Long-Term Echoes of Short-Term Policy: Tracing the Persistent Impact of Medicare Advantage Subsidies *

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Abstract

In this paper, we investigate how government subsidies in insurance markets shape long-term market outcomes. We do this by analyzing the Medicare Advantage (MA) program, a public health insurance program in which the federal government provides private insurance companies subsidies to cover Medicare beneficiaries. While these subsidies originally varied sharply at a population cutoff (see Duggan, Starc, and Vabson 2016), recent changes from the Affordable Care Act greatly reduced this discontinuity. We find that, even 10 years after this phase out began, counties that fell right above the population threshold and received higher subsidies continued to experience significantly higher rates of plan enrollment, greater MA penetration in the Medicare market, more participating MA plans, and lower outpatient MA prices when compared to counties that just missed these higher subsidies in the past. Our results demonstrate two facts: 1) that subsidies can have impacts on health insurance markets that persist after the subsidies are largely phased out; and 2) that these subsidies can impact insurer-provider bargaining and reduce the price of outpatient care, especially where insurance markets are highly concentrated.

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1 Introduction

Governments intervene in healthcare markets through a variety of regulations and subsidies, to encourage health insurer participation and align payer incentives with social or program goals. Such policy interventions directly affect insurer and consumer incentives when the policies are in place. However, these policies may also generate effects that persist well after the policy phases out. This persistence may be especially present in health insurance markets, where previous researchers have shown that consumers exhibit high degrees of inertia.[1] If present, such long-running effects are important to document because they alter the possible benefits–and costs–of such interventions.

We provide new evidence on the long-lasting effects of government subsidies on health insurance markets by analyzing the interaction of two policies in the Medicare Advantage (MA) market. Medicare Advantage (MA) is a $203 billion program in which the federal government contracts with commercial insurers to provide coverage for Medicare beneficiaries. Over time, the levels and nature of these per enrollee payments, called "benchmark" payments, have changed. In this paper, we examine the impacts of these higher benchmark payments on MA market outcomes and the prices for medical care, along how these impacts change as these higher payments are largely phased out.

To examine this question empirically, we use two sources of policy variation. First, we analyze a discontinuity in capitated Medicare Advantage payment rates first exploited by Duggan et al. (2016). In that paper, the authors document that MA payment rules increase discontinuously for counties associated with a metropolitan statistical area (MSA) with population exceeding a 250,000 threshold. This results in otherwise similar counties that fall close to this threshold being exposed to very different MA payment rates, potentially influencing the number of plans introduced in these markets, the fraction of beneficiaries who enroll in an MA plan, and the bargaining power of the plans themselves with respect to hospitals and providers in the area. Second, we expand on this variation to examine how a later policy change in the Affordable Care Act (ACA), which greatly reduced this gap at the 250,000 MSA population threshold, affected MA enrollment and plan participation. We also analyze a novel MA county price index, which we previously developed in Buchmueller et al. (2022) and derived from data on provider transaction prices provided by the Health Care Cost Institute (HCCI). We use this price index to investigate whether higher benchmark payments affected the prices paid by MA plans for outpatient and inpatient care.

[1] For example, Strombom et al. (2002), Handel (2013), and Abaluck and Gruber (2016). For a wider ranging review, see Handel and Kolstad (2015).

Consistent with previous work, we find that counties that received higher benchmark payments had significantly higher enrollment in Medicare Advantage plans compared to otherwise similar counties that just missed the population cutoff. And, in a novel contribution, we show that these higher benchmark payments also affected market prices: MA plans in counties that fall just above the population cutoff pay lower prices for outpatient care compared to plans in counties just below the cutoff, although inpatient prices appear largely similar for MA plans in these two sets of counties. We hypothesize that these price differences reflect the fact that MA plans above the population cutoff covered more patients and therefore had greater bargaining power vis a vis outpatient providers compared to plans below the cutoff.

Then, we document that between 2012 and 2016, the discontinuity in benchmark payments was largely phased out as the result of ACA policy changes. By 2016, county benchmarks on either side of the population cutoff were indistinguishable, and the difference in payments after accounting for plan quality bonus payments and the MA bidding process had fallen by more than half. However, we find that markets exposed to higher benchmark payments in the past remained significantly different across several dimensions even after higher payments were reduced. These counties continued to have higher rates of MA enrollment, greater MA penetration and more participating MA plans long after the payment advantage was greatly reduced. Indeed, even 5 years after these higher payments began to be phased out, the discontinuity in these outcomes at the population cutoff was essentially unchanged compared to the period when much higher payments were in place. Similarly, we continue to find significantly different outpatient prices in counties that were initially exposed to the higher benchmark payments, even after this payment differential is reduced. These price effects are particularly large in markets where the insurance side is highly concentrated. These results demonstrate that large subsidies can shape long-run insurance market outcomes even after these subsidies are reduced. Given the large reduction in the difference in payments across the cutoff from 2012 to 2016 and the continued elevated enrollment, these results may point to the relative importance of the number of covered lives in insurer-provider price and network negotiations.

2 Background

2.1 Medicare Advantage

Medicare beneficiaries have a choice of two types of public health insurance. Beneficiaries can enroll in traditional Medicare (TM), in which the federal government operates as an insurer and sets parameters such as cost-sharing and reimbursement rates. Alternatively, beneficiaries can select from a menu of private health insurance plans, called Medicare Advantage (MA) plans, which may have different premiums, cost-sharing arrangements, benefits, and provider networks. Private companies offer Medicare Advantage plans but are paid a capitated payment from Medicare for each beneficiary they enroll.

Historically, this per enrollee payment to MA plans was based on observed medical costs in traditional Medicare in that plan's county, as measured using previous years' spending in traditional Medicare. However, to avoid having counties in which this payment was considered inappropriately low, Medicare introduced a uniform floor in 1998. This floor resulted in higher payments for counties with historically lower spending in Medicare. Starting in 2001, Medicare established separate floors for "urban" and "rural" counties, with urban counties receiving a higher floor payment. Medicare considered a county to be urban if it was part of a metropolitan statistical area (MSA) with 250,000 residents or more. As a result, counties associated with MSAs just above and just below the 250,000 population threshold experienced very different benchmark floors despite being otherwise similar in terms of their underlying input costs and population needs. In 2004, the Medicare Modernization Act and newly defined metropolitan and micropolitan statistical areas brought about additional changes in benchmarks. Benchmarks were raised, and a county's urban classification and floor status were recalculated based on these new MSA delineations. Additionally, counties that qualified as an urban county in 2001 were grandfathered in to urban status, regardless of their 2004 MSA populations.

The Medicare Modernization Act additionally introduced a competitive bidding system for insurer payments. In 2006, this competitive bidding process was implemented, in which, after county benchmarks are published, insurers make a bid for each plan and segment (which may span multiple counties), based on expected enrollment and expected risk scores amongst expected enrollees in that plan-segment. This bid represents the insurer's estimate of the cost to cover Medicare Part A and B benefits for an enrollee, and may include administrative costs and profit capped at 15% of the total plan revenue.[2] These bids are adjusted by CMS based on expected risk and an expected benchmark for each bid is calculated. When MA eligibles enroll in a MA plan, the plan-segment bid is adjusted by the ratio of the enrollee's county benchmark to the expected plan-segment benchmark. If the insurer's bid is above the benchmark, insurers are required to charge enrollees a premium to cover the difference. If the insurer's bid is below the benchmark, insurers receive a portion of the savings as a rebate. Prior to 2012, insurers received 75% of the savings as a rebate with which they were required to provide extra benefits. After

[2] https://bettermedicarealliance.org/wp-content/uploads/2020/03/BMA_WhitePaper_MA_Bidding_and_Payment_2018_09_19-1.pdf

2012, this rebate percentage transitioned to 50 - 70% of the savings, dependant on the contract's quality star rating. Research indicates that benchmark payments and realized payments track each other closely, as plan bids increase on average by about $0.50 for every $1 increase in the county's benchmark (Song et al., 2013).

In 2010, the Affordable Care Act made a variety of changes to MA reimbursement intending to bring MA benchmarks more in line with costs in traditional "fee for service" Medicare. In the "post-ACA" period, benchmark calculations would transition to a new formula, consisting of the product of county per capita TM spending and both county and plan percentage adjustments. These ACA changes resulted in an end to the urban and rural floor policies. First, benchmarks for 2011 were frozen at their 2010 level. After 2011, yearly benchmarks were subject to a cap equal to the counterfactual pre-ACA benchmark for that county-year. Counties transitioned from the pre-ACA to post-ACA benchmark calculation over a set period of 2, 4, or 6 years, the length of which was determined by the difference between the county's Projected 2010 Benchmark (a one time calculation based on the county's 2010 fee for service (FFS) rate) and the county's 2010 pre-ACA rate,[3] with counties receiving a longer transition period for larger differences between the two rates. As there is no difference between the post-ACA benchmark calculation formulas for urban and rural counties, we should expect the difference in benchmarks for urban and rural counties to close entirely by the end of the transition period in 2017.[4] This policy change additionally provides the opportunity to observe the "long run" impact of historically high rates (among urban counties with MSA populations above the 250,000 cutoff) while the difference between these rates narrows over the post-ACA period.

Additionally in 2012, the ACA instituted plan quality bonus payments, aimed at incentivizing increases to plan quality. Each plan could receive an additional payment on top of the county benchmark amount based on that plan's quality star rating. Plans with a rating exceeding certain star thresholds could receive a 3-5% bonus payment, with this bonus doubling in certain counties with low FFS spending and high MA enrollment. While these bonuses were uncapped for the first few years of the policy change, the sum of benchmarks and quality bonus payments were capped at the pre-ACA benchmark rate beginning in 2015.[5]

A variety of studies have taken advantage of pre-ACA variation in MA payments to explore how payment increases affect consumers and plans. For example, Cabral et al. (2018) and Duggan et al.

[3]https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Downloads/Advance2012.pdf

[4]While the post-ACA benchmark calculation policy does not factor in MSA population thresholds or floor amounts, the prior floor policy could have some residual impact through the use of pre-ACA benchmark caps.

[5]For more information on the exact bonus payment percentages by year, please see yearly CMS Advance Notices.

(2016) both investigate whether increased payments affect enrollment in MA, and to what extent payment increases are passed on to consumers in the form of lower premiums and enhanced benefits. Both studies document incomplete pass through, i.e., when payments increase, less than the full amount is passed on to consumers in the form of lower premiums or enhanced benefits. These results suggest that plans in MA markets have substantial market power. Similarly, Song et al. (2013) find that a $1 increase in Medicare benchmark payments increases plans' bids by $0.53, consistent with the result that MA plans exercise market power. Other studies have used variation at the 250,000 MSA population cutoff to investigate the relationship between MA enrollment with hospital admissions and mortality (Afendulis et al., 2017) and opioid abuse (Baker et al., 2020; Rhodes, 2020).

While these studies present relevant evidence on how MA policy affects plans and patients, less is known about how the prices received by providers might respond to changes in MA payments and enrollment. Descriptive evidence shows that, for inpatient care, average MA and TM prices are not very different. For example, Curto et al. (2019) present statistics comparing hospital payments for patients in MA and TM and find that, within a hospital and diagnosis related group, payments from MA plans are only about 1 percent higher than what is received by the hospital for seeing a TM patient. However, prices for ED care are 9 to 10 percent higher in MA as compared to TM. The authors speculate that this similarity in prices across TM and MA for hospital services may reflect the regulation that requires hospitals to accept the TM prices for beneficiaries if the hospital is not included in the MA network. This regulation may allow MA plans to bargain down hospital prices close to the rate paid by traditional Medicare. Other research has documented similar patters; for example, Maeda and L (2018) also show similar prices paid by MA and TM and further demonstrates a negative correlation between MA enrollment and the ratio of MA to TM prices. Baker et al. (2016) similarly use HCCI inpatient claims data to show MA plans pay 5-8% less than FFS Medicare for hospital admissions. They additionally document a negative relationship between prices and MA penetration rates, showing that MA plans in high penetration rate CBSAs pay lower prices than MA plans operating in CBSAs with lower penetration rates.

Additional studies have illustrated several other potential avenues through which MA prices may vary. Xu and Polsky (2023) analyze MA and TM prices using Hospital Price Transparency Rule data, finding MA and TM outpatient prices deviate substantially at roughly half of the hospitals studied. These deviations often result in higher prices for MA plans, and the authors find that higher markups are more often found at hospitals in rural areas. Lin et al. (2022) compare MA and FFS Medicare prices for dialysis using claims data from HCCI, finding that higher payments are made by MA plans and higher markups are charged to MA plans by larger dialysis chains. The authors additionally suggest that these large dialysis chains may leverage their market power during negotiations with MA plans to bargain for these higher prices. Meyers et al. (2018) examine differences in quality of care for MA and FFS Medicare enrollees, specifically with regards to skilled nursing facilities (SNFs). They find that FFS Medicare enrollees are more likely to enter higher-rated SNFs, and attribute some of the difference in likelihood of high-quality SNF admission to the fact that MA plans are more likely to have narrower provider networks in an attempt to reduce MA plan costs.

These studies suggest that inpatient hospital prices are already low in MA as compared to other commercial insurance, but are higher for hospital outpatient care. Increasing the payments plans receive for providing beneficiaries coverage, and the resulting increase in plan enrollment, could shift these observed prices. Additional levers that may affect bargained for prices, like differences in provider location, high amounts of market power, or likelihood of network inclusion, may affect not only MA prices with respect to FFS Medicare prices, but may affect prices across MA plans as well. In the next section, we describe one potential mechanism through which payments could affect transaction prices: altering bargaining between plans and providers.

2.2 Why Might a Subsidy Continue to Have Effects While Being Phased-Out?

There are a variety of reasons why a subsidy that is greatly reduced could continue to generate long-lasting changes in insurance markets. For example, a large and growing literature demonstrates that there are large switching costs and consumers display substantial inertia in health insurance markets (Handel, 2013; Marzilli Ericson, 2014; Nosal, 2011). If a subsidy spurs higher enrollment in MA, then high inertia may result in continuing effects even after the subsidy phases out. Furthermore, some research suggests that entry of health insurance plans into a market may be driven in part by the fixed cost of entering (Geddes, 2022). If, for example, substantial fixed costs arise from the initial setup of provider networks, plans may incur these fixed costs to enter while the subsidy is in effect, and it may not be profitable to exit even when the subsidy that induced that entry has begun to erode.

2.3 How Could Subsidies Affect Prices?

In addition to studying how these higher benchmark payments affect enrollment in MA plans over time, we also present novel evidence on the role of these subsidies in market prices. We hypothesize that benchmark payments may affect prices in the short- and long-term through several channels. First, Gowrisankaran et al. (2015) (hereafter, GNT) and Gaynor et al. (2015) (GHT) frame the insurer-provider bargaining in a Nash Bargaining framework with a "take it or leave it" setup for prices and network inclusion. This Nash Bargaining setup is a useful theoretical framework to derive a more comprehensive understanding of how Medicare Advantage subsidies might influence the bargained prices for medical care. This section first summarizes the Nash-Bargaining setup. We then describe three mechanisms which we refer to as the incomplete-passthrough effect, the enrollment effect, and the entry effect, all of which may affect bargained-for prices.

2.3.1 Nash-Bargaining

The below equation illustrates the GNT model bargaining between managed care organizations (MCOs) and providers, using a Nash-Bargaining model with take it or leave it prices, meaning MCOs and providers bargain over provider system, insurer, procedure-specific prices to maximize the weighted product of the provider and insurer objective functions:

$$NB^{m,s}(p_{mj_{j\in J_s}}|\vec{p}_{m,\_s}) = \underbrace{\left(\sum_{j\in J_s} q_{mj}(N_m,\vec{p}_m,e_m)[p_{mj}-mc_{mj}]\right)^{b_{s(m)}}}_{\text{Provider Surplus}}\underbrace{\left(V_m(N_m,\vec{p}_m)-V_m(N_m\setminus J_s,\vec{p}_m)\right)^{b_{m(s)}}}_{\text{Insurer Surplus}} \tag{1}$$

The Nash Bargaining solution maximizes equation 1 for each target provider-system, insurer, procedure specific price, holding all other prices and networks fixed.

$$p^*_{mj} = \max_{p_{mj}} NB^{m,s}\left(p_{mj}, p^*_{m,-s}|p_{m,-j}\right) \tag{2}$$

The key elements of this objective function, relevant to our discussion, include provider surplus and insurer surplus. Provider surplus depends on expected quantities and markup. Expected quantities, q_{mj}, depend on the insurer m's network, prices, and the number of enrollees. The markup is the difference between the target price and marginal cost. Insurer surplus, on the other hand, is the difference between $V_m(N_m, \vec{p}_m)$, the value to the insurer of including the target provider in the network with price vector $\vec{p}_m$, and $V_m(N_m \setminus J_s, \vec{p}_m)$, the value to the insurer of without the target provider in the network, keeping the remaining prices and network constant. The parameters b_s and b_m represent the bargaining weights, which sum to one.

To make the relationship from subsidy to enrollment to expected quantity more explicit, we slightly modified the notation from GNT and GHT by including number of enrollees, e_m, in the expected quantity function. Additionally, subsidies, enrollment, and market conditions may modify the relationship between V_m and the network and price choice variables. Although we do not explicitly model bargaining, if one were to do so, it could be beneficial to delineate the connection between enrollment and the network, which is currently embedded in the value function on the insurer surplus side.

How do these elements influence prices? Assuming we have an equilibrium with an interior solution, holding all else constant, policies that increase provider surplus would theoretically apply downward pressure on the target price. Conversely, policies enhancing insurer surplus would apply upward pressure on prices. With this setup, we can consider how varying subsidy levels influence the Nash Bargaining equilibrium. Specifically, we will consider the mechanisms through which subsidy would impact provider surplus, insurer surplus, or both.

2.3.2 Incomplete-Passthrough Effect

Consider a simple example of "incomplete-passthrough" of a subsidy. When the government partially subsidizes the cost of a good, firms may choose to capture a portion of the subsidy, by decreasing their price by less than the subsidy amount. This phenomenon is referred to as incomplete passthrough, since the full benefit of the subsidy is not passed on to the consumer.

In the context of Medicare Advantage subsidies, Duggan et al. (2016) find evidence of incomplete passthrough, with private insurers accruing much of the benefit of additional subsidies and a smaller share going to patients. We propose that this incomplete passthrough could also impact negotiated procedure prices. When negotiating prices, providers are aware of any subsidies being paid to insurers, and may attempt to bargain for higher procedure prices in an attempt to capture some of this surplus.

Applying this to the Nash Bargaining framework, all else equal, the subsidy raises the insurer's value $V_m(N, P, B))$ of including a target provider in their network which would lead to a higher Nash Bargaining price equilibrium.

2.3.3 Enrollment Effect

The next mechanism to consider is the enrollment effect, which relates to how variations in enrollment influence the bargaining dynamics. Changes in subsidy levels could affect the number of MA enrollees. An increase in enrollees would enhance an insurer's bargaining position, as providers could gain from a larger patient pool. Within the Nash-Bargaining framework, more enrollees leads to increased expected profits for providers through higher expected patient volumes. This dynamic would theoretically exert downward pressure on the equilibrium prices, given that providers anticipate higher overall revenue from the expanded patient pool.

2.3.4 Entry Effect

We describe the entry effect as the mechanisms through which subsidies encourage new insurers to enter the market, and the corresponding influence of additional insurers on negotiated prices. Given a partial passthrough of the subsidy through lower prices or higher plan quality, insurers could attract more enrollees. However, new insurers may be incentivized to enter the market since additional subsidies partially cover insurer costs.

On the provider side, with more insurers in the market, providers may have an opportunity to play insurers off each other to secure better terms in bargaining. In the Nash-Bargaining framework, with enrollees divided among a larger number of insurers, expected quantities per insurer could be lower, which, in equilibrium, would put downward pressure on prices.

On the insurer side, it is worth noting that, in the Nash-Bargaining setup, we could see changes in insurer surplus. For example, more insurers could put competitive pressure on plan prices, plan quality, and network size. The direction of the entry effect on negotiated prices is unclear since some of these forces could be offsetting. All else equal, one would expect lower plan prices to decrease negotiation prices, similar to a reversal of the incomplete-passthrough effect. Conversely, if overall demand is more sensitive to network size, one would expect upward pressure on negotiated prices.

2.3.5 Combined Mechanisms

The incomplete passthrough, enrollment, and entry effects, while not exhaustive, underscore the potential ways subsidy could influence bargaining dynamics. In markets with incomplete passthrough, providers may extract some of this windfall for themselves through negotiations in the form of higher prices. However, subsidies could impact enrollment and entry. In the Nash-Bargaining setup, each of these forces would influence equilibrium negotiated prices. To better understand these mechanisms, we separately estimate the impact of benchmark payments on enrollment, insurer entry, market concentration, and negotiated procedure prices. To the extent that price differences are driven by enrollment effects, we would expect these differences to persist even after the subsidy begins to erode if enrollment remains elevated in plans in the affected counties.

3 Data

3.1 MSA Definitions and Populations

We take advantage of the urban floor cutoff used in Duggan et al. (2016) and others combined with variation from later changes in this policy due to the Affordable Care Act to investigate the effect of changes to government payments made to insurers on insurance markets. Crucial to this approach is a discontinuity in MA benchmarks for urban counties that occurred at an MSA population of 250,000. We take advantage of this discontinuity in a regression discontinuity design approach, with MSA population serving as the running variable that determines each county's rural or urban status. Due to policy changes that occurred in 2001 and 2004, we will need each county's MSA population for both 2001 and 2004.

From the US Census Bureau, we begin with county-year population estimates for both 2001 and 2004,[6] along with city and town population estimates for 2001.[7][8] We additionally use two historic MSA delineation files: 1) the MSA delineation file for Dec 2003; and 2) the MSA delineation file for 1999. These files define MSAs for 2004 and 2001 respectively. For each county, we then calculate their associated MSA population for both 2001 and 2004. Both populations are needed, as counties that qualified for urban status in 2001, but not 2004, were grandfathered in as urban counties.[9] We use these two measures to create our running variable, what we refer to as the "relevant MSA population." This measure is the MSA population that determined a county's urban status, and is equal to the county's 2004 MSA population for non-grandfathered counties and the 2001 MSA population for grandfathered counties.[10]

3.2 MA Benchmark, Enrollment, Market Penetration, and Plan Data

MA benchmarks are the maximum monthly capitated payments made to MA plans per enrollee. While these benchmarks were originally paid in full to insurers, the amount paid to insurers in later years was adjusted by both plan quality bonuses and the competitive bidding process. We examine multiple aspects of this payment process. We first derive a measure of the "base" MA benchmark from yearly

[6] https://www2.census.gov/programs-surveys/popest/datasets/2000-2009/counties/totals/

[7] https://www2.census.gov/programs-surveys/popest/datasets/2000-2009/cities/totals/

[8] While MSAs are delineated by counties in 2004, in 2001, some New England counties were broken into multiple MSAs at the town-level.

[9] These grandfathered counties generally arise due to two possible scenarios: 1) the MSA population has dropped between 2001 and 2004; or 2) the county was assigned to a different MSA with a lower population in 2004.

[10] As we use population estimates that change over time, there may be some measurement error inherent in this variable. We believe only one county may have received the wrong urban status assignment due to this error, and we drop that county from our analysis.

CMS rate calculation data books.[11]. For each year, we use the risk-adjusted benchmark rate before any budget neutrality adjustments.

In later years, this base benchmark was adjusted in two major ways. As part of the ACA policy changes, benchmarks were adjusted by each plan's star rating, with higher quality plans receiving bonus payments of up to 10% on top of the county benchmark. Using Medicare Part C and D Performance Data,[12] we first derive the star rating of each contract. We then calculate the plan quality bonus benchmark, equal to the sum of the county benchmark and contract-county quality bonus payment, for each contract-county using the contract star rating, the aforementioned CMS rate calculation data, and yearly CMS Announcement and Advance Notice documents.[13] We then use the county-contract enrollment data, described below in more depth, to calculate contract enrollment-weighted average county star ratings and bonus benchmarks.

Realized payments to insurers were further adjusted through the competitive bidding process, first implemented in 2006. While these bids somewhat track county benchmarks, we use MA bid pricing data[14], rate calculation and bonus benchmark data, Medicare Part C and D performance data, and county-plan-level enrollment data to derive enrollment-weighted average county bids, savings, rebates, and premiums. By examining payments to insurers through multiple channels, we are able to examine three ways government payments to insurers may change: 1) via changes to county benchmarks; 2) via potential additional quality bonus payments due to higher plan quality; and 3) via potential changes to payments resulting from changes to insurer bids.

Our analysis focuses on a subset of comparable counties whose 2004 FFS rate is below the rural floor (referred to in Duggan et al. (2016) as "group 1" counties). Within these counties, all counties to the left of the urban cutoff receive the rural floor for their 2004 MA benchmark, while all counties to the right receive the urban floor. By limiting to these counties, we can examine the full effect of the higher benchmark payments given to urban MA plans, as all counties in the affected group should have similar FFS costs, but only a subset receives higher payments. We use the 2004 FFS rate found in the 2004 MA rate calculation data book to identify these counties.

We collect MA enrollment data from two CMS sources. For 2008 through 2021, we use MA county

[11] https://www.cms.gov/Medicare/Health-Plans/MedicareAdvtgSpecRateStats/Ratebooks-and-Supporting-Data
[12] https://www.cms.gov/medicare/health-drug-plans/part-c-d-performance-data
[13] https://www.cms.gov/medicare/payment/medicare-advantage-rates-statistics/announcements-and-documents
[14] https://www.cms.gov/medicare/payment/medicare-advantage-rates-statistics/data

penetration data,[15] while we use State County files for 1997 through 2005.[16] As the later data is provided monthly, and the earlier data is provided quarterly, we use estimates for MA enrollment and MA eligibles from March for both sources.[17] For later files, MA enrollment is censored at 11 enrollees per county. For our analysis, we censor the earlier data using an 11 enrollee cutoff as well. We use data on MA enrollees and MA eligibles to calculate the MA penetration rate, a measure of market penetration equal to the number of enrollees divided by the number of eligibles in each county.

Additionally, we use contract-level enrollment and service area data from CMS to construct measures of insurer competition at the county-year-level. We begin with monthly enrollment data at the county-plan-contract-level[18] and impose two restrictions on the sets of available contracts. First, we use monthly contract service area data[19] to restrict the set of counties within which a contract may operate.[20] Second, within each month, we limit to county-plan-contracts that have greater than 10 enrollees. We then construct three county-year-level variables to measure insurer concentration and market participation. We first calculate the number of plan-contracts within a county-month that have greater than 10 enrollees. We then calculate the number of parent organizations that offer these plans within each county-month. Lastly, for each county-month, we compute the number of enrollees for each parent organization, enrollment-based market shares for each parent organization, and county-month HHIs. We then average these variables within each year to arrive at our county-year estimates.

3.3 Medicare Advantage Price Indices

To construct our outcome variable, we rely on a price index generated from MA claims data recorded in the Health Care Cost Institute (HCCI) database. A detailed description of these price indices, and direct access to the indices themselves, is found in our concurrent paper Buchmueller et al. (2022). Here, we briefly describe the methodology we used to produce these indices, and the following discussion borrows heavily from that paper.

The HCCI data contains detailed information on inpatient, outpatient, and pharmaceutical claims for over 50 million commercially insured individuals per year. Previous research has used these data

[15] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/MA-State-County-Penetration

[16] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/HealthPlanRepFileData/SC

[17] Due to data availability, we use June estimates for 1997 and 2008.

[18] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/Monthly-Enrollment-by-Contract-Plan-State-County

[19] https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/MCRAdvPartDEnrolData/MA-Contract-Service-Area-by-State-County

[20] We do this to limit any "movers" in the enrollment data, those who may enroll in a contract, but later move to a new location not covered in their contract's service area.

to study health care spending and prices in a variety of settings including prescription drugs, dialysis, pediatric hospitals, and acute care hospitals (see Cooper et al. (2018), McCarthy and Raval (2022), Dafny et al. (2022), League et al. (2022)). In addition to recording data on the general commercially insured population, the data contains significant coverage of the MA population, with coverage of about 40 percent of all MA enrollees.[21]

To construct the price indices, we generate two datasets comprised of procedures and discharges to patients whose payer is Medicare Advantage observed between 2012 and 2016. The first dataset is at the outpatient procedure level and contains over 235 million procedures over the five years that the data cover. The second dataset includes information reported at the inpatient discharge level. These data include roughly 7 million inpatient discharges. Within each of these discharges, we observe the patients' diagnoses and the procedures performed during the hospital stay. Within each dataset, we estimate county price indices by regressing the log of the price of the procedure or discharge on county by year fixed effects and a set of control variables.[22] For the outpatient regression, we include as controls procedure by year fixed effects, the log of the number of "units" of the procedure received by the patient (e.g. a claim item of 60 minutes of physical therapy may be billed as four 15 minute units), and patient demographics (e.g., age group and gender). For the inpatient regression, we include diagnosis related group (DRG) by year fixed effects, the log of the length of stay, and patient demographics. We also construct alternative versions of each index with other combinations of controls, as well as separate versions of the index that rely on only procedures or hospital stays that occur in versus out of network. These alternative constructions allow us to assess the sensitivity of our analyses to the exact empirical specification we use to generate the indices. From these sets of regressions, we obtain the coefficients on the county fixed effects to use as price indices.

In order to conduct our analysis, we make two sample restrictions. First, we restrict our sample of counties to those whose fee for service rates are such that they would be bound by the rural floor if their associated MSA population fell below 250,000.[23] For these counties, we expect their position relative to the 250,000 MSA population threshold to have a meaningful effect on benchmark payments. Second, we are only permitted to disclose estimates from the HCCI database if the number of observations support exceeded 10. Our analysis is therefore limited to counties and years that meet this disclosure requirement.

[21] See https://www.healthdatamanagement.com/articles/hcci-gets-full-access-to-medicare-claims-data.

[22] We identify county by mapping the zip code of the provider to the county.

[23] These are referred to as "Group 1" counties by Duggan et al. (2016).

4 Empirical Approach

To analyze the impact of higher benchmark payments on enrollment, plan variety, and prices over time, we take advantage of the interaction between two policies. First, we use a regression discontinuity design that exploits the discontinuity in MA benchmark payments for counties associated with MSAs with 250,000 population or higher. Second, we take advantage of the fact that the ACA changed this discontinuity and reduced the payment difference at the cutoff, while leaving the enrollment differentials largely unchanged. The transition between these policies allows us to examine how the market impacts change over time, as the higher payments to insurers are gradually phased out and the discontinuity in benchmark payments is reduced.

We operationalize this approach by estimating a regression discontinuity design model at the 250,000 population cutoff by year. We use the same MSA population bandwidth (from 150,000 to 350,000 population) used in Duggan et al. (2016), with a triangular kernel. We further weight our data to place higher weight on county level observations associated with greater precision of the price index by weighting by the inverse of the variance of price index estimate. To conduct inference, we estimate using cluster-robust nearest neighbor variances (Abadie and Imbens, 2008). In our preferred specification, we include covariates measured prior to the implementation of the benchmark floor, the log of the 1997 fee for service rate and the log of 1997 Medicare Advantage enrollment, to improve precision. However, our analysis is very similar if we exclude these control variables. We estimate these models annually to capture the policy-driven changes in the discontinuity over time and because the price indices are comparable within, but not across years.

5 Results

5.1 How did Payments to Insurers Evolve Over Time At the Population Cutoff?

We first examine how the floor policies affect monthly benchmark payments that MA plans receive over time. First, Figure 1 plots county benchmark payments relative to the 250,000 population threshold for five years broadly representative of the five "eras" of the floor policy. First, Panel (A) plots average benchmark payments in 2000, prior to the urban floor being instituted, against the county's relevant MSA population. In this "untreated" year, we find no evidence that benchmark payments differed across the 250,000 population cutoff. Panel (B) shows a similar figure using data from 2003, when the urban floor was in place. In this year, we see a small but significant change in benchmark payments at the cutoff. Panel (C) shows data from 2008, after the Medicare Modernization act greatly increased the size of the benchmark discontinuity at the cutoff. Here, we see that counties that fell just above the population threshold received substantially higher payments compared to those below. Panel (D) shows data from 2014, during the ACA transition that phased out the floor policy. In this year, the discontinuity in payments is much less pronounced than in Panel (C). Finally, Panel (E) shows benchmark payment averages from 2019, after the ACA transition was completed and the benchmark discontinuity was nearly eliminated. In this year, there is no longer an apparent discontinuity in benchmark payments at the population cutoff.

We combine these annual RD analyses into a single figure in Figure 2. In this figure, we show our estimated discontinuity in benchmark payments at the 250,000 population threshold by year. Vertical lines indicate the years of major policy changes and show the years in which we observe price data in HCCI. We see that, starting in 2001 and increasing in 2004, counties whose MSA population placed them right above the urban floor cutoff experienced significantly higher benchmark payments per month per enrollee than counties whose payments placed them right below that cutoff. The difference during this period was between $60 and $80 per month. Then, starting in 2012, the new ACA rules began to phase in which steadily closed the gap between counties on either side of the urban floor cutoff. By 2017, the difference in benchmark payments across the threshold was close to zero and not statistically significant. It remains statistically insignificant through 2021, the last year for which we have this data. This pattern is similar without controls; see Appendix Figure A.1.

While county benchmarks provide a base maximum capitated payment to insurers for enrollees within each county, realized payments to insurers are additionally affected by the quality of their offered plans. Dependent on plan quality and certain county characteristics, quality bonus payments implemented in 2012 offer potential increases to insurer payments. If an offered plan's star rating exceeds certain thresholds, plans are eligible to receive a quality bonus payment of up to 5% of the county benchmark. In certain counties, these quality bonus payments may be doubled to a maximum of 10% of the county benchmark. Even if there is no difference in county benchmarks across the urban cutoff, if insurers offer higher quality plans or enrollees enroll in higher quality plans in urban counties, insurer payments may be higher in urban counties due to higher quality bonus payments.

We study this potential change to insurer payments by examining how both plan quality and quality bonus payments change across the urban cutoff. In each year, after determining the star rating for each MA contract, we construct a contract enrollment-weighted average star rating within each county. If there are increases to this average star rating across the urban cutoff, this could indicate that either insurers offer higher quality plans in urban counties or that enrollees are more likely to enroll in higher quality plans in urban counties, both of which could result in additional payments to insurers across the urban cutoff. We examine this possibility in Figure 3. Similarly to county benchmarks, for each year, we plot the estimated discontinuity and 95% confidence interval for the county average contract star rating in panel (A), limited to Group 1 counties within the DSV [150k, 350k] bandwidth. With the exception of 2013, there is no significant difference in the enrollment-weighted average contract star rating across the urban cutoff.

We can similarly examine the difference in "bonus" benchmarks, the sum of each county's benchmark and the contract enrollment-weighted average quality bonus payment within each county, across the urban cutoff. In contrast to our results in Figure 2 which show the discontinuity in benchmarks reducing to an insignificant amount by 2016, annual estimates of the discontinuity in bonus benchmarks, shown in panel (B) of Figure 3, follow a decreasing pattern from 2012 through 2014, but eventually settle near a $25 discontinuity across the urban cutoff. Through 2014, while county benchmarks were subject to a pre-ACA benchmark cap, the quality bonus payments were not, and could allow the bonus benchmark to be in excess of the pre-ACA benchmark. This policy was changed, and for all years after 2014, the sum of the county benchmark and quality bonus payment was subject to the pre-ACA rate cap. Bonus benchmarks in rural counties exceed the pre-ACA rate cap more often than in urban counties, leading to a continued discontinuity in bonus benchmarks after 2015, despite no difference in the average contract star rating across the urban cutoff. While this result implies a continued possibility of higher payments to insurers after the 2012 ACA policy changes, the estimated discontinuity still reduces from near $70 to around $25, amidst a time period of large increases to county benchmarks overall.

Realized payments to insurers will also be affected through the competitive bidding process, in place since 2006, described in more depth above. We examine the effect of the urban cutoff on multiple aspects of the bidding process, namely insurer bids, CMS capitated payments to the insurer, and insurer rebates. We first use plan-segment bid and plan enrollment data to create yearly enrollment-weighted county average bids. We then compute a measure of CMS capitated payments to insurers, equal to the lesser of the benchmark and bid, and create yearly enrollment-weighted county averages of CMS payments. We additionally compute the rebate for each plan-segment-county, equal to 0 if the bid is above the benchmark and a portion of the savings if the bid is below the benchmark, and create yearly enrollment-weighted county average rebate amounts. We additionally compute the sum of CMS payments and rebates, and find yearly enrollment-weighted county average CMS payment and rebate amounts, meant to reflect the total amount given back to plans per enrollee, to fund either expected costs or additional benefits. We examine the effect of the urban cutoff on each of these variables.

In panel (A) of Figure 4, we show the yearly estimated discontinuity in average MA bids across the urban cutoff. Given prior research that shows MA bids closely track MA benchmarks (Song et al., 2013), it is unsurprising to see estimated discontinuities in MA bids that show similar patterns to estimated discontinuities in MA benchmarks. There is a broadly positive and increasing effect across the cutoff until 2012, after which this difference decreases to an insignificant amount by 2017. A similar pattern is observed in the yearly discontinuity estimates for average CMS payments as well, illustrated in panel (B) of Figure 4.

Panel (C) of Figure 4 shows the yearly estimated discontinuity across the urban cutoff for average rebate payments within each county. While there is a slight increase in estimated rebate payments across the urban cutoff prior to 2012, this effect becomes either insignificant or fairly small towards the end of our price index data sample. When examining the sum of CMS payments and rebates, as shown in panel (D) of Figure 4, we see patterns similar to those observed in our yearly benchmark and bonus benchmark estimates. We see increases across the urban cutoff that grow until the ACA policy changes take effect, after which these differences across the cutoff shrink to an estimate near $20.

MA county benchmarks have been subject to many policy changes over the years. In this paper, we focus mainly on the effects of a policy that gave higher payments to insurers in a subset of urban counties. While this policy began to be phased out with the implementation of ACA policies in 2012, remnants of past policies could be felt both as counties transitioned to new post-ACA policies and as certain payments remained subject to pre-ACA payment caps. While we observe that the urban cutoff has an insignificant effect on county benchmarks by 2016, realized payments to insurers are contingent on both additional potential quality bonus payments and the competitive bidding process. When examining the effect of the urban cutoff on county average bonus benchmarks or county average CMS payments and rebates after bidding is complete, while the effect of the urban cutoff diminishes after 2012, there is still a small and significant positive effect which persists after 2012. While this provides an avenue for insurers in urban counties to receive higher payments from CMS than those insurers in rural counties, this difference is decreasing across our main 2012 through 2016 sample period, and continues to decrease over time with respect to increasing county benchmarks.

5.2 Impact of the Cutoff on Enrollment, Plan Entry, and HHI

The urban floor and subsequent ACA payment policies had a substantial impact on the amount of payments a plan received per enrollee. We next use a similar empirical approach to examine how the MA penetration rate and the log of total MA enrollment evolved over this period. Our results are presented in Figure 5, with the MA penetration rate reported in panel A and log of MA enrollment reported in panel B.[24] Associated plots showing the averages of these variables by MSA population for the five years mentioned above are reported in Appendix Figure A.2 and A.3. We see significant differences in both MA penetration and log MA enrollment beginning in 2008. On average, counties falling just above the 250,000 population cutoff have an approximately 10 percentage point higher MA penetration rate in 2008, rising to about a 15 percentage point higher MA penetration rate by 2012. This estimate is slightly greater than the estimates reported in Duggan et al. (2016), perhaps indicative of a stronger effect in later years or cumulative effects on enrollment over time. However, in contrast to the difference in benchmark payments, we do not see any evidence that this difference in MA penetration rates becomes smaller when the ACA policy transitions out the higher benchmark payments for counties just above the urban floor. Indeed, our estimate in 2021 is 16.6, even larger than the 14.7 percentage point discontinuity we observe in 2012 when the discontinuity in benchmark payments was largest. In short, the impact of large benchmark payments on MA penetration outlived the higher payments themselves.

Higher benchmark payments may encourage plans to increase enrollment via advertising or lowering premiums. However, the fact that payment pass through is incomplete also implies that plan profit per enrollee has increased, which could encourage entry by other plans. We investigate whether the number of plans active in a county increases at the 250,000 threshold and report these results in Figure 6, which plots RD estimates by year beginning in 2007. We find an increase in the total number of plans offered of about 70% at the threshold. The effect remains significant through 2022, a full decade after the subsidies began to be phased out, although this effect does appear to become somewhat smaller over time. Since the same parent company can offer multiple plans, we also investigate the number of parent companies participating in a county changes at the threshold.[25] We again see a significantly higher number of participating parent companies just to the right of the population threshold, with counties above the threshold experiencing about 35% more participating parent companies than those just below

[24]Recall we do not have data for 2006 or 2007.

[25]The same insurer can offer multiple plans; we refer to the insurer as the parent company (e.g., Aetna, Humana). We derive this variable from the plan-level enrollment data.

the threshold. This effect on parent company participation remains significant after the ACA transition. Finally, we examine HHI, as measured using enrollment by parent company. As additional plans enter, competition in these markets should rise. However, we do not find a statistically significant difference in HHI at the population cutoff. This is primarily because enrollment in the marginally offered plan is low.

Overall, our results show that a large increase in the capitated MA subsidy to plans had long-term effects on enrollment in MA, MA enrollment as a percentage of total Medicare enrollment, and the number of plans operating in the county. These differences persist even 6 years after the full transition to a new benchmark policy that resulted in a complete removal of the higher benchmark payments and a sizeable reduction in realized payments to plans. Indeed, the effects of the subsidy on MA penetration and log enrollment hardly change in the years following, despite the subsidy diminishing greatly.

5.3 Impact of Payments on Outpatient and Inpatient Prices

We next examine whether transaction prices changed at the 250,000 population cutoff, and whether these changes demonstrated the same persistence over time reflected in the enrollment and plan participation data. We start by examining how in-network prices changed for outpatient and inpatient procedures. Figure 7 plots our county price index for in-network outpatient procedures against county MSA population. Marker sizes correspond to the weights given to these observations in our RD, with size weighted by the product of a triangular kernel and the inverse variance of the price index estimate. Each panel corresponds to a different year. We see relatively high values of the price index immediately to the left of the cutoff, with lower values to the right of the cutoff. This change at the cutoff is consistent across years. A similar analysis is conducted for inpatient visits in Figure 8. While the price index values appear somewhat lower for inpatient visits across the cutoff, the difference at the cutoff is visually small, except in 2016.

Figure 9 presents the associated RD estimates for in-network outpatient (panel A) and inpatient (panel B) prices in each year, with corresponding values reported in Tables 1 and 2. We see a statistically significant and negative impact of falling above the cutoff on outpatient prices of about 0.28 log points in 2012. This estimated effect remains stable across years, mirroring the stability in the effect of the cutoff on the log of MA enrollment documented in Figure 5. We observe a negative effect on outpatient prices, that remains present and stable even after the discontinuity in benchmarks across the cutoff began to greatly decrease. We ascribe these lower outpatient prices mainly to the enrollment effects observed at the cutoff, with MA penetration rates in urban counties maintaining a much higher level than penetration rates in rural counties throughout our sample. That is, MA plans operating in counties just above the cutoff population were able to extract lower outpatient prices due to the fact that they covered a larger number of individuals. This hypothesis is further bolstered by the fact that insurance markets do not appear to be less concentrated just above the cutoff despite serving a larger number of enrollees (Figure 6).

In contrast, the effect on the price of inpatient stays is quite small and not statistically significant, with the exception of 2016 in which we observe a significant negative impact on inpatient prices.

We additionally examine how these pricing effects change with respect to MA insurer concentration. One hypothesized mechanism through which payments may decrease prices is by improving an insurer's bargaining position by increasing the number of patients covered by that insurer. But, the marginal effect of additional enrollees may be less important in a market that is highly competitive. To explore this relationship, for each year, we first categorize counties into one of four insurer HHI quartiles, based on the prior year's MA parent organization county-level MA enrollment shares. We then re-run our yearly price index RD within each HHI quartile and plot the results for in-network outpatient procedures and inpatient stays in Figure 10. While the patterns may differ subtly across years or categories, our results generally illustrate that within higher insurer HHI county groupings, price effects become more negative as the MA market within counties becomes more concentrated. While price effects are generally insignificant for the counties with the lowest insurer HHIs, price effects are more strongly negative for those counties within the highest insurer HHI quartile. These results could help emphasize the large impact bargaining may have on prices for MA care. When the MA insurer market is less concentrated, insurers may struggle to leverage higher payments or higher enrollments into lower bargained-for prices with providers, who may play these many insurers off of each other. However, as the MA insurer market becomes more concentrated, these insurers may be more able to leverage higher enrollments across the urban cutoff for larger price decreases with providers.

5.3.1 Robustness of Price Index Estimates

We discuss the development of our MA price index estimates in Buchmueller et al. (2022). To examine the robustness of our price index results to other specifications, we run a series of robustness checks for other price index specifications and RD bandwidth choices. Additionally, given the difference in slopes that can be observed in Figure 7, we run checks to ensure our results are not being driven by a small number of observations to either side of the 250,000 MSA population cutoff, but are instead likely resulting from this urban cutoff.

Our price index RD results are robust to a number of alternative ways of specifying the RD model and constructing the price index, which we demonstrate in Figure 11. For each year, we conduct our estimates using alternative versions of the price index model. For outpatient procedures, we constructed versions of the price index that account for patient demographics and/or modification codes in the claims files. For inpatient stays, we have constructed alternative price indices that control for log of the length of stay and/or patient demographics. For each of these different versions of the price index, we report a version of the RD estimates using both a data-driven bandwidth (denoted with a dashed line) and the Duggan et al. (2016) bandwidth (solid line). The top panel shows the results for the outpatient price index and the lower panel shows the results for the inpatient price index. Across all versions, the results are quite stable.

We also conduct our analysis on subgroups of procedures and inpatient stays, reported in Figure 12. For outpatient procedures, we examine ER visits, ambulance services, radiology services, and lab pathology services. For inpatient care, we analyze stays associated with mental health, surgical care, and skilled nursing facilities (SNFs). Within these categories of procedures and hospital stays, we find largely similar patterns as when we examine price effects overall.

We additionally conduct a series of donut RDs to examine how those observations nearest to the 250,000 MSA population cutoff may drive the results seen in Figure 9. In Figure 13, we estimate donut RD effects for both outpatient and inpatient in-network prices. We estimate these effects for a variety of donut sizes, for both those Group 1 counties within the Duggan et al. (2016) bandwidth and all Group 1 counties using a data-driven bandwidth. Across specifications, for small donut sizes, we see our estimated effects are relatively consistent, indicating that the effects we estimate in 9 are unlikely to be entirely driven by those observations nearest to the 250,000 MSA population cutoff.

To further examine the robustness of our estimates, we run a series of placebo test RDs in Figure 14 and 15. For in-network prices, we estimate an RD effect with a series of alternative cutoffs, ranging from 150,000 to 350,00 (a test in this style of a simulated -0.3 effect at the 250,000 cutoff can be seen in Appendix Figure A.4). For outpatient prices in Figure 14, we observe our estimated effect is generally largest at the actual cutoff of 250,000, while estimated effects are frequently smaller or insignificant at alternative cutoffs. For inpatient prices in Figure 15, we generally see effects that are insignificant or relatively small across the range of alternative cutoffs. These sets of results may help lend credence to our theory that these price effects are being driven predominately by a policy at the 250,000 MSA population urban cutoff, rather than some other nearby cutoff that may be biasing our estimates.

6 Conclusion

In this paper, we provide new evidence on the effects that insurer subsidies–even if short-lived–can have on insurance market characteristics. We leverage two critical policy changes to investigate this question. First, policy changes in 2001 and 2004 resulted in MA plans in urban counties receiving capitated payments from the government approximately 10.5% higher than those directed to plans in similar rural counties. Second, starting in 2012, the Affordable Care Act gradually phased out much of this benchmark discrepancy between urban and rural counties.

Although these elevated payments began to phase out in 2012, substantial differences in MA enrollment, MA penetration rate, and the number of MA plans offered in urban counties persisted well after the phase-out was complete. The persistence of these effects indicates that high subsidies can have large impacts on MA enrollment and market structure, and that these impacts may persist at a similar level long after a large reduction in the level of the subsidy is implemented.

We also provide novel evidence that MA benchmark payments may influence transaction prices for medical care. The impact of these increased payments on negotiated medical prices is theoretically ambiguous, as several factors, like MA enrollment and MA plan entry, could influence bargaining outcomes. Using county-level price indices derived from HCCI claims data, we find persistent decreases in the prices for outpatient procedures associated with plans participating in counties whose initial benchmark payments were higher as a result of the urban cutoff. For most years, we find negligible effects of these higher benchmark payments in urban counties on the prices for inpatient stays. We find consistent results across care categories and alternative sets of price index controls. And, we see the largest effects of the payments on prices in counties that have highly concentrated insurer markets. Like our analyses of enrollment, we find that these price effects are persistent across years.

Our price index spans the years 2012 through 2016, during which the differential in benchmark payments directed to MA plans in urban counties was largely phased out, while significant differences in MA enrollment in urban counties remained relatively stable. Additionally, in our analyses of entry, exit, and market concentration, we find that while more plans and insurers participated in these urban markets, enrollment outpaced entry, and we see only minor effects on market concentration. Given our findings of persistent negative price effects for outpatient procedures across all years, these results underscore the relative importance of the enrollment effect over the incomplete passthrough and entry effects. The incomplete passthrough effect should decrease as the differences in benchmarks fade and entry effects are largely absent across all years. However, enrollment remains persistently higher and outpatient prices remain persistently lower in urban areas across all years, indicative of the strong effects the number of covered lives may plan in insurer-provider network and price negotiations.

In this paper, we show that insurer subsidies can have large impacts on MA market structure. These subsidies and their market impacts, particularly higher levels of MA enrollment, can in turn have large impacts on negotiated prices for MA care, with heterogeneous effects seen across different types of care. These results help to underscore the importance of bargaining in MA markets, with the potential present for large decreases in the prices for medical care. However, the question remains of who benefits most from these subsidy, enrollment, and price changes. Do patients receive less expensive care, or are insurers "doubly subsidized," through both government subsidies and lower prices paid to providers? Future work could examine this issue, or explicitly model the bargaining problem between insurers and providers in an attempt to more accurately measure the relative importance of higher subsidies, additional market entry, and increases in the number of covered lives.

Table 1: RD Estimates of Urban Floor Cutoff on Price Indices, Outpatient Procedures

All Outpatient Procedures, 2012	-.283	-.34	-.339	-.388
	.082	.072	.102	.092
Bw	[150000,350000]	[97390.07,3642556]	[150000,350000]	[95022.53,2377744]
N (Left, Right of bw)	[201,174]	[93,352]	[201,174]	[86,332]
All Outpatient Procedures, 2013	-.212	-.256	-.258	-.315
	.093	.076	.112	.093
Bw	[150000,350000]	[105012.7,3795492]	[150000,350000]	[100217,2622931]
N (Left, Right of bw)	[199,170]	[100,349]	[199,170]	[95,335]
All Outpatient Procedures, 2014	-.269	-.353	-.325	-.428
	.1	.063	.125	.093
Bw	[150000,350000]	[99258.48,3874259]	[150000,350000]	[99199.06,3880324]
N (Left, Right of bw)	[194,167]	[90,341]	[194,167]	[90,341]
All Outpatient Procedures, 2015	-.314	-.292	-.361	-.38
	.082	.078	.103	.094
Bw	[150000,350000]	[121284,2731276]	[150000,350000]	[116728.5,3994780]
N (Left, Right of bw)	[194,171]	[120,333]	[194,171]	[119,346]
All Outpatient Procedures, 2016	-.194	-.185	-.225	-.252
	.067	.057	.073	.058
Bw	[150000,350000]	[114530.4,2569124]	[150000,350000]	[101345.5,3745957]
N (Left, Right of bw)	[201,175]	[122,338]	[201,175]	[97,352]
DSV Bandwidth	X	X		
Data Driven BW			X	X
RD Controls	X		X	

Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: Limited to Group 1 counties.
SEs NN clustered at the relevant MSA. Bars represent 95% CIs.
Price Index Controls: Procedure Code, Log(Units), Demographics.
RD Controls: Log(1997 FFS Rate), Log(1997 MA Enrollment).

Figure 1: Mean County MA Benchmarks and Relevant MSA Populations

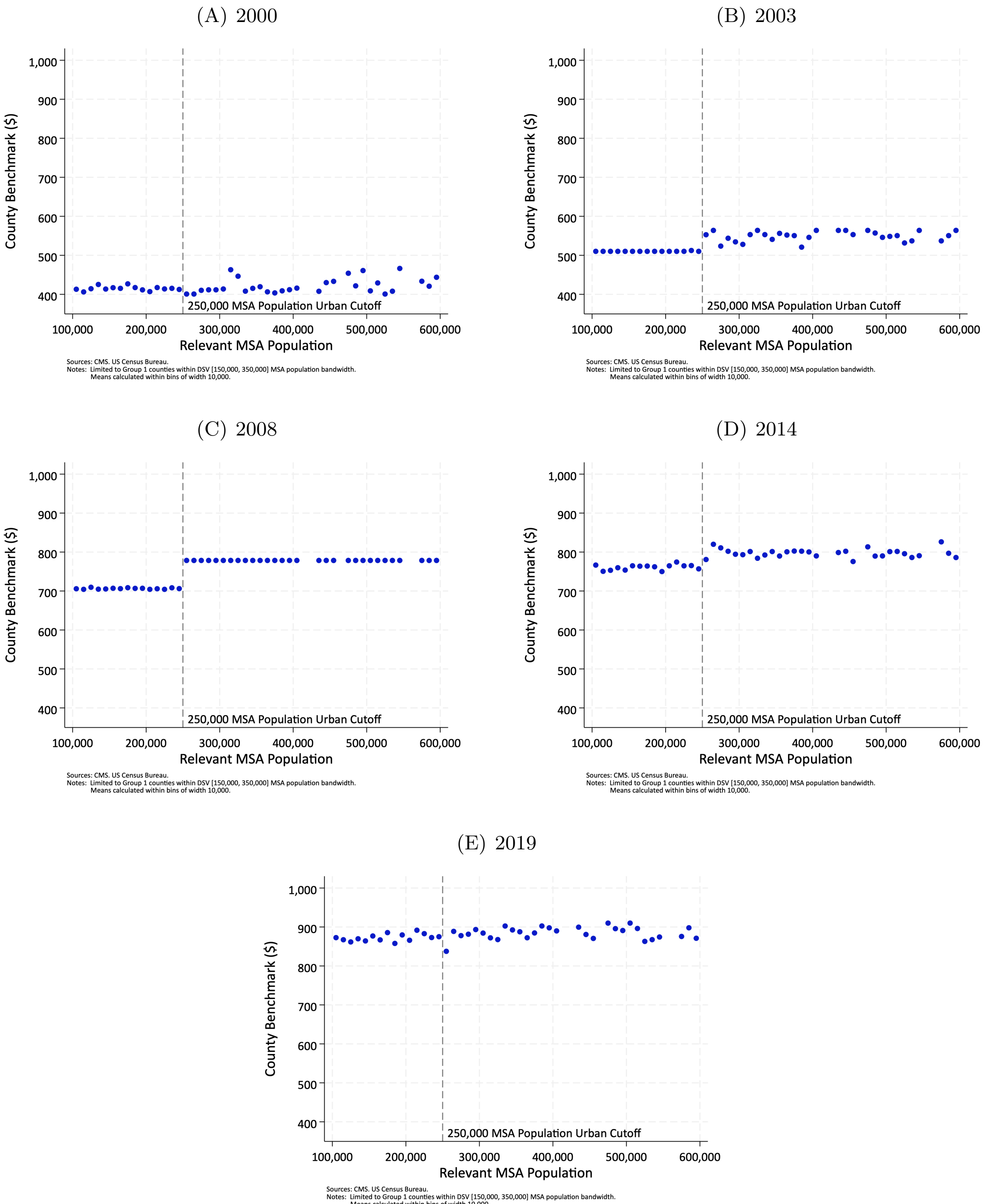
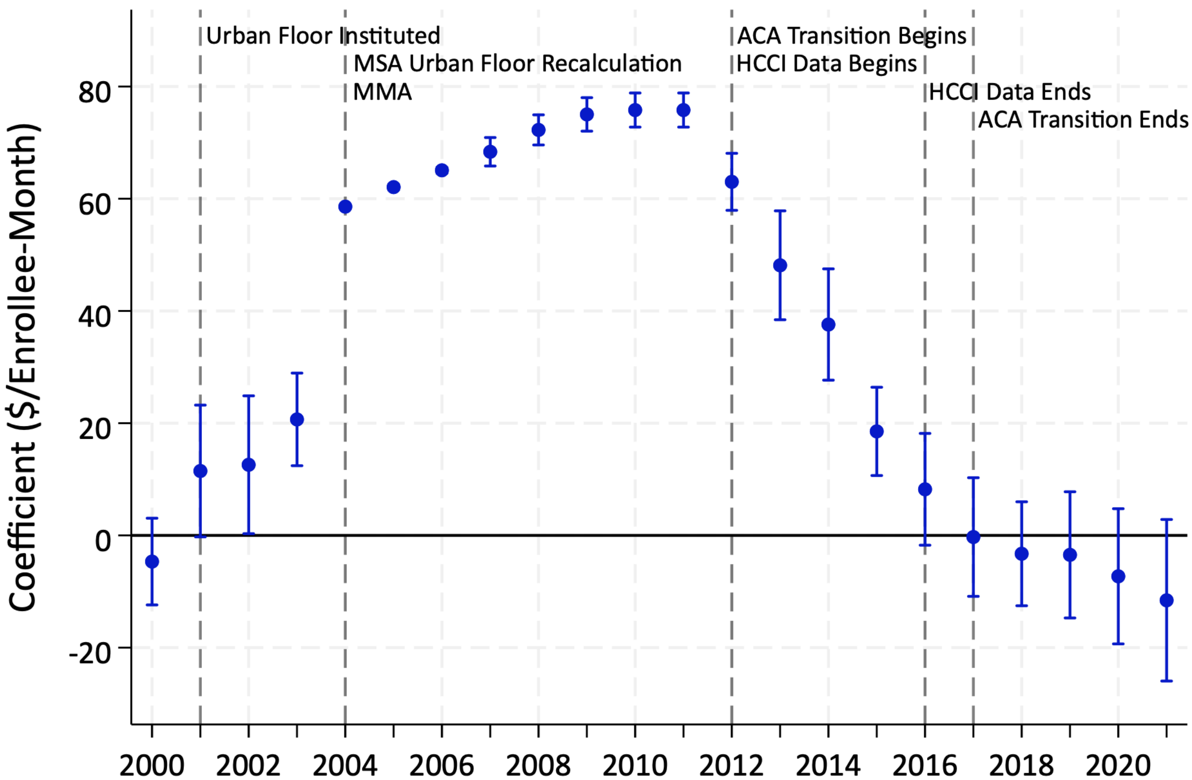


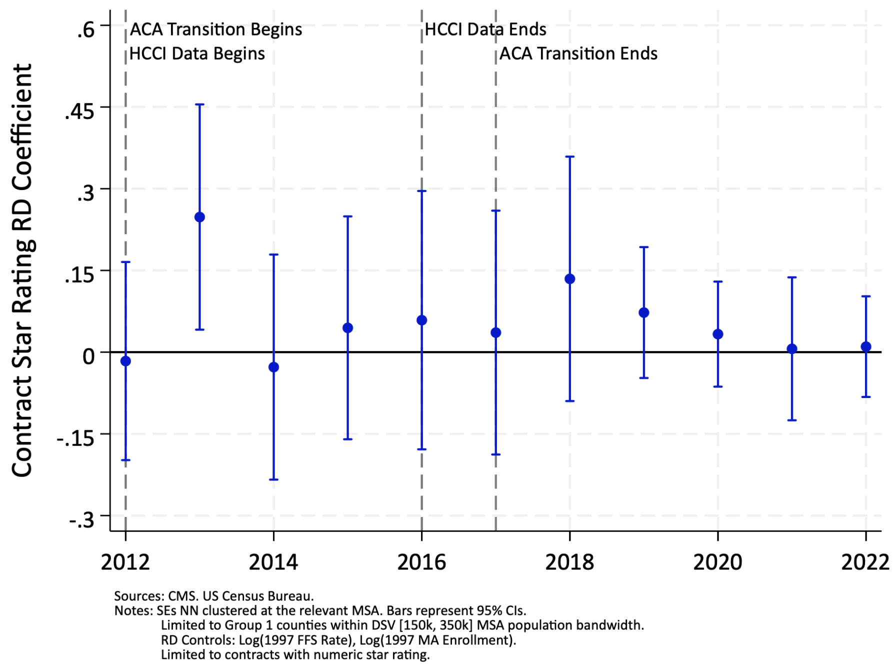
Figure 2: Estimates of Discontinuity in Benchmark Payments by Year



Sources: CMS. US Census Bureau.
Notes: Limited to Group 1 counties within DSV [150,000, 350,000] MSA population bandwidth.
SEs NN clustered at the relevant MSA. Bars represent 95% CIs.
RD Controls: Log(1997 MA Enrollment) and Log(1997 FFS Rate).

Figure 3: Estimates of Discontinuity in Benchmark Bonus Payments

(A) Average Contract Star Rating



(B) MA Bonus Benchmark

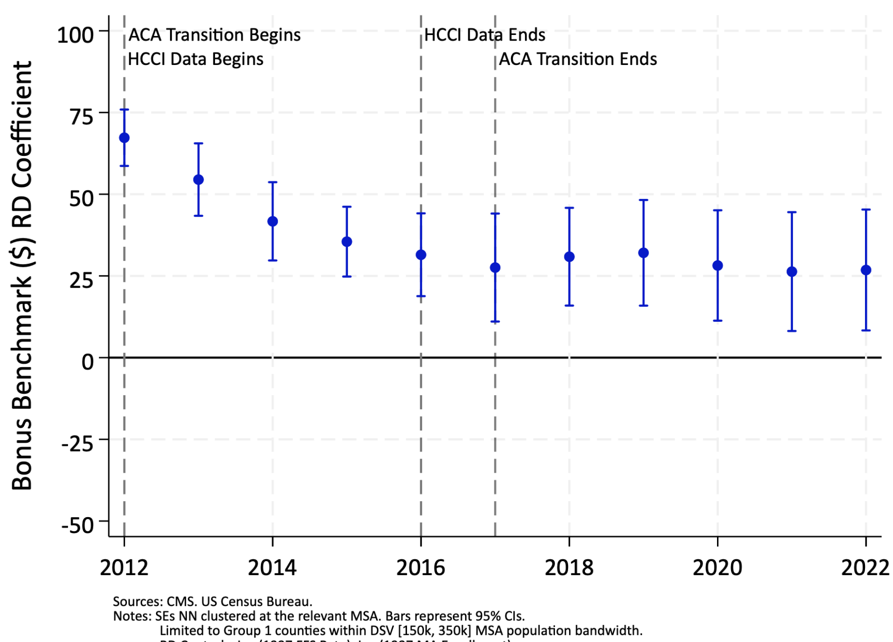
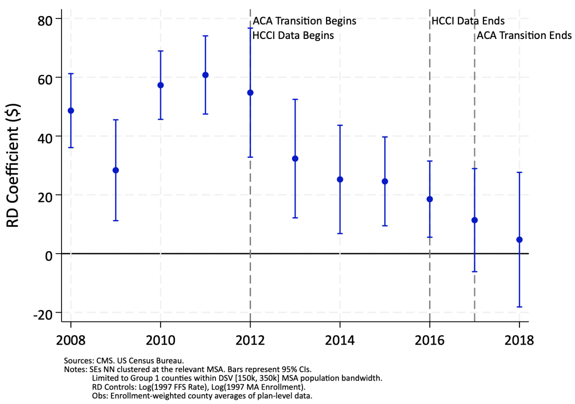
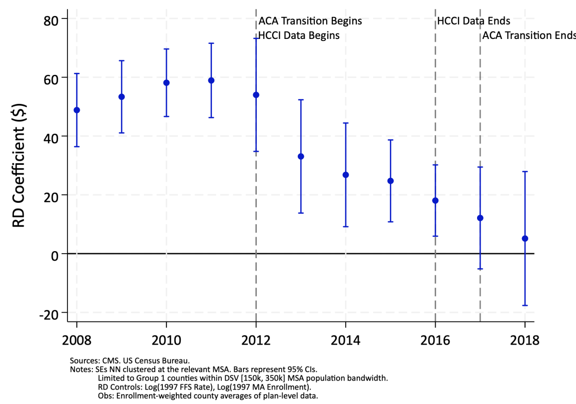


Figure 4: Estimates of Discontinuity in Bids and Rebates

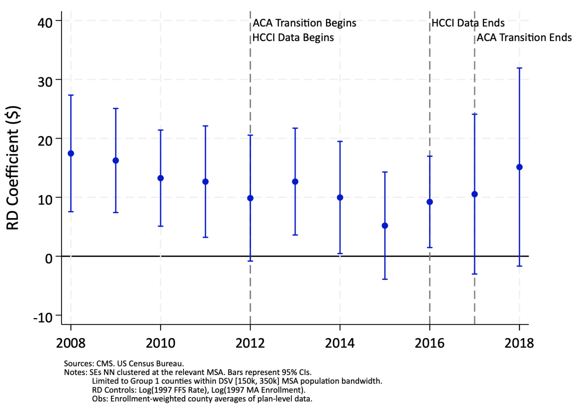
(A) Average MA Bid



(B) Average CMS Payment



(C) Average MA Rebate



(D) Average MA Payment + Rebate

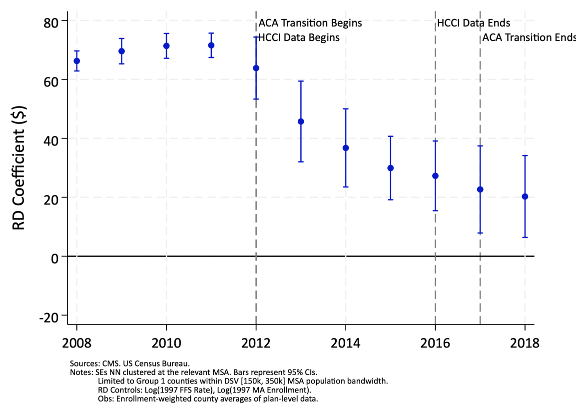
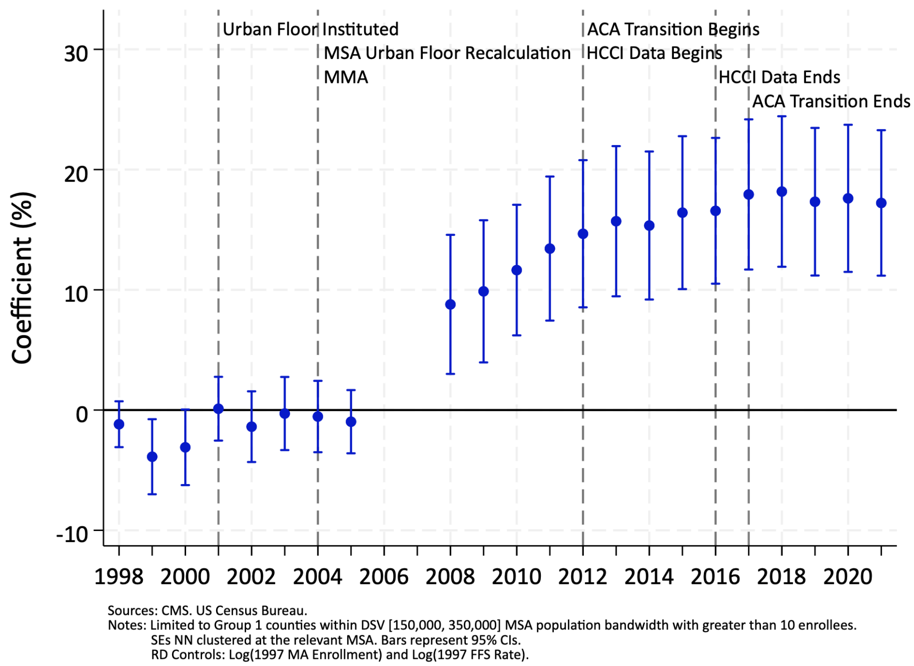


Figure 5: Estimates of Discontinuity in Medicare Advantage Penetration and Enrollment

(A) MA Penetration Rate



(B) Log(MA Enrollment)

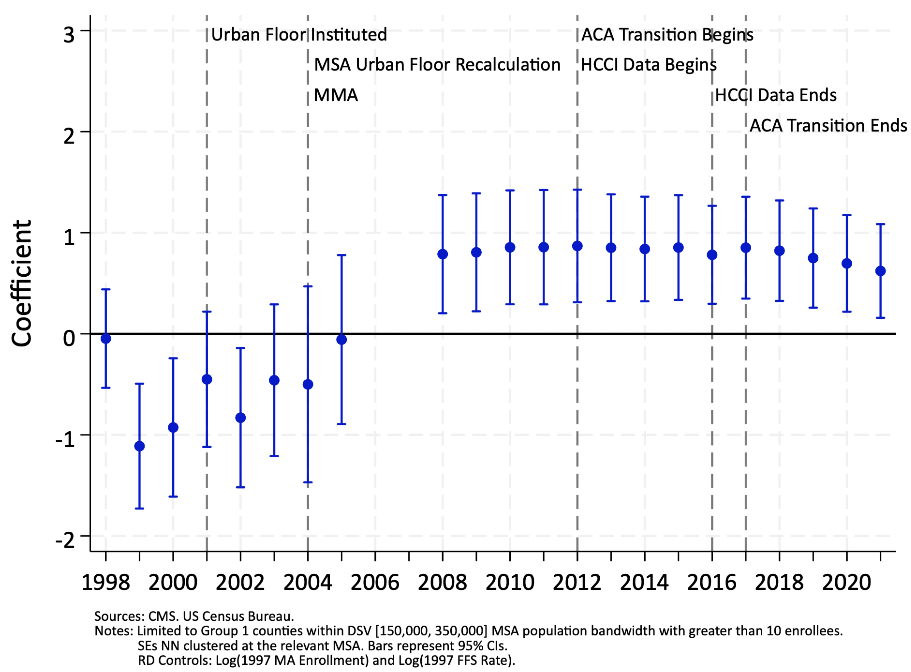
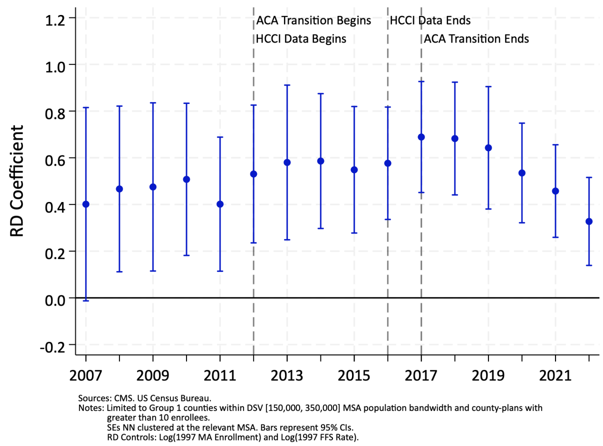
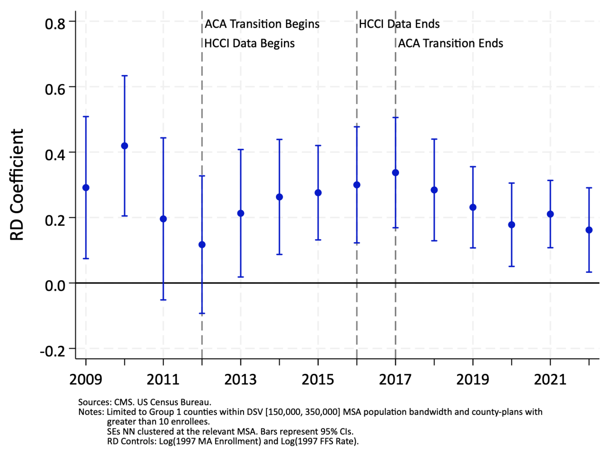


Figure 6: Estimates of Discontinuity in Medicare Advantage Plans and HHI

(A) Log(# of Plans)



(B) Log(# of Parent Orgs)



(C) HHI

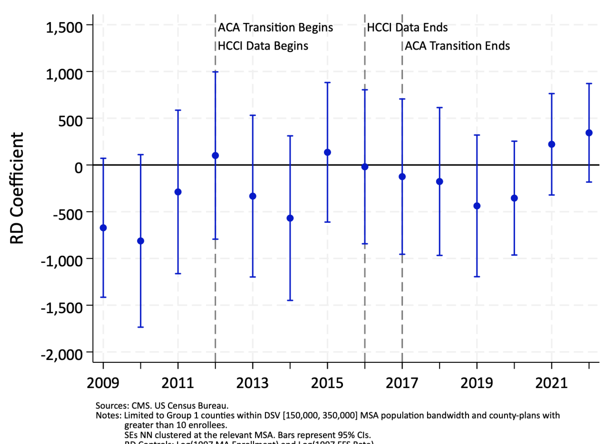
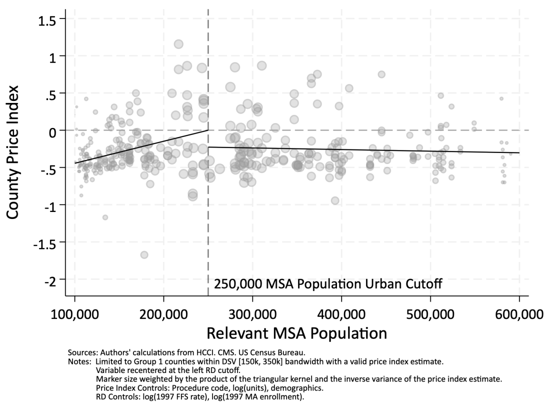
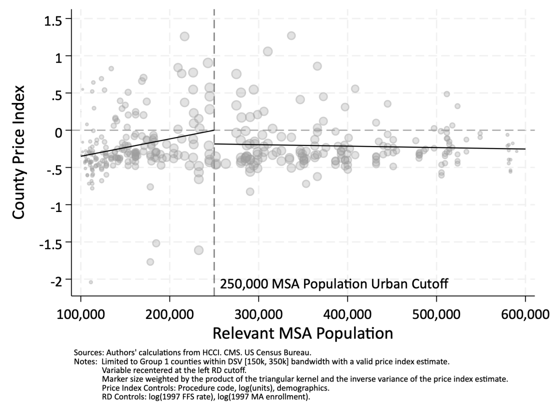


Figure 7: Estimates of Discontinuity in Outpatient Provider Prices

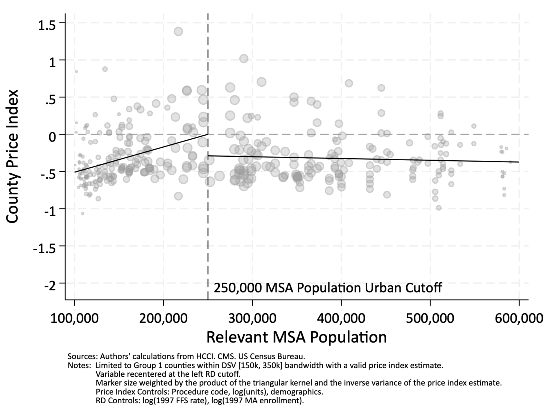
(A) 2012



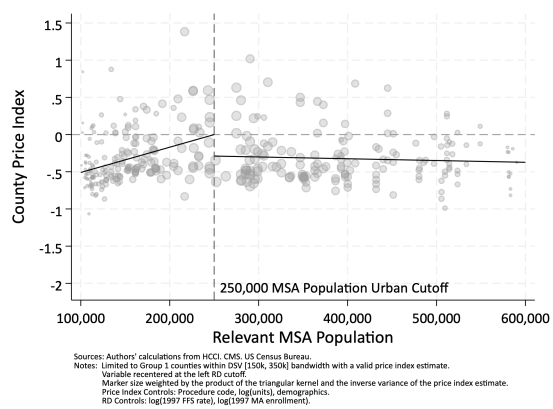
(B) 2013



(C) 2014



(D) 2015



(E) 2016

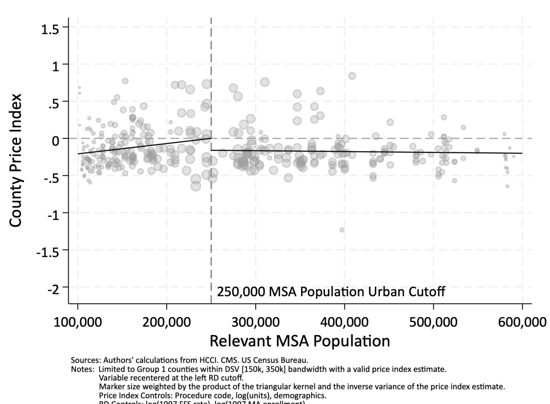
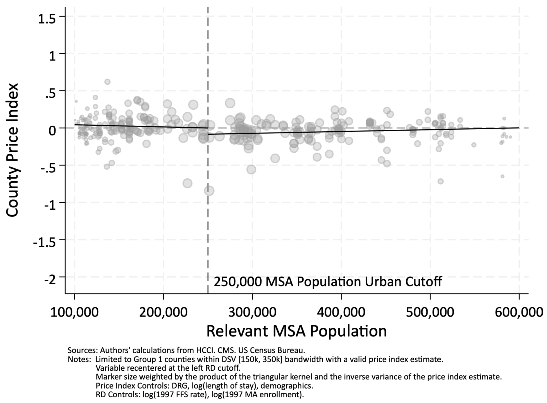
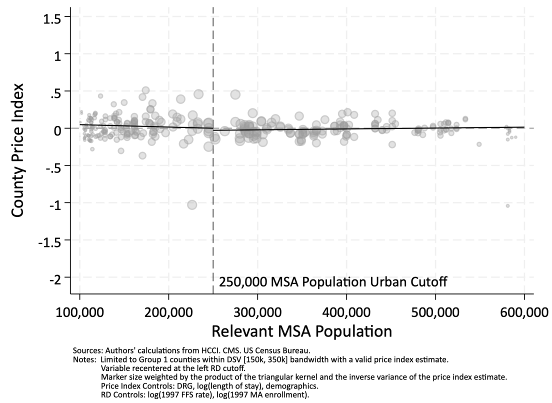


Figure 8: Estimates of Discontinuity in Inpatient Provider Prices

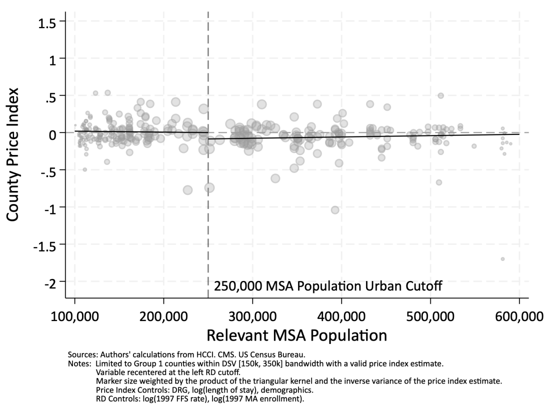
(A) 2012



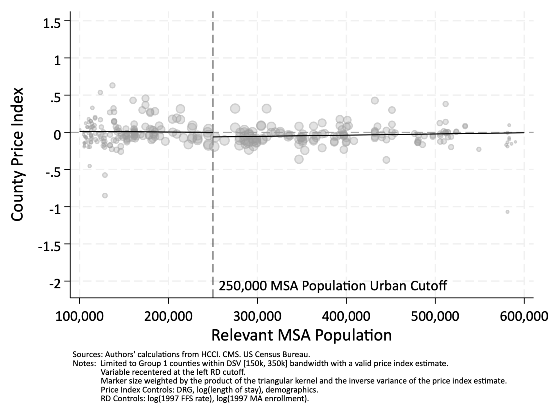
(B) 2013


County Price Index
1.5
1
.5
0
-.5
-1
-1.5
-2
250,000 MSA Population Urban Cutoff
100,000
200,000
300,000
400,000
500,000
600,000
Relevant MSA Population
Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: Limited to Group 1 counties within DSV [150k, 350k] bandwidth with a valid price index estimate.
Variable recentered at the left RD cutoff.
Marker size weighted by the product of the triangular kernel and the inverse variance of the price index estimate.
Price Index Controls: DRG, log(length of stay), demographics.
RD Controls: log(1997 FFS rate), log(1997 MA enrollment).

(C) 2014


County Price Index
1.5
1
.5
0
-.5
-1
-1.5
-2
250,000 MSA Population Urban Cutoff
100,000
200,000
300,000
400,000
500,000
600,000
Relevant MSA Population
Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: Limited to Group 1 counties within DSV [150k, 350k] bandwidth with a valid price index estimate.
Variable recentered at the left RD cutoff.
Marker size weighted by the product of the triangular kernel and the inverse variance of the price index estimate.
Price Index Controls: DRG, log(length of stay), demographics.
RD Controls: log(1997 FFS rate), log(1997 MA enrollment).

(D) 2015


County Price Index
1.5
1
.5
0
-.5
-1
-1.5
-2
250,000 MSA Population Urban Cutoff
100,000
200,000
300,000
400,000
500,000
600,000
Relevant MSA Population
Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: Limited to Group 1 counties within DSV [150k, 350k] bandwidth with a valid price index estimate.
Variable recentered at the left RD cutoff.
Marker size weighted by the product of the triangular kernel and the inverse variance of the price index estimate.
Price Index Controls: DRG, log(length of stay), demographics.
RD Controls: log(1997 FFS rate), log(1997 MA enrollment).

(E) 2016

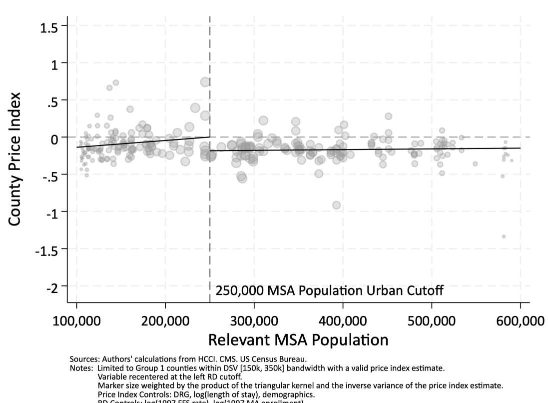
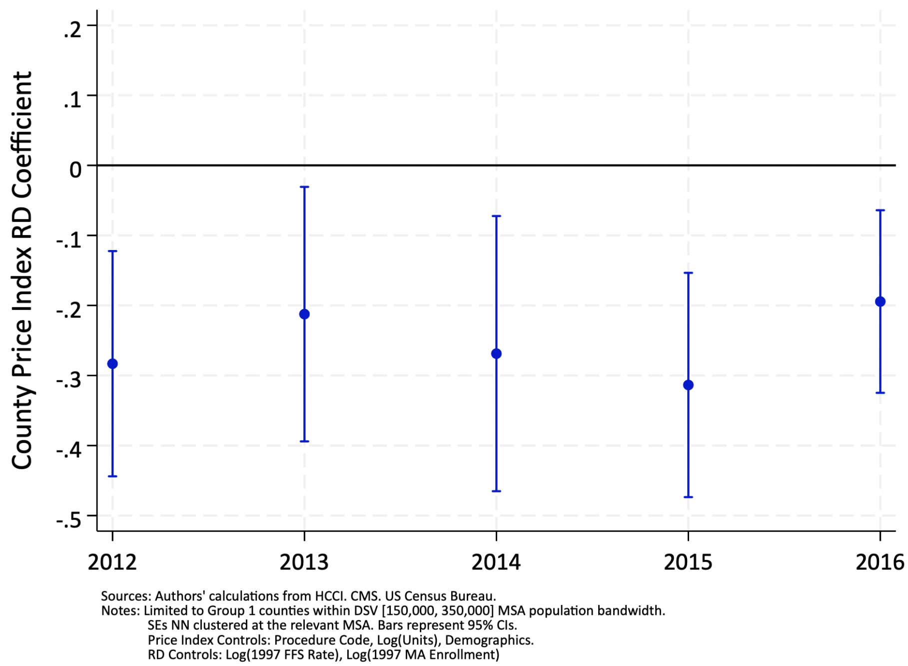

County Price Index
1.5
1
.5
0
-.5
-1
-1.5
-2
250,000 MSA Population Urban Cutoff
100,000
200,000
300,000
400,000
500,000
600,000
Relevant MSA Population
Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: Limited to Group 1 counties within DSV [150k, 350k] bandwidth with a valid price index estimate.
Variable recentered at the left RD cutoff.
Marker size weighted by the product of the triangular kernel and the inverse variance of the price index estimate.
Price Index Controls: DRG, log(length of stay), demographics.
RD Controls: log(1997 FFS rate), log(1997 MA enrollment).

Figure 9: Estimates of Discontinuity in Provider Prices

(A) Outpatient Prices



(B) Inpatient Prices

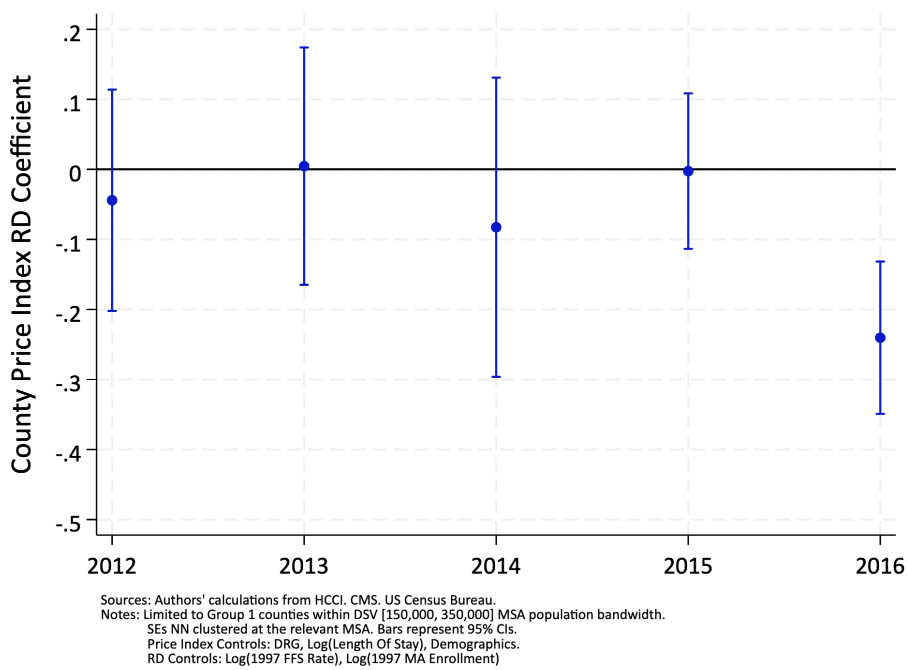
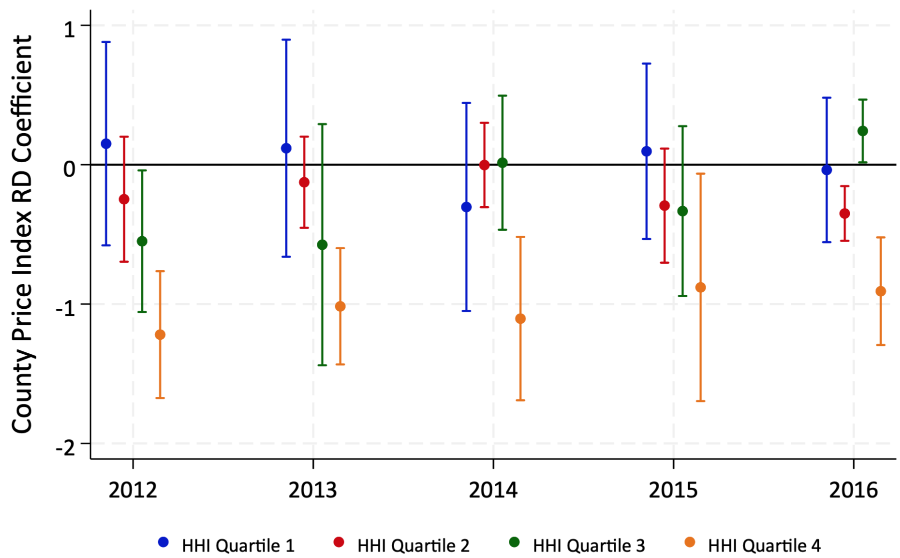


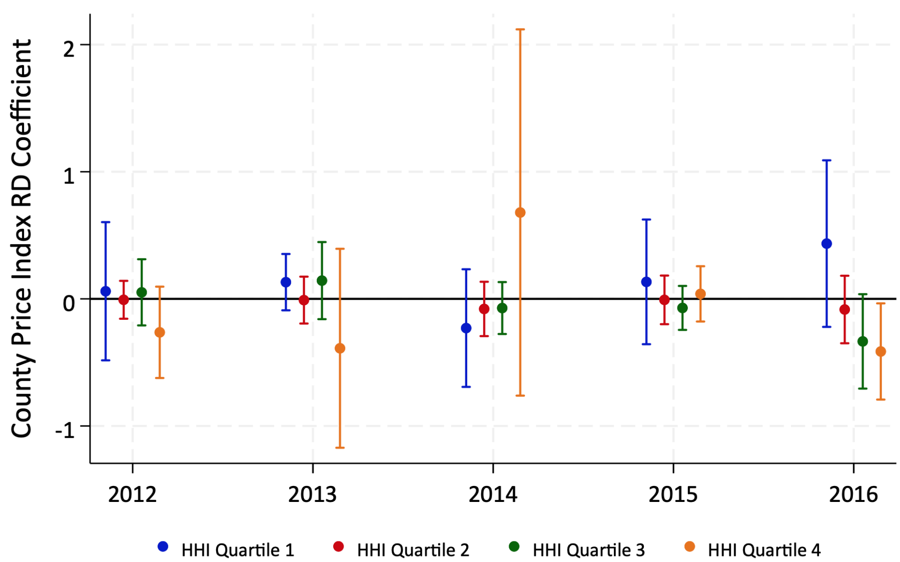
Figure 10: Estimates of Discontinuity in Provider Prices by HHI Quartile

(A) Outpatient Prices



Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: DSV [150k, 350k] MSA population RD bandwidth. SEs NN clustered at the relevant MSA. Bars represent 95% CIs.
Price Index Controls: Procedure Code, Log(Units), Demographics.
RD Controls: Log(1997 FFS Rate), Log(1997 MA Enrollment)
HHI quartiles calculated using prior year county-level HHIs across Group 1 counties within DSV [150k; 350k] bandwidth with price index estimate.

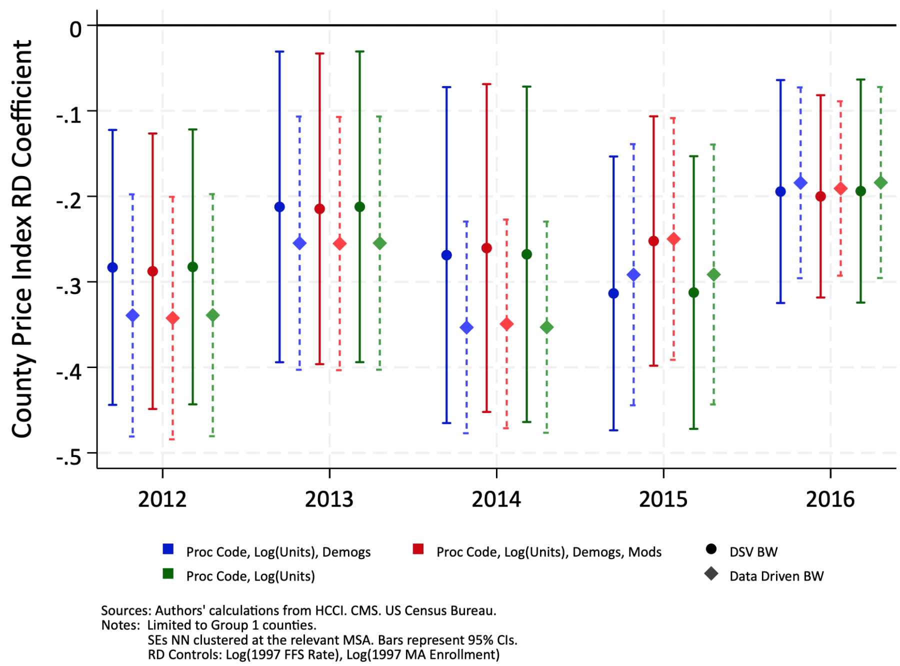
(B) Inpatient Prices



Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: DSV [150k, 350k] MSA population RD bandwidth. SEs NN clustered at the relevant MSA. Bars represent 95% CIs.
Price Index Controls: DRG, Log(Length Of Stay), Demographics.
RD Controls: Log(1997 FFS Rate), Log(1997 MA Enrollment)
HHI quartiles calculated using prior year county-level HHIs across Group 1 counties within DSV [150k; 350k] bandwidth with price index estimate.

Figure 11: Estimates of Discontinuity in Provider Prices: Alternative Specifications

(A) Outpatient Prices



(B) Inpatient Prices

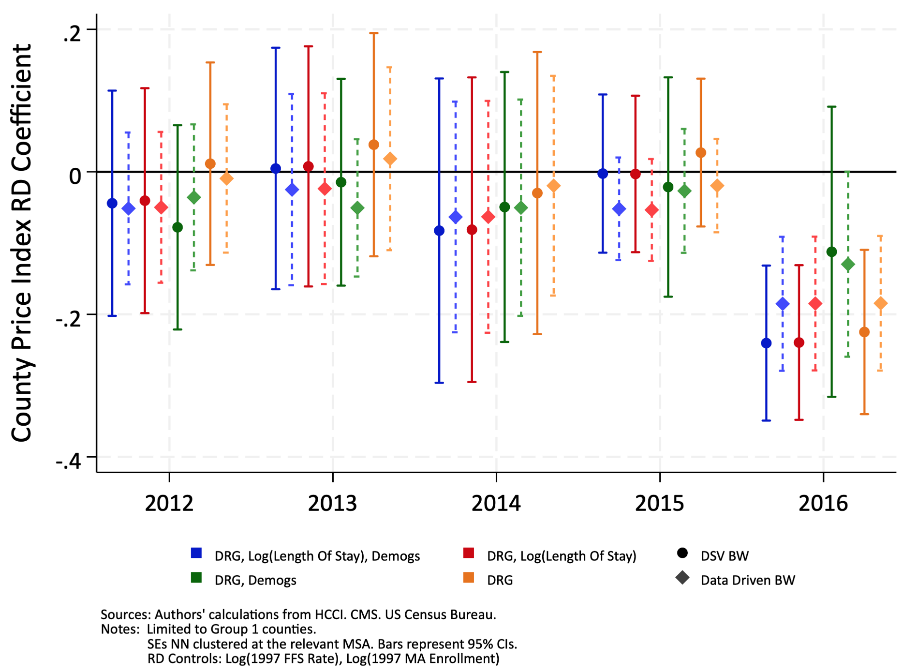
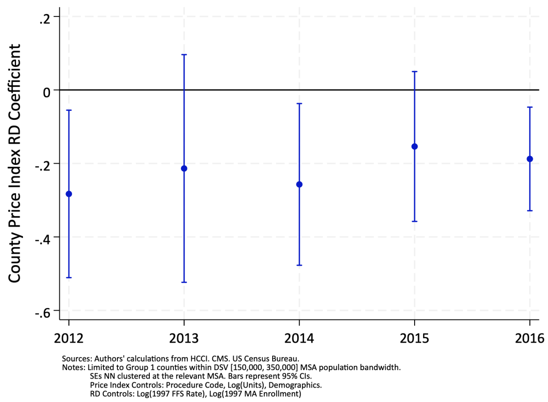
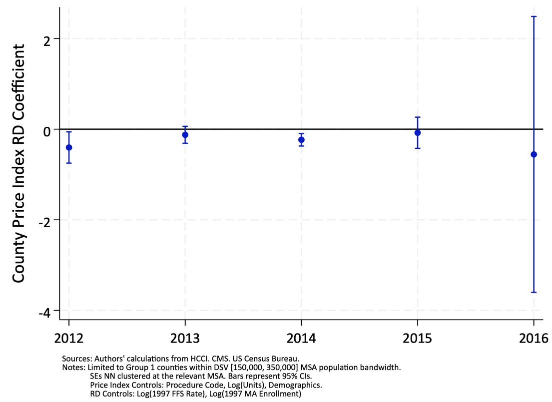


Figure 12: Estimates of Discontinuity in Provider Prices by Category

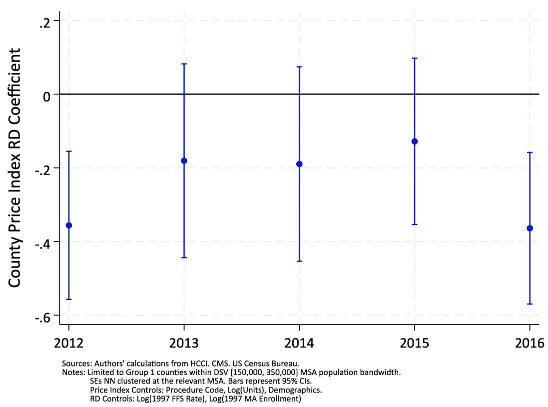
(A) Emergency Room (Outpatient)



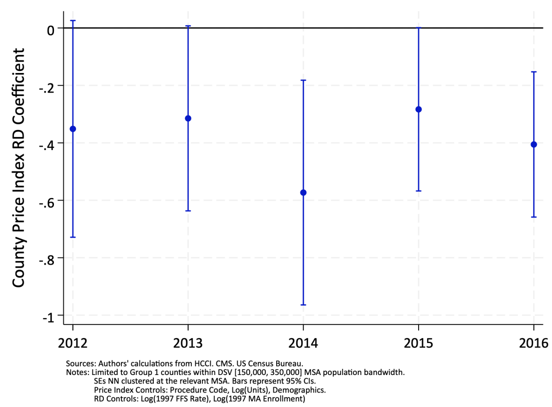
(B) Ambulance Services (Outpatient)



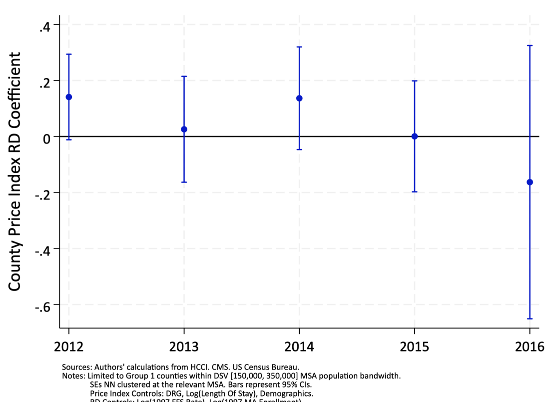
(C) Radiology Services (Outpatient)



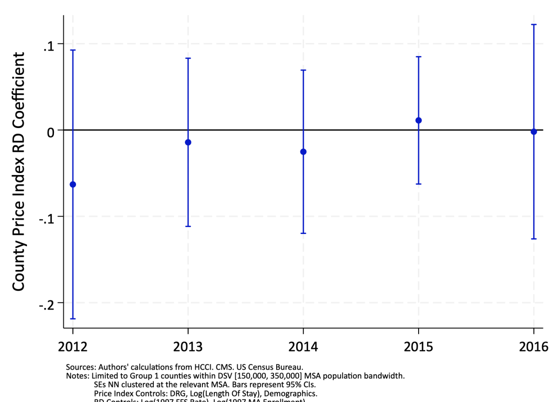
(D) Lab Pathology (Outpatient)



(E) Mental Health (Inpatient)



(F) Surgical (Inpatient)



(G) SNF (Inpatient)

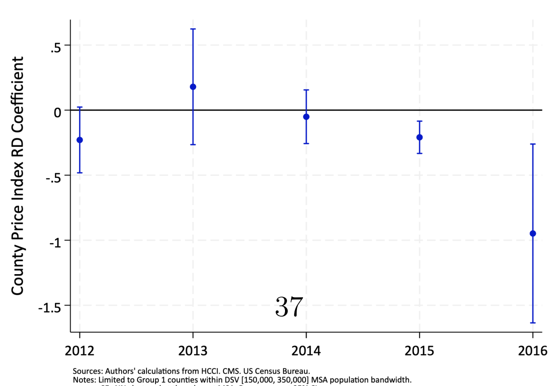
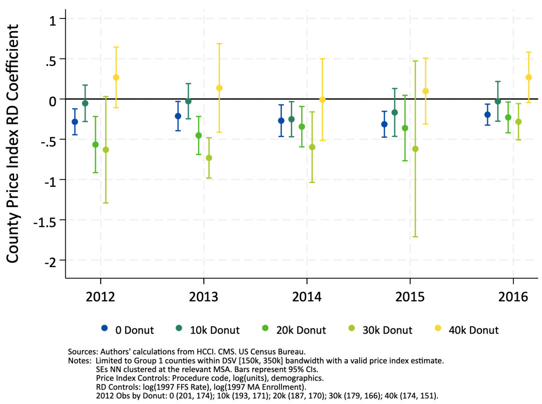
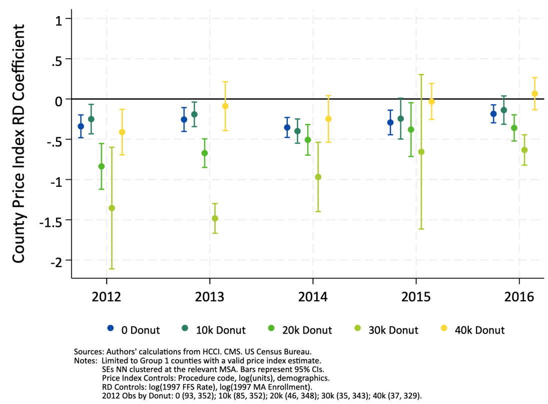


Figure 13: Donut Estimates of Discontinuity in In-Network Provider Prices

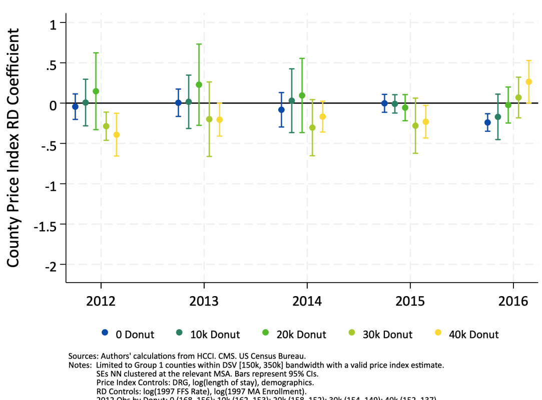
(A) Outpatient; Duggan et al. (2016) Bandwidth



(B) Outpatient; Data-Driven Bandwidth



(C) Inpatient; Duggan et al. (2016) Bandwidth



(D) Inpatient; Data-Driven Bandwidth

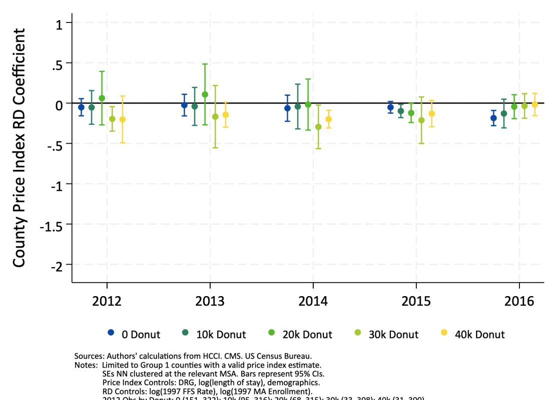
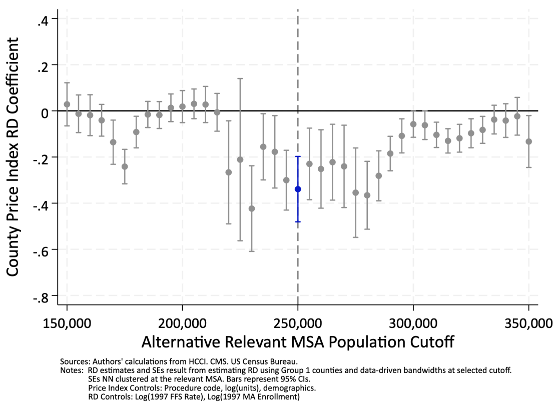
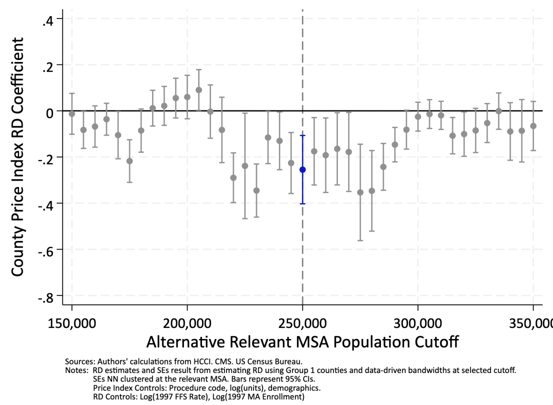


Figure 14: Placebo Estimates of Discontinuity in In-Network Outpatient Provider Prices

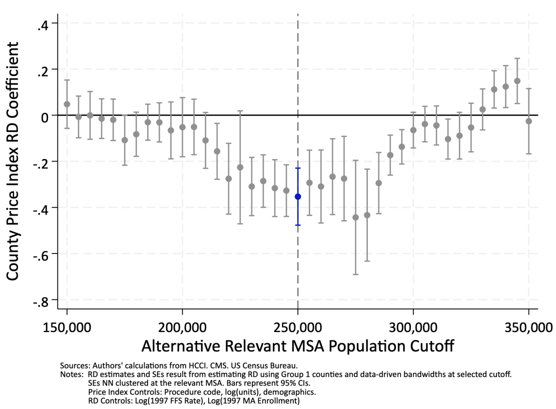
(A) 2012



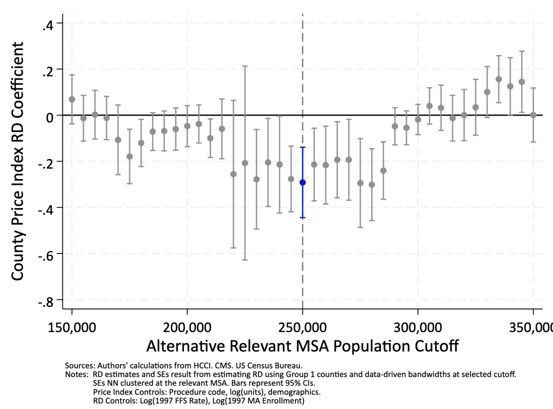
(B) 2013



(C) 2014



(D) 2015



(E) 2016

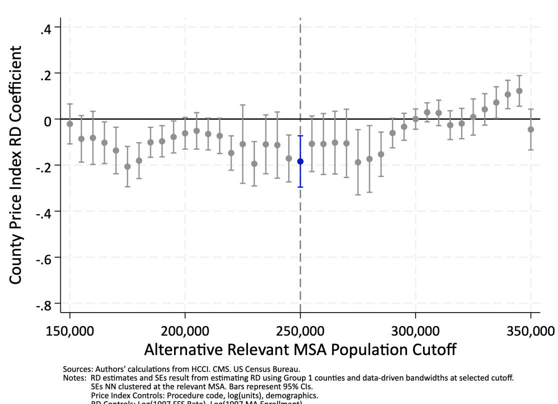
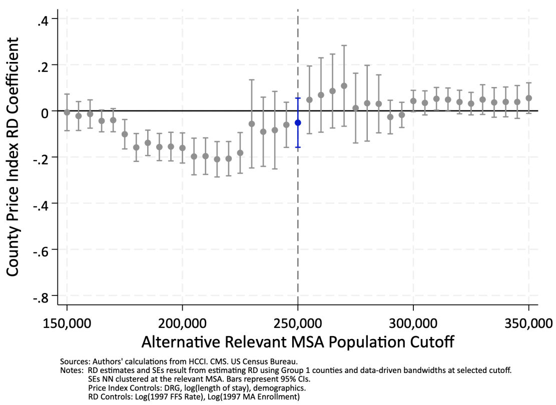
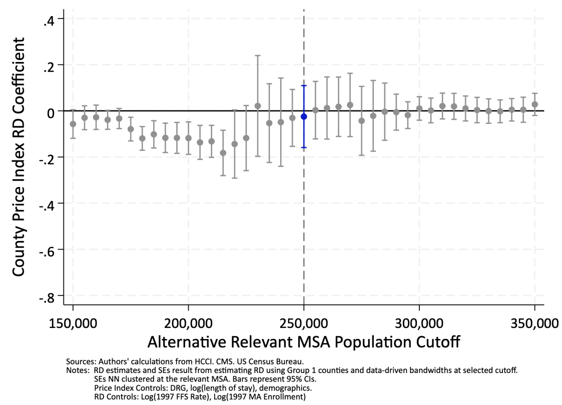


Figure 15: Placebo Estimates of Discontinuity in In-Network Inpatient Provider Prices

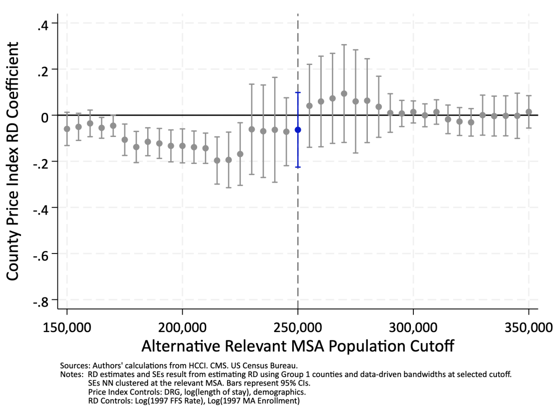
(A) 2012



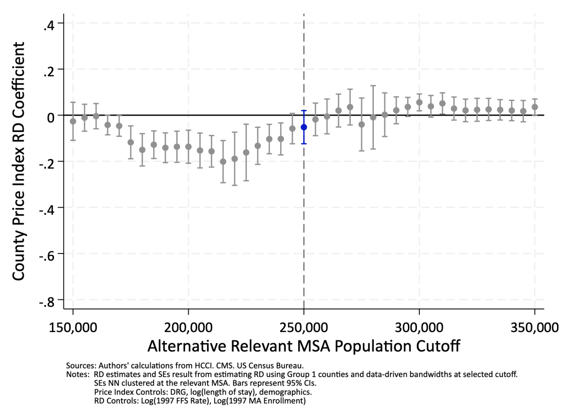
(B) 2013



(C) 2014



(D) 2015



(E) 2016

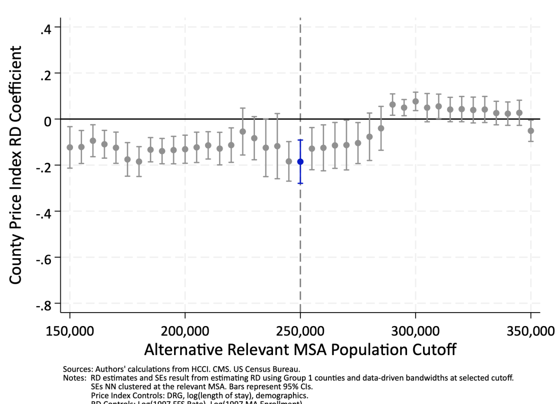


Table 2: RD Estimates of Urban Floor Cutoff on Price Indices, Inpatient Stays

All Inpatient Stays, 2012	-.044	-.051	-.048	-.068
	.081	.054	.083	.058
Bw	[150000,350000]	[142506.3,4394190]	[150000,350000]	[144352.1,4664443]
N (Left, Right of bw)	[168,156]	[151,322]	[168,156]	[157,336]
All Inpatient Stays, 2013	.005	-.025	.007	-.03
	.086	.068	.089	.07
Bw	[150000,350000]	[148466.6,4336270]	[150000,350000]	[149915.4,4287981]
N (Left, Right of bw)	[161,145]	[158,296]	[161,145]	[161,296]
All Inpatient Stays, 2014	-.083	-.063	-.087	-.084
	.109	.083	.116	.09
Bw	[150000,350000]	[142267.1,3929258]	[150000,350000]	[145786.2,3814576]
N (Left, Right of bw)	[164,151]	[149,309]	[164,151]	[161,309]
All Inpatient Stays, 2015	-.003	-.052	-.006	-.062
	.057	.037	.06	.038
Bw	[150000,350000]	[148283.9,3491561]	[150000,350000]	[150882.1,3591799]
N (Left, Right of bw)	[159,144]	[156,301]	[159,144]	[160,301]
All Inpatient Stays, 2016	-.24	-.185	-.238	-.187
	.055	.048	.055	.047
Bw	[150000,350000]	[144144.8,3765497]	[150000,350000]	[142303.9,3355111]
N (Left, Right of bw)	[135,140]	[126,275]	[135,140]	[122,273]
DSV Bandwidth	X	X		
Data Driven BW			X	X
RD Controls	X		X	

Sources: Authors' calculations from HCCI. CMS. US Census Bureau.
Notes: Limited to Group 1 counties.
SEs NN clustered at the relevant MSA. Bars represent 95% CIs.
Price Index Controls: DRG, Log(Length of Stay), Demographics.
RD Controls: Log(1997 FFS Rate), Log(1997 MA Enrollment).

A Appendix Tables and Figures

Figure A.1: Estimates of Discontinuity in Benchmark Payments by Year without Controls

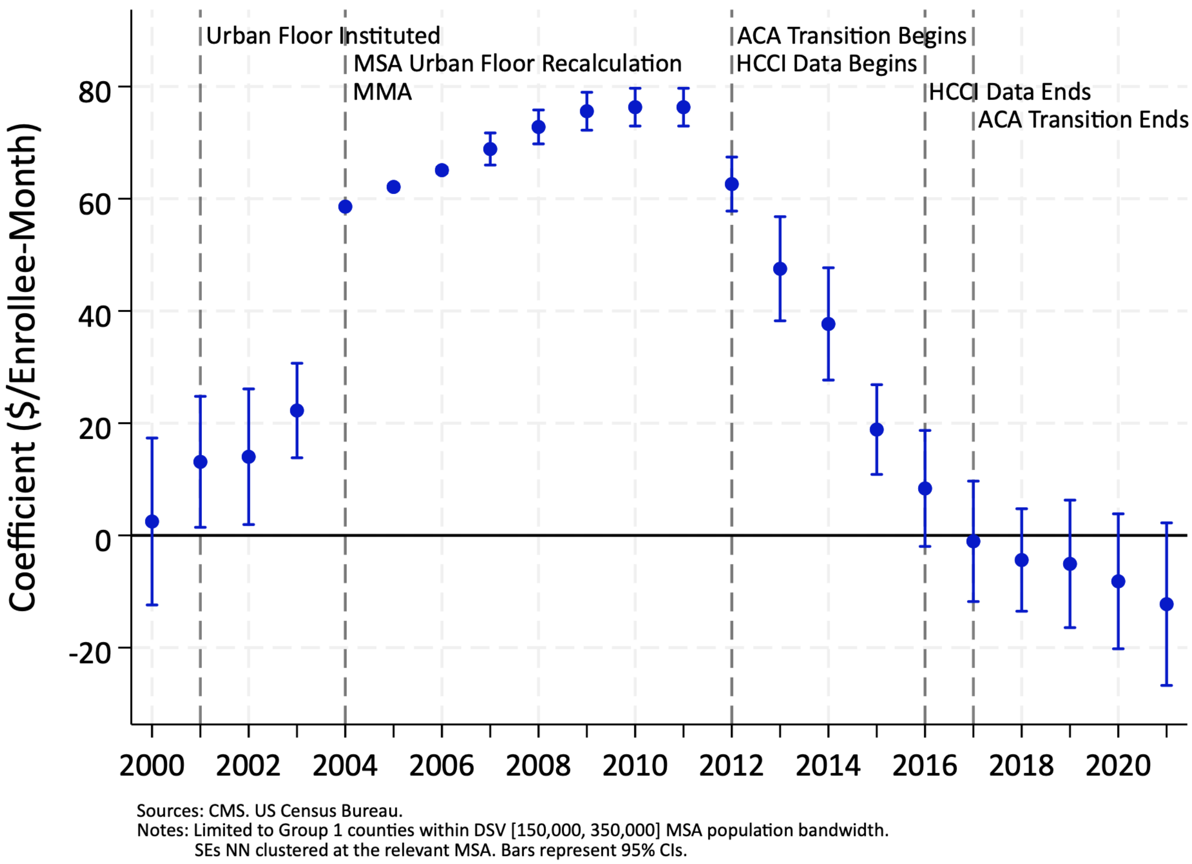
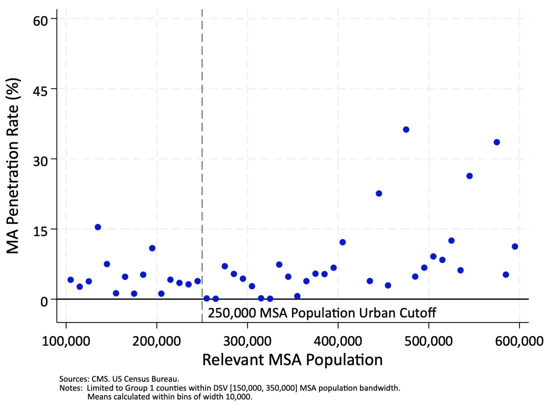
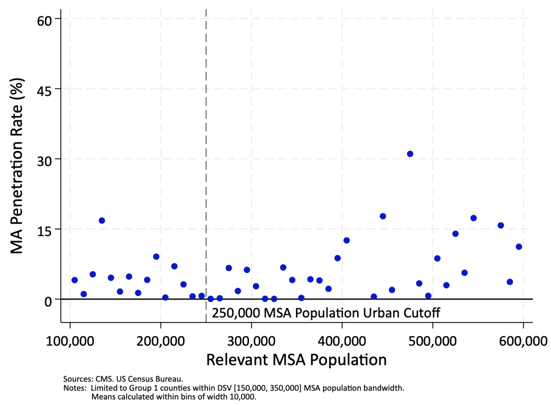


Figure A.2: Mean County MA Penetration Rates and Relevant MSA Populations

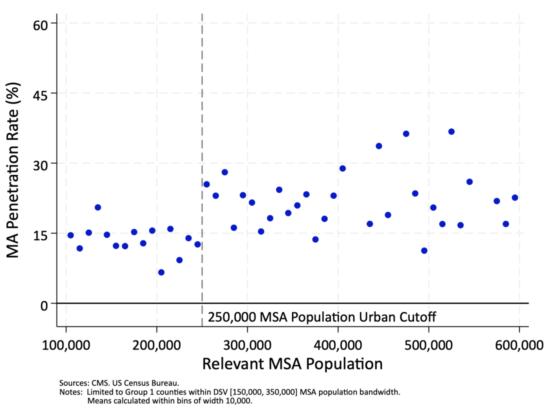
(A) 2000



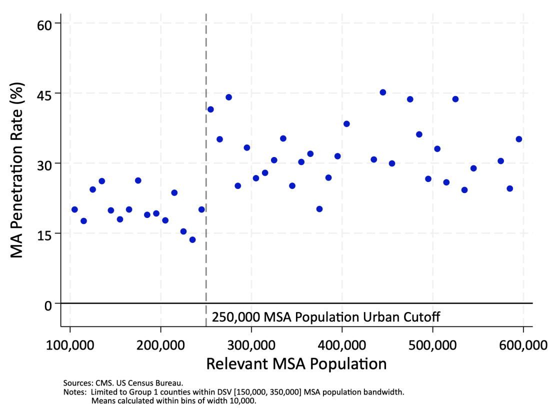
(B) 2003



(C) 2008



(D) 2014



(E) 2019

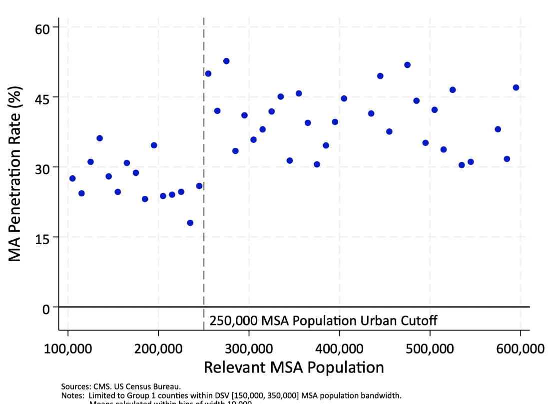
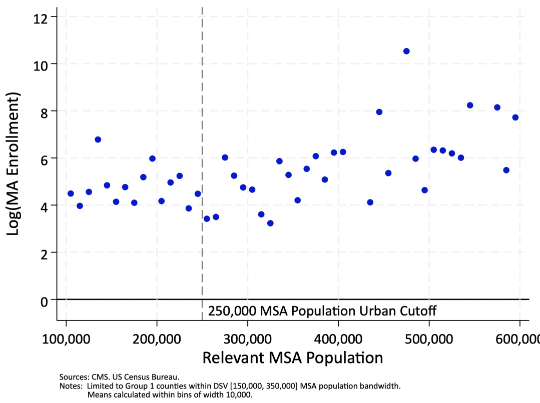
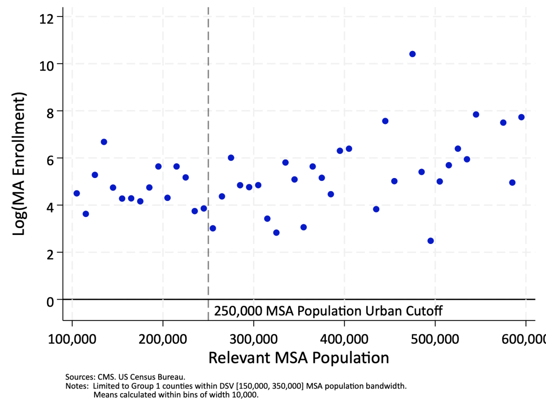


Figure A.3: Mean County Log(MA Enrollment) and Relevant MSA Populations

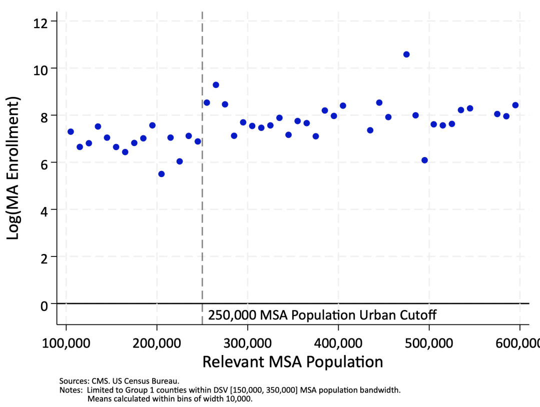
(A) 2000



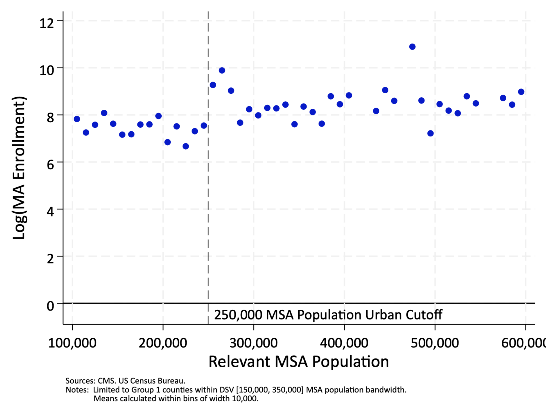
(B) 2003



(C) 2008



(D) 2014



(E) 2019

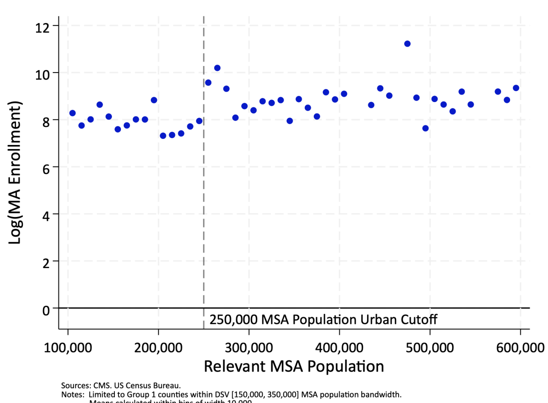


Table A.1: RD Estimates of Urban Floor Cutoff on Benchmark Payments, MA Penetration, and Enrollment

MA Benchmark, 2012	63.012	66.407	62.612	66.218
	2.593	2.063	2.454	1.994
Bw	[150000,350000]	[109263.1,3923994]	[150000,350000]	[111392.9,2705669]
N (Left, Right of bw)	[220,180]	[126,369]	[220,180]	[130,356]
MA Penetration Rate, 2012	14.663	14.43	14.54	13.709
	3.122	1.63	3.04	1.624
Bw	[150000,350000]	[109722.7,2752754]	[150000,350000]	[116860.9,2405725]
N (Left, Right of bw)	[220,180]	[126,356]	[220,180]	[139,349]
Log(MA Enrollment), 2012	.869	1.09	1.069	1.232
	.284	.183	.279	.191
Bw	[150000,350000]	[98000.13,2866949]	[150000,350000]	[98810.18,2732342]
N (Left, Right of bw)	[220,180]	[106,363]	[220,180]	[106,356]
MA Benchmark, 2013	48.133	51.502	47.519	50.268
	4.95	3.917	4.734	3.644
Bw	[150000,350000]	[105846,3764248]	[150000,350000]	[107267.1,3072194]
N (Left, Right of bw)	[220,180]	[116,369]	[220,180]	[118,365]
MA Penetration Rate, 2013	15.706	15.089	15.654	14.549
	3.186	1.732	2.966	1.555
Bw	[150000,350000]	[112480.1,2784738]	[150000,350000]	[118187.1,2436197]
N (Left, Right of bw)	[220,180]	[132,356]	[220,180]	[139,349]
Log(MA Enrollment), 2013	.852	1.082	1.063	1.243
	.27	.17	.278	.188
Bw	[150000,350000]	[98197.2,2833470]	[150000,350000]	[99049.01,2763178]
N (Left, Right of bw)	[220,180]	[106,356]	[220,180]	[107,356]
MA Benchmark, 2014	37.582	34.129	37.687	32.565
	5.058	3.668	5.105	3.579
Bw	[150000,350000]	[107675.4,3504013]	[150000,350000]	[114141.2,3198119]
N (Left, Right of bw)	[220,180]	[118,369]	[220,180]	[134,365]
MA Penetration Rate, 2014	15.348	15.543	15.305	15.143
	3.14	2.068	2.947	1.967
Bw	[150000,350000]	[124541.3,2998392]	[150000,350000]	[130002.3,2624697]
N (Left, Right of bw)	[220,180]	[152,365]	[220,180]	[161,355]
Log(MA Enrollment), 2014	.839	1.098	1.051	1.264
	.264	.179	.272	.193
Bw	[150000,350000]	[101223.9,2618965]	[150000,350000]	[100011,2971752]
N (Left, Right of bw)	[220,180]	[109,355]	[220,180]	[108,365]
MA Benchmark, 2015	18.536	12.851	18.862	12.62
	4.016	2.882	4.079	2.679
Bw	[150000,350000]	[88507.84,2821985]	[150000,350000]	[95580.66,2633308]
N (Left, Right of bw)	[220,180]	[83,356]	[220,180]	[96,355]
MA Penetration Rate, 2015	16.418	15.923	16.347	15.361
	3.244	2.343	3.075	2.27
Bw	[150000,350000]	[126799.7,2869409]	[150000,350000]	[131545.9,2551255]
N (Left, Right of bw)	[220,180]	[160,363]	[220,180]	[162,355]
Log(MA Enrollment), 2015	.853	1.106	1.064	1.28
	.265	.183	.277	.2
Bw	[150000,350000]	[99447.59,2679054]	[150000,350000]	[98148.34,2900627]
N (Left, Right of bw)	[220,180]	[107,355]	[220,180]	[106,363]
MA Benchmark, 2016	8.214	9.846	8.368	8.91
	5.081	3.379	5.272	3.225
Bw	[150000,350000]	[89285.48,2697279]	[150000,350000]	[98323.76,2619143]
N (Left, Right of bw)	[220,180]	[92,356]	[220,180]	[106,355]
MA Penetration Rate, 2016	16.571	15.841	16.432	15.312
	3.092	2.18	2.942	2.123
Bw	[150000,350000]	[123653.2,3147875]	[150000,350000]	[129461,2760882]
N (Left, Right of bw)	[220,180]	[152,365]	[220,180]	[161,356]
Log(MA Enrollment), 2016	.781	1.042	.988	1.205
	.247	.155	.265	.184
Bw	[150000,350000]	[96975.75,2622403]	[150000,350000]	[96817.98,2972065]
N (Left, Right of bw)	[220,180]	[103,355]	[220,180]	[103,365]
DSV Bandwidth	X	X		
Data Driven BW			X	X
Controls	X		X	

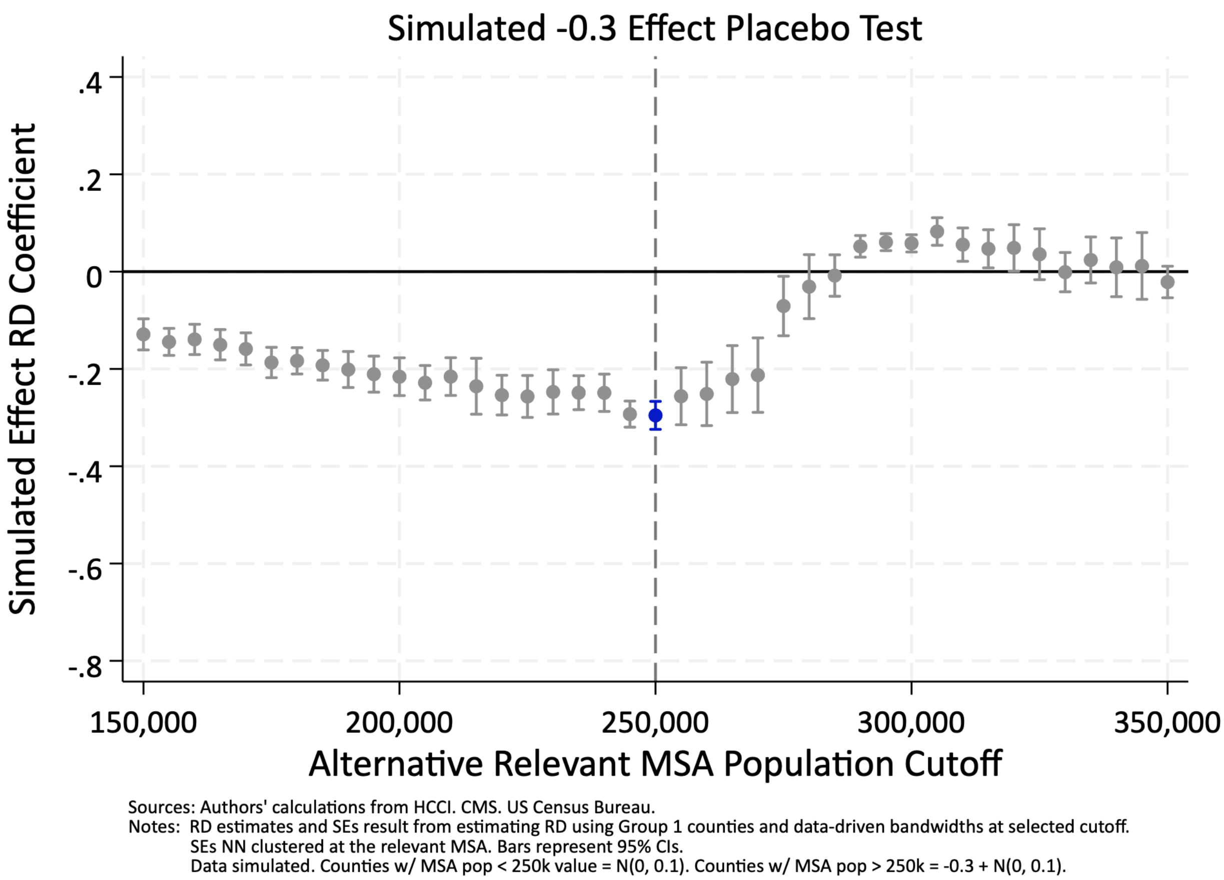
Sources: CMS. US Census Bureau.

Notes: Limited to Group 1 counties.

SEs NN clustered at the relevant MSA.

RD Controls: Log(1997 FFS Rate), Log(1997 MA Enrollment).

Figure A.4: Placebo Test of a Simulated -0.3 Effect at Cutoff



References

Abadie, A. and G. W. Imbens (2008). Estimation of the conditional variance in paired experiments. *Annales d'Economie et de Statistique 91/92*, 175–187.

Abaluck, J. and J. Gruber (2016). Evolving choice inconsistencies in choice of prescription drug insurance. *American Economic Review 106*(8), 2145–2184.

Afendulis, C. C., M. E. Chernew, and D. P. Kessler (2017). The effect of medicare advantage on hospital admissions and mortality. *American Journal of Health Economics 3*(2), 254–279.

Baker, L. C., M. K. Bundorf, A. M. Devlin, and D. P. Kessler (2016). Medicare advantage plans pay hospitals less than traditional medicare pays. *Health Affairs 35*(8), 1444–1451.

Baker, L. C., M. K. Bundorf, and D. P. Kessler (2020). The effects of medicare advantage on opioid use. *Journal of Health Economics 70*, 102278.

Buchmueller, T., A. Kaye, W. Mandelkorn, and S. Miller (2022). How do medicare advantage prices vary geographically? evidence from a new price index.

Cabral, M., M. Geruso, and N. Mahoney (2018, August). Do larger health insurance subsidies benefit patients or producers? evidence from medicare advantage. *American Economic Review 108*(8), 2048–87.

Cooper, Z., S. V. Craig, M. Gaynor, and J. Van Reenen (2018, 09). The Price Ain't Right? Hospital Prices and Health Spending on the Privately Insured*. *The Quarterly Journal of Economics 134*(1), 51–107.

Curto, V., L. Einav, A. Finkelstein, J. Levin, and J. Bhattacharya (2019, April). Health care spending and utilization in public and private medicare. *American Economic Journal: Applied Economics 11*(2), 302–32.

Dafny, L., K. Ho, and E. Kong (2022). How do copayment coupons affect branded drug prices and quantities purchased? Working Paper 29735, National Bureau of Economic Research.

Duggan, M., A. Starc, and B. Vabson (2016). Who benefits when the government pays more? pass-through in the medicare advantage program. *Journal of Public Economics 141*, 50–67.

Gaynor, M., K. Ho, and R. J. Town (2015, June). The industrial organization of health-care markets. *Journal of Economic Literature 53*(2), 235–84.

Geddes, E. (2022, December). The effects of price regulation in markets with strategic entry: Evidence from health insurance markets. Working paper.

Gowrisankaran, G., A. Nevo, and R. Town (2015, January). Mergers when prices are negotiated: Evidence from the hospital industry. *American Economic Review 105*(1), 172–203.

Handel, B. and J. Kolstad (2015). Getting the most from marketplaces: Smart policies on health insurance choice. *Brookings Hamilton Project: Discussion Paper 2015-08*.

Handel, B. R. (2013, December). Adverse selection and inertia in health insurance markets: When nudging hurts. *American Economic Review 103*(7), 2643–82.

League, R. J., P. Eliason, R. C. McDevitt, J. W. Roberts, and H. Wong (2022, 02). Variability in Prices Paid for Hemodialysis by Employer-Sponsored Insurance in the US From 2012 to 2019. *JAMA Network Open 5*(2), e220562–e220562.

Lin, E., B. Ly, E. Duffy, and E. Trish (2022). Medicare advantage plans pay large markups to consolidated dialysis organizations. *Health Affairs 41*(8), 1107–1116.

Maeda, J. and L. N. L (2018, Dec). How do the hospital prices paid by medicare advantage plans and commercial plans compare with medicare fee-for-service prices? *Inquiry 55*.

Marzilli Ericson, K. M. (2014, February). Consumer inertia and firm pricing in the medicare part d prescription drug insurance exchange. *American Economic Journal: Economic Policy 6*(1), 38–64.

McCarthy, I. and M. V. Raval (2022, September). Price spillovers and specialization in health care: The case of children's hospitals. Working Paper 30425, National Bureau of Economic Research.

Meyers, D. J., V. Mor, and M. Rahman (2018). Medicare advantage enrollees more likely to enter lower-quality nursing homes compared to fee-for-service enrollees. *Health Affairs 37*(1), 78–85.

Nosal, K. (2011, October). Estimating switching costs for medicare advantage plans. Working paper.

Rhodes, J. (2020). Private health insurer incentives and prescription opioid use: Evidence from medicare part d. Dissertation, University of Michigan;

https://deepblue.lib.umich.edu/bitstream/handle/2027.42/163252/jhrhodes$_1.pdf?sequence = 1isAllowed = y$.

Song, Z., M. B. Landrum, and M. E. Chernew (2013). Competitive bidding in medicare advantage: Effect of benchmark changes on plan bids. *Journal of Health Economics 32*(6), 1301–1312.

Strombom, B. A., T. C. Buchmueller, and P. J. Feldstein (2002). Switching costs, price sensitivity and health plan choice. *Journal of Health Economics 21*(1), 89–116.

Xu, J. and D. Polsky (2023). Comparing medicare advantage and traditional medicare prices for hospital outpatient services with hospital price transparency data. *Medical Care Res Rev. 80*(4), 455–461.