Is Choice Overload a Problem for Health-Plan Choice? Evidence from the ACA Marketplace

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Abstract

Policy proposals have called for limiting the number of plan options in health insurance markets due to concerns that choice overload may impair individual decision-making. We analyze private health insurance markets in the federally administered Healthcare.gov exchange and document substantial variation across counties in the number of options enrollees face. We then exploit a sudden policy shock that led to a sharp relative price increase for a subset of health plans to examine whether people respond differently to price shocks in areas with larger choice sets. Contrary to the simplest predictions of choice overload, we find that enrollees in areas with very large choice sets responded somewhat more strongly to this relative price change. At the same time, we find that subsets of consumers who arguably should not have reacted to the price change nonetheless did so more in markets with a larger number of options. Our findings suggest that choice overload is not limiting consumers' sensitivity to plan features, but consumers are also not making clearly better choices in areas with larger choice sets.

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1 Introduction

Health insurance is complex, and individuals are often asked to navigate choice menus containing a very large number of options. This is especially true in the private health insurance markets established by the Affordable Care Act (ACA). The average number of available plan options in the federally operated Healthcare.gov exchange has increased dramatically in recent years, rising to more than 100 plans as of 2022 (Chu et al., 2021). While the proliferation of plans in some cases reflects the existence of multiple competing insurers, most insurers offer a large number of options that cover similar expected levels of spending but with different cost-sharing features, like deductibles and copay levels (Liu, 2025).

Although some degree of choice is generally seen as valuable and there is a clear desire to promote competition in these exchanges, there is a growing concern that plan menus in private health insurance markets are excessively large and complex. Researchers have suggested that the federal government follow the lead of some states that have more strongly regulated plan options by introducing standardization and limiting the number of plan options (e.g., Day and Nadash, 2012; Rasmussen and Taylor, 2021). In 2021, President Biden issued an executive order that directed the Department of Health and Human Services to explore ways to better standardize plans and limit the number of options sold through federal marketplaces.

Calls to reduce the size and complexity of insurance menus are partly motivated by a significant body of evidence that people struggle to make informed decisions about health insurance and often appear to make suboptimal decisions (e.g., Abaluck and Gruber, 2011, 2016, 2023; Bhargava et al., 2017; Handel and Kolstad, 2015; Sinaiko and Hirth, 2011). There is also evidence from psychology and behavioral economics that in some settings having too many options can induce forms of "choice overload" that lead to lower individual satisfaction and distortions in consideration of options (Iyengar and Kamenica, 2010; Iyengar and Lepper, 2000).

However, the evidence is more mixed as to whether large choice sets are problematic in health insurance specifically. For example, consistent with predictions of choice overload, McWilliams et al. (2011) found that enrollment in Medicare Advantage fell when the number of options became extremely large, and Frank and Lamiraud (2009) documented lower switching rates when more plans were available. By contrast, Ericson and Starc (2016) showed that standardization in the Massachusetts exchange (a precursor to the current ACA model) changed choice patterns but did not increase price sensitivity. Similarly, Abaluck and

Gruber (2023) analyzed patterns of choices for school district employees across the state of Oregon and documented suboptimal decision patterns. However, they did not find evidence that larger choice sets had any impact on the quality of decisions or the way that people traded off different contract features.

In this paper, we contribute new evidence on the role of choice-set size in health insurance markets by analyzing how consumers with different numbers of options responded to a major shift in the relative prices of plans. We exploit an unanticipated policy shock generated in the private health insurance exchanges for the 2018 plan year. In late 2017, after insurers had finalized the set of plans they were offering, the federal government unexpectedly announced that it would no longer reimburse insurers for the cost of additional insurance benefits – known as cost-sharing reductions (CSRs) – that insurers are required to offer to low-income consumers. In response, regulators in many states permitted insurers to raise premiums on silver-tier plans (70% actuarial value), where CSRs apply, while leaving other tiers—particularly gold (80% AV) and bronze (60% AV)—largely unaffected. This practice became known as "silver loading". In states with silver loading, there was a substantial increase in the relative price of silver plans versus other tiers.[1] This large relative change in prices leads to a prediction that overall consumers in these states should have shifted away from silver-tier plans in 2018. These shifts should have been especially concentrated among higher-income consumers who were not eligible for silver-tier-specific CSR plans. Prior work has documented that failing to fully react to the impacts of silver loading caused some enrollees to be in dominated options (Rasmussen and Anderson, 2021). Our question of interest is whether enrollees in markets with larger choice sets reacted less to this shock and shifted away from silver-tier plans at lower rates.

We begin by documenting that there is substantial variation in the number of health insurance options faced by consumers across ACA markets. We analyze choice menus at the county level in states using the federally facilitated exchange Healthcare.gov. We measure choice-set size in several ways, including the overall number of plan options available, the number of different insurers offering plans, and the number of plans per insurer. There is substantial variation in these measures across states. In 2018, at the low-end consumers in the median county in states such as Nevada, Tennessee, Arizona and Mississippi had around 5 plans to choose from, while on the high-end the median county had 31 plans in Wisconsin and 36 plans in Florida. Much of this variation is at the state level. The within-state variation is more mixed, with some

[1] A smaller number of states engaged in "broad loading" and insurers incorporated the costs of CSRs into the price of all plans regardless of tier.

states having very little variation, while in others the number of plans varies substantially across counties in the state. Both cross-state and within-state variation in the number of plans comes from a mix of variation in the number of insurers and the number of plans per insurer. Many counties in 2018 only had one insurer offering plans, but some had four or five. The number of plans per insurer varies even more dramatically. For example, in 2018 the median counties in Arizona and South Carolina both had only one insurer offering plans, but in Arizona customers had 4 plan options while customers in South Carolina faced 24.

Choice-set size, especially the number of insurers, is clearly not randomly assigned across counties (Geddes, 2024; Abraham et al., 2017; Fang and Ko, 2025). A potential concern for our analysis is that counties with larger (or smaller) choice sets may differ along other dimensions, beyond choice-set size itself, that also influence how enrollees responded to the silver-loading policy. Some prior studies have examined insurer entry decisions and documents how it correlates with local market conditions: Abraham et al. (2017) show that counties with larger populations and higher incomes tend to attract more insurers; Dickstein et al. (2015) document that rural areas typically face fewer participating insurers; and Dafny et al. (2015) find that increased insurer competition is associated with lower premiums. Motivated by these findings, we examine how choice-set size covaries with county characteristics, including population, the share of lower-income consumers, the share of older consumers, rural status, and premium levels. A few county-level characteristics correlate with choice-set size, specifically premium levels. For this reason, we control for the set of county-level characteristics in our analysis. Additionally, much of the variation in choice-set sizes occurs due to strong cross-state variation. The fact that choice-sets vary substantially at the state-level suggest that part of the variation may be driven by state-level regulatory decision rather than local demand conditions.

Turning to the enrollment differentials after silver loading, we find that overall there was, as predicted, a meaningful switch away from silver-tier plans in states states that adopted the policy. Among consumers with incomes at or below 250% of the federal poverty line (FPL), who are eligible for cost-sharing reductions in silver-tier plans, enrollment in silver tier fell from 84% in 2017 to 76% in 2018. Consumers with incomes above 250% of FPL reacted more strongly, with silver enrollment falling from about 50% in 2017 to 32% in 2018. The greater responsiveness of those above 250% of FPL makes sense because they are not eligible for CSRs by selecting silver-tier plans and for many of them silver-tier plans were especially unattractive

relative to other tiers, and potentially dominated by other options. However, the fact that nearly one-third of these enrollees above 250% of FPL remained in silver-tier plans despite silver-loading policy is likely an indication of meaningful rates of inattention, inertia, and sub-optimal decision making.

To what extent is the variation in the number of options in the choice environment associated with different reactions to the sudden relative increase of silver plans in 2018? We find no evidence of choice overload effects. If anything, our evidence suggests that after silver loading consumers in counties with high numbers of options shifted away from silver-tier plans somewhat more than those with fewer options. This relationship is clear and robust across regression specifications (i.e., whether controlling for county characteristics and state fixed effects) for the number of plans and the number of plans per insurer, though is less robust when measured by the number of insurers. A 20-plan increase—roughly one standard deviation—is associated with a 2–4 percentage point larger reduction in silver enrollment in 2018. We estimate a relationship of similar magnitude when we analyze the number of plans per insurer. These results go directionally against the hypothesis that having more options would make it harder for consumers to recognize and respond to the policy shift.

The fact that having more options was related to somewhat stronger reactions to the policy change does not, however, imply that more options was necessarily associated with better overall choices. To explore this question more, we look at the heterogeneity in how choice-set size relates to switching rates across different income groups. For higher-income consumers, switching from silver was likely optimal. However, for lower-income consumers, who are eligible for CSRs by remaining in silver-tier plans, it is less clear if a switch to a different tier of plans is optimal. If having more options is leading to overall "better" reactions to the policy shift, we would hope to observe that the relationship with choice-set size is weaker among lower-income enrollees. While lower-income customers are less likely to switch away from silver, the relationship between switching rates and choice-set size is only modestly weaker for them. Within the lower-income group, we further conduct heterogeneity analysis to examine whether the relationships differ in places where more people are eligible for plans with the most generous CSRs (those with incomes from 100% to 150% of FPL). For these very-low-income enrollees, silver plans likely remained optimal after silver loading because of the extremely generous cost sharing available in the silver tier. We find, though, that counties with an above-median share of consumers with incomes below 150% of FPL saw similar and

in some cases even stronger associations between the number of plan options and reductions in silver-tier enrollment. One interpretation of these findings is that having more plan options may be drawing attention to alternative lower-priced options, but not necessarily helping to facilitate optimal decision making.

In addition to our primary measures of choice-set size, we explore variation in two other features of the local choice environment that could affect the complexity of navigating the set of options and hence reactions to changes in the market environment. First, in 2017 and 2018 the federal government introduced "simple choice" plan with standardized cost-sharing features.[2] Insurers on Healthcare.gov could voluntarily offer these plans and consumers could sort and filter to see these options separately on the website. We document moderate county-level variation in the prevalence of "simple choice" designs: around 62% of counties had none of these options, while at the high end in some counties "simple choice" options made up 50% of plans. We find that counties with a larger share of "simple choice" plans saw a greater reduction in silver enrollment after silver loading among consumers with incomes above 250% of FPL. We see little association for lower-income consumers. These results are at least suggestive that "simple choice" options might facilitate better reactions to the policy shift.

Another potentially important feature of the choice environment is that many insurers exited from ACA markets throughout the country in 2018. These exits gave enrollees in plans offered by exiting insurers an additional incentive to actively compare plan options.[3] The percentage of enrollees in 2018 whose 2017 insurer had exited varied widely across counties, providing variation to explore this link. Contrary to our initial hypothesis that insurer exits would lead to more active decisions and stronger responses to silver loading, we actually find that the responses were moderately weaker in counties with higher exit shares.

Taken together, our results suggest that neither smaller choice sets nor insurer exits that force active choice were important drivers of consumers' ability to respond to the market changes induced by the silver-loading policy. In fact, the results go modestly in the opposite direction from these initial hypotheses. These

[2]The HHS created a set of "simple choice" plans and encouraged insurers to offer them on the federal-facilitated exchange for plan years 2017 and 2018. The Trump Administration eliminated the simple choice plans starting from plan year 2019 (Collins, 2018). Starting from plan year 2023, HHS required insurers on Healthcare.gov to offer a standardized qualified health plan option at every product network type and metal level throughout each service area where they offer non-standardized QHP options and further required the insurers to limit the total number of options offered starting from 2024 (Pollitz et al., 2023)

[3]In September 2016, CMS issued a notice specifying that enrollees whose insurers exit the market would have a suggested alternative plan from another insurer selected by CMS.
See https://www.cms.gov/CCIIO/Resources/Regulations-and-Guidance/Downloads/FAQ-Regarding-Crosswalk-of-Enrollees-into-Plans-Offered-by-Other-Issuers.pdf

findings highlight the value in testing whether established behavioral phenomena, like choice overload, are key issues in specific market and policy environments. Our results suggest that policies aimed at reducing choice-set size, and possibly also those aimed at inducing active choice, are unlikely by themselves to lead to strong improvements in consumers' ability to make informed choices in private health insurance markets. At the same time, we do observe clear indicators that ACA enrollees did not respond optimally to the market shocks induced by the change in CSR funding and silver loading policies. This suggests a need for other policies that help people navigate the complexity of plan choice. Our evidence suggests that policies like the standardization of plan designs, like the "simple choice" options, are a more promising direction to explore than simply focusing on the number of available options.

2 Data and Sample

2.1 Plan Data

We use data from the Health Insurance Exchange Public Use Files for 2016-2018 (Center for Medicaid and Medicare Services).[4] Plans in the private health insurance exchanges are offered at the level of geographic rating areas. The public use files include the universe of plans offered in each rating area, with information on plan ID, insurer, metal tier (e.g., bronze, silver, gold), premiums, actuarial value, and whether the plan uses the "simple-choice" design. We further match rating areas to counties. This allows us to construct the county-level measures, such as the number of plans, the number of insurers, the number of plans per insurer, and the share of plans labeled "simple choice." Additionally, we use the premium and actuarial value information to construct the premium changes of silver plans relative to other plans over time. For each metal tier, we compute the average silver premium per unit of actuarial value (AV) in each county. We then compare this value for the silver tier with the average of the bronze and gold tiers. The change in this difference from 2017 to 2018 allows us to quantify the increase in the relative price of the silver-tier plans due to the silver-loading policy (described below).

[4] https://www.cms.gov/cciio/resources/data-resources/marketplace-puf

2.2 Silver-loading Status

In order to identify states that enacted "silver loading" policies, we start with a list compiled by researcher David Anderson based on policy announcements in each state during the 2017-2018 transition period.[5] Within this set, we further validate that the relative price of silver-tier plans increased compared with other tiers, and we restrict our "silver loading" sample to states that both had announced such policies and where the relative price of silver plans rose on average. Among the list of states that had announced silver-loading policies, we drop six where the average changes in silver premium per AV relative to bronze and gold plans were not positive (suggesting silver loading did not actually happen in these states). This process classifies 24 of the 36 states participating in the Healthcare.gov platform as silver loading states. Using the same measure, we verify that the 5 states that announced broad-loading policies (where premiums in all tiers would be increased proportionally), did not see the same sharp increase in silver premium relative to bronze and gold plans that we observe in silver-loading states. See the discussion of the sample restriction in Section 2.6.

2.3 Income-based Subsidies

The silver-loading policy increased the relative price of silver-tier plans. In general, this should have made plans in other tiers relatively more attractive. This would be especially true for individuals with incomes greater than 400 % of FPL, who during this time frame were not eligible for any premium subsidies. These individuals paid the full cost of coverage and thus saw plans outside the silver tier become relatively more cost-effective.

Customers with incomes between 250% and 400% of FPL were eligible for partial premium subsidies and faced lower net costs of plans. Subsidies vary depending on the local premium levels and household income. They are set so that the net cost of the second-lowest-cost silver plan does not exceed a designated percentage of income. As a result, when silver premiums rose, subsidies also rose, so the net price of silver plans did not necessarily increase. However, because subsidies can be used for plans in other tiers too, the

[5] Anderson categorized policies somewhat finely. For example, he distinguished between pure "silver loading", in which a state encouraged insurers to load the costs of CSRs into all silver-tier plans, regardless of whether they were offered on or off exchange, and "silver switcharoo", in which silver loading was only for on-exchange but not off-exchange plans. We lump together all states that used a variation of silver loading for on-exchange plans (comprising 3 or Anderson's four categorizations). See the full list of policies in each state: https://docs.google.com/spreadsheets/d/1W2EQhCXowRDDuqJhy6PUJtIGHjoND9f_K7oALyDAbLg/edit?usp=sharing

differentials in the net price after subsidy across tiers reflect the movement in the full price. As such, even consumers with subsidies should have a new incentive to consider plans in other tiers. One complication is that as subsidies increase, the net premium of the lowest-cost bronze plans may hit zero. Since net premiums cannot go negative (i.e., an individual cannot receive subsidies beyond the cost of their chosen plan), bronze plans did not necessarily become more attractive than silver plans for these individuals after silver loading. A zero-premium bronze plan may still be less attractive than a silver plan offering better coverage at only slightly higher net cost. Even in these cases, however, gold plans became relatively more attractive than silver plans.

Finally, customers with incomes below 250% of FPL are eligible in addition for CSRs. By choosing a silver-tier plan, these individuals receive lower deductibles and other cost-sharing benefits without paying higher premiums. The actuarial value of silver-tier CSR plans is 93% for consumers with incomes below 150% of FPL, 87% for 150-200% of FPL, and 73% for 200-250% of FPL. Although the 2018 silver-loading policy generally reduced the relative attractiveness of CSR plans, in some cases the CSRs were valuable enough that choosing silver would remain optimal. For example, consider enrollees with incomes below 150% of FPL. These individuals are eligible for CSRs that raise their plan's actuarial value to 93%, which is a very generous coverage. After silver loading, such plans may cost slightly more than gold plans with 80% coverage, but rarely enough to justify giving up the generous additional coverage.

Overall, these patterns suggest that, in general, silver loading should have made silver plans less attractive. This effect, though, should be especially true for higher-income enrollees and likely should be much more muted for the lowest-income enrollees.

2.4 Enrollment Data

We obtain enrollment data in the health insurance marketplaces from the Marketplace Open Enrollment Period Public Use Files (Centers for Medicare and Medicaid Services).[6] The data include total enrollment, enrollment by income range relative to the FPL, enrollment by metal tier, and CSR enrollment at the county level. Enrollment counts were censored (i.e., masked in the data) if there were fewer than 10 enrollees in a given enrollment category in a county. In these cases, we impute the masked values as 5.

[6] https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/marketplace-products

2.5 County Characteristics

We complement our plan and enrollment information with county characteristics, which we obtained from the Small Area Health Insurance Estimates (SAHIE) developed by the U.S. Census Bureau.[7] SAHIE provides estimates of population and population with incomes below 400% of FPL, which we use to measure local market size and size of potential subsidy-eligible consumers. We also construct an indicator for whether a county is primarily rural from the 2013 Rural-Urban Continuum Codes obtained from USDA.[8]

2.6 Study Sample

To construct the analytic sample, we implement several restriction criteria to isolate counties where we can appropriately investigate the relationship between plan options and the responses to the silver-loading policy. First, as described above, we only include states that announced a silver-loading policy and where we detect a relative increase in silver-tier plans for 2019. Second, we only include counties with plans available on the marketplace in all three main metal tiers—bronze, silver, and gold—in both 2017 and 2018. We further limit the analysis to counties with total enrollment of at least 10 individuals, and we exclude counties where small cell counts in the silver tier or different income ranges make it impossible to calculate accurate changes in silver-tier enrollment shares. The final analytic dataset includes 1,487 counties in 24 states.

3 Results

3.1 Variation in Choice-set Size

We examine three measures of choice-set size at the county level: the total number of plan options available, the number of insurers offering plans, and the number of plans per insurer. Figure 1 panels (a) through (c) show the histograms of these measures across 7,620 county-years from 2016 to 2018. The histograms show wide variation in the number of plans, with many counties having single-digit numbers of plans but many others with more than 30 plans. The number of insurers varies less, with most counties having between 1 and 5 insurers offering plans, and 82% have three or fewer. Much of the variation in the total number of plans, then, comes from variation in the number of plans per insurer. The peak of that distribution is around 9 plans per insurer, but there is substantial variation from only a few plans per insurers up to the range of 20

[7] https://www.census.gov/programs-surveys/sahie.html
[8] https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/

plans per insurer.

Panels (d) through (f) of Figure 1 show kernel density estimates of the measures across counties by year and allow for comparisons of how the distributions shifted over time.[9] From 2016 to 2018, distributions shift toward fewer plans and fewer insurers. Although plans per insurer show no strong time trend, their dispersion is smaller in 2018 than in earlier years. Together, these results suggest that the number of options was relatively low in 2018 when the policy shift occurred. In subsequent years, the number of plans and number of insurers rebounded and have grown quite high by plan year 2022 (Chu et al., 2021).

Figure 2 examines cross-state and within-state variation in these measures. It plots the county-level median of each measure across states for 2017 and 2018. This figure also provides boxes that show the 25th to 75th percentile of the measure across counties within each state. For this graph we use all 37 states participating in the federal exchange and label silver-loading states "SL" and broad-loading states "BL".[10] There are a few key takeaways. First, each measure varies substantially across states. For example, the number of plans in the median county ranges from roughly 5 to 40. The number of plans in the median county fell in many states in 2018, but the variation remained substantial across states. Second, states differ substantially on the extent of within-state homogeneity in these measures. For many states nearly all counties have very similar measures (evidenced by no box around the median in Figure 2), while for some there is substantial variation. For example, in Florida in 2018 the 25th-percentile county had 12 plans, while the 75th-percentile county had 18 plans. In contrast, in Arizona in 2017 thirteen out of fifteen counties had exactly 5 plans. The strong state-level differences in choice-set size suggests that regulatory approaches may play a significant role in shaping the size of choice sets for private health insurance exchanges.

Table 1 shows stability in these measures over time at both the cross-state and within-state levels. For each measure, we regress the measure in one year on the measure in the prior year (Columns 1 and 3 regress 2018 on 2017; Columns 2 and 4 regress 2017 on 2016). Columns 1 and 2 report state-level regressions using the measure for the median county in each state. This allows us to quantify the extent of persistence in the state-level variation. We find strong persistence in each measure. In Columns 3 and 4 we quantify the

[9] Appendix Figure A1 shows 2017 and 2018 distributions separately for states that announced silver loading versus broad loading. These figures show that both types of states experienced similar reductions in these measures, suggesting changes were not specific reactions to silver loading.

[10] For the primary analysis below, we restrict to the subset of silver-loading states where we observe substantial relative price increases for the silver tier.

within-state persistence using county-level data with state fixed effects. We again find strong persistence in the within-state variation: counties with higher values in one year are predicted to have higher levels in the following year.

Choice-set size, particularly the number of participating insurers, is clearly not randomly assigned across counties (Geddes, 2024; Abraham et al., 2017; Fang and Ko, 2025). A natural concern is therefore that perhaps something else correlates with both choice-set size and response to the price shock. We examine how measures of choice-set size covary with observable county characteristics, including population size (aged between 21-64), the share of lower-income consumers (i.e. below 400% of the FPL), the share of older consumers (aged between 50-64), rural status, and average silver premium per AV. Appendix Table A1 reports county-level factors associated with several measures of choice-set size. We find modest correlations between county-level characteristics and measures of choice-set size. The strongest association is that counties with higher average premium levels tend to have fewer insurers and plans available. There is also a modest positive correlation with population size and the number of insurers, but little correlation with population and the plans per insurer. Overall, county-level characteristics do not strongly correlate with measures of choice-set size, suggesting that most of the variation in choice-set size is likely uncorrelated with the most obvious drivers of insurance demand. Throughout our analysis we control for the county-level characteristics to isolate the differences across counties with similar characteristics but different numbers of plan options. We also note that for 2018 county-level choice sets were determined before the CSR funding cut and few insurers responded to the sliver-loading policy by changing plan offerings.[11]

Figure 3 shows the distributions of two additional local choice-environment measures. Panel (a) shows that, combining data from 2017 and 2018, the share of plans that were simple choice designs across counties

[11] In 2017, insurers faced substantial policy uncertainty regarding both the individual mandate and federal CSR payments. When preparing plan filings under the direction of state regulators, some insurers incorporated the potential loss of CSR funding, some filed contingency rates, while others assumed no policy change (see details of different strategies used by insurers in https://www.kff.org/affordable-care-act/issue-brief/how-the-loss-of-cost-sharing-subsidy-payments-is-affecting-2018-premiums). Insurers submitted proposed offerings and premiums in June–July 2017, with regulatory approval completed by early September. By mid-to-late September, plan participation decisions and the number of plans were finalized. The Trump administration's decision to terminate CSR payments was announced later, on October 12, 2017. While some insurers that had not fully priced in the loss of CSR funding adjusted their premiums quickly after the announcement, few exited the marketplace at that stage (see timeline details in https://www.healthinsurance.org/obamacare/the-acas-cost-sharing-subsidies/). Thus, although premium schedules often reflected expectations about CSR policy, the number of plans offered and insurer participation were already fixed prior to the official announcement. The post-October response - silver loading - took the form of reloading CSR costs onto silver-tier premiums rather than altering the size of choice sets. In short, silver loading changed prices, not the number of plan options.

ranged from 0 (more than 60% of counties) to about 10%. Panel (b) plots the distribution of the county share of enrollees whose insurer exited the market from 2017 to 2018. In about half of counties there were no exits, but in the other half there was at least one insurer exit, with variation spanning the full range in terms of the share of enrollees who needed to find a new insurer. We also examine how these two choice-environment measures correlate with county-level characteristics in Appendix Table A2, where we have similar finding that premium level matters while other factors have limited economic significance.

3.2 Silver-loading Price Shock and Enrollment

We begin by verifying that the silver-loading policy generated a differential increase in premiums for silver-tier plans. To compare relative prices across metal tiers, we construct a measure of premiums per unit of actuarial value (AV), defined as a plan's premium divided by the policy-targeted actuarial value for that tier (60 for bronze, 70 for silver, 80 for gold, and 90 for platinum). This measure allows for direct comparisons of relative prices across tiers. Our focus is on the average silver premium per unit of AV and its comparison to the averages for bronze and gold plans.[12]

Figure 4 plots the difference between the average silver-plan premium per AV and the average bronze- and gold-plan premiums per AV over time. The solid line shows the pattern for states that enacted broad-loading policies after the 2018 CSR-payment policy shock, while the dashed line shows the pattern for states that employed silver loading. We see that, in both sets of states, the difference in premium per AV was close to zero in 2015 and trended modestly downward until 2017, likely reflecting some changes in how insurers used allowable adjustments for tier-level utilization patterns to adjust the relative prices of tiers over time. The sharp effect of the 2018 policy shock and the differential for silver-loading states is clearly visible in the figure. After 2018, the relative prices of silver plans diverged between the two sets of states, with silver loading states seeing a strong and persistent increase in the relative price of silver-tier plans. On average, the relative price of silver plans rose by about $0.80 per AV. Specifically, silver-plan premiums rose from about $5.00 to $6.50 per AV, an increase of roughly 30%.

In Figure 5 we plot the average share of enrollees in silver plans over time. Panel (a) plots the shares for consumers with incomes above 250% of FPL and Panel (b) shows the series for those with incomes at or below 250% of FPL, who are eligible for CSRs. Each panel separately reports results for states that adopted

[12] Enrollment in platinum-tier plans is rare, and such plans are not always available in every market or from every insurer.

silver loading versus those that used broad loading. For higher-income consumers, silver enrollment shares in both groups of states rose modestly from 2015 through 2017, reaching about 42% in broad-loading states and 50% in silver-loading states. In 2018, silver enrollment continued to rise modestly in broad-loading states but fell sharply in silver-loading states to about 32%. For lower-income consumers, silver enrollment shares were substantially higher from 2015 to 2017, reflecting the value of enrolling in the silver tier for those eligible for cost-sharing reductions. In 2017, about 84% of consumers with incomes at or below 250% of FPL were enrolled in silver plans. In 2018, silver enrollment rose slightly in broad-loading states but dropped sharply to around 76% in silver loading states.[13]

3.3 Changes in Silver-tier Enrollment by Choice-set Size

Our main question of interest is whether the reduction in silver enrollment in silver-loading states was different depending on the number of options in the choice environment.[14] Figure 6 provides a first look at this question by plotting silver enrollment shares in silver-loading states over time, separately for counties with above-median (solid line) and below-median (dashed line) levels of each of our three primary measures of choice-set size: the number of plans, the number of insurers, and the number of plans per insurer. Prior to 2018 there were some modest differences in the silver enrollment shares by choice-set size. Among those in the above 250% of FPL income group, silver enrollment shares were somewhat lower in counties with larger choice sets. There was less of a clear differential in the lower income group. The key finding in this figure, though, is that, in 2018, silver enrollment shares fell more sharply in counties with above-median levels of the choice-set size measures, a pattern observed consistently across all three measures and both income groups. This pattern is clearly visible for the higher-income (FPL $>$ 250) group and more modest for the lower-income group.

The results in Figure 6 provide simple visual evidence that goes against the hypothesis that larger choice sets would mute the responsiveness to the policy change. However, these raw average differences could potentially reflect other county characteristics that correlates of choice-set size we documented above.

[13] One concern is that silver loading may have induced higher-income consumers to shift off exchange in order to remain in silver plans. Appendix Figure A2 plots total enrollment each year (relative to 2015) for consumers below and above 250 percent of FPL. Because we do not observe such a drop, the evidence suggests that the decline in silver enrollment among higher-income consumers primarily reflects switching across tiers.

[14] It would be interesting to examine the specific metal tiers to which consumers switched; however, due to data limitations, this analysis cannot be conducted separately for different FPL groups.

To further explore the extent to which these relationships hold after accounting for county-level factors, and to better quantify their magnitude, we turn to simple OLS regression analysis. We estimate the following specification at the county level:

$$y_{cj} = \alpha_j \text{size}_c + \mathrm{X}_c \beta_j + \varepsilon_{cj}, \tag{1}$$

where our outcome variable of interest y_{cj} is the change from 2017 to 2018 in the county-level share of enrollment in silver-tier plans for income-group j in county c. Throughout we present results separately for consumers with incomes at or below 250% of FPL (eligible for cost-sharing reductions) and for those with incomes above 250% of FPL.

The vector of control variables includes a number of different county-level measures. In all specifications we include two controls that capture the price *differentials* between silver-tier plans and other tiers: (i) the relative silver premium per AV change; (ii) the silver-bronze premium gap. For the first measure we use our measure of the difference in price per AV in Silver versus other tiers analyzed in Figure 4 above and calculate the difference in that measure from 2017 to 2018. This provides a measure of the size of the relative premium shock for silver plans in that county. For our sample of silver-loading states, the average relative silver premium per AV change was $0.89, implying that the silver-plan prices rose by a little under one dollar more per AV than those of other tiers. The second control variable we include for price differentials is simpler and is just the difference in 2018 between the monthly premium for the lowest-cost silver plan and the lowest-cost bronze plan available in the county. This measure allows us to control for the absolute gap between the cheapest possible plan (bronze) and the cheapest silver plan, which may be a relevant comparison for the most price-conscious individuals selecting plans. The intention with these two controls is to capture the relevant price comparisons in a county so that any differentials we observe based on the choice-set size measures are reflecting differentials by choice-set sizes holding fixed the underlying economic value of the available plan options the best we can.

In some specifications we also include additional county-level controls. These include the size of the population aged 21–64, the percent of the population with incomes below 400% of FPL (and thus potentially eligible for premium subsidies), the population of consumers in age groups 40–50 and 50-64, and an indicator for whether the county is predominantly rural. We also include the level of the average per-AV

premium of silver plans in 2017 to account for the overall price levels prior to silver-loading changes. Additionally, we include the lagged outcome variable in some specifications; however, there were no large trends in the relative price of silver plans prior to the silver loading. Finally, in some specifications we include state fixed effects. In these specifications, our identifying variation comes only from states with meaningful within-state variation in choice-set size.

Table 2 provides summary statistics for the variables used in our regression specifications. This table presents weighted means and standard deviations for the variables across all 1,487 counties in our analysis sample. The weight is the total county enrollment in 2018 across plan tiers and income groups. In the regressions, which are split by income above and below 250% of FPL, we instead weight by total 2018 enrollment within the relevant income group.

Our regression results for our three main measures of choice-set size are reported in Tables 3, with Panel (a) showing results for the number of plans, Panel (b) for the number of insurers, and Panel (c) for the number of plans per insurer. Each panel reports six regression specifications. The first three are for consumers with incomes below 250% of FPL (eligible for cost-sharing reductions) and Columns 4–6 are for the higher income group. Columns 1 and 4 only control for the relative price measures and do not include any additional county-level controls. Columns 2 and 5 add further county-level controls. Finally, Columns 3 and 6 add state fixed effects.

Across all panels we observe predictable and sensible estimates for the two price controls: higher relative price differentials for silver plans are associated with greater reduction in silver-tier enrollment. We tend to see that there is more weight on the relative price change measure for those with higher incomes, while for the lower-income group there is more weight on the absolute gap between the lowest-cost silver and bronze plans. The coefficients on the price controls vary somewhat across tables and also across specifications based on the control variables included, reflecting some degree of correlation with other control variables.

Table 3 Panel (a) shows the results for the number of plans. Consistent with the visual evidence in Figure 6, we generally find a negative relationship here showing that counties with a larger number of plans experienced larger shifts away from silver plans after the policy change. These estimates imply that an increase of 20 additional plans (close to a one-standard-deviation increase in Table 1) is associated with a

1.4 to 2.0 percentage point larger reduction in silver-tier enrollment among the lower-income group, relative to an average decline of 7.9 percentage points. For higher-income consumers, the point estimates across Columns 4 to 6 imply that an increase of 20 additional plans is associated with a 1.4 to 3.6 percentage point additional reduction in silver-tier enrollment. When we isolate to within-state variation using state fixed effects in Columns 3 and 6, however, the estimated effect is somewhat smaller: a 1.8 percentage point reduction for lower-income consumers and a 1.4 percentage point reduction for higher-income consumers with 20 additional plans. Overall, the evidence suggests that responses to the policy change were somewhat stronger in counties with more available plans.

The results in Table 3 Panel (b) for the number of insurers are overall less stable. The largest estimated effect is in Column 4, where we estimate without control variables that an additional insurer offering plans is associated with a 1.5 percentage point greater shift away from silver plans in 2018 for the higher income group. The estimate with state fixed effects in Column 6 is similar to that in Column 4, but slightly smaller. However, the estimate is less precise when controlling for the additional variables. The estimates for the lower-income group are relatively small and have large standard errors. With state fixed effects, the sign of the estimate flips but is still insignificant. Overall, we see this evidence as suggesting that there is not a strong or clear relationships between the number of insurers and the responsiveness to the price shock.

The results in Table 3 Panel (c) for the number of plans per insurer are the most consistent across specifications and income groups. In all of the specifications we see a negative estimated relationship where counties with more plans per insurer saw a larger shift away from silver plans. An increase of 5 additional plans per insurer (roughly a one-standard-deviation increase from Table 1) is associated with a 2.2 to 2.8 percentage point additional reduction in silver share for the lower-income group. For the higher-income group, 5 additional plans are associated with a 1.0–3.9 percentage point further reduction in silver share. This evidence suggests a fairly clear relationship: more plans per insurer are associated with greater shift away from the silver enrollment.

One potential concern is that the effect of larger choice-set size coincides with the increased prevalence of $0 bronze plans after silver loading (Drake et al., 2023). This may explain why very low-income consumers sometimes switched away from silver despite being eligible for CSR plans. To address this concern,

we re-estimate the main regressions controlling for the share of $0 bronze plans.[15] Appendix Table A3 reports the results. The coefficients of the choice-set size measures are slightly smaller than those in the main results. We also show similar results hold controlling for changes in the share of $0 Bronze plans, as shown in Appendix Table A4.

3.4 Simple Choice and Insurer Exits

Table 4 presents results for our first secondary metric of the choice environment – the percent of simple choice options in 2018. This table uses the same basic regression structure as our main results in Tables 3, but we also include a control for the total number of plans. Controlling for the number of plans allows us to isolate the role of simple-choice options themselves, rather than capturing the effect of simply adding more plans to the menu. For the lower-income group, the estimates are small, statistically insignificant, and somewhat unstable across specifications. By contrast, for the higher-income group we estimate that areas with more simple-choice options experienced a greater shift away from silver plans. The point estimates suggest that a two–percentage point increase in the share of simple-choice options—roughly one standard deviation—is associated with a 0.4 to 1.6 percentage point additional decline in silver-tier enrollment. These results are suggestive that simple-choice options might have allowed higher-income consumers, for whom switching away from silver plans was likely optimal, to better make comparisons across tiers.

In Table 5, we present results on the percent of 2017 enrollees whose insurer exited in 2018. In these regressions, we control for the total number of insurers in 2018, which allows us to isolate how switching from silver plans might differ based on the number of people who needed to select a new insurer. The idea behind this analysis is that an insurer exit is likely to break inertia patterns and prompt a more careful (re)consideration of the option set. Across both income groups and all specifications, the point estimates go in the direction that a higher share of enrollees experiencing an insurer exit is associated with a lower reduction in silver-tier enrollment share. The results are strongest for the lower-income group where we estimate in Column 2 that a 17-percentage point increase in the share with an insurer exit (roughly a one-

[15] Because enrollment data are only available in coarse FPL and age bins, we cannot directly calculate the share of consumers facing $0 bronze plans. Instead, we use a representative individual aged 46 with income at 150% of the FPL to proxy exposure to $0 bronze plans. This choice is motivated by the fact that consumers with incomes below 150% of the FPL account for 49% of total enrollment, and individuals younger than 46 make up 43% of enrollment. Thus, a 46-year-old consumer at 150% of the FPL provides a reasonable benchmark. For robustness, we also consider individuals aged 46 with incomes at 200% and 250% of the FPL. Appendix Figure A3 plots the distribution of these measures across counties.

standard-deviation increase from Table 1) is associated with a 1.5 percentage point smaller reduction in the silver enrollment share (from a baseline decrease of about 8 percentage point). The results are smaller and not statistically significant in Columns 4 to 6 for the higher income group.

In Table 6 where we show the estimates when simultaneously controlling for all three of our primary choice-set size measures along with the two secondary measures. The estimates are broadly consistent with the results described above. Namely, the clearest results are that the number of plans per insurer is associated with a greater shift away from silver plans. Ultimately, the results point to an interpretation that having more options, especially in terms of plans per insurer, is generally associated with a greater reaction to the silver-loading policy.

3.5 Heterogeneous Enrollment Responses by Share of Enrollees Below 150% of FPL

As we discussed earlier, it is unclear whether switching away from silver plans benefits consumers with incomes below 250% of FPL. Consumers with incomes between 100% and 150% of FPL are eligible for silver-tier plans with 94% actuarial value and this high generosity should make these individuals least likely to optimally switch. Ideally, we would examine silver enrollment shares for consumers with incomes between 150–200% of the FPL over time. However, silver enrollment data at this level of income granularity are not available for 2017 and earlier years. As a result, we split counties based on whether they have an above- or below-median share of enrollees with incomes below 150% of FPL among those with incomes below 250% of FPL. Appendix Table A7 presents results using our three primary measures, splitting counties by whether the share of enrollees with incomes below 150% of FPL (among those below 250% of FPL) is above or below the median. Overall, the results across these measures are consistent with our main analysis: in markets with larger choice sets, consumers are more likely to switch away from silver plans. More importantly, the effects are not smaller and often slightly stronger among counties with larger share of enrollees with incomes below 150% of FPL. As this group of consumers benefits least from switching from silver plans after the premium change, this suggests that the additional reactions among this group of consumers to the premiums may come at the cost of forgoing the generous risk protection offered by silver-tier plans.

3.6 Instrumental Variable Regressions

So far, we have argued that differential enrollment patterns are driven by choice-set size, given that it is a relatively stable feature of the choice environment and we control for extensive county-level factors potentially associated with choice-set size and consumer behavioral responses. However, in the absence of exogenous or quasi-experimental variation in the choice-set size, it remains possible that our measures of choice-set size are correlated with unobserved county-level factors that also influence enrollment behavior following the silver-loading policy. In order to further explore the possibility that the county-level variation in choice-set size is associated with other unobservable factors, we employ two instrumental variable strategies. These strategies allow us to address particular versions of potential endogeneity, but do not represent fully valid instruments that provide overall quasi-experimental identification. As such, they are best viewed as complementary robustness checks.

Our first instrument is a "leave-one-out" strategy, where we predict a county's choice-set size using the average choice-set size across all other counties in the same state. In this way we isolate the variation that comes from state-level differences in choice-set size measures, which may reflect state-level regulatory approaches. Recall from Figures 2 and 3 that there is substantial cross-state variation in these measures that is also stable over time. The potential benefit of this IV strategy is that if there are unobserved county-specific factors that influence both a county's reaction to silver loading and the menus offered in that county, this approach helps to address that source of endogeneity. It does not, however, address any forms of endogeneity that occur across all counties within a state.

For the second instrument we use a lagged approach where we predict the county-level choice-set-size measure in 2018 based on the level of that choice-set-size measure in 2017 in the county. This approach helps address the possibility that the variation in choice-set size measure in 2018 reflects county-level changes that are correlated with other changes specific to that county that affected silver-tier enrollment. By leveraging the variation that was predictable as of 2017, we exploit how tendencies in a county's choice-set size relate to reactions to silver loading. However, to the extent that there are time-invariant factors of a county that correlate with both choice-set size and reactions to silver loading that we cannot observe, this strategy will not address such forms of endogeneity.

Appendix Tables A8 and A9 present the results of these approaches, without and with county-level

controls, separately. In the first and third columns of each table we show the OLS results (corresponding to columns (1) and (3) and columns (2) and (4) from Tables 3, respectively); in the subsequent columns we include results using the two IV strategies. The IV results change the point estimates in some cases and are not entirely stable. However, the qualitative patterns described above hold overall when analyzing the IV strategies and we highlight in particular that the clearest results remain that the number of plans per insurer is estimated to increase the switching away from silver plans.

4 Conclusion

In this paper we contribute new evidence to our understanding of the role of choice-set size in health insurance markets by analyzing how consumers in private health insurance markets with different levels of choice-set size responded to a major shift in the relative prices of plan options. Consumers responded to the sharp increase in silver premiums and switched away from silver-tier plans among both consumers with incomes at or below 250% of FPL and those with incomes above 250% of FPL. We find that after silver loading consumers in counties with larger choice-set sizes shifted away from silver-tier plans somewhat more. These results go directionally against the hypothesis that having more options would make it harder for consumers to recognize changes and respond to the policy shift. This suggests that larger choice-set size did not prevent people from responding to a price shift in a way that choice-overload concerns would have predicted. The switch away from silver plans implies that more options might lead to better outcomes for consumers with higher income. However, the results for consumers with the lowest incomes suggest some caution is warranted in interpreting the impacts of many plan options as purely beneficial.

There are also two potential limitations to our study. First, we note that 2018 was a period when there were relatively few plans offered in ACA markets and that the size of choice menus has grown dramatically in recent years. Despite the fact that we are able to exploit significant variation in the number of plans offered, it could be that the range of menu sizes in 2018 does not allow us to detect potentially negative effects that would arise in the current environment. It would be valuable to find additional policy experiments to exploit to reanalyze these patterns for more recent years of ACA experience.

Second, we also note that the standardization of plan options may have benefits that our study design cannot detect. Our results suggest that the availability of simple choice options might have facilitated reac-

tions to the relative price change for higher income consumers but overall our results do not lend very strong support to the idea that standardizing plans and limiting the number of options would have a very large impact on choices. Yet standardized options could have other benefits that we do not detect when analyzing this policy change. For example, simple choice plans might facilitate enrollment on the extensive margin by making it simpler to decide whether or not to participate in the market at all, which would improve access to insurance and enhance competition (Chu et al., 2021). Given that proposals to further standardize plan options continue to surface among health policy advocates, it would be beneficial to have more research on this topic in the future.

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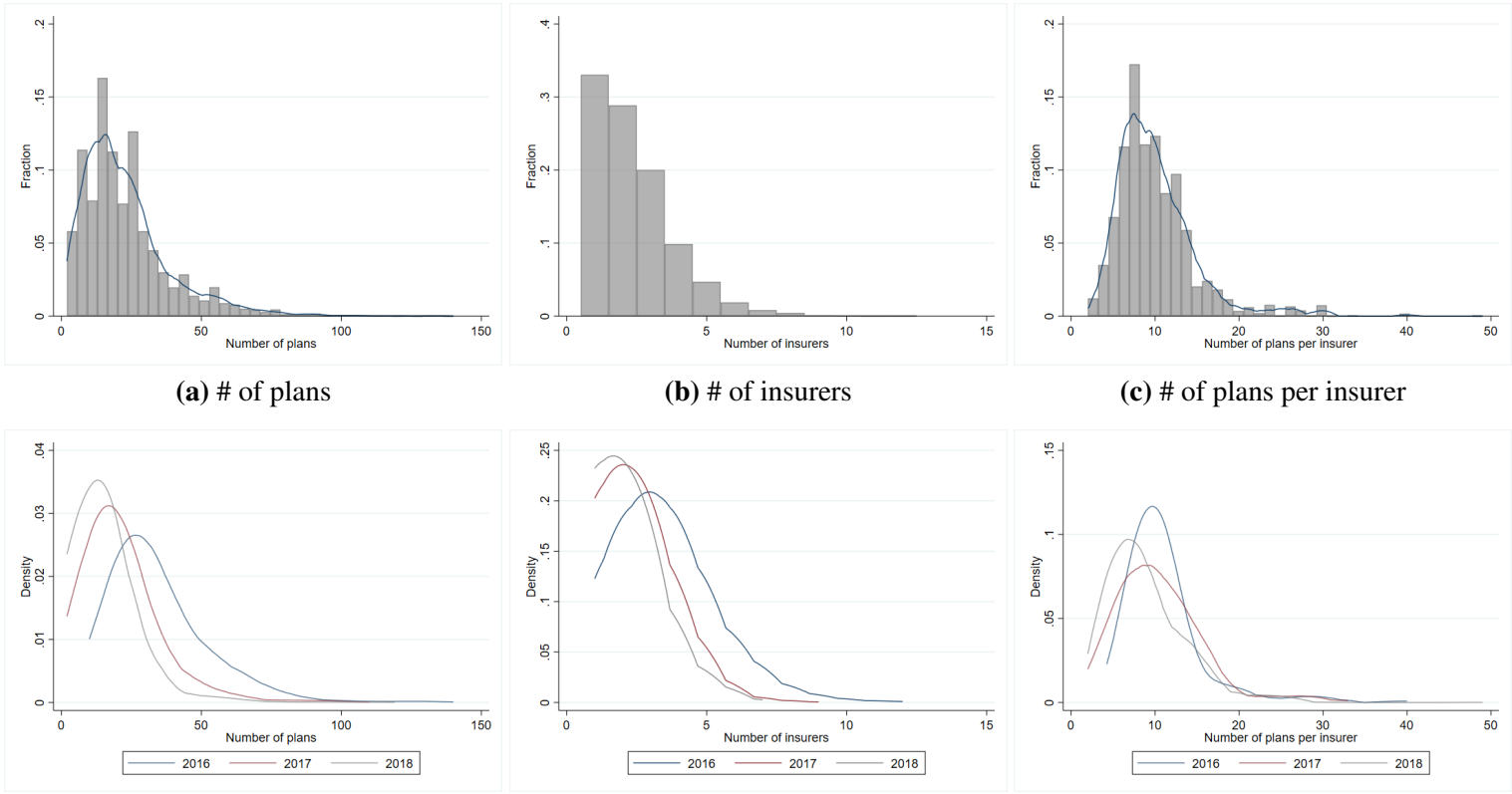
Figures and Tables

Figure 1: Distributions of choice-set-size measures

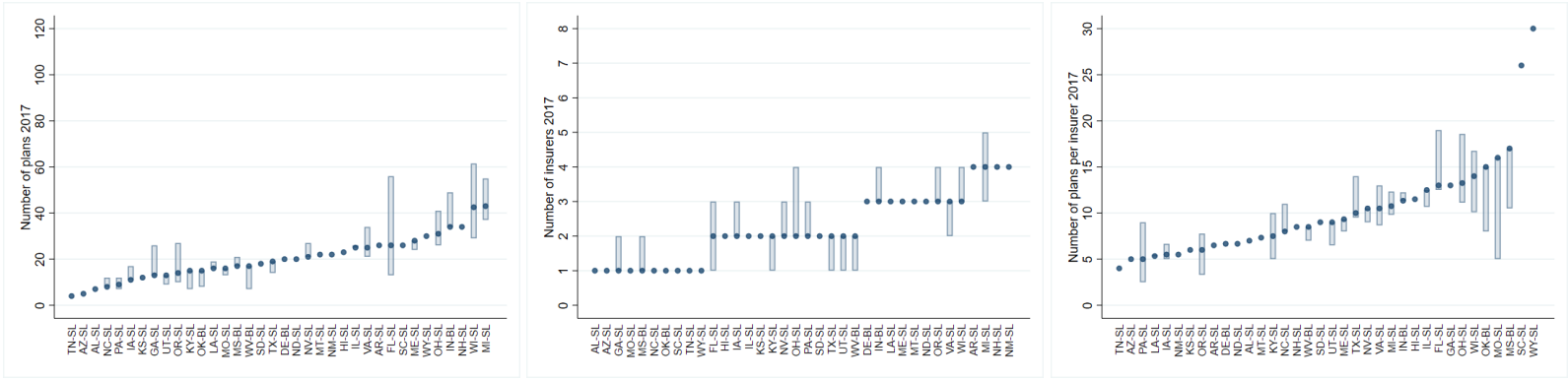


(a) # of plans **(b)** # of insurers **(c)** # of plans per insurer

(d) # of plans over time **(e)** # of insurers over time **(f)** # of plans per insurer over time

Note: Top panel figures plot the histograms of choice-set-size measures. The sample includes 7,620 county-year observations from 2016 to 2018. Panels (a) and (c) also overlay kernel density estimates (Epanechnikov kernel, bandwidths of 3.1 and 1.2, respectively). Bottom panel figures plot the kernel density of choice-set-size measures for each year. plot kernel densities of choice-set size measures by year. The sample includes 2,460 counties in 2016 and 2,580 in 2017 and 2018 (Kentucky is excluded in 2016 because it was a state-based exchange).

Figure 2: Choice-set size measures across and within states

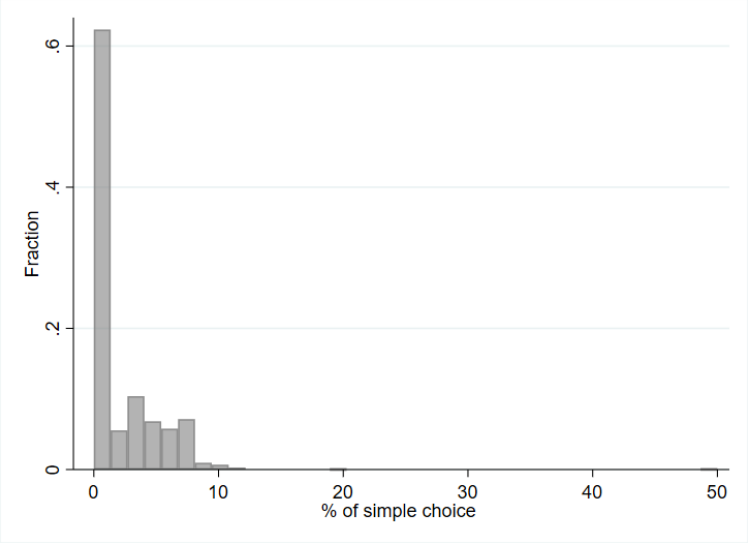


(a) # of plans - 2017 **(b)** # of insurers - 2017 **(c)** # of plans per insurer - 2017

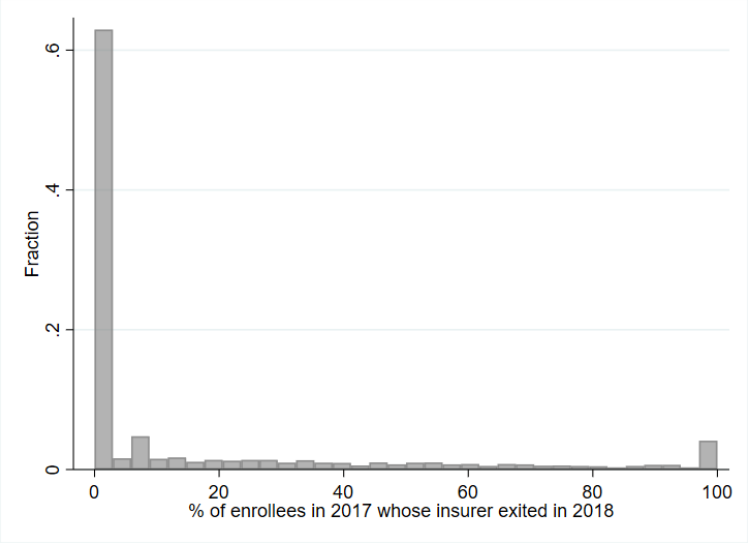
(d) # of plans - 2018 **(e)** # of insurers - 2018 **(f)** # of plans per insurer - 2018

Note: Figures plot the state-level median of each choice-set size measure across counties (circles). The boxes indicate the 25th–75th percentile range of county-level values within each state. On the x-axis, "SL" denotes states that implemented silver loading, while "BL" denotes states that used broad loading.

Figure 3: Distributions of simple choice and insurer exit



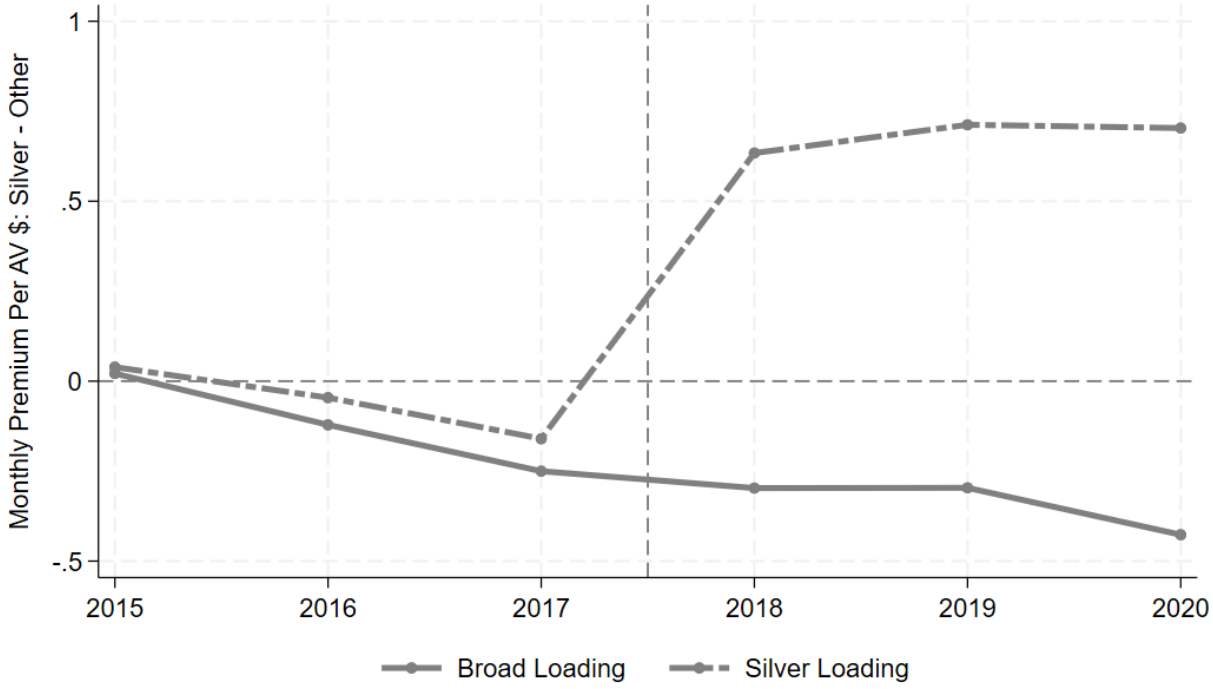
(a) Percent of simple choice plans



(b) Percent of 2017 enrollees whose insurer exited in 2018

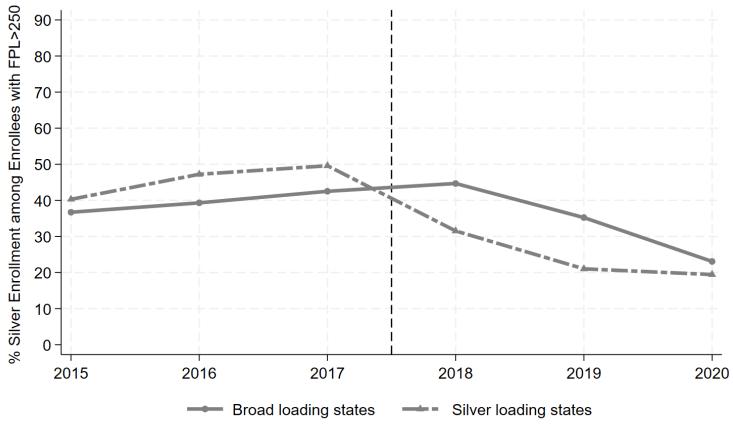
Note: Panel (a) plots the histogram the share of plans with the simple-choice design in 2017 and 2018. Panel (b) plots the distribution of the share of 2017 enrollees whose insurer exited the market in 2018. Observations are at the county-year level, with 5,156 county-year observations in Panel (a) and 2,542 in Panel (b).

Figure 4: Average silver premiums per AV relative to bronze and gold Plans

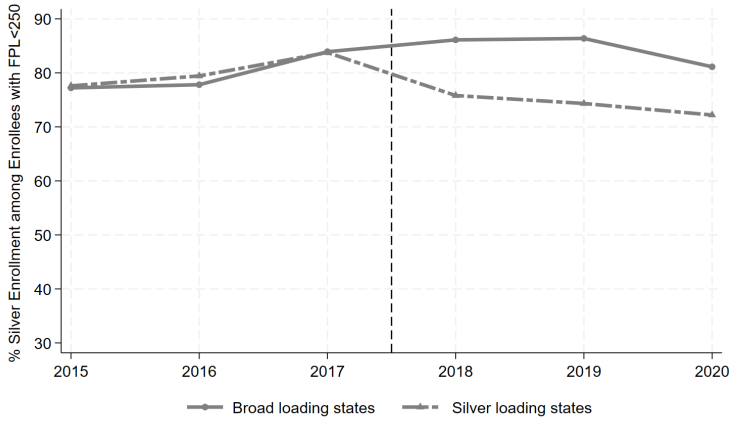


Note: The figure plots the difference between the average silver premium per unit of AV and the average bronze- and gold-plan premiums per AV over time.

Figure 5: Silver enrollment over time by income group



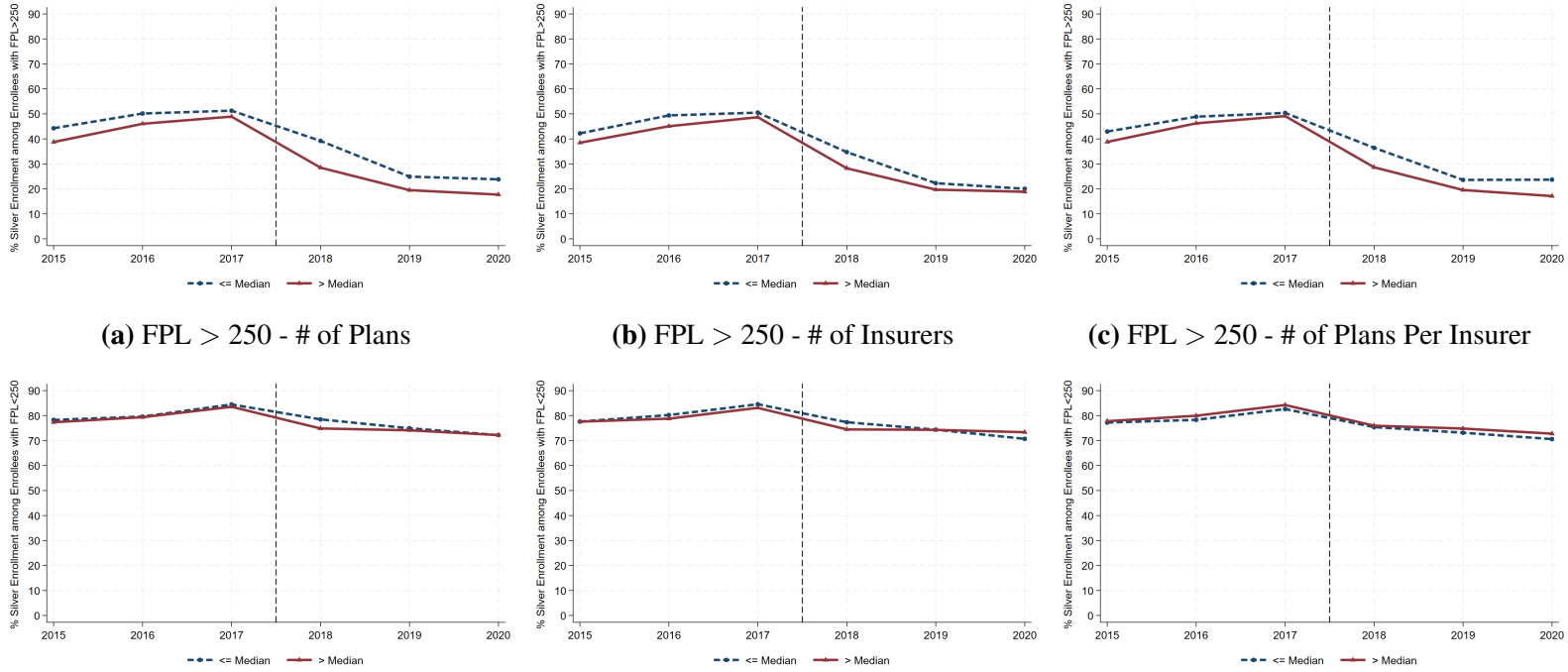
(a) FPL $>$ 250



(b) FPL $\leq$ 250

Note: Panel (a) plots silver enrollment share among enrollees with incomes $\geq$ 250% of FPL and Panel (b) plots the percent of silver enrollment among enrollees with incomes at or below 250% of FPL. The solid linerepresents broad-loading states, and the dashed line represents silver-loading states.

Figure 6: Silver enrollment pattern over time in silver loading states split by medians of the choice-set-size measures



(a) FPL $>$ 250 - # of Plans

(b) FPL $>$ 250 - # of Insurers

(c) FPL $>$ 250 - # of Plans Per Insurer

(d) FPL $\leq$ 250 - # of Plans

(e) FPL $\leq$ 250 - # of Insurers

(f) FPL $\leq$ 250 - # of Plans Per Insurer

Note: Figures plot percent of Silver enrollment. It pooled all the counties in silver loading states each year (N = 1822) and split by medians of choice-set-size measures as of 2018. The figures in top panels are among consumers with FPL $>$ 250 and the bottom panel are among consumers with FPL $\leq$ 250.

Table 1: Correlation of choice-set size measures over time at the state and county levels

	(1) State-level 2018-2017	(2) State-level 2017-2016	(3) County-level 2018-2017	(4) County-level 2017-2016
Number of plans	0.46***	0.45***	0.67***	0.59***
	(0.12)	(0.11)	(0.01)	(0.01)
Number of insurers	0.70***	0.45***	0.55***	0.51***
	(0.11)	(0.11)	(0.01)	(0.01)
Number of plans per insurer	0.50***	0.71***	0.61***	0.48***
	(0.10)	(0.13)	(0.02)	(0.02)
N (States/Counties)	35	35	2,460	2,460
Adjusted R-squared	0.40	0.45	0.79	0.78
Outcome Variable Mean	8.53	10.38	8.78	10.46
State Fixed Effects	No	No	Yes	Yes

Note: The table reports correlations of choice-set size measures over time at both the state and county levels. Columns (1) and (2) use the state-level median of each measure, while Columns (3) and (4) use county-level measures with state fixed effects. Columns (1) and (3) regress 2018 measures on 2017 measures, and Columns (2) and (4) regress 2017 measures on 2016 measures. Each row corresponds to a different measure of interest. The coefficient is the variable of interest on the lagged one. Standard errors are in the parenthesis.

Table 2: Summary statistics

	Mean	SD
Outcome Variables		
Changes in % Silver enrollment among FPL$\leq$250 from 17 to 18	-8.08	6.74
Changes in % Silver enrollment among FPL$>$250 from 17 to 18	-18.83	10.10
Lagged Outcome Variables		
Changes in % Silver enrollment among FPL$\leq$250 from 16 to 17	1.20	4.01
Changes in % Silver enrollment among FPL$>$250 from 16 to 17	7.23	6.65
Measures of Choice-set Sizes, Simple Choice, and Insurer Exits		
# of plans 2018	30.75	20.75
# of insurers 2018	2.78	1.35
# of plans per insurer 2018	10.89	5.05
% simple choice among all plans in 2018	1.75	1.86
% of enrollees in 2017 whose insurer exited for 2018	6.64	16.67
Other County-level Measures		
Average monthly silver premium per AV 2017	4.58	0.79
Silver per AV relative premium change from 17 to 18	0.89	0.47
Diff. of lowest monthly silver and bronze premium	100.84	32.76
Total population aged 21–64 (millions)	0.60	0.73
% population with FPL$<$400 among total pop aged 21–64	60.52	9.16
% population with age 50–64 among total pop aged 21–64	22.03	1.77
Rural Area	0.13	0.34
Total number of enrollees (000) 2017	71.95	104.82
Total number of enrollees (000) 2018	69.96	105.06

Note: The table reports means and standard deviations of the variables, weighted by total county enrollment in 2018. Observation is at at county level. N = 1,487. The states are restricted to silver loading states, including AL, AR, FL, HI, IA, IL, KS, LA, ME, MI, MT, NC, NM, NV, OH, OR, PA, SC, SD, TN, TX, UT, WI, and WY.

Table 3: Percentage point change in silver enrollment share (2017–2018) by choice-set size

	(1)	(2)	(3)	(4)	(5)	(6)
		FPL≤250			FPL>250	
Panel A: Number of plans in 2018						
# of plans 2018	-0.07**	-0.10***	-0.09***	-0.18***	-0.13***	-0.07*
	(0.03)	(0.02)	(0.03)	(0.04)	(0.04)	(0.04)
Silver Per AV Relative Premium Change	-0.27	0.64	1.66	-6.16***	-6.30***	0.81
	(1.55)	(1.10)	(1.68)	(1.63)	(1.69)	(1.13)
Diff. of Lowest Silver and Bronze Prm	-0.03*	-0.05***	-0.06***	-0.03	-0.07***	-0.18***
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)
Panel B: Number of insurers in 2018						
# of insurers 2018	-0.39	-0.48	0.18	-1.51***	-0.52	-1.12**
	(0.47)	(0.38)	(0.70)	(0.45)	(0.50)	(0.50)
Silver Per AV Relative Premium Change	-1.76	-1.05	2.65	-8.82***	-8.20***	0.94
	(1.58)	(1.12)	(1.68)	(1.69)	(1.69)	(1.16)
Diff. of Lowest Silver and Bronze Prm	-0.01	-0.04***	-0.05**	-0.01	-0.06**	-0.18***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Panel C: Number of plans per insurer in 2018						
# of plans per insurer 2018	-0.45***	-0.43***	-0.56***	-0.77***	-0.65***	-0.20
	(0.06)	(0.06)	(0.14)	(0.10)	(0.10)	(0.12)
Silver Per AV Relative Premium Change	0.21	0.31	2.14	-5.78***	-6.04***	0.81
	(1.57)	(1.07)	(1.55)	(1.69)	(1.57)	(1.14)
Diff. of Lowest Silver and Bronze Prm	-0.02	-0.03**	-0.05***	0.00	-0.05**	-0.18***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
N (Counties)	1,487	1,487	1,487	1,487	1,487	1,487
Mean Y (Change in % Silver Enrollment)	-7.91	-7.91	-7.91	-17.62	-17.62	-17.62
Additional Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

Note: The table reports OLS regression results weighted by enrollment above or below 250% of FPL in 2018. The outcome variables are the changes in the share of enrollees with silver plans between 2017 and 2018, reported separately for those with incomes $\leq$ 250% of the FPL and those with incomes $>$ 250%. The sample is restricted to silver-loading states on the federally facilitated exchange. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 4: Percentage point change in silver enrollment share (2017–2018) by percent of simple-choice plans in 2018

	(1)	(2)	(3)	(4)	(5)	(6)
		FPL≤250			FPL>250	
% simple choice among all plans in 2018	-0.02	-0.05	-0.02	-0.82***	-0.53***	-0.19
	(0.15)	(0.15)	(0.20)	(0.21)	(0.20)	(0.24)
Silver Per AV Relative Premium Change	-0.27	0.67	1.67	-5.99***	-6.11***	0.91
	(1.56)	(1.13)	(1.69)	(1.55)	(1.66)	(1.10)
Diff. of Lowest Silver and Bronze Prm	-0.03*	-0.05***	-0.06***	-0.03*	-0.07***	-0.18***
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)
# of plans 2018	-0.07**	-0.10***	-0.09***	-0.17***	-0.13***	-0.07*
	(0.03)	(0.02)	(0.03)	(0.03)	(0.03)	(0.04)
N (Counties)	1,487	1,487	1,487	1,487	1,487	1,487
Mean Y (Change in % Silver Enrollment)	-7.91	-7.91	-7.91	-17.62	-17.62	-17.62
Additional Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

Note: The table reports OLS regression results weighted by 2018 enrollment below or above 250% of FPL. The dependent variable is the percentage-point change in silver enrollment from 2017 to 2018 for each income group. The sample is restricted to silver-loading states on the federally facilitated exchange. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 5: Percentage point change in silver enrollment share (2017–2018) by percent of 2017 enrollees whose insurer exited in 2018

	(1)	(2)	(3)	(4)	(5)	(6)
		FPL≤250			FPL>250	
% of enrollees in 2017 whose insurer exited for 2018	0.03*	0.08***	0.07***	0.02	0.05*	0.01
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Silver Per AV Relative Premium Change	-1.62	-0.79	4.22***	-8.04***	-7.91***	1.02
	(1.62)	(1.08)	(1.60)	(1.73)	(1.76)	(1.17)
Diff. of Lowest Silver and Bronze Prm	-0.02	-0.04***	-0.07***	-0.01	-0.05*	-0.18***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
# of insurers 2018	-0.36	-0.33	-1.27***	-1.49***	-0.07	-1.21**
	(0.50)	(0.41)	(0.48)	(0.48)	(0.53)	(0.57)
N (Counties)	1,436	1,436	1,436	1,436	1,436	1,436
Mean Y (Change in % Silver Enrollment)	-7.96	-7.96	-7.96	-18.21	-18.21	-18.21
Additional Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

Note: The table reports OLS regression results weighted by the enrollment below or above 250% of FPL in 2018. The dependent variable is the percentage-point change in silver enrollment from 2017 to 2018 for each income group. The sample is restricted to silver-loading states on the federally facilitated exchange. The number of observations is smaller than in the summary statistics because the measure of insurer exit is calculated from county-insurer data, and some insurer-level data are missing. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

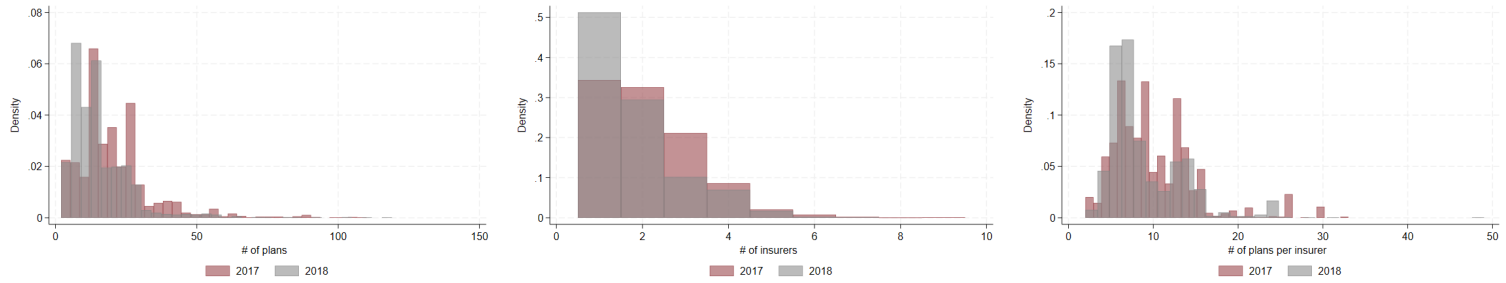
Table 6: Percentage point change in silver enrollment share (2017 to 2018) with all choice-set measures

	(1)	(2)	(3)	(4)	(5)	(6)
		FPL≤250			FPL>250	
# of plans 2018	0.02	-0.02	-0.03	0.11	0.06	0.10
	(0.04)	(0.04)	(0.06)	(0.07)	(0.07)	(0.08)
# of insurers 2018	-0.44	-0.43	-0.96	-2.43***	-1.13	-2.56**
	(0.58)	(0.65)	(0.99)	(0.83)	(0.92)	(1.05)
# of plans per insurer 2018	-0.49***	-0.37***	-0.31*	-0.97***	-0.77***	-0.41*
	(0.08)	(0.09)	(0.17)	(0.17)	(0.17)	(0.22)
% simple choice among all plans in 2018	-0.02	-0.00	-0.04	-0.63***	-0.34	-0.17
	(0.16)	(0.16)	(0.19)	(0.21)	(0.21)	(0.24)
% of enrollees in 2017 whose insurer exited for 2018	0.02	0.05***	0.06***	0.00	0.03	0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Silver Per AV Relative Premium Change	0.18	0.87	3.95**	-5.54***	-6.23***	0.76
	(1.50)	(1.08)	(1.62)	(1.55)	(1.64)	(1.11)
Diff. of Lowest Silver and Bronze Prm	-0.02	-0.05***	-0.07***	-0.03	-0.04*	-0.17***
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.03)
N (Counties)	1,436	1,436	1,436	1,436	1,436	1,436
Mean Y (Change in % Silver Enrollment)	-7.96	-7.96	-7.96	-18.21	-18.21	-18.21
Additional Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

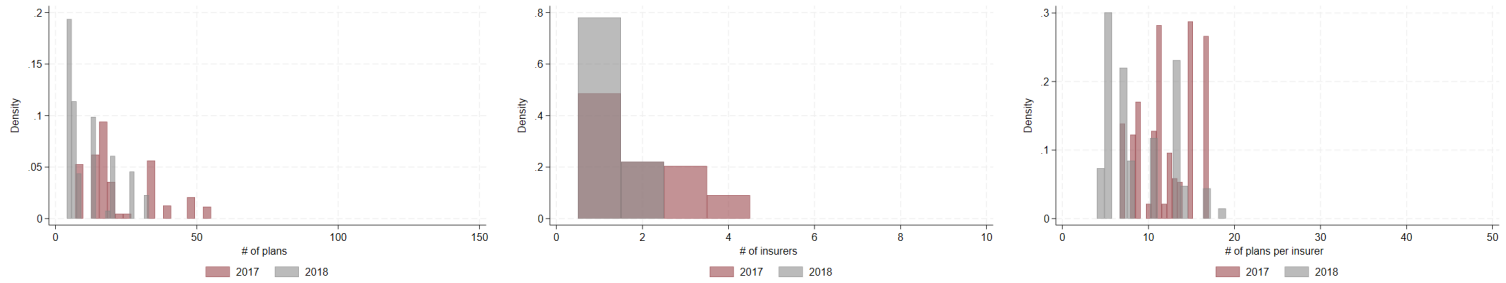
Note: The table reports OLS regression results weighted by the enrollment below or above 250% of FPL in 2018. The dependent variable is the percentage-point change in silver enrollment from 2017 to 2018 for each income group. The sample is restricted to silver-loading states on the federally facilitated exchange. The number of observations is smaller than in the summary statistics because the measure of insurer exit is calculated from county-insurer data, and some insurer-level data are missing. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Appendix A Appendix Figures and Tables

Figure A1: Distribution of choice-set sizes in silver loading states and broad loading states



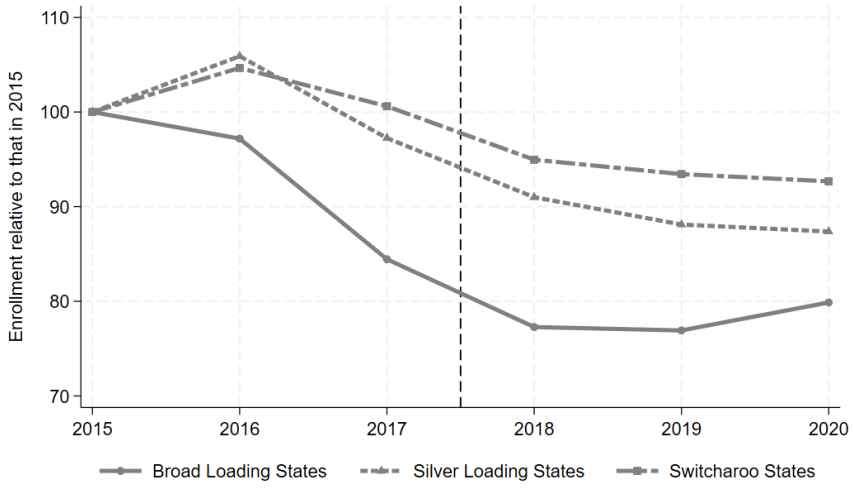
(a) # of plans - SL **(b)** # of insurers - SL **(c)** # of plans per insurer - SL



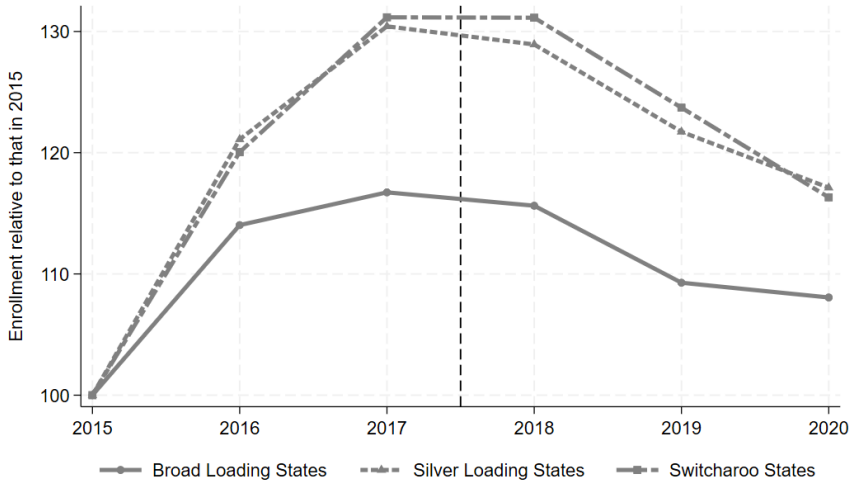
(d) # of plans - BL **(e)** # of insurers - BL **(f)** # of plans per insurer - BL

Note: Top panel figures plot the distribution of choice-set-size measures in silver loading states, and the bottom panel figures are for broad loading states. Observation are at county level.

Figure A2: Total enrollment over time by income group in silver loading, broad loading and switcharoo states



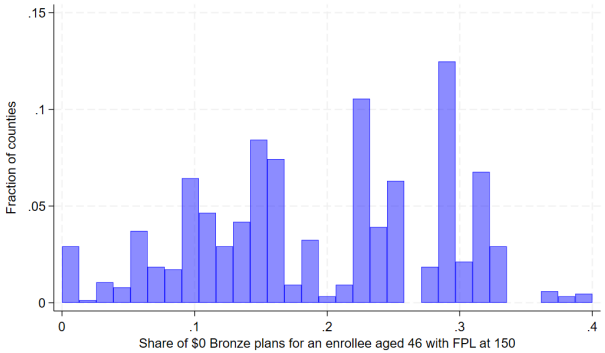
(a) FPL $\leq$ 250



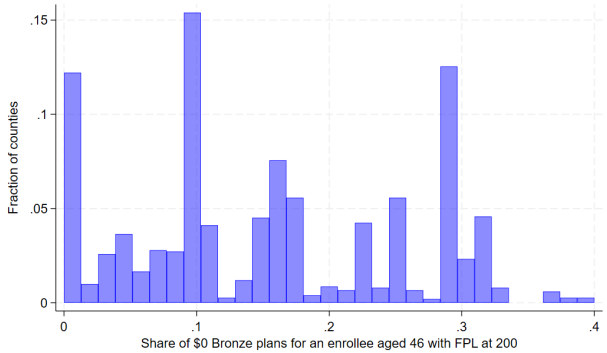
(b) FPL $>$ 250

Note: Panel (a) plots enrollment among enrollees with incomes at or below 250% of FPL over time (as a percentage of the 2015 level) in silver loading, broad loading and switcharoo states, in which silver loading was only for on-exchange but not off-exchange plans. Panel (b) Panel (b) shows the same measure for enrollees with incomes above 250% of FPL.

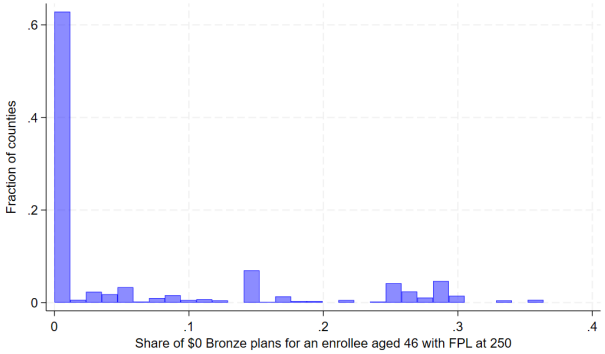
Figure A3: Distribution of $0 bronze plan availability for a 46-year-old enrollee



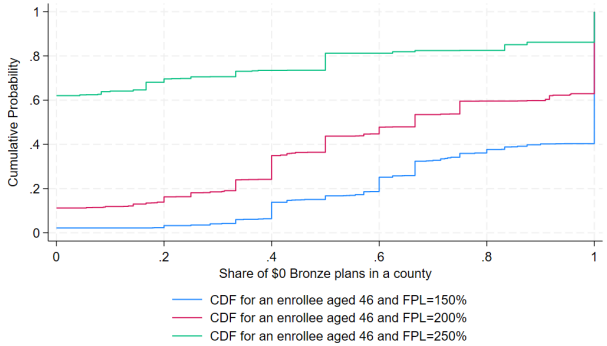
(a) Histogram for a consumer aged 46 with income = 150% of FPL



(b) Histogram for a consumer aged 46 with income = 200% of FPL



(c) Histogram for a consumer aged 46 with income = 250% of FPL



(d) CDF

Note: Figures in Panels (a)–(c) plot the histogram of the share of $0 bronze plans in the choice set of a representative 46-year-old enrollee with income at 150%, 200%, and 250% of the FPL, respectively. Panel (d) shows the CDF of the share of $0 bronze plans for the same enrollee across the three income levels. Observations are at the county level.

Table A1: Determinants of choice-set size

	(1)		(2)		(3)		(4)		(5)		(6)	
	# of Plans				**# of Insurers**				**Plans per Insurer**			
	Level	Std. β	Level	Std. β	Level	Std. β	Level	Std. β	Level	Std. β	Level	Std. β
Total pop aged 21–64 (mil)	15.08***	0.20	8.13***	0.11	1.36***	0.19	0.89***	0.13	0.51	0.02	-0.61	-0.02
	(4.00)		(2.70)		(0.32)		(0.22)		(0.51)		(0.43)	
% pop FPL $<$ 400	-0.05**	-0.05	-0.03	-0.03	-0.01***	-0.07	-0.01***	-0.08	0.04***	0.08	0.03***	0.06
	(0.02)		(0.02)		(0.00)		(0.00)		(0.01)		(0.01)	
Share aged 50–64	23.44***	0.11	-2.47	-0.03	1.89***	0.09	-0.80***	-0.04	4.22**	0.05	0.82	0.01
	(4.83)		(3.49)		(0.46)		(0.27)		(1.79)		(1.08)	
Avg. Silver Premium per AV (2017)	-2.63***	-0.22	-4.61***	-0.38	-0.26***	-0.22	-0.26***	-0.23	-0.73***	-0.15	-1.28***	-0.26
	(0.18)		(0.34)		(0.02)		(0.03)		(0.08)		(0.13)	
Rural	-2.60***	-0.12	-1.17***	-0.05	-0.03	-0.02	-0.06**	-0.03	-1.28***	-0.14	-0.13	-0.01
	(0.55)		(0.37)		(0.05)		(0.03)		(0.22)		(0.14)	
N (Counties)	2,577		2,577		2,577		2,577		2,577		2,577	
Adj. R^2	0.13		0.58		0.11		0.75		0.04		0.67	
Mean Y	14.78		14.78		1.73		1.73		8.88		8.88	
SD Y	10.69		10.69		1.00		1.00		4.39		4.39	
State FE	No		Yes		No		Yes		No		Yes	

Note: The table reports OLS regression results for the determinants of choice-set size. The sample includes both silver-loading and non–silver-loading states on the federally facilitated exchange. Outcome variables reflect choice-set size in 2018, with all explanatory variables measured in 2017. "Std. β" reports standardized coefficients. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A2: Determinants of two simple choice and insurer exit

	(1)		(2)		(3)		(4)	
	% Simple Choice / All Plans (2018)				**% of 2017 Enrollees Whose Insurer Exited (2018)**			
	Level	Std. β	Level	Std. β	Level	Std. β	Level	Std. β
Total population aged 21–64 (mil)	-0.31	-0.01	-1.39***	-0.06	-16.96***	-0.09	-3.13	-0.02
	(0.29)		(0.42)		(3.19)		(1.93)	
% pop FPL < 400	-0.03***	-0.08	-0.01	-0.02	-0.48***	-0.16	-0.19***	-0.06
	(0.01)		(0.01)		(0.07)		(0.06)	
Share aged 50–64	-0.99	-0.02	-3.16**	-0.05	-4.48	-0.01	-7.15	-0.01
	(1.43)		(1.24)		(11.51)		(9.88)	
Avg. Silver Premium per AV (2017)	-0.75***	-0.21	-0.69***	-0.19	-4.71***	-0.14	0.89	0.03
	(0.06)		(0.10)		(0.56)		(1.24)	
Rural	0.36**	0.06	0.45***	0.07	-4.68***	-0.08	-4.41***	-0.07
	(0.15)		(0.12)		(1.45)		(1.19)	
N (Counties)	2,577		2,577		2,400		2,400	
Adjusted R^2	0.05		0.42		0.06		0.44	
Mean Y	1.78		1.78		15.80		15.80	
SD Y	3.12		3.12		28.86		28.86	
State Fixed Effects	No		Yes		No		Yes	

Note: The table reports OLS regression results for the determinants of choice-set size. The sample includes both silver-loading and non–silver-loading states on the federally facilitated exchange. Outcome variables reflect choice-set size in 2018, with all explanatory variables measured in 2017. "Std. β" reports standardized coefficients. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A3: Robustness check: controlling for share of $0 bronze plans among all plans in 2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		FPL≤250				FPL>250		
	Baseline	0 Bronze-150	0 Bronze-200	0 Bronze-250	Baseline	0 Bronze-150	0 Bronze-200	0 Bronze-250
Panel A: Number of plans in 2018								
# of plans 2018	-0.10***	-0.08***	-0.07***	-0.07***	-0.13***	-0.08***	-0.08**	-0.06**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.03)	(0.03)	(0.03)
Silver Per AV Relative Premium Change	0.64	1.28	1.36	0.92	-6.30***	-4.67***	-5.49***	-5.60***
	(1.10)	(1.14)	(1.06)	(0.98)	(1.69)	(1.57)	(1.49)	(1.22)
Diff. of Lowest Silver and Bronze Prm	-0.05***	-0.07***	-0.09***	-0.08***	-0.07***	-0.12***	-0.13***	-0.13***
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Panel B: Number of insurers in 2018								
# of insurers 2018	-0.48	-0.11	0.29	-0.08	-0.52	0.29	0.54	0.15
	(0.38)	(0.36)	(0.35)	(0.34)	(0.50)	(0.41)	(0.50)	(0.40)
Silver Per AV Relative Premium Change	-1.05	0.20	0.41	-0.20	-8.20***	-5.53***	-6.40***	-6.49***
	(1.12)	(1.18)	(1.07)	(1.00)	(1.69)	(1.63)	(1.53)	(1.23)
Diff. of Lowest Silver and Bronze Prm	-0.04***	-0.07***	-0.09***	-0.08***	-0.06**	-0.11***	-0.13***	-0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)
Panel C: Number of plans per insurer in 2018								
# of plans per insurer 2018	-0.43***	-0.38***	-0.36***	-0.30***	-0.65***	-0.52***	-0.55***	-0.37***
	(0.06)	(0.07)	(0.06)	(0.06)	(0.10)	(0.09)	(0.09)	(0.08)
Silver Per AV Relative Premium Change	0.31	1.11	1.45	0.62	-6.04***	-4.10***	-4.70***	-5.39***
	(1.07)	(1.11)	(1.05)	(1.00)	(1.57)	(1.48)	(1.38)	(1.18)
Diff. of Lowest Silver and Bronze Prm	-0.03**	-0.06***	-0.08***	-0.06***	-0.05**	-0.10***	-0.11***	-0.12***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
N (Counties)	1,487	1,487	1,487	1,487	1,487	1,487	1,487	1,487
Mean Y (Change in % Silver Enrollment)	-7.91	-7.91	-7.91	-7.91	-17.62	-17.62	-17.62	-17.62
Additional Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	No	No	No	No	No	No	No	No

Note: The table reports OLS regression results weighted by enrollment above or below 250% of FPL in 2018. The outcome variables are the changes in the share of enrollees with silver plans between 2017 and 2018, reported separately for those with incomes $\leq$ 250% of the FPL and those with incomes $>$ 250%. The sample is restricted to silver-loading states on the federally facilitated exchange. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Additionally, Columns (2)–(4) and (6)–(8) control for the share of $0 bronze plans in the choice set of a representative consumer aged 45 with incomes at 150%, 200%, and 250% of FPL. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A4: Robustness check: changes in the share of $0 bronze plans among all plans in 2018

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		FPL≤250				FPL>250		
	Baseline	0 Bronze-150	0 Bronze-200	0 Bronze-250	Baseline	0 Bronze-150	0 Bronze-200	0 Bronze-250
Panel A: Number of plans in 2018								
# of plans 2018	-0.10***	-0.10***	-0.09***	-0.08***	-0.13***	-0.13***	-0.13***	-0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)	(0.04)	(0.03)
Silver Per AV Relative Premium Change	0.64	0.65	0.65	1.08	-6.30***	-6.29***	-6.26***	-5.46***
	(1.10)	(1.12)	(1.02)	(0.99)	(1.69)	(1.68)	(1.64)	(1.26)
Diff. of Lowest Silver and Bronze Prm	-0.05***	-0.05***	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***	-0.12***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Panel B: Number of insurers in 2018								
# of insurers 2018	-0.48	-0.48	-0.09	-0.09	-0.52	-0.53	-0.33	0.03
	(0.38)	(0.38)	(0.37)	(0.35)	(0.50)	(0.51)	(0.51)	(0.43)
Silver Per AV Relative Premium Change	-1.05	-1.05	-0.82	-0.09	-8.20***	-8.18***	-8.02***	-6.60***
	(1.12)	(1.12)	(1.01)	(1.00)	(1.69)	(1.66)	(1.61)	(1.27)
Diff. of Lowest Silver and Bronze Prm	-0.04***	-0.04***	-0.07***	-0.07***	-0.06**	-0.05**	-0.07***	-0.11***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)	(0.02)
Panel C: Number of plans per insurer in 2018								
# of plans per insurer 2018	-0.43***	-0.46***	-0.43***	-0.33***	-0.65***	-0.66***	-0.65***	-0.47***
	(0.06)	(0.07)	(0.06)	(0.06)	(0.10)	(0.10)	(0.10)	(0.09)
Silver Per AV Relative Premium Change	0.31	0.43	0.71	0.80	-6.04***	-6.01***	-5.76***	-5.22***
	(1.07)	(1.13)	(0.99)	(1.01)	(1.57)	(1.61)	(1.47)	(1.22)
Diff. of Lowest Silver and Bronze Prm	-0.03**	-0.04**	-0.06***	-0.06***	-0.05**	-0.05**	-0.07***	-0.10***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
N (Counties)	1,487	1,487	1,487	1,487	1,487	1,487	1,487	1,487
Mean Y (Change in % Silver Enrollment)	-7.91	-7.91	-7.91	-7.91	-17.62	-17.62	-17.62	-17.62
Additional Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	No	No	No	No	No	No	No	No

Note: The table reports OLS regression results weighted by enrollment above or below 250% of FPL in 2018. The outcome variables are the changes in the share of enrollees with silver plans between 2017 and 2018, reported separately for those with incomes $\leq$ 250% of the FPL and those with incomes $>$ 250%. The sample is restricted to silver-loading states on the federally facilitated exchange. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Additionally, Columns (2)–(4) and (6)–(8) control for changes in the share of $0 bronze plans in the choice set of a representative consumer aged 45 with incomes at 150%, 200%, and 250% of FPL. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A5: Heterogeneity results by share of $0 bronze plans among all plans in 2018 for consumers with FPL $\leq$ 250%

	(1)	(2)	(3)	(4)	(5)	(6)
	Share of $0 Bronze Plans $\leq$ Median			Share of $0 Bronze Plans $>$ Median		
Panel A: Number of plans in 2018						
# of plans 2018	-0.06**	-0.07***	-0.08***	-0.12***	-0.20***	-0.21***
	(0.03)	(0.02)	(0.02)	(0.04)	(0.04)	(0.06)
Silver Per AV Relative Premium Change	1.59	3.75***	2.50	-2.79**	-1.60*	4.88***
	(2.65)	(1.38)	(2.22)	(1.32)	(0.95)	(1.46)
Diff. of Lowest Silver and Bronze Prm	-0.06**	-0.10***	-0.01	0.00	-0.01	-0.19***
	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
Panel B: Number of insurers in 2018						
# of insurers 2018	0.02	0.46	-1.38***	-1.13***	-1.50***	-2.48***
	(0.52)	(0.40)	(0.46)	(0.38)	(0.39)	(0.96)
Silver Per AV Relative Premium Change	0.28	2.46*	2.55	-3.35**	-2.58**	6.82***
	(2.51)	(1.36)	(2.18)	(1.40)	(1.03)	(1.27)
Diff. of Lowest Silver and Bronze Prm	-0.05*	-0.10***	-0.01	0.00	-0.01	-0.19***
	(0.03)	(0.02)	(0.03)	(0.02)	(0.02)	(0.03)
Panel C: Number of plans per insurer in 2018						
# of plans per insurer 2018	-0.45***	-0.32***	-0.26*	-0.25***	-0.28***	-0.25***
	(0.08)	(0.08)	(0.15)	(0.09)	(0.10)	(0.09)
Silver Per AV Relative Premium Change	1.89	3.15**	2.54	-2.64**	-1.83*	6.42***
	(2.35)	(1.33)	(2.27)	(1.31)	(1.01)	(1.53)
Diff. of Lowest Silver and Bronze Prm	-0.04	-0.09***	-0.01	0.01	0.00	-0.18***
	(0.03)	(0.02)	(0.04)	(0.02)	(0.02)	(0.04)
N (Counties)	748	748	1,010	739	739	477
Mean Y (Change in % Silver Enrollment)	-8.44	-8.44	-8.16	-6.29	-6.29	-6.98
Additional Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

Note: The table reports OLS regression results weighted by the enrollment at or below 250% of FPL in 2018. Columns 1-3 reports results for counties with share of $0 bronze plans at or below the median, columns 4-6 report results for those above the median. Outcome variables are changes in percent of Silver enrollment among enrollees with FPL $\leq$ 250 from 2017 to 2018. The sample is restricted Silver loading states on the Federal-facilitated exchange. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A6: Heterogeneity results by share of $0 bronze plans among all plans in 2018 for consumers with FPL > 250%

	Share of $0 Bronze Plans ≤ Median			Share of $0 Bronze Plans > Median		
Panel A: Number of plans in 2018						
# of plans 2018	-0.13***	-0.10***	-0.03	-0.37***	-0.25***	-0.23***
	(0.04)	(0.04)	(0.03)	(0.07)	(0.07)	(0.06)
Silver Per AV Relative Premium Change	-2.03	-2.02	-2.15**	-8.58***	-9.09***	1.33
	(1.75)	(1.84)	(0.90)	(1.83)	(1.65)	(2.09)
Diff. of Lowest Silver and Bronze Prm	-0.12***	-0.18***	-0.05***	0.04*	0.04*	-0.32***
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.04)
Panel B: Number of insurers in 2018						
# of insurers 2018	-0.70	0.07	-0.85**	-2.00***	-0.49	-2.72***
	(0.45)	(0.54)	(0.35)	(0.70)	(0.76)	(0.74)
Silver Per AV Relative Premium Change	-4.07**	-3.65*	-2.13**	-10.23***	-10.26***	3.18*
	(1.95)	(1.94)	(0.86)	(2.05)	(1.83)	(1.86)
Diff. of Lowest Silver and Bronze Prm	-0.11***	-0.18***	-0.05***	0.05**	0.06**	-0.33***
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)
Panel C: Number of plans per insurer in 2018						
# of plans per insurer 2018	-0.55***	-0.45***	-0.03	-0.91***	-0.68***	-0.23*
	(0.11)	(0.10)	(0.09)	(0.24)	(0.20)	(0.12)
Silver Per AV Relative Premium Change	-2.08	-2.64	-2.22**	-7.26***	-8.29***	2.43
	(1.85)	(1.71)	(0.93)	(2.04)	(1.86)	(2.18)
Diff. of Lowest Silver and Bronze Prm	-0.10***	-0.16***	-0.06***	0.06**	0.05**	-0.32***
	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)	(0.04)
N (Counties)	748	748	1,010	739	739	477
Mean Y (Change in % Silver Enrollment)	-19.60	-19.60	-18.35	-13.43	-13.43	-15.64
Additional Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

Note: The table reports OLS regression results weighted by the enrollment above 250% of FPL in 2018. Columns 1-3 reports results for counties with share of $0 bronze plans at or below the median, columns 4-6 report results for those above the median. Outcome variables are changes in percent of Silver enrollment among enrollees with FPL $\leq$ 250 from 2017 to 2018. The sample is restricted Silver loading states on the Federal-facilitated exchange. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A7: Heterogeneity in enrollment responses by share of consumers with income below 150% of the FPL among those below 250% of the FPL

	(1)	(2)	(3)	(4)	(5)	(6)
	Below-med share of pop < 150% FPL			Above-med share of pop < 150% FPL		
Panel A: Number of plans in 2018						
# of plans 2018	-0.09***	-0.11***	-0.14***	-0.09***	-0.14***	-0.10***
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)
Silver Per AV Relative Premium Change	-3.34**	-2.47*	2.71***	0.03	2.04	7.21***
	(1.48)	(1.32)	(0.79)	(1.71)	(1.32)	(2.67)
Diff. of Lowest Silver and Bronze Prm	-0.08***	-0.12***	-0.03	-0.01	-0.02	-0.09***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Panel B: Number of insurers in 2018						
# of insurers 2018	-0.13	-0.14	-3.49***	-0.44	-2.08***	-0.60
	(0.27)	(0.28)	(0.61)	(0.72)	(0.55)	(0.56)
Silver Per AV Relative Premium Change	-3.20**	-2.31	3.02***	-2.00	0.85	7.46***
	(1.59)	(1.44)	(0.82)	(1.59)	(1.28)	(2.70)
Diff. of Lowest Silver and Bronze Prm	-0.07***	-0.11***	-0.02	0.01	-0.02	-0.09***
	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)
Panel C: Number of plans per insurer in 2018						
# of plans per insurer 2018	-0.43***	-0.41***	-0.12	-0.59***	-0.53***	-0.60***
	(0.14)	(0.12)	(0.16)	(0.05)	(0.08)	(0.12)
Silver Per AV Relative Premium Change	-2.55*	-1.67	3.26***	0.59	0.81	7.01***
	(1.44)	(1.31)	(0.99)	(1.60)	(1.12)	(2.55)
Diff. of Lowest Silver and Bronze Prm	-0.07***	-0.11***	-0.03	0.00	0.00	-0.08***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
N (Counties)	744	744	749	743	743	736
Mean Y (Change in % Silver Enrollment)	-9.25	-9.25	-9.57	-7.43	-7.43	-7.19
Additional Controls	No	Yes	Yes	No	Yes	Yes
State Fixed Effects	No	No	Yes	No	No	Yes

Note: The table reports OLS regression results weighted by the enrollment at or below 250% of FPL in 2018. Columns 1-3 reports results for counties with share of consumers with incomes below 150% of FPL at or below the median, and Columns 4-6 report results for counties above the median. The dependent variable is the percentage-point change in silver enrollment from 2017 to 2018 among enrollees with FPL ≤ 250. The sample is restricted to silver-loading states on the federally facilitated exchange. Additional control variables include the lagged outcome variable, average silver premium per AV in 2017, total population, the share of the population with income below 400% of FPL, and an indicator for rural counties. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A8: IV estimates: percentage point change in silver enrollment share (2017–2018) by choice-set size measures without controls

	(1)	(2)	(3)	(4)	(5)	(6)
		FPL≤250			FPL>250	
	OLS	2SLS	2SLS	OLS	2SLS	2SLS
	(No IV)	(Leave 1 IV)	(Lagged IV)	(No IV)	(Leave 1 IV)	(Lagged IV)
Panel A: Number of plans in 2018						
# of plans 2018	-0.07**	-0.10**	-0.06	-0.18***	-0.23***	-0.18***
	(0.03)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Silver Per AV Relative Premium Change	-0.27	0.36	-0.61	-6.16***	-5.33***	-6.27***
	(1.55)	(1.47)	(1.38)	(1.63)	(1.70)	(1.68)
Diff. of Lowest Silver and Bronze Prm	-0.03*	-0.04**	-0.02	-0.03	-0.04*	-0.03
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
First Stage F-test Value		1,659.88	5,949.57		1,152.90	4,930.12
Panel B: Number of insurers in 2018						
# of insurers 2018	-0.39	-0.96**	0.02	-1.51***	-0.72	-1.71***
	(0.47)	(0.38)	(0.58)	(0.45)	(0.47)	(0.55)
Silver Per AV Relative Premium Change	-1.76	-1.43	-1.99	-8.82***	-8.95***	-8.78***
	(1.58)	(1.80)	(1.44)	(1.69)	(1.78)	(1.67)
Diff. of Lowest Silver and Bronze Prm	-0.01	-0.03	-0.01	-0.01	0.00	-0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
First Stage F-test Value		1,165.22	5,192.58		1,252.80	4,658.57
Panel C: Number of plans per insurer in 2018						
# of plans per insurer 2018	-0.45***	-0.44***	-0.56***	-0.77***	-0.86***	-0.68***
	(0.06)	(0.11)	(0.06)	(0.10)	(0.12)	(0.11)
Silver Per AV Relative Premium Change	0.21	0.15	0.76	-5.78***	-5.38***	-6.15***
	(1.57)	(1.35)	(1.72)	(1.69)	(1.62)	(1.78)
Diff. of Lowest Silver and Bronze Prm	-0.02	-0.02	-0.02	0.00	-0.00	0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
First Stage F-test Value		2,616.20	3,680.49		2,060.51	2,810.47
N (Counties)	1,487	1,487	1,487	1,487	1,487	1,487
Mean Y (Change in % Silver Enrollment)	-7.91	-7.91	-7.91	-17.62	-17.62	-17.62
Additional Controls	No	No	No	No	No	No
State Fixed Effects	No	No	No	No	No	No

Note: The table reports 2SLS regression estimates without additional controls, weighted by county-level enrollment above or below 250% of FPL in 2018. The outcome variables are the changes in the share of enrollees with silver plans between 2017 and 2018, reported separately for those with incomes $\leq$ 250% of the FPL and those with incomes $>$ 250%. The leave 1 IV uses the average choice-set size of other counties within the same state, while the lagged IV uses the county's own choice-set size in 2017 to predict its 2018 value. The sample is restricted to silver-loading states on the federally facilitated exchange. Robust standard errors are reported in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A9: IV estimates: percentage point change in silver enrollment share (2017–2018) by choice-set size measures with controls

	(1)	(2)	(3)	(4)	(5)	(6)
		FPL≤250			FPL>250	
	OLS	2SLS	2SLS	OLS	2SLS	2SLS
	(No IV)	(Leave 1 IV)	(Lagged IV)	(No IV)	(Leave 1 IV)	(Lagged IV)
Panel A: Number of plans in 2018						
# of plans 2018	-0.10***	-0.14***	-0.06**	-0.13***	-0.21***	-0.11***
	(0.02)	(0.04)	(0.03)	(0.04)	(0.05)	(0.04)
Silver Per AV Relative Premium Change	0.64	1.36	-0.20	-6.30***	-5.18***	-6.62***
	(1.10)	(1.26)	(1.05)	(1.69)	(1.78)	(1.78)
Diff. of Lowest Silver and Bronze Prm	-0.05***	-0.06***	-0.04***	-0.07***	-0.08***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
First Stage F-test Value		889.01	3,649.92		875.35	3,953.37
Panel B: Number of insurers in 2018						
# of insurers 2018	-0.48	0.07	0.67	-0.52	0.39	-0.54
	(0.38)	(0.52)	(0.48)	(0.50)	(0.64)	(0.60)
Silver Per AV Relative Premium Change	-1.05	-1.29	-1.56	-8.20***	-8.46***	-8.19***
	(1.12)	(1.15)	(1.13)	(1.69)	(1.76)	(1.70)
Diff. of Lowest Silver and Bronze Prm	-0.04***	-0.04**	-0.03	-0.06**	-0.05	-0.06**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
First Stage F-test Value		1,121.39	2,806.00		1,248.85	3,372.18
Panel C: Number of plans per insurer in 2018						
# of plans per insurer 2018	-0.43***	-0.49***	-0.51***	-0.65***	-0.79***	-0.60***
	(0.06)	(0.08)	(0.08)	(0.10)	(0.11)	(0.11)
Silver Per AV Relative Premium Change	0.31	0.53	0.61	-6.04***	-5.53***	-6.20***
	(1.07)	(1.04)	(1.10)	(1.57)	(1.52)	(1.63)
Diff. of Lowest Silver and Bronze Prm	-0.03**	-0.03**	-0.03**	-0.05**	-0.04**	-0.05**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
First Stage F-test Value		2,383.92	3,807.67		2,155.65	2,851.68
N (Counties)	1,487	1,487	1,487	1,487	1,487	1,487
Mean Y (Change in % Silver Enrollment)	-7.91	-7.91	-7.91	-17.62	-17.62	-17.62
Additional Controls	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects	No	No	No	No	No	No

Note: The table reports 2SLS regression estimates, with controls and weighted by county-level enrollment above or below 250% of FPL in 2018. The outcome variables are the changes in the share of enrollees with silver plans between 2017 and 2018, reported separately for those with incomes $\leq$ 250% of the FPL and those with incomes $>$ 250%. The leave 1 IV uses the average choice-set size of other counties within the same state, while the lagged IV uses the county's own choice-set size in 2017 to predict its 2018 value. The sample is restricted to silver-loading states on the federally facilitated exchange. Additional control variables include the lagged outcome variable, the 2017 average silver premium per AV, total population, the share of the population with income below 400% of the FPL, the share of the population aged 50–64, and a rural area indicator. $*p < 0.10, **p < 0.05, ***p < 0.01$.