FRANK BATTEN SCHOOL OF LEADERSHIP AND PUBLIC POLICY

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IMPROVING COMPETITION IN VIRGINIA'S HEALTH INSURANCE MARKETPLACE

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DISCLAIMER

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

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Executive Summary

The Patient Protection and Affordable Care Act (ACA) sought to provide affordable health insurance to individuals who would otherwise be uninsured. The Health Insurance Exchanges (also known as Health Insurance Marketplaces) were established in each state to foster competition among private insurers on price and quality in order to meet that objective. In recent years, however, premiums on the exchange markets have increased substantially nationwide and by an even larger amount in the Commonwealth of Virginia. Between 2017 and 2019, for example, the average benchmark premium increased by 72% in Virginia compared to the national average of 33%. Premiums in the Charlottesville Virginia area were the highest in the country in 2018. Enrollment has also declined in recent years, and surveys suggest that the cost of premiums was an important consideration in enrollment decisions. This study provides an analysis of the existing health insurance marketplace climate in Virginia and across the U.S. with a goal of understanding how best to improve competition, reduce premiums, increase coverage options, and expand marketplace enrollment. Three alternative policy options are explored and evaluated based on their respective projected feasibility, cost-effectiveness, ability to increase premium affordability, and potential to improve competition and reduce premiums in at-risk areas in Virginia where there is presently only a single marketplace insurer.

This study begins by providing some background information on the ACA, including program requirements and the structure and operations of Health Insurance Marketplaces. This discussion is followed by a review of trends in marketplace premiums and enrollments both in Virginia and nationwide. The results show that the number of insurers, and hence competition, has declined over time, while premiums have risen. There are a variety of factors behind this trend, including the discontinuation of the federal reinsurance program, sicker risk pools than anticipated, and underestimation of health care utilization levels. At the county and independent city level, many Virginia consumers have only one insurer serving their community. In 2017, the percentage of counties and independent cities with a marketplace issuer monopoly increased from 21% to 81%. While the percentages have decreased from 2018 to 2019, almost half of all counties in Virginia still only have one issuer. Counties in Southwest Virginia and other rural communities across the state are disproportionately represented among these monopoly issuer markets.

A literature review is presented to examine what is known about how competition (or the lack thereof) impacts health insurance premiums. Broadly speaking, existing studies find that premiums tend to be lower and grow more slowly over time in markets that are served by multiple insurers. To learn how competition impacts premiums at the county and independent city level in Virginia, a fixed effects econometric analysis is conducted. The results indicate that a reduction of one insurer from a market is associated with an 8.3% increase in health insurance premiums.

Building on this understanding of the issues surrounding the current health insurance landscape in Virginia, three policy options are identified. The first, Status Quo, is to take no new actions. The rationale for this approach is that there are recent indications that ACA marketplaces are stabilizing, and the expansion of Medicaid eligibility in Virginia is likely to result in healthier risk pools, thereby contributing to lower premiums.

The second policy option is implementing a state-based reinsurance program. To date, seven states have employed such an approach, which involves using a combination of state and federal funds to cover the costs of claims that are especially high in order to reduce risk for insurance companies. By shielding insurers from some of the volatility associated with large or catastrophic claims, reinsurance leads to premium reductions. In addition, insurers have expressed that a reinsurance program might serve as an incentive for more entry into ACA markets. However, a synthetic control analysis presented in this study of the early experiences of reinsurance programs in the seven states finds little evidence that reinsurance programs have had such an effect.

The third policy option is a Medicaid buy-in through which a public plan that leverages the existing state Medicaid infrastructure is introduced in the marketplace to compete with private plans. In the short run, the new Medicaid buy-in option would promote additional competition for consumers seeking insurance through the marketplace. It is not clear, however, whether competition would be sustained in the long run, as it is possible that one or more existing insurers might ultimately respond by exiting markets. The Medicaid buy-in product should nonetheless increase premium affordability by offering a lower-cost option in the marketplace.

The Status Quo option is projected to lead to more affordable marketplace premiums and improved access to health insurance options, especially in at-risk areas, at no cost to the state. Further benefits for Virginia residents can be realized through pursuit of a state-based reinsurance program, which is projected to further contribute to the objectives of premium reductions and enhanced consumer choice. Although this option entails additional costs to Virginia, it is a highly feasible and effective option. The Medicaid buy-in option is not recommended at present due to the substantial political challenges of garnering necessary support at the state and federal levels. However, this option would merit reconsideration if the political climate were to improve, since it is projected to be a relatively cost-effective method of achieving the desired outcomes.

Problem Statement

The Health Insurance Exchange markets in the majority of Virginia counties and independent cities have experienced a substantial decline in competition between insurers and increase in premiums since 2016.

Introduction

One of the principle objectives of the Patient Protection and Affordable Care Act (ACA) was the provision of affordable health insurance to individuals who would otherwise be uninsured. The ACA Health Insurance Marketplaces (also known as Health Insurance Exchanges) were established in each state to foster competition among private insurers on price and quality to further that end. In recent years, premiums on the marketplaces have increased substantially nationwide and by an even larger amount in Virginia. Between 2017 and 2019, the average benchmark premium (second-lowest-cost silver premium) increased by 72% in Virginia compared to the national average of 33%. The premium increases from 2017 to 2018 were the largest in the country in Virginia in the City of Charlottesville and in Albemarle, Fluvanna, and Greene counties, where the monthly premium for a 40 year-old ineligible for federal ACA subsidies[1] rose by 195%, 234%, and 247% from 2017 to 2018 for the lowest-cost bronze, silver, and gold plan, respectively (Semanskee, Claxton, & Levitt, 2017). High premiums are the least affordable for older, middle-class individuals who purchase their own health insurance through their state's marketplace. For 60-year olds with an annual income of $50,000 (412% of the federal poverty line, just above the cutoff for federal subsidies), the monthly premium for the lowest cost plan available to them in 2019 is between 21 and 30% of their income in all but 14 counties and independent cities in Virginia, in which the monthly premium instead falls between 16 and 20% of their income (Fehr, Cox, Levitt, & Claxton, 2019). Marketplace enrollment has declined in recent years, and surveys suggest that the cost of premiums was an important consideration in enrollment decisions.

A key driver of the rise in premiums is that the exchange markets have become more concentrated and less competitive. The number of insurers participating in the marketplace has fallen since 2016, both in Virginia and nationally. In 2019, almost half of all counties and independent cities in Virginia (47%) had only one insurer participating in the individual exchange market. Previous research has found that greater competition among marketplace insurers is associated with lower premiums (Dafny, Gruber, & Ody, 2014; Van Parys, 2018; Sheingold, Nguyen, & Chappel, 2015). An econometric analysis presented in this paper indicates that premium increases in Virginia were larger in counties with less insurer competition. Improving marketplace competition in and throughout Virginia can increase the affordability of health insurance and improve enrollment and consumer choice. Given federal gridlock over health insurance reform, a state-based solution is necessary for Virginia.

[1] Individuals with incomes between 100% and 400% of the federal poverty level are eligible for federal premium tax credits that lower their monthly premium for a marketplace health insurance plan.

Background

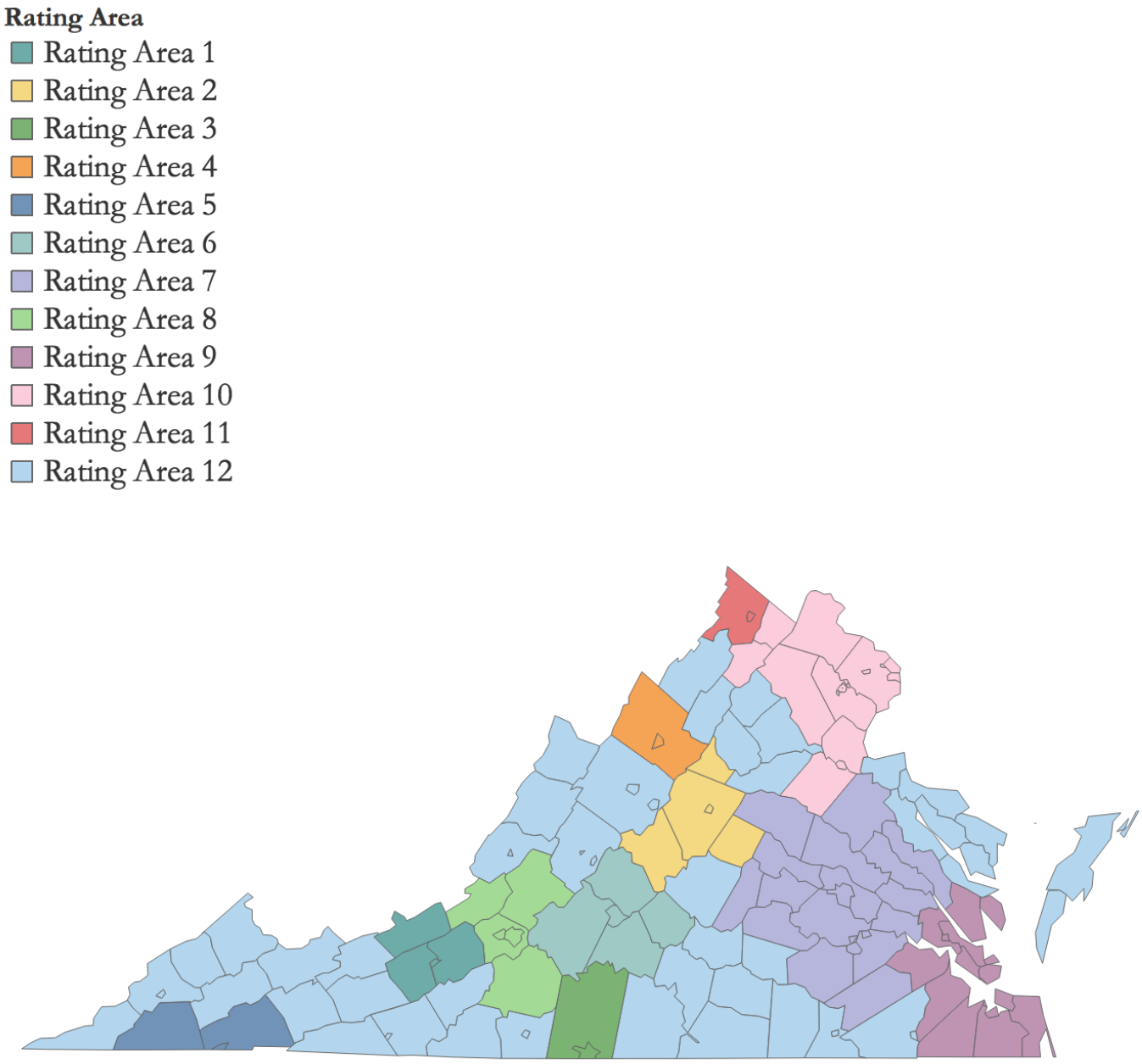
ACA Health Insurance Marketplaces

The ACA reformed health insurance markets through the creation of health insurance marketplaces, prohibition of exclusions of coverage based on pre-existing conditions, establishment of employer and individual mandates, and expansion of Medicaid eligibility to 138% of the federal poverty level (FPL) in states that opt to do so. The ACA required all states to have operational health insurance marketplaces by 2014. Private insurers sell non-group (individual) and small-group health insurance plans through these marketplaces. Instead of establishing its own state-run marketplace, Virginia elected to use the Federally-Facilitated Health Insurance Marketplace platform, HealthCare.gov. Although Virginia uses this federal platform, Virginia received approval from the U.S. Department of Health and Human Services to conduct its own plan management. Marketplace plans are placed into metal categories based on how health care costs are divided between the insurance company and the plan holder. Bronze plans have the lowest monthly premiums and the highest costs to plan holders when they need health care. All plans offered on the Virginia marketplace must be certified by Virginia as a Qualified Health Plan (QHP) and meet certain requirements, including offering essential health benefits and satisfying network adequacy requirements.

Exchange markets are divided by product (individual health plan or small group health plan) and geography. Virginia has twelve geographic rating areas: Rating Area 1 – Blacksburg, Rating Area 2 – Charlottesville, Rating Area 3 – Danville, Rating Area 4 – Harrisonburg, Rating Area 5 – Bristol, Rating Area 6 – Lynchburg, Rating Area 7 – Richmond; Rating Area 8 – Roanoke; Rating Area 9 – Virginia Beach-Norfolk; Rating Area 10 –Washington-Arlington-Alexandria; Rating Area 11 – Winchester; Rating Area 12 – Non-MSA. These rating areas correspond to the metropolitan statistical areas (MSAs) in Virginia, and there is one additional rating area that covers all non-MSA areas. The rating area map is provided in Figure 1. For reference, a map of Virginia's demographic regions is provided in Appendix A and a map designating counties and independent cities in Virginia as urban, mostly rural, and completely rural is provided in Appendix B. Insurers set rates for each plan that they offer within a rating area, but insurers do not necessarily offer plans in all counties within a rating area. There is variation in insurer participation, plan offerings, and premiums among counties within a rating area as well as across rating areas.

Figure 1

Geographic Rating Areas in Virginia



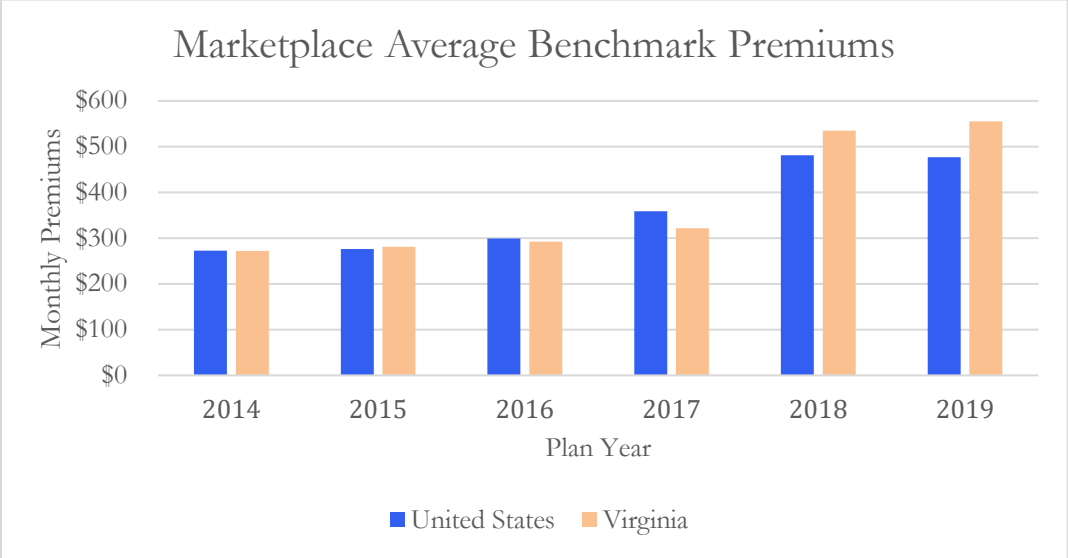
Source: Map generated based on rating area designations listed on the Centers for Medicare and Medicaid Services (CMS) website ("Virginia Geographic Rating Areas: Including State Specific Geographic Divisions," 2013).

Marketplace Premiums in Virginia

Figure 2 compares the benchmark premium (second-lowest-cost silver premium) for a 40-year-old in Virginia to the national average for the years 2014 to 2019. The average benchmark premium in Virginia was $272 per month in 2014, which was just slightly below the national average of $273. Premiums increased somewhat between 2014 and 2016, but remained below $300. Premiums began to rise more substantially after 2016, particularly in 2018. Between 2017 and 2019, the average benchmark premium in Virginia increased by 72% to $555 per month. During the same time, the national average increased by 33% to $477. As indicated in Table 1, the average lowest-cost bronze, silver, and gold premiums in Virginia were also higher than the national average in both 2018 and 2019, and the percentage increase between 2017 and 2019 was also higher. Rising premiums are a concern not only for consumers purchasing insurance on the marketplace, but also for taxpayers who finance federal subsidies.

Marketplace premiums vary across counties and independent cities within Virginia, and the range of premiums grew substantially in 2018. Table 2 presents summary statistics for the second-lowest cost silver plan (SLCSP).

Figure 2



Source: Kaiser Family Foundation analysis of data from HealthCare.gov, state rate review websites, state plan finder tools and CMS analysis of rate changes in the benchmark silver plan. October 2018.
Note: Premiums were analyzed using the second-lowest cost silver (benchmark) premium for a 40-year-old in each county and weighted by county plan selections. The premiums for a 40-year-old, were calculated from the QHP Landscape files for 2016-2018. Premium data is not available in the 2019 QHP Landscape files.

Marketplace premiums were within a fairly tight band between $276 and $318 in 2016. In contrast, premiums in 2018 ranged from $447 in Hanover County to $1048 in Albemarle, Fluvanna, and Greene counties and Charlottesville City. This premium rate was the highest rate in the country. The premium rate was $317 the year before in those areas. One explanation for this premium hike that was emphasized in the media is the fact that the

number of insurers offering plans in these areas declined from two to one from 2017 to 2018, thus creating a monopoly insurer (Itkowitz, 2018). The relationship between premiums and insurer competition is discussed in detail later in this paper.

Table 1

Comparison of Average Marketplace Premiums in Virginia to National Averages by Metal Tier, 2017-2019

Metal Tier	Year	National Average	Virginia
Average Lowest-Cost Bronze Premium	2017	$290	$268
	2018	$341	$398
	2019	$339	$410
	% Change 2017-2019	17%	53%
Average Lowest-Cost Silver Premium	2017	$345	$310
	2018	$456	$515
	2019	$452	$525
	% Change 2017-2019	31%	69%
Average Benchmark Premium	2017	$359	$322
	2018	$481	$535
	2019	$477	$555
	% Change 2017-2019	33%	72%
Average Lowest-Cost Gold Premium	2017	$446	$430
	2018	$526	$688
	2019	$514	$531
	% Change 2017-2019	15%	23%

Source: Kaiser Family Foundation analysis of data from HealthCare.gov, state rate review websites, state plan finder tools and CMS analysis of rate changes in the benchmark silver plan. October 2018.

Notes: Premiums are monthly. Kaiser Family Foundation analyzed premiums using the lowest-cost premium for each metal tier (bronze, silver, and gold) and the second-lowest-cost silver (benchmark) premium for a 40-year-old in each county. Premiums are weighted by county plan selections.

Table 2

Summary Statistics for Second-Lowest-Silver Premiums in Virginia for a 40-year-old

Year	Counties	Mean	Minimum	Maximum
2016	134	$299	$276	$318
2017	134	$333	$296	$371
2018	134	$560	$447	$1048

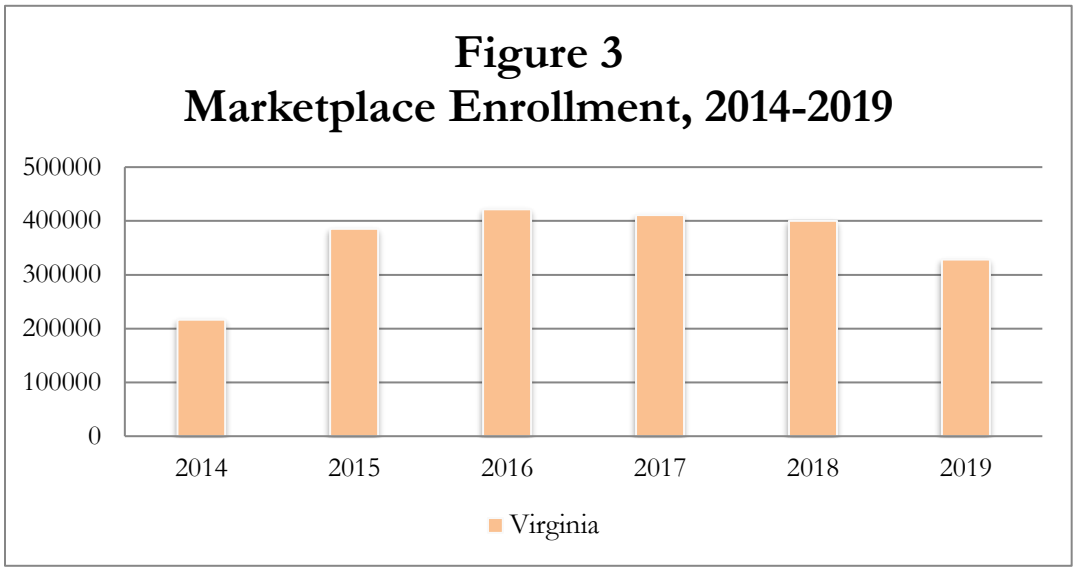
Source: Calculated from QHP Landscape Files obtained from HealthCare.gov.
Note: The mean is an un-weighted mean, so it is not directly comparable to the weighted mean in Table 1.

Marketplace Enrollment in Virginia

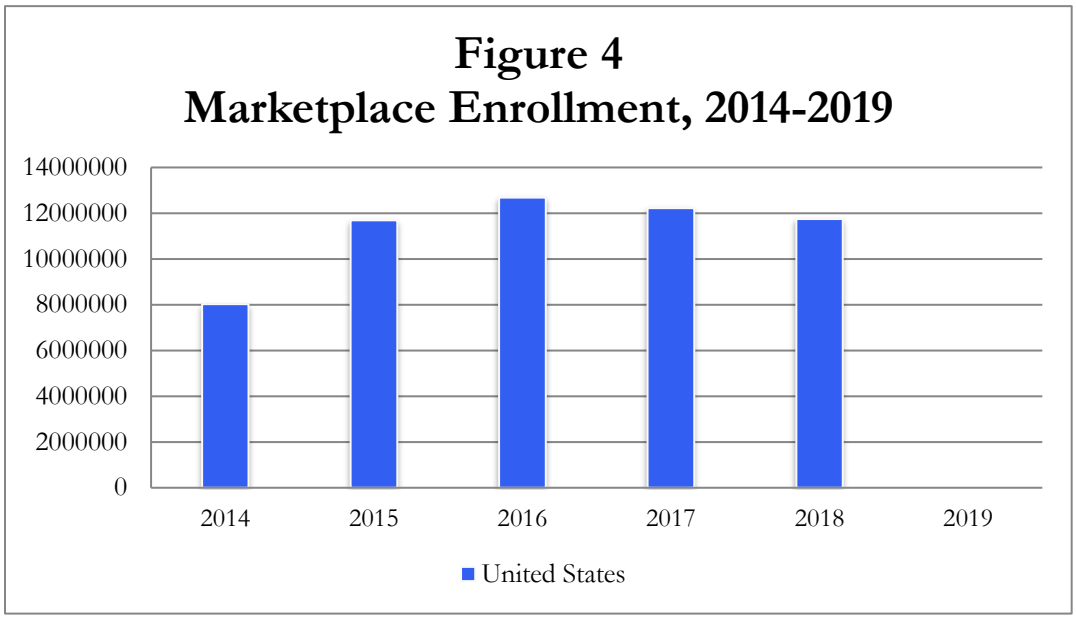
Enrollment in the marketplace, particularly among young and healthy individuals, is important for stabilizing risk pools and health insurance markets. Figure 3 illustrates the trends in enrollment for Virginia. Enrollment increased substantially between 2014 and 2016 and then began to decline. Enrollment declines are a particular concern if they are associated with a gap between the number of potential marketplace enrollees and the actual number of marketplace enrollees. In 2018, only 42% of the potential marketplace population was enrolled in the marketplace in Virginia ("Marketplace Enrollment as a Share of the Potential Marketplace Population," 2018). The especially large decline in enrollment in 2019 is attributable, at least in part, to the expansion of Medicaid eligibility to Virginia residents earning up to 138% of the federal poverty level (FPL) as of January 1, 2019.

As shown in Figure 4, the enrollment trends in Virginia are similar to national enrollment trends. Consumers may not enroll in a marketplace plan if the premiums are high relative to their perceived need for health insurance (Eibner & Rivlin, 2015, p. 35). In an Urban Institute Health Monitoring Survey, three in five uninsured adults cited affordability issues as the reason they did not have health insurance (Shartzer, Kenney, Long, & Odu, 2015). Based on a survey of officials representing state-based marketplaces, the Commonwealth Fund found that plan costs were important determinants of enrollment, and that consumers who were ineligible for tax credits were less likely to enroll (Giovannelli & Curran, 2016).[2] Marketplace enrollment has dropped sharply among individuals who are ineligible for tax credits and who thus bear the full cost of premium increases (Hall, 2018, p. 4). A CMS report estimated that approximately one million people were priced out of the marketplaces in 2017 (U.S. Centers for Medicare and Medicaid Services, 2018; Katz, 2018).

[2] The survey also found that consumer confusion about healthcare premiums, cost sharing, and tax credits were significant barriers to enrollment.



Source: Kaiser Family Foundation analysis of open enrollment reports from Office of the Assistant Secretary for Planning and Evaluation (ASPE) and Centers for Medicare and Medicaid Services (CMS).



Source: Kaiser Family Foundation analysis of open enrollment reports from Office of the Assistant Secretary for Planning and Evaluation (ASPE) and Centers for Medicare and Medicaid Services (CMS). Note: Enrollment data for 2019 include only states using the HealthCare.gov platform, so an estimate for total U.S. enrollment is not available for 2019.

Evaluation of Marketplace Competition in and throughout Virginia

Trends in Insurer Participation in Marketplace Markets

Table 3 tracks the number of insurance companies participating in the individual exchange market in Virginia from 2014-2019 and compares it to the national average number of issuers for each of those years.[3] Table 3 shows that the number of insurers in the individual market for Virginia increased by one per year from 2014 to 2017, and then decreased by two in 2018. As shown in Table 3, the number of insurers participating in the marketplaces fell nationwide beginning in 2016. In 2019, the number of insurers participating in the Virginia marketplace increased by one when Virginia Premier Health Plan, Inc. entered the marketplace in the Richmond Rating Area.

As described by Corlette et al. (2018) and Holahan et al. (2019), a number of factors affected insurers' decisions about whether to participate in the marketplace, including the political uncertainty around the potential repeal of the ACA, discontinuation of the federal reinsurance program, and economic difficulty due to sicker risk pools and higher utilization of services than expected. Consistent with these explanations, the two insurers that left the Virginia marketplace at the end of 2017, United Healthcare and Aetna, cited volatility of the ACA market and uncertainty regarding federal policies as motivations for their departures (Bryan, 2017). Virginia was one of only a few states in which either United or Aetna still offered marketplace plans in 2017. In 2017, they exited Virginia along with the other remaining states[4] (Norris, 2016). Anthem, which had initially planned to exit the Virginia marketplace in 2018, expressed similar concerns about the uncertainty of the ACA (Bryan, 2017). Anthem ultimately decided to remain in the Virginia marketplace in order to cover the 58 counties that would have otherwise been left without any coverage.

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Table 3

Comparison of the Number of Issuers Participating in the Individual Marketplace in Virginia to the National Average, 2014-2019

Number of Issuers Participating in the Individual Health Insurance Marketplaces						
Year	2014	2015	2016	2017	2018	2019
Virginia	5	6	7	8	6	7
National Average	5	6	5.6	4.3	3.5	4

Source: Kaiser Family Foundation analysis of insurer rate filings to state regulators.

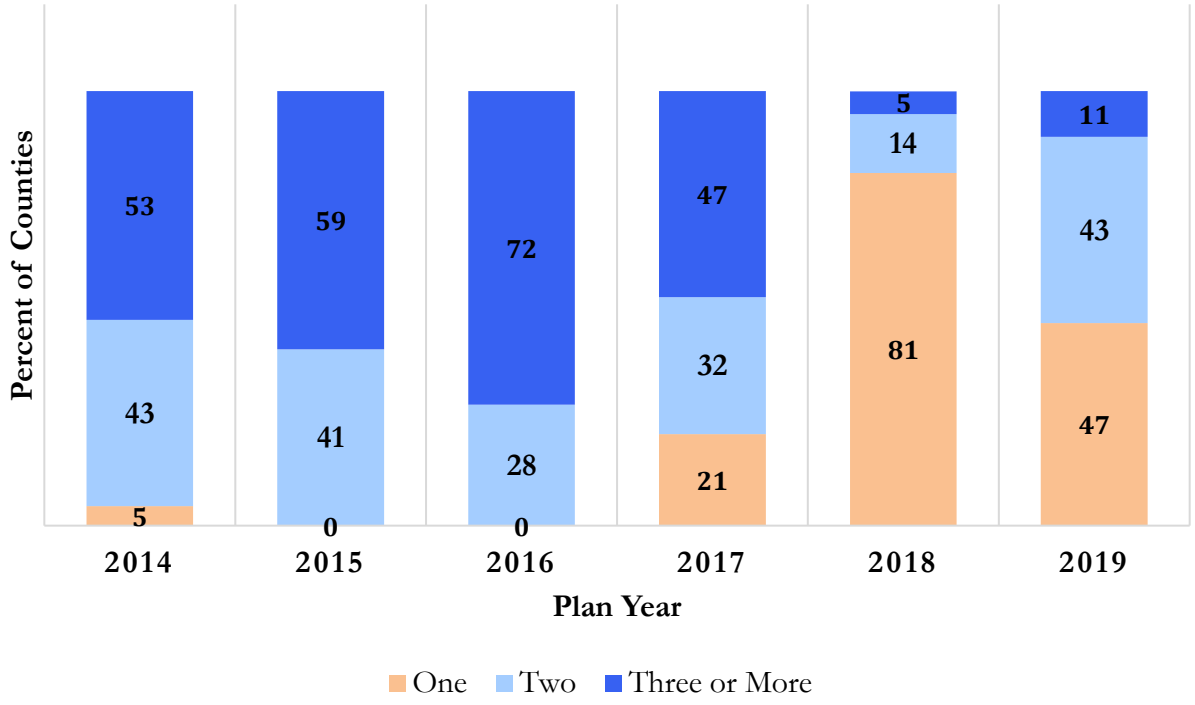
Note: Kaiser Family Foundation grouped insurers by parent company or group affiliation, which were obtained from HHS Medical Loss Ratio public use files and supplemented with additional research.

[3] The numbers differ from the number of issuers listed in the Landscape Database because the Kaiser Family Foundation data are grouped by parent company and group affiliation. For instance, the 2017 Landscape Database lists the Piedmont HMO and PPO as two separate issuers while the Kaiser Family Foundation data group them together.

[4] In 2017, UnitedHealthcare participated in the individual marketplace in Virginia, New York and Nevada and Aetna participated in Virginia, Iowa, Delaware and Nebraska. They both exited all states at the end of 2017.

There is substantial variation in insurer participation across counties within Virginia. Figure 5 shows the percentage of counties with one, two, or three or more plan issuers on the ACA marketplace in Virginia for each year from 2014-2019. In 2017, the percentage of counties with a marketplace issuer monopoly increased from 21% to 81%. While the percentages have decreased from 2018 to 2019, almost half of all counties in Virginia still only have one issuer. The markets with monopolies are disproportionately located in Non-Metropolitan Statistical areas and in Southwest Virginia, as depicted by Figure 6. A map illustrating the ACA individual market insurers offering plans in each county and independent city in Virginia can be found in Appendix C.

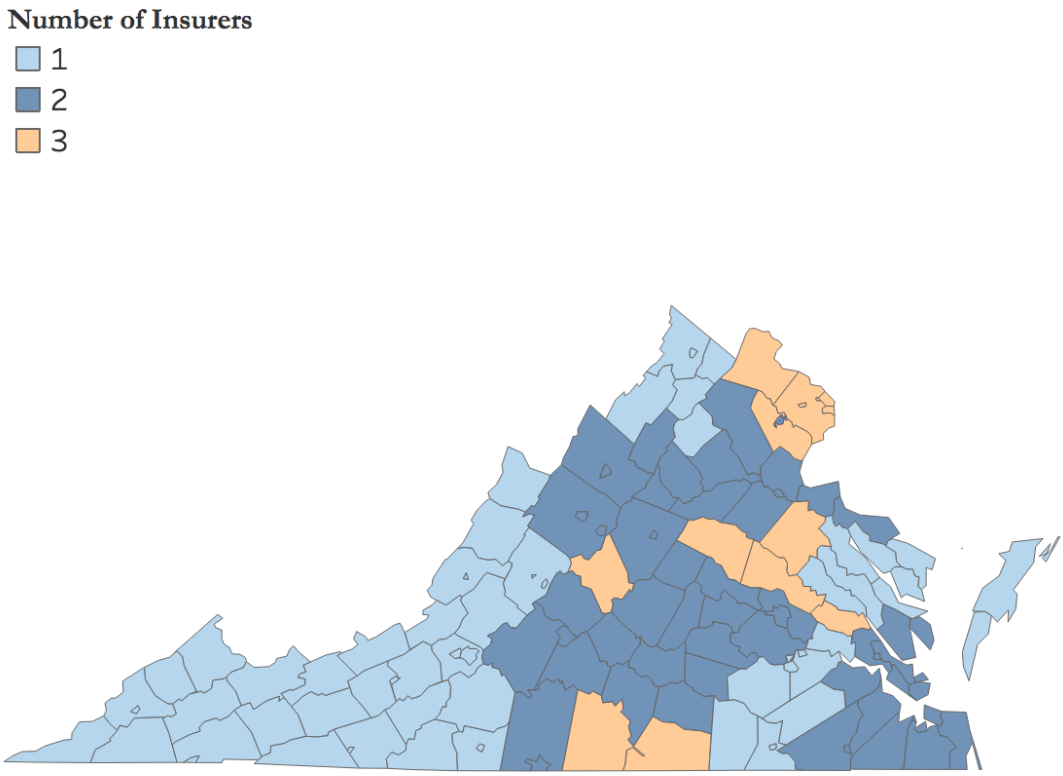
Figure 5
Insurer Participation in the ACA Individual Market in Virginia
Percent of Counties with One, Two or Three or More Insurers



Source: Kaiser Family Foundation Analysis of QHP Landscape data obtained from HealthCare.gov.

Figure 6

Number of Exchange Insurance Issuers in Virginia's Counties and Independent Cities in 2019



Source: Kaiser Family Foundation Analysis of QHP Landscape data obtained from HealthCare.gov.

This disparity between insurer marketplace participation in urban and rural counties is shown in Table 4.[5] In 2019, 54.4% of rural counties in Virginia had only one insurer, compared to 35.2% of urban counties. Similarly, the average number of insurers was 1.5 in rural counties and 1.8 in urban counties.

[5] The share of the population in each U.S. county living in rural areas was drawn from a county-look-up table based on the 2010 U.S. Census. Counties with a rural population share exceeding 50% were classified as rural counties, while those with a share of 50% or below were classified as urban counties.

Table 4

Virginia Trends in Marketplace Insurer Participation across Urban and Rural Counties, 2014-2019

Year	Average # Insurers Per County		% Counties by # Insurers in Marketplace						% Enrollees by # Insurers in Marketplace		
			Urban			Rural					
	Urban	Rural	1	2	3+	1	2	3+	1	2	3+
2014	2.7	2.4	1.9	33.3	64.8	6.3	49.4	44.3	1	26	73
2015	2.7	2.6	0.0	37.0	63.0	0.0	43.0	57.0	0	23	77
2016	3.3	2.9	0.0	22.2	77.8	0.0	31.6	68.4	0	17	83
2017	3.1	2.1	11.1	24.1	64.8	27.9	36.7	35.4	5	22	73
2018	1.4	1.2	77.7	9.3	13.0	83.5	16.5	0.00	8	36	56
2019	1.8	1.5	35.2	50.0	14.8	54.4	38.0	7.6	16	45	39

Source: Kaiser Family Foundation analysis of data from the QHP Landscape files released by HealthCare.gov.

Table 5

Nationwide Trends in Marketplace Insurer Participation across Urban and Rural Counties, 2014-2019

Year	Average # Insurers Per County		% Counties by # Insurers in Marketplace						% Enrollees by # Insurers in Marketplace		
			Urban			Rural					
	Urban	Rural	1	2	3+	1	2	3+	1	2	3+
2014	3.3	2.5	11.4	27.7	60.9	19.7	37.6	42.7	6	18	76
2015	4.2	3.2	4.5	20.0	75.5	6.3	31.5	62.2	1	8	91
2016	3.7	2.9	5.9	23.6	70.5	8.0	33.2	58.8	2	13	85
2017	2.5	1.9	24.7	35.3	40.0	38.4	37.8	23.8	21	21	58
2018	2.0	1.6	39.9	35.4	24.7	59.3	26.7	14.0	15	26	48
2019	2.3	1.8	28.3	40.8	30.9	41.9	39.4	18.7	17	25	58

Source: Kaiser Family Foundation analysis of data from the QHP Landscape files released by HealthCare.gov.

Table 5 provides analogous statistics at the national level. Consistent with Table 3, the number of county-level insurers was at its peak in 2015. In that year, there was an average of 4.2 insurers covering urban county marketplaces and 3.2 insurers covering rural county marketplaces across the U.S. Only a very small fraction of counties nationwide were served by only one insurer in that year, and consumers in 75.5 % of urban counties and 62.2 % of rural counties were able to choose from plans offered by three or more different insurers in their marketplace. Insurer participation began to drop off substantially beginning in 2017. By 2018, consumers in 39.9 % of urban counties and 59.3 % of rural counties had a choice of only one insurer in their marketplace. Insurer participation improved somewhat in 2019 as

providers gained somewhat improved clarity on the risks and benefits associated with the new insurance climate.

The decline in the number of issuers per county in Virginia leads to a reduction in choice for consumers. One measure of choice is the number of qualified health plans (QHPs) available to consumers. Table 6 provides estimates of QHPs per county and QHPs per issuer in county from the Office of the Assistant Secretary for Planning and Evaluation, Health and Human Services, on issuer and plan options for enrollees for Plan Years 2014, 2018, and 2019, along with the changes in those numbers from Plan Years 2014-2019 and 2018-2019 for Virginia. These averages are compared to the averages of all the other states that use the HealthCare.gov platform. In all years shown, the average numbers of QHPs per county and per issuer in county have been lower than the national averages. This discrepency indicates that consumer choice is lower in Virginia than in other HealthCare.gov states, on average.

Table 6

Comparison of the Average Number of Qualified Health Plans (QHPs) per County and per Issuer in County in Virginia and Nationally, 2014, 2118, and 2019

			All States Using HealthCare.gov	Virginia
QHPs per County (Weighted Average)		2014	51	29
		2018	25	12
		2019	26	14
	Change	2018-2019	1	1
		2014-2019	-25	-15
QHPs per Issuer In County		2014	12	8
		2018	10	6
		2019	9	6
	Change	2018-2019	0	-1
		2014-2019	-3	-2

Source: Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation (ASPE), analysis of the 2019 QHP Landscape data.

Exchange Market Herfindahl-Hirschman Indices and Insurer Market Share

Table 7, below, reports the Herfindahl-Hirschman Index (HHI) computed by the American Medical Association for Virginia and most of the Metropolitan Statistical Areas (MSAs) in Virginia in the exchange market as of February 1, 2017. The HHI is a standard measure of market concentration used by the Department of Justice and the Federal Trade Commission to assess competition in antitrust investigations (U.S. Department of Justice and Federal Trade Commission, 2010). It is calculated as the sum of squares of the shares of the individual market participants and ranges from 0 to 10,000. HHI values from 1,500 to 2,500 indicate moderate concentration, and values above 2,500 indicate a highly concentrated (uncompetitive) market. Based on Table 4, the state of Virginia as a whole and all of the MSAs in Virginia for which an HHI was calculated have highly concentrated markets except for the Washington-Arlington-Alexandria MSA. The Staunton-Waynesboro MSA has the highest market concentration, followed by the Charlottesville MSA. Additionally, the table

shows that in 2017, Anthem was the largest insurer in all but one MSA and had over 50 percent market share in most MSAs. A 50 percent market share by one provider is another indication of uncompetitive markets.

Table 7

HHI and Largest Insurers' Market Shares in Virginia and MSAs in the Exchange Market

State and MSA	HHI	Insurer 1	Share (%)	Insurer 2	Share (%)
Virginia	3127	Anthem	46	Aetna	28
Blacksburg-Christiansburg-Radford	6153	Anthem	77	Sentara (Optima Hlth)	15
Charlottesville	7277	Anthem	85	Aetna	11
Harrisonburg	6877	Anthem	81	Sentara (Optima Hlth)	19
Lynchburg	6698	Anthem	80	Centra (Piedmont)	18
Richmond	4011	Anthem	48	Aetna	40
Roanoke	4270	Anthem	56	Aetna	31
Staunton-Waynesboro	8046	Anthem	89	Aetna	11
Virginia Beach-Norfolk-Newport News	5972	Anthem	74	Sentara (Optima Hlth)	17
Winchester	4198	Aetna	58	Aetna	26
Washington-Arlington-Alexandria	2626	Kaiser	33	CareFirst	17

Source: American Medical Association analysis of data from Decision Resources Group (DRG) Managed Market Surveyor, which reports data as of Feb. 1, 2017.

Notes: The American Medical Association analysis did not include the Danville and Bristol MSAs. The American Medical Association categorized the Washington-Arlington-Alexandria MSA as part of the District of Columbia, but it is included in this chart because it is a rating area in Virginia.

Evaluation of the Effect of Insurer Competition on Premiums

Literature Review

Sheingold, Nguyen, and Chappel (2015) analyze competition and premiums in the Health Insurance Marketplaces. Their measure of competition in the insurance marketplace is the number of issuers of health insurance plans from which consumers can choose. Using data for the 35 states that participated in the Federal Facilitated Marketplace (including Virginia), they find that the average number of insurance plan issuers per county increased from 2.6 in 2014 to 3.5 in 2015. Furthermore, over half of the counties in these states experienced an increase in the number of issuers between 2014 and 2015 and only eight percent of counties experienced a decline in the number of issuers.

To evaluate the impact of competition on insurance premiums, they estimate the relationship between changes in premiums and changes in the number of issuers between 2014 and 2015, while controlling for other factors that may affect premiums. In the benchmark model, the dependent variable is the change in the SLCSP premium for a 21-year-old individual offered in the county and the key explanatory variable is an indicator variable equal to one if the county experienced an increase in the number of issuers. The control variables include, among others, the size of the rating area in which the county is located, the hospital wage index for 2015, the percent of plans that are HMOs, the take-up rate of QSP eligible individuals, and the presence of Consumer Operated and Oriented Plans ("CO-OPs"). They find that counties that experienced an increase in the number of issuers had premium growth rates that were 8.4 percentage points less than counties that did not experience an increase in the number of issuers. For sensitivity analysis, they also found that increases in competition led to a lower growth rates in *average* silver plan premiums, but this effect was smaller than the effect for the SLCSP plan premium.

Dafny, Gruber, and Ody (2015) also estimate the relationship between competition and marketplace premiums for states participating in the FFM. Their study is based only on 2014 data because that was the only available data at the time. They document a negative correlation between the number of marketplace insurers and the SLCSP premiums across rating areas. They note, however, that the correlation does not necessarily mean that more insurers lead to lower premiums, because the number of insurers is not exogenous. For example, insurers may decide to enter in markets where medical costs are relatively low and these markets may have lower insurance premiums due to the lower medical costs. To control for this endogeneity problem, they employ an approach based on United Healthcare's decision not to participate in the marketplace in 2014. This decision had a greater impact on competition in areas and states where United is a more prominent insurer. The study finds that the SLCSP premiums would have been 5.4% lower, on average, if United had participated in the marketplace.

Parys (2018) researches the effect of insurer competition on premiums across ratings areas in the 35 federally facilitated marketplaces. She investigates three hypotheses for disparities in marketplace premiums between rating areas: enrollee health, provider market power, and insurer market power. Consistent with the previously discussed authors, she focuses on SLCSP plan premiums. She tracks the changes in those premiums from 2014 to 2018 in each rating area and finds that insurer competition in rating areas was the strongest predictor of premium increases through 2018. The premiums in rating areas with one, two, or three or more insurers started off relatively similar in 2014, but diverged beginning in 2016 until premiums were 50% higher in the rating areas with a monopolist insurer, relative to rating areas with three or more insurers, and 21% higher in rating areas with two insurers, relative to rating areas with three or more insurers. Other factors that affected premiums were Medicaid expansion, (associated 10.4% lower premiums), whether the rating area contained a large metropolitan county (associated with 4.9% lower premiums), and the share of the uninsured population that qualified for premium tax credits (associated with 5.4% higher premiums per one standard deviation increase in this measure). Notably, hospital-system concentration and county health ratings had very small effects.

All three of these studies suggest that competition in the insurer market leads to lower premiums. The magnitude of the effect, however, ranges from 5.4% (Dafny, Gruber, and Ody, 2015) and 8.4% (Sheingold, Nguyen, and Chappel, 2015) to over 21% (Parys, 2018).

Fixed Effects Regression Estimation of the Effect of Insurer Competition on Premiums in Virginia

To evaluate the potential impact of competition on premiums in Virginia, the impact of the number of issuers on premiums in Virginia is estimated for the years 2016-2018. The dependent variable is the natural log of the SLCSP premium for a 21-year-old individual. The independent variables are a time trend, the number of issuers in the county, and a fixed effect for each county. The fixed effects control for characteristics of each county that are constant over time, such as whether the county is rural or urban. The model is estimated for all 134 Virginia for 2016-2018. Standard errors are clustered within rating areas.

The results are presented in the "Model 1" column of Table 8. The time trend coefficient is positive and statistically significant, which is consistent with the data presented in Figure 1 that premiums have been rising over time. The coefficient of the number of issuers indicates that a decrease in the number of issuers by one issuer would lead to a premium increase of approximately 8.3%. It is statistically significant at the 5% level. The negative relationship between premiums and the number of issuers is consistent with the results of the studies discussed above and the estimated coefficient is remarkably similar to the effect estimated by Sheingold, Nguyen, and Chappel (2015).

This coefficient is estimated to be the same across all counties, regardless of the number of issuers already in the county. In other words, it does not distinguish between a situation where the number of issuers increases from one to two and a situation where the number of issuers increases from three to four. To evaluate whether the impact of an additional issuer would be greater in monopoly and duopoly markets relative to markets with a three or more issuers, an alternative model is estimated where the key independent variables are two dummy variables: 1) only one issuer in the county and 2) only two issuers in the county. The omitted dummy variable is for counties with three or more insurers. The results are presented in the third column of Table 8. The coefficients of both of these variables are positive and statistically significant at the 5% level of significance, indicating that premiums are higher in counties with only one or two issuers than in counties with three or more issuers. In particular, the coefficient of the "one issuer" variable indicates that premiums would increase by approximately 26% if the number of issuers in a county fell from three or more issuers to just one, and the coefficient on the "two issuers" variable indicates that premiums would increase by approximately 9% if the number of issuers in a county fell from three or more to two. Considered together, these results indicate that entry of an additional issuer into a monopoly market would reduce premiums by 17% and entry of an additional issuer into a duopoly market would reduce premiums by 9%. The average lowest cost silver premiums for a 21-year-old individual in 2018 in counties with one issuer and two issuers were $449 and $394, respectively. Thus, the results suggest that entry of an additional issuer would reduce premiums by $76 and $36 per month for consumers in otherwise monopoly and duopoly markets.

Table 8

Effect of Number of Issuers on the Second Lowest Silver Premium in Virginia

	Model 1	Model 2
Number of Issuers	-0.831 (0.030)	
One Issuer in County		0.261 (0 .113)
Two Issuer in County		0.092 (0 .020)
Time Trend	0.227 (0.024)	0.208 (0.030)
County Fixed Effects	Yes	Yes
Number of Observations	402	402

Source: QHP Landscape Files obtained from HealthCare.gov.
Notes: The dependent variable is defined as the natural log SLCSP premium. Robust standard errors are reported in parentheses and are clustered by rating area.

Policy Options

The following policy options are proposed to improve competition between private insurers in Virginia's exchange markets and stabilize the marketplace.

Policy Option 1: Status Quo

Under this policy option, Virginia policymakers would not intervene further in the exchange markets. They would rely on the recently enacted Medicaid-expansion in Virginia and changes in the federal policy environment to achieve the desired effects on insurer competition and marketplace stability.

The ACA individual health insurance market appears to already be stabilizing due to resolution of the uncertainty surrounding whether the ACA would be repealed and the impact of the Trump administration's decision to end cost-sharing reductions. Insurers had overestimated these threats in many cases, and are now projecting the market to be profitable and re-entering ("The Health 202: Health-care competition in Charlottesville a dramatic example of Obamacare's resilience," 2018). Anthem's decision to re-enter the market in the Charlottesville, Virginia area at significantly lower rates than the only existing provider, Optima, is illustrative of the market's rebound to a more competitive atmosphere (Itkowitz, 2018).

The expansion of Medicaid eligibility to Virginia residents earning up to 138% of the federal poverty level (FPL) as of January 1, 2019 could also help stabilize the marketplace. Due to this expansion, 400,000 more Virginians are now eligible for Medicaid, including an

estimated 100,000 consumers who were enrolled in Virginia's ACA marketplace in 2018 (U.S. Centers for Medicare & Medicaid Services, 2018). Other states that have expanded Medicaid have a lower share of people earning between 100 and 138% of the FPL enrolled in their marketplaces (six percent), compared to non-expansion states (40%) (Khazan, 2017). Studies suggest that the health of the individual marketplace risk pools in Medicaid expansion states improved as people earning between 100 and 138 percent of the federal poverty level left the marketplace. An Office of the Assistant Secretary for Planning and Evaluation (ASPE) study found that close to 20% of individuals in that income category report being in fair or poor health compared to approximately eight percent of individuals with incomes above 138% of the federal poverty line (Sen & DeLeire, Thomas, 2016). A Kaiser Family Foundation analysis of average state risk scores concluded that states that have expanded Medicaid have healthier individual market risk pools, on average (Semanskee, Cox, & Levitt, 2016).

The impact of healthier risk pools on marketplace premiums is discussed in the section that projects the outcomes of the status quo in terms of affordability. Given the association between plan prices and enrollment (Giovannelli & Curran, 2016; Hall, 2018; Shartzer et al., 2015), Medicaid expansion could lead to increased enrollment if it decreases premiums. Individuals whose income is too high to qualify for Medicaid or federal premium subsidies would be especially sensitive to premium decreases. If these individuals were relatively young and healthy, the health of the market risk pools would be further improved.

State Innovation Waivers (Section 1332 Waivers)

Policy Options 2 and 3 both involve applying for a State Innovation Waiver.

Under section 1332 of the ACA, states can apply for waivers to alter certain provisions of the ACA. To receive waiver approval, states must demonstrate that the plan meets section 1332 statutory requirements, including satisfaction of four guardrails.
The state innovation must:

1. Provide coverage that is at least as comprehensive as the coverage that would be provided under the ACA without the waiver
2. Provide coverage that is at least as affordable as the coverage that would be provided under the ACA without the waiver
3. Provide coverage to at least a comparable number of its residents as would be provided under the ACA without the waiver
4. Not increase the federal deficit

Meeting the guardrails does not guarantee approval of a 1332 waiver. Waiver approval is at the discretion of the Departments of Health and Human Services and the Treasury.

If approved, the initial duration of a 1332 waiver is five years, with the possibility of renewal.

Policy Option 2: State-Based Reinsurance

Under this policy option, Virginia would apply for a 1332 waiver to operate a state-based reinsurance program. Based on other states' experiences with the section 1332 waiver application and approval process for a reinsurance program, the proposed timeframe is obtaining waiver approval in 2020 and implementing the reinsurance program in 2021.

A reinsurance program reduces the risk insurers face of incurring especially high claims costs. The ACA established a transitional reinsurance program (TRP) that operated during the first three years of the marketplaces (2014-2016). The TRP operated using a claims cost-based model, reimbursing individual market insurance issuers who enrolled high-risk individuals for a portion of costs (the coinsurance rate) from claims that exceeded a specified threshold (the "attachment point") up to a set cap. By covering a portion of the most expensive claims, the TRP reduced premiums by over 10% per year that it was operational (Manatt Health, 2018). These reductions occurred because insurance companies factor in their expected claims costs when setting their rates.

Seven states have implemented their own reinsurance programs: Alaska, Maine, Maryland, Minnesota, New Jersey, Oregon, and Wisconsin. Alaska was the first state to do so, establishing a comprehensive health insurance fund in 2017 to operate as a reinsurance program (American Academy of Actuaries Individual and Small Group Markets Committee, 2017). Subsequently, Alaska's 1332 waiver for a reinsurance program was approved in 2017. Oregon and Minnesota also received 1332 waiver approval for reinsurance programs in 2017 and implemented their respective programs in 2018. Alaska, Oregon, and Minnesota had four goals in common for their reinsurance programs: stabilizing individual market premiums and mitigating future rate increases, increasing consumer enrollment, maintaining and increasing insurer participation, and generating federal savings to fund state-level innovation (Schwab et al., 2018). Maine, Maryland, New Jersey, and Wisconsin received 1332 waiver approval in 2018 and implemented their reinsurance programs in 2019.

In their 1332 waiver applications, the states requested to waive the single risk pool provision in section 1312(c)(1) of the ACA in order to enable their reinsurance payments to be taken into account for market-wide index rate determinations. Factoring in reinsurance payments lowers the market-wide index rate, which in turn reduces marketplace premiums, including premiums for the states' SLCSP. The states also requested and received approval to receive federal funding assistance for their reinsurance programs. The federal payments to a state, known as "pass-through" funding, are an aggregate payment to the state of the amount equal to the amount the federal government would have paid to the state's residents in premium tax credits in the absence of the state's reinsurance program. State reinsurance programs decrease the amount the federal government is obligated to pay in premium tax credits to subsidy-eligible consumers by reducing SLCSP premiums. Premium tax credits are equal to the difference between the cost of the SLCSP and the premium contribution an individual is expected to pay, which is based on the individual's expected income for the year. In the absence of the section 1332 waivers, the federal government would keep the savings from the decreased premium tax credits.

States use a combination of federal pass-through funding and state money to finance their reinsurance programs. Funds to cover a state's share of the reinsurance program have come

from a variety of sources, including state general funds, state premium taxes, and assessments on state providers or insurers. A portion of the state funding comes from taxes on insurers in both Alaska and Oregon. The total cost of a reinsurance program depends, in part, on the target reduction in individual market premiums.

As discussed in the background section of this paper, lower premiums can incentivize higher enrollment. Reinsurance programs were projected to increase individual market enrollment by 0.8 percent (Wisconsin) to 13.3% (Minnesota) in 2019 (Badger, 2018). A report from the Georgetown University Health Policy Institute concluded that the state-based reinsurance programs in 2018 were largely successful in increasing marketplace enrollment among unsubsidized enrollees, reducing premiums, and incentivizing insurers to remain in the market (Rachel Schwab et al., 2018). The effectiveness of reinsurance programs will be discussed in the evaluation section of this paper.

Policy Option 3: Medicaid Buy-In

Under this policy option, Virginia would apply for a 1332 waiver to offer a state-sponsored QHP on the exchange to compete with plans offered by private insurers. Given the lead-time that Virginia would require to study options and develop a strategy for the buy-in product, the proposed timeframe is to obtain waiver approval in 2021 and to implement the program in 2022.

Leveraging Medicaid to offer a public health insurance option for consumers who do not otherwise qualify for Medicaid coverage is a policy approach that is receiving increasing attention from state policymakers in the United States. "Medicaid Buy-In" has become a catchall term for a range of policy proposals that follow that overarching strategy, rather than a term for a specific policy. It is often used interchangeably with "public option." Although no state has implemented any version of a Medicaid buy-in program, eight states have active legislation for a buy-in option, two other states have legislatively established a task-force study group for a buy-in option, and two other states have active legislation to establish a task-force study group for a buy-in option (Heather Howard, 2019). Here, the proposed policy involves offering a state-sponsored plan on the marketplace. This approach is distinct from other proposals involving state-sponsored products, namely allowing consumers to buy into the state employee health benefit program, establishing a basic health program, or offering a Medicaid buy-in option off of the marketplace. Those options were determined to be less suitable for the Virginia context than a state-sponsored, on-marketplace public option, and are thus not further discussed in this paper. While there are a variety of design options for a state-sponsored marketplace plan, those considerations are narrowed down in this section in order to provide a more concrete policy option.

The on-marketplace public option in Virginia would leverage Virginia's Medicaid program purchasing power, provider networks, and administrative infrastructure to the extent possible within the confines of marketplace requirements. Doing so would enable Virginia to set provider reimbursement rates (perhaps at Medicaid or Medicare levels, or at a level between those options and the commercial reimbursement rates). These rates should be sufficiently low to enable the state-sponsored plan to be offered to consumers at a price lower than other marketplace plans, but not so low as to discourage provider participation.

The plan would need to meet federal and state benefit and rating requirements to operate as a QHP on the marketplace, which is necessary for consumers to be able to use federal tax credits towards the purchase of the plan. Only state-licensed insurance issuers can offer a QHP under the ACA, so Virginia would offer the plan in partnership with a Medicaid managed care organization (MCO), or with multiple MCOs if a single MCO is unable to offer statewide coverage (Patricia Boozang, Chiquita Brooks La-Sure, & Heather Howard, 2018, p. 4). A 1332 waiver would likely be required for Virginia to administer the product through the state Medicaid agency (Virginia Department of Medical Assistance Services) or other state agency, such as the Bureau of Insurance, instead of through a MCO partnership (Patricia Boozang, Chiquita Brooks La-Sure, & Heather Howard, 2018, p. 4). In addition to being the most feasible design option, partnering with an existing issuer also has the least risk for the state.

An Urban Institute report found that a Medicaid buy-in program could increase marketplace competition and lead to lower premiums, especially in those states that have expanded Medicaid, have few marketplace insurers, and high marketplace premiums (John Holahan & Linda J. Blumberg, 2018). The potential effectiveness of a Medicaid buy-in program in Virginia is assessed in the evaluation section of this paper.

Criteria for Evaluating Policy Options

The following criteria are used to evaluate the projected outcomes of the policy options described in the previous section. The greatest weight is placed on feasibility, given that the other criteria are superfluous if a policy option cannot be implemented. The second most important criterion is cost-effectiveness, which was emphasized by Virginia JLARC when they developed the project proposal. The third most important criterion is affordability, as the high premiums associated with the lack of competition are a key rationale for this project. Ability to target at-risk counties is ranked fourth out of the alternatives. Policy Options 2 and 3 are evaluated on the basis of their projected outcomes relative to the baseline projections of Policy Option 1: Status Quo.

Feasibility

This criterion takes into account the combined political and administrative feasibility of each alternative, and gives a cumulative score to each option using a subjective scale of low, medium, or high. The political element is important because the alternatives require action from the Virginia General Assembly. This criterion measures the likelihood of each alternative gaining the political support necessary to clear the General Assembly. Given the need for section 1332 waiver approvals for Policy Options 2 and 3, this criterion will also take into account the likelihood of receiving waiver approval from the Trump administration. The administrative component takes into account the capacity required by the state government agencies to successfully implement each alternative.

Cost-Effectiveness

This criterion evaluates which of a set of policy options will achieve the greatest increase in competition among insurers for the costs. Only costs to Virginia are considered. Following Parys, Sheingold et al, Dafny et al, and Abraham et al, competition in this cost-effectiveness analysis is defined based on the number of marketplace insurers. Given the geographic nature of exchange markets, competition is further specified at the county or independent city level. In particular, the effectiveness measure is defined to be the expected change in the number insurance issuers per county multiplied by the number of counties. It is calculated as the probability (0.0-1.0) of increasing the number of insurance issuers in a county or independent city in Virginia by one, relative to the counterfactual, multiplied by the number of counties and independent cities. The policy alternatives will be ranked based on their computed cost-effectiveness ratio.

$$CER = \frac{Total\ Cost\ of\ Alternative}{\text{Expected Number of Counties and Independent Cities with a One} - \text{Insurer Increase}}$$

Impact on Premium Affordability

The high premiums associated with limited competition are an important motivating factor for this analysis of improving competition in Virginia's exchange markets. This criterion will assess the degree to which each policy option is projected to reduce marketplace premiums, both directly and indirectly. Each option is ranked on a subjective scale of low, medium, or high impact.

Potential to Improve Competition and Reduce Premiums in At-Risk Areas

As described in the background section of this paper, the number of counties with only one marketplace insurer is a cause for concern because these "at-risk" counties would be left without marketplace coverage options if their only marketplace insurer were to exit. Moreover, the presence of a monopolist insurer likely results in relatively high premiums in those at-risk areas due to the lack of competition. These at-risk counties and independent cities are disproportionately located in rural areas, as illustrated in Figure 6. This criterion evaluates the ability of the alternatives to target the counties with low insurer participation and incentivize insurers to participate in the marketplace in those areas. Each option is ranked on a subjective scale of low, medium, or high potential to improve competition in at-risk areas.

Evaluation of Policy Options

Projected Feasibility of Policy Options

Policy Option 1: Status Quo

This option does not require any new initiatives, so it does not require any new political action. Therefore, the political feasibility is high.

This option does not require any further action on the part of government agencies in Virginia. So, it also ranks high in terms of administrative feasibility.

The cumulative feasibility score is high.

Policy Option 2: State-Based Reinsurance

Reinsurance has broad bipartisan support. The Trump administration has expressed support for states using 1332 waivers to establish their own reinsurance programs. In November, CMS Administrator Seema Verma encouraged states to pursue reinsurance programs (Drake, Fried, & Blewett, 2019). At the state level, the legislatively established Virginia Market Stability Work Group (2018) recommended a reinsurance program as a promising approach. Overall, the prospects for legislation clearing the General Assembly and gaining the Governor's signature to pursue a 1332 waiver to enact a reinsurance program and for waiver approval are good. Accordingly, the political feasibility of this option is high.

To assist states with administering reinsurance programs, CMS offers a transitional program to calculate issuers' reinsurance payments and the use of the federal EDGE server software to develop a database for the state's reinsurance program. However, Virginia would eventually be responsible for operating its own program (Centers for Medicare and Medicaid Services, 2018). The experiences of the seven existing states with operational reinsurance programs indicate that Virginia too would have the capacity to run the program. In all states' 1332 waiver applications to operate a reinsurance program, the states indicated that their existing staff and resources would be able to absorb the administrative tasks that the waiver would require them to perform (Office of the Commissioner of Insurance, 2018). On the administrative feasibility scale, this option ranks high.

The cumulative feasibility score is high.

Policy Option 3: Medicaid Buy-In

Enacting a Medicaid buy-in program faces a number of political hurdles. Insurers have raised deep concerns about competitive pressures from a public option on the marketplace, which might make it unattractive for them to continue to participate (Anderson & Sandoe, 2018). It is likely that insurers would lobby against state legislation to pursue a Medicaid buy-in. This political opposition, combined with a predisposition among Republican lawmakers to oppose expansion of public health insurance programs, would have high potential to impede such a legislative initiative. Even if Virginia were to successfully enact legislation to pursue a

1332 waiver for a buy-in program, there is a consensus in the literature that waiver approval for a Medicaid buy-in under the Trump administration is unlikely (Manatt Health, 2019). Thus, this option ranks low in terms of political feasibility.

The administrative feasibility is medium to high given that Virginia could leverage existing Medicaid infrastructure (Chiquita Brooks-LaSure, Hailey Davis, Kyla M. Ellis, & Cindy Mann, 2019, p. 8; Cindy Mann, 2017) and the resources of the MCO(s) with which it partners.

Despite this administrative feasibility, **the cumulate feasibility ranks low** because political approval is a prerequisite for administration.

Projected Cost-Effectiveness of Policy Options

Table 9 shows the best estimates for costs to Virginia, effectiveness, and the cost-effectiveness ratio for each of the policy options.

Policy Option 1: Status Quo

Gabel, Whitmore, Stromberg, and Green (2018) estimate, using a Poisson regression model, that Medicaid expansion increases the number of insurers competing in a rating area by 0.77. This estimate is statistically significant with a p-value less than 0.001. The magnitude of this estimate seems large given that the average number of insurers in Virginia counties and independent cities increased by about 0.40 from 2018 to 2019, and the average number of insurers per county across states that did not implement Medicaid expansion as of 2019 increased by about 0.22. It could be the case that the full effect of Medicaid expansion on insurer competition takes more than one year, especially since take-up of Medicaid coverage increases over time and the Gabel et al. study used data from multiple plan years. Or, it could be the case that Virginia is different from other expansion states. While the exact effect of Medicaid expansion on the number of marketplace insurers in Virginia counties and independent cities is uncertain, any increase in competition comes at no cost to Virginia. The federal government pays 93% of the total costs of expanded Medicaid coverage in 2019 and will pay 90% of the total costs every year starting in 2020 (Hayes, Nuzum, Coleman, & Collins, 2019). Assessments on private acute care hospitals cover the entire state portion of the costs. Savings to the Department of Corrections, Department of Medical Assistance Services, and Community Service Boards due to Medicaid expansion offset the other cost associated with Medicaid expansion — additional resources for local Department of Social Services workers to handle increased application volume (*Overview of the Governor's Introduced Budget*, 2018).

The units of effectiveness for Medicaid buy-in are computed using the 0.77 estimate as the expected change in the number of insurers per county or independent city and multiplying that number by the number of counties and independent cities in Virginia to obtain an estimate of 102 counties and independent cities with a one-insurer increase. The cost-

effectiveness ratio is computed by dividing the present value of costs to Virginia, $0, each year and across years, by 102. The result is a baseline **cost-effectiveness ratio of $0 per county or independent city with a one-insurer increase.**

Cost-Effectiveness Analysis of Policy Options 2 and 3

A full cost-effectiveness analysis, including sensitivity tests, for Policy Options 2 and 3 is provided in Appendix E. The results of this analysis are summarized below.

Policy Option 2: State-Based Reinsurance

Insurers often cite reinsurance programs as the best way to attract insurer participation (Manatt Health, 2018). A report from the Georgetown University Health Policy Institute concluded that the state-based reinsurance programs in 2018 were largely successful in incentivizing insurers to remain in the market (Schwab et al., 2018). The conclusion with respect to insurer incentives was based on interviews with insurers in Alaska, Oregon, and Minnesota. These insurers indicated that reinsurance programs had an effect on their decisions to remain in markets, re-enter, and expand. For instance, insurers reported that the reinsurance programs incentivized them to remain in the marketplace at a time when many other companies were exiting from markets in states without reinsurance programs (Schwab et al., 2018). Reinsurance could potentially be particularly effective at improving competition between private insurers in rural areas. Insurers expressed that reinsurance provided a backstop for them to enter counties that were less populated and had limited provider networks and high-cost claims. A state official credited the state's reinsurance program to the expansion of two insurers into rural counties (Schwab et al., 2018). Reinsurance could also be especially important for the financial health and marketplace participation decisions of smaller insurers: "The ending of the [federal] reinsurance program… disadvantaged smaller insurers because their size makes them less able to efficiently bear the risk of very-high-cost cases. As a consequence, the business case for participating in the marketplaces was weakened, resulting in less choice and less competition" (Frank, 2019).

The Virginia Market Stability Work Group (2018) reported that state-based reinsurance programs have a "proven track record" of increasing insurer participation based on outcomes post-reinsurance implementation, without accounting for a pre-trend. A causal effect of the reinsurance programs on those outcomes cannot be determined through such an approach, and econometric analysis appears to be absent from the literature on reinsurance. To address this lacunae, Appendix D presents a synthetic control analysis of the impact of state-based reinsurance programs on insurer participation in marketplaces. Overall, the findings provide little support for the hypothesis that state reinsurance programs help to maintain or improve insurer participation in the first one to three years following their implementation. Of the seven states that implemented reinsurance programs, the estimated causal effect of the program on the average number of insurers per county increased in three states, and fell in four states. Further research is needed to understand why these programs

were not more effective in this regard. One possibility is that the perceived benefits of the reinsurance programs to prospective insurers were small and that other factors, including uncertainties about the future of the ACA under the current administration, had a chilling effect on the willingness of new insurers to enter the marketplace. It is possible that reinsurance programs will have a more positive effect in future, less uncertain, policy environments.

The best estimate of costs to Virginia for state-based reinsurance is $311,017,287 during the initial five years of waiver implementation. Over this period, the best estimate for program effectiveness is a cumulative 146 counties or independent cities with a one-insurer increase relative to baseline. These estimates yield a **cost-effectiveness ratio of $2,125,887 per county or independent city with a one-insurer increase in the number of marketplace insurers.**

Policy Option 3: Medicaid Buy-In

A Medicaid buy-in option would directly increase competition between marketplace insurers in the short run by injecting an additional competitor into the marketplace. If the state-sponsored option were to improve the health of risk pools in exchange markets by increasing enrollment among healthy individuals who are attracted to the lower cost option, it could further incentivize insurer participation by creating more desirable market conditions. The probability that a Medicaid buy-in option would lead to an increase of one in the number of issuers in exchange markets is estimated to be 100%. Multiplying the number of counties and independent cities in Virginia by 100% yields an expected value of 133 counties and independent cities in Virginia with a one-insurer increase relative to the baseline in each year of the Medicaid buy-in program.

There is a pervasive concern in the literature that a state-sponsored marketplace product could disincentive insurer participation. If private insurers struggle to compete with the lower-cost option, they might exit the marketplace (Brooks-LaSure, Boozang, Traube, & Davis, 2018; Brooks-LaSure, Grady, Guyer, & Ellis, 2018; Howard, 2017; James, n.d.; Massachusetts Health Connector, 2018). The public option could end up being the only marketplace option remaining in a county or independent city if private insurer exits were to occur. According to Manatt Health (2019), the amount of competition in a county or independent city before the Medicaid buy-in product is introduced will impact how insurers react. The greatest risk of insurer exit is in areas where current marketplace insurer participants are limited, especially if the buy-in is priced significantly lower than other options (Manatt Health, 2019). In Virginia, Anthem would likely exit the 53 counties and independent cities in which it is the only marketplace insurer, particularly given that Anthem

only remains in those counties to prevent them from becoming bare areas.[6] Anthem's exit would be even more probable if Virginia partnered with Anthem as an MCO to issue the public option, since Anthem would have no reason to offer two different marketplace products in those areas. Cigna would also likely exit the nine areas in which it is the only marketplace insurer if there were a public option available.

A modified estimate for the effectiveness of a Medicaid buy-in is computed by subtracting the 62 counties and independent cities with only one insurer from the total number of counties and independent cities (133) to get 71 counties and independent cities with a one-insurer increase relative to the baseline per year. This number serves as the best estimate. A lower estimate can be computed if it is assumed that a portion of the 57 counties and independent cities with two marketplace insurers would also experience an insurer exit. Assuming at least one insurer would exit 50% of those counties and independent cities as a result of Medicaid buy-in further decreases the estimated number of counties and independent cities with a one-insurer increase relative to the baseline per year from 71 to 42.

The best estimate of costs to Virginia for a Medicaid buy-in option is $2,384,828 during the initial five years of waiver implementation. Over this period, the best estimate for program effectiveness is a cumulative 355 counties or independent cities with a one-insurer increase relative to baseline. These estimates yield a **cost-effectiveness ratio of $6,718 per county or independent city with a one-insurer increase in the number of marketplace insurers.**

Table 9

Summary of Cost-Effectiveness Estimates for Each Policy Option

Policy Option	Present Value of Costs	Number of Counties and Independent Cities in Virginia with a One-Insurer Increase	Dollars per County or Independent City with a One-Insurer Increase
Status Quo	$0	102 per year/512 over 5 years	**$0**
State-Based Reinsurance	$311,017,287	146	**$2,125,887**
Medicaid Buy-In	$2,384,828	355	**$6,718**

[6] Anthem covers approximately 85% of the 62 counties and independent cities with only one insurer in 2019, and Cigna covers approximately 15%. Anthem had planned to exit the marketplace for 2018 (Bryan, 2017), but remained to cover the 58 counties and independent cities that otherwise would have been left without any marketplace insurers ("bare areas").

Projected Impacts of Policy Options on Premium Affordability

Policy Option 1: Status Quo

The difference between risk pools in Medicaid expansion and non-expansion states is reflected in differences in marketplace premiums between those states. The ASPE study found that marketplace premiums are about seven percent lower in expansion compared to non-expansion states (DeLeire & Sen, 2016). The authors attribute this gap to lower expected spending per enrollee in the individual markets in expansion states, since the lower-income, lower-health individuals who take-up Medicaid coverage and exit the exchange individual markets likely have higher health care expenditures. The association between income and health in Virginia is illustrated in Figure 7, which shows that the counties in Virginia that have the lowest health factor rankings also tend to have relatively low median household income. These counties are non-urban and are primarily located in Virginia's Southwest, Southside, and Eastern demographic regions and in Rating Area 12 (see Figure 1 and Appendices A and B for how the counties line up). As a greater share of residents of these counties become eligible for Medicaid coverage through Medicaid expansion, the remaining exchange market risk pools should become healthier and premiums would correspondingly decrease.

If Medicaid leads to a decrease in the share of the population eligible for marketplace coverage, then there is potential for the number of insurers participating in the marketplace to decline. Decreased competition between insurers could offset at least some of the premium reductions that would otherwise result from healthier risk pools. Taking this potentially mitigating factor into account, **Policy Option 1: Status Quo is given a rating of "medium" with regard to its potential impact on premium affordability.**

Policy Option 2: State-Based Reinsurance

State-based reinsurance programs not only have a track record of reducing premiums, but also can be designed specifically to achieve specific premium reduction targets. Actuaries forecasted that reinsurance programs that are in effect in 2019 would reduce premiums by seven percent (Oregon) to 30% (Maryland) relative to what they would have been in the absence of the programs (Badger, 2018).

Accordingly, **Policy Option 2: State-Based Reinsurance is given a rating of "high" with regard to its potential impact on premium affordability.**

Policy Option 3: Medicaid Buy-In

A Medicaid buy-in product on the marketplace would likely be able to offer lower premiums, because it would leverage administrative efficiencies from the existing Medicaid infrastructure and negotiate lower provider payment rates than the existing marketplace reimbursement rates (Manatt Health, 2019, p. 1). Entering exchange markets at a lower price than existing QHPs is expected to place competitive pressure on other marketplace issuers to reduce their premiums insofar as the premium is pegged to the actual cost of coverage for the average eligible adult (Anderson & Sandoe, 2018). The buy-in product could further

reduce premiums if it incentivized healthy consumers to enroll in the marketplace (United States of Care, 2019). Like the reinsurance program option, the Medicaid buy-in option is anticipated to reduce the SLCSP and thereby generate cost-savings to the federal government in the form of reduced premium tax credit obligations.

As with Policy Option 1: Status Quo, this option could lead to a decrease in the number of insurers participating in the marketplace. Decreased competition between insurers could offset at least some of the premium reductions that would otherwise result from anchoring marketplace premiums with a public option. Taking this potentially mitigating factor into account, **Policy Option 2: Medicaid Buy-In is given a rating of "medium" with regard to its potential impact on premium affordability.**

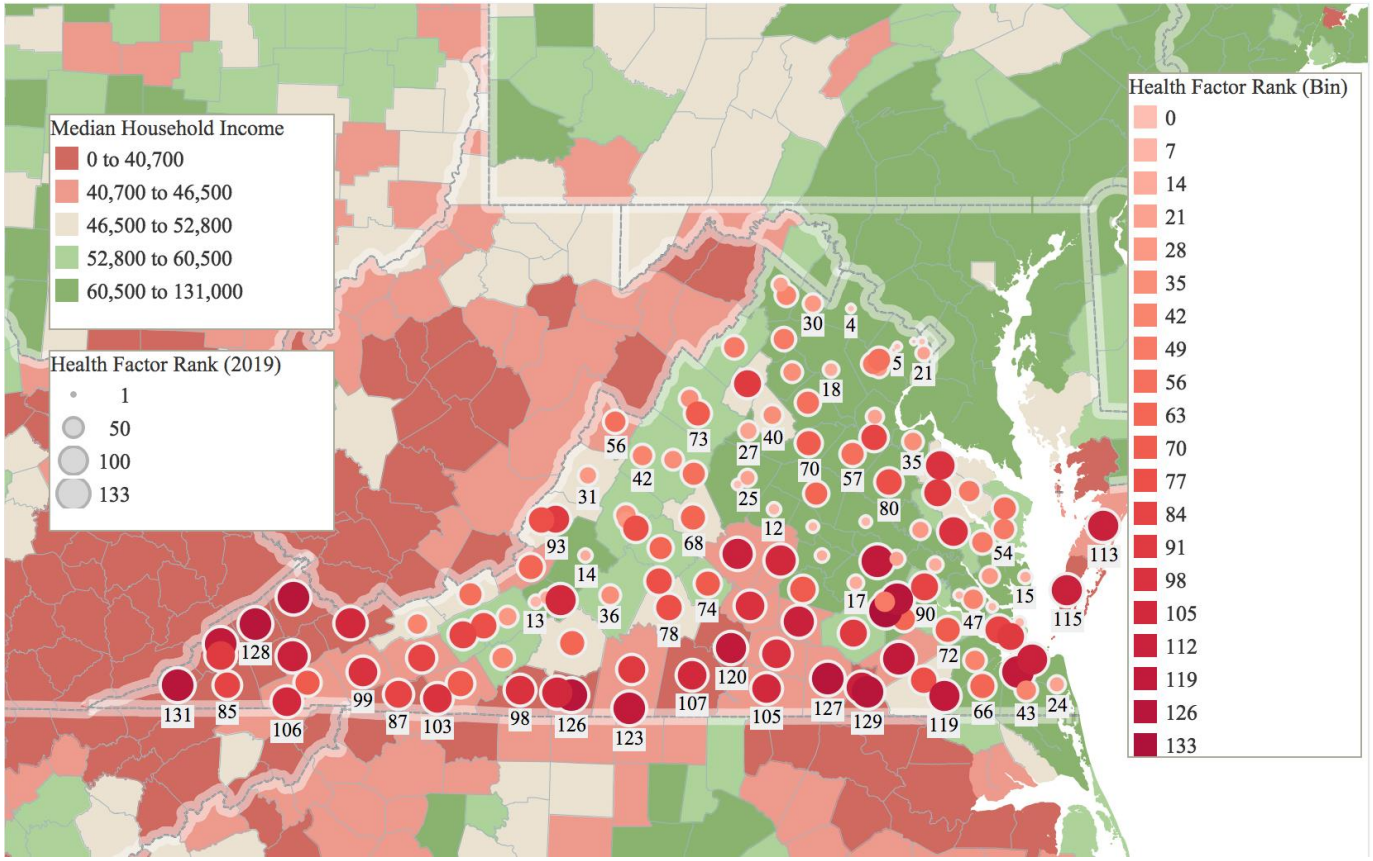
Projected Ability of Policy Options to Improve Competition and Reduce Premiums in At-Risk Areas

Policy Option 1: Status Quo

By improving the health of risk pools, Medicaid expansion should decrease the cost of claims that insurers have to pay on behalf of enrollees in Virginia. Medicaid expansion is expected to decrease the number of people churning between Medicaid, private insurance, and no coverage as well. With decreased churn, insurers will have greater certainty about their cost exposure (Center on Budget and Policy Priorities, 2012). Insurers' administrative costs will also be reduced because they will have to manage care for fewer people who have their health care disrupted as they drop out of and resume marketplace coverage (Center on Budget and Policy Priorities, 2012). By decreasing insurers' claims and administrative costs and increasing their certainty about their cost exposures, Medicaid expansion in Virginia could reduce premiums and incentivize additional insurers to participate in the marketplace. While improved risk pools and decreased churn could provide this incentive, an important consideration is the size of the potential exchange market populations. Many at-risk markets have relatively low numbers of potential marketplace enrollees, which may limit the appeal of such areas to new issuer entrants. On balance, **Policy Option 1: Status Quo is given a rating of "medium"** for its potential to improve competition and reduce premiums in at-risk areas.

Figure 7

Median Household Income and Health Factor Rankings in Counties in Virginia



Source: Map generated based on health factor rankings of counties in Virginia for 2019 from countyhealthrankings.org and 2018 median household income from Tableau map data layer options.

Policy Option 2: State-Based Reinsurance

By limiting especially high issuer costs associated with high-risk enrollees, reinsurance would cause the average premium to fall across all exchange markets throughout the state, including at-risk areas. In fact, premium reductions would likely be greatest in at-risk counties and independent cities because these areas tend to have a higher concentration of high-risk enrollees. This hypothesis is supported by reinsurance program legislation in Colorado which specifically designates different premium reduction targets in rural and metropolitan areas, with a greater reduction in rural areas (Anderson, 2019). Reinsurance also has the potential to promote greater competition among insurers in at-risk areas. Insurers have stated that reinsurance in other states provided a backstop for them to enter counties in those states that had high-cost claims (Schwab et al., 2018). However, the synthetic control analysis presented in Appendix D finds little evidence that existing reinsurance programs have had a meaningful impact on competition in rural areas.

Overall, **Policy Option 2: State-Based Reinsurance is given a rating of "high"** for its potential to improve competition and reduce premiums in at-risk areas. Although reinsurance is unlikely to have a substantive impact on insurer competition in at-risk areas, there is strong evidence of its potential to significantly reduce premiums in those areas.

Policy Option 3: Medicaid Buy-In

A Medicaid buy-in option will likely ultimately maintain the number of insurers in at-risk counties and independent cities. While the number of insurers in those counties and independent cities may increase by one in the short term after the public option is offered on the marketplace, the existing insurer in at-risk areas will probably exit, leading to no net gain in insurer options. As explained by Manatt Health (2019), the greatest risk of insurer exit is precisely in those areas where current marketplace insurer participants are limited. This risk is amplified if the buy-in plan is priced significantly lower than existing marketplace plans. Nevertheless, marketplace enrollees in at-risk areas would be better off with their only insurer option being a lower-cost, public option. Medicaid buy-in option would also eliminate the risk of any county or independent city being left with no marketplace insurer options.

Overall**, Policy Option 3: Medicaid Buy-In is given a rating of "medium" for its potential to improve competition and reduce premiums in at-risk areas.** As with the reinsurance option, the Medicaid buy-in option seems likely to improve premiums but not competition. However, the extent of premium reduction through this option is less certain because Medicaid buy-in has never been implemented. Therefore, the rating assigned to this option is lower.

Policy Outcomes Matrix and Policy Recommendation

Criterion	Policy Option		
	Status Quo	State-Based Reinsurance	Medicaid Buy-In
Feasibility	High	High	Low
Cost-Effectiveness Ratio	$0 per county or independent city with a one-insurer increase in the number of marketplace insurers	$2,125,887 per county or independent city with a one-insurer increase in the number of marketplace insurers	$6,718 per county or independent city with a one-insurer increase in the number of marketplace insurers
Impact on Premiums Affordability	Medium	High	Medium
Projected Ability of Policy Options to Improve Competition and Reduce Premiums in At-Risk Areas	Medium	High	Medium

Even under the status quo, consumers in Virginia are likely to benefit from more affordable marketplace premiums and improved access to health insurance options. Residents of at-risk areas will especially benefit from Medicaid expansion. The state will not incur any costs for implementing this expansion.

Virginia residents could further benefit from the implementation of a state-based reinsurance program as described under Policy Option 2. Reinsurance is expected to reduce marketplace

premiums, particularly in rural counties and independent cities. Another potential benefit of reinsurance is increased insurer competition within certain rating areas where the potential marketplace enrollee population would be sufficiently attractive to new insurers. Policy Option 2 is highly feasible politically and administratively. Unlike Policy Option 1, the state would incur costs for implementing a reinsurance program.

While Policy Option 3 is currently not politically feasible, it is worthy of further consideration should the political climate become more favorable. A Medicaid buy-in product is a relatively cost-effective option that has a reasonable likelihood of improving premium affordability, especially in at-risk areas. Furthermore, it would be an effective way to ensure that all areas within Virginia would continue to have at least one marketplace insurer option. Another future consideration is a variation of the Medicaid buy-in option that would only be implemented in at-risk areas. This variation would provide a more tailored solution to address the least stable markets in Virginia and could potentially be more politically palatable. An additional variation to consider would be to forego 1332 waiver approval and finance the costs of a Medicaid buy-in through a combination of state funding and premium contributions (United States of Care, 2019).

Policy Recommendation

Pursue Policy Option 2: State-Based Reinsurance in order to achieve a greater number of health insurance coverage options in the marketplace at a more affordable price for all Virginians, including the most vulnerable constituents.

Recommendations for Policy Implementation

Reinsurance Program Design Considerations

Virginia's reinsurance program could use the traditional claims cost-based model, a condition-based model, or a hybrid model. The claims cost-based model is the most popular, and is utilized by Minnesota, Oregon, Wisconsin, New Jersey, and Maryland. As examples, Minnesota reimburses insurers for 80% of claims between $50,000 and $250,000, and Oregon reimburses insurers for 50% of claims between $95,000 and $1 million (Schwab et al., 2018). A conditions-based model reimburses insurers for claims costs of individuals with one or more high cost conditions on a pre-determined list. Alaska uses a condition-based approach, reimbursing insurers for all the claims costs from enrollees with at least one of 33 high-cost conditions (Centers for Medicare and Medicaid Services, 2018, 26). Maine is the only state to operate a hybrid reinsurance program. Maine's program reimburses insurance issuers for a fraction or all of the costs from claims above $47,000 from enrollees with at least one of eight specified high-risk conditions (Centers for Medicare and Medicaid Services, 2018, 27). Another design consideration is whether the Virginia reinsurance

program would use a prospective or retrospective model to determine claims reimbursements. A retrospective model is recommended because it is less complex to design and operate both for the state and insurers, and it would enable insurers to be reimbursed for lower-risk individuals who have unexpectedly high claims costs (Centers for Medicare and Medicaid Services, 2018, 28).

State Funding Considerations

Virginia policymakers should consult with policymakers in states with operational reinsurance programs regarding their recommendations for sources of funding for the state portion of reinsurance claims reimbursements. One option Virginia policymakers should consider is establishing a state-based individual mandate and using the revenue generated by that mandate towards financing a reinsurance program. The Virginia Market Stability Work Group (2018) concluded that implementing a state-level individual mandate in conjunction with a reinsurance program would bolster the reinsurance program's ability to reduce premiums by increasing the number of marketplace enrollees and thereby increasing the size and stability of risk pools. When determining the amount the state is willing to contribute towards reinsurance payments, Virginia policymakers should be cognizant of the uncertainty of the amount of federal contributions. The amount of federal funding is essentially recalculated each year, and there are likely to be discrepancies between the division of federal and state funding calculated in the 1332 waiver application and the actual program costs. For example, Wisconsin received approximately $40 million less in federal funding than anticipated in 2018 (Cousart & Riley, 2019).

Other Best Practices for Reinsurance Implementation

Virginia policymakers should more broadly seek insights from the seven states that have implemented reinsurance programs as well as from the federal government (about the former transitional reinsurance program) regarding the design of their reinsurance programs, pain points, lessons learned, and recommendations. They should then identify the best practices across these jurisdictions and tailor the Virginia program to address any contextual differences, such as population characteristics, program objectives, or cost considerations. Virginia should also consider how to align its state reinsurance program with the federal risk adjustment program to avoid duplicative payments to insurers. In Maryland, additional actuarial analysis was commissioned to determine the risk of these duplicative payments (Keith, 2018), and an adjustment was ultimately included in Maryland's reinsurance formula to mitigate against this risk (Cousart & Riley, 2019).

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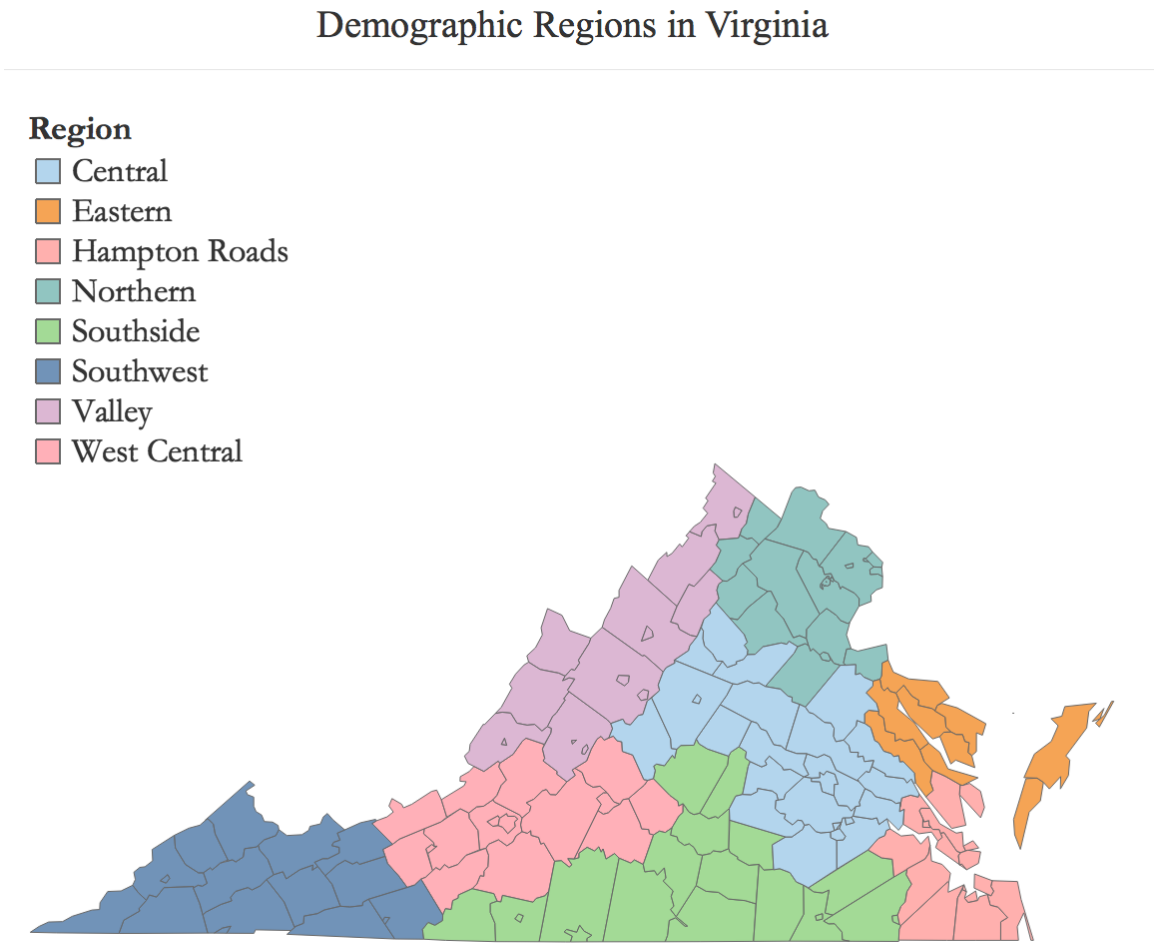
Appendices

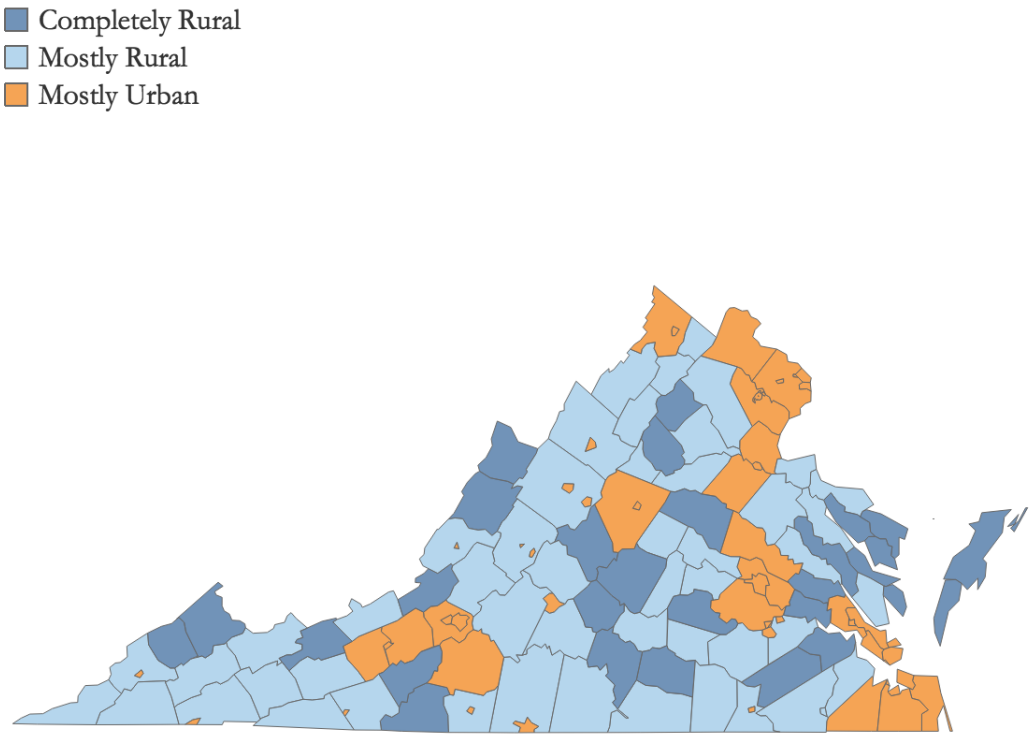
Appendix A: Map of Demographic Regions in Virginia



Source: Map generated based on demographic region designations on the Weldon Cooper Center for Public Service website.

Appendix B: Map of Rural, Mostly Rural, and Mostly Urban Counties and Independent Cities in Virginia

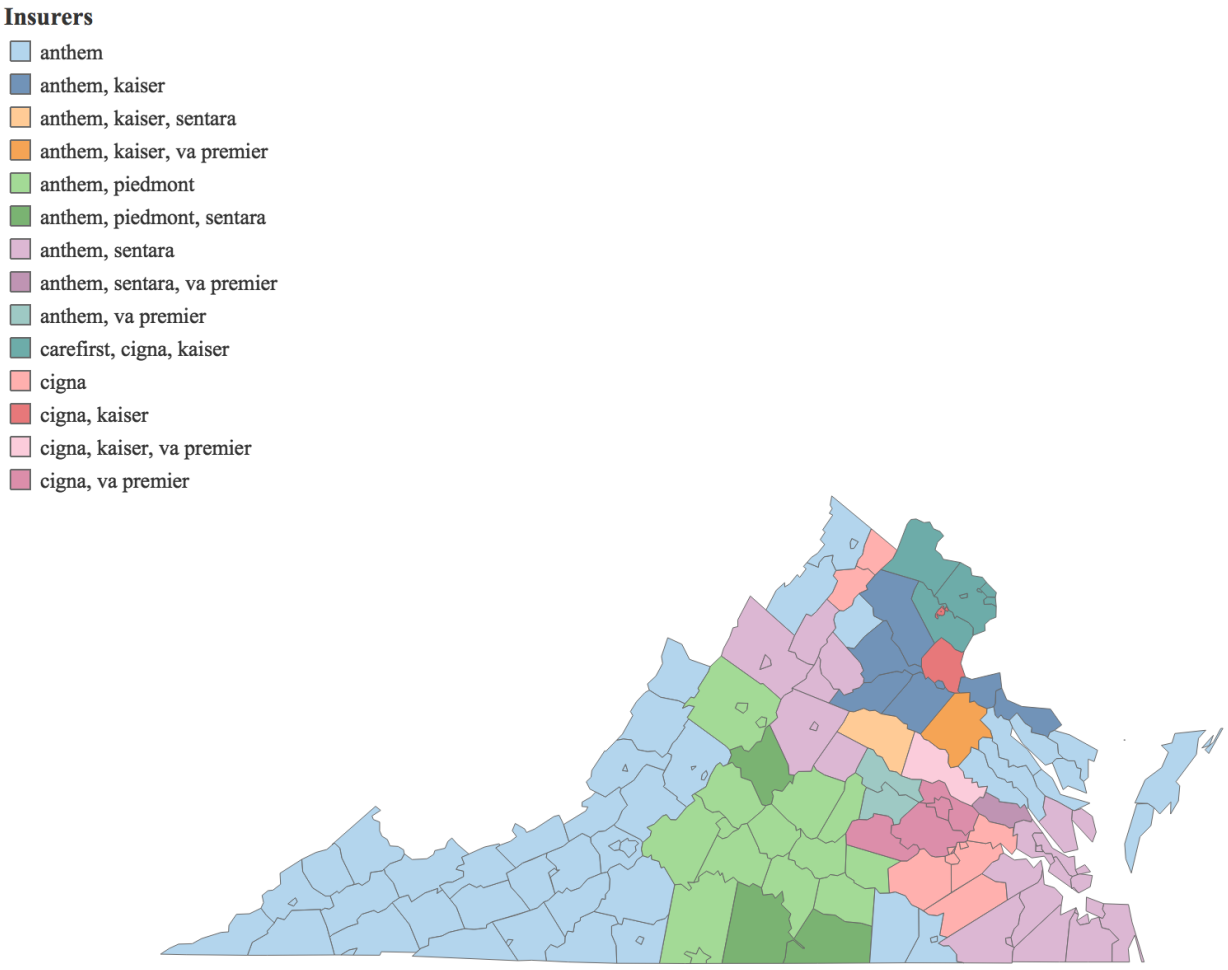
Distribution of Rural, Mostly Rural, and Mostly Urban Counties and Independent Cities in Virginia



Source: Map generated based on the share of the population in each Virginia county living in rural areas, which was drawn from a county-look-up table from the U.S. Census Bureau that is based on the 2010 U.S. Census.

Appendix C: Map of Insurer Participation in Marketplace Individual Markets in Virginia Counties and Independent Cities

ACA Individual Market Insurers in Virginia in 2019, By County and Independent City



Source: Map generated based on Kaiser Family Foundation Analysis of QHP Landscape data obtained from HealthCare.gov.

Appendix D: Synthetic Control Analysis of the Effect of State-Based Reinsurance on Insurer Marketplace Participation

An important objective of the section 1332 waivers for state-based reinsurance programs is to provide a greater incentive for insurance carriers to participate in ACA marketplaces. Seven states have implemented such programs to date: Alaska, Maine, Maryland, Minnesota, New Jersey, Wisconsin, and Oregon. Alaska was the first to implement a reinsurance program, which became effective for the 2017 benefit year. The reinsurance programs in Minnesota and Oregon were introduced in the following year, and the programs in the four remaining states became effective for the 2019 benefit year. This section provides an econometric analysis of whether these state-level reinsurance programs have led to improved participation by insurers over the short period that they have been in place.

Data

A balanced state level panel on insurer participation for ACA benefit years 2014-2019 was compiled for this analysis. Nationwide statistics on insurer participation by county were drawn from the Kaiser Family Foundation (KFF) website (Fehr, 2018). An index of the relative health of the population in each state was obtained from United Health Foundation (2017). This index was derived from thirty-five underlying indicators of health status that cover individual behavior, community and environmental conditions, health care policies, and clinical care. The share of the population in each U.S. county living in rural areas was drawn from a county-look-up table based on the 2010 U.S. Census (*County Classification Lookup Table*, n.d.). Counties with a rural population share exceeding 50 % were classified as rural counties, while those with a share of 50 % or below were classified as urban counties. County-level statistics were rolled up to derive state-level measures of the average number of insurers in urban and rural counties, the shares of counties with access to one, two, or three or more insurers, and other relevant factors.

As indicated in Table 5 above, the average county-level number of insurers nationwide peaked in 2015, began to decline in 2016 and then declined sharply in 2017. Against this backdrop of nationwide trends in insurer participation, Table II.1 summarizes the changes in participation within those states that have introduced reinsurance programs. Statistics on insurer participation in the benefit year prior to the availability of the state program are compared to statistics for the first and, for those states where two years of experience are available, the second year of the program. Among the seven states that have implemented a reinsurance program, only two states (Maine and Wisconsin) have experienced an increase in the average number of insurers per county since the reinsurance program came into effect. In Maine, all counties are in the same rating area, so the increase from two to three insurers following enactment of the reinsurance program took place in every county, urban and rural alike. The increase in the average number of insurers per county in Wisconsin was small (from 2.4 insurers per county to 2.5), and rural counties in the state experienced no change. Four states have experienced a reduction in the average number of insurers per county since enacting their reinsurance programs (Alaska, Minnesota, Oregon, and Maryland), while the number of insurers in New Jersey has not changed. Prior to the enactment of their reinsurance programs, consumers in all counties of Alaska, Minnesota, Oregon, Maine, and New Jersey had access to two or more insurance providers in their marketplaces. Following enactment, all consumers in Minnesota, Maine, and New Jersey continued to have access to

at least two providers. However, a small share of consumers in Oregon and Minnesota experienced a decline to a single provider. In Wisconsin, 87 % of enrollees had access to two or more insurers in their marketplace prior to enactment of the state reinsurance program. Following enactment, this share improved to 93 %. In contrast, the share of enrollees in Maryland with access to two or more marketplace insurers declined from 89 to 88 % after the state's reinsurance program became effective. Among rural counties in the state, access to at least two insurers declined from 65 to 59 %.

Overall, the aforementioned statistics do not appear to support the hypothesis that state reinsurance programs are an effective way to bring more insurers into marketplaces, at least in the short run. However, it is possible that the state-based reinsurance programs helped to maintain the participation of some insurers who otherwise would have left the market. For instance, it has been suggested that Alaska's program was responsible for preventing the state's last remaining insurer (Premera Blue Cross Blue Shield of Alaska) from leaving the individual market in 2017 (Blumenthal et al., 2018). To investigate this possibility, a synthetic control analysis of insurer marketplace participation was conducted.

Table D.1

Insurer Marketplace Participation in Reinsurance Program States Pre- and Post-Enactment

State	Effect. Year	Average # Insurers Across All Counties			Average # Insurers Across Rural Counties			% Enrollees with Access to 2 or more Insurers			% Rural Counties with Access to 2 or more Insurer		
		Pre	Year 1	Year 2	Pre	Year 1	Year 2	Pre	Year 1	Year 2	Pre	Year 1	Year 2
Alaska	2017	2.0	1.0	1.0	2.0	1.0	1.0	100	0.0	0.0	100	0.0	0.0
Minnesota	2018	2.3	2.3	2.1	2.1	2.1	2.1	100	98	99	100	100	100
Oregon	2018	3.3	2.4	2.5	3	2.2	2.2	100	97	97	100	93	93
Maine	2019	2.0	3.0		2.0	3.0		100	100		100	100	
Maryland	2019	1.5	1.4	N/A	1.0	1.0	N/A	89	88	N/A	65	59	N/A
New Jersey	2019	2.7	2.7		(All Urban)			100	100		(All Urban)		
Wisconsin	2019	2.4	2.5		2.3	2.3		87	93		88	92	

Methodology

The synthetic control method of Abadie and Gardeazabal (2003) has become a popular method for estimating the causal effects of state and local policy initiatives. Under this approach, one constructs a synthetic control using a set of "donor" jurisdictions that have not been impacted by the initiative being studied. The purpose of this control is to provide a counterfactual measure of the outcome path for the affected jurisdiction in the absence of the initiative. The difference between the actual outcome path for the treated jurisdiction and the predicted counterfactual path based on the synthetic control in the periods after enactment then serves as a measure of the impact of the initiative. The synthetic control is a weighted average of the outcomes observed in the donor jurisdictions. The weights are selected to closely match the values of relevant predictors of the outcome variable in the treatment and (weighted) donor samples for the periods prior to the enactment of the initiative. Often, a closer match can be achieved by taking a weighted average across a number of jurisdictions rather than by relying on a single jurisdiction as a control for the treated jurisdiction. Typically, however, the weights assigned to some donor jurisdictions by the optimization algorithm are equal to zero, which effectively excludes these jurisdictions

from the analysis. Included among the predictors are values of the outcome variable in selected pre-treatment periods. This helps to ensure that the outcome path of the synthetic control mirrors that of the treated jurisdiction over the years preceding the enactment of the initiative.

To assess the significance of the causal effect estimates, the method of Galiani and Quistorff (2016) was employed. Under this approach, one applies the same synthetic control analysis to each untreated state, generating a "placebo estimate" of the causal effect based on a comparison of the outcome for that state with a synthetic control constructed from the other remaining untreated states. A p-value is then computed as the percentage of placebo effect estimates that are at least as large as the causal effect estimate for the treated state. As is conventional, a low p-value (for example, 0.05) signifies that it is highly unlikely that a causal effect estimate of the size reported would have been observed if the reinsurance program actually had no impact on the outcome variable.

Separate synthetic control analyses were conducted for each of the seven states that have introduced reinsurance programs. The set of donor states was restricted to the remaining forty-three states.[7] For each of the seven "treated" states, several different outcome measures were evaluated. These included the average number of insurers per county, the average number of insurers per rural county, the percentage of enrollees who had access to multiple insurers, and the percentage of rural counties in which consumers had access to multiple insurers. The outcome measures relating to rural counties were included because it tends to be more difficult to attract insurers to participate in rural markets. A separate synthetic control analysis was performed for each outcome measure.

The state-level predictor variables for each synthetic control specification include the aforementioned health index measure, the population size, and the overall share of the population residing in rural areas.[8] Each of these factors is likely to play a role in an insurer's marketplace participation decision. The values of the relevant outcome measure in selected pre-treatment years are also included as predictors to help insure a common trend among the treated state and the synthetic control in the years leading up to the enactment of the reinsurance program. Generally, as one includes more years for the outcome measure as predictors, the correspondence between the pre-treatment trends improves, but the correspondence between the other predictor variables eventually diminishes. Therefore, the selection of which (and how many) pre-treatment years to include for the outcome variable was guided by the objective of achieving a reasonably common pre-treatment reporting trend for the outcome variable without unduly sacrificing the fit of the other predictor variables.

Results

Table D.2 presents the impact estimates and their simulated p-values for the states that implemented a reinsurance program that was in-effect for either the 2017 or 2018 benefit

[7] The District of Columbia was excluded from the donor pool, because the health index measure was not available to serve as a predictor.

[8] The first two predictor variables are based on their measured values in 2017, while the rural population share is based on the 2010 Census.

years. The weights are listed for the five donor states with the largest contribution to the synthetic control for the analyses conducted for each of these states in Tables D.3 through D.5. The earlier start for these programs permits the estimation of causal effects for two to three years. The estimated causal effects for the various outcome measures are consistently negative for Alaska. The number of insurers in the state declined from two to one in 2017, the year the state reinsurance program went into effect. In contrast, the synthetic control group has a much smaller decline in participating insurers. The simulated p-values for the estimated causal impacts for the share of enrollees and the share of rural counties with access to two or more insurers are small, suggesting that the negative estimated causal effects are not attributable to chance.

In the case of Minnesota, the estimated causal effects of the state's reinsurance program are mostly positive. However, the simulated p-values are quite large, so the results may be attributable to sampling error.

The estimated causal effects for Oregon are mixed. For most of the outcome measures, the simulated p-values are large, indicating that the estimated effects are inconclusive. An exception is the estimated effects for the share of rural counties with access to three or more insurers. The simulated p-values for these estimates are rather small, suggesting that the reinsurance program had a detrimental impact on this outcome measure.

Table D.2

Synthetic Control Estimates of Causal Effects of Reinsurance Programs in Alaska, Minnesota, and Oregon

Outcome	Alaska			Minnesota		Oregon	
Impact Year	2017	2019	2019	2018	2019	2018	2019
Average Number of Insurers per County	-0.879 (0.302)	-0.617 (0.442)	-0.724 (0.372)	0.105 (0.698)	0.104 (0.814)	-0.344 (0.535)	-0.678 (0.256)
Average Number of Insurers per Rural County	-0.730 (0.325)	-0.533 (0.500)	-0.638 (0.325)	0.298 (0.500)	0.352 (0.500)	-0.467 (0.375)	-0.707 (0.200)
Percent of Enrollees with 2+ Insurer Options	-1.000 (0.000)	-0.999 (0.024)	-0.999 (0.024)	0.058 (0.690)	0.068 (0.643)	0.219 (0.349)	0.139 (0.326)
Percent of Rural Counties with 2+ Insurers	-0.896 (0.025)	-0.810 (0.150)	-0.849 (0.125)	-0.024 (0.590)	-0.037 (0.564)	0.325 (0.333)	.015 (0.769)
Percent of Enrollees with 3+ Insurer Options				0.064 (0.558)	0.014 (0.767)	-0.189 (0.372)	-0.099 (0.535)
Percent of Rural Counties with 3+ Insurers				0.036 (0.325)	0.071 (0.350)	-0.659 (0.075)	-0.666 (0.050)

Notes: Simulated p-values are in parentheses. Outcomes involving three or more insurers were not analyzed for Alaska, as it has never had more than two insurers.

Table D.3

*Weights for Five Donor States with Largest Contributions to Synthetic Control (Alaska Program)**

Outcome	State 1	State 2	State 3	State 4	State 5
Average Number of Insurers per County	DE (0.974)	VT (0.026)			
Average Number of Insurers per Rural County	WV (0.34)	VA (0.203)	SD (0.175)	VT (0.153)	MD (0.129)
Percent of Enrollees with 2+ Insurer Options	DE (0.974)	VT (0.026)			
Percent of Rural Counties with 2+ Insurers	SD (0.686)	KY (0.189)	LA (0.124)		

Notes: Weights are in parentheses. In some cases, the synthetic control includes fewer than five donor states.

Table D.4

*Weights for Five Donor States with Largest Contributions to Synthetic Control (Minnesota Program)**

Outcome	State 1	State 2	State 3	State 4	State 5
Average Number of Insurers per County	VT (0.467)	CT (0.227)	VA (0.151)	CO (0.064)	CA (0.061)
Average Number of Insurers per Rural County	VT (0.481)	NE (0.329)	CA (0.083)	CO (0.073)	MA (0.032)
Percent of Enrollees with 2+ Insurer Options	HI (0.332)	MA (0.254)	CT (0.117)	CA (0.044)	NY (0.042)
Percent of Rural Counties with 2+ Insurers	HI (0.352)	MA (0.216)	VT (0.121)	NY (0.055)	CA (0.053)
Percent of Enrollees with 3+ Insurer Options	MA (0.287)	UT (0.285)	CT (0.153)	ND (0.059)	CO (0.041)
Percent of Rural Counties with 3+ Insurers	NE (0.428)	CO (0.258)	UT (0.125)	MA (0.078)	46 (0.059)

Notes: Weights are in parentheses. In some cases, the synthetic control includes fewer than five donor states.

Table D.5

*Weights for Five Donor States with Largest Contributions to Synthetic Control (Oregon Program)**

Outcome	State 1	State 2	State 3	State 4	State 5
Average Number of Insurers per County	OH (0.611)	MA (0.236)	AZ (0.153)		
Average Number of Insurers per Rural County	OH (0.448)	MA (0.381)	AZ (0.17)		
Percent of Enrollees with 2+ Insurer Options	DE (0.133)	NY (0.124)	ND (0.120)	RI (0.105)	HI (0.097)
Percent of Rural Counties with 2+ Insurers	ND (0.325)	NM (0.158)	HI (0.084)	46 (0.065)	NY (0.063)
Percent of Enrollees with 3+ Insurer Options	ID (0.541)	48 (0.392)	NM (0.04)	CA (0.027)	
Percent of Rural Counties with 3+ Insurers	ID (0.453)	NM (0.300)	NY (0.132)	UT (0.107)	ND (0.008)

Notes: Weights are in parentheses. In some cases, the synthetic control includes fewer than five donor states.

The estimation results for the four state reinsurance programs that became effective for the 2019 benefit year are presented in Table D.6. Tables D.7 through D.10 identify the donor states and their weights for the synthetic control analyses of each of these states' reinsurance programs. The estimated causal impacts for the various outcome measures are consistently negative in the case of Maryland. Two of these estimates, for the average number of insurers across rural counties and the percentage of rural counties with access to two more insurers, are associated with relatively small simulated p-values, suggesting that the negative estimated impact of the state reinsurance program is not attributable to sampling error.

The estimated causal effects for the various outcome measures under the Maine reinsurance program are uniformly positive. The simulated p-values for two of the estimates, for the share of enrollees and the share of urban counties with access to three or more insurers, are rather small. This suggests that the positive estimated impact of Maine's reinsurance program on these two outcome measures is not attributable to sampling error.

The estimated causal effects for the New Jersey and Wisconsin reinsurance programs are mixed, and the simulated p-values are quite large, so these results are inconclusive.

Table D.6

Synthetic Control Estimates of Causal Effects of Reinsurance Programs in Alaska, Minnesota, and Oregon

Impact Year			2019	
Outcome	Maryland	Maine	New Jersey	Wisconsin
Average Number of Insurers per County	-0.207 (0.535)	0.277 (0.419)	0.297 (0.372)	-0.303 (0.512)
Average Number of Insurers per Rural County	-1.001 (0.000)	0.559 (0.225)	N/A	-0.090 (0.625)
Percent of Enrollees with 2+ Insurer Options	-0.015 (0.512)	0.001 (0.860)	0.000 (1.000)	-0.066 (0.405)
Percent of Rural Counties with 2+ Insurers	-0.807 (0.077)	0.000 (1.000)	N/A	0.038 (0.525)
Percent of Enrollees with 3+ Insurer Options	-0.280 (0.302)	0.842 (0.049)	-0.125 (0.405)	-0.028 (0.581)
Percent of Rural Counties with 3+ Insurers	-0.036 (0.316)	0.804 (0.027)	N/A	-0.039 (0.375)

Note: Outcomes involving rural counties were not analyzed for New Jersey because New Jersey does not have any rural counties.

Table D.7

Weights for Five Donor States with Largest Contributions to Synthetic Control (Maryland Program)

Outcome	State 1	State 2	State 3	State 4	State 5
Average Number of Insurers per County	NE (0.569)	OH (0.217)	CO (0.192)	AZ (0.021)	
Average Number of Insurers per Rural County	OH (0.390)	ND (0.278)	WA (0.236)	AZ (0.096)	
Percent of Enrollees with 2+ Insurer Options	CT (0.374)	AR (0.114)	DE (0.088)	CA (0.079)	RI (0.041)
Percent of Rural Counties with 2+ Insurers	ND (0.736)	NE (0.193)	IA (0.071)		
Percent of Enrollees with 3+ Insurer Options	NV (0.689)	UT (0.304)	CA (0.007)		
Percent of Rural Counties with 3+ Insurers	NE (0.770)	IN (0.111)	CA (0.075)	CT 0.023	ND 0.021

Notes: Weights are in parentheses. In some cases, the synthetic control includes fewer than five donor states.

Table D.8

Weights for Five Donor States with Largest Contributions to Synthetic Control (Maine Program)

Outcome	State 1	State 2	State 3	State 4	State 5
Average Number of Insurers per County	ND (0.378)	NH (0.202)	AR (0.186)	WV (0.185)	ID (0.044)
Average Number of Insurers per Rural County	HI (0.276)	ND (0.22)	NH (0.192)	25 (0.122)	WV (0.061)
Percent of Enrollees with 2+ Insurer Options	RI (0.809)	LA (0.19)			
Percent of Rural Counties with 2+ Insurers	NM (0.58)	HI (0.317)	VT (0.103)		
Percent of Enrollees with 3+ Insurer Options	IN (0.727)	NH (0.148)	MO (0.121)	IA (0.003)	
Percent of Rural Counties with 3+ Insurers	IN (0.693)	NH (0.229)	MO (0.054)	FL (0.024)	

Notes: Weights are in parentheses. In some cases, the synthetic control includes fewer than five donor states.

Table D.9

Weights for Five Donor States with Largest Contributions to Synthetic Control (New Jersey Program)

Outcome	State 1	State 2	State 3	State 4	State 5
Average Number of Insurers per County	CT (0.586)	OH (0.166)	AR (0.159)	MI (0.089)	
Percent of Enrollees with 2+ Insurer Options	MA (0.339)	NY (0.298)	SD (0.166)	LA (0.086)	KS (0.025)
Percent of Enrollees with 3+ Insurer Options	NM (0.745)	AZ (0.211)	MA (0.044)		

Notes: Weights are in parentheses. In some cases, the synthetic control includes fewer than five donor states. Outcomes involving rural counties were not analyzed for New Jersey because New Jersey does not have any rural counties.

Table D.10

Weights for Five Donor States with Largest Contributions to Synthetic Control (Wisconsin Program)

Outcome	State 1	State 2	State 3	State 4	State 5
Average Number of Insurers per County	VA (0.404)	MA (0.187)	OH (0.174)	IA (0.126)	AR (0.109)
Average Number of Insurers per Rural County	NH (0.384)	MO (0.289)	VA (0.175)	MA (0.126)	MT (0.025)
Percent of Enrollees with 2+ Insurer Options	MA (0.427)	LA (0.256)	ND (0.186)	UT (0.095)	CA (0.024)
Percent of Rural Counties with 2+ Insurers	MA (0.393)	LA (0.205)	NH (0.196)	NE (0.141)	WV (0.065)
Percent of Enrollees with 3+ Insurer Options	MA (0.402)	NV (0.319)	VA (0.148)	ND (0.086)	AR (0.045)
Percent of Rural Counties with 3+ Insurers	VA (0.315)	MA (0.235)	IA (0.189)	IN (0.137)	NH (0.099)

Notes: Weights are in parentheses. In some cases, the synthetic control includes fewer than five donor states.

Overall, the findings from the synthetic control analysis provide little support for the hypothesis that state reinsurance programs help to maintain or improve insurer participation in the first one to three years following their implementation. Further research is needed to understand why these seven programs were not more effective in this regard. One possibility is that the perceived benefits of the reinsurance programs to prospective insurers were small and that other factors, including uncertainties about the future of the ACA under the current administration, had a chilling effect on the willingness of new insurers to enter the marketplace.

The analysis in this section focused on outcomes related to insurer participation. In future research, it would be interesting to apply this synthetic control framework to other outcomes, including health insurance premiums and enrollment levels.

Appendix E: Cost-Effectiveness Analysis of Policy Options 2 and 3

Identification of Costs and Effectiveness of Each Policy Alternative

Identification and Classification of Costs

Only costs to Virginia are considered for this analysis.

The costs of each policy alternative are identified and classified in Table E.1. For the Medicaid buy-in option, the activities listed in Table E.1 as required for the study, design, and implementation of the buy-in product are based on those included in buy-in legislation and corresponding fiscal analysis in other states, especially HB-7267 in the Connecticut General Assembly (An Act Concerning Public Options for Health Care in Connecticut, 2019; HW, 2019). The fiscal note for HB-7267 does not estimate any costs associated with implementing a competitive process to select and contract with one or more MCOs to administer the state-sponsored plan, so this activity is not listed in Table E.1. Costs associated with hiring a health care analyst to provide support to a working group studying a public insurance coverage option are included in the fiscal note (RDP, 2019) for another active bill in the Connecticut General Assembly, HB-7339 (An Act Concerning a Public Insurance Option, 2019). These costs are listed in Table E.1 based on the assumption that Virginia likewise would hire an additional employee to assist with the study and plan design phase.

There are no costs listed for the Medicaid buy-in option in Table E.1 that are associated with administration and oversight management because it is assumed that Virginia would leverage the existing state Medicaid infrastructure to the extent consistent with the Marketplace (Brooks-LaSure, Ellis, Mann, & Davis, 2019, p. 8; Mann, 2017) and the resources of the MCO(s) with which it partners for these tasks. There are no other costs listed for the Medicaid buy-in option because it is assumed that federal pass-through funding through a 1332 waiver and tax credits and premium contributions paid by enrollees would cover the remaining costs. According to Manatt Health Strategies, this assumption that state funding would not be necessary would hold insofar as the buy-in product is accurately priced and meets 1332 waiver requirements (Boozang & Brooks-LaSure, 2018). Manatt Health Strategies analysts made that assumption in their initial study of a Medicaid buy-in plan in Colorado (Brooks-LaSure, Grady, Guyer, & Ellis, 2018).

In contrast with the Medicaid buy-in option, it is assumed that Virginia would not incur costs associated with study and program design activities, such as healthcare and actuarial consulting, for a state-based reinsurance program outside of the waiver process. State-based reinsurance programs have been more widely studied than a state-sponsored Medicaid buy-in option, and there are case studies of reinsurance implementation in other states as well as published guidance from the federal government for implementing a state-based reinsurance

program (Centers for Medicare and Medicaid Services, 2018). The cost of hiring one, limited duration (four-year) operations and policy analyst to assist existing staff with the 1332 waiver submission process, rule-making, and implementation is included in the reinsurance program cost. Oregon forecast this expenditure (To, 2017, p. 3), and it is plausible that Virginia would need to hire an analyst as well.

In other states' 1332 waiver applications to operate a state-based reinsurance program, the states indicated that their existing staff and resources would be able to absorb the administrative tasks that the waiver would require them to perform (Office of the Comissioner of Insurance, 2018). It is therefore assumed that Virginia would not need to hire staff to undertake administrative functions related to the reinsurance program. Unlike with the Medicaid buy-in alternative, there would be an administrative cost of a reinsurance program to Virginia (see Table E.1). While Virginia would have to perform set-up activities for a reinsurance program, such as arranging or contracting for administrative, actuarial, budgetary, and banking services and creating a governance structure (Centers for Medicare and Medicaid Services, 2018, p. 28), cost estimates for these activities cannot be found in other states' fiscal analyses or the literature. These activities are thus not included in the cost analysis.

Table E.1

Identification and Classification of the Costs of Each Alternative

	State-Based Reinsurance	Medicaid Buy-In
Up-Front Costs	Preparation and submission of 1332 waiver application	Study, plan design, and implementation: • Establishments of eligibility criteria • Design and offering of the plan • Establishment of a schedule of payments and reimbursement rates • Preparation and submission of 1332 waiver application • Evaluation of the impact of the plan on individuals in the state, health care providers and health care facilities in the state, and the individual and group health insurance markets in the state
Recurring Costs	One operation and policy	One health care analyst hire

	analyst hire (4 years)	(2 years)
	Administrative costs	
	Reinsurance payments	

Identification of Effectiveness Measure

Following Parys, Sheingold et al, Dafny et al, and Abraham et al, competition in this cost-effectiveness analysis is defined based on the number of marketplace insurers. Given the geographic component of exchange markets, competition is further specified at the county and independent city level. In particular, the effectiveness measure is defined as the expected change in the number of insurers per county or independent city multiplied by the number of counties and independent cities.

Valuation of Costs and Effectiveness of Each Policy Alternative

Valuation of Costs

Table E.2 provides estimates of the costs of each of the policy alternatives and the basis for estimations.

Table E.2

Costing Each Policy Alternative

Cost	Estimate	Basis for Estimation
State-Based Reinsurance		
1332 waiver	$250,000	Virginia State Corporation Commission's Fiscal Impact Statement for another policy, offering catastrophic health plans on the individual market, requested $250,000 to cover the initial minimum estimated cost of preparing and submitting a 1332 waiver application. State Corporation Commission, n.d.).
Salary	Annual Assumed Costs: $77,026 (Over 4 Years)	Fiscal impact analysis of HB-2391 in the Oregon Legislative Assembly (To, 2017, p. 3)
Administrative costs	Annual Assumed Costs: Additional 1% of state portion of the reinsurance fund	Oklahoma's 1332 waiver application[9] to operate a reinsurance program estimated that administrative expenses would be less than 1% of the state portion of the reinsurance fund (*1332 State Innovation Waiver Application for the State of Oklahoma*, 2017). The Centers for Medicare and Medicaid Services estimated that state administrative costs for a reinsurance program would amount to at most an additional 1 to 3% of claims costs, based on prior experience (Centers for Medicare and Medicaid Services, 2018).
Reinsurance payments	$307,419,958 from 2021-2025	Estimated using the Oliver Wyman Reinsurance Pass-Through Savings Funding Calculator and assuming a 10% target reduction in premiums per year and a five percent discount rate. See projected outcomes in accompanying cost-effectiveness spreadsheet for more information on methodology and detailed projections

[9] Oklahoma withdrew its 1332 waiver request because the Departments did not provide timely waiver approval.

Table E.3, Continued

Medicaid Buy-In		
Study, Plan Design, and Implementation Activities	1.5 million in 2021 $750,000 in 2022	Fiscal analysis of HB-7267 in the Connecticut General Assembly (An Act Concerning Public Options for Health Care in Connecticut, 2019; HW, 2019)
Salary	Annual Assumed Costs: $72,511 (over 2 years)	Fiscal note (RDP, 2019) for HB-7339 in the Connecticut General Assembly (An Act Concerning a Public Insurance Option, 2019)

Valuation of Effectiveness

State-Based Reinsurance

Insurers often cite reinsurance programs as the best way to attract insurer participation (Manatt Health, 2018). A report from the Georgetown University Health Policy Institute concluded that the state-based reinsurance programs in 2018 were largely successful in incentivizing insurers to remain in the market (Schwab et al., 2018). The conclusion with respect to insurer incentives was based on interviews with insurers in Alaska, Oregon, and Minnesota. These insurers indicated that reinsurance programs had an effect on their decisions to remain in markets, re-enter, and expand. For instance, insurers reported that the reinsurance programs incentivized them to remain in the marketplace at a time when many other companies were exiting from markets in states without reinsurance programs (Schwab et al., 2018). Reinsurance could potentially be particularly effective at improving competition between private insurers in rural areas. Insurers expressed that reinsurance provided a backstop for them to enter counties that were less populated and had limited provider networks and high-cost claims. A state official credited the state's reinsurance program to the expansion of two insurers into rural counties (Schwab et al., 2018). Reinsurance could also be especially important for the financial health and marketplace participation decisions of smaller insurers: "The ending of the [federal] reinsurance program… disadvantaged smaller insurers because their size makes them less able to efficiently bear the risk of very-high-cost cases. As a consequence, the business case for participating in the marketplaces was weakened, resulting in less choice and less competition" (Frank, 2019).

The Virginia Market Stability Work Group (2018) reported that state-based reinsurance programs have a "proven track record" of increasing insurer participation based on outcomes post-reinsurance implementation, without accounting for a pre-trend. A causal effect of the reinsurance programs on those outcomes cannot be determined through such an approach, and econometric analysis appears to be absent from the literature on reinsurance. To address this lacunae, Appendix D presents a synthetic control analysis of the impact of state-based reinsurance programs on insurer participation in marketplaces. Overall, the findings provide little support for the hypothesis that state reinsurance programs help to maintain or improve insurer participation in the first one to three years following their implementation. Of the seven states that implemented reinsurance programs, the estimated causal effect of the program on the average number of insurers per county increased in three states, and fell in four states. Further research is needed to understand why these programs were not more effective in this regard. One possibility is that the perceived benefits of the reinsurance programs to prospective insurers were small and that other factors, including uncertainties about the future of the ACA under the current administration, had a chilling effect on the willingness of new insurers to enter the marketplace. It is possible that reinsurance programs will have a more positive effect in future, less uncertain, policy environments.

A range of estimates for the expected value of the change in the number of insurers in Virginia is derived from a combination of the quantitative and interview evidence. Based on the synthetic control analysis, the lower bound is zero. In light of the interview evidence, however, there is some positive probability that a reinsurance program would be effective. One measure of an upper bound probability is the proportion of states that experienced an increase in the number of insurers per county. Based on the synthetic control model results, this number is 3/7 or 43%. The average of the upper and lower bound probabilities, 22%, is used to estimate the expected value of the change in the number of insurers. Multiplying the number of counties and independent cities in Virginia by 22% yields an expected value of 29 counties and independent cities in Virginia with a one-insurer increase relative to the baseline in each year of the reinsurance program.

Medicaid Buy-In

A Medicaid buy-in option would directly increase competition between marketplace insurers in the short run by injecting an additional competitor into the marketplace. If the state-sponsored option were to improve the health of risk pools in exchange markets by increasing enrollment among healthy individuals who are attracted to the lower cost option, it could further incentivize insurer participation by creating more desirable market conditions. The probability that a Medicaid buy-in option would lead to an increase of one in the number of issuers in exchange markets is estimated to be 100%. Multiplying the number

of counties and independent cities in Virginia by 100% yields an expected value of 133 counties and independent cities in Virginia with a one-insurer increase relative to the baseline in each year of the Medicaid buy-in program.

There is a pervasive concern in the literature that a state-sponsored marketplace product could disincentive insurer participation. If private insurers struggle to compete with the lower-cost option, they might exit the marketplace (Brooks-LaSure, Boozang, Traube, & Davis, 2018; Brooks-LaSure, Grady, Guyer, & Ellis, 2018; Howard, 2017; James, n.d.; Massachusetts Health Connector, 2018). The public option could end up being the only marketplace option remaining in a county or independent city if private insurer exits were to occur. According to Manatt Health (2019), the amount of competition in a county or independent city before the Medicaid buy-in product is introduced will impact how insurers react. The greatest risk of insurer exit is in areas where current marketplace insurer participants are limited, especially if the buy-in is priced significantly lower than other options (Manatt Health, 2019). In Virginia, Anthem would likely exit the 53 counties and independent cities in which it is the only marketplace insurer, particularly given that Anthem only remains in those counties to prevent them from becoming bare areas.[10] Anthem's exit would be even more probable if Virginia partnered with Anthem as an MCO to issue the public option, since Anthem would have no reason to offer two different marketplace products in those areas. Cigna would also likely exit the nine areas in which it is the only marketplace insurer if there were a public option available.

A modified estimate for the effectiveness of a Medicaid buy-in is computed by subtracting the 62 counties and independent cities with only one insurer from the total number of counties and independent cities (133) to get 71 counties and independent cities with a one-insurer increase relative to the baseline per year. This number serves as the best estimate. A lower estimate can be computed if it is assumed that a portion of the 57 counties and independent cities with two marketplace insurers would also experience an insurer exit. Assuming at least one insurer would exit 50% of those counties and independent cities as a result of Medicaid buy-in further decreases the estimated number of counties and independent cities with a one-insurer increase relative to the baseline per year from 71 to 42.

Tabulation of the Costs and Effectiveness of Each Policy Alternative

The schedule of annual costs and effectiveness is shown in Table E.3 for state-based reinsurance and in Table E3. for Medicaid buy-in. Costs have been discounted using a five percent rate, following the arguments of Sinden and Thampapillai (2002).

[10] Anthem covers approximately 85% of the 62 counties and independent cities with only one insurer in 2019, and Cigna covers approximately 15%. Anthem had planned to exit the marketplace for 2018 (Bryan, 2017), but remained to cover the 58 counties and independent cities that otherwise would have been left without any marketplace insurers ("bare areas").

Table E.3

Tabulation of Annual Costs and Benefits for State-Based Reinsurance

Costs	Tabulation of Annual Costs						
		Initial Waiver Period					
	2020	2021	2022	2023	2024	2025	**Total**
1332 waiver	$250,000	$0	$0	$0	$0	$0	$250,000
Salary	$73,358	$69,865	$66,538	$63,369	$0	$0	$273,130
Reinsurance payments	$0	$73,854,051	$67,144,859	$60,982,504	$55,320,832	$50,117,712	$307,419,958
Administrative costs	$0	$738,541	$671,449	$609,825	$553,208	$501,177	$3,074,200
Total Costs	**$323,358**	**$74,662,456**	**$67,882,845**	**$61,655,698**	**$55,874,041**	**$50,618,889**	**$311,017,287**

	Tabulation of Expected Number of Counties and Independent Cities with a One-Insurer Increase						
		Initial Waiver Period					
	2020	2021	2022	2023	2024	2025	**Total**
Number of Counties and Independent Cities	29	29	29	29	29	29	**176**

Table E.4

Tabulation of Annual Costs and Benefits for Medicaid Buy-In

Costs	Tabulation of Annual Costs							
			Initial Waiver Period					
	2020	2021	2022	2023	2024	2025	2026	**Total**
Study, plan design, and implementation activities	$1,500,000	$750,000	$0	$0	$0	$0	$0	$2,250,000
Salary	$69,058	$65,770	$0	$0	$0	$0	$0	$65,770
Total Costs	**$1,569,058**	**$815,770**	**$0**	**$0**	**$0**	**$0**	**$0**	**$2,384,828**

	Tabulation of Annual Expected Number of Counties and Independent Cities with a One-Insurer Increase							
			Initial Waiver Period					
	2020	2021	2022	2023	2024	2025	2026	**Total**
Number of Counties and Independent Cities	0	0	71	71	71	71	71	**355**

Calculation of Cost-Effectiveness Ratio

The cost-effectiveness ratio for each policy alternative is calculated by dividing the present value of costs by the total number of counties and independent cities that are expected to experience a one-insurer increase in the number of marketplace insurers as a result of the policy option during the initial 1332 waiver period. The present value of costs and the units of effectiveness are summarized in Table E.5 for reinsurance and Medicaid buy-in, respectively.

Table E.5

Computation of Cost-Effective Ratios for Policy Alternatives

Policy Alternative	Present Value of Costs	Units of Effectiveness	Cost-Effectiveness Ratio
State-Based Reinsurance	$311,017,287	146	**$2,125,887**
Medicaid Buy-In	$2,384,828	355	**$6,718**

Comparison of Policy Alternatives by their Cost-Effectiveness Ratios

The status quo is the most cost-effective policy option, with a cost-effectiveness ratio of $0 per county or independent city with a one-insurer increase. If Virginia policymakers wanted to pursue an alternative policy to further improve competition, Medicaid buy-in is the most cost-effective alternative that is considered in this analysis. Medicaid buy-in is predicted to lead to an additional one-insurer increase relative to baseline in 2.4 times as many counties and independent cities in Virginia as state-based reinsurance over a five-year 1332 waiver period. The ratio of the present value of costs of Medicaid buy-in to the present value of costs of state-based reinsurance is 1 to 130.4. The clear ranking of the policy options in terms of cost-effectiveness is:

1. Status quo
2. Medicaid buy-in
3. State-based reinsurance

Tests for the Effect of Changes in Assumptions

To test for robustness of the reinsurance estimates, the present value of reinsurance program costs was recalculated for changes in target premium reduction rate, discount rate, program

longevity (if the 1332 waiver were renewed for another five years), and administrative costs. The units of effectiveness were recalculated for changes in the predicted probability of increasing the average number of marketplace insurers per county by one insurer. The cost-effectiveness ratio was recalculated for all combinations of all of the aforementioned recalculations. These recalculations are in the "Reinsurance Sensitivity" tab of the accompanying cost-effectiveness spreadsheet. The robustness of Medicaid buy-in estimates was tested by recalculating the present value of costs for changes in discount rate and program length, recalculating the units of effectiveness for changes in the predicted number of counties and independent cities with a one-insurer increase and for changes in program length (again, if the program length were 10 years instead of five), and recalculating the cost-effectiveness ratio for all combinations of those recalculations. These recalculations are in the "Medicaid Buy-In Sensitivity" tab of the accompanying cost-effectiveness spreadsheet.

Elasticities were calculated based on the recalculated values for key variables. For state-based reinsurance, the change in the cost-effectiveness ratio that follows a change in the reinsurance claims costs from the low estimate to the best estimate is 49% and the change in the cost-effectiveness ratio that follows a change in the reinsurance claims costs from the best estimate to the high estimate is 66 percent. The cost-effectiveness ratio is much more sensitive to changes in reinsurance claims costs than to changes in the discount rate or to changes in administrative costs. For instance, the cost-effectiveness ratio only changed by 11% following a change in the discount rate from low (3%) to best (5%) and by 19% following a change in the discount rate from best to high (7%). The cost-effectiveness ratio for Medicaid buy-in changed by 0.2% following a change in the discount rate from low to best and by 0.4% following a change in the discount rate from best to high. Other elasticities were not calculated for Medicaid buy-in because there are not more variables with different levels.

Even changing the reinsurance claims costs, which the elasticity tests indicate the cost-effectiveness ratio for reinsurance is the most sensitive to, to the low level yields a cost effectiveness ratio (1,054, 827) that is much larger than the best estimate of the cost-effectiveness ratio for Medicaid buy-in (6,718). A cross-over value for the units of effectiveness measure for Medicaid buy-in that is needed to change the ranking of the policy alternatives is computed using the following formula and the best estimates for the cost-effectiveness ratios of Medicaid buy-in and reinsurance and for the units of reinsurance effectiveness.

$$\frac{Units\ of\ Reinsurance\ Effectiveness}{Units\ of\ Medicaid\ Buy\ In\ Effectiveness} = \frac{Present\ Value\ of\ Reinsurance\ Costs}{Present\ Value\ of\ Medicaid\ Buy\ In\ Costs}$$

$$\frac{146}{Units\ of\ Medicaid\ Buy\ In\ Effectiveness} = \frac{311{,}017{,}287}{2{,}384{,}824}$$

$$\frac{146}{Units\ of\ Medicaid\ Buy\ In\ Effectiveness} = 130.414976$$

$$Units\ of\ Medicaid\ Buy\ In\ Effectiveness = 1.11950333$$

For reinsurance to be ranked in front of Medicaid buy-in in terms of cost-effectiveness, it would have to be the case that Medicaid buy-in only resulted in at most one county or independent city experiencing an increase in the number of marketplace insurers over a five-year period. This outcome is unlikely given that the low estimate for Medicaid buy-in effectiveness is 210 over five years.

Conclusion

If Virginia policymakers were to pursue a policy alternative to the status quo in order to further improve marketplace competition in Virginia counties and independent cities relative to the status quo, the more cost-effective alternative is Medicaid buy-in. As shown in Table 6, the best estimate for the cost-effectiveness ratio for Medicaid buy-in is $6,718 per county or independent city with a one-insurer increase in the number of marketplace insurers. This ratio is much lower than that of the best estimate for the reinsurance cost-effectiveness ratio: $2,125,887 per county or independent city with a one-insurer increase in the number of marketplace insurers. The ranking of Medicaid buy-in ahead of reinsurance based on cost-effectiveness is robust to sensitivity analysis, including recalculations of costs, units of effectiveness, and cost-effectiveness ratio for changes in assumptions, elasticity tests, and computation of a crossover value. The results should nonetheless be taken as preliminary given the uncertainty around the costs to Virginia and the effectiveness of each program. Virginia will need to contract for actuarial consulting and economic analysis to get a clearer idea of how cost-effective each policy alternative would be. It will be especially important to get as accurate of an estimate as possible for Virginia's share of reinsurance claims costs, since that is a critical value for determining the costs of reinsurance to Virginia.