ONLINE APPENDIX

Can Health Insurance Competition Work? Evidence from Medicare Advantage

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Appendix A: Data Set Construction

A.1. Medicare Beneficiary Panel Data Set

We combine several sources of data in order to construct a complete panel data set of aged Medicare enrollees during the time period 2006 through 2011. We use four main files, all within the administrative CMS data: the Enrollment Database (EDB), the Risk Adjustment Processing System (RAPS), the Monthly Membership Detail (MMD) database, and the Health Plan Management System (HPMS). We supplement this with information from other CMS auxiliary administrative files. In addition to this, we make use of the claim-level files to construct TM costs at the individual-year level for Medicare beneficiaries. The claims cover a variety of claim types: inpatient, outpatient, home health agency, hospice, skilled nursing facility, durable medical equipment, and Part B carrier, which together provide comprehensive information on Part A and Part B costs for TM enrollees. Our analysis sample consists of every aged Medicare beneficiary enrolled at any point from 2006 through 2011.

Next, we describe the sample restrictions used to arrive at our analysis sample, which is a panel data set of individual-year-level observations. The starting sample consists of any individual who was enrolled during any month of an observation year, according to the EDB. The observation years are 2006-2011. We drop observations according to the following criteria, which are shown in Appendix Table A1:

1. The individual qualifies as "ESRD" (End-Stage Renal Disease) or "Disabled" during any month of the observation year, according to monthly enrollment variables in the EDB.

2. Months enrolled in Part A is not equal to months enrolled in Part B. This occurs primarily because some Medicare beneficiaries who are still working enroll in Part A, since it is free, but delay Part B enrollment if they receive coverage through an employer and wish to avoid paying the Part B monthly premium. We drop these individuals because they do not receive all of

their health benefits through Medicare and their Medicare costs are not directly comparable to those of other Medicare enrollees.

3. Age on December 31 is less than 65 years old. All individuals who qualify for Medicare on the basis of being aged should be at least 65 years old, so this condition not being met indicates that the age or birth date is likely incorrect.

4. The individual has a non-Medicare primary payer. We drop these individuals because we are unable to observe all of their healthcare claims.

5. The individual lives in Alaska, Guam, Puerto Rico, or the Virgin Islands. We drop these individuals because the Medicare program or Medicare Advantage is atypical in these areas.

6. The individual has a missing or invalid county identifier; that is, an identifier that does not appear among the counties with published MA benchmarks. For TM enrollees, we use the county identifier in RAPS. For MA enrollees, we use the county identifier from the MMD database in order to be consistent with other MA payment variables.

7. The individual is in Long-Term Institutional (LTI) care, according to a set of monthly LTI indicators that are part of the RAPS database.

8. The individual is missing a risk score. This is extremely rare.

In addition to these sample restrictions, we make several additional sample restrictions that are specific to MA enrollees, corresponding to the restrictions made in constructing the MA plan panel data set. Specifically, we drop observations according to the following criteria, which are also shown in Appendix Table A1:

1. The individual is enrolled in MA according to the EDB but is missing from the records of MA payments, i.e., the MMD database. This is very rare.

2. The data needed to construct the individual's MA plan bid are missing. This is very rare.

3. The individual is enrolled in an MA "Part B Only" plan.

4. The individual is enrolled outside of the official plan service area, i.e., the individual is enrolled in a plan-county-year combination that does not appear in the official set of approved plan-county-year combinations in the HPMS. This can occur if an individual was previously in a

plan's service area but then moved to a different location outside of the plan's service area. In this case, the individual has the option to remain in his MA plan.

5. The individual is enrolled in a plan type other than a Local Coordinated Care Plan (CCP) or Private Fee-for-Service (PFFS) plan. There are a small number of plans that are not Local CCP or PFFS plans, such as regional Preferred Provider Organizations (PPOs), and their payments are set according to different bidding rules. Therefore, we drop these plans in order to focus our analysis on the MA program's primary competitive bidding rules.

6. The individual was enrolled in an employer-sponsored "800-series" MA plan. Although this is a relatively large and important segment of the MA market, we drop these plans from our analysis for three reasons. First, the choice of plan is made not by the Medicare beneficiary but instead by the employer, which renders these plans unsuitable for demand analysis. Second, these plans are not available to all Medicare beneficiaries and are thus not part of the choice set for Medicare beneficiaries who are not affiliated with the relevant employer. Third, it is likely that these plans are subsidized by the employer, and we do not observe the subsidy amounts.

7. The individual is enrolled in an MA Special-Needs Plan (SNP). These MA plans specialize in serving MA enrollees who have special needs or have chronic conditions. While this segment of the market is interesting, we focus our attention on MA plans that are intended for the broader market of Medicare beneficiaries.

8. The individual is enrolled in a PFFS plan. PFFS is an anomalous plan type that was somewhat prevalent during our sample period but has since become obsolete. PFFS plans are not typical "managed care" plans. While MA insurers can vary the cost sharing requirements and other attributes of PFFS plans, they do not impose provider networks and engage in other activities that are typically used to steer enrollees toward certain providers. We have repeated our main analysis including the PFFS plans and we obtain similar results, so including these plans would not impact our main conclusions.

The analysis sample obtained after the drops described above is an unbalanced panel: an individual can leave the sample if he dies, and newly eligible Medicare enrollees enter the sample each year. The exact numbers of observations in the starting and final samples are reported in Appendix Table A1.

A.2. Variable Definitions

- *TM or MA indicator.* The EDB contains information at the monthly level on enrollment in Medicare Parts A, B, and C. We classify an individual as TM if he was enrolled in Medicare Parts A and B during the first month of enrollment that we observe for the observation year, and we classify him as MA if he was enrolled in Medicare Part C during the first month of enrollment that we observe for the observation year.

- *Age.* This is constructed using the beneficiary's birth date in the EDB, and computed as of December 31 of the observation year.

- *Male.* This variable is constructed from the demographic information in the EDB.

- *Urban.* We define "urban" using the classification that was used to set the urban floor in 2004, when the urban floor was last set prior to the beginning of our sample period. We identify counties that were at the urban floor in 2004, and we construct an urban indicator that is equal to one if the individual lives in one of these counties.

- *New enrollee.* The EDB contains a variable with the Medicare beneficiary's Medicare start date. If the year of this start date is equal to the observation year, then we define that beneficiary as a new enrollee.

- *Supplemental insurance (Medigap or RSI).* The CMS administrative files contain a beneficiary insurance profile that provides information on which beneficiaries have supplemental insurance on top of regular Medicare. We construct a supplemental insurance indicator that is equal to one if a beneficiary appears in the file that lists those beneficiaries with supplemental insurance.

- *Part D.* The EDB contains information at the monthly level on enrollment in Medicare Part D. We construct a Part D indicator that is equal to one if the beneficiary is enrolled in Part D during any month of the observation year.

- *Died.* The EDB contains a variable with the Medicare beneficiary's date of death. We construct an indicator for death during the observation year that is equal to one if the year of death is equal to the observation year.

- *Risk score.* For TM enrollees, we use the risk scores in RAPS, which are calculated for all Medicare beneficiaries (not only MA enrollees). For MA enrollees, we use the risk scores in the MMD that are used to compute MA payments. We apply year-specific normalization factors to ensure that the TM risk scores are comparable to the risk scores in the MMD. That is, as CMS publicly reports that it also does, we divide risk scores by 1 in 2006, 1.029 in 2007, 1.040 in 2008, 1.030 in 2009, 1.041 in 2010, and 1.058 in 2011. We are able to verify that the normalized MA risk scores from the RAPS and the MA risk scores from the MA payments file are almost always identical, except for the years 2010 and 2011. In those latter two years, the MA risk scores in the payment files also incorporate an upcoding adjustment (CMS publicly reports that it divided all MA risk scores by 1.0341 and this coincides with what we observe in the MA risk scores that are used to compute payments in the MA payments files).

- *TM monthly claims costs.* We use the payment variables in the Medicare claims files to construct total taxpayer costs for the observation year (we exclude beneficiary cost-sharing amounts). We divide this by the number of months enrolled in Parts A and B in order to obtain monthly claims costs for TM enrollees.
- *MA monthly total CMS payment.* In the MMD database, we observe monthly payments made to MA plans on behalf of each MA enrollee. We assign each MA enrollee to the plan in which he is enrolled in August of the observation year. We use August because September through December is not available for our last two observation years, 2010 and 2011. If the MA enrollee does not appear among the August payments (for instance, because he died earlier during the observation year), then we assign his plan in July, and so on, working backwards until we reach January. Once we have assigned each MA enrollee to a particular MA plan, we also use the MA payment associated with the particular month that was used, and we define this as the MA monthly total CMS payment.
- *MA monthly rebate payment.* We use the same procedure described in defining the MA monthly total CMS payment. We use the MA rebate associated with the particular month that was used to assign an MA enrollee's plan, and define this as the MA monthly rebate payment.

A.3. Medicare Advantage Plan Panel Data Set

For our analysis of competitive bidding, we combine information from the HPMS and MMD to construct a panel data set of all MA plans offered from 2006 through 2011. We use the HPMS to construct the official set of plan offerings in each county-year. The HPMS is a database maintained by CMS that contains the official list of approved MA plans in each year, including the list of counties in which each plan can operate (known as the plan's "service area"). The HPMS also has information on the organization that offers each plan (i.e., the name of the private insurer), as well as a unique contract identifier and plan identifier.

In addition, we observe basic plan characteristics, such as whether the plan offers Part C supplemental benefits, whether the plan is bundled with Part D benefits, and how the plan rebate is allocated across four different categories: a reduction in cost sharing, a reduction of the Part B premium, an increase in Part D benefits, and other mandatory benefits.

We do not directly observe the standardized plan bids. However, we do observe the exact difference between the plan bid and the plan benchmark (since we observe the rebate directly). Furthermore, in the MMD file we observe the exact total payment, risk score used to calculate payment, county, contract identifier, and plan identifier for each MA enrollee during each month of our sample period. In addition, we observe the county benchmark, since this information is publicly available. As we describe in the paper, we know the formula used to compute the payment and rebate as a function of the bid, benchmark, and risk score. The only component in the mapping from standardized bid to payment that we do not directly observe is the plan-provided projected enrollment weights that are used to compute Intra-Service Area Rate (ISAR) factors for plan-county-year-specific payment rates. In some of the analysis, we use realized enrollment weights instead of projected enrollment weights. In summary, we directly observe "plan bid minus plan benchmark", which is used in our main demand analysis. In some specific analyses that require the standardized "plan bid", we directly observe all components needed to calculate it exactly except that we use realized plan enrollment instead of projected plan enrollment.

The initial sample has 35,367 plan-years. We drop observations according to the following criteria:

1. The plan is only offered in Alaska, Guam, Puerto Rico, or the Virgin Islands (617 plan-years).

2. The plan is a "Part B Only" plan (306 plan-years).

3. The plan is a Special Needs Plan (SNP) (3,079 plan-years). We drop these plans because they are targeted at individuals with special needs, such as those with chronic conditions, and are not the primary focus of our analysis.

4. The plan is of a type other than Local CCP or PFFS (e.g., Regional PPO or Cost) (13,461

plan-years). These alternative plan types, although numerous, serve a small fraction of MA enrollees and do not have the same competitive bidding rules as Local CCP and PFFS plans.

5. The plan is an employer-sponsored "800 series" plan (5,402 plan-years). These plans are selected by employers and are not available to all Medicare enrollees. We discuss the reasons for dropping these plans in Appendix A.1.

6. The plan bid is missing (this occurs if we do not observe a single enrollee in a given plan in the MA payments data) (191 plan-years).

7. The plan is a PFFS plan (3,687 plan-years). We discuss the reasons for dropping PFFS plans in Appendix A.1.

The final sample has 8,624 plan-years, each of which has at least 1 enrollee. There are 2,976 unique plans.

Appendix B: Alternative Strategies and Specifications for Demand Estimates

In this appendix, we discuss alternative specifications for demand estimates. For the sake of exposition, we focus on the case where there is no heterogeneity by dual eligibility and risk bin. Without the heterogeneity allowing for separate price coefficients for each of the four consumer groups, we can discuss the impacts of specification changes on two price coefficients instead of eight price coefficients. There are two price coefficients because we still allow for the price coefficient to differ for bids that are above and below the benchmark. In results not shown here, we also examine these specifications allowing for heterogeneity; we obtain similar demand estimates. In this section, for simplicity, we also do not impose the supply-side moment described in the main text, as we do in the main demand specifications reported in Table 2. We explore specifications using alternative samples, using instruments for price (insurer bid), using instruments for the natural logarithm of the plan's MA share, and using various forms of fixed effects. Results are shown in Appendix Tables B1 through B4. In the discussion that follows, we refer to the coefficient on $p^-_{jk} = (b_{jk} - B_k) \cdot \mathbf{1}\{b_{jk} \leq B_k\}$ as α^- and we refer to the coefficient on $p^+_{jk} = (b_{jk} - B_k) \cdot \mathbf{1}\{b_{jk} > B_k\}$ as α^+.

B.1. Alternative Samples

Appendix Table B1 shows demand estimates from specifications using alternative samples. Column (1) shows the sample and specification identical to the "preferred" demand specification in column (4) of Table 2, except that there is no heterogeneity by consumer group. The "preferred" demand specification excludes PFFS plans and includes dual eligibles.

Column (2) shows the same specification as in column (1) but excludes dual eligibles. The coefficient α^- changes from -0.003 in column (1) to -0.004 in column (2), and the coefficient α^+ changes from -0.004 in column (1) to -0.005 in column (2). Thus, both price coefficients become slightly larger in magnitude and the mean elasticity in column (2) is -3.676. Column (3) shows the same specification as in column (1) but includes PFFS plans. The coefficient α^- becomes slightly larger in magnitude, changing from -0.003 in column (1) to -0.004 in column (3). The coefficient α^+ changes by more, going from -0.004 in column (1) to -0.024 in column (3). The magnitudes of both price coefficients are also somewhat larger in column (4), where PFFS plans are included and dual eligibles are excluded. The implied mean elasticity is -7.509.

Columns (5) and (6) show specifications using an alternative classification of PFFS plans. That is, PFFS plans are classified as traditional Medicare. This is motivated by the fact that PFFS plans are quite similar to traditional Medicare in that they have unrestricted provider networks. For these specifications, MA enrollees who are enrolled in PFFS plans are attributed to traditional Medicare, and all market share variables are recomputed accordingly. Dual eligibles are included in column (5) and are excluded in column (6). The price coefficients in column (5) are quite similar to those in column (1), which is the same except for the reclassification of PFFS plans. Results in column (6) are also quite similar to those in column (2), which is the same except for the reclassification of PFFS plans. Thus, whether PFFS plans are excluded or classified as traditional Medicare, we obtain similar demand estimates.

Across the different sample definitions explored in this table, we find price coefficients that are somewhat variable, with an implied mean elasticity that ranges from -2.406 in column (1) to -7.509 in column (4). The implied mean elasticity from our "preferred" demand specification in Table 2 column (4) is -6.410, which lies well within this range. Thus, the price coefficients found in this table are not very different from those used in the main analysis.

B.2. Instruments for Price (Insurer Bid)

In Appendix Table B2, we show results from demand specifications using instruments for price (insurer bid) that have previously been used in the MA literature. Column (1) shows a specification identical to the "preferred" demand specification in column (4) of Table 2, except that there is no heterogeneity by consumer group. This specification does not include any instrument for price.

Song, Landrum, and Chernew (2012) estimate a model that includes year fixed effects and market fixed effects. There was a "rebasing" of county benchmarks in 2007 and 2009, where county benchmarks were updated due to updated estimates of historical TM costs. They argue that this lead to benchmark changes that were exogenous: "benchmarks in all counties were updated by law using national or regional floor updates that were largely uncorrelated with changes in underlying costs in any specific county." We use the county benchmark as an instrument for price in Column 2. Because we allow for 2 price coefficients, we interact the county benchmark with an indicator for whether the plan bid is below the benchmark, and obtain two price instruments $B \cdot \mathbf{1}\{b \leq B\}$ and $B \cdot \mathbf{1}\{b > B\}$. We obtain an estimate of α^- that is approximately double the magnitude of what we obtain in column (1). However, we obtain an estimate of α^+ that is positive. The implied mean elasticity is -5.561, which is similar to the implied mean elasticity of -6.410 in our "preferred" demand specification in Table 2. Thus, compared to our "preferred" demand specification, this instrument gives similar results for plans bidding below the benchmark, but the estimate of α^+ is of the wrong sign.

In columns (3) through (5), we use the price instruments from Cabral, Geruso, and Mahoney (2018). These instruments rely on a legislative change. As a result of the Benefits Improvement and Protection Act (BIPA) of 2000, rural and urban payment floors were implemented in 2001. This established minimum benchmarks in certain counties that were classified as rural or urban. Cabral, Geruso, and Mahoney (2018) construct a variable called "distance to floor" given by

$$\Delta b_{jt} = \max\{b_{u(j)t} - c_{jt}, 0\}$$

where j indexes counties, t indexes years, $u(j)$ indicates whether county j is urban, $b_{u(j)t}$ is the floor benchmark rate in 2001 ($475 for rural counties and $525 for urban counties), and c_{jt} is the counterfactual benchmark rate had the floor not been binding, which is a 3 percent update over the rate in 2000. Thus, the "distance to floor" variable measures a county's "exposure" to the BIPA legislation. Cabral, Geruso, and Mahoney (2018) argue that the "distance to floor" as a result of this one-time legislative change is plausibly exogenous. As in Cabral, Geruso, and Mahoney (2018), we also construct a "change in 2001" variable, which is simply the change in benchmark that occurred in a county in 2001.

Results from specifications using each of these two price instruments are shown in columns (3) and (4), and the two price instruments are combined in column (5). We combine all price instruments, including the county benchmark instrument, in column (6). In each case, we find very imprecise price coefficients. In columns (3) and (4), the estimate of α^- is of the wrong sign and is not statistically significant at the 10 percent level. The estimates of α^+ are implausibly large in magnitude, more than 10 times as large in magnitude as estimates from most of our other specifications. In columns (5) and (6), we obtain estimates of α^- that are similar in magnitude to that in our "preferred" specification, though less precise, but estimates of α^+ are of the wrong sign.

In summary, we prefer to rely on the fixed effects specifications for the main analysis. While the price coefficients obtained in these specifications are sometimes similar in magnitude to those used in our "preferred" demand specification, they are very imprecise and sometimes of the wrong sign. This may be attributable to the fact that these price instruments are constructed from a one-time legislative change and do not exhibit any year-to-year variation, which makes them less suitable for our analysis.

B.3. Instruments for Plan's MA Share

In Appendix Table B3, we show demand estimates from specifications using several different instruments for ln(plan MA share). Each of these instruments captures the degree of competition present in each market. Column (1) shows a specification identical to the "preferred" demand specification in column (4) of Table 2, except that there is no heterogeneity by consumer group. This specification includes two instruments for ln(plan MA share): the number of contracts in the county, and the number of insurers in the service area.

Recall that within each year, an MA plan serves a collection of counties that comprise the MA plan's "service area," and that a plan sets one bid for the entire service area. We therefore construct two sets of instruments (defined within an observation year): the number of insurers, number of contracts, or number of plans in the plan's county; and the number of insurers, number of contracts, or number of plans in the plan's service area. Columns (2) through (5) show results from each of the alternative instruments not used in the "preferred" specification. Column (6) shows results from combining all six possible instruments in one specification. In each of the cases shown in columns (2) through (6), we obtain estimated price coefficients that are very similar to those in column (1). The estimates of α^- range from -0.002 to -0.003, compared to -0.003 in column (1). The estimates of α^+ range from -0.001 to -0.004, compared to -0.004 in column (1). Implied mean elasticities range from -2.428 to -3.375, which is quite similar to the implied mean elasticity of -2.406 in column (1). Thus, the choice of instrument for ln(plan MA share) makes almost no difference in the estimated price coefficients.

B.4. Alternative Fixed Effects Models

Appendix Table B4 shows demand estimates using various combinations of year, county, contract, and plan fixed effects. Each of the columns also includes fixed effects for plan quality indicators. There is one indicator for each possible "plan quality" rating, from 2.5 stars up to 5 stars. Column 1 shows a specification identical to the "preferred" demand specification in column (4) of Table 2, except that there is no heterogeneity by consumer group. The "preferred" specification in column (1) has year and contract fixed effects. In column (2), we do not include any fixed effects other than the plan quality fixed effects. In columns (3) and (4), we add in either year fixed effects or contract fixed effects, respectively. In column (5), we include year, county, and contract fixed effects. In column (6), we include year, contract, and plan fixed effects. Finally, in column (7) we include all possible fixed effects: year, county, contract, and plan. In columns (2) through (7), estimates of α^- are very similar, ranging from -0.001 to -0.002, compared to -0.003 in column (1). Thus, including various combinations of fixed effects has essentially no impact on the price coefficient α^-, which is relevant for the vast majority of plans, since 96 percent of plans bid below the benchmark. Estimates of α^+ vary slightly more, ranging from -0.012 in columns (2) and (3) to -0.003 in columns (4) and (5). The estimate of α^+ in column (1), which is -0.004, falls within this range. In summary, including additional fixed effects leads to an implied mean elasticity that is slightly smaller in magnitude (-0.750) compared to the mean elasticity in the "preferred" specification (-2.406), but these differences are not sufficiently large to impact the conclusions from our main analysis.

B.5. Incentives for Risk Selection

Prior to the introduction of risk scoring, insurers had a clear incentive to enroll healthier beneficiaries and there is considerable evidence that they did. There is evidence on this dating back at least to Eggers (1980) and Eggers and Prihoda (1982). We observed in Section 3 that MA enrollees today continue to have lower risk scores and lower mortality conditional on risk score. Of course, if bidding is sufficiently competitive, cost savings from favorable risk selection will translate to lower bids and be competed away. From the perspective of bidding competition, a crucial issue is whether bidding incentives on the margin are affected by risk selection. In particular, a key question is whether firms might avoid low bids to maintain more favorable enrollee characteristics. In the context of our empirical approach, we also propose to infer each plan's costs from observed bids. If a higher bid leads to significantly healthier enrollees, we would need to account for this in our estimation.

We therefore want to assess whether plans have an incentive to adjust their bids in order to change the risk composition of their enrollees. To do this, we consider specifications that are identical to those used for our demand estimates in Table 2, but where the dependent variables are measures of expected insurer costs. In Appendix Table B5, we examine the extent to which there is a relationship between price (insurer bid) and two measures of expected insurer costs for MA enrollees: the mean risk score of an MA plan's enrollees and a measure of conditional mortality. This allows us to look separately at selection on observables and selection on unobservables.

Columns (1) through (3) of Appendix Table B5 report results where the dependent variable is the mean risk score, and include different combinations of year and contract fixed effects. In column (3), which corresponds to the "preferred" demand specification used in the main analysis, we estimate that when bids are below the benchmark, a \$10 increase in b is associated with a 0.001 decrease in mean risk score, or a 0.16 percent decrease in mean risk (relative to a mean of 0.905). Even if a plan were to move its bid from the 50th percentile to the 25th percentile, which is a \$33 decrease, this would be associated with only a 0.005 (0.53 percent) increase in mean risk score. When bids are above the benchmark, a \$10 increase in b is associated with a 0.02 increase in mean risk score, off of a mean of 0.905, or a 2.00 percent increase in mean risk. Note that this somewhat larger coefficient is not empirically relevant, as the vast majority (96 percent) of plan bids are below the benchmark. Overall, we conclude that for plan bids below the benchmark, even a relatively large bid change is associated with a relatively modest change in mean risk score. It is therefore unlikely that plans have very strong incentives to adjust their bids to account for effects on enrollee composition. Furthermore, because all MA payments are risk adjusted, even these small effects on risk score composition do not affect plan bidding incentives, to the extent that risk adjustment captures differences in underlying costs.

In columns (4) through (6) of Appendix Table B5, we explore impacts on plan bidding incentives in the case where risk adjustment does not fully capture differences in expected insurer costs.

These columns are identical to columns (1) through (3), but the dependent variable is a measure of conditional mortality. The measure of conditional mortality is 100 times the mean mortality rate of an MA plan's enrollees, divided by the mean risk score of an MA plan's enrollees. This measure captures differences in mortality that remain even after accounting for differences in mean risk score. We interpret this as a proxy for health and expected insurer costs. In column (6), which corresponds to the "preferred" demand specification used in the main analysis, we estimate that when bids are below the benchmark, a \$10 increase in b is associated with a 0.036 increase in the conditional mortality measure, off of a mean of 3.271, or a 1.1 percent increase. When bids are above the benchmark, a \$10 increase in b is associated with a 0.074 increase in the conditional mortality measure, off of a mean of 3.271, or a 2.3 percent increase in the conditional mortality measure. These effects are not trivial but they are still relatively small in magnitude.

From these two sets of exercises, we conclude that there is not a robust relationship between MA plan bid and our two measures of expected insurer costs. That is, changes in plan bids do not have much effect on a plan's risk composition. Thus, abstracting from this complication is unlikely to affect our overall results. Taking it into account would lead to somewhat higher cost estimates following the logic of Section 3.

Appendix C: Computations and Counterfactual Exercises

C.1. Variable Definitions

A *market* is a county-year and markets are indexed by k. Years are indexed by t. A *plan* is a unique Medicare Advantage plan benefit package and plans are indexed by j. A plan's *service area* is the set of counties where the plan is offered, which is fixed for each calendar year but may change from year to year. The *plan bid* is denoted by b_{jt} and is defined as the bid that an MA plan submits as its cost to cover an enrollee in its service area with risk score 1. In each year, a plan submits only one standardized plan bid for its entire service area. The plan bid in each market, denoted b_{jk}, is defined based on b_{jt} and projected enrollment weights for counties in the plan's service area. The *benchmark* is denoted by B_k and is the administrative CMS benchmark rate for market k, which varies at the market (county-year) level. The *plan benchmark* is denoted by B_{jk} and is defined as the plan-specific benchmark in market k, which is the mean of the benchmarks for all counties in the plan's service area, weighted by projected enrollment weights submitted by the plan to CMS. A plan j's *excess bid* is denoted by $p_{jk} = b_{jk} - B_k$. A plan j's *excess bid above* *the benchmark* is $p_{jk}^{+} = (b_{jk} - B_k) \cdot \mathbf{1}\{b_{jk} > B_k\}$. A plan j's *excess bid below the benchmark* is $p_{jk}^{-} = (b_{jk} - B_k) \cdot \mathbf{1}\{b_{jk} \leq B_k\}$. An individual's *Medicare enrollee risk-months* in year t is defined as the product of the individual's risk score and total months of enrollment in year t. The *Medicare enrollee risk-months* for plan j in market k is defined as the sum of Medicare enrollee risk-months for individuals enrolled in plan j in market k. The *market share of plan j in market k* is denoted by s_{jk} and is defined as the proportion of market k's Medicare enrollee risk-months enrolled in plan j. The *market share of traditional Medicare in market k*, also known as the *market share of plan 0 in market k*, is denoted by s_{0k} and is defined as the proportion of market k's Medicare enrollee risk-months enrolled in traditional Medicare. The *within-MA market share of plan j in market k* is denoted by $\bar{s}_{jk}$ and is defined as the proportion of market k's Medicare Advantage enrollee risk-months enrolled in plan j.

C.2. Demand Estimation

We estimate the demand system described in the main text using the generalized method of moments (GMM). We impose a supply-side moment using the average costs based on claims data from plans offered by three large private insurers (Aetna, Humana, and UnitedHealth) in a single year (2010), as reported in Curto et al. (2019). These plans are a subset of our data, and cover approximately half of the Medicare Advantage enrollees during that year.

The demand estimation procedure relies on the property of the logit (and nested logit) model, which simplifies the computation. Specifically, in logit models the implied markups are only a function of observed market shares and the price coefficients (and in our case, also the nested logit σ parameter). This allows us to partition the parameters to those that affect the markups (and thus affect the supply side moment) – the eight αs and σ – and those that don't (β). Conditional on the former, the latter (β) do not affect the supply-side moment and are not associated with any endogeneity concerns (given our assumptions), so can be obtained in closed form using OLS. Given the large set of fixed effects, this dramatically simplifies computation as it means that we can perform the non-linear optimization only over the first set of parameters (the eight αs and σ). Consequently, the detailed description of the estimation procedure is as follows:

1. We start with initial values $\{\tilde{\alpha}_h^-, \tilde{\alpha}_h^+\}_{h=1}^{H}$ and $\tilde{\sigma}$.

2. We estimate an OLS regression:

$$\ln(s_{hjk}) - \ln(s_{h0k}) - (\tilde{\sigma}\ln(\bar{s}_{hjk}) - \tilde{\alpha}_h^+ p_{jk}^+ - \tilde{\alpha}_h^- p_{jk}^-) = x_{jk}'\beta + \epsilon_{hjk}$$

to obtain estimates $\tilde{\beta}$ of the coefficients β.

3. Using the estimates $\tilde{\beta}$ and initial values $\{\tilde{\alpha}_h^-, \tilde{\alpha}_h^+\}_{h=1}^H$ and $\tilde{\sigma}$, we compute residuals:

$$\tilde{\epsilon}_{hjk} = \ln(s_{hjk}) - \ln(s_{h0k}) - x_{jk}'\tilde{\beta} - (\sigma\ln(\bar{s}_{hjk}) - \alpha_h^+ p_{jk}^+ - \alpha_h^- p_{jk}^-).$$

4. Our first set of moment conditions $\hat{m}(\theta)$ consists of:

$$\frac{1}{n}\sum x_{jk}\tilde{\epsilon}_{hjk} = 0,$$
$$\frac{1}{n}\sum z_{jk}\tilde{\epsilon}_{hjk} = 0$$

for each covariate x_{jk} and instrument z_{jk} from our demand specification.

5. We add an additional "supply-side" moment. We evaluate mark-ups implied by the initial values $\{\tilde{\alpha}_h^-, \tilde{\alpha}_h^+\}_{h=1}^H$ and $\tilde{\sigma}$ (using the formulas provided in Appendix C.4), compute implied costs $\hat{c}$ and then evaluate a moment condition:

$$\hat{c} - \bar{c}_{AHU},$$

i.e., the difference between implied costs $\hat{c}$ and average costs for MA plans in the Aetna-Humana-UnitedHealth (in 2010) sample used in Curto et al. (2019), denoted $\bar{c}_{AHU}$.

6. We find the parameters $\theta = (\{\alpha_h^-, \alpha_h^+\}_{h=1}^H, \sigma, \beta)$ that solve:

$$\hat{\theta} = \text{argmin}_{\theta\in\Theta}(\hat{m}(\theta))'\hat{W}(\hat{m}(\theta)).$$

7. Finally, we start with a low weight on the supply-side moment and gradually increase it until the moment is almost perfectly matched (this is achieved for a weight of one – so that $\hat{W}$ is equal to the identity matrix – in our preferred demand specification in column (4) of Table 2, and to a weight of 100 in our other demand specifications (columns (1) through (3) of Table 2). This "weight adjustment" is essentially equivalent to a constrained optimization that uses

the demand moments alone (where the constraint is that the parameters should make the single supply-side moment match).

In the demand table with estimates from the main specifications, we also report bootstrapped standard errors. In order to compute these standard errors, we use the following procedure:

1. We draw a random sample of markets, with replacement, that is the same size as the number of markets in our data set.

2. For each bootstrap sample, we repeat the demand estimation procedure above in order to obtain estimates of all demand parameters.

3. We repeat the bootstrapping procedure B times (using $B = 50$).

4. For each demand parameter θ, we compute the standard deviation using the bootstrap estimates θ_b of the demand parameter θ, i.e.,

$$s = \sqrt{\frac{1}{B-1}\sum_{b=1}^{B}(\theta_b - \bar{\theta})^2}$$

and define this as the standard error.

C.3. Calculating Elasticities

We calculate the own-price elasticity of demand with respect to the plan bid b_j. By definition, the own-price elasticity of demand for plan j in market k is $\theta_{jk} = \frac{\partial Q_{jk}/Q_{jk}}{\partial b_{jk}/b_{jk}}$. Our preferred demand specification is a nested logit specification

$$\ln(s_{hjk}) - \ln(s_{h0k}) = \delta_{hjk} + \sigma \ln(\bar{s}_{hjk})$$

with

$$\delta_{hjk} = x'_{jk}\beta - \alpha_h^+ p_{jk}^+ - \alpha_h^- p_{jk}^- + \xi_{jk}$$

and where h indexes consumer groups, j indexes plans, and k indexes markets. Noting that the nested logit market share is given by

$$s_{hjk} = \frac{\exp\left(\frac{\delta_{hjk}}{1-\sigma}\right)}{\sum_{j>0} \exp\left(\frac{\delta_{hjk}}{1-\sigma}\right)} \cdot \frac{\left[\sum_{j>0} \exp\left(\frac{\delta_{hjk}}{1-\sigma}\right)\right]^{1-\sigma}}{\exp(\delta_0) + \left[\sum_{j>0} \exp\left(\frac{\delta_{hjk}}{1-\sigma}\right)\right]^{1-\sigma}},$$

we differentiate the expression for s_{hjk} to obtain

$$\frac{\partial s_{hjk}}{\partial \delta_{hlk}} = s_{hjk}\left(\frac{1-\bar{s}_{hjk}}{1-\sigma} + \bar{s}_{hjk}s_{h0k}\right) \text{ if } j = l,$$
$$\frac{\partial s_{hjk}}{\partial \delta_{hlk}} = s_{hjk}\bar{s}_{hlk}\left(\frac{1}{1-\sigma} - s_{h0k}\right) \text{ if } j \neq l.$$

Letting M_k denote the size of market k, we have $Q_{jk} = M_k \cdot s_{jk}$. Then

$$\theta_{jk} = \frac{\partial Q_{jk}}{\partial b_{jk}} \cdot \frac{b_{jk}}{Q_{jk}} = \frac{\partial s_{jk}}{\partial b_{jk}} \cdot \frac{b_{jk}}{s_{jk}}.$$

In our preferred specification, there are four consumer groups $h = 1, \ldots, H$, each with market size M_k^h. Then

$$s_{jk} = \frac{Q_{jk}}{M_k} = \sum_{h=1}^{H} \frac{Q_{jk}^h}{M_k} = \sum_{h=1}^{H} \frac{Q_{jk}^h}{M_k^h} \cdot \frac{M_k^h}{M_k} = \sum_{h=1}^{H} s_{hjk} \cdot \frac{M_k^h}{M_k}$$

and

$$\frac{\partial s_{jk}}{\partial b_{lk}} = \sum_{h=1}^{H} \frac{\partial s_{hjk}}{\partial b_{lk}} \cdot \frac{M_k^h}{M_k}$$

where

$$\frac{\partial s_{hjk}}{\partial b_{lk}} = \frac{\partial s_{hjk}}{\partial \delta_{hlk}} \cdot (-\alpha_h^- \cdot \mathbf{1}\{b_{lk} \leq B_k\} - \alpha_h^+ \cdot \mathbf{1}\{b_{lk} > B_k\}).$$

We compute θ_{jk} for each plan-market pair (j, k) and report the mean, weighted by MA enrollee risk-months, in Table 2.

C.4. Calculating Markups and Costs

In the text we show that, for a given market, optimal bidding implies the first-order conditions

$$c = b + (\Omega \cdot D_b Q)^{-1} Q$$

where c, b, and Q are J-dimensional vectors of the implied costs, observed bids, and observed shares, respectively, $D_b Q$ is the estimated matrix of own- and cross-bid derivatives, and Ω is the ownership matrix. In this section, we discuss how we compute the markup vector $(\Omega \cdot D_b Q)^{-1} Q$.

We compute markups separately for each market. For a given market, suppose there are J plans. We define a $J \times J$ matrix $D_b Q$ with entries

$$(D_b Q)_{jl} = \frac{\partial s_l}{\partial b_j}$$

(note that the index l that corresponds to the column is the same as the index l that corresponds to the market share). We use the estimates that we obtain from the nested logit estimation, $\hat{\alpha}$ and $\hat{\sigma}$, to compute the entries of $D_b Q$ for each market. We define the ownership matrix Ω with entries

$$(\Omega)_{jl} = \mathbf{1}\{\text{plans } j \text{ and } l \text{ owned by same MA parent organization}\}.$$

Then we compute $-(\Omega \cdot \hat{D_b Q})^{-1} Q$, which gives a vector of plan markups for the market. We also obtain a vector of implied plan costs $\hat{c} = b + (\Omega \cdot \hat{D_b Q})^{-1} Q$.

C.5. Counterfactuals

In this section, we discuss the steps used to compute optimal bids and other counterfactual outcomes for the policy exercises discussed in the paper. A subset of the counterfactuals is reported in Table 3. The remaining counterfactuals are reported in Appendix Table C1. For each of the counterfactuals, we use the estimates of $\{\alpha_h^-, \alpha_h^+\}_{h=1}^H$ and σ obtained from the preferred demand specification reported in Table 2. We also use the implied plan costs $\hat{c}$ computed using the method described in the previous section. The steps to compute the counterfactuals are as follows:

1. Fix a particular market k. For each counterfactual, we solve for optimal bids separately for each market. Suppose there are J plans in the market, indexed by j.

2. Create a vector of counterfactual benchmark rates. Note that in our policy experiments, we

sometimes change benchmark rates by a uniform dollar amount, or we sometimes replace benchmark rates so that they are proportional to TM costs.

3. Create variables for the counterfactual rebate pass-through rate, as well as estimates of plan quality $\hat{\delta_j} = \ln(s_j) - \ln(s_0) - \hat{\sigma}\ln(\bar{s}_j)$.

4. Set several parameters that affect convergence: tolerance of 0.1, step size of 0.1, and maximum iterations of 500.

5. We define some notation for vectors that are computed as part of the iterative procedure described below. Let $\tilde{b}$ denote the vector of plan bids at a particular step in the iteration, let b^* denote the optimal bid obtained within an iteration by solving the insurer first-order condition, let $\tilde{s}$ denote the vector of plan market shares at a particular step in the iteration, and let s^* denote the implied market share obtained within an iteration given a vector of bids and the counterfactual parameters.

6. Iterate the following steps until one of the two convergence criteria (defined below) is achieved (or the maximum iterations has been reached).

   (a) For the first iteration, initialize the vector $\tilde{b}$ to the plan bids observed in the data. Also initialize $\tilde{s}$ to the plan market shares observed in the data.

   (b) Given the bids $\tilde{b}$ and the counterfactual benchmark rates and counterfactual rebate pass-through rates, solve for new implied market shares s^*. Note that these implied market shares also depend on the values of $\hat{\delta_j}$.

   (c) Given the new implied market shares s^* and the counterfactual benchmark rates and counterfactual rebate pass-through rates, use the insurer first-order condition to solve for new optimal bids b^*.

   (d) Using the current "guess" for the optimal plan bids $\tilde{b}$ and the new optimal bids b^*, interpolate between the two to define a new "guess" for the optimal plan bids as $\tilde{b} = (1 - (\text{step size})) \cdot \tilde{b} + (\text{step size}) \cdot b^*$.

   (e) Compute the first convergence criterion, which is that $\Delta = \frac{1}{J}\sum_{j=1}^{J} \left| b^* - \tilde{b} \right| + 100 \cdot \frac{1}{J}\sum_{j=1}^{J} |s^* - \tilde{s}| <$ tolerance. Let Δ_i denote the value of the first convergence criterion for iteration i.

(f) If the number of iterations is greater than 200, then also compute the second convergence criterion. Let i denote the number of the current iteration. The second convergence criterion is defined as $\left|\sum_{l=i-10}^{i-1} \Delta_l - \sum_{l=i-20}^{i-11} \Delta_l\right| < \frac{\text{tolerance}}{10}$.

7. Using this iterative procedure, we obtain a vector of optimal plan bids for each counterfactual (all of the markets converge according to at least one of the two convergence criteria we define above).

8. For a given market k, compute counterfactual market-level consumer surplus using the expression

$$\tilde{CS} = \sum_i \frac{1}{\hat{\alpha}_{h(i)}^{+}} \ln\left[1 + \exp\left((1-\hat{\sigma})\ln\left[\sum_{j=1}^{J} \exp\left(\frac{\tilde{\delta}_{h(i)j}}{1-\hat{\sigma}}\right)\right]\right)\right]$$

where $\tilde{\delta}_j$ denotes counterfactual plan quality given the counterfactual's optimal plan bids. Also compute consumer surplus excluding the component of plan quality generated by rebate dollars, i.e.,

$$\tilde{CS}^{No\ Rebate} = \sum_i \frac{1}{\hat{\alpha}_{h(i)}^{+}} \ln\left[1 + \exp\left((1-\hat{\sigma})\ln\left[\sum_{j=1}^{J} \exp\left(\frac{\tilde{\delta}_{h(i)j}^{No\ Rebate}}{1-\hat{\sigma}}\right)\right]\right)\right]$$

where $\tilde{\delta}_j^{No\ Rebate}$ is equal to $\tilde{\delta}_j$ minus the component that is generated by the rebate.

9. Given the optimal plan bids obtained, recompute all variables that are a function of the plan bids (rebate, premium, payments to plans, insurer profits, etc.) and report per enrollee-month means in Table 3 and Appendix Table C1.

Appendix D: Construction of Predicted TM Costs for MA Enrollees

D.1. Comparison with MedPAC and Alternative Approaches

In order to construct predicted TM costs for MA enrollees, we first use the Medicare claims data to construct TM costs at the county-year level. The resulting mean TM costs differ slightly from those published by CMS and used by MedPAC to benchmark the MA program (MedPAC, 2012). CMS publishes county-year-level TM costs based on all aged Medicare beneficiaries (including dual eligibles). Mechanically, CMS adds up TM costs for each county-year and divides by 12 times the number of TM enrollees in the county-year (this is done separately for Parts A and B). This is reported as a monthly TM cost. For this sample, the average risk score should be approximately 1. It need not be exactly 1, since the risk adjustment model is calibrated separately on a subsample of TM enrollees. CMS does not report any risk-adjusted measures of TM costs.

Like CMS, we construct annual county-level TM costs based on all aged Medicare beneficiaries (including dual eligibles). However, our approach slightly differs. For each county-year, we add up TM costs and divide by the total number of TM risk-months in the county-year. Dividing by TM risk-months instead of TM enrollees is important for our exercise for two reasons. The first is that we obtain a risk-adjusted measure of monthly TM costs. The second is that our denominator is scaled by the number of months that a TM enrollee is actually enrolled, which is 11.3 on average (due to mortality as well as mid-year enrollment of newly eligible Medicare beneficiaries). Thus, we construct a monthly flow cost for TM coverage per insured risk unit, rather than computing the annual TM cost divided by 12. For a detailed comparison of the two approaches, see Appendix Table A7 in Curto et al. (2014).

Our predicted TM costs are relatively simple, but it is possible to consider several possible elaborations.

1. Allow TM costs to scale non-linearly with risk score. We estimate a Poisson model of TM costs with $E[x_i] = \exp(\alpha_k + \beta_k \ln r_i)$, and also with quadratic and cubic terms for $\ln r$, allowing the α_k and β_k parameters to vary with county-year. We obtain slope parameters β_k slightly above 1, but the overall model does not have superior in-sample fit to the model above.

2. Allow the degree of residual selection to vary with plan type, with county-year, or with risk score. One could use proxies other than mortality to estimate the degree of residual selection. We focus on mortality because we observe it reliably for all beneficiaries.

3. Estimate a predictive model of TM costs using the underlying disease codes, while attempting to adjust for differential coding across TM and MA. This might be something to consider in future work.

D.2. Using Conditional Mortality to Rescale MA Risk Scores

In this section, we provide details for how we use mortality conditional on risk score in order to rescale MA risk scores to make them comparable to TM risk scores. This adjustment is a way to account for the fact that MA enrollees may be less costly than TM enrollees, even conditional on risk score. These cost differences conditional on risk score may arise because the risk score does not fully capture differences in health or preferences for consuming health care. These cost differences conditional on risk score may also arise due to the fact that MA insurers typically code health diagnoses more intensively than TM does (Geruso and Layton, 2015). Adjusting MA risk scores is relevant for computing predicted TM costs for MA enrollees. We define predicted TM costs as the TM costs that MA enrollees would have incurred had they been enrolled in TM.

As we discuss in the paper, we let $\mu_{TM}(r)$ and $\mu_{MA}(r)$ denote the one-year mortality rates of TM and MA enrollees, respectively. Assuming both rates are strictly increasing in r (and that expected costs scale proportionately with mortality rate), we can define $\Lambda(r)$ to be an increasing function such that $\mu_{TM}(\Lambda(r)) = \mu_{MA}(r)$. To operationalize this, we compute a single scaling factor λ_t for each year, so that in year t we have $\Lambda_t(r) = \lambda_t \cdot r$. In other words, we assume that if an MA enrollee is observed to have risk score r in the data, then we can multiply this risk score r by λ_t in order to obtain the comparable risk score in TM.

In the following, we outline the steps to compute the λ_t scaling factor for each year in our data. The steps are as follows:

1. We construct a geographically balanced sample of MA and TM enrollees by randomly dropping TM enrollees in each county-year until their total number equals the total number of MA enrollees in that county-year (or vice versa if MA enrollees happen to be the majority, which is unusual). After trimming a very small number of outliers (risk scores above 10), this leaves us with a geographically balanced sample of 25,249,683 MA enrollee-years and 25,327,853 TM enrollee-years over the entire sample period from 2006 through 2011.

2. We create risk score bins of width 0.05 for risk scores between 0.3 and 3 and of width 0.25 for risk scores between 3 and 10.

3. For each bin, we compute mean TM risk score, mean TM mortality, mean MA risk score, and mean MA mortality (weighting everyone within the bin equally).

4. We sort all bins by TM mortality. We also sort all bins by MA mortality. This gives us a monotone function from risk score to mortality; one function for TM enrollees and one function for MA enrollees. Thus, each bin is associated with a "sorted" TM mortality rate and a "sorted" MA mortality rate.

5. For each bin, we find the maximum value of sorted TM mortality that is less than or equal to the value of sorted MA mortality associated with that bin (this is the TM mortality lower

bound). We then find the mean TM risk score that corresponds to this TM mortality lower bound, which gives us an "implied lower risk score" for that bin (lower bound on the TM risk score associated with that bin).

6. For each bin, we find the minimum value of sorted TM mortality that is greater than or equal to the value of sorted MA mortality associated with that bin (this is the TM mortality upper bound). We then find the mean TM risk score that corresponds to this TM mortality upper bound, which gives us an "implied upper risk" for that bin.

7. For each bin, we interpolate in order to assign a TM risk score to the bin. In order to do this, we note that the value of sorted MA mortality is at a certain proportion of the distance between the TM mortality lower bound and the TM mortality upper bound associated with that bin. Then, we assign to this bin the risk score that is at the same proportion of the distance between the implied lower risk score and the implied upper risk score.

8. For each bin, we divide the assigned TM risk score by the mean MA risk score to obtain λ for that particular bin.

9. To obtain an overall value of λ_t for the given observation year, we compute a weighted average of the bin-specific λs, weighting by the number of MA enrollees in each bin. These year-specific λ_t adjustment factors are: 1.077 in 2006, 1.034 in 2007, 0.994 in 2008, 0.962 in 2009, 0.997 in 2010, and 0.994 in 2011.

Appendix E: Additional Figures and Tables

Appendix Figures E1 and E2 and Appendix Tables E1 through E5 report additional results and are referenced in the main text.

Appendix References (to papers not mentioned in the main text)

Curto, Vilsa, Liran Einav, Jonathan Levin, and Jay Bhattacharya. 2014. "Can Health Insurance Competition Work? Evidence from Medicare Advantage."NBER Working Paper No. 20818.

Eggers, Paul. 1980. "Risk Differential between Medicare Beneficiaries Enrolled and Not Enrolled in an HMO." *Health Care Financing Review* 1(3): 91-9.

Appendix Figure E1: The distribution of county benchmarks

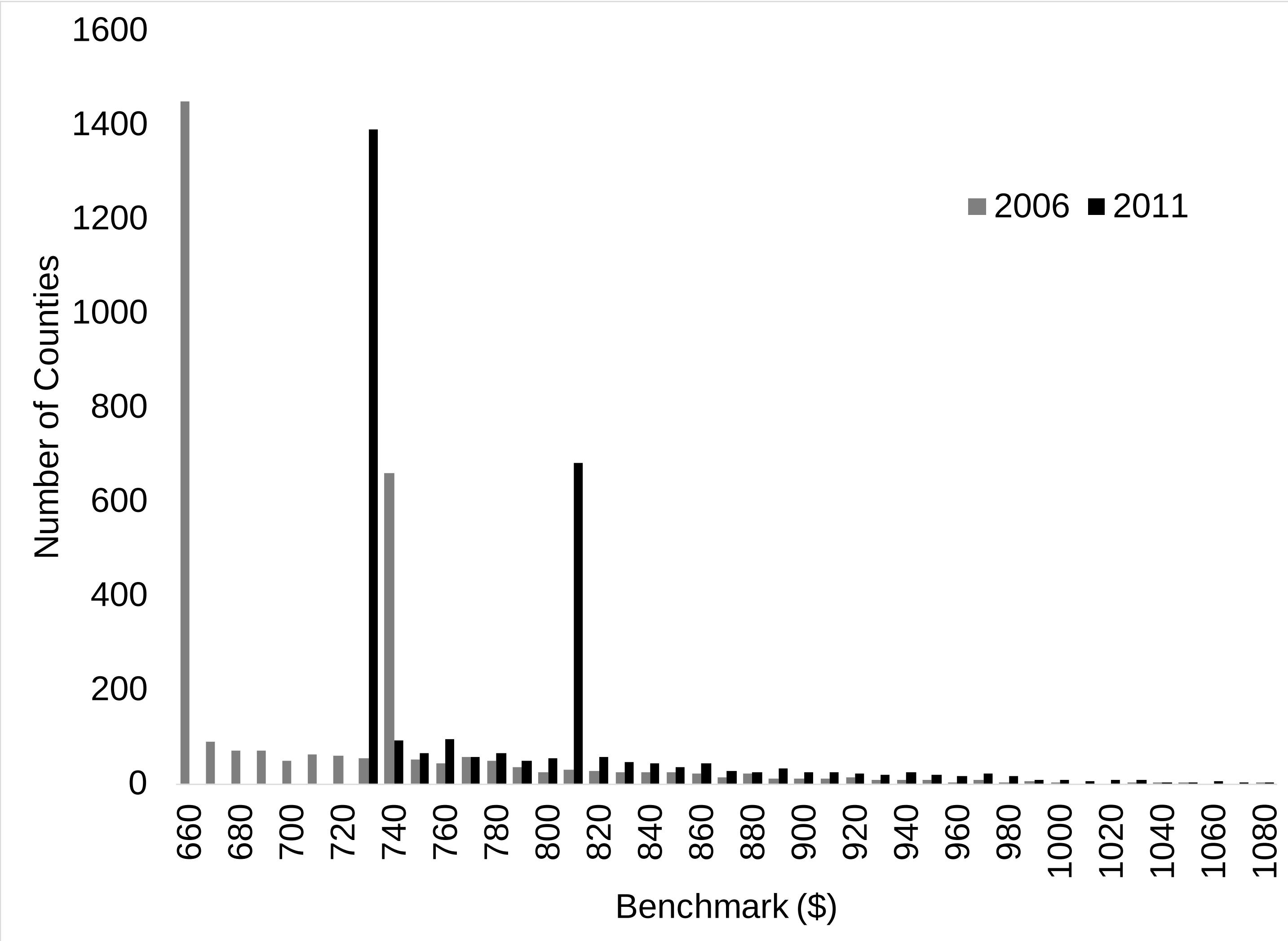

Figure shows the distribution of county-specific benchmarks in 2006 (gray) and 2011 (black), the first and last years of our data. The figure illustrates that a large number of the benchmarks (68% of the counties in 2006, 66% in 2011) are within $10 of the urban and (lower) rural floors, which were established by the Benefits Improvement and Protection Act of 2000. The rest of the counties are associated with other benchmarks, which are distributed over a range of about $200 (per a standardized enrollee-month) above the floor.

Appendix Figure E2: Mortality rates in MA and TM, by risk score

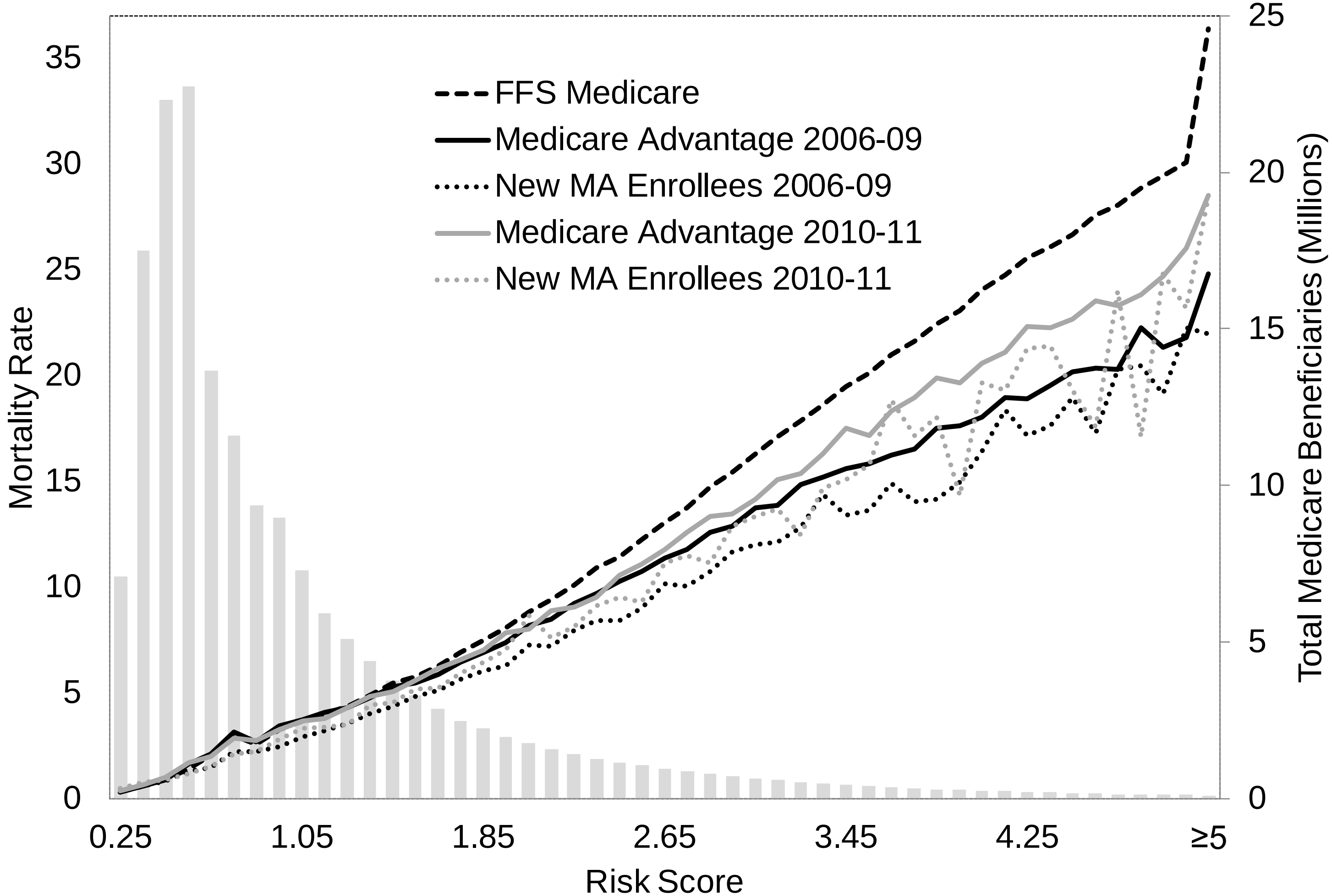

Figure shows the mortality rate (over the subsequent calendar year), by risk score bin (0-0.1, 0.1-0.2, and so on), for beneficiaries who are in traditional Medicare, and in MA plans. Mortality for MA enrollees is plotted separately before and after 2010, when CMS deflated all the MA risk scores to adjust for differential coding. The figure also shows mortality specifically for new enrollees in MA, i.e., Medicare beneficiaries who were in TM the previous year. The gray bars show the underlying distribution of risk scores among Medicare beneficiaries.

Appendix Table A1: Details about the impact of various sample restrictions

	No. of Enrollee-Years	
	Traditional Medicare (1)	Medicare Advantage (2)
Starting sample [a]	228,971,828	60,969,879
	% of Starting Sample	
Dropped from sample because…	Traditional Medicare (1)	Medicare Advantage (2)
Qualifies as ESRD or Disabled during any month of observation year	19.4	12.5
Months enrolled in Part A not same as months enrolled in Part B	9.3	0.1
Age on December 31 is less than 65	0.2	0.0
Has non-Medicare primary payer	4.4	3.8
Lives in Alaska, Guam, Puerto Rico, or Virgin Islands	0.4	2.7
Invalid county identifier	0.1	4.8
In Long-Term Institutional (LTI) care	2.7	1.4
Missing or invalid risk score	0.0	0.0
Does not appear in MA payments records		0.1
Missing data on MA plan bid		0.1
Enrolled in Part B Only plan		0.0
Enrolled outside of official plan service area		4.5
Enrolled in plan type other than Local CCP or PFFS		1.1
Enrolled in employer-sponsored 800 series plan		13.2
Enrolled in Special Needs Plan (SNP)		4.4
Enrolled in Private Fee-for-Service (PFFS) plan		8.3
	No. of Enrollee-Years	
	Traditional Medicare (1)	Medicare Advantage (2)
Final sample	145,321,124	26,218,507

Table shows the percentage of Traditional Medicare (TM) and Medicare Advantage (MA) enrollees dropped from the sample due to various restrictions. [a] The starting sample is all individuals enrolled in Medicare during any month of the observation year.

Appendix Table B1: Demand estimates across alternative sample definitions

	Dependent variable: ln(plan share) - ln(TM share)					
	(1)	(2)	(3)	(4)	(5)	(6)
(b - B) x I{b ≤ B}	-0.003 ***	-0.004 ***	-0.004 ***	-0.006 ***	-0.003 ***	-0.004 ***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
(b - B) x I{b > B}	-0.004	-0.005	-0.024 ***	-0.029 ***	-0.005	-0.006
	(0.003)	(0.005)	(0.005)	(0.005)	(0.004)	(0.005)
ln(plan MA share)	0.332 ***	0.277 ***	0.361 ***	0.409 ***	0.240 ***	0.207 ***
	(0.037)	(0.045)	(0.016)	(0.027)	(0.034)	(0.038)
Mean of dependent variable	-5.008	-4.887	-5.276	-5.393	-5.071	-4.925
Mean elasticity (risk-month-weighted)	-2.406	-3.676	-4.403	-7.509	-2.454	-3.546
No. of observations	44,044	44,044	113,235	113,235	44,044	44,044
No. of clusters	506	506	582	582	506	506
PFFS plans included	N	N	Y	Y	Y (classified as TM)	Y (classified as TM)
Dual eligibles included	Y	N	Y	N	Y	N
Instruments for ln(plan MA share)	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area
Plan rating FEs (for each half-star)	Y	Y	Y	Y	Y	Y
Year FEs	Y	Y	Y	Y	Y	Y
Contract FEs	Y	Y	Y	Y	Y	Y

Table presents demand regression results at the market-plan level. The unit of observation is a market-plan (a market is a county-year). Standard errors are clustered at the contract level. The plan's standardized bid is denoted by b and the plan's benchmark is denoted by B. The table reports the mean of the own-price demand elasticities with respect to b (weighted by enrollee risk-months; further details are provided in Appendix B and C). *p < 0.1, **p < 0.05, ***p < 0.01.

Appendix Table B2: Demand estimates from various strategies to instrument for price

	Dependent variable: ln(plan share) - ln(TM share)					
	(1)	(2)	(3)	(4)	(5)	(6)
(b - B) x I{b ≤ B}	-0.003 ***	-0.006 **	0.011	0.011	-0.007 *	-0.005
	(0.001)	(0.003)	(0.009)	(0.009)	(0.004)	(0.003)
(b - B) x I{b > B}	-0.004	0.011	-0.079 *	-0.072 *	0.016	0.004
	(0.003)	(0.014)	(0.041)	(0.038)	(0.019)	(0.014)
ln(plan MA share)	0.332 ***	0.372 ***	0.167 *	0.168 *	0.361 ***	0.332 ***
	(0.037)	(0.040)	(0.095)	(0.096)	(0.049)	(0.042)
Mean of dependent variable	-5.008	-5.008	-5.008	-5.008	-5.008	-5.008
Mean elasticity (risk-month-weighted)	-2.406	-5.561	6.428	6.364	-6.107	-4.107
No. of observations	44,044	44,044	44,044	44,044	44,044	44,044
No. of clusters	506	506	506	506	506	506
Instruments for price	None	Benchmark	Distance to floor (BIPA)	Change in 2001 (BIPA)	Distance to floor (BIPA), change in 2001 (BIPA)	Benchmark, distance to floor (BIPA), change in 2001 (BIPA)
Instruments for ln(plan MA share)	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area
Plan rating FEs (for each half-star)	Y	Y	Y	Y	Y	Y
Year FEs	Y	Y	Y	Y	Y	Y
Contract FEs	Y	Y	Y	Y	Y	Y

Table presents demand regression results at the market-plan level. The unit of observation is a market-plan (a market is a county-year). Standard errors are clustered at the contract level. The plan's standardized bid is denoted by b and the plan's benchmark is denoted by B. The table reports the mean of the own-price demand elasticities with respect to b (weighted by enrollee risk-months; further details are provided in Appendix C). Details on instruments for price are provided in Appendix B. *p < 0.1, **p < 0.05, ***p < 0.01.

Appendix Table B3: Demand estimates using different instruments for MA share

	Dependent variable: ln(plan share) - ln(TM share)					
	(1)	(2)	(3)	(4)	(5)	(6)
(b - B) x I{b ≤ B}	-0.003 ***	-0.003 ***	-0.003 ***	-0.002 ***	-0.002 ***	-0.003 ***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)
(b - B) x I{b > B}	-0.004	-0.004	-0.004	-0.003	-0.001	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ln(plan MA share)	0.332 ***	0.348 ***	0.363 ***	0.481 ***	0.658 ***	0.364 ***
	(0.037)	(0.039)	(0.037)	(0.067)	(0.101)	(0.037)
Mean of dependent variable	-5.008	-5.008	-5.008	-5.008	-5.008	-5.008
Mean elasticity (risk-month-weighted)	-2.406	-2.428	-2.451	-2.683	-3.375	-2.453
No. of observations	44,044	44,044	44,044	44,044	44,044	44,044
No. of clusters	506	506	506	506	506	506
Instruments for ln(plan MA share)	No. of contracts in county, no. of insurers in service area	No. of insurers in county	No. of plans in county	No. of contracts in service area	No. of plans in service area	No. of insurers, contracts, plans in county; no. of insurers, contracts, plans in service area
Plan rating FEs (for each half-star)	Y	Y	Y	Y	Y	Y
Year FEs	Y	Y	Y	Y	Y	Y
Contract FEs	Y	Y	Y	Y	Y	Y

Table presents demand regression results at the market-plan level. The unit of observation is a market-plan (a market is a county-year). Standard errors are clustered at the contract level. The plan's standardized bid is denoted by b and the plan's benchmark is denoted by B. The table reports the mean of the own-price demand elasticities with respect to b (weighted by enrollee risk-months; further details are provided in Appendix C). Details on instruments for ln(plan MA share) are provided in Appendix B. *p < 0.1, **p < 0.05, ***p < 0.01.

Appendix Table B4: Demand estimates from alternative choices of fixed effects

	Dependent variable: ln(plan share) - ln(TM share)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(b - B) x I{b ≤ B}	-0.003 ***	-0.001 *	-0.001 *	-0.002 ***	-0.001 *	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
(b - B) x I{b > B}	-0.004	-0.012	-0.012	-0.003	-0.003	-0.010 ***	-0.009 ***
	(0.003)	(0.008)	(0.009)	(0.003)	(0.002)	(0.004)	(0.003)
ln(plan MA share)	0.332 ***	0.470 ***	0.464 ***	0.289 ***	0.643 ***	0.117	0.250 ***
	(0.037)	(0.040)	(0.040)	(0.042)	(0.040)	(0.075)	(0.079)
Mean of dependent variable	-5.008	-5.008	-5.008	-5.008	-5.008	-5.008	-5.008
Mean elasticity (risk-month-weighted)	-2.406	-1.722	-1.685	-1.772	-0.972	-0.759	-0.750
No. of observations	44,044	44,044	44,044	44,044	44,044	44,044	44,044
No. of clusters	506	506	506	506	506	506	506
Instruments for ln(plan MA share)	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area
Plan rating FEs (for each half-star)	Y	Y	Y	Y	Y	Y	Y
Year FEs	Y	N	Y	N	Y	Y	Y
County FEs	N	N	N	N	Y	N	Y
Contract FEs	Y	N	N	Y	Y	Y	Y
Plan FEs	N	N	N	N	N	Y	Y

Table presents demand regression results at the market-plan level. The unit of observation is a market-plan (a market is a county-year). Standard errors are clustered at the contract level. The plan's standardized bid is denoted by b and the plan's benchmark is denoted by B. The table reports the mean of the own-price demand elasticities with respect to b (weighted by enrollee risk-months; further details are provided in Appendix B and C). *p < 0.1, **p < 0.05, ***p < 0.01.

Appendix Table B5: The effect of bids on plan risk pool

	Dependent variable: Mean risk score of MA plan enrollees			Dependent variable: 100 x (mean mortality rate / mean risk score) of MA plan enrollees		
	(1)	(2)	(3)	(4)	(5)	(6)
(b - B) x I{b ≤ B}	-0.001 ***	-0.001 ***	-0.0001	0.002 ***	0.002 ***	0.004 ***
	(0.0001)	(0.0001)	(0.0001)	(0.001)	(0.001)	(0.001)
(b - B) x I{b > B}	0.004 ***	0.003 ***	0.002 ***	0.012 **	0.011 **	0.007
	(0.001)	(0.001)	(0.0004)	(0.006)	(0.006)	(0.009)
ln(plan MA share)	-0.011 **	-0.016 ***	-0.017 ***	0.007	-0.039	-0.079 *
	(0.005)	(0.005)	(0.004)	(0.032)	(0.035)	(0.041)
Supplemental benefits	0.067 ***	0.062 ***	0.106 ***	0.080	0.106 *	0.295 ***
	(0.009)	(0.009)	(0.008)	(0.060)	(0.060)	(0.068)
Part D benefits	0.022	0.041 ***	0.046 ***	-0.393 ***	-0.340 ***	-0.276 ***
	(0.014)	(0.015)	(0.015)	(0.091)	(0.093)	(0.106)
Mean of dependent variable	0.905	0.905	0.905	3.271	3.271	3.271
No. of observations	44,044	44,044	44,044	44,044	44,044	44,044
No. of clusters	506	506	506	506	506	506
Instruments for ln(plan MA share)	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area	No. of contracts in county, no. of insurers in service area
Plan rating FEs (for each half-star)	Y	Y	Y	Y	Y	Y
Year FEs	N	Y	Y	N	Y	Y
Contract FEs	N	N	Y	N	N	Y

Table presents demand regression results at the market-plan-group level, where a demographic group is dual eligibles or non-dual eligibles in the lowest, middle, and highest risk terciles. The unit of observation is a market-plan-group (a market is a county-year). Standard errors are clustered at the contract level. The plan's standardized bid is denoted by b and the plan's benchmark is denoted by B. *p < 0.1, **p < 0.05, ***p < 0.01.

Appendix Table C1(a): Detailed results from additional policy experiments

Panel A. Results for entire sample of MA enrollees

Description of policy experiment	Taxpayer cost [a] (1)	MA cost [b] (2)	Predicted TM cost [c] (3)	Insurer profits (4)	MA share (5)	Consumer surplus (6)
1. Benchmarks lowered by $200, rebate passed through at 25%	653	599	754	137	4.1	25
2. Benchmarks lowered by $200, rebate passed through at 50%	653	598	756	136	4.2	26
3. Benchmarks lowered by $200, rebate passed through at 90%	660	597	771	128	4.5	28
4. Benchmarks lowered by $200, rebate passed through at 100%	664	596	776	125	4.7	28
5. Benchmarks lowered by $100, rebate passed through at 25%	734	607	745	153	6.8	36
6. Benchmarks lowered by $100, rebate passed through at 50%	733	605	749	146	7.2	38
7. Benchmarks lowered by $100, rebate passed through at 90%	739	601	767	117	9.6	52
8. Benchmarks lowered by $100, rebate passed through at 100%	745	599	771	109	10.5	59
9. Benchmarks lowered by $75, rebate passed through at 90%	758	601	766	115	11.5	64
10. Benchmarks lowered by $50, rebate passed through at 90%	777	603	765	112	13.9	80
11. Benchmarks lowered by $25, rebate passed through at 90%	796	604	763	110	16.6	99
12. Rebate passed through at 90%	815	605	761	110	19.6	123
13. Benchmarks raised by $100, rebate passed through at 25%	918	616	743	302	8.7	45
14. Benchmarks raised by $100, rebate passed through at 50%	862	612	753	190	14.6	82
15. Benchmarks raised by $100, rebate passed through at 90%	895	607	758	116	32.6	248
16. Benchmarks raised by $100, rebate passed through at 100%	914	605	758	109	37.4	307
17. Benchmarks raised by $200, rebate passed through at 25%	989	615	745	363	9.5	50
18. Benchmarks raised by $200, rebate passed through at 50%	908	613	753	194	20.9	131
19. Benchmarks raised by $200	942	609	755	142	36.6	294
20. Benchmarks raised by $200, rebate passed through at 90%	980	607	755	127	46.0	426
21. Benchmarks raised by $200, rebate passed through at 100%	1,010	606	755	120	51.7	527
22. Benchmarks set at 90% TM costs, rebate passed through at 25%	712	605	771	162	4.8	29
23. Benchmarks set at 90% TM costs, rebate passed through at 50%	721	604	795	150	5.4	33
24. Benchmarks set at 90% TM costs	739	601	811	132	6.6	43
25. Benchmarks set at 90% TM costs, rebate passed through at 90%	753	599	817	121	7.5	52
26. Benchmarks set at 90% TM costs, rebate passed through at 100%	764	597	819	114	8.2	60
27. Benchmarks set at 100% TM costs, rebate passed through at 25%	765	610	766	185	6.3	35
28. Benchmarks set at 100% TM costs, rebate passed through at 50%	772	609	790	160	7.7	45
29. Benchmarks set at 100% TM costs	790	606	801	129	10.5	70
30. Benchmarks set at 100% TM costs, rebate passed through at 90%	806	604	804	115	12.7	92
31. Benchmarks set at 100% TM costs, rebate passed through at 100%	818	603	804	107	14.2	109

Table expands on Table 3 in the main text, using the same calculations described in the notes to that Table, but reports the expanded set of counterfactuals that are plotted in Figure 5. Details of the counterfactual calculations are described in Appendix C.

Appendix Table C1(b): Detailed results from additional policy experiments

Panel B. Results by demographic groups of MA enrollees

Description of policy experiment	MA share: low risk (1)	MA share: medium risk (2)	MA share: high risk (3)	MA share: dual eligible (4)	Consumer surplus: low risk (5)	Consumer surplus: medium risk (6)	Consumer surplus: high risk (7)	Consumer surplus: dual eligible (8)
1. Benchmarks lowered by $200, rebate passed through at 25%	4.8	4.1	3.7	4.5	14	11	37	12
2. Benchmarks lowered by $200, rebate passed through at 50%	4.9	4.2	3.8	4.6	14	12	37	12
3. Benchmarks lowered by $200, rebate passed through at 90%	5.3	4.6	4.2	4.9	15	13	41	13
4. Benchmarks lowered by $200, rebate passed through at 100%	5.5	4.8	4.4	5.0	16	13	42	13
5. Benchmarks lowered by $100, rebate passed through at 25%	9.3	8.6	5.1	7.9	24	22	48	20
6. Benchmarks lowered by $100, rebate passed through at 50%	9.9	9.1	5.4	8.3	26	23	51	21
7. Benchmarks lowered by $100, rebate passed through at 90%	12.5	11.7	8.3	9.9	33	30	75	24
8. Benchmarks lowered by $100, rebate passed through at 100%	13.5	12.7	9.4	10.5	35	32	87	26
9. Benchmarks lowered by $75, rebate passed through at 90%	14.8	14.1	10.3	11.3	39	36	93	28
10. Benchmarks lowered by $50, rebate passed through at 90%	17.5	16.7	12.9	12.8	46	43	118	31
11. Benchmarks lowered by $25, rebate passed through at 90%	20.4	19.4	16.0	14.2	55	51	150	35
12. Rebate passed through at 90%	23.3	22.1	19.5	15.7	63	59	189	39
13. Benchmarks raised by $100, rebate passed through at 25%	12.3	11.9	6.3	9.8	32	30	58	24
14. Benchmarks raised by $100, rebate passed through at 50%	18.6	17.9	13.3	13.1	49	46	119	32
15. Benchmarks raised by $100, rebate passed through at 90%	35.3	32.9	35.6	21.6	105	95	405	55
16. Benchmarks raised by $100, rebate passed through at 100%	39.8	36.9	41.4	24.1	124	111	508	62
17. Benchmarks raised by $200, rebate passed through at 25%	13.3	12.9	7.3	10.4	35	32	66	26
18. Benchmarks raised by $200, rebate passed through at 50%	24.6	23.4	21.1	16.1	67	62	201	40
19. Benchmarks raised by $200	39.0	36.2	40.6	23.4	120	108	482	60
20. Benchmarks raised by $200, rebate passed through at 90%	47.8	44.0	51.3	28.4	160	142	713	75
21. Benchmarks raised by $200, rebate passed through at 100%	53.4	48.9	57.5	31.9	190	168	889	87
22. Benchmarks set at 90% TM costs, rebate passed through at 25%	6.3	5.6	4.2	5.4	17	15	41	14
23. Benchmarks set at 90% TM costs, rebate passed through at 50%	7.0	6.3	4.9	5.9	20	17	49	16
24. Benchmarks set at 90% TM costs	8.2	7.5	6.2	6.7	24	21	68	18
25. Benchmarks set at 90% TM costs, rebate passed through at 90%	9.1	8.4	7.3	7.3	27	25	86	19
26. Benchmarks set at 90% TM costs, rebate passed through at 100%	9.8	9.0	8.2	7.7	30	27	100	21
27. Benchmarks set at 100% TM costs, rebate passed through at 25%	8.6	8.0	5.0	7.2	23	21	48	18
28. Benchmarks set at 100% TM costs, rebate passed through at 50%	10.3	9.6	6.7	8.3	28	25	66	21
29. Benchmarks set at 100% TM costs	13.1	12.3	10.2	9.9	38	35	112	25
30. Benchmarks set at 100% TM costs, rebate passed through at 90%	15.2	14.2	12.8	11.0	46	42	153	29
31. Benchmarks set at 100% TM costs, rebate passed through at 100%	16.6	15.6	14.7	11.8	52	47	185	31

Table expands on Table 3 in the main text, using the same calculations described in the notes to that Table, but reports the expanded set of counterfactuals that are plotted in Figure 5. Details of the counterfactual calculations are described in Appendix C.

Appendix Table E1: Coverage options available to Medicare beneficiaries

	Traditional Medicare (TM)	TM + Part D	TM + Medigap	TM + Medigap + Part D	Medicare Advantage (MA)	MA Part D Plan
Monthly Premium	Part B	Part B + Part D	Part B + Medigap	Part B + Medigap + Part D	Part B + MA	Part B + MA
Hospital/Physician Cost-Sharing Requirements	Baseline	Baseline	Lower	Lower	Lower	Lower
Prescription Drug Cost-Sharing Requirements	Baseline	Lower	Baseline	Lower	Baseline	Lower
Additional Benefits	None	None	None	None	Supplemental benefits (e.g., dental, vision)	Supplemental benefits (e.g., dental, vision)
Provider Network	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Plan network	Plan network

Table describes the set of options available to Medicare beneficiaries. The paper focuses on the choice of an MA plan (one of the two last columns), but beneficiaries could also purchase additional coverage (beyond the basic coverage provided by TM) by purchasing Medigap and/or Part D coverage separately.

Appendix Table E2: Medicare Advantage Concentration Metrics

	All	Urban	Rural	2006-07	2008-09	2010-11
C2	85.6%	82.0%	86.5%	91.1%	79.3%	86.5%
C2 > 75%	76.5%	69.4%	78.5%	88.3%	62.5%	79.3%
C2 > 90%	47.6%	37.6%	50.4%	65.9%	28.5%	49.3%
C3	93.9%	91.4%	94.6%	97.0%	89.8%	95.0%
C3 > 75%	95.4%	91.5%	96.5%	99.0%	90.4%	97.1%
C3 > 90%	75.8%	67.3%	78.2%	89.2%	58.5%	80.5%
HHI	53.2%	47.7%	54.7%	63.5%	44.6%	52.0%

Statistics in the table are calculated using MA enrollment data from 2006-2011 and are calculated at the county-year level. We report the mean of each variable across the relevant county-years. We only include a county-year if it has at least one MA enrollee, and we weight each county-year equally when we compute the mean across county-years. We define C2 as the market share (of enrollee risk-months) of the top two insurers in a county-year, and C3 is defined analogously. The row labeled "C2 > 75%" is an indicator variable equal to one if C2 is greater than 75 percent. Other indicator variables are defined analogously. The HHI is the Herfindahl Index.

Appendix Table E3: Top MA Insurers

Insurer	National Market Share	Percentage of Counties Where Active
UnitedHealth Group, Inc.	19.3	80.7
Humana, Inc.	15.7	96.7
Blue Cross Blue Shield Affiliates	8.1	25.1
Kaiser Foundation Health Plan, Inc.	7.8	2.4
WellPoint, Inc.	4.8	72.9
Highmark, Inc.	3.4	3.8
Coventry Health Care, Inc.	3.1	87.8
Health Net, Inc.	3.0	19.7
Aetna, Inc.	2.2	20.0
Universal American Corp.	2.1	98.7
HealthSpring, Inc.	1.5	4.8
WellCare Health Plans, Inc.	1.3	64.9
The Regence Group	1.1	2.8
EmblemHealth, Inc.	1.0	2.2
UCare Minnesota	1.0	3.6
Munich American Holding Corporation	0.8	93.1
Cigna	0.7	48.5
University of Pittsburgh Medical Center	0.7	1.4
Universal Health Care, Inc.	0.7	26.4
Group Health Cooperative	0.6	0.6
Top 20 Insurers	79.2	100.0
All Other Insurers	20.8	99.8

Statistics in the table are calculated using MA enrollment data from 2006-2011. We use the set of published MA benchmarks as the set of counties where MA is offered, and we drop Alaska, Guam, Puerto Rico, and the Virgin Islands. An insurer is considered to be active in one of the 3,118 remaining counties where MA is offered if the insurer offers at least one plan in that county at any point during the sample period. The national market share is the average national market share during the sample period. In the penultimate row of the last column, we report the percentage of counties where at least one of the top 20 insurers was active during the sample period. In the bottom row of the last column, we report the percentage of counties where at least one non-top-20 insurer was active during the sample period.

Appendix Table E4: Transition of Beneficiaries across Coverages

Panel A. Exiting sample

	Year *t + 1*		
Year *t*	Exited Sample (%) (1)	Died (%) (2)	Observations (3)
Medicare Advantage	4.06	3.61	20,555,401
Traditional Medicare	3.68	4.05	121,349,031

Panel B. Switching between MA and TM

	Year *t + 1*		
Year *t*	Stayed (%) (1)	Switched (%) (2)	Observations (3)
Medicare Advantage	98.00	2.00	18,978,510
Traditional Medicare	97.60	2.40	111,973,011

Panel C. Switching among MA contracts and plans

	Year *t + 1*		
Year *t*	Stayed in Contract (%) (1)	Stayed in Plan (%) (2)	Observations (3)
Medicare Advantage	93.91	84.80	18,599,352

Table tabulates the transitions between MA and TM, as well as switching behavior for those who stay in MA. The table uses individual-year-level data from 2006 through 2010 (the year 2011 is excluded since the potential outcome the following year is not observed). Panel A shows percentages of Medicare enrollees who exited the sample or died. Panel B, which restricts the sample to those who did not exit the sample or die, shows percentages of MA enrollees who stayed in MA the following year or switched to TM the following year. The entries for TM enrollees are defined analogously. Panel C, which restricts the sample to MA enrollees who stayed in MA the following year, shows the percentages of MA enrollees who stayed in the same MA contract the following year or stayed in the same MA plan the following year.

Appendix Table E5: Allocation of Plan Rebates

	All	0 > b - B ≥ -100	-100 > b - B ≥ -200	-200 > b - B
	(1)	(2)	(3)	(4)
Cost-sharing benefits	75.1	79.8	75.0	61.0
Part B premium reduction	0.6	0.0	0.6	2.5
Part D benefits	13.2	11.0	11.6	24.3
Other mandatory benefits	11.1	9.2	12.9	12.2
No. of plan-years	8,274	4,883	2,728	663

Table reports the mean percentage of rebate dollars allocated across four exhaustive and mutually exclusive categories. All reported statistics are weighted by the plan's share of enrollee risk-months. The sample used in the table consists of plan-year observations for non-PFFS plans bidding below the benchmark (since a plan bidding above the benchmark has a rebate of zero).