Received: 15 October 2021 | Revised: 9 November 2022 | Accepted: 12 November 2022

DOI: 10.1111/jori.12414

ORIGINAL ARTICLE

Journal of Risk and Insurance

Do insurers respond to active purchasing? Evidence from the Massachusetts health insurance exchange

Mark Shepard[1] | **Ethan Forsgren**[2]

[1]Harvard Kennedy School, NBER, Cambridge, Massachusetts, USA

[2]UCLA, Los Angeles, California, USA

Correspondence
Mark Shepard, Harvard Kennedy School, NBER, Cambridge, MA, USA.
Email: mark_shepard@hks.harvard.edu

Abstract

Health insurance markets face continued challenges with high premiums and limited insurer competition. We describe a unique set of "active purchasing" policies used by Massachusetts' pioneer health insurance exchange to shape the rules of competition and reward lower-price insurers with additional customers. We provide evidence that these policies significantly influenced insurer pricing. Between 2010 and 2013, over 80% of insurer prices were set exactly at or within 1% of pricing thresholds created by active purchasing policies. A key "limited choice" policy was associated with a 16%–20% reduction in average insurance prices relative to comparison markets in 2012–2014. Insurers achieved these price cuts partly through cost reductions via narrower provider networks and partly through reduced profit margins.

KEYWORDS

active purchasing, insurance competition, insurance exchanges

1 | INTRODUCTION

One of the most influential ideas in modern health policy is "managed competition" (Enthoven, 1993)—the idea that proper functioning of health insurance markets requires that competition be "managed" through certain forms of government intervention. The most recent

application of managed competition in the United States is in the Affordable Care Act (ACA), which has insured more than 10 million people through its subsidized insurance exchanges (officially called "Marketplaces"). The underlying goal of these exchanges is to create a market that will deliver the benefits of choice and competition while also using public subsidies to broaden affordability and using government regulations and risk adjustment to ameliorate market failures such as adverse selection.[1]

There remains significant uncertainty, however, about how to design managed competition policies in practice. The actual constellation of policies varies widely across managed competition programs and the lack of randomized implementations or good counterfactuals makes it hard to isolate natural experiments (McGuire & Van Kleef, 2018). Moreover, the tumultuous experience of the ACA Marketplaces has raised questions about the strategy's efficacy. Starting in 2017, the Marketplaces saw sharply higher premiums (Semanskee, Claxton, & Levitt, 2017), exits by several prominent insurers (Semanskee, Claxton & Long, & Kamal, 2017), and substantially reduced competition (Griffith et al., 2018). In 2018, more than half of the country lived in areas where the Marketplace had just one or two competing insurers (Kamal et al., 2017). While this share had declined to 22% of enrollees (and 54% of counties) by 2021, limited competition and high premiums remain important concerns.

In this strained environment, it is increasingly important to identify models for managed competition policies that can control costs and maintain coverage. In this paper, we describe a unique set of policies used in the nation's pioneer exchange, the Massachusetts Connector, and present descriptive evidence on the effects of those policies.

Operating since 2006, the Connector predates the ACA exchanges that it inspired by nearly a decade (McDonough et al., 2006). Previous studies have described the early impact of the Connector (and the state's "Romneycare" reform more broadly) on coverage, costs, and quality of care (Gruber, 2011; Holtz-Eakin, 2011; Mechanic et al., 2012; Weissman & Bigby, 2009). However, these studies focus largely on the history of the Connector up to about 2010, and do not capture its trajectory nor the policies enacted thereafter. This key part of the Connector's story remains untold.

Our paper makes two main contributions to the literature on these issues. First (in Section 2), we describe a unique set of competitive policies that the Connector enacted in its low-income subsidized segment—a program called Commonwealth Care (or "CommCare") before 2014 and ConnectorCare under the ACA. While most ACA Marketplaces act as a passive price-taker—or *clearinghouse*—for plans and consumers, the Connector used its regulatory and purchasing power (through subsidies) to become an *active purchaser* in the market. Active purchasing involves the government using its own purchasing power to shape the rules of competition, as opposed to the more passive clearinghouse approach that provides subsidies but otherwise seeks to "let the market work."[2]

[1]Designing policies to combat adverse selection requires care because insurance take-up is voluntary, which means that policies addressing adverse selection *among* insurance plans may reduce insurance take-up among the healthy (Geruso et al., Forthcoming; Klein et al., 2022; Saltzman, 2021). The reasons for incomplete take-up are still uncertain; they may include time preferences and liquidity constraints (Baillon et al., 2022; Ericson & Sydnor, 2018), actuarial unfairness due to community rating and adverse selection (Pauly et al., 2020), and the presence of informal coverage by charity care and unpaid medical debts (Finkelstein et al., 2019; Mahoney, 2015). These complex issues can also affect the optimal design of cost sharing (Phelps, 2022).

[2]In the context of Enthoven's managed competition strategy, an active purchaser is attempting to fulfill the role of a government "sponsor," which "structures and adjusts the market to overcome attempts by insurers to avoid price competition" (Enthoven, 1993).

When the ACA was implemented, a handful of other states (most famously California) also took an active purchasing approach to their exchanges.[3] However, Massachusetts' approach in the Connector went further than others. California, for example, employed two main policies: *standardized plan benefits* and *selective contracting*. Standardizing plan benefits encourages plans to compete on dimensions like price and quality rather than complex benefit packages, creating a more interpretable product for consumers. Selective contracting reserves for the state the right to exclude (or threaten to exclude) plans with high prices or insufficient provider networks.

While Massachusetts similarly standardizes benefits and retains the power to selectively contract, we identified at least four additional policy strategies used by the Connector at various points during its history. The first, which we call *steering through default choices*, rewards lower-price plans with members by making them the default choice for certain passive enrollees. The second approach involves *limiting choice for new enrollees*—requiring them to choose from a subset of lower-price plans. Limiting new enrollees' choices is a stronger version of steering than setting enrollees' default choices, but it is less aggressive than selective contracting because it allows higher-price plans to remain in the market for existing enrollees. Third, the Connector has *differentially subsidized low-price plans*, a technique made possible by its use of additional state subsidies, over and above those provided by the ACA after 2014. Fourth, the Connector at times also engaged in *direct price regulation*, requiring plans to price within a specified range (often with aggressive price caps).

Taken together, these policies provide carrots and sticks that make insurers' demand curves more price elastic, thus augmenting the incentive to compete on prices. This approach differs from the standard thinking that "competition" is simply a factor of the number of insurers in the Marketplace. Instead of focusing solely on recruiting more insurers, Massachusetts' approach involved shaping the *rules of competition* in ways that encouraged more aggressive price competition among the insurers in the market.

The second contribution of our paper (in Sections 3 and 4) is to present evidence on the effects of these policies on insurance prices. While this evidence is fundamentally descriptive, it supports our hypothesis that active purchasing policies played an important role in shaping insurer competition. We present three pieces of evidence. First, exploiting the fact that several competitive policies were associated with explicit price targets, we find that a large share of insurer prices (84% over the 2010–2013 period) were set exactly at or within 1% below the relevant target levels. This "price bunching" suggests that the targets were effective at influencing prices, although it is difficult to quantify the magnitude of the effects.

Second, we study the 2012 introduction of the limited choice policy, which required a subset of new enrollees to choose one of the two cheapest plans in the market. We find that the policy was associated with a sharp decline in insurance prices by about 14% over 2 years. This was a substantial price reduction for insurance markets—where prices typically only rise over time. The reduction did not occur in other markets (including the state's Medicaid and commercial insurance) and is statistically significant in difference-in-difference regressions. A closer look at insurer bids provides evidence consistent with a causal interpretation. After the policy's introduction, insurer bids newly segmented into two groups. Two to three insurers (depending on the year) cut prices dramatically, competing to be among the lowest two bidders who would "win" access to limited choice enrollees.

[3]Krinn and colleagues label 10 states (including Massachusetts) as active purchasers, though the degree of activity varies widely (Krinn et al., 2015). They find that active purchasing states had higher premiums in 2014, but the evidence is entirely cross-sectional. Robinson and colleagues describe the policies used by California (which they call "the nation's most active purchaser"), including selective contracting, negotiating premiums, and standardizing benefits (Robinson et al., 2015). They argue these policies have been effective at keeping premiums low and delivering better quality plans.

The remaining insurers kept prices relatively high. This bimodal pattern is consistent with what one would expect from the limited choice policy's incentives.

Third, we show evidence that the Connector's relatively slow Marketplace premium growth has been sustained into the first years of the ACA under the ConnectorCare program. Over the 2014–2018 period, the Connector's benchmark second cheapest silver plan premium grew by an average of 4% per year versus national premium growth of 16% in the median state. As a result of this slower growth, Massachusetts became one of the lowest-premium exchanges in the nation, falling from the twenty-fifth to the second-lowest benchmark premiums across all states. It maintained its status as the second- or third-lowest premium state from 2017 to 2020, although it rose to the 8th-lowest rank in 2021.

Although lower premiums are a key policy goal, they are not the only consideration. We highlight a key tradeoff involved with stronger price competition: reductions in insurance plan quality. We focus on covered provider networks, the main quality attribute over which exchange insurers had flexibility. We find that large premium cuts in CommCare after 2012 were sometimes, but not always, accompanied by narrower networks—and particularly exclusion of the state's most prestigious (and expensive) "star hospital" system. In other cases, however, insurers cut premiums without narrowing networks, and we show that these were facilitated by sharp reductions in insurer profit margins. Overall, we find that two-thirds of premium reductions from 2011 to 2013 occurred through lower margins, with the other one-third coming via lower medical costs.

In sum, this body of evidence suggests that active purchasing policies and managed competition can play a substantial role in reducing price growth in health insurance markets. However, it is important to note the limitations of our analysis. Fundamentally, our study reports on the outcomes of policy experimentation in a single state Marketplace, making it difficult to draw strong causal conclusions. Moreover, the simultaneous implementation of policies over time makes it difficult to quantify exact magnitudes of effects. We view our study as making a more modest descriptive contribution—highlighting a unique set of competitive policies in the Massachusetts Connector and showing that they have been associated with relative success at controlling insurance prices.

Our paper proceeds as follows. Section 2 describes the active purchasing policies used by the Connector, both before and after the ACA. Section 3 lays out the data and methods. Section 4 presents our empirical results, and Section 5 discusses them and concludes.

2 | ACTIVE PURCHASING IN THE MASSACHUSETTS EXCHANGE

2.1 | Background and policy overview

Like the ACA for which it was a model, Massachusetts' 2006 health reform law ("RomneyCare") sought to expand coverage by issuing an individual mandate and providing subsidies for individuals to purchase private health insurance (McDonough et al., 2006). Subsidies were available for individuals up to 300% of the federal poverty level to purchase insurance through the Commonwealth Care ("CommCare") exchange. A separate market called CommChoice was available for individuals above 300% of poverty without subsidies (see Ericson & Starc, 2015).

In this paper, we focus on the policies the Connector used in regulating CommCare as a market-based insurance program. These differed from the way most ACA Marketplaces work today. Most ACA Marketplaces operate as a *clearinghouse*, with the regulator working as a passive market facilitator. Except for regulating benefits and distributing subsidies, regulators

in this model seek to minimize interventions in the market. The guiding principle of this clearinghouse model is to "let the market work."

In contrast, the Connector operated CommCare as an *active purchaser*. Active purchasing draws on strategies of competitive procurement used by employers and state Medicaid programs to contract with private health insurers.[4] The guiding principle is to use the government's regulatory and purchasing power to shape the competitive incentives and encourage desired outcomes like cost control or quality improvement.

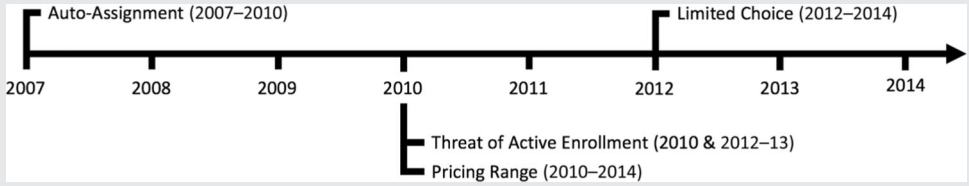
Previous authors have defined certain tools used in active purchasing (Bingham et al., 2018; Corlette & Volk, 2011). They have also observed how these tools have been employed in exchanges such as California and Massachusetts (Bingham et al., 2018; Corlette & Alker, Touschner, et al., 2011). To date, these descriptions have focused on policies like "standardization of benefits" and "selective contracting". In the case of CommCare, for example, the Connector required that subsidized plans cover a standard set of benefits with an actuarial value of approximately 95%–99%, depending on the enrollee's income. It also reserved the right to have final say over which plans were eligible for subsidies, and actively recruited insurers to join the market.

The Connector differed in important ways, however, from other active purchasers. In addition to selective contracting and standardization of benefits, the Connector significantly broadened its active purchasing toolkit. Additional active purchasing strategies used in CommCare included:

(1) Steering to low-price plans through default options: Many subsidized insurance enrollees are passive and fail to actively select a plan once they qualify for a subsidy. The Connector leveraged this reality to reward low-price insurers in two ways. First, it used *preferential auto-assignment* to enroll passive new enrollees into low-price plans.[5] Second, it threatened to invoke "active open enrollment" if plans failed to price below certain targets. If invoked, active open enrollment would have eliminated auto-renewal during the yearly open enrollment window and required all enrollees to actively select a plan or else be defaulted into a low-price plan.[6]
(2) Limiting choice to low-price plans: An even stronger way of rewarding competition on price involves *requiring* enrollees to choose low-price plans. In an extreme version, this could mean that only low-price plans (e.g., pricing below a threshold) can operate in the market—a policy analogous to selective contracting. However, as we describe below, the Connector applied limited choice only for new enrollees and only for the lowest-income segment of the market (below 100% of poverty) who were fully subsidized. This setup lessened disruption by allowing higher-price plans to continue operating in the market (and avoid forcing their enrollees to switch plans), giving them the opportunity to bid low in future years.

[4]This strategy grew out of CommCare's genesis as a hybrid between a traditional individual insurance market and a Medicaid program. Consistent with this viewpoint, the Connector called the annual process of soliciting insurer price bids as a "procurement" process.
[5]"Passive" new enrollees were people who had applied and qualified for the CommCare program but failed to respond when asked to select a plan. Before 2010, CommCare "auto-assigned" these individuals into a default plan, which was randomly selected, with higher probability weights for lower-price plans. Auto-assignment continued through 2010 until it was ended for budgetary reasons. After this, passive new enrollees did not receive coverage—effectively a default of no insurance. Shepard and Wagner (2022) study the causal impact of this 2010 policy change.
[6]The Connector used a threat of active open enrollment in 2010 and 2012, and as we show, the threat proved so effective that nearly all plans complied by pricing below the target.

TABLE 1 CommCare active purchasing timeline



Auto-assignment	New members in the fully subsidized group (below 100% of poverty) who did not actively select a plan were auto-assigned, with larger shares going to the lowest-price plans.
Threat of active open enrollment	If invoked, current members who failed to make an active plan selection during open enrollment would be auto-assigned to the cheapest plan. Plans could prevent this from taking effect by setting prices below target levels.
Pricing range	From FY2010 to FY2014, the Connector implemented fixed maximum and minimum bounds on the bidding range.
Limited choice	New members in the fully subsidized group (below 100% of poverty) could only choose the cheapest two plans in their region.

(3) Pricing regulation: The simplest way to lower prices is to directly impose price caps on participating insurers. The Connector started using price caps in 2010, and these were binding on at least one plan in every year from 2010 to 2014. Interestingly, the Connector also imposed price floors (which were binding in several years) to satisfy federal rules requiring that prices fall within an actuarially sound rate range.
(4) Differential subsidies for low-price plans: In the post-ACA Connector, Massachusetts rewarded low-price insurers by offering differentially large subsidies for these plans. The state offered add-on subsidies (on top of federal tax credits) to lower premiums for silver plans for a subset of enrollees (with incomes below 300% of poverty), but it limited these subsidies to the lowest-cost silver plans in each region. We discuss this "ConnectorCare" program further below.

2.2 | Timeline of active purchasing in CommCare

Table 1 summarizes the timeline of active purchasing policies used in CommCare. In the exchange's early years (fiscal 2007 to 2009),[7] the Connector took a relatively passive approach: it required standardized benefits and reserved the right to selectively contract with plans, but the main competitive policy was auto-assignment of passive new enrollees into low-price plans.

Two main shifts in active purchasing policy occurred in 2010 and 2012. In 2010, the exchange instituted an aggressive premium ceiling—below what was required by the actuarially sound range and below several insurers' 2009 premiums. In addition, the Connector set several target thresholds below which insurers had to price or else risk losing enrollees through active open enrollment and auto-assignment. Insurers had to set prices at least 1%

[7]References to years in this discussion are to Massachusetts fiscal years, which run from July–June. For instance, state fiscal year 2009 ran from July 2008 to June 2009.

below a target capitation rate or enrollees would be actively enrolled in other plans; insurers also had to price at a discount of at least 2% or they would lose auto-assignment of passive enrollees.

This active approach to premium regulation continued in 2011, though a relatively high actuarially sound range set by a consultant prevented the exchange from using some of the policies from 2010.[8]

In 2012, in response to state budget pressures, the Connector again boosted its active purchasing role. It implemented a new policy, called limited choice, whereby new enrollees in the lowest-income, fully-subsidized group (below 100% of poverty) were restricted to choosing the cheapest plan based on pre-subsidy price.[9] The limited choice policy effectively took a large group (about half of all enrollees) that was previously insensitive to prices (since all plans were fully-subsidized) and steered them to the lowest-price plans. This policy strengthened insurer incentives to lower prices and appears to have had a major impact on competitive behavior. In competing to access this newly stratified population, two insurers tied in bidding at the bottom of the actuarially-sound range, meaning enrollees were able to choose between two options. Following dramatic premium reductions in 2012, CommCare continued the limited choice policy into 2013 and the shortened fiscal 2014 (July through December 2013, up to the start of the ACA).

One way to think of the limited choice policy is as a *substitute* for the ACA's more familiar approach of allowing free choice but setting fixed dollar subsidies so that enrollees must pay more for higher-price plans. Requiring positive premiums was not seen as a viable option for CommCare's poorest enrollees (with incomes below the poverty line), just as it is not used for similarly poor enrollees in Medicaid managed care programs. Before 2012, this below-poverty group had unrestricted choice and 100% price subsidies, implying that their demand was price inelastic. The limited choice policy created effective price elasticity by *requiring* them to choose one of the two cheapest plans (effectively, a price of infinity for other options). Compared to the ACA's approach—which sets a positive (but finite) incremental enrollee premium for higher-price plans—the limited choice policy in fact creates *stronger* incentives for insurers to set low prices.

2.3 | Policies after the start of the ACA

With the implementation of the ACA Marketplaces in 2014, several of CommCare's active purchasing policies were continued through a successor program called ConnectorCare. ConnectorCare used state subsidies over-and-above federal ACA subsidies to maintain CommCare's generous subsidies and actuarial values for enrollees below 300% of poverty. The state reserved these extra state subsidies, however, for only the five lowest-cost silver plans in each region. This form of linking subsidies to low premiums gave the state continued leverage in the marketplace and gave plans a continued incentive to keep premiums low.

[8]Because of the relatively high ASRR, the Connector set insurer premiums for medical care (the "medical bid") equal to the bottom of the ASRR for all plans. Insurers could not reduce this medical bid but could offer discounts on an administrative fee (set by default at $32 per member-month) intended to cover nonmedical costs.

[9]The policy exempted new enrollees with recent enrollment experience in another plan that was not low-price. The policy did not apply to enrollees above 100% of poverty, who were not fully subsidized so could choose to pay more for a higher-price plan.

3 | STUDY DATA AND METHODS

3.1 | Conceptual approach and statistical analyses

To test the role of the Connector's active purchasing policies in affecting market prices, we take several approaches. First, we examine the distribution of insurer prices relative to price thresholds set by active purchasing policies. We report the share of prices in each year that are exactly at, or within 1% below, these thresholds. Intuitively, when insurers price just at or below a threshold, it suggests that the policy influenced their pricing decision.

Second, we use the policy timeline described above to study the association of policy shifts with insurer prices. We focused our analysis on the most aggressive policy, the 2012 limited choice policy, which required fully subsidized enrollees to choose one of the two cheapest plans.

We do two analyses of this 2012 change. First, we study the path of average prices in the CommCare market relative to average prices in three comparison markets: commercial insurance in Massachusetts, Massachusetts Medicaid managed care organization prices, and national employer-sponsored insurance.[10] We plot the path of prices in these market from 2007 to 2014 to examine this trend visually. We also implement a difference-in-differences model. Letting m = market and t = year, we regress prices (Y_{mt}) on market fixed effects (α_m), year fixed effects (β_t), and an interaction of CommCare with a dummy for post-2012 (δ), as shown in the following equation:

$$Y_{mt} = \alpha_m + \beta_t + \delta \cdot (CommCare_m \times t \geq 2012) + \epsilon_{mt}. \quad (1)$$

In addition, we examine the distribution of prices within CommCare around the 2012 change. Conceptually, this policy creates an auction-like incentive to be one of the two cheapest plans to "win" access to the limited choice enrollees. We therefore expect this policy to lower prices and particularly to strengthen price competition at the "low end"—that is, among insurers competing in the limited choice auction. Higher-cost insurers with little chance of being one of the two cheapest plans will have little incentive to cut prices. It is reasonable to expect a "fanning out" or increasingly bimodal distribution of prices to emerge after the 2012 policy change.[11]

To help interpret any price changes and understand mechanisms, we show descriptive trends for two other outcomes of interest. The first is the breadth of plans' covered hospital networks, a key measure of plan quality on which insurers have flexibility. We measure network breadth as the share of Massachusetts acute care hospitals (weighted by bed size) covered by each plan, based on hospital network tables posted publicly by the CommCare program. Second, we use administrative health insurance claims data from the CommCare program to calculate insurer-paid medical costs, which lets us break down insurer revenues into costs and gross profit margins (excluding insurer administrative costs, which we cannot observe).

[10]Average prices in CommCare are (enrollment-weighted) averages across all plans, drawn from public reports of the Massachusetts Health Connector's board meetings. We discuss the data sources used for our analysis in the subsection below.

[11]A natural question is whether there were other policy changes that differentially affected CommCare in 2012 that may have driven the results. We are not aware of any other major changes. In particular, the ACA's minimum medical loss ratio (MLR) rules, which took effect in 2011, did not apply to CommCare insurers, whose plans technically fell under a Medicaid waiver rather than the standard individual market regulation process. For evidence on the impact of MLR rules, see Cicala et al. (2019) and Callaghan et al. (2020).

Finally, we study trends in premiums in Massachusetts' post-ACA Marketplace relative to other states. As described above, the Connector has taken a more active approach through its ConnectorCare program than most Marketplaces, which act as clearinghouses. If this active purchasing has been successful, one would expect this to translate into lower premiums and/or lower growth over time. To analyze this statistically, we draw on data on benchmark (second-cheapest) silver premiums in each state for 2014 to 2021. We plot premiums in Massachusetts relative to the median state and to 10th-lowest and 10th-highest price states in nation.

3.2 | Data sources

We use historical information on premiums and policies in the Massachusetts exchange (both CommCare and the post-ACA state Marketplace) and other comparison settings. Information on policies was gleaned from public documents published by the Connector (including its annual report and board meeting materials) and from conversations with Connector staff.[12]

Data on CommCare insurer premiums was gathered from publicly available reports and state contracts with insurers. To calculate enrollment-weighted average premiums (across plans, regions, and income groups), we use deidentified administrative enrollment data made available via a data use agreement with the Connector. This administrative dataset also contained insurance claims, which we used to calculate average insurer-paid medical costs and margins (the difference between revenues and costs). Our research protocol was approved by the IRBs of Harvard University and the National Bureau of Economic Research.

To measure premiums in comparison settings, we draw on publicly available data sources. Specifically, the Kaiser Employer Health Benefits Survey for national employer-sponsored insurance premiums (Kaiser Family Foundation, 2017a), Massachusetts' Center for Health Information and Analysis (CHIA) for state-specific commercial insurance premiums,[13] and public capitation reports for Massachusetts Medicaid managed care organizations.[14] For benchmark silver premiums in the ACA Marketplaces, we use data compiled by the Kaiser Family Foundation (Kaiser Family Foundation, 2017b).

3.3 | Limitations

Our study is subject to several limitations. Most fundamentally, our analysis involves studying the association of policies and pricing outcomes enacted in a single state exchange. Absent an experiment that randomizes policies across markets, it is challenging to infer the exact counterfactual path that insurer prices would have followed absent the policies we study.

[12]We particularly thank Michael Norton, the Connector's Senior Advisor on Market Reforms, for his assistance in answering questions and clarifying ambiguities about CommCare's policies.

[13]Commercial premiums data comes from the Massachusetts Center for Health Information and Analysis (CHIA). Data for 2009–2014 are average pmpm premiums (net of MLR rebates) for all fully insured contracts, which come from the "Annual Report on the Performance of the Massachusetts Health Care System" for 2013, 2015, and 2016, available online at http://www.chiamass.gov/premiums/. Data for 2007 and 2008 are from two reports from the Division of Health Care Finance and Policy: "Massachusetts Health Care Cost Trends: Premiums and Expenditures" (May 2012) and "Massachusetts Health Care Cost Trends: Premium Levels and Trends in Private Health Plans: 2007–2009" (May 2011).

[14]Authors calculations using the MassHealth 4B Reports ("MCO Experience Review—Revenue/Expense Reports") for 2007–2014, obtained via a public records request.

Our analysis of prices in comparison settings provides a natural benchmark, but these settings should not be viewed as ideal control groups.

We view our results as providing suggestive evidence of the effects of active purchasing policies, rather than giving precise causal estimates. Similarly, the analysis of bunching of insurer prices just below policy targets provides evidence that these targets affected insurer pricing, but we cannot infer the magnitude of the effect. Insurers may have dropped their prices by variable amounts depending on what they would have priced their plans without the policies in effect.

Our results suggest an effect of the suite of active purchasing policies enacted by the Connector. The analysis of any one policy may not generalize to insurance markets that take a more limited approach or where the market structure is different.

Finally, our results are focused on insurance prices, but prices are just one outcome in an insurance market and plan quality also matters. To understand quality, we also examine changes in provider networks, which are the main quality feature on which insurers have flexibility (given that cost sharing and covered benefits are standardized). Nonetheless, there may be other forms of "softer" quality such as customer service or managed care restrictions that we cannot directly measure. Our results, therefore, not sufficient to make strong statements about enrollee or social welfare. There is likely to be a tradeoff between price and quality, and states will need to assess this tradeoff based on their individual needs and circumstances.

4 | RESULTS

4.1 | Prices and competitive policy thresholds

Table 2 shows the influence of active purchasing policies with target thresholds on insurer premiums. Three policies involved setting thresholds: price floors and ceilings, active open

TABLE 2 Conformity of prices and active purchasing policy thresholds

	Fiscal year			
	2010	**2011**	**2012**	**2013**
Total number of prices set	23	5	5	5
Number of prices at a policy threshold (share)	21 (91%)	4 (80%)	4 (80%)	3 (60%)
Breakdown, by policy:				
Price ceiling	1	4	1	2
Price floor	8	0	2	*n/a*
Active open enroll. threshold	4	*n/a*	1	1
Auto-assignment threshold	8	*n/a*	*n/a*	*n/a*

Note: Share of total number of bids in parentheses. The Connector required that bids be within predefined thresholds in order for plans to qualify for various policies. We determined bids to be at the threshold if it was exactly at the threshold or within 1% below it. In 2010, insurers set one price per region, resulting in 23 total prices (five insurers × five regions, with one insurer not participating in two regions). In 2011, the Connector simplified its bidding structure so that each insurer submitted one price for the entire state. Across 2010–2013, 84% of bids were within 1% of an active purchasing policy threshold. N/A (not applicable) signifies years when a policy was not in effect.

Source: Connector procurement reports, fiscal years 2010–2013.

enrollment, and auto-assignment. The table shows the number of premium bids that were exactly at or within 1% below these thresholds.

Active purchasing thresholds appear to have influenced a large share of bids. In 2010 when insurers priced at a regional level (resulting in 23 total bids among the five insurers), 21 of these were at a policy threshold. From 2011 on, when each insurer set a single state-wide price (or five total bids per year), 3–4 of these were at a threshold. In total across all four years, 84% of all premium bids (32 of 38 bids) were within 1% of a policy threshold.[15] In almost every year that a threshold existed, at least one plan bid within 1% of that threshold.

Most of these binding thresholds were premium ceilings and floors. But active open enrollment and auto-assignment thresholds were also binding in every year they were used. If we exclude the 18 prices set at price floors/ceilings and focus on the remaining 20 price bids, 14 of these (or 70%) were set at an active purchasing threshold for auto-assignment or the threat of active open enrollment.

A prime example is the active purchasing policy in 2012. In this year, CommCare threatened to impose active open enrollment on all insurers if three of the five insurers did not price below $414.98 (or $55 above the min allowed bid). While CeltiCare and Network Health cut prices aggressively to compete for the limited choice enrollees, it was unclear whether a third insurer would meet this target. In the end, Neighborhood Health Plan (NHP) set a premium of $414.95, preventing active open enrollment from being invoked.

Figure 1 shows additional visual evidence on the relationship between insurer prices and policy thresholds, showing the specifics of the statistics summarized in Table 2. The graph shows that most prices were set exactly at a competitive policy threshold (indicated with vertical lines), especially in 2010 when all four active purchasing policies were in place.

While the evidence suggests that policy thresholds influence insurer pricing, it is less clear the direction or magnitude of the effects. In principle, policy thresholds could lead to either increases or decreases in prices relative to the counterfactual without them in place. In the case of 2010, the overall pricing trends (see Figure 3) suggest that the policies likely *decreased* insurer premiums on net, if only because the 2010 price ceiling was below many insurers' prices from 2009. This was true for half of all 2009 prices at the insurer x region level. However, in a subset of cases the policies likely increased prices, with an example being Western Massachusetts where all plans' 2009 prices fell well below the 2010 price floor. Therefore, the net impact depends critically on where thresholds are set relative to counterfactual pricing trends. Without a full supply-side model, this counterfactual is difficult for us to quantify for the full suite of active purchasing policies. However, as we discuss next, the large changes following the 2012 introduction of the limited choice policy give us greater opportunity to quantify pricing impacts.

4.2 | CommCare prices after 2012 introduction of limited choice policy

Figure 2 plots average insurer prices in CommCare (black lines) versus comparison markets from 2007 to 2014. The trends in CommCare divide into two periods: before and after 2012, when the limited choice policy was instituted. From 2007 to 2011, prices were growing steadily

[15]Most prices are set almost exactly at a threshold, so the results are not very sensitive to the 1% tolerance. If we lower this leeway to 0.5%, 30 of 38 bids (or 79%) are within 0.5% of a policy threshold. See Figure 1 for additional visual evidence.

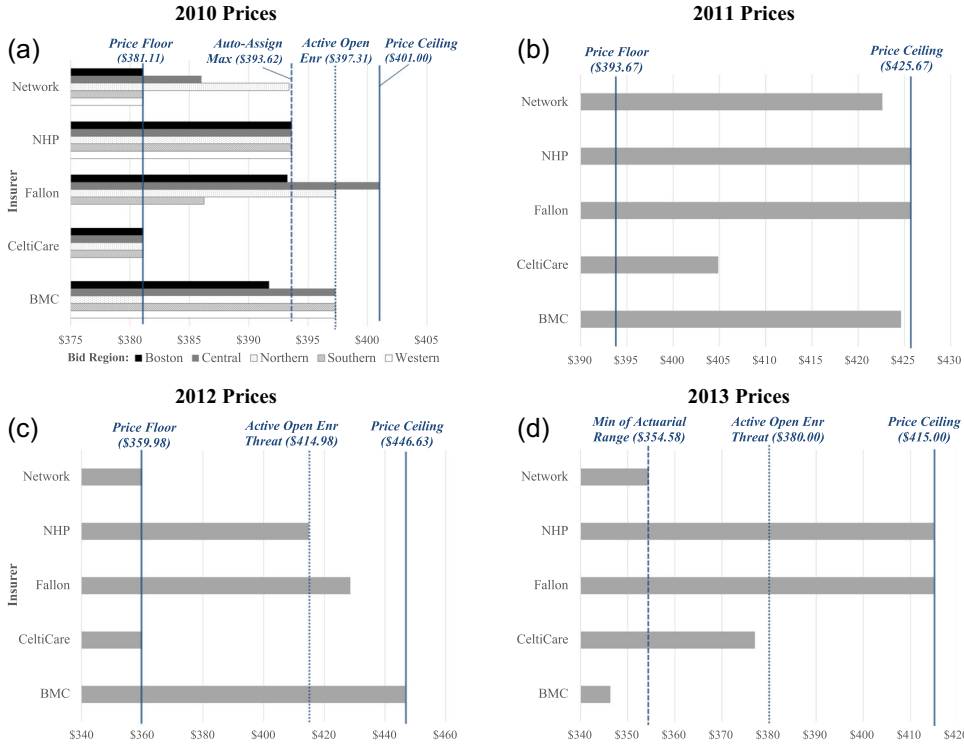


FIGURE 1 Insurer prices and active purchasing policy thresholds. The figure shows insurer prices and active purchasing policy thresholds over the 2010–2013 period for CommCare. Panel (a) shows values for 2010, panel (b) for 2011, panel (c) for 2012, and panel (d) for 2013. In 2010, insurer prices were set at a regional level, resulting in 23 price bids across the five insurers. From 2011 to 2013, each insurer set a single statewide price. Active purchasing policy thresholds are indicated with vertical lines, and the relevant policy and value is labeled.

in both CommCare and other markets. On an annualized basis, nominal premium growth from 2007 to 2011 was 5.2% per year in CommCare versus 4.3% to 5.5% in the three comparison settings. These growth rates were high but typical for health insurance. There was a slight dip in CommCare's prices in 2010—possibly related to the introduction of new active purchasing policies—but prices rebounded in 2011.

Starting in 2012, CommCare prices experienced a major trend break. Average prices *fell* 6.6% in 2012 and another 7.7% in 2013—almost 14% over 2 years.[16] This represented a clear divergence from the other markets where prices continued to rise, albeit at a slower rate (1.1%–3.5% growth per year).

Table 3 shows the results from the difference-in-differences (DD) regression that corresponds to Figure 2. Consistent with the visual evidence, the key coefficients on the interaction between CommCare and post-2012 indicator(s) are negative and statistically significant. The pooled DD estimate in column (1) indicates that CommCare prices were $68.49 per month lower in the post-2012 period than comparison markets (statistically significant at

[16]These premium reductions occurred without significant changes in plan benefits or actuarial value. However, as we discuss below, they were accompanied by narrowing of provider networks in important ways.

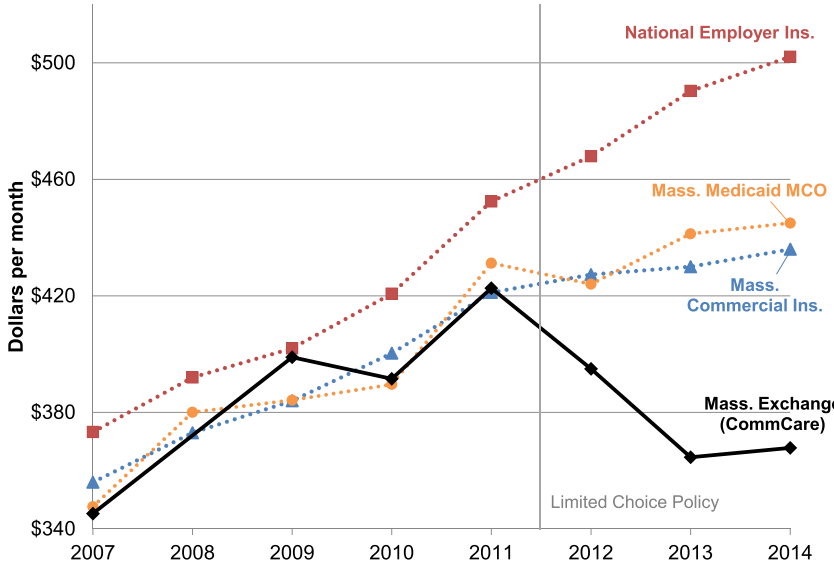


FIGURE 2 Average monthly prices of insurance: CommCare and other insurance markets. CommCare prices are for the state fiscal year (July–June). The vertical gray bar represents the implementation of the "Limited Choice" policy, which was introduced before insurers set prices in fiscal year 2012. *Source*: Connector Board Meeting reports, Kaiser-HRET Survey for national employer-sponsored insurance premiums, Massachusetts' Center for Health Information and Analysis (CHIA) for state-specific commercial insurance premiums, and public capitation reports from Massachusetts Medicaid managed care organizations.

the 1% level). This is a 16% reduction relative to CommCare's premium in 2011. Column (2) shows results from a richer model that interacts CommCare with individual year dummies for 2012 to 2014. These estimates suggest reductions that rise from $37.52 per month (or 9%) in 2012 to $82 to $86 (or 20%) in 2013 to 14.

This sharp decline is remarkable for health insurance markets in which premiums nearly always rise. The 20% premium reduction in 2013 translates to major savings for the state of Massachusetts—about $1000 per member-year or about $200 million in total.

Notably, because of the "price-linked" nature of subsidies (Jaffe & Shepard, 2020)—in which enrollees pay a pre-defined (income-specific) amount for the cheapest plan, with the state picking up the remainder—nearly all these savings accrued to the state via reduced subsidies. Average enrollee-paid premiums fell by just $2.40 from 2011 to 2013, implying that over 95% of the large insurer price reductions over 2011–13 accrued to the state.

4.3 | Distribution of CommCare insurer prices

Figure 3 shows the premiums for each of the five insurers underlying the overall trends. In the years up to 2010 when insurers set multiple premiums (by region and demographics), the graph shows enrollment-weighted averages; for 2011 and following, the single premium set by each insurer is shown. The graph also shows price ceilings and floors in applicable years.

From 2007 to 2009, premiums varied substantially across insurers and rose across the board. With the start of more aggressive active purchasing in 2010, this variation narrowed, and

TABLE 3 Difference in difference analysis of CommCare prices after 2012 Limited Choice policy, 2007–2014

	Outcome variable: Price ($ per month)	
	(1)	(2)
Variables	Coeff. (SE)	Coeff. (SE)
CommCare × Post_2012	−68.49 (14.11)**	
CommCare × 2012		−37.52 (6.58)**
CommCare × 2013		−82.00 (10.04)**
CommCare × 2014		−85.96 (11.98)**
Year dummies	X	X
Market dummies	X	X
Constant	350.1 (5.335)**	350.1 (5.641)**
Observations	31	31
R^2	0.934	0.958

Note: Regression analysis of the data presented in Figure 1 is shown. CommCare premiums are for the relevant state fiscal year (July–June). Robust standard errors in parentheses. Prices in dollars per month.

Source: Same as Figure 1.

**$p < 0.01$; *$p < 0.05$.

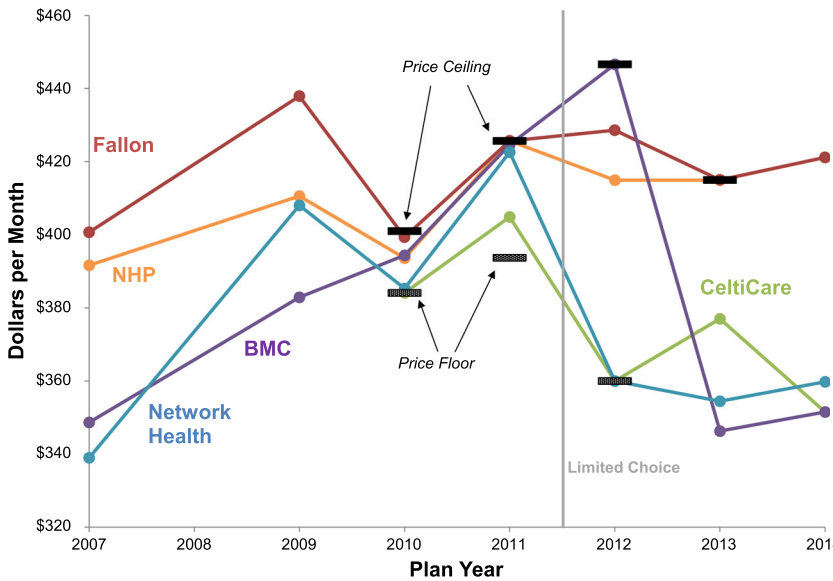


FIGURE 3 CommCare insurer premiums, fiscal years 2007–2014. Prices reflect state-wide average (enrollment weighted) premiums. Black bars represent price ceilings and floors during years when price regulations were in effect. *Source*: Connector procurement reports, fiscal years 2007–2014.

several insurers cut premiums from 2009. In addition, a new insurer (CeltiCare, owned by the national company Centene) entered the market with a low-price strategy. These forces led to an overall average premium decline of 2%. The graph suggests that the new premium ceiling likely played a role, though other thresholds may also have been important.

After premium increases in 2011, there were major shifts in 2012 and 2013. In 2012, Network Health and CeltiCare competed aggressively to be the lowest price and "win" access to the population facing limited choice. Both cut premiums by more than 10% and priced at the minimum allowed level. Meanwhile, the other insurers maintained relatively high premiums, particularly BMC HealthNet which priced at the ceiling.

Because of their much lower prices and access to limited choice enrollees, Network Health and CeltiCare grew sharply, with their combined market share rising from 38% at the end of 2011 to 62% at the end of 2012. Other insurers lost market share, particularly BMC whose share fell by almost half (from 34% to 18%). Thus, the market-level premium decline of 6.6% was driven by both the large premium cuts by Network Health and CeltiCare and the shift in market share towards these low-price plans. A simple decomposition suggests that about 60% of the overall premium decrease came from plan-level changes (holding fixed 2011 shares), while the remaining 40% came from the shift in market shares.

Facing such a large loss of membership, BMC in 2013 reversed course and cut its monthly premium by over $100 (or 22%) down to the lowest level among all plans. As a result, its market share rebounded back to 42% at the end of 2013, restoring its status as the largest plan. Figure 3 shows that this premium cut by BMC (and the resulting shift in market shares) was the main driver of the overall average premium decrease in 2013.

4.4 | Mechanisms and tradeoffs in provider networks

The evidence so far suggests that CommCare insurers responded strongly by cutting prices in response to the 2012 limited choice policy. It is natural to ask, then, *how* insurers achieved these cuts. Did these involve cuts in costs, profit margins, or both? Were there tradeoffs in terms of insurance plan quality? And to what extent did consumers benefit from these changes versus savings being realized by a reduction in state subsidy spending?

4.4.1 | Changes in plan quality: Covered hospital networks

We start by examining plan quality responses, as captured in the breadth of medical provider networks, the main quality attribute that CommCare insurers could flexibly set (recall that cost sharing and covered services were standardized by the state). Figure 4 plots plans' hospital network breadth over time, measured by the share of Massachusetts acute care hospitals (weighted by bed size) covered in network. Before 2012, the largest difference among the four statewide plans (excluding Fallon) was that CeltiCare had a much narrower network, covering fewer than half of hospitals versus 74%–88% coverage for the other three statewide plans (BMC, Network, NHP).[17] This was consistent with CeltiCare's strategy of offering a limited-network and low-price plan, and CeltiCare indeed had the lowest plan prices in each year from 2010 to

[17]Fallon has a much more limited statewide network because its operations were focused on Central Massachusetts, and its network was only comprehensive there.

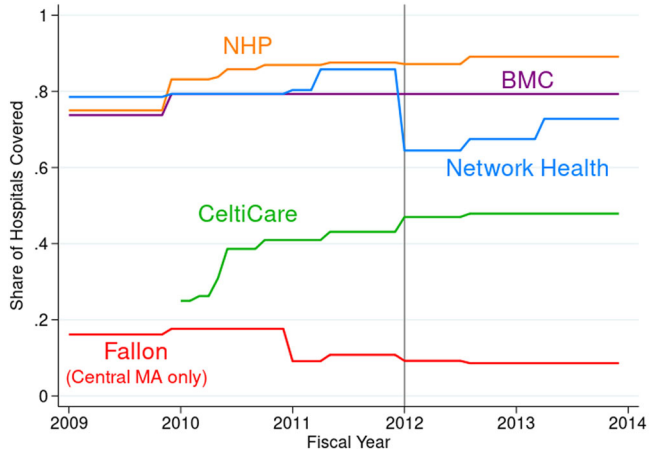


FIGURE 4 CommCare plan hospital network breadth, 2009–2013. The graph shows the share of acute care Massachusetts hospitals covered by each CommCare plan, weighted by hospital bed size in 2011. The vertical line indicates the introduction of the limited choice policy in 2012, at which point Network Health narrowed its network by excluding the Partners Healthcare System (the state's largest and top-ranked provider system) and several other hospitals. *Source*: Connector administrative data on hospital networks; hospital bed sizes from the American Hospital Association Annual Survey. Figure replicated from Shepard (2022).

2012. This strategic connection between low premiums and limited networks is also consistent with evidence from ACA Marketplaces (Dafny et al., 2017).

Starting with the introduction of the limited choice policy in 2012, the patterns are mixed on whether plans that cut premiums also narrowed networks. One clear example where this occurred was Network Health in 2012. Along with its 15% premium cut, it also dramatically narrowed its network, dropping one-fifth of hospitals statewide at the start of 2012. As highlighted in related work by Shepard (2022), the largest change involved dropping the Partners Healthcare System, the state's largest and most prestigious medical system (owner of two top-ranked hospitals, Mass. General and Brigham & Women's Hospitals). Shepard shows that Partners hospitals had both high prices and treated patients intensively. As a result, excluding them allowed Network Health to significantly reduce its per-enrollee costs, both through price/utilization reductions and through a favorable selection effect as relatively high-cost Partners patients switched to other plans. Using a structural plan choice model, he finds that these reductions meaningfully reduced average enrollee welfare by $132 per person-year (about one-fifth of average post-subsidy premiums), though the insurer cost savings were substantially larger ($696 per year).[18]

On the other hand, the post-2012 insurer premium cuts were not always accompanied by narrower networks. Both CeltiCare (in 2012) and BMC (in 2013) cut their premiums by more than 10% without making meaningful network changes; indeed, CeltiCare expanded its network slightly in 2012. Instead, as we show below, these plans absorbed the premium reductions in other ways, including through lower profit margins. Notably, however, BMC never covered Partners Healthcare. Further, CeltiCare did drop Partners Healthcare from its

[18]This network narrowing did not appear to lead to lower total enrollment in the exchange or to a rise in enrollees dropping coverage. Supporting Information: Appendix Figure A1 plots these outcomes and shows that they were stable through the 2012 network changes.

network at the start of 2014, to facilitate its premium cuts in that year after losing substantial market share in 2013.[19] Leading into the transition to the ACA, just a *single* exchange plan (NHP) still covered Partners—and to do so, it had to maintain a high premium (at the allowed ceiling) and with low profit margins (see below).[20]

In sum, the data suggest mixed evidence on whether active purchasing-related premium cuts led to narrower networks in general. But they *did* seem to lead to nearly all plans dropping the state's most prestigious and expensive academic medical system, Partners Healthcare, suggesting that there likely were quality tradeoffs involved with the price reductions.

4.4.2 | Decomposing price reductions: Costs versus insurer margins

To further understand insurer responses to the active purchasing policies, Figure 5 plots statistics on overall per-member insurer revenues, medical costs, and gross profit margins (excluding administrative costs, which are unobserved).[21] Revenues equal average prices set by insurers; after 2010, these revenues are risk-adjusted following the program's rules.[22]

Panel (a) shows—consistent with the pricing patterns already shown—that revenues rose gradually from 2008 to 2011 (with a brief downturn in 2010), before falling dramatically from 2011 to 2013 by about 15%. Over the same period, per-enrollee medical costs also fell, but by a smaller amount. Moreover, the cost growth slowdown appears to have started a bit earlier in 2010, aligned with the start of the broader set of active purchasing policies. Costs were roughly flat during 2010–2011 before falling by about 5% from the final quarter of 2011 to the final quarter of 2013. As a result, gross insurer margins fell substantially, from 11% in 2011q4 ($45 per enrollee-month) down to essentially zero by the end of 2013.[23]

This analysis suggests that the incidence of insurance price reductions was shared between insurers reducing gross profit margins and lowering medical costs (partly via the narrower networks). Margins reductions, however, were the larger piece, accounting for about two-thirds of the 15% price reduction from 2011 to 2013.

Panel (b) further analyzes this fall in gross percent margins (revenue minus medical costs, as a share of revenues) separately for the four statewide insurers, excluding Fallon to ease visibility. Recall from Figure 3 that there were three major price cuts during the 2011–2013 period: (1) Network Health in 2012, (2) CeltiCare in 2012, and (3) BMC in 2013. Of these, only Network Health's cut involved a simultaneous narrowing of its hospital network, and Figure 5b shows that its margins were largely unchanged from 2011 to 2012. Instead, its price cut was approximately equaled by its cost reductions associated with the narrower network, along with the favorable risk selection it experienced (see Shepard, 2022). By contrast, CeltiCare's and BMC's cuts, which did not involve network narrowing, were accompanied by large cuts in

[19]This change is not shown in Figure 4 because it occurs just after our complete network information ends in 2013.
[20]Additionally, NHP was vertically integrated with Partners Healthcare, having been acquired by it during fiscal years 2012–2013. Therefore, it was unlikely to drop Partners from its network even if it had an incentive to do so.
[21]Based on insurer financial reports, insurer administrative costs were on average about $30 per member-month, suggesting that net margins are about $30 lower than the gross margins shown.
[22]Risk adjustment began in 2010, but we lack complete risk score data until 2010, so raw revenues are shown for 2010. Risk adjustment has little effect on overall market-wide revenues in Panel (a) (since the market-wide average risk score is normalized to 1.0), but it does affect plan-specific revenues (and therefore margins) in Panel (b).
[23]We cannot continue this analysis into fiscal 2014 because the claims-based cost data start to become incomplete.

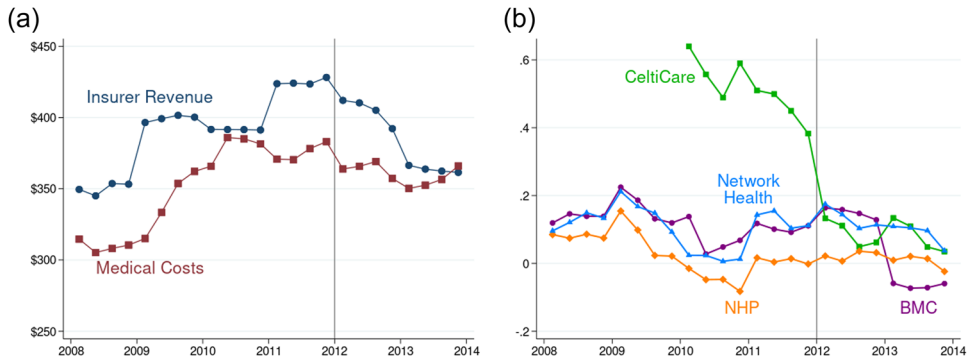


FIGURE 5 Insurer revenues, costs, and margins. (a) Insurer revenue and medical costs ($/month). (b) Gross insurer margins (before admin costs). The graphs show quarterly statistics on insurer revenues and medical costs per enrollee-month (a) and gross margins before administrative costs, equal to (Revenue − Medical Costs)/Revenue (b). Revenues equal total payments received (after applying relevant risk adjustment), and medical costs are insurer-paid claims, both calculated from the CommCare administrative data. To ease visibility, Panel (b) shows statistics only for the four statewide insurers, excluding the small regional insurer Fallon.

profit margins. CeltiCare's margins fell by more than half, from over 40% in 2011% to 8% in 2012. BMC's margins fell from 15% in 2012 down to *below zero* in 2013.[24] Thus, the evidence is consistent with insurers achieving price cuts by first reducing costs via narrower networks (if feasible), but if not, sacrificing profit margins.

4.5 | Analysis of ACA marketplace premiums

Figure 6 shows the path of ACA benchmark (second-lowest) silver premiums from 2014 to 2021 for Massachusetts and for the median state nationally (with dashed lines showing the range from the 10th highest and to 10th lowest state in each year).[25] To see how Massachusetts compares to other active purchasers, we also show the average premium for the nine other states that Krinn et al. (2015) identify as active purchasing states (see table note for a list).

The graph shows the divergent path of premiums in Massachusetts versus the rest of the nation. Benchmark premiums in Massachusetts declined slightly (by 1% to 3% per year) from 2014 to 2017, with the growth rate in each year statistically different from the average other state. Although premiums spiked in 2018—largely due to the termination of cost-sharing reduction subsidies and silver-loading adopted by the Massachusetts exchange

[24]BMC's negative margins may be rationalized as part of a dynamic invest-then-harvest strategy, with the goal of rebuilding its market share after losing so much share in 2012. CeltiCare's very high pre-2012 margins are partly explained by the fact that it was pricing near the allowed floor, but it was risk selecting a very healthy population. Part of CeltiCare's very high margins would have been clawed back by risk corridor provisions in plan contracts, but we do not observe the exact amounts.

[25]Post-ACA premiums are not directly comparable to pre-ACA CommCare premiums because the enrollee population and actuarial values are different. ACA premiums are for a 70% AV plan, while we estimate that CommCare plans had an average AV of 97%. Moreover, CommCare covered enrollees with incomes from 0-300% of poverty, whereas the ACA markets covered enrollees above 138% of poverty (with lower-income people shifting to Medicaid).

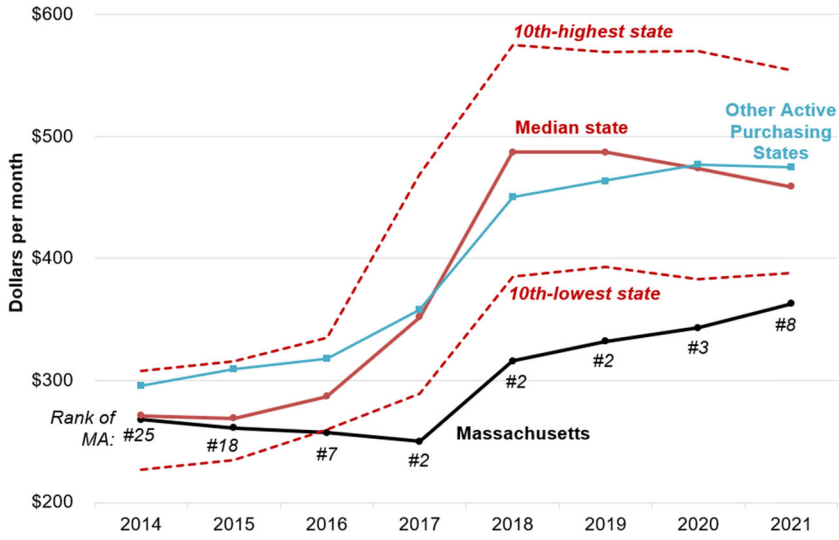


FIGURE 6 Average benchmark premiums in ACA Marketplaces, 2014–2021. The graph shows average benchmark premiums in ACA Marketplaces over time. Average benchmark premiums were calculated by Kaiser Family Foundation based on the price of the second-lowest cost silver premium for a 40-year-old nonsmoker in each county, averaged across counties weighted by market size. The black line is for Massachusetts, with its rank from the lowest among the other 51 states + DC written beneath. The red lines show benchmark premiums for the 10th-lowest, median, and 10th-highest premium state in each year. The blue line shows the average premium for the nine states other than Massachusetts that Krinn et al. (2015) identify as active purchasing states: CA, CT, KY, MD, NV, NY, OR, RI, and VT. *Source*: Secondary data abstracted from Kaiser Family Foundation. Original data from HealthCare.gov.

(Levitt et al., 2017)—Massachusetts' 26% growth was less than the 34% growth in the national average. From 2017 to 2020, Massachusetts maintained the second or third lowest benchmark silver premiums of any state in the country, though it fell to the eighth-lowest price state in 2021. Massachusetts' premiums were also notably lower than the average for other active purchasing states, consistent with its distinct approach to active purchasing policies.

Furthermore, unlike many ACA Marketplaces, the Connector, on net, has not lost insurers. The ConnectorCare program currently has five participating insurers, the same number that participated in CommCare. For the exchange overall (beyond just ConnectorCare), there were 8 insurers as of 2021, down slightly from the 10 participants before 2016.[26]

5 | DISCUSSION

ACA Marketplaces face continued premium increases and political instability that forces policymakers to confront tradeoffs in price, coverage, and quality. In this paper, we identify policies that use government's regulatory and purchasing power to shape incentives and increase competition—expanding the toolkit in a strategy known as "active purchasing."

[26]The two insurers that exited were Minuteman Health (a "co–op" insurer that failed) and CeltiCare, whose market share never recovered after other insurers began competing more aggressively on price starting in 2012–13.

We proceed to describe active purchasing policies employed by Massachusetts both before and after the ACA. We show evidence that these policies contributed to remarkable and durable premium reductions over time, albeit with tradeoffs in reduced provider network coverage.

Our observational evidence suggests that Massachusetts' 2012 limited choice policy played a large role in encouraging competition and lowering prices. The other active purchasing policies likely exerted an additional effect, as evidenced by plans' tendency to "bunch" prices at policy thresholds. By sustaining its own state subsidies, Massachusetts was able to continue to exert competitive pressure and preserve the gains made from 2010 to 2014 through the early years of the ACA. The Connector's premium growth since 2015 has been much slower than for the typical state exchange, and it now has some of the lowest benchmark premiums in the nation.

Active purchasing policies may affect premiums through multiple channels. Consider, for instance, the additional state subsidies for lower-income enrollees used since 2015 in the Massachusetts ConnectorCare program. These may lead to lower market average premiums in several ways. First, they encourage insurers to set lower premiums, since the add-on subsidies are targeted to the cheapest plans in each market. Second, they encourage consumers to select these lower-premium plans, which are differentially subsidized. Finally, by making insurance cheaper, they encourage more low-income enrollees to participate in the market. Past evidence from Massachusetts suggests that additional enrollees are likely to be younger, healthier, and lower-cost, resulting in a healthier risk pool and lower average costs (Finkelstein et al., 2019)

Together, our results suggest the potential role of active purchasing policies for ACA exchanges to boost competition and lower premiums. Underlying active purchasing is the idea that "letting the market work" may not always be the best policy for health insurance. Health insurance is subject to multiple market failures. The best-known market failure is adverse selection—which is why even clearinghouse ACA exchanges use policies such as benefit regulation, subsidies, and risk adjustment. But another market failure is lack of competition, an issue that has become increasingly relevant for the ACA Marketplaces. Previous research has confirmed that insurance markets with fewer insurers and less competition lead to higher prices over time (Gaynor et al., 2014). While many states try simply to recruit new insurers to their marketplace, our research supports the hypothesis that active purchasing can strengthen competitive incentives, even without expanding the number of insurance competitors (Frank & McGuire, 2017). Moreover, the experience of the Massachusetts Connector—with its changing but stable number of competitors—shows that regulators may wish to think beyond just how to *recruit* insurers and consider how to shape the market's incentives to deliberately *attract* competitive entrants.

Policymakers should be aware that stoking price competition may have tradeoffs, as suggested by the Massachusetts experience. By standardizing many dimensions of the insurance product, such as its benefits and cost sharing, the Connector and other ACA Marketplaces encouraged firms to compete on price. Another dimension firms can compete on, however, is their provider network. Massachusetts, like many states, exhibits large variation in provider's prices for healthcare services (Massachusetts Office of the Attorney General, 2010; Seltz et al., 2016). As Massachusetts introduced new active purchasing policies, especially the 2012 limited choice policy, we found that some plans responded by narrowing their provider networks by excluding expensive and prestigious "star" hospitals, such as Massachusetts General Hospital and Brigham & Women's Hospital. In the post-ACA Marketplace, only one ConnectorCare plan (NHP, later renamed "AllWays") covers these hospitals, and that plan is owned by the hospitals' parent company.

Ultimately, we find that excluding expensive star providers was a key part of how insurers cut costs. However, insurers also achieved price savings through reduced profit margins, which we find accounted for two-thirds of the large price reductions in the pre-ACA CommCare market.

The Massachusetts Connector demonstrates the potential of active purchasing to spur competition in subsidized insurance markets. As exchanges around the country confront the same budgetary pressures that the Connector has faced, policymakers could employ similar policies to create competition, control costs, and maintain coverage. Moreover, the lessons from the Connector apply similarly to Medicare Advantage markets and state Medicaid programs, which essentially subsidize insurance coverage through commercial insurers and Managed Care Organizations. Additional research is needed to delineate the effects of individual active purchasing policies. Further research should also investigate what market characteristics might be unique to Massachusetts, and how policies might be adapted to other states.

ACKNOWLEDGMENTS

We thank the editor and two anonymous referees for helpful and constructive comments in the revision process. We thank Amitabh Chandra, Tim Layton, and Ben Sommers for their helpful comments. We thank the Massachusetts Health Connector (and especially Marissa Woltmann and Michael Norton) for their help understanding the data and policy environment.

REFERENCES

Baillon, A., O'Donnell, O., Quimbo, S., & van Wilgenburg, K. (2022). Do time preferences explain low health insurance take-up. *Journal of Risk and Insurance*, *89*(4), 951–983. https://doi.org/10.1111/jori.12395

Bingham, A., Cohen, M., & Bertko, J. (2018, July 11). *National vs. California comparison: Detailed data help explain the risk differences which drive covered California's success*. Health Affairs (Millwood). www.healthaffairs.org/do/10.1377/hblog20180710.459445/full/

Callaghan, S. R., Plummer, E., & Wempe, W. F. (2020). Health insurers' claims and premiums under the affordable care act: Evidence on the effects of bright line regulations. *Journal of Risk and Insurance*, *87*(1), 67–93. https://doi.org/10.1111/jori.12272

Cicala, S., Lieber, E. M. J., & Marone, V. (2019). Regulating markups in US health insurance. *American Economic Journal: Applied Economics*, *11*(4), 71–104. https://doi.org/10.1257/app.20180011

Corlette, S., Alker, J., Touschner, J., & Volk, J. (2011). *The Massachusetts and Utah health insurance exchanges: Lessons learned*. Georgetown University Health Policy Institute. www.rwjf.org/en/library/research/2011/03/the-massachusetts-and-utah-health-insurance-exchanges.html

Corlette, S., & Volk, J. (2011). *Active purchasing for health insurance exchanges: An analysis of options*. Georgetown University Health Policy Institute & National Academy of Social Insurance. www.nasi.org/research/2011/active-purchasing-health-insurance-exchanges-analysis-option

Dafny, L. S., Hendel, I., Marone, V., & Ody, C. (2017). Narrow networks on the health insurance marketplaces: Prevalence, pricing, and the cost of network breadth. *Health Affairs*, *36*(9), 1606–1614. https://doi.org/10.1377/hlthaff.2016.1669

Enthoven, A. C. (1993). The history and principles of managed competition. *Health Affairs*, *12*(Suppl. 1), 24–48. https://doi.org/10.1377/hlthaff.12.Suppl_1.24

Ericson, K. M. M., & Starc, A. (2015). Pricing regulation and imperfect competition on the massachusetts health insurance exchange. *Review of Economics and Statistics*, *97*(3), 667–682.

Ericson, K. M., & Sydnor, J. (2018). *Liquidity constraints and the value of insurance* (No. w24993; p. w24993). National Bureau of Economic Research. https://doi.org/10.3386/w24993

Finkelstein, A., Hendren, N., & Shepard, M. (2019). Subsidizing health insurance for low-income adults: Evidence from Massachusetts. *American Economic Review*, *109*(4), 1530–1567. https://doi.org/10.1257/aer.20171455

Frank, R. G., & McGuire, T. G. (2017). Regulated medicare advantage and marketplace individual health insurance markets rely on insurer competition. *Health Affairs*, *36*(9), 1578–1584. https://doi.org/10.1377/hlthaff.2017.0613

Gaynor, M., Ho, K., & Town, R. (2014). *The industrial organization of health care markets* (Working Paper No. 19800). National Bureau of Economic Research. https://doi.org/10.3386/w19800

Geruso, M., Layton, T. J., McCormack, G., & Shepard, M. (Forthcoming). The two margin problem in insurance markets. *The Review of Economics and Statistics*, 1–46. https://doi.org/10.1162/rest_a_01070

Griffith, K., Jones, D. K., & Sommers, B. D. (2018). Diminishing insurance choices in the affordable care act marketplaces: A county-based analysis. *Health Affairs*, *37*(10), 1678–1684. https://doi.org/10.1377/hlthaff.2018.0701

Gruber, J. (2011). Massachusetts points the way to successful health care reform. *Journal of Policy Analysis and Management*, *30*(1), 184–192. https://doi.org/10.1002/pam.20551

Holtz-Eakin, D. (2011). Does Massachusetts's health care reform point to success with national reform. *Journal of Policy Analysis and Management*, *30*(1), 178–184. https://doi.org/10.1002/pam.20553

Jaffe, S., & Shepard, M. (2020). Price-linked subsidies and imperfect competition in health insurance. *American Economic Journal: Economic Policy*, *12*(3), 279–311. https://doi.org/10.1257/pol.20180198

Kaiser Family Foundation. (2017a, September 19). *2017 Employer Health Benefits Survey*. Kaiser Family Foundation. www.kff.org/health-costs/report/2017-employer-health-benefits-survey/

Kaiser Family Foundation. (2017b, November 13). *Marketplace Average Benchmark Premiums*. Kaiser Family Foundation. www.kff.org/health-reform/state-indicator/marketplace-average-benchmark-premiums/

Kamal, R., Shoaibi, C., Kaplun, B., Semanskee, A., & Levitt, L. (2017, August 10). *An Early Look at 2018 Premium Changes and Insurer Participation on ACA Exchanges*. Kaiser Family Foundation. www.kff.org/health-reform/issue-brief/an-early-look-at-2018-premium-changes-and-insurer-participation-on-aca-exchanges/

Klein, P. P., van Kleef, R., Henriquez, J., & Paolucci, F. (2022). The interplay between risk adjustment and risk rating in voluntary health insurance. *Journal of Risk and Insurance*. Advance online publication. https://doi.org/10.1111/jori.12394

Krinn, K., Karaca-Mandic, P., & Blewett, L. A. (2015). State-based marketplaces using 'clearinghouse' plan management models are associated with lower premiums. *Health Affairs*, *34*(1), 161–169. https://doi.org/10.1377/hlthaff.2014.0627

Levitt, L., Cox, C., & Claxton, G. (2017, April 25). *The effects of ending the Affordable Care Act's cost-sharing reduction payments*. Kaiser Family Foundation. www.kff.org/health-reform/issue-brief/the-effects-of-ending-the-affordable-care-acts-cost-sharing-reduction-payments/

Mahoney, N. (2015). Bankruptcy as implicit health insurance. *American Economic Review*, *105*(2), 710–746. https://doi.org/10.1257/aer.20131408

Massachusetts Office of the Attorney General. (2010). *Examination of health care cost trends and cost drivers: Report for annual public hearing under G.L. c. 118G, § 6 1/2*. Office of the Attorney General Martha Coakley. www.mass.gov/files/documents/2016/08/vn/2010-hcctd-full.pdf

McDonough, J. E., Rosman, B., Phelps, F., & Shannon, M. (2006). The third wave of Massachusetts health care access reform. *Health Affairs*, *25*(6), W420–W431. https://doi.org/10.1377/hlthaff.25.w420

McGuire, T. G., & Van Kleef, R. C. (2018). *Risk adjustment, risk sharing and premium regulation in health insurance markets: Theory and practice*. Academic Press.

Mechanic, R. E., Altman, S. H., & McDonough, J. E. (2012). The new era of payment reform, spending targets, and cost containment in massachusetts: early lessons for the nation. *Health Affairs*, *31*(10), 2334–2342. https://doi.org/10.1377/hlthaff.2012.0338

Pauly, M., Leive, A., & Harrington, S. (2020). Losses (and gains) from health reform for non-Medicaid uninsureds. *Journal of Risk and Insurance*, *87*(1), 41–66. https://doi.org/10.1111/jori.12255

Phelps, C. E. (2022). Optimal health insurance. *Journal of Risk and Insurance*. Advance online publication. https://doi.org/10.1111/jori.12377

Robinson, J., Lee, P., & Goldman, Z. (2015, October 2). *Whither health insurance exchanges under the Affordable Care Act? Active purchasing versus passive marketplaces*. Health Affairs (Millwood). www.healthaffairs.org/do/10.1377/hblog20151002.050940/full/#one

Saltzman, E. (2021). Managing adverse selection: Underinsurance versus underenrollment. *The Rand Journal of Economics*, *52*(2), 359–381. https://doi.org/10.1111/1756-2171.12372

Seltz, D., Auerbach, D., Wrobel, M., & Pervin, A. (2016, May 12). *Addressing price variation In Massachusetts*. www.healthaffairs.org/do/10.1377/hblog20160512.054840/full/

Semanskee, A., Claxton, G., & Levitt, L. (2017, November 14). *How premiums are changing in 2018*. Kaiser Family Foundation. www.kff.org/health-reform/issue-brief/how-premiums-are-changing-in-2018/

Semanskee, A., Claxton, G., Long, M., & Kamal, R. (2017, November 10). *Insurer participation on ACA marketplaces, 2014–2018*. Kaiser Family Foundation. www.kff.org/health-reform/issue-brief/insurer-participation-on-aca-marketplaces/

Shepard, M. (2022). Hospital network competition and adverse selection: Evidence from the Massachusetts health insurance exchange. *American Economic Review*, *112*(2), 578–615. https://doi.org/10.1257/aer.20201453

Shepard, M., & Wagner, M. (2022). *Reducing ordeals through automatic enrollment: Evidence from a subsidized health insurance exchange*. Harvard University working paper.

Weissman, J. S., & Bigby, J. (2009). Massachusetts health care reform—Near-universal coverage at what cost? *New England Journal of Medicine*, *361*(21), 2012–2015. https://doi.org/10.1056/NEJMp0909295

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Shepard, M., & Forsgren, E. (2023). Do insurers respond to active purchasing? Evidence from the Massachusetts health insurance exchange. *Journal of Risk and Insurance*, 90, 9–31. https://doi.org/10.1111/jori.12414