Efficient Subsidy Design in the Health Insurance Marketplaces

Authors: Coleman Drake, PhD,[1] Mark Meiselbach, PhD,[2] Daniel Polsky, PhD[2]

[1] University of Pittsburgh School of Public Health

[2] Johns Hopkins University Bloomberg School of Public Health

Corresponding Author: Coleman Drake, PhD. 130 De Soto Street, Pittsburgh, PA15261. Email: cdrake@pitt.edu.

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Abstract

Enrollment in the Health Insurance Marketplaces created by the Affordable Care Act reached an all-time high of approximately 25 million Americans in 2025, roughly doubling since enhanced premium tax credits were made available in 2021. The expiration of enhanced subsidies in 2026 is estimated to leave over seven million Americans without health insurance coverage by 2030. Ten states have created supplemental Marketplace subsidies, yet little attention has been paid to how to best structure these policies to mitigate coverage losses. Using administrative enrollment data from Maryland's Marketplace, we estimate demand for Marketplace coverage. Then, using estimated parameters, we simulate enrollment and costs under varying supplemental subsidy designs. We project that enhanced subsidy expiration will reduce enrollment by 14.5%. Comparing various subsidy designs, we find that fixed-dollar subsidies are significantly more cost-effective at mitigating coverage losses than altering expected amounts enrollees must pay for the benchmark plan. Furthermore, while supplemental subsidies exhibit diminishing marginal returns and do not meaningfully increase overall coverage generosity, they are effective at inducing higher income potential enrollees to purchase coverage.

1. Introduction

Enrollment in the Health Insurance Marketplaces created by the Affordable Care Act (ACA) reached an all-time high of 25 million people in 2025, eleven years after their creation in 2014. Increases in the generosity of Marketplace premium tax credits (PTCs), implemented under the American Rescue Plan Act of (ARPA) and subsequently by the Inflation Reduction Act (IRA) from 2021 through 2025, caused Marketplace enrollment to double. Yet the expanded premium tax credits (ePTCs) expired in 2026. Some 3.9 million Marketplace enrollees are projected to become uninsured in 2026, and 7.4 million by 2030 (Congressional Budget Office 2024), likely leading to decreased access to care, worsening health, and increased mortality (Courtemanche et al. 2018a, 2018b, 2020; Goldin et al. 2020).

Ten states offer supplemental PTCs in 2026, most of which were created to mitigate coverage losses from ePTC expiration (Swindle and Giovanelli 2024; Norris 2026). Supplemental PTCs also are under consideration in at least seven more states (Norris 2026). It is thus important to understand how states can cost-effectively structure supplemental Marketplace premium subsidies to maximize coverage gains. However, no prior study has done so. In this study, we provide the first post-ARPA estimates of extensive and intensive margin premium elasticities of Marketplace coverage and use them to simulate how states can cost-effectively structure supplemental state subsidies to minimize uninsurance and underinsurance.

We estimate demand for Marketplace coverage using administrative 2017-2024 data from Maryland's Health Insurance Marketplace, the Maryland Health Benefit Exchange (MHBE). We identify premium sensitivity using a fixed effects approach similar to Tebaldi (2025). We then

recover coverage elasticities and simulate enrollment under the two main types of supplemental subsidies created by states thus far.[1]

We identify demand, similarly to Tebaldi (2025), using mechanical variation in post-subsidy premiums that is decoupled from unobserved enrollee health risks and local market shocks. Our approach is strengthened by our exploiting three distinct, policy-induced sources of variation: (1) the exogenous inflation of benchmark silver premiums due to "silver loading" from 2018 onward, which dramatically increased subsidies without corresponding increases to bronze or gold plan premiums; (2) age-based discontinuities in expected contribution percentages introduced by Maryland's Young Adult Subsidy in 2022; and (3) temporal variation from the implementation of enhanced premium tax credits under the ARPA and IRA. Conditional on granular demographic and rating-area-by-year fixed effects, these intersecting subsidy rules generate idiosyncratic variation in net premiums for otherwise identical households.

Our primary findings are fourfold. First, absent ePTCs, we project a 14.5% enrollment reduction in Maryland, meaning roughly 17,500 will lose Marketplace coverage and may become uninsured. Second, state supplemental subsidies broadly exhibit diminishing marginal returns for different designs. Third, fixed-dollar subsidies are substantially more cost-effective at increasing coverage than reductions in the expected contribution amount enrollees must pay for the benchmark plan (i.e., how the ARPA and the IRA were structured). Fourth, although supplemental subsidies are largely ineffective at increasing coverage generosity, they are effective at inducing higher income potential enrollees to purchase coverage.

Our work contributes to the literature on the design of government-subsidized private health insurance markets in several ways. First, while several prior studies examine how federal

[1] These ranges are similar to those considered by Maryland in designing its supplemental PTCs (Maryland Health Benefit Exchange 2025).

policymakers should structure the price-linked subsidies characteristic of the Marketplaces (Jaffe and Shepard 2020; Finkelstein et al. 2019; Tebaldi 2025), ours is the first, to our knowledge, to study how states can supplement them. Our findings provide timely, policy relevant information to state policymakers navigating ePTC expiration. This federal-state interaction is also broadly relevant to other countries with a federal system of government and government-subsidized private health insurance markets, such as Australia (Liu and Zhang 2023), Germany (Bünnings et al. 2019), and Switzerland (Ginneken et al. 2017).

Second, our study is the first post-ARPA, post-pandemic study to estimate extensive and intensive margin elasticities and semi-elasticities of coverage. We find extensive margin demand elasticities broadly consistent with prior, pre-ARPA/IRA Marketplace studies (Saltzman 2019; Tebaldi 2025; Tebaldi et al. 2023; Drake et al. 2023; Hopkins et al. 2025). Our estimated intensive margin premium elasticities are inelastic compared to prior studies (Abraham et al. 2017; Drake 2019; Saltzman 2019).

Third, we develop a solution to a post-pandemic data limitation by deploying a novel approach in the health insurance literature: estimating extensive margin demand with a Poisson specification. Prior to the COVID-19 pandemic, researchers routinely used American Community Survey (ACS) data to estimate the size and characteristics of the eligible uninsured population (Saltzman 2019; Tebaldi 2025; Finkelstein et al. 2019; Drake et al. 2023). However, beginning in 2020, the ACS could no longer produce stable estimates of this population due to increased non-response and pandemic-era changes in Medicaid eligibility (Rothbaum and Bee 2021; McIntyre 2025). To address this, we group enrollment data into demographic cell-market-year level counts and estimate a Poisson specification using market-by-year fixed effects to account for the size of the relevant uninsured population. While novel in health economics,

modeling extensive margin demand without data on the outside option using a Poisson process is established in the industrial organization literature (Hortaçsu et al. 2023; Betancourt et al. 2023).

Our paper proceeds as follows. Section 2 describes the regulatory structure of the Marketplaces, focusing on premium subsidies. Section 3 describes the data. Section 4 develops and estimates a model of demand for coverage; Section 5 reports results. Section 6 simulates coverage choices and costs under different types of state supplemental subsidy programs and discusses policy implications. Section 7 concludes.

2. Background

2.1. The Health Insurance Marketplaces

The Health Insurance Marketplaces, created by the *Affordable Care Act (ACA)* in 2010 and implemented in 2014, offer partially community-rated health plans with guaranteed issue and essential health benefits. People without affordable offers of insurance from their employers or eligibility for public insurance programs, namely Medicaid and Medicare, receive *premium tax credit subsidies (PTCs)* from the federal government to purchase Marketplace coverage. Several state and federal policies have altered the absolute and relative value of PTCs since 2014.

While most states historically relied on the federal platform, Healthcare.gov, the land scape has shifted; 20 states operated state-based marketplaces in 2025, and two more will transition by 2027 (CMS 2024). Maryland, which we examine in this study, has had its own Marketplace, the *Maryland Health Benefit Exchange (MHBE)*, since 2014.

2.2. Premiums and Benefits

Marketplace insurers set their plans' premiums in coordination with states or the federal government based on experience rating and generosity of coverage. Insurers can vary premiums across clusters of counties known as geographic rating areas. Insurers set one premium for each

plan offered in each rating area. Those premiums are multiplied by an age adjustment factor based on the age of each household member enrolling in coverage. Age adjustment varies on a three-to-one basis, ranging from one at age 21 to three at age 64.[2]

Plans must have a metal level representing their actuarial value (AV): bronze (60% AV), silver (70% AV), or gold (80% AV). To reduce out-of-pocket costs, enrollees with incomes at or below 250% of the federal poverty level (FPL) are eligible for *cost-sharing reduction (CSR)* subsidies, which attach exclusively to silver plans. CSR subsidies increase the effective AV of silver plans to 94% for enrollees with incomes between 100-150% FPL, to 87% between 150-200% FPL, and 73% between 200-250% FPL. The 94% and 87% subsidies effectively bifurcate the market; enrollees with incomes below 200% FPL overwhelmingly select silver plans, whereas those above 200% FPL (where the 73% CSR provides marginal value) distribute across bronze, silver, and gold plans (DeLeire et al. 2017).

2.3. Federal Marketplace Premium Tax Credits

Federal premium tax credits are price-linked subsidies (Jaffe and Shepard 2020) that limit the amount eligible Marketplace enrollees must pay for Marketplace coverage as a percentage of their income; PTCs cover the residual. Premium tax credits are indexed to the premium of the *benchmark plan*—the second lowest premium silver plan available in a county-year. By covering residual premiums, PTCs set the benchmark plans' premium equal to an *expected contribution percentage*, a sliding scale percentage of an enrollee's modified adjusted gross income. Although PTCs are calculated based on the benchmark plan's premium, they can be applied towards the premium of any other plan. If enrollees select a plan with premium below the benchmark plan's,

[2] Enrollees indicating that they smoke when applying for coverage are charged an additional 50% for coverage that is not reimbursed by subsidies. Practically, few enrollees indicate they smoke because there is no incentive to do so.

they can pay less for coverage than their expected contribution percentage. However, PTCs cannot reduce premiums below zero.

Expected contribution percentages ranged from roughly two to ten percent of MAGI from 2014 through early 2021, with eligibility for PTCs expiring at 400% FPL. The ARPA and the IRA's *enhanced premium tax credits (ePTCs)* reduced expected contribution percentages from zero percent to 8.5% and removing the 400% FPL eligibility cap beginning from 2021 through 2025. **Figure 1** illustrates how the ARPA/IRA changed expected contribution percentages and expected contribution amounts—what an enrollee with PTCs will pay for the benchmark plan after applying PTCs—across the income distribution. Subsidies reverted to pre-ARPA levels when ePTCs expired in 2026.

2.4. State Subsidy Programs

Ten states currently supplement federal subsidies with state-funded subsidies (Swindle and Giovanelli 2024; Norris 2026), as shown in **Appendix Table 1**. These subsidies typically increase the generosity of federal premium subsidies by either reducing expected contribution percentages, such as Maryland and Vermont, or providing fixed dollar amount subsidies, such as New Jersey and Washington. State supplemental subsidies are typically conditioned on eligibility for federal PTCs, though some states have expanded PTC eligibility in cases where people are not eligible. Supplemental subsidy generosity is typically based on income like federal PTCs, although Maryland conditioned supplemental subsidy on age.

Maryland began supplementing federal PTCs in 2022 with the creation of its *Young Adult Subsidy (YAS)* program. As it was implemented in 2022, the YAS reduced the expected contribution percentages of enrollees aged 18 to 30 by 2.5 percentage points. It phased out per additional year of age by 0.5 percentage points, ending at age 35. In 2023, the YAS was

expanded such that the phase out began at age 34 and ended at age 38.[3] Similarly to other states, Maryland altered its supplemental subsidies in 2026 to address ePTC expiration. The new approach fully replaces ePTCs for enrollees with incomes below 200% FPL, phases down ePTC replacement to 50% at 250% FPL, and continues to replace 50% of ePTCs up to 400% FPL (Norris 2026).

3. Data

3.1. Data Sources and Sample Selection

We use administrative enrollment and plan offering data from the MHBE spanning 2017 to 2024. The enrollment data provide individual-level plan selections, federal and state subsidy amounts, demographic characteristics (age, income as a percentage of FPL, county of residence), and coverage spells. The plan data detail standard characteristics including premiums, metal levels, and rating area availability, allowing us to identify the benchmark plan for each county-year.**3.2.**

We restrict our sample to premium subsidy-eligible enrollees within the traditional ACA eligibility range of 138–400% FPL, as those above 400% FPL lost PTC eligibility upon ePTC expiration in 2026. We also exclude adults aged 65 and older, American Indian/Alaskan Native enrollees (who face distinct subsidy rules), observations with missing premium data, and the small fraction of enrollees selecting catastrophic or platinum coverage. These restrictions eliminate less than 2.5% of the raw sample

3.3. Measures

[3] The YAS also was modified in 2023 so that it could eliminate the portion of plans' premiums due to non-Essential Health Benefits; federal PTCs cannot do this. Maryland mandates that Marketplace plans cover non-Hyde abortion benefits, so prior to 2023 this mandate meant that zero-premium MHBE plans did not exist. Allowing the YAS to cover these benefits, alongside other non-Essential Health Benefits like adult and vision coverage, meant that zero-premium plans became available in Maryland for the first time.

Our primary outcomes are the extensive margin decision to enroll and the intensive margin plan selection. Both are modeled as functions of net premiums (the premium faced by the enrollee after age rating and all applicable subsidies). We construct these net premiums sequentially: (1) applying CMS age adjustment factors to baseline premiums; (2) computing federal PTCs based on the age-adjusted benchmark plan and IRS expected contribution schedules; and (3) calculating net premiums for all available plans by subtracting the enrollee's total subsidy from the age-adjusted premium, flooring at zero. State-level interventions, such as Maryland's YAS, are incorporated into the final net premium calculation.

3.4. Sample Characteristics

Table 2 details the demographic and plan selection characteristics of the sample.[4] Subsidized enrollment in the 138–400% FPL range grew substantially during the study period, rising from 114.5 thousand enrollees in 2023 to 133.2 thousand in 2024, consistent with national trends following ePTC implementation. This enrollment increase was not accompanied with substantial shifts in enrollee demographics—mean income was 224.0% FPL in 2018 and 224.3% in 2024; mean age was 43.0 in 2018 and 41.7 in 2024. Yet mean net premiums of selected plans decreased substantially over this period, from 80.3 dollars per month to 51.6 dollars per month. Silver and gold metal level selections changed over time, though the percentage of enrollees choosing bronze plans remaining stable slightly above 20%. Over 50% of enrollees select silver plans in 2018, decreasing to 26.6% in 2024. This shift was mirrored by an increase in gold plan selections from about 25% to 50% of plan selections. This shift occurred almost entirely among higher income enrollees, as silver CSR enrollment increased from 70.9% in 2018 to 84.8% in 2024.

[4] Here, we discuss changes in plan choices from 2018 to 2024. This is the appropriate comparison when considering how the introduction of ePTCs affected the market because another key policy change, silver loading, occurred from 2017 to 2018.

Lastly, we note that inertia was high throughout the study period, ranging from roughly 52% to 71%.

Table 3 shows how the choice set of plans changed over time. The range of networks (2-4) and insurers (3-5) has remained stable over time, though the number of plans the mean enrollee could choose from increased from 16 in 2018 to 41 in 2024. Mean pre-subsidy premiums without age adjustment (i.e., for a 21-year-old) declined from 394.5 to 276.2 dollars per month from 2018 to 2024, and available plans were split roughly evenly between bronze, silver, and gold. CareFirst Blue Choice has historically been the largest insurer in MHBE, though its market share declined from a peak of 67.1% in 2021 to 39.8% in 2024. Optimum Choice, which entered MHBE in 2021 with 2.6% market share, increased its market share to 35.9% by 2024. Kaiser has participated in MHBE since 2018 with market shares ranging from 42.6% in 2018 to 19.8% in 2024. Other insurers' market shares have never exceeded 5%.

4. Coverage Demand Estimation

We employ a two-part framework to evaluate the demand effects of ePTC expiration, separately modeling the extensive margin (coverage take-up) and the intensive margin (plan choice). We identify premium sensitivity by leveraging mechanical variation in post-subsidy premiums generated by the interaction of PTC rules, age-rating curves, and spatiotemporal variation in plan offerings.

4.1. Extensive Margin: Coverage Demand

To overcome post-2020 American Community Survey data limitations regarding the uninsured population size, we model extensive margin demand using a Poisson regression framework. We aggregate enrollment data into cells defined by FPL groups g, five-year age bands a, rating areas r, and years t. Expected enrollment in each cell is specified as:

$$E[Enr_{gart}] = \exp\left(\beta_1 P_{gart}^{Min} + \beta_2\left(P_{gart}^{Min} 1_{FPL>200}\right) + \beta_3\left(P_{gart}^{Min} 1_{Age\geq 45}\right) + \mu_g + \lambda_a + \gamma_{rt}\right)$$

Where P_{gart}^{Min} is the net monthly premium of the lowest-cost available bronze plan, functioning as the primary price signal for market entry. This is consistent with findings from prior Marketplace and individual market literature (Marquis et al. 2004; Auerbach and Ohri 2006; Hackmann et al. 2015; Saltzman 2019; Drake et al. 2023). We interact this minimum premium with indicators for higher income (>200% FPL) and relatively older age (≥45) to capture heterogeneous price sensitivities. The specification includes age (λ_a) and income (μ_g) fixed effects to absorb baseline demographic preference heterogeneity, and rating area-by-year fixed effects (γ_{rt}) to control for unobserved market dynamics (e.g., advertising), local choice set variations, and changes in the underlying eligible population.[5] We estimate the model via Poisson d (PPML) with standard errors clustered at the rating area level.

4.2. Intensive Margin: Plan Choice

Conditional on enrollment, we model plan choice using a conditional logit model within a random utility framework. The utility U for enrollee i choosing plan j in network n in year t is:

$$U_{ijnt} = \alpha_1 P_{ijt} + \alpha_2 P_{ijt} 1_{Age\geq 45} + \alpha_3 P_{ijt} 1_{FPL>200} + \alpha_4 P_{ijt} AV_j + \beta AV_j + \gamma I_{ijt} + \eta_n + \epsilon_{ijnt}$$

where P_{ijt} is the net monthly premium and AV_j is plan's actuarial value. We allow premium sensitivity to vary by age, income, and actuarial value (to account for adverse selection dynamics where willingness to pay shifts for higher AV coverage). I_{ijt} is an inertia indicator for whether

[5] Prior studies have used the American Community Survey (ACS) to estimate the number and demographics of potential Marketplace enrollees (Saltzman 2019; Finkelstein et al. 2019; Drake et al. 2023). However, these studies all used ACS data from before the COVID-19 pandemic, which caused data quality issues with the 2020 ACS and a general drop in response rates. It also resulted in many people that would otherwise have been eligible for Marketplace coverage being able to hold Medicaid through 2023 due to COVID continuous coverage provisions. In our analysis of Maryland ACS data, we found large fluctuations in the number of potential enrollees from 2020-2024 that were not consistent in changes in insurance policy over time. Additionally, ACS estimates from Maryland are naturally noisier because of the states relatively smaller size. For all these reasons, we prefer using a Poisson specification that controls for the number of potential enrollees with market-by-year fixed effects.

the enrollee held plan j as of December 31st in year $t-1$ (Handel 2013; Drake et al. 2022; Saltzman et al. 2025). Network fixed effects η_n absorb time-invariant insurer and network quality characteristics, and ϵ_{ijnt} follows an i.i.d. Type 1 extreme value distribution. We estimate this specification using a PPML fixed-effects estimator, as the likelihood function of a conditional logit model is equivalent to that of a Poisson model with choice-occasion fixed effects (Guimarães et al. 2003).[6] This approach allows us to manage the large set of choice-occasion intercepts.

4.3. Identification

Following Tebaldi (2025), we isolate exogenous variation in net premiums by exploiting the mechanical properties of the ACA subsidy formula. While pre-subsidy "sticker" prices correlate with age and geographic risk, net premiums are determined by the interaction of these prices with federal rules, generating idiosyncratic variation. Because PTCs are calculated based on the benchmark silver plan while the premiums for all other plans are set independently, the subsidy formula decouples net premiums from unobserved health risk.

This mechanical variation identifies parameters on both margins:

- **Extensive Margin (P_{gart}^{Min})**: On the extensive margin, the spread between the benchmark plan and the lowest-cost plan fluctuates across rating areas due to insurer competition and plan offerings. Consequently, demographically identical households face different minimum premiums for market entry simply based on geographic rating area boundaries.
- **Intensive Margin (P_{ijmt})**: Because subsidies are calculated as a fixed dollar amount for a given enrollee but pre-subsidy premiums scale multiplicatively with age, applying the

[6] We include choice-occasion (i.e., enrollee-year) fixed effects in our plan choice specification in R so that the Poisson specification behaves equivalently to a conditional logit specification. We omit these fixed effects from the estimating equation above to present it in the traditional conditional logit framework.

subsidy mathematically alters the relative net premiums among competing plans. This compresses or expands premium differences between plans idiosyncratically across age and income cohorts, isolating variation in the relative cost of one plan relative to another.

Our approach further isolates this mechanism through three major policy shocks that independently shifted net premiums during the study period:

1. **Silver Loading (2018-Present):** The cessation of federal CSR payments led regulators to load these costs exclusively onto silver plans in most states, including Maryland (Drake and Anderson 2020; Drake et al. 2023; Rasmussen and Anderson 2021). Because PTCs index to silver plans, PTCs mechanically inflated for all enrollees. On the extensive margin, this widened the gap between the PTC and the minimum price of coverage, often driving P_{gart}^{Min} to zero. On the intensive margin, it lowered bronze and gold plans' premiums relative to silver plans.
2. **Young Adult Subsidy (2022-Present):** Beginning in 2022, Maryland reduced expected contribution percentages for young adults aged 18 to 34, later expanded to 37. This program exogenously reduced premiums for younger cohorts relative to older cohorts in the same rating area-year.
3. **Enhanced Premium Tax Credits (2022-2025):** The ARPA/IRA increased subsidy generosity by lowering expected contribution percentages. This allows us to observe many of the same households facing drastically different minimum and relative premiums over time.

By exploiting these three distinct sources of variation, our model identifies premium sensitivity (α, β) that are orthogonal to unobserved preferences.

4.4. Elasticities

We convert our estimates to premium semi-elasticities η and elasticities ϵ. On the extensive margin, these are calculated as:

$$\eta_{Ext} = 100\beta_{ext} = 100(\beta_1 + \beta_2 1_{Age\leq 45} + \beta_3 1_{Inc>200})$$

$$\epsilon_{Ext} = \beta_{ext}\bar{P}_{gart}^{Min}$$

Intensive margin premium elasticities are evaluated at $AV = 70$ (i.e., a standard non-CSR silver plan):

$$\eta_{Int} = 100\alpha_{int} = 100(\alpha_1 + \alpha_2 1_{Age\leq 45} + \alpha_3 1_{Inc>200} + \alpha_4 AV_{70})$$

$$\epsilon_{Int} = \alpha_{int}\bar{P}_{ijnt}$$

We calculate standard errors using the delta method.

4.4. Interpretation and Limitations

We note several limitations. On the extensive margin, aggregation by demographic cell assumes homogeneous preferences within cells. We mitigate this by using granular demographic cells (i.e., five income groups by five-year age bins by rating area by year). Our approach also assumes the minimum premium is the primary price signal on the extensive margin. While standard in the literature, it may misstate the effective price for potential enrollees with strong brand loyalty or atypical preferences (e.g., robust insurance is preferred to uninsurance which is preferred to catastrophic coverage).

On the intensive margin, our use of a conditional logit framework imposes the independence of irrelevant alternatives (IIA) assumption, implying the entry of a new plan draw enrollment proportionally across all existing plans. Additionally, while our model includes a robust inertia parameter to capture the pronounced stickiness of plan choice between 2018 and 2024, it remains difficult to perfectly disentangle true structural state dependence from unobserved individual preferences for specific provider networks or insurers. We also control for

unobserved network and issuer quality using static fixed effects; these absorb long-run brand value but may not fully capture unobserved, time-varying quality shocks.

5. Results

5.1. Extensive Margin Results

We report the extensive margin Poisson estimates in **Table 3**. Across specifications, we find precise estimates for premium sensitivity and its demographic interactions in the expected directions. In our preferred specification (4), the baseline premium coefficient is -0.008 (95% CI: -0.009 to -0.007). This sensitivity is attenuated by approximately one-quarter for relatively older enrollees (0.002 [0.001 to 0.002]) and higher-income enrollees (0.002 [0.001 to 0.003]), indicating that older and wealthier individuals are less deterred by premium increases.

Table 4 reports the corresponding elasticities and semi-elasticities. Because mean premiums are roughly ten times higher for older, higher-income enrollees than for younger, lower-income enrollees, standard elasticities appear mechanically larger for the older/wealthier cohort. To provide a more robust, apples-to-apples comparison, we prefer premium semi-elasticities (the percentage change in enrollment per $100 increase in monthly premium). We find semi-elasticities ranging from -0.78 [-0.90 to -0.66] for lower-income, younger enrollees to -0.40 [-0.46 to -0.35] for higher-income, older enrollees. These estimates are generally consistent with, though slightly more elastic than, pre-ARPA analyses of administrative Marketplace data.(Saltzman 2019; Tebaldi et al. 2023; Finkelstein et al. 2019; Tebaldi 2025).

5.2. Intensive Margin Results

Intensive margin conditional logit estimates are reported in **Table 5**. Premium sensitivity increases in magnitude as we sequentially introduce controls for demographic interactions, actuarial value (AV) interactions, and inertia. Consistent with adverse selection dynamics, we

find a positive premium-by-AV interaction, indicating that enrollees become less price-sensitive when evaluating more generous coverage tiers. Furthermore, the premium-by-age interaction is three to five-and-a-half times larger than the premium-by-income interaction, revealing a substantially higher willingness to pay for generous coverage among older populations. Finally, we observe a massive inertia coefficient, reaffirming prior literature highlighting the pronounced stickiness of default plan choices in the Marketplaces (Drake et al. 2022; Saltzman et al. 2025).

Age-by-income semi-elasticities for the intensive margin exhibit a similar pattern to the extensive margin, though the gradient is less extreme. As shown in **Table 6**, Semi-elasticities are similar in magnitude for younger enrollees regardless of income (-0.94 [-0.97 to -0.92] for lower-income vs. -1.07 [-1.10 to -1.05] for higher-income) and decrease in magnitude by roughly 0.5 for older enrollees across both income brackets.

6. Comparing Subsidy Designs

Having recovered demand parameters, we simulate the effects of varied state supplemental subsidy designs on extensive and intensive margin demand within a partial equilibrium framework.

6.1. Implied Coverage Losses

We establish a baseline by simulating counterfactual coverage losses if ePTCs expired in 2024 in **Figure 2**. Absent ePTCs, we project a 14.5% reduction in enrollment, equating to approximately 17,500 individuals losing MHBE coverage.[7] Coverage losses are heavily concentrated among enrollees between 175% and 300% FPL. Net premium increases for those under 175% FPL are

[7] Our estimate is quite similar to the CBO's estimates (Congressional Budget Office 2024), though it is lower than the state of Maryland's or the Urban Institute.

relatively minor, while enrollees above 300% FPL did not experience large enough premium decreases under ePTCs to induce massive marginal entry (and thus, exit).

6.2. State Supplemental Subsidy Scenarios

To evaluate cost-effective mitigation strategies, we simulate five policy scenarios representing structures currently used by states:

1. **Baseline Expiration (Most States):** ePTCs expire with no state intervention.
2. **Partial ePTC Restoration (Maryland Model):** ePTCs are fully restored for enrollees under 200% FPL, phasing down to a 50% replacement at 250% FPL.
3. **Full ePTC Restoration (New Mexico Model):** Complete state-funded replacement of the federal ePTC reduction.
4. **$40 Fixed PMPM Subsidy (Colorado/Washington Model):** A flat $40 monthly reduction applied to net premiums.
5. **$80 Fixed PMPM Subsidy:** A flat $80 monthly reduction.

6.3. Supplemental Subsidy Results

Table 7 summarizes the simulated enrollment and state budgetary impacts. Our analysis yields four primary findings regarding the structural efficiency of state subsidies:

1. **Fixed-Dollar Subsidies Outperform ECP Reductions:** Fixed PMPM subsidies are substantially more cost-effective at maximizing coverage than policies mirroring the ARPA/IRA structure (ECP reductions). For example, a $60 fixed subsidy and a partial ePTC restoration carry similar annual costs ($81.4 million vs. $84.5 million). However, the $60 fixed subsidy covers a marginal enrollee for $5,969 (inducing ~15,200 total enrollees), while the partial ePTC restoration costs $6,140 per marginal enrollee (inducing only ~11,200 enrollees). This efficiency gain occurs because fixed subsidies

avoid over-subsidizing inframarginal enrollees beyond the point where zero-dollar bronze coverage is already available.

2. **Diminishing Marginal Returns:** All evaluated subsidy schemes exhibit diminishing marginal returns for both total enrollment and actuarial value. The marginal cost to cover an enrollee rises steeply as fixed subsidies expand: $4,721 under a $40 subsidy, $5,352 under a $60 subsidy, and $5,969 under an $80 subsidy.
3. **Highly Effective for Higher-Income Cohorts:** Paradoxically, supplemental subsidies alter demand most effectively for higher-income households (>200% FPL). Lower-income enrollees largely already have access to zero- or near-zero-premium plans without ePTCs, meaning additional subsidies provide little extensive-margin entry incentive. Conversely, higher-income enrollees rely on these supplemental subsidies to achieve zero-premium coverage.
4. **Ineffective at Increasing Coverage Generosity:** While more generous subsidies successfully decrease the mean net premium, they fail to meaningfully shift the mean enrollee's actuarial value. Neither fixed nor ECP-based subsidies alter the *relative* price spread between metal tiers enough to overcome the massive intensive-margin inertia coefficient.

6.4. Policy Implications

Our findings offer clear guidance for state policymakers navigating the ePTC cliff. First, states should prioritize fixed-dollar subsidy structures over ECP reductions to maximize cost efficiency. By avoiding subsidizing enrollees beyond the point zero-premium plans are available and preventing disproportionate distributions to price-inelastic higher-income enrollees, fixed subsidies stretch state dollars further. Second, due to sharp diminishing returns, even modest

interventions (e.g., a $20 PMPM subsidy) can secure substantial coverage preservation. Finally, policymakers should recognize that premium subsidies alone are inadequate tools for nudging populations toward richer metal tiers; separate interventions targeting relative plan pricing are required to nudge enrollees towards more generous coverage.

6.5. Limitations

These simulations are subject to limitations. As a partial equilibrium analysis, we do not model supply-side responses, such as insurers strategically adjusting plan offerings or premiums in anticipation of demand shifts. This is likely a minor limitation due to the mechanics of price-linked subsidies—regardless of insurer participation or plan offerings, the net premium of the benchmark plan is determined by policy, not changes in the choice set. Although changes in the choice set affect minimum net premiums and plans' relative costs, subsidy design and income are the two primary determinants of coverage affordability. Additionally, we hold constant other federal policy headwinds, such as the resumption of stricter income verification requirements slated for 2027, which will likely apply independent downward pressure on overall enrollment (Kaiser Family Foundation 2025).

7. Conclusion

Using administrative data from Maryland's Health Insurance Marketplace, we provide updated estimates of the demand for individual market coverage. Our simulations demonstrate that upon the expiration of enhanced federal subsidies, states can most cost-effectively mitigate coverage losses by deploying fixed-dollar supplemental subsidies rather than reducing expected contribution percentages.

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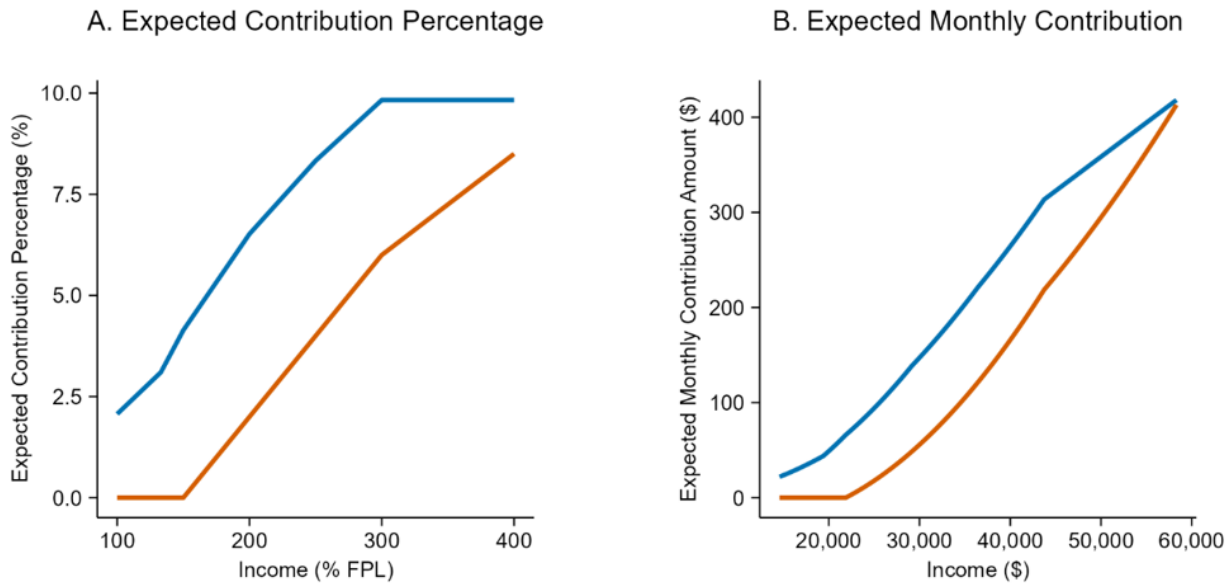
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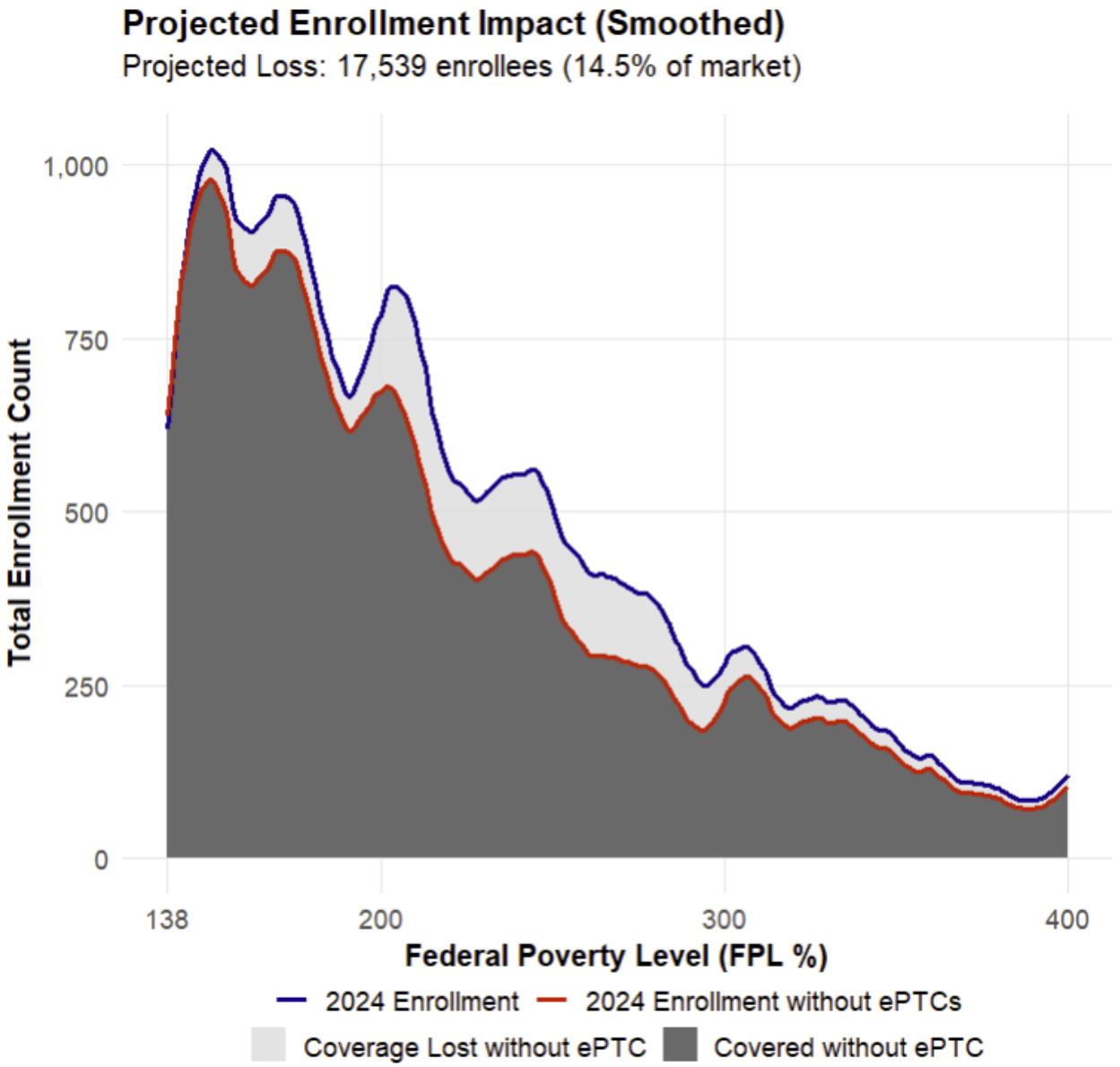
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Figure 1 Expected Contribution Percentages and Monthly Contributions by Income under ACA and IRA



Notes. The ACA subsidy regime is the original subsidy regime created by the ACA in 2014 to which states reverted in 2026. The IRA subsidy regime increased subsidy generosity from 2022-2025. Income is reported in 2024 dollars. Subsidies for enrollees with incomes >400% FPL are only available under the IRA subsidy regime and are not shown here.

Figure 2 Projected Coverage Losses from ePTC Expiration



Notes. We calculate 2024 enrollment without ePTCs by: (1) calculating changes in premium subsidies and post-subsidy premiums using 2021 expected contribution percentages prior to ePTC implementation under ARPA; and (2) predicting enrollment with these premium changes for 2024 enrollees using our baseline extensive margin demand specification.

Figure 3 Extensive Margin Cost Effectiveness of State Supplemental Subsidy Schemes



Notes. Subsidy schemes are described in Section 6.2. We simulate enrollment and costs under each scheme using 2024 data using our baseline extensive margin demand specification.

Table 1 Demographic and Plan Choice Characteristics of Maryland Health Benefit Exchange Enrollees, 2017-2024

	Year, Mean (SD)							
Characteristic	2017	2018	2019	2020	2021	2022	2023	2024
Enrollment (1,000's)								
Individuals	83.7	94.2	95.4	101.2	103.9	104.1	114.5	133.2
Households	59.3	67.4	68.2	72.9	76.2	77.1	84.2	99.2
Demographics								
Income (% FPL)	216.5 (64.2)	224.0 (68.3)	225.9 (68.5)	227.9 (68.9)	228.6 (69.0)	231.4 (68.4)	230.9 (66.4)	224.3 (65.1)
Age (Years)	43.6 (14.9)	43.0 (14.6)	42.9 (14.9)	43.2 (15.0)	43.5 (14.8)	43.3 (14.9)	42.5 (15.1)	41.7 (15.1)
Plan Selections								
Premium ($)								
Pre-Subsidy	772.8 (413.4)	1062.1(605.6)	937.5 (530.9)	828.6 (472.3)	719.2 (414.0)	718.7 (407.7)	743.0 (428.0)	744.6 (446.6)
Net of Subsidy	102.9 (123.7)	80.3 (132.4)	69.5 (113.6)	58.3 (99.0)	38.4 (78.5)	50.7 (87.5)	57.0 (95.3)	51.6 (94.7)
Metal Level (%)								
Bronze	18.3	22.0	20.5	22.4	22.9	21.9	22.9	22.7
Silver	78.9	52.9	45.7	34.8	30.2	27.3	27.2	26.6
CSR 87, 94	58.3	70.9	74.8	80.4	78.4	80.8	79.1	84.8
No CSR, CSR 73	41.7	29.1	25.2	19.6	21.6	19.2	20.9	15.2
Gold	2.8	25.1	33.8	42.7	47.0	50.8	49.9	50.7
Inertia (%)								
No Inertia (New)	100.0	48.0	36.5	40.8	31.6	28.9	38.9	40.3
Inertial (Returning)	-	52.0	63.5	59.2	68.4	71.1	61.1	59.7
Kept Same Plan	-	34.7	56.2	39.3	60.3	63.5	54.9	51.0
Switched Plans	-	17.2	7.3	19.9	8.2	7.6	6.2	8.7

Notes. Sample includes subsidized enrollees with incomes from 138-400% FPL. See Section 3.1 for details. FPL = Federal poverty level. CSR = Cost-sharing reduction subsidy.

Table 2 Plan offerings on the Maryland Health Benefit Exchange, 2017-2024

	Year, Mean (SD)							
Characteristic	2017	2018	2019	2020	2021	2022	2023	2024
Available Choices (#)								
Plans	27.2 (1.0)	16.0 (0.0)	14.0 (0.0)	17.0 (0.0)	27.0 (0.0)	31.0 (0.0)	32.0 (0.0)	41.0 (0.0)
Networks	4.0 (0.0)	3.0 (0.0)	2.0 (0.0)	2.0 (0.0)	2.0 (0.0)	2.0 (0.0)	3.0 (0.0)	3.6 (0.5)
Insurers	5.0 (0.0)	3.0 (0.0)	3.0 (0.0)	3.0 (0.0)	4.0 (0.0)	4.0 (0.0)	4.0 (0.0)	5.0 (0.0)
Plan Characteristics								
Pre-Subsidy Premium ($)								
Metal Level (%)	284.7 (4.4)	394.5 (21.7)	360.6 (15.7)	316.7 (6.5)	267.4 (3.8)	253.9 (2.8)	266.3 (2.6)	276.2 (0.0)
Bronze								
Silver	18.3%	22.0%	20.5%	22.4%	22.9%	21.9%	22.9%	22.7%
Gold	78.9%	52.9%	45.7%	34.8%	30.2%	27.3%	27.2%	26.6%
Insurer (Market Share %)	2.8%	25.1%	33.8%	42.7%	47.0%	50.8%	49.9%	50.7%
CareFirst BlueChoice								
Kaiser Foundation	62.9%	53.7%	54.7%	65.3%	67.1%	61.3%	51.0%	39.8%
Optimum Choice	33.3%	42.6%	41.9%	31.4%	26.9%	27.4%	26.9%	19.8%
Other					2.6%	7.7%	19.2%	35.9%

Notes. Sample includes all bronze, silver, and gold plans offered on MHBE. All values are weighted by enrollment in the rating areas in which plans are offered.

Table 3 Poisson Estimates of Extensive Margin Demand for Coverage

Covariate	(1)	(2)	(3)	(4)
Premium	-0.005***	-0.006***	-0.007***	-0.008***
	[-0.005, -0.004]	[-0.006, -0.005]	[-0.008, -0.006]	[-0.009, -0.007]
Premium x Age >= 40		0.002***		0.002***
		[0.001, 0.002]		[0.001, 0.002]
Premium x FPL > 200%			0.002***	0.002***
			[0.001, 0.003]	[0.001, 0.003]
Observations	960	960	960	960
FE: Age Group	X	X	X	X
FE: Income Group	X	X	X	X
FE: Rating Area-by-Year	X	X	X	X

Notes. Estimates are coverage semi-elasticities of a one dollar increase in the monthly premium of the net premium of the lowest premium plans. Estimates are from a Poisson pseudo-maximum likelihood specification with standard errors clustered at the rating area level. 95% confidence intervals reported in brackets. Observations are enrollment counts by income-age-rating area-year level cells. See Section 4.1 for details.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4 Estimated Mean Elasticities and Semi-Elasticities of Marketplace Coverage

Group	Mean Premium	Semi-Elasticity ($100)	Elasticity
Overall	35.8	-0.57 [-0.64, -0.50]	-0.20 [-0.23, -0.18]
Lower Income, Younger	6.6	-0.78 [-0.90, -0.66]	-0.05 [-0.06, -0.04]
Lower Income, Older	3.7	-0.63 [-0.73, -0.52]	-0.02 [-0.03, -0.02]
Higher Income, Younger	90.1	-0.56 [-0.60, -0.52]	-0.50 [-0.54, -0.46]
Higher Income, Older	57.5	-0.40 [-0.46, -0.35]	-0.23 [-0.26, -0.20]

Notes. Elasticities are calculated from specification (4) in Table 3. Lower/higher income enrollees have incomes equal to or below/above 200% of the federal poverty level (FPL). Younger/older enrollees live in households where the oldest household member is below/at or above 45 years of age. We calculate 95% confidence intervals reported in brackets using the delta method. See Section 4.4 for details.

Table 5 Conditional Logit Estimates of Intensive Margin Demand for Coverage

Covariate	(1)	(2)	(3)	(4)
Premium ($100s)	-0.46***	-0.84***	-1.12***	-1.43***
	[-0.47, -0.45]	[-0.89, -0.78]	[-1.17, -1.06]	[-1.48, -1.37]
Premium x Age >= 45		0.49***	0.52***	0.59***
		[0.46, 0.51]	[0.50, 0.54]	[0.57, 0.62]
Premium x FPL > 200%		-0.16***	-0.13***	-0.07***
		[-0.18, -0.15]	[-0.15, -0.12]	[-0.08, -0.05]
Actuarial Value (AV)	6.75***	6.92***	6.95***	7.07***
(0-100% as 0-1)	[6.68, 6.82]	[6.84, 7.00]	[6.88, 7.02]	[7.00, 7.15]
Premium x AV		0.11***	0.25***	0.38***
		[0.05, 0.17]	[0.19, 0.31]	[0.32, 0.44]
Inertia (Prior Plan)			4.48***	4.47***
			[4.46, 4.49]	[4.46, 4.49]
N (Millions)	19.8	19.8	19.8	19.8
FE: Network	X	X	X	
FE: Issuer				X
FE: Enrollee-Year	X	X	X	X

Notes. Estimates are from a Poisson pseudo-maximum likelihood specification with standard errors clustered at the rating area level. 95% confidence intervals reported in brackets. Conditional on our use of enrollee-year fixed effects, estimates are equivalent to those estimated from a conditional logit specification. The unit of analysis is the enrollee-choice-year. See Section 4.2 for details.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 Estimated Mean Own-Premium Premium Elasticities and Semi-Elasticities

Group	Mean Premium ($)	Semi-Elasticity ($100)	Elasticity
Lower Income, Younger	42.65	-0.94 [-0.97, -0.92]	-0.40 [-0.41, -0.39]
Lower Income, Older	46.17	-0.42 [-0.44, -0.40]	-0.19 [-0.20, -0.19]
Higher Income, Younger	90.78	-1.07 [-1.10, -1.05]	-0.98 [-1.00, -0.95]
Higher Income, Older	100.67	-0.55 [-0.56, -0.54]	-0.56 [-0.57, -0.54]

Notes. Elasticities are calculated from specification (3) in Table 5 with an actuarial value of 70 (i.e., silver without CSR). Lower/higher income enrollees have incomes equal to or below/above 200% of the federal poverty level (FPL). Younger/older enrollees live in households where the oldest household member is below/at or above 45 years of age. 95% confidence intervals reported in brackets. We calculate 95% confidence intervals reported in brackets using the delta method. See Section 4.4 for details.

Table 7 Summary Simulations

Income Group/ Policy Scenario	New Enrollment (1,000s)	Supplemental Subsidy Costs ($)			Mean Selected Plan Characteristics	
		Total (M)	Per New Enrollee	Per 10 AV Pts	Net Premium ($)	Actuarial Value
All Enrollees						
Full ePTC Restoration	17.5	$112.0	$6,385	$836	$109.32	76.9
Partial ePTC Restoration	13.8	$84.5	$6,140	$793	$123.37	77.1
$40 Fixed Subsidy	11.2	$52.7	$4,721	$620	$144.54	77.0
$60 Fixed Subsidy	15.2	$81.4	$5,352	$703	$127.59	76.9
$80 Fixed Subsidy	18.4	$109.9	$5,969	$783	$111.61	76.9
Income ≤200% FPL						
Full ePTC Restoration	3.5	$44.1	$12,459	$1,393	$53	81.9
Partial ePTC Restoration	3.8	$44.3	$11,806	$1,327	$53	81.9
$40 Fixed Subsidy	3.4	$24.3	$7,218	$857	$81	81.6
$60 Fixed Subsidy	3.7	$36.3	$9,735	$1,122	$64	81.8
$80 Fixed Subsidy	3.8	$47.1	$12,551	$1,403	$49	82.0
Income >200% FPL						
Full ePTC Restoration	14.0	$67.8	$4,847	$664	$156	72.8
Partial ePTC Restoration	10.0	$40.2	$4,016	$549	$186	72.8
$40 Fixed Subsidy	7.8	$28.4	$3,640	$501	$202	72.8
$60 Fixed Subsidy	11.5	$45.0	$3,926	$540	$182	72.8
$80 Fixed Subsidy	14.7	$62.8	$4,283	$588	$163	72.8

Notes. Full ePTC restoration recreates ARPA/IRA subsidies with state funds. Partial ePTC restoration restores ARPA/IRA under 200% FPL and phases down the replacement to 50% of ARPA/IRA levels at 250% FPL up to 400% FPL. Fixed subsidies simply provide enrollees with lump sum subsidies of the specified amount. Changes in costs and enrollment are calculated relative to a baseline scenario of simulated 2024 enrollment without ePTCs as shown in Figure 2. See Section 6.2 for details.

Appendix Table 1 Details of State Supplemental Premium Subsidy Programs

State	Program Name	Years	Eligibility (% FPL)	Structure	Key Parameters
CA	CA Premium Subsidy	2020; 2026+	≤165%	ECP reduction	ECP set to 0% for ≤150% FPL (vs. ACA schedule of 2.1–4.19%). For 150–165% FPL: ECP reduced to 3.19–3.91% (vs. ACA 4.19–4.91%), a ~1pp reduction.
CO	SilverEnhanced Savings	2026+	≤400%	Flat dollar PMPM	$80/mo for the primary enrollee + $29/mo per additional member on a family policy. Uniform across all income levels ≤400% FPL.
CT	Covered Connecticut	2021+	≤175%	ECP reduction	Zeroes out all remaining premium after federal APTC is applied.
	Young Adult Subsidy	2021+	≤400% Age 18-40	ECP reduction	ECP reduced by −2.5pp for ages 18–30, with linear phase-out through the upper age limit (currently 40). Stacks with other subsidies where applicable.
MD	Young Adult Subsidy	2022+	≤400% Age 18-37	ECP reduction	ECP reduced by −2.5pp for ages 18–30, with linear phase-out to age 37. Superseded by the all-ages program starting 2026; young adults 18–37 retain an additional subsidy stack.
	Premium Assistance	2026+	≤400%	ECP reduction	100% of the ARP/IRA-expiration subsidy reduction replaced for enrollees <200% FPL; 50% replaced for enrollees at 250–400% FPL.
MA	ConnectorCare	2007+	≤400%	Tiered flat premium cap	Monthly premium capped at fixed amounts by income tier (2026 lowest-cost plan): $0 (100–150%), $53 (150–200%), $103 (200–250%), $152 (250–300%), $235 (300–400%).
NJ	NJ Health Plan Savings	2021+	≤600%	Flat dollar PMPM	PMPM subsidy inversely proportional to federal APTC received: enrollees with higher APTC get less state subsidy; those with lower APTC get more. Range: $20–$100/person/mo. Result: most ≤250% FPL households reach $0 premium; those above receive ~$100/person/mo.
NM	Marketplace Affordability Program	2023+	≤400% (2023-25); None (2026)	ECP reduction	For 2023-25, ECP-based reduction stacked on federal APTC for enrollees ≤400% FPL (exact pp reduction set administratively). For 2026, reduce ECPs to offset IRA/ARPA expiration.

VT	Vermont Premium Assistance	2014+	≤300%	ECP reduction	ECP reduced by a flat −1.5pp relative to the federal schedule for all enrollees ≤300% FPL. Reduction is *uniform* across the full income range.
WA	Cascade Care Savings	2023+	≤250%	Flat dollar PMPM	$55/member/mo for APTC-eligible enrollees (reduced from $155 in 2025). Requires enrollment in a standardized Cascade Care Silver or Gold plan.

Notes. FPL = Federal Poverty Level; ECP = Expected Contribution Percentage (share of household income owed for the benchmark second-lowest-cost Silver plan). pp = percentage points. PMPM = per member per month. APTC = Advance Premium Tax Credit (federal). Connecticut's 2026 temporary expansion ($70M appropriation covering 100–200% and 400–500% FPL) omitted for conciseness; structure is partial federal offset analogous to Maryland's all-ages program. This table excludes Minnesota, which provided subsidies offsetting 25% of the cost of the benchmark plan to >400% FPL enrollees in 2017.

Appendix A: Extensive Margin Robustness Checks

To evaluate the sensitivity of our extensive margin demand estimates to our structural and functional form assumptions, we estimate two alternative specifications.

A.1. Overdispersion and the Poisson Specification

Our primary extensive margin model relies on a Poisson pseudo-maximum likelihood (PPML) estimator. A standard limitation of the Poisson distribution is the assumption that the conditional mean and variance of the dependent variable are equal. Because our data are aggregated into highly granular demographic-by-market cells, unobserved heterogeneity may lead to overdispersion (variance exceeding the mean), which can artificially compress standard errors and overstate the statistical significance of estimated parameters.

To test if our findings are driven by this functional form assumption, we re-estimate our extensive margin model using a negative binomial regression, which relaxes the mean-variance equality assumption by introducing a dispersion parameter.

As shown in **Appendix Table A1**, our primary finding is highly robust to this alternative specification. In our preferred fully specified model (Column 4), the baseline premium coefficient remains highly significant and nearly identical in magnitude to our primary PPML estimates (β = -0.009; 95% CI: -0.012, -0.006). However, the interaction term for older enrollees (Premium x Age >= 40) attenuates to zero and loses statistical significance. This suggests that while overall extensive margin demand is consistently responsive to minimum premiums, the demographic heterogeneity in price sensitivity among older cohorts in our primary specification is sensitive to the variance structure of the model. While we retain the age effect in our policy simulations, its magnitude is relatively small.

A.2. Alternative Extensive Margin Price Signal (Minimum Silver Premium)

Consistent with standard individual market literature, our primary extensive margin specification defines the price of market entry as the minimum available bronze premium (P^{Min}). However, due to the structure of Cost-Sharing Reductions (CSRs), bronze plans may be viewed as inadequate coverage by lower-income households. We test the sensitivity of our model to the choice of price signal by re-estimating extensive margin demand using the lowest-cost silver plan premium (P^{MinSlv}) as the relevant price of entry.

Appendix Table A2 reveals two critical dynamics that validate our use of the minimum bronze premium as the primary extensive margin signal. First, the baseline sensitivity to the silver premium (β = -0.002; 95% CI: -0.004, -0.001) is substantially smaller than the sensitivity to the bronze premium. This indicates that the silver premium is a weak signal for market exit; when silver premiums rise, marginal enrollees predominantly downgrade to bronze coverage rather than exiting the market entirely.

Second, the interaction term for higher-income enrollees (Premium x FPL > 200%) flips signs, becoming negative and significant (β = -0.002; 95% CI: -0.003, -0.001). This dynamic is a mechanical consequence of the ACA's CSR design. For enrollees under 200% FPL, a silver plan functions as a highly generous, near-platinum product (87% or 94% AV); consequently, they are relatively price-inelastic to silver premium fluctuations. For enrollees above 200% FPL who do not receive meaningful CSRs, a silver plan is simply a standard 70% AV product. When silver premiums increase, this higher-income cohort readily substitutes away to bronze plans. Because the minimum silver premium is fundamentally tangled with the non-linear value of CSRs, it fails to capture the pure cost of avoiding uninsurance, affirming our use of minimum bronze premiums to model extensive margin entry.

Appendix Table A1. Negative Binomial Estimates of Extensive Margin Coverage Demand

Covariate	(1)	(2)	(3)	(4)
Premium	-0.005***	-0.005***	-0.009***	-0.009***
	[-0.007, -0.003]	[-0.007, -0.003]	[-0.012, -0.006]	[-0.012, -0.006]
Premium x Age >= 40		0.000		0.000
		[-0.000, 0.001]		[-0.000, 0.001]
Premium x FPL > 200%			0.003***	0.004**
			[0.002, 0.005]	[0.002, 0.005]
Observations	960	960	960	960
FE: Age Group	X	X	X	X
FE: Income Group	X	X	X	X
FE: Rating Area-by-Year	X	X	X	X

Notes. Dispersion parameter theta estimated from the fully-specified model and held fixed across specifications. Standard errors clustered at the rating area level. 95% confidence intervals reported in brackets. * p < 0.05 ** p < 0.01 *** p < 0.001

Appendix Table A2. Poisson Estimates of Extensive Margin Coverage Demand with Minimum Net Silver Premium

Covariate	(1)	(2)	(3)	(4)
Premium	-0.003***	-0.005***	-0.000	-0.002***
	[-0.004, -0.002]	[-0.006, -0.004]	[-0.002, 0.001]	[-0.004, -0.001]
Premium x Age >= 40		0.002***		0.002***
		[0.002, 0.002]		[0.002, 0.003]
Premium x FPL > 200%			-0.002***	-0.002***
			[-0.003, -0.001]	[-0.003, -0.001]
Observations	960	960	960	960
FE: Age Group	X	X	X	X
FE: Income Group	X	X	X	X
FE: Rating Area-by-Year	X	X	X	X

Notes. Standard errors clustered at the rating area level. 95% confidence intervals reported in brackets. * p < 0.05 ** p < 0.01 *** p < 0.001