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

Preliminary and Incomplete Draft, Comments Welcome

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Abstract

Nearly 15 million Medicare recipients are currently enrolled in private Medicare Advantage (MA) plans. Many previous studies have estimated the impact of MA enrollment - relative to traditional fee-for-service Medicare - on program expenditures, quality of care, and health outcomes. Surprisingly little work has explored how these effects vary with the generosity of plan reimbursement. In this study, we aim to fill this gap by exploiting a substantial policy-induced increase in the reimbursement of MA plans in MSAs with a population of 250 thousand or more relative to MSAs just below this threshold. Our findings demonstrate that the additional reimbursement leads more plans to enter these markets and to an increase in MA enrollment. However, our findings suggest that less than one-third of the additional reimbursement is passed through to consumers in the form of better coverage. Our results further suggest that this incomplete pass-through is not primarily driven by selection and instead suggest that imperfect competition in the market for MA plans plays a key role. Our results have implications for a key feature of the Affordable Care Act that will reimbursement to MA plans by $92 billion from 2014 to 2019.

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1 Introduction

The Medicare program currently provides health insurance to more than 51 million U.S. residents with total expenditures estimated to exceed $600 billion in 2012 (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 14.5 million recipients, the federal government instead contracts with private insurers and other organizations to coordinate and finance medical care through the Medicare Advantage (MA) program. Plans are paid a fixed amount per-member per-month and thus have a financial incentive to keep costs down. Medicare recipients have the option to enroll in MA and program enrollment has fluctuated over time and varies substantially across geographic areas at a point-in-time.

A large body of 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, however, investigated how the effect of MA enrollment varies with the generosity of plan reimbursement. Theoretically, one would expect plan payment rates to influence both the quality of coverage offered by private insurers and potentially the entry decisions of some insurers. This gap in the literature is unfortunate given a key feature of the recently enacted Affordable Care Act that steadily lowers reimbursement to MA plans by an estimated $156 billion from 2013-22. While the Congressional Budget Office and others have estimated that these lower payment rates will reduce MA enrollment, there is little evidence regarding how the quality of coverage will change for those who remain in MA.

In this study, we aim to partially fill this gap in the literature by exploiting variation across geographic areas in the generosity of MA plan reimbursement. Several factors influence the level of plan reimbursement for a Medicare Advantage enrollee, including the individual's

risk score (which depends on the person's health status) and a county-level benchmark rate. Through the risk score factor, plans are paid more for individuals with one or more health conditions such as diabetes or hypertension. Through the county benchmark factor, plans are paid more in areas with high fee-for-service spending, such as Miami, Florida, than in areas with low FFS spending, such as Minneapolis, Minnesota.

In part to encourage more MA options in areas with low FFS spending, the federal government in 1998 set a minimum benchmark known as a payment floor, which would be increased annually with the growth in average per-capita Medicare FFS expenditures. Initially, the payment floor was uniform across all counties. However, in 2001, the payment floor was set to be 10% higher in counties belonging to metro areas with more than 250 thousand residents. As an example of these payment dynamics, in 2008, Ohio counties Lawrence and Washington both had benchmarks that were set at the payment floor. However, Lawrence County belongs to the Huntington, WV metropolitan area – with a population of 286K – while Washington County belongs to the Parkersburg, WV MSA, with a population of just 163K. As a result, the county-level benchmark in Lawrence County was $772 per month – corresponding to the urban floor rate – versus just $699 per month in neighboring Washington county – the non-urban floor rate.

We use several data sources to investigate whether this policy-induced variation in the generosity of MA reimbursement affects the quality of insurance coverage, the utilization of medical care, as well as health outcomes. The relationship between average fee-for-service expenditures and the county-level benchmark in 2007 is shown in Figure 1. As this figure demonstrates, counties with relatively low fee-for-service spending have benchmarks that correspond to the payment floor. Furthermore, this figure shows two different payment floors, for urban (metro area with population of 250K or more) and non-urban (249k or less) counties. Hence, each county's urban status is based off the population of the associated metro area; however, for the 67% of counties that belong to single-county metro areas, the county and metro populations coincide.

To estimate the incidence of the additional reimbursement, we begin with an illustrative model covering the basic case of perfect competition, in which insurers earn zero profits. Under this model, as an insurer makes its coverage more generous, more Medicare recipients are likely to enroll in the MA plan. If these marginal enrollees are more costly (conditional on their risk score), then even with perfect competition, the inframarginal enrollees will not receive the full benefit of the additional reimbursement. Intuitively, if an insurer receives $10 more per month from the federal government and reduces its premium by exactly $10, its profits will decline. In our model we formalize how the degree of selection affects the incidence of MA reimbursement for the case of perfect competition.

Of course, the market for Medicare Advantage plans may not be perfectly competitive. Previous research by Dafny (2011) and others strongly suggests that in many geographic markets health insurers exercise a significant amount of market power. To the extent that this is true in the market for Medicare Advantage, then even if there is no difference between the marginal and the average MA enrollee, there will be less than full pass-through of the benefits. Theoretically, both advantageous selection and imperfect competition reduce pass-through rates. Furthermore, we use our model to outline the forces, including entry, affecting incidence under imperfect competition.

Our first set of empirical results investigates the effect of the additional plan reimbursement on the number of insurers enrolling MA recipients and the HHI concentration index of MA enrollment in the county. We find that in counties with 10 percent more reimbursement (due to the higher payment floor) there are on average 1.9 additional insurers and that the average HHI is lower by 1047. These effects are substantial given that there are on average 6.2 insurers in our analysis sample and the average HHI is 3937. This first set of results indicates that the additional reimbursement induces more insurers to enter the MA market and that individuals enrolled in MA then have more plans from which to choose.

We next estimate the effect of the additional reimbursement on the fraction of Medicare recipients enrolling in MA. Theoretically, one would expect the additional reimbursement

to result in more MA enrollment, as plans either improve the quality of their coverage or advertise more intensively. Consistent with this, we estimate that the 10.5 percent increase in plan reimbursement leads to a 7.0 percentage point increase in enrollment in Medicare Advantage HMO and PPO plans. The higher reimbursement also leads to a similar increase of 5.3 percentage points in enrollment in private fee-for-service MA plans, though these plans differ little from traditional Medicare because they do not bear financial risk nor can they restrict recipients' choice of providers.

Given evidence of higher levels of competition in markets with higher MA payments, we turn to calculating the impact on plan price and quality. Here, we find much smaller estimates. For example, we find that enrollees in counties located in MSAs that are just above the population threshold do not pay significantly lower monthly premiums. Estimates that incorporate the premium, expected out-of-pocket costs, and rebates to consumers suggest that less than one-sixth of the additional funding is passed through to consumers and we can rule out pass through of more than 55 percent at the 95 percent level of confidence. These findings suggest that very little of the additional reimbursement is passed on to consumers in the form of lower premiums, deductibles, or co-payments.

Of course, plans may be increasing the quality of medical care rather than decreasing their enrollees' financial costs. To investigate this issue, we use detailed individual-level data from the Consumer Assessment of Healthcare Providers and Systems (CAHPS) regarding MA enrollee's satisfaction with and utilization of health care along with their health status. We find no evidence of increased patient satisfaction or utilization of routine, PCP, or specialist visits in urban floor counties relative to their non-urban counterparts. Similarly, we find no impact on self-reported (overall or mental) health or satisfaction with care. Finally, selection and composition effects may explain low pass-through of benefits. Yet we show very similar enrollee composition across our payment threshold.

Taken together, our results indicate that the increased reimbursements paid to floor counties just above the 250 thousand threshold substantially increase the number of en-

rollees in Medicare Advantage despite small impacts on actual plan quality. Not only is this inconsistent with a model of perfect competition, but it presents a puzzle even allowing for imperfectly competitive insurers. How do insurers increase enrollment in counties above the MSA population threshold? We present suggestive evidence that firms advertise more aggressively in counties with higher benchmarks and that this increased advertising leads to higher enrollments.

The recently enacted Affordable Care Act instituted many changes to the Medicare Advantage program that are currently being phased in. Chief among them is a reduction in the generosity of MA reimbursement, with the magnitude of these reductions growing steadily over time. According to the Congressional Budget Office, these cuts will save the federal government $156 billion over the 2013-2022 period. Our estimates indicate that the incidence of these cuts will fall primarily on the supply side of the market. However, our results also suggest a significant reduction in the number of Medicare recipients enrolled in MA plans. While we cannot measure the direct impact on firm profitability,we can look to stock returns as a proxy. Following reversals of recent planned cuts to the MA program, the stock market valuation of major health insurers rose substantially (see Figure 6). Along with other recent evidence regarding the effect of the ACA on the valuation of health insurers (Al-Ississ and Miller 2013, Kliff 2013), our results suggest that health insurers have benefited substantially from the policy-induced increases in plan reimbursement while we find little evidence of substantial benefits to consumers.

The paper is organized as followers. Section 2 describes the Medicare Advantage program and Section 3 describes our theoretical framework. Section 4 describes the data on Medicare Advantage enrollment, cost, and quality along with insurer participation. Section 5 outlines our identification strategy and presents our results, and Section 6 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 existing, government provided Medicare into private managed care plans. The federal government hoped to achieve quality as well as cost improvements by harnessing competition between private insurers (Hansmann 1980, Donahue 1989, also see McGuire, Newhouse, and Sinaiko (2011) for an excellent and comprehensive history). In contrast to the fee-for-service (FFS) framework used by traditional government Medicare, Medicare Advantage plans provide care through a managed care model. Under traditional FFS, patients have substantial freedom in selecting physicians as well as treatment options, with relatively few restrictions placed on the scope of care. Under managed care, greater restrictions exist on physician access, with access often limited to a plan's provider network. Furthermore, many managed care plans require special approval for specialist visits and certain procedures. They may also make efforts to coordinate patient care, which could yield efficiency improvements.

2.1 Plan Description

While all Medicare Advantage plans must cover the services that are included under traditional Medicare Parts A and B, individual plans can 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 can enter county-level markets by offering a variety of plans, and an insurer can selectively introduce a Medicare Advantage plan to certain counties and not to others. An insurer can offer multiple plans within the same county and vary the characteristics of these plans. 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 (HMO's) 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. Medicare Advantage HMO plans do not allow enrollees to see physicians or hospital 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). Differences between these plan types could ultimately shape insurers' market entry decisions, in terms of the plan types offered within a county. For instance, given that PFFS plans are not required to form provider networks, the fixed costs of market entry for PFFS plans could be much lower than for other types of plans.

2.2 Plan Reimbursement

Payments to Medicare Advantage plans are based on payment benchmarks, which correspond to a given enrollee's county of residence. The benchmark payment is risk-adjusted for that enrollee's demographic and health characteristics. Originally, county-level payment benchmarks for Medicare Advantage plans were set at 95% of a county's per enrollee, risk-adjusted Medicare fee-for-service spending. CMS introduced a payment floor in 1998, primarily to encourage plan entry to rural counties. However, as a by-product of this implementation, government spending on MA enrollees in many counties (particularly rural ones) came to exceed spending on similar enrollees in Medicare FFS. In 2001, CMS introduced a second

payment floor, which was set at an approximately 10 percent premium to the existing one, and which applied only to urban counties. CMS defined a county as "urban" if the metropolitan area in which it is included had a population of 250 thousand or more.

The relationship between a county's average per-capita fee-for-service spending can be seen in Figure 1. 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 floor of $613. Counties with per-capita FFS spending above $613 were in this year essentially unaffected by the payment floor while only urban counties between $555 and $613 are affected. As the figure shows, the magnitude of 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.

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 percent of the difference got returned to the federal government. The remaining 75 percent 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 (CMS, 2006). Recent work has explored the effect of county benchmark changes on plan bids but does not consider the effects on measures of plan quality (Chernew et al, 2013).

A number of papers highlight 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, a literature 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), mortality, and disparities in health care (Balsa, Cao, and McGuire 2007). Our paper is designed to bridge this literature, by connecting policy-induced differences in plan generosity to market structure, while also measuring the impact of market structure on outcomes for beneficiaries.

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 2010). Furthermore, out 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 2013 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 pass-through in employer-sponsored plans). Finally, Gaynor and Town 2012 provide a nice summary of competition in health care markets more broadly.

3 Theory

This section describes the theoretical framework that informs the empirical specifications. Because the government cannot write a complete contract over the premiums, plan benefits, patient utilization, and plan expenditures, incidence is likely to depend on the degree of competition in the market as well as selection. Under perfect competition and constant marginal costs (perfectly elastic supply), we expect full pass-through of reimbursements to consumers.[1] However, competition may be imperfect and there may be selection. For ex-

[1] 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.

ample, previous work has found evidence of advantageous selection into Medicare Advantage (Brown et al. 2013) and adverse selection with respect to plan generosity within Medicare Advantage (Lustig 2012). We can also derive the theoretical incidence under less stringent assumptions.[2]

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[3], then the marginal Medicare Advantage consumer is sicker and more costly to insure than the average. 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 3 illustrates that incomplete pass-through under advantageous selection into Medicare Advantage policies. 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.[4]

However, various studies (Dafny 2010, Lustig 2012, Starc 2013) have argued that perfect

[2]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.

[3]As suggested by Brown et al. (2013).

[4]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 additionaly spending passes through to consumers in the form of a lower premium.

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competition is a poor benchmark in insurance markets. The incidence of the MA subsidy depends on market structure. For example, consider pass-through under monopoly. Figure 4 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: the less competitive the conduct in a market is, the smaller the pass-through rate.

In addition, more firms may enter as a result of increased plan generosity. Plans may be diffferentiated by financial features, networks, or branding; alternatively, firms may face high fixed costs. 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. 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.[5] Therefore, in order

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

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

to predict firm entry and the associated increase in competitive pressure, we are interested in a comparative static that links 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.[6] Third, there is a *cost effect*, where higher benchmarks could change the nature of selection within the market. 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.

4 Data

We use a number of administrative datasets from CMS (Centers for Medicare & Medicaid Services) and from HCUP (Healthcare Cost & Utilization Project) that contain MA plan enrollment levels, plans' financial generosity towards enrollees, measures of plan quality and patient utilization, government payment amounts to Medicare Advantage plans, and FFS spending levels per enrollee. We extract information on plan characteristics from a variety of CMS datasets, covering such dimensions as insurer identity, plan type, plan financial characteristics (including premium and out of pocket costs), and plan quality measures. We construct measures of MA enrollee composition at a plan, county, as well as year level, using

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.

[6] 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.

CAHPS survey data, Medicare denominator data, as well as hospital discharge data. These data are nationwide in scope, covering more than three thousand US counties. We have annual county-level data on the number of insurers, the HHI index, and MA enrollment (separately by HMO, PPO, and PFFS) from 2007 through 2011 and we have data on plan characteristics (such as premiums, out-of-pocket costs, and Part D coverage) and individual-level data on MA plan ratings for these same years.

We initially differentiate between three types of counties - those with monthly per-capita FFS spending below $662.32 in 2004, those between $662.32 and $732.04, and finally those above $732.04. For the first group, for any given level of FFS spending, the benchmark is approximately 10.5 percent higher in urban counties than in non-urban counties and is set at the payment floor. For the third group, the benchmarks are essentially the same in each of the two types of counties for any given level of FFS spending. And for the second group, the gap in benchmarks between the two counties declines linearly from about 10.5 percent at per-capita FFS spending of $662.32 to 0 by $732.04. Urban counties in this group have their benchmarks set at the payment floor while non-urban counties do not.

Figure 1 shows the relationship between average fee-for-service expenditures and county benchmarks for the three types of counties. As this figure shows, the effect of being designated an urban county (in a metropolitan area with 250 thousand or more residents) is largest for those with average fee-for-service spending below $662 and this effect declines steadily from that threshold to the threshold of $732, at which point the floor no longer binds for urban counties. Table 1 provides summary statistics for all counties and then separately for each of these three types of counties. As the table shows, both benchmarks and average per-capita FFS expenditures are generally higher for the third group than for the second or first groups. Additionally the average population - both of the individual counties and of the metropolitan areas in which they are included - is highest among those above the $732 threshold and lowest in those below the $662 threshold.

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 while a non-floor county with low expenditure growth may convert to floor status. This is of course more likely for counties close to the kinks in the schedule displayed in Figure 1. For example, among non-urban counties with FFS expenditures from 600 to 662 in 2007, more than 10 percent are no longer "floor counties" three years later in 2010. In contrast, just 0.3 percent of non-urban counties with FFS expenditures below 600 in 2007 do not have floor status in 2010. Similarly while 32 percent of non-urban counties with FFS expenditures between 663 and 730 convert to floor status by 2010, just 2 percent of non-urban counties above 730 do. The patterns are similar for non-urban counties, with those closer to the kink in 2007 more likely to shift floor status thereafter. 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. Our analyses explore the effect of this reimbursement generosity from 2007 through 2011.

In our first set of analyses, we include all 2945 counties with non-missing data. However, because we use the urban / non-urban threshold as a key source of identification, we primarily focus on counties located in metropolitan areas that are relatively close to the 250 thousand population threshold so as to have a more comparable set of counties. More specifically, we include counties located in metropolitan areas with populations between 100 thousand and 600 thousand. The population range is set larger above the threshold because the density of metropolitan area populations is somewhat thicker in the range below the threshold than above. These criteria yield a sample of 576 counties, with 304 below the population threshold and 272 above. These counties are included in 280 metropolitan areas, with approximately half of the metro areas having just 1 county, 20 percent having exactly two counties, and the remaining 30 percent having between 3 and 6 counties. More than 70 percent of the counties in our analysis sample have benchmarks set at the floor in 2004, with the percentage somewhat higher among urban counties (82%) than non-urban coun-

ties (62%). This difference is not surprising given the much larger range of fee-for-service spending that can qualify an urban county for floor status.

4.1 Plan Enrollment Data

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 has the technical term contract). Our final dataset is at the county-year-insurance contract level. For any given year, we exclude contracts with fewer than 10 enrollees. 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 market. For counties with fewer than 10 enrollees, this number is not reported. Given the small number of counties in our analysis sample missing this data (e.g. just 11 out of 576 in 2007), our results are not sensitive to whether we exclude these counties from our sample or assume that MA enrollment is equal to 0 in those cases.

Among counties with at least 10 MA enrollees (94 percent of all counties), the average number of insurers offering an MA plan is 4.4 and the average HHI concentration index is 0.55. For our analysis sample, just 2 percent of counties have fewer than 10 enrollees and the corresponding averages are 5.7 and 0.46, respectively. These market measures treat PFFS, HMO, and PPO types of Medicare Advantage similarly. We compile a list of the most active insurers, based on the number of county-years in which they operate from 2007 through 2011, and also break out each firm's activity by county type as in Table I. We present these statistics in Table 2 and show that Humana is the most active MA insurer, in terms of county-years in which it is present (nearly 80 percent of all possible markets).

4.2 Plan Characteristics Data

To measure plan financial characteristics, we draw on plan-year level data from the CMS landscape files and metrics of premium levels, the availability of drug coverage, and mean

drug deductibles and copayments (for the plans that offer this coverage).[7] We obtain data on consumer out-of-pocket costs at a plan-year level as compiled by CMS. These figures are featured as part of the Medicare Compare database, and, therefore, are likely to be salient to consumers. The database breaks down out-of-pocket costs 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 across these estimates to construct a single composite metric. There is no geographic variation in this data, so it provides a valuable aggregate measure of plan generosity.

If insurers bid below the benchmark, they must devote a part of the difference to improving consumer benefits in the form of a rebate of added benefits. As noted, the bid denotes the insurer's estimated cost of providing traditional Medicare coverage to an enrollee with an average risk score. The rebate amount, meanwhile, equates to 75% of the difference between the bid amount and the benchmark, in those cases where the benchmark exceeds the bid (CHS, 2006). As such, we examine the impact of benchmark differences on rebate amounts, which we obtain from CMS data files at an insurer-plan type-county-year level.

In some cases, plans allocate rebates towards decreasing the Part B premium paid by consumers. Plans could also allocate this rebate towards reduced cost-sharing or supplementary benefits like drug coverage. When the estimated cost of supplementary benefits exceeds the rebate amount, plans can charge consumers an additional premium: there exist many plans that receive rebates, yet simultaneously charge a premium. In Table IB, we present the average financial characteristics of plans across different sets of counties, including urban floor and non-urban floor counties in the population range of interest. The results indicate that plans' financial generosity in urban floor counties is no greater, on average, than in the non-urban counterparts. These numbers suggest that higher payments to plans within urban

[7] 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.

floor counties are not getting passed on to consumers, at least financially.

4.3 Plan Quality Data

As measures of plan quality, we rely on CAHPS survey data, which contains enrollees' ratings of plans, self-assessments of health status, and other measures of plan experience, such as self-reported number of physician visits. The CAHPS survey is administered yearly, and covers every Medicare Advantage plan that is at least a year old. 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 are selected). While 600 are selected for questioning, fewer respond (non-response rate is around 25%.)

We have obtained the CAHPS data at an individual respondent-level, for the years 2007-2011. The data identifies the insurance contract in which each survey respondent is enrolled, along with that respondent's demographic characteristics such as county of residence, age, race, and education. In addition, the data contains the respondent's answers to each of the survey questions.

To measure the quality and composition of care within plans, we also make use of hospital discharge data from HCUP's National Inpatient Sample (NIS), for the years 2007-2010. The NIS contains discharge-level data for every single visit made to a hospital, from 20% of all hospitals from over 40 states. The data in the NIS is at an individual-discharge level, and was separately submitted to the NIS by each participating state. As such, the heterogeneity in what states track or turn-over also finds its way into the NIS.

Only a fraction of states in the NIS, 16 in total, offer the specific information required for our analyses-county identifiers and identifiers differentiating Medicaid FFS from Medicaid managed care patients (incidentally, these states contain 59% of MA enrollees). We should note that county identifiers contained in the NIS all denote the location of the hospital, rather than of the patient's original county of residence. As MA reimbursement is based on patients' county of residence, this results in some measurement error. However, the extent of

this error could be modest, as evidence suggests that the vast majority patients use hospitals in their home counties (in California's discharge data, hospital and patient county correspond approximately 95% of the time).

In Table IC, we present the average levels of CAHPS indicators within different sets of counties, including urban floor and non-urban floor counties. We find that measures of plan quality and utilization appear to be similar across these counties.

4.4 Identification Strategy

We exploit variation in the Medicare Advantage benchmark formula that leads urban floor counties to have benchmarks that are up to 10.5% higher than similar, non-urban floor counties. As shown in Figure 1, both urban and non-urban counties with per-capita FFS expenditures of $662 or less in 2007 had benchmarks set at the urban or non-urban floor. In contrast, the payment floor did not bind in counties above $732 in per-capita FFS spending. Urban counties between these two thresholds had benchmarks at the urban floor while the non-urban floor was not binding in comparable counties in metropolitan areas with a population less than 250 thousand.

Our key sources of variation are the urban / non-urban population threshold and a county's per-capita level of fee-for-service expenditures. We begin by estimating the effect of urban status on the level of benchmarks and then proceed to estimate the effect on market outcomes such as the number of insurers and the HHI concentration index along with measures of plan quality such as plan premiums and enrollee satisfaction with care. We control flexibly for a county's per-capita level of FFS expenditures and for both the county and metropolitan area population when estimating specifications of the following type:

$$Y_{jt} = b_0 + b_1 * FFS_{j,2007} + b_2 * Urban_j + f(CountyPop_{j,2007}) + g(MetroPop_{j,2007}) + g_t \quad (1)$$

In this equation, our coefficient of particular interest is b2, which represents our estimate

of the average impact of urban status on outcome variable Y. One concern with this equation is that there may be other factors associated with urban status - being part of a relatively large metropolitan area - that are not adequately captured by our controls for county and metropolitan area population and fee-for-service expenditures. This concern is to some extent reduced by focusing on a smaller and more comparable set of counties that are close to the 250 thousand threshold. To probe further on this potential concern, we estimate this specification with each of the three set of counties - those "fully treated" by the urban status, those "partially treated" and those "untreated." If we were to estimate a large effect of urban status for counties with high per-capita FFS expenditures, this would suggest that some other factor is driving the estimate.

We also estimate specifications in which we consider those counties with FFS costs in 2007 that put them above the non-urban floor threshold but below the urban floor. Urban counties in this per-capita FFS range are essentially partially treated. This is close to a full treatment for counties close to $662 in per-capita FFS expenditures and declines linearly to 0 for those counties at $732. We therefore define a variable GAP that captures this partial treatment as the (absolute value of the) difference between the county's 2007 FFS spending and $732 while scaling this difference by $70.

$$Y_{jt} = b_0 + b_1 * FFS_{j,2007} + b_2 * Urban_j + b_3 * GAP_j \quad (2)$$

$$+b_4 * Urban_j * GAP_j + f(CountyPop_{j,2007}) + g(MetroPop_{j,2007}) + g_t \quad (3)$$

We estimate the first specification above for each of the three sets of counties and estimate the second specification for counties above the $662 threshold. Our analysis focuses on the period from 2007 through 2011. During this period, payment floors are functionally (albeit not formally) present, since benchmarks after 2004 were set at the highest of the previous year's benchmark (adjusted for inflation) or a county's average FFS level. Counties with

binding 2004 floors would have future benchmarks set at the inflation adjusted floor value, so long as this value exceeded the county's FFS level for all subsequent years. 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. As described above, a county's floor status can change from one year to the next.

5 Results

5.1 The Impact on County Benchmarks

Table 3 summarizes the results from several specifications that explore the impact of a county's urban status on its monthly Medicare Advantage benchmark. The specification listed in the first column includes observations for each year from 2007 through 2011 for all counties with monthly fee-for-service spending below $662.32. The specifications also control (with a linear and quadratic term) for both the county population and the metropolitan area population along with monthly fee-for-service expenditures. Standard errors are clustered at the metropolitan area level given the level of variation in the URBAN indicator. The statistically significant estimate for the coefficient on the URBAN indicator implies that during this five-year time period, the average difference in monthly benchmarks between urban and non-urban counties was about $72. This estimate is virtually unchanged in the next column when we restrict attention to the subset of counties in metro areas with populations between 100 and 600 thousand. In both specifications, there is a small though statistically significant estimate on the coefficient for FFS expenditures. This reflects the fact that, as described above, counties close to the threshold are more likely to have fee-for-service spending above the payment floors in subsequent years.

The next two columns summarize a companion set of specifications for counties with fee-for-service expenditures between $662 and $732. As shown in Figure 1, in this range, status as an urban county results in a partial treatment as the gap between the urban and

non-urban benchmarks is only a fraction of that for those in the lower FFS range. And consistent with this, the point estimates for the URBAN indicator are significantly positive though much smaller than for the previous samples, suggesting on average an increase of $23 in the monthly benchmark. In these specifications, the coefficient for the FFS expenditures variable is large and highly significant, which makes sense given that - at least for non-urban counties - higher FFS expenditures directly translate into a higher benchmark.

In columns five and six, we summarize the results for counties with per-capita FFS expenditures above $732 per month. For this set of counties, the URBAN indicator should have little impact on the benchmark, as shown in Figure 1. Consistent with this, column five shows an estimate of just $3, which is statistically insignificant. For the narrower sample, the URBAN indicator coefficient is actually negative and marginally statistically significant. In these two specifications, the coefficient estimate for FFS spending is slightly above 1, reflecting the direct relationship between FFS expenditures and the benchmark shown in this expenditure range as shown in Figure 1.

In the final two specifications, we estimate specifications similar to (2) above in which we include counties above the $662 threshold, thus combining the second and third groups. In both specifications, the URBAN indicator is small in magnitude and statistically insignificant. However, the interaction of the URBAN indicator with the GAP variable described above is close to $50 in both cases and highly statistically significant. This provides further evidence that the baseline level of per-capita FFS expenditures is a strong predictor of the benchmark even for those counties above the non-urban floor threshold.

Taken together, the results in Table 3 demonstrate that URBAN status is a powerful predictor of MA benchmarks for counties with FFS expenditures below both the urban and non-urban floors. Additionally, the results are fairly similar when we consider the full sample or restrict attention to the subset of counties in metro areas with populations close to the 250 thousand threshold. In the subsequent sections, we focus primarily on counties with per-capita FFS expenditures below the non-urban threshold in 2007 and with metro populations

between 100 and 600 thousand. We do this so as to focus on the counties for which the URBAN status "matters most" and to consider a more comparable set of counties.

5.2 Market Structure

We next explore the effect of the policy-induced increase in MA plan reimbursement on two measures of market structure - the number of insurers and the HHI concentration index. As our model above suggests, increases in the generosity of reimbursement may cause additional firms to enter the MA market and incumbent firms to increase the quality of their product in response. We consider here counties in the first group described above with FFS expenditures per enrollee below $662 in 2007. For this group of counties, the average number of insurers offering an MA plan during the 2007 through 2011 period was 6.2 and the average HHI concentration index 3937 (measured on a 10,000 scale). 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. In contrast to the previous set of analyses, one would expect the population measures to be an important determinant of our outcome variables in this case. A large body of previous studies suggests that, as the size of a market grows, so too will the number of firms operating.

The first specification summarized in Table 4 considers the effect of URBAN status on the number of insurers. The point estimate of 1.92 for the URBAN indicator variable represents more than 30 percent of the mean number of insurers for our analysis sample. This estimate is highly significant with a t-statistic of 3.6. This same column reveals that there is a strong relationship with the county population and the estimate for the URBAN indicator is robust to including a cubic and a quartic in this county population measure. Interestingly, the population of the metropolitan area has little additional relationship with this outcome variable. The significantly negative point estimate of -.618 for the per-capita FFS expenditures variable suggests that fewer insurers enter as a county's fee-for-service expenditures gets closer to the threshold. This makes sense as the gap between the plan

reimbursement and FFS expenditures is declining in that measure (as shown in Figure 1). Thus insurers respond to the greater profit opportunities that exist in the counties with very low fee-for-service spending.

The second specification yields a similar picture by considering the effect of URBAN status on the HHI concentration index. Counties in metropolitan areas above the URBAN threshold are significantly less concentrated, with the point estimate of -1047 representing more than one-fourth the mean HHI in our analysis sample. This is approximately equal to the HHI decline that would occur when increasing from 4 to 7 equally sized insurers (though the actual impact is clearly different given an average HHI of almost four thousand in our sample). As expected, the other point estimates in column 2 have the opposite sign to those for the previous specification given that here a larger number represents fewer insurers operating.

Specifications one and two suggest that the additional reimbursement available to plans in counties with the URBAN designation leads to more entry and a reduction in concentration. The next three specifications explore whether and to what extent the additional reimbursement leads to more MA enrollment. The third specification shows that the fraction of Medicare recipients enrolled in Medicare Advantage HMO or PPO plans increases by 7 percentage points as a result of the greater reimbursement, while specification four shows a corresponding increase of 5.3 percentage points in the share enrolled in MA private fee-for-service plans. Both estimates represent nearly 75 percent of the sample means and thus our findings here suggest that the policy-induced increase in plan reimbursement leads to substantially more Medicare Advantage enrollment. It is also worth noting that - for both plan types - enrollment is declining in the level of per-capita fee-for-service expenditures. This evidence, coupled with the estimates for the URBAN status indicator, demonstrate that financial incentives how a powerful impact on insurer entry and on the fraction of Medicare recipients enrolled in MA plans.

In a companion set of specifications not summarized here, we investigated the relationship

between these outcome variables and URBAN status as in equation (2) above for the sample of counties above the $662 threshold in per-capita fee-for-service expenditures. Our results there are broadly consistent with those displayed in Table 4 for counties below this $662 threshold, suggesting that the extra reimbursement resulting from URBAN designation leads to more entry, lower concentration, and an increase in Medicare Advantage enrollment.

5.3 Financial Characteristics of Plans

We next consider how the financial generosity of MA coverage varies with the additional policy-induced reimbursement. As discussed in our theoretical framework above, insurers may respond to the higher benchmarks in URBAN counties 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. This premium data is available at the county-plan-year level, and our county-year measures are enrollment weighted-averages. As shown in the first column of Table 5, the point estimate for the URBAN indicator is very small in magnitude (-0.76) and statistically insignificant. This suggests that despite the substantially higher benchmarks in urban counties, MA enrollees do not benefit in the form of much lower premiums.

In the next column, we investigate the effect on out-of-pocket costs (OOPC). In contrast to the previous measure, this one is measured at the plan-year level given that plan financial characteristics would be the same across geographic markets. Once again, our measure weights by MA enrollment, and the average OOPC in our analysis sample is approximately $383 per month. The point estimate of -10 for the URBAN coefficient is statistically insignificant. The fifth column takes the sum of OOPC and the monthly plan premium and the coefficient for the URBAN indicator in that case is -11. Furthermore, we can rule out financial benefits of more than 31 dollars per month (about 40 percent of the benchmark effect) at the 95 percent level of confidence.

In the third 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). We only have rebate data for 2007 through 2010, and so our analysis sample is 20 percent smaller as a result. But consistent with our estimate for the two preceding financial measures, our results provide little evidence to suggest that benchmarks that are 72 dollars higher per month lead to substantial additional benefits to enrollees. We add these three financial measures together (subtracting the rebate given higher values of it reflect better benefits) in the total cost measure considered in the sixth specification. The point estimate of -11.4 suggests that less than one-sixth of the value of additional benchmarks translates into more generous benefits, and our confidence interval rules out pass-through of more than 55 percent at the 95 percent level of confidence.

The specifications displayed in Table 5 provide additional insight regarding the effect of plan reimbursement on the financial generosity of MA plans. As described above, the magnitude of the gap between a county's per-capita FFS expenditures and the payment floor is significantly positively related with the number of insurers operating and with total MA enrollment. However, the estimate for the FFS expenditure coefficient in both the premium and plan rebate specifications suggest very little link with the generosity of coverage. And the significantly negative point estimate for this variable in the OOPC specification suggests that - as the gap between the floor and FFS expenditures grows - out-of-pocket costs actually increase. Adding up these three measures of financial generosity, our results provide little evidence to suggest that the larger gaps that lead to more insurer entry and more MA enrollment are associated with better coverage on this dimension.

In the fourth specification we consider the provision of drug coverage and - consistent with the previous measures - find little evidence that this benefit is more likely to be offered by plans in urban counties, as the point estimate on the URBAN indicator is actually negative.[8]

[8]However, we postulate that this is the result of idiosyncratic changes to plan offerings for a particular insurer, rather than a general pattern.

And as with the OOPC variable, Part D coverage seems to be less generous in counties with lower FFS reimbursement, where more insurers enter.

Taken together, the results in this section suggest that the additional plan reimbursement for plans in URBAN counties does not translate into more generous benefits. Similarly, a larger gap between the payment floor and the county's fee-for-service expenditures is not associated with better benefits either. These results are to some extent surprising given that both of these variables have a powerful impact on both insurer entry decisions, the concentration of the market, and on total MA enrollment.

5.4 Quality Characteristics

Higher MA reimbursements could also be passed on to consumers in the form of quality improvements. 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 CAHPS, for 2007-2011. These data contain information on respondents' counties of residence, allowing us to examine the relationship between county-level reimbursement variation and the measures included in the CAHPS.

We examine reimbursement's impact on respondents' overall ratings of plan quality along different dimensions: health care received, the primary care provider, specialists seen, and the plan overall. We run our results at a respondent-level and restrict the sample to individuals in floor counties in the 100-600k metro population range. 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. 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. Our standardized treatment effect metric allows us to rule out increases in plan satisfaction greater than 3.5% of the mean. These results also contain no significant relationships between higher MA benchmarks and plan ratings.

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 statuses. These results, which are presented in Table 8, provide no evidence of a significant relationship between urban status and utilization or outcomes, for floor counties in the 100-600k population range.

In Table 12, we also present results on utilization impact using discharge data from the National Inpatient Sample (NIS). Throughout these analysis, we restrict to floor counties in the 100-600k population range, and run specifications including hospital fixed effects. The key independent variable throughout is the interaction term between MA status and the urban status of the enrollee's county. Altogether, results are consistent with those from the CAHPS, and show no significant association between the higher benchmarks in MA counties and measures such as length of stay, number of procedures, and mortality, across a number of specifications.

5.5 Compositional Effects

We do not find evidence of increased reimbursements being passed through to consumers in the form of plan quality or treatment changes. However, our results could be biased by reimbursement-driven changes to enrollee composition within Medicare Advantage. As we showed in Table 4, the 10.5 percent increase in benchmarks for floor counties resulting from urban status leads to a substantial increase in MA enrollment. As such, we test for possible compositional changes to MA enrollment, which could result from reimbursement increases.

Using data from the CAHPS, we restrict to MA enrollees in floor counties in the 100-600k population range. We then compile demographic and health metrics for enrollees in urban and non-urban floor counties, respectively. As shown in Table 9, we do not find substantial differences in age, gender, race, or in other utilization measures across enrollees in these counties. Of course, this does not rule out the possibility of unobserved differences between the marginal and average MA enrollee.

These results from the CAHPS are reinforced by analyses from New York State Medicare

Denominator Data, for 1998-2003. This period encompasses a 2001 policy change-the introduction of a differentiated floor for urban counties. Previously, there was a uniform floor applying across all counties. Using the exogenous reimbursement variation resulting from the introduction of this floor, we test for impact of reimbursement on MA enrollees' demographic characteristics. In doing so, we find no evidence of changes to MA enrollee composition (overall, as well as among the subset newly eligible for Medicare & MA enrollment). These results are displayed in Table 10.

5.5.1 Discussion

Our empirical results show that larger subsidies to Medicare Advantage plans lead to significantly more insurers and to less concentrated insurance markets. Furthermore, more generous subsidies lead to higher Medicare Advantage penetration rates. Given these two facts, it would be natural to assume that the higher subsidies are passed on to consumers in the form of lower premiums, OOPC, or higher quality. Our empirical results do not support this conclusion. The exogenous \$72/month disparity in plan benchmarks across our population discontinuity is not accompanied by significant differences in premiums, out-of-pocket costs, or rebates. While our estimates are somewhat imprecise, we can rule out increased in overall generosity of \$37/month or more, and thus can reject that more than 55 percent of the subsidy is passed on to consumers at a confidence level of 95 percent . The point estimates suggest pass-through of just 16 percent.

These results could still be consistent with a perfectly competitive market if other measures of plan quality increased substantially and / or if enrollee composition changed significantly as a result of advantageous selection. However, our results utilizing the CAHPS data do not support either of these hypotheses. Additional analyses using the Medicare denominator file (see Table 10) also indicate limited advantageous selection.[9] Given low pass-through of benchmarks to consumers and limited evidence of strong selection on the

[9]While this is true of the margin we examine, there is evidence of advantageous selection overall (Brown et al 2013).

margin, we argue that perfect competition is a poor benchmark for this market. While higher margins seem to stimulate competition, competition has a limited effect on the price and quality of MA plans.

Yet imperfectly competitive firms must also compete for consumers. The increase in the number of plans sold indicates that something must induce higher participation rates. We find some suggestive evidence that strategic advertising may drive enrollments. In order to calculate the impact of benchmarks on marketing, we utilize data on TV spot advertising from Kantar Ad$pender . We aggregate our measure of simulated benchmarks to the DMA level to match the Kantar data and create a measure of average, Medicare-enrollee weighted simulated benchmarks. Because our identification strategy relies on county-level benchmarks, our results using advertising data at the more aggregated DMA level should be viewed as suggestive, rather than causal. In Table 11, we regress TV spot advertising spending on both the empirical and simulated benchmarks, controlling for a number of market characteristics, including size and FFS costs. Our results indicate that higher benchmarks are associated with higher levels of advertising. A $100 increase in the average benchmark is associated with a $5 increase in advertising spending per Medicare enrollee; the results indicate that moving from the twenty-fifth to seventy-fifth percentile of average benchmark is associated with a doubling in advertising spending.[10]

Taken together, our results strongly suggest that higher subsidies for private insurance in this market leads to additional insurer advertising, but little additional monetary or medical care benefit for consumers.[11] We cannot rule out that higher benchmarks improve health outcomes, or that Medicare Advantage may lead to better coordination of care. However, the measures of financial and quality measures that we use suggest that higher benchmarks

[10] Our results are suggestive that the causal effect may be even larger, as seen in columns 3 and 6. However, the regressions are at the DMA-year level, and do not allow us to exploit the identification strategy using only counties with populations between 100,000 and 400,000.

[11] The advertising is clearly market expanding if Medicare Advantage is the relevant market. However, 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 2012), tend to compete on advertising, rather than plan generosity or innovative benefit packages.

are only partly captured by consumers. These results take on additional significance when one considers the effect of payment floors in both urban and non-urban counties on both the number of MA enrollees and on spending per MA enrollee. A back-of-the-envelope estimate suggests that this additional spending was close to $10 billion during a typical year in our sample period.

Overall, the evidence indicates that incidence of the subsidy falls on the supply side of the market. This view is supported by evidence from insurer stock returns throughout the passage of the Affordable Care Act (Al-Ississ and Miller 2013). In Figure 6, we show how the stock prices of major Medicare Advantage insurers reacted-on April 1st, 2013-to a surprise reversal of planned 2% cuts to MA reimbursements and a shift instead to 3% increases. The average increase in stock prices of approximately 3 percent for these insurers suggests that market participants viewed the 5 percent swing in reimbursement as largely benefiting health insurers instead of MA enrollees.

6 References

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7 Tables and Figures

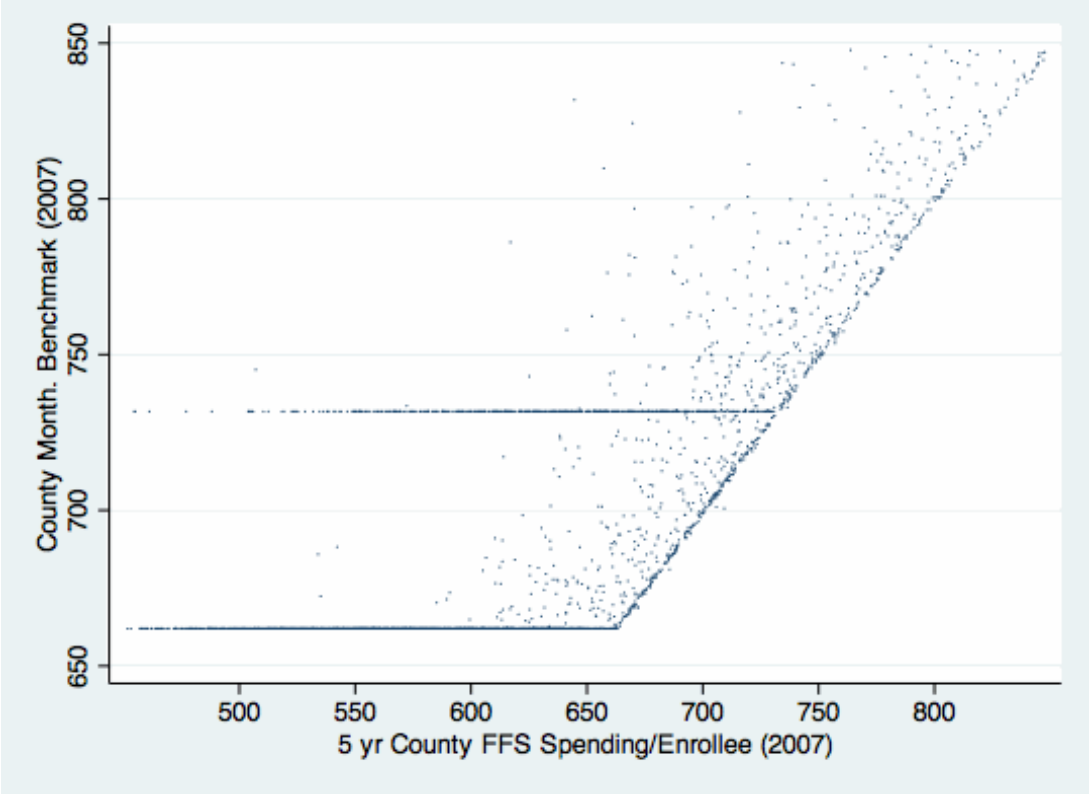


Figure 1: FFS Costs and County Benchmarks

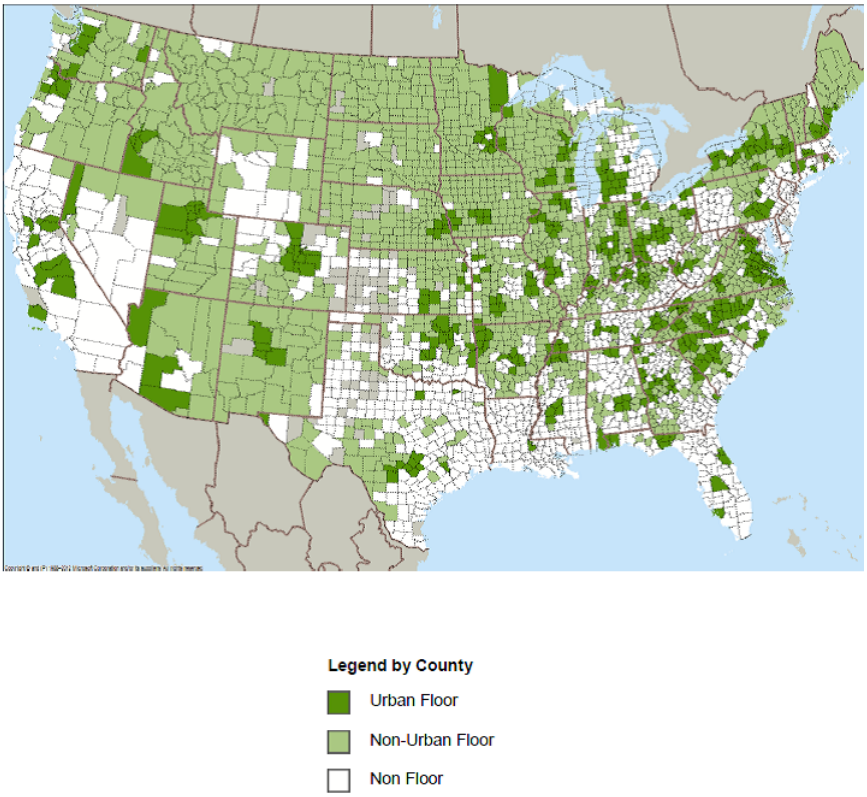


Figure 2: National Benchmarks

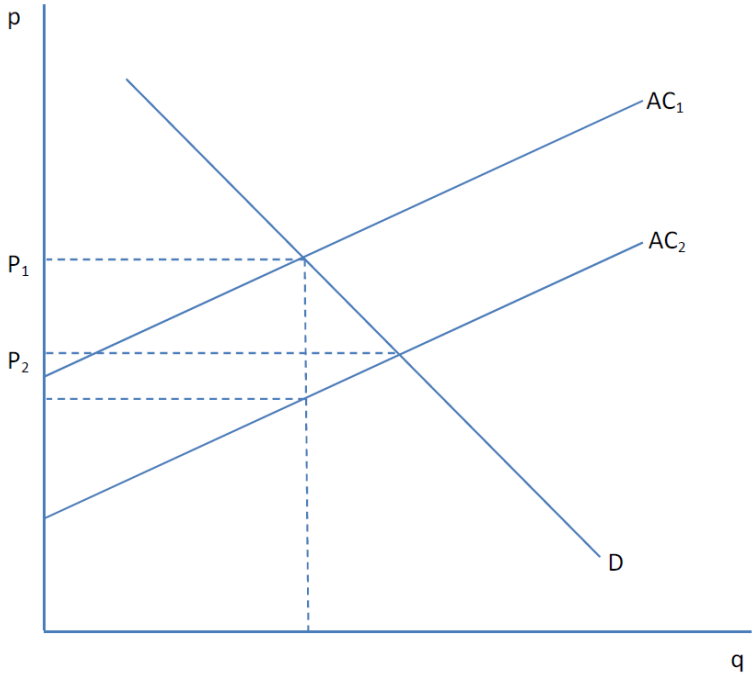


Figure 3: Pass-Through Under Advantageous Selection

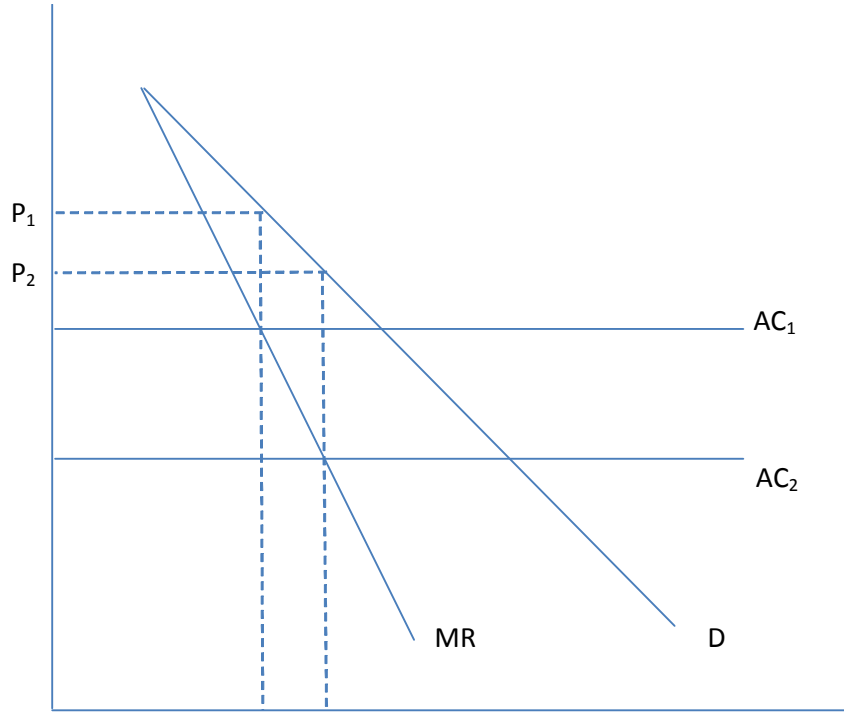


Figure 4: Pass-Through Under Constant Average Cost and Monopoly

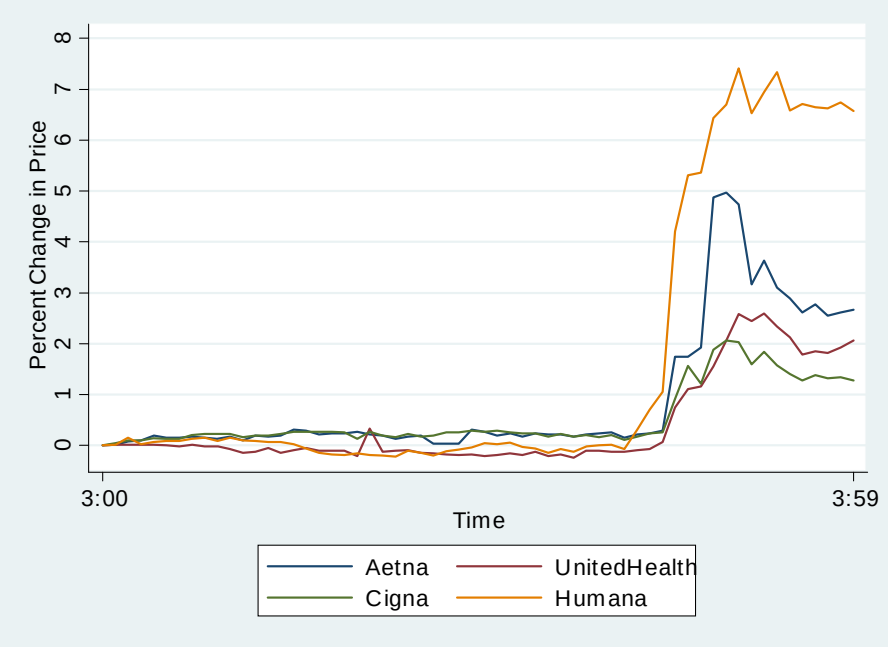


Figure 5: Stock Returns of Major MA Insurers, 3-4 pm on April 1, 2013

Table 1: Summary Statistics: County & Financial

	All	*Sub-Group 1*	*Sub-Group 2*	*Sub-Group 3*
Per Capita 2007 FFS Rest:	**None**	***Below 662***	***Above 662 & Below 732***	***Above 732***
Metro Pop (thousands)	472	239	616	1,109
	(1,209)	(661)	(1,103)	(2,180)
County Pop (thousands)	96	50	104	246
	(306)	(105)	(243)	(631)
Monthly Per Cap. FFS	680	615	732	839
	(104)	(60)	(29)	(72)
Medicare Enroll (thousands)	14.79	8.33	15.98	35.98
	(39.66)	(14.93)	(33.28)	(79.47)
MA Penetration Rate	0.12	0.12	0.11	0.14
	(0.10)	(0.10)	(0.09)	(0.13)
PFFS Penetration Rate	0.05	0.06	0.04	0.02
	(0.04)	(0.05)	(0.03)	(0.03)
HHI Index	5,117	5,168	5,070	5,002
	(2,212)	(2,244)	(2,168)	(2,155)
Floor Status (2007)	0.62	0.92	0.27	0.00
	(0.49)	(0.26)	(0.44)	(0.00)
MA Benchmark (Monthly)	764	726	771	888
	(75)	(32)	(32)	(84)
N	3044	1850	667	527
Out of Pocket Costs (monthly)	380.1	391.7	369.6	352.6
	(38.8)	(32.7)	(33.0)	(47.0)
Rebate Payment (monthly)	58.3	53.6	59.3	73.3
	(22.5)	(15.7)	(17.8)	(37.0)
Premium (monthly)	32.3	31.2	33.4	34.6
	(19.8)	(18.4)	(19.2)	(24.5)
Premium+OOPC	412.5	423.2	403.0	387.2
	(43.7)	(35.7)	(38.2)	(59.6)
Premium+OOPC-Rebate Pmt	356.4	372.6	344.3	314.3
	(61.2)	(45.0)	(51.6)	(91.7)
N	3028	1840	666	522

Notes: The first panel presents summaries of demographic, MA penetration, and other characteristics for different sets of counties. The second panel presents summaries of the financial characteristics of MA plans, across different sets of counties. Measures are denoted per enrollee, per month. The unit of observation is aggregated to the county level, for the 2007-2011 period, and is weighed based on plan enrollment. The original data is obtained from publicly available CMS files, including simulated out of pocket cost information, premium metrics, as well as other data.

Table 2: 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 3: First Stage Regression Results

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	County Benchmark							
Urban	71.563***	71.456***	20.010***	22.720*	3.306	-22.145*	0.504	-10.549
	(0.785)	(2.369)	(3.437)	(11.548)	(5.988)	(12.929)	(4.323)	(9.197)
Urban*T							46.442***	55.236***
							(5.68)	(13.48)
T							10.990*	2.805
							(5.794)	(13.875)
County Pop (100k)	0.078	-1.674	-0.532	-1.660	-1.891***	-8.322	-1.310***	-6.879
	(0.517)	(1.496)	(0.813)	(5.104)	(0.612)	(7.832)	(0.463)	(4.411)
County Pop (100k) Sq	0.017	0.515	0.019	0.181	0.025***	0.616	0.020***	0.799
	(0.039)	(0.478)	(0.026)	(0.948)	(0.008)	(1.447)	(0.007)	(0.817)
Metro Pop	0.035	0.608	0.664**	1.594	0.490*	22.989*	0.459**	8.753
	(0.099)	(3.021)	(0.285)	(13.582)	(0.272)	(13.297)	(0.209)	(9.941)
Metro Pop Sq	0.000	-0.097	-0.008*	-0.282	-0.005**	-2.234	-0.005***	-0.797
	(0.002)	(0.371)	(0.005)	(1.610)	(0.002)	(1.743)	(0.002)	(1.211)
2007 FFS 5-Yr	0.039***	0.038***	0.665***	0.549***	1.142***	1.063***	1.157***	1.154***
	(0.005)	(0.013)	(0.056)	(0.136)	(0.038)	(0.061)	(0.032)	(0.049)
Pop.	None	100-600k	None	100-600k	None	100-600k	None	100-600k
FFS (2007)	***<662***	***B<662***	***>662 & <732***	***>662 & <732***	***>732***	***>732***	***>662***	***>662***
Observations	9,230	1,740	3,330	650	2,640	490	5,970	1,140
R-squared	0.945	0.970	0.630	0.673	0.892	0.799	0.904	0.873

Notes: Table presents results of our first-stage regression, a linear model with MA Benchmark as the outcome and urban as the instrument of interest. T = (732.04 - FFS Avg) /69.7 if FFS Avg is >662.3 and <732.04 and otherwise 0. The unit of observation is at the county-year level, for the 2007-2011 period. 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.
Urban	1.917***	-1,046.862**	0.070***	0.053***	0.123***
	(0.532)	(465.660)	(0.024)	(0.015)	(0.027)
2007 FFS 5-yr (100s)	-0.618***	595.645***	-0.034**	-0.033***	-0.067***
	(0.236)	(181.990)	(0.017)	(0.008)	(0.017)
Metro Pop (100k)	-0.434	330.945	-0.009	-0.021	-0.030
	(0.699)	(586.893)	(0.025)	(0.018)	(0.026)
Metro Pop (100k) Sq	0.028	-26.678	0.001	0.002	0.002
	(0.106)	(79.533)	(0.004)	(0.002)	(0.004)
Cnty Pop (100k)	3.682***	-1,413.268***	0.044***	-0.000	0.043***
	(0.338)	(250.517)	(0.011)	(0.006)	(0.012)
Cnty Pop (100k) Sq	-0.543***	259.973***	-0.007**	-0.001	-0.008**
	(0.107)	(69.070)	(0.003)	(0.002)	(0.003)
Additional Controls	Year				
Counties	Metro 100-600k, FFS 5 yr Under 662 (from 2007)				
Mean	6.17	3,937	0.092	0.074	0.167
	(2.940)	(1,849)	(0.106)	(0.061)	(0.109)
N	1,740	1,728	1,740	1,740	1,740
R-squared	0.557	0.187	0.285	0.271	0.304

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. 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 within the specified population band. We include controls for year and 2007 per capita Medicare FFS spending. 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

	(1) Premium	(2) OOPC	(3) Rebate	(4) Drug Cov. Indicator	(5) Logged (Cost)	(6) Logged (Tot. Cost)
Urban	-0.760	-10.021	3.594	-0.063	-0.024	-0.019
	(5.829)	(10.436)	(4.510)	(0.080)	(0.028)	(0.041)
2007 FFS 5-yr (100s)	2.958	-11.039***	-1.807	0.114***	-0.019*	-0.020
	(3.167)	(4.011)	(1.851)	(0.031)	(0.011)	(0.016)
Metro Pop (100k)	-8.714	12.293	3.074	0.086	0.006	-0.020
	(6.577)	(9.661)	(4.751)	(0.085)	(0.026)	(0.041)
Metro Pop (100k) Sq	1.285	-2.075*	-0.382	-0.006	-0.002	0.002
	(0.957)	(1.252)	(0.614)	(0.011)	(0.003)	(0.005)
Cnty Pop (100k)	5.357*	-17.473***	-0.589	-0.042	-0.031**	-0.032*
	(2.924)	(4.154)	(1.807)	(0.027)	(0.012)	(0.018)
Cnty Pop (100k) Sq	-0.957	3.561***	0.416	0.009	0.007**	0.005
	(0.882)	(1.135)	(0.520)	(0.007)	(0.003)	(0.005)
Additional Controls	Year					
Counties	Metro 100-600k, 2007 FFS 5-yr Blw Floors					
Mean	30.46	382.50	57.02	0.66	6.01	5.87
	(24.08)	(38.26)	(18.08)	(0.24)	(0.09)	(0.14)
N	1,701	1,701	1,360	1,701	1,701	1,360
R-squared	0.173	0.313	0.320	0.137	0.131	0.101

Notes: Table presents linear regression models, where outcome variables are financial characteristics of MA plans. The unit of observation is aggregated at the county-year, for the 2007-2011 period. 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 within the specified population band. We include controls for year and 2007 per capita Medicare FFS spending. We also include quadratic population controls, for counties as well as metros. Tot. Cost is premium plus OOPC. Tot. Cost is premium plus OOPC less any rebate. Populations are stated in terms of 100k. Standard errors are clustered at the metro-level.

Table 6: 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. Measures are denoted for each enrollee, per year. The unit of aggregation is at the county-year level. The original data is taken from the CAHPS and was at an individual respondent level. SRH refers to self-reported health.

Table 7: CAHPS Ratings

	(1) Overall Health Plan	(2) Overall Healthcare	(3) PCP	(4) Specialist Seen	(5) Drug Benefits
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)
Metro Pop (100k)	0.157	0.076	0.215**	0.092	0.228
	(0.173)	(0.139)	(0.097)	(0.129)	(0.161)
Metro Pop (100k) Sq	-0.022	-0.001	-0.021*	-0.009	-0.028
	(0.022)	(0.018)	(0.012)	(0.016)	(0.020)
Cnty Pop (100k)	-0.012	-0.019	-0.044	-0.055	-0.034
	(0.065)	(0.056)	(0.047)	(0.059)	(0.066)
Cnty Pop (100k) Sq	0.001	0.006	0.008	0.006	0.007
	(0.016)	(0.013)	(0.011)	(0.014)	(0.016)
Stand. Treat. Effect			-0.119		
			(0.083)		
Additional Controls			Year		
Counties			Metro 100-600k, 2007 FFS 5-yr Blw Floors		
Mean	8.39	8.51	9.02	8.9	8.35
	(0.92)	(0.81)	(0.63)	(0.86)	(0.98)
N	1,657	1,641	1,625	1,545	1,588
R-squared	0.029	0.023	0.015	0.007	0.025

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 individual respondent level, for the 2007-2011 period. The original data is obtained from CMS, from the CAHPS survey of MA enrollees. 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 controls for year and 2007 per capita Medicare FFS spending. 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 and Liebman (2004) and Finkelstein et al (2012). All specifications include controls for age categories, race, and gender.

Table 8: CAHPS Utilization and Health

	(1) Specialist Visits	(2) Personal MD Visits	(3) Routine Visits	(4) SRH Overall	(5) SRH Mental Health
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)
Metro Pop (100k)	0.080	-0.065	0.068	-0.010	-0.126
	(0.088)	(0.114)	(0.136)	(0.089)	(0.083)
Metro Pop (100k) Sq	-0.011	0.010	-0.006	-0.004	0.013
	(0.011)	(0.015)	(0.017)	(0.012)	(0.011)
Cnty Pop (100k)	0.054	-0.139**	-0.042	-0.131***	-0.146***
	(0.040)	(0.054)	(0.053)	(0.043)	(0.042)
Cnty Pop (100k) Sq	-0.007	0.028*	0.010	0.025**	0.029***
	(0.009)	(0.014)	(0.013)	(0.010)	(0.010)
Stand. Treat. Effect			0.071		
			(0.110)		
Additional Controls			Year		
Counties			Metro 100-600k, 2007 FFS 5 yr Blw Floors		
Mean	1.66	1.90	2.27	2.92	2.26
	(0.50)	(0.67)	(0.75)	(0.47)	(0.46)
N	1,554	1,651	1,661	1,661	1,662
R-squared	0.009	0.014	0.010	0.034	0.024

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 individual respondent level, for the 2007-2011 period. The original data is obtained from CMS, from the CAHPS survey of MA enrollees. 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 controls for year and 2007 per capita Medicare FFS spending. 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 and Liebman (2004) and Finkelstein et al (2012). All specifications include controls for age categories, race, and gender.

Table 9: CAHPS Composition

	100-600k Metro & 2007 FFS Below Floors	
	Urban	*Non-Urban*
Age		
65-74	31.9%	29.5%
75-80	24.7%	24.6%
81-84	17.2%	17.9%
85+	12.0%	13.1%
Unknown	7.5%	8.8%
White	90.2%	91.8%
Female	54.1%	53.7%
MD Visits	1.77	1.76
Specialist Visits	1.67	1.66
Routine Care Visits	2.17	2.18
General Health Self-Assess	2.77	2.78
Mental Health Self-Assess	2.11	2.12

Note: The original data is obtained from the CAHPS survey, at an individual respondent level, for the years 2007-2011. These summary statistics are based on individual respondent-level data.

Table 10: New York State Medicare Denominator Data: Composition

	(1)	(2)	(3)	(4)	(5)
	Female	Age	White	Black	Hispanic
Floor Prem (in hundreds/month)	0.10%	0.23	2.3%**	-0.82%	-0.17%**
	(0.52)	(0.24)	(1.01)	(0.54)	(0.08)
Controls			Year, County		
Mean	56.2%	74.6	93.7%	3.7%	1.0%
	(9.2)	(2.2)	(9.8)	(6.8)	(2.9)
N	366	366	366	366	366
R-Squared	0.89	0.87	0.99	0.99	0.99

Note: Regressions run at a county-year level for all Medicare recipients in New York State, for the 1998-2003 period. Underlying data sourced from Medicare denominator data for New York State for that same period.

Table 11: Advertising Spending

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Spending Per Enrollee			Log(1+Spending Per Enrollee)		
Avg. Benchmark	2.369***	5.239***		0.486***	0.870***	
	(0.746)	(1.539)		(0.0607)	(0.124)	
Current FFS Spending		-5.066***	-4.272***		-0.518***	-0.325***
		(1.283)	(1.290)		(0.103)	(0.0963)
5 Yr. Avg. FFS Spending		0.328	-5.537***		-0.0407	-1.469***
		(1.377)	(2.082)		(0.111)	(0.155)
Avg. Simulated Benchmark			14.56***			3.118***
			(2.906)			(0.217)
Constant	-13.58**	-4.961	-38.94***	-2.659***	-1.938***	-10.05***
	(5.524)	(7.055)	(11.33)	(0.449)	(0.567)	(0.846)
N	840	840	840	840	840	840
R-squared	0.025	0.050	0.065	0.080	0.125	0.257

Table 12: Discharge Analyses (Appendix)

	(1)	(2)	(3)
VARIABLES	Length of Stay	Num Proc	Tot. Charges
MA*Urban	0.088	0.076	-391.8
	(0.147)	(0.050)	(824.7)
MA	-.186**	-.051**	-488.8*
	(0.077)	(0.022)	-248.2
Controls	Year, Hospital FE's, Age, Gender		
Counties	Metro 100-600k, 2007 FFS 5 yr Blw 662		
Mean	5.249	1.687	28872
	(6.232)	(2.238)	(37,550)
N	285,448	285,450	285,414
R-squared	0.557	0.187	0.285

Notes: Table presents linear regression models, where outcome variables are hospital utilization measures such as length of stay and number of procedures. The unit of observation is at the individual discharge level and spans the 2007-2010 period. The original data is obtained from the National Inpatient Sample (NIS) and is limited to states that track hospital county location and MA status. We limit the discharge data to Medicare discharges. Finally, we restricted to those counties within the specified population band. We include controls for individuals' gender and age range. Finally, we include hospital fixed effects. Standard errors are clustered at the metro-area level.

Table 13: Composition Analyses: Risk Score (Appendix)

VARIABLES	(1) Mean Enrollee Risk Score
Urban	0.021
	(0.025)
2007 FFS 5yr (in 100s)	0.065***
	-0.009
Metro Pop (100k)	0.005
	(0.029)
Metro Pop (100k) Sq	-0.002
	(0.004)
Cnty Pop (100k)	0.013
	(0.009)
Cnty Pop (100k) Sq	-0.003
	(0.002)
Additional Controls	Year
Counties	Metro 100-600k, & 2007 FFS 5 yr Blw 662
Mean	0.885
	(0.081)
N	1,724
R-squared	0.197

Notes: Table presents linear regression model, where outcome variable is average risk score of MA enrollees for any given-county year combination. This risk-score outcome serves as a measure of composition of Medicare recipients who choose to enroll in MA. Underlying data is from CMS and covers 2007-2011 period.

Table 14: Bid Analysis (Appendix)

	(1)
VARIABLES	Bid as Fraction of Benchmark
Urban	0.004
	(0.008)
2007 FFS 5yr (in 100s)	0.004
	(0.003)
Metro Pop (100k)	-0.006
	(0.009)
Metro Pop (100k) Sq	0.001
	(0.001)
Cnty Pop (100k)	0.001
	(0.003)
Cnty Pop (100k) Sq	-0.001
	(0.001)
Additional Controls	Year
Counties	Metro 100-600k, & 2007 FFS 5 yr Blw 662
Mean	0.897
	(0.034)
N	1,360
R-squared	0.339

Notes: Table presents linear regression model, where outcome variable is insurers' average bid, as a fraction of a county's benchmark, for any given-county year combination. The underlying data is from CMS and covers 2007-2010 period.