

Estimated Costs of a Reinsurance Program to Stabilize the Individual Health Insurance Market: National- and State-Level Estimates

INQUIRY: The Journal of Health Care Organization, Provision, and Financing
Volume 56: 1–9
© The Author(s) 2019
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/0046958019836060
journals.sagepub.com/home/inq



Coleman Drake, PhD¹ , Brett Fried, MS², and Lynn A. Blewett, PhD² 

Abstract

Reinsurance, an insurance product designed to protect health insurers against the financial risk of covering high-cost enrollees, has attracted bipartisan policy interest as a mechanism to stabilize individual health insurance markets. Three states—Alaska, Minnesota, and Oregon—have implemented state-based reinsurance programs under the Affordable Care Act's 1332 State Innovation Waivers, and reinsurance waivers have been approved though not yet enacted in Maine, Maryland, New Jersey, and Wisconsin. In this article, we estimate the costs of implementing national and state-based reinsurance programs using health spending data from the 2007-2016 Medical Expenditure Panel Survey and state demographic and health insurance coverage data from the 2015-2017 Current Population Survey Annual Social and Economic Supplement. We project that a reinsurance program with an 80% payment rate for expenditures between \$40,000 and \$250,000 would cost \$30.1 billion from 2020-2022. We observed considerable variation in reinsurance programs and estimated costs between the 4 states we examined: California, Florida, Illinois, and Texas. Our projections provide updated estimates of the costs of implementing federal reinsurance programs for the individual health insurance market.

Keywords

reinsurance, states, individual health insurance market, health insurance marketplaces, Affordable Care Act

What do we already know about this topic?

Reinsurance is being considered by state and national policy makers as a strategy to stabilize the individual health insurance market.

How does your research contribute to the field?

Our research leverages national data resources to estimate the size and spending in the individual market across 4 large states and estimates the costs of a fully funded national reinsurance program.

What are your research's implications toward theory, practice, or policy?

Our estimates are in line with estimates developed by Congressional Budget Office based on proposed legislation, and contribute to evidence that can be used for ongoing policy discussions on ways to stabilize the individual health insurance market.

Introduction

Reinsurance is a common tool used in the insurance industry whereby a company cedes a portion of its insurance risk to another insurance company providing needed protection against unexpected catastrophic claims. Reinsurance has received bipartisan attention from state and federal policy makers seeking to address the current instability in the individual health insurance market. Three states implemented state-based reinsurance through the Affordable Care Act's (ACA) 1332 State Innovation Waivers in 2018 (Alaska, Minnesota, and Oregon), and another 4 states received waiver approval for implementation in 2019 (Maine,

Maryland, New Jersey, and Wisconsin).^{1,2} The 3 states that implemented reinsurance waivers in 2018 succeeded in their goal to reduce premiums, experienced mixed success

¹University of Pittsburgh, Pittsburgh, USA

²University of Minnesota, Minneapolis, USA

Received 25 September 2018; revised 11 December 2018; revised manuscript accepted 8 February 2019

Corresponding Author:

Lynn A. Blewett, University of Minnesota, SHADAC, 2221 University Ave SE, Suite 345, Minneapolis, MN 55414, USA.

Email: blewe001@umn.edu



Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons

Attribution-NonCommercial 4.0 License (<http://www.creativecommons.org/licenses/by-nc/4.0/>) which permits non-commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (<https://us.sagepub.com/en-us/nam/open-access-at-sage>).

in their goal to increase enrollment, and met their goal of maintaining insurer participation.³

Reinsurance is not a new idea. The ACA included a temporary reinsurance program from 2014-2016 to address foreseen instability of the individual market with the implementation of the Health Insurance Marketplaces. The ACA's reinsurance program used an *attachment point* (the point at which reinsurance is triggered) of \$45,000 for 2014 and 2015 and raised it to 90 000 for 2016.⁴ The *reinsurance cap* (the point at which no additional reinsurance payments are made) was set at 250,000 for all 3 years. The range reimbursed by reinsurance (defined by the attachment point and the reinsurance cap) is referred to here as the *reinsurance corridor*. The ACA's reinsurance program reimbursed 100% of the claims submitted within its reinsurance corridor in 2014, 55.1% in 2015, and 52.9% in 2016. Eligible claims of \$7.9 billion were submitted by 437 insurers in 2014, \$14.3 billion by 497 insurers in 2015, and \$7.5 billion by 445 insurers in 2016. An actuarial analysis showed that the availability of reinsurance reduced premiums by 10% to 14% in 2014, 6% to 11% in 2015, and 4% to 6% in 2016.⁵

The Centers for Medicare and Medicaid Services (CMS) recently updated its risk adjustment program—another program to protect insurers against the risks of covering sicker enrollees—for 2018 by adding an additional reinsurance component. This program pools the individual and small group markets across the states and pays 60% of claims that exceed \$1 million.⁶ The costs are spread across all states and paid for through an adjustment to the risk adjustment transfer.

The current administration has promoted reinsurance as an option to stabilize states' individual markets. Former Health and Human Services (HHS) Secretary Price sent a letter to all governors at the end of March 2017, encouraging states to submit Section 1332 State Innovation Waivers to implement state-operated reinsurance programs.⁷ In addition, pressure continues for Congress to explicitly fund state-based reinsurance outside of the 1332 waiver process. In January 2018, the executive directors of the 10 state-based marketplaces sent a letter to the Senate Health, Education, Labor, and Pensions Committee asking the Congress to support federal financing of reinsurance.⁸ In March 2018, Senators Alexander and Collins proposed the Bipartisan Health Care Stabilization Act of 2018, which included \$10 billion in funding for reinsurance-like programs for 3 years.⁹

The ACA's State Innovation Waivers allow states to seek pass-through federal funding, or the amount that results from a reduction in federal spending on Marketplace subsidies, to support the financing of state-based reinsurance. States can request the difference between what the federal government would have paid in subsidies and the reduced amount of federal subsidies that result based on the proposed state innovation. That is, whatever savings are achieved in terms of reduced premium tax credits (PTCs)

can be "passed through" to states to fund their reinsurance programs.¹⁰ Seven states have received CMS approval of 1332 waivers for reinsurance as of December 2018 (Alaska, Maine, Maryland, Minnesota, New Jersey, Oregon, and Wisconsin); 2 states (Oklahoma and Iowa) submitted waiver applications that were withdrawn; and several states are considering 1332 reinsurance proposals, including Louisiana, New Hampshire, and Idaho, which all have drafted proposals.¹

CMS-approved, state-based reinsurance programs use 2 basic approaches to program design. Of the 7 approved waivers, Minnesota, New Jersey, Maryland, Oregon, and Wisconsin use a traditional reinsurance approach whereby the insurance carrier pays a premium to cede risk to a reinsurance carrier who pays a portion of the carriers' claims within a specified reinsurance corridor. Minnesota's insurance carriers, for instance, do not cede risk to the reinsurance carrier through an insurance premium. The state of Minnesota pays the premiums using state funds from the general fund and a 2% provider tax. Minnesota's reinsurance carrier reimburses 80% of claims between \$50,000 and \$250,000, and Oregon pays 50% of claims up to \$1 million (with attachment point to be determined). Wisconsin proposes to pay 50% of claims between \$50,000 and \$250,000, Maryland 80% of claims between \$50,000 and \$250,000, and New Jersey 60% of claims between \$40,000 and \$215,000.¹¹

Alaska used an alternative approach in their proposal: a condition-specific model in which reinsurance pays 100% of all claims for individuals with one or more of 33 specific conditions.¹² Maine proposed a hybrid model with an automatic ceding of risk for claims of those with one of 8 conditions,¹³ plus traditional reinsurance corridor approach for all others. For both groups, reinsurance will pay 90% of claims between \$47,000 and \$77,000 and 100% of claims in excess of \$77,000.¹⁴

States' experiences with the HHS waiver approval process have been mixed. Alaska's 1332 reinsurance application was submitted in December 2016 and approved in July 2017.¹² Minnesota's reinsurance proposal was submitted in May 2017 and approved in September 2017.¹⁵ However, Minnesota's request for pass-through funding for its Basic Health Program (BHP) was denied, creating a projected loss of \$277 million in federal funds for fiscal years 2018-2020.^{16,17} Despite these varied experiences, states continue to assess the viability of reinsurance as a mechanism to stabilize their markets.² Oregon's experience, in which their waiver was approved in less than 2 months, suggests that approval may be shorter for states using an approach already approved by CMS.

In addition to state-proposed 1332 reinsurance waivers, Congress has considered several proposals for a federal reinsurance program. A federal program would support state-based reinsurance through a direct appropriation for

financing outside of the ACA waiver approval process. It is with these initiatives in mind that we estimate the costs of a federal reinsurance program. Specifically, we use national survey data on health insurance spending to estimate the costs of implementing national and state-based reinsurance programs in 2020, varying the size of the reinsurance corridors and payment rates. We also estimate the costs of a federal reinsurance for 4 large states: California, Florida, Illinois, and Texas. These estimates of the size and costs of reinsurance will help policy makers to better understand the potential costs of implementing national and state-based reinsurance programs.

Methods

Data

We estimate state-level health care expenditures in the individual market and then model the costs of national and state-level reinsurance programs. We impute total health care expenditures for nonelderly adults with private nongroup health insurance in the 2015-2017 Current Population Survey Annual Social and Economic Supplement (CPS-ASEC) using health care spending data from the 2007-2016 Medical Expenditure Panel Survey Household Component (MEPS-HC). The CPS data cover the years 2014-2016.

The CPS is an annual, nationally representative survey of individual household members that collects extensive social and economic data for the previous year. The CPS includes data on out-of-pocket expenditures by individuals but does not include expenditures by insurers. The MEPS is a smaller, nationally representative survey of individual household members with information on health care-related characteristics, including insurance coverage, demographics, and total expenses. By itself, the MEPS is not suitable for our analysis because of its small sample of individuals in the nongroup insurance market since the implementation of the ACA: 3282 for 2014-2016.

Analysis

The CPS lacks information on total health care expenditures, and the MEPS has an insufficient sample size. We cannot use either in isolation to estimate reinsurance costs. We overcome this limitation by using the information on health care expenditures provided in the MEPS to impute health care expenditures for the larger sample of 35,053 respondents with nongroup coverage from the 2015-2017 CPS (data years 2014-2016). We use data on MEPS respondents for both the nongroup and group insurance markets—138,001 respondents—to impute health care expenditures for CPS respondents. In developing its 2016 risk adjustment model, CMS used group market data to

model individual market health care expenditures. They concluded that “characteristics of the individual market enrollees . . . tended to be closer to enrollees in employer-sponsored insurance [than Medicaid].”¹⁸ We take a similar approach to CMS in that we also use group market data to model individual market health care expenditures.¹⁸

We use predictive mean matching to impute the square root of total health care expenditures for the nonelderly with nongroup insurance in the CPS, using total health care expenditure and demographic data from the MEPS that are also available in the CPS. Predictive mean matching is a multiple-imputation technique that uses linear regression to match missing cases to nonmissing cases (eg, matching CPS respondents to MEPS respondents).¹⁹ We perform predictive mean matching with 5 nearest neighbors. That is, we assign an MEPS respondent’s expenditures by randomly selecting from the observed expenditures of the 5 CPS respondents whose predicted expenditures are closest to the predicted expenditures of the MEPS respondent. Expenditures are predicted based on a linear regression described below. Unlike other multiple-imputation techniques, predictive mean matching is ideal for our analysis because it preserves the skewed distribution of health care expenditures observed in the MEPS.

We define total health care expenditures as the sum of health care expenditures for an individual, excluding out-of-pocket payments. For the per capita estimate, we divide total payments by the total population (eg, individuals with zero expenditures are included in the calculation). We model total health care expenditures as a function of the following demographic characteristics present in both the CPS and the MEPS: coverage type (group, nongroup); self-reported health status (excellent, very good, good, fair, poor); age (0-17; 18-25, 26-44, 45-54, 55-64); sex (male, female); race (non-Hispanic white, Hispanic, African American, Asian, other); education (below high school, high school or General Education Development [GED], some college, college graduate); federal poverty level (0%-100%, 100%-250%, 250T-400%, 400%+); census region; and year. Children assume the education values of their parents. Health status, age category, sex, and year were all interacted with a coverage type indicator to capture differences between group and nongroup coverage by health status, age, sex, and time.

We inflate total health care expenditures to 2017 levels using the medical Consumer Price Index (CPI) and then to a 2020 level using projected health care growth as reported in the National Health Expenditures Accounts. That is, the medical CPI accounts for *observed, historical* growth in medical expenditures in previous years (2008-2017), whereas the National Health Expenditures Accounts address *projected* growth that has not yet occurred (2018-2020). We then use an additional adjustment factor of 10% to address research that shows MEPS undercounted actual

spending by this amount for individuals with private insurance.²⁰

We then use our estimates to calculate the potential costs of reinsurance programs. Specifically, we set reinsurance attachment points to \$20,000, \$40,000, and \$60,000; payment rates to insurers within the reinsurance corridor to 70%, 80%, and 90%; and the reinsurance cap to \$250,000. Applying these reinsurance designs to 4 states, we highlight the variation in the estimates of individuals with expenses that qualify for reinsurance and reinsurance program expenditures. Results are presented as the mean of 10 imputations. We limit our state-level reinsurance estimates to the 4 states where combined 2015-2017 CPS sample size exceeds 1000—California, Texas, Illinois, and Florida—to minimize the standard deviation of our imputations.

Appendix Table A1 lists the MEPS sample size for the individual and group markets in our expenditure ranges of interest (0; 1-20,000; 20,001-40,000; 40,001-60,000; 60,001-250,000; 250,001+ US dollars). While the number of 2007-2016 MEPS respondents in the individual market is small (6765 in total), there are roughly as many respondents in each of the ranges relevant to our simulated reinsurance programs. Specifically, we observe 3393 MEPS respondents with 2020 inflation-adjusted health care expenditures from \$20,001 to \$40,000, 1040 MEPS respondents with expenditures from \$40,001 to \$60,000, and 1146 MEPS respondents with expenditures from \$60,001 to \$250,000.

Our imputation method broadly preserves the shape of the distribution of expenditures within the ranges of interest among CPS respondents, although it does underestimate expenditures relative to the MEPS respondents. For example, 631 (1.8%) CPS respondents have expenditures ranging from \$20,001 to \$40,000 in our mean imputation, but 3393 (2.46%) MEPS respondents have expenditures in the same range. This is consistent with MEPS respondents in the group market reporting higher rates of poor health status than MEPS respondents in the individual market (ie, about 14% of 2007-2016 MEPS group market respondents report poor health status, whereas roughly 10% of individual market respondents do); lower self-reported health is highly correlated with higher expenditures. These differences in the distribution of expenditures are thus a reflection of the demographics of individual market enrollees as reflected in the CPS.

Results

Table 1 displays the number, total expenditures, and per capita expenditures of individual market enrollees that would qualify for various hypothetical 2020 reinsurance programs both nationally and for the 4 states we examine. Standard deviations of total expenditures and per capita

Table 1. Number, Total Expenditures, and Per Capita Expenditures of Enrollees Qualifying for Hypothetical 2020 Reinsurance Programs by Attachment Point and State.

State, attachment point, \$	Individual market enrollees	Total expenditures, \$ billions	Per capita expenditures, \$
National			
None	19,956,636	66.4	3,326
20,000	631,112	34.1	53,964
40,000	260,146	23.7	91,207
60,000	144,421	18.1	125,553
California			
None	3,090,956	9.1	2,929
20,000	81,757	4.4	53,545
40,000	33,336	3.0	91,175
60,000	18,886	2.3	124,292
Florida			
None	1,818,582	5.8	3,166
20,000	51,713	3.0	58,336
40,000	22,496	2.2	98,004
60,000	13,282	1.8	131,807
Illinois			
None	817,375	2.8	3,427
20,000	25,628	1.4	56,188
40,000	10,589	1.0	96,010
60,000	6,364	0.8	127,381
Texas			
None	1,643,967	4.8	2,904
20,000	44,595	2.4	52,795
40,000	17,853	1.6	90,164
60,000	10,847	1.3	117,732

Note. Expenditures are converted into 2020 dollars using the medical Consumer Price Index (2008-2017) and the National Health Expenditures Accounts projections (2018-2020).

expenditures also are shown. We project that 631,112 enrollees would be covered by a federal reinsurance program with a \$20,000 attachment point. Increasing the attachment point to \$40,000 or \$60,000 would reduce covered enrollees to 260,146 and 144,421, respectively. Among enrollees that qualify for the \$20,000, \$40,000, and \$60,000 attachments points, total health care expenditures sum to \$34.1 billion, \$23.7 billion, and \$18.1 billion, respectively.

Although a reinsurance program with a \$20,000 attachment point would only cover about 3% of individual market enrollees, those enrollees' health care expenditures account for over half of individual market health care expenditures (ie, \$34.1 billion of \$66.4 billion). This skew in the distribution of health care expenditures also is made clear by the per capita expenditures of enrollees covered by hypothetical reinsurance programs; enrollees covered by a reinsurance program with an attachment point of \$60,000 have mean per capita expenditures of \$125,553, as opposed to the mean

Table 2. Projected Total Reinsurance Costs for a Hypothetical 2020 Reinsurance Program by Payment Rate, Attachment Point, State, and Year.

Attachment point, \$	Projected reinsurance costs and standard deviations, \$ billions				
	National	California	Florida	Illinois	Texas
90% Payment rate					
20,000	18.0 (1.9)	2.3 (0.4)	1.6 (0.3)	0.8 (0.2)	1.3 (0.3)
40,000	10.7 (1.2)	1.4 (0.3)	1.0 (0.3)	0.5 (0.2)	0.7 (0.2)
60,000	7.2 (0.9)	0.9 (0.2)	0.7 (0.2)	0.3 (0.2)	0.5 (0.2)
80% Payment rate					
20,000	16.0 (1.9)	2.1 (0.4)	1.4 (0.3)	0.7 (0.2)	1.1 (0.3)
40,000	9.5 (1.2)	1.2 (0.3)	0.9 (0.3)	0.4 (0.2)	0.7 (0.2)
60,000	6.4 (0.9)	0.8 (0.2)	0.6 (0.2)	0.3 (0.2)	0.4 (0.2)
70% Payment rate					
20,000	14.0 (1.9)	1.8 (0.4)	1.2 (0.3)	0.6 (0.2)	1.0 (0.3)
40,000	8.3 (1.2)	1.1 (0.3)	0.8 (0.3)	0.4 (0.2)	0.6 (0.2)
60,000	5.6 (0.9)	0.7 (0.2)	0.5 (0.2)	0.2 (0.2)	0.4 (0.2)

Note. All hypothetical programs have a reinsurance cap of \$250,000. Expenditures are converted into 2020 dollars using the medical Consumer Price Index (2008-2017) and the National Health Expenditures Accounts projections (2018-2020). Payment rates are the percentage paid to insurers within the reinsurance corridor (eg. \$40,000-\$250,000).

individual market enrollee with expenditures of \$3326. Per capita costs for enrollees with expenditures beyond the \$20,000 attachment point are higher in Florida (\$58,336) and Illinois (\$56,188) than the national average (\$53,964) and lower than average in California (\$53,545) and Texas (\$52,975). These differences indicate that a reinsurance program with the same parameters would have relatively similar costs in different states, as the per capita costs listed above are only 10% higher in the costliest state (Florida) relative to the least costly state (Texas).

Table 2 shows projected reinsurance costs using different attachment points and payment rates to insurers within the reinsurance corridor in 2020. We project that a national reinsurance program in 2020 with a \$40,000 to \$250,000 reinsurance corridor and an 80% payment rate would cost \$9.5 billion. The payment rate could be raised to 90% while keeping the attachment point at \$40,000 for an additional \$1.2 billion. Lowering the attachment point, however, is relatively costly. Lowering the attachment point to \$20,000 while keeping the payment rate at 80% would increase the cost of the program by \$6.5 billion to a total of \$16.0 billion. Changing the attachment point and payment rate simultaneously allows for wide variation in the costs of a 2020 national reinsurance program, ranging from \$5.6 billion for a

program with a 70% payment rate and \$60,000 attachment point to \$18.0 billion for a program with a 90% payment rate and \$20,000 attachment point.

Table 2 also shows the standard deviations of projected reinsurance costs for each attachment point and payment rate. The standard deviation of reinsurance costs among our imputations for a national reinsurance program with an 80% payment rate, a \$20,000 attachment point, and a \$250,000 cap is \$1.9 billion, or about $\pm 12\%$ of the mean projected costs of \$16.0 billion. Standard deviations increase relative to mean estimates for state-level estimates and higher attachment points. The ranges of projected reinsurance costs among the 10 imputations are shown in Appendix Table A2.

Limitations

Our study is subject to several limitations. First, the size of the state samples for individual market enrollment limited the scope of our analysis to 4 large-sample states with more than 1,000 2015-2017 CPS respondents. Second, the MEPS does not survey individuals with extremely high health expenditures whose health complications may prevent them from being surveyed.²¹ Third, the MEPS tends

to undercount expenditures for the privately insured. The second and third limitations may have led to a downward bias in our estimates. While the literature suggests our 10% adjustment is reasonable given the literature on the subject, it is likely that this adjustment varies across the distribution of health expenditures.²² These limitations are similar to those of other researchers who use the MEPS to estimate expenditures.²³ Another limitation is that our data do not reflect the changes to the individual health insurance market that have occurred under the current Administration in the past year.²⁴ These changes may reduce participation in the individual health insurance market, particularly among the healthiest enrollees. However, because the sickest enrollees are likely to remain enrolled, reinsurance costs may not decrease substantially.⁹ Finally, because of the scarcity of MEPS respondents with extremely high expenditures, we are unable to project the costs of reinsurance programs that cover the enrollees with the highest expenditures first, which are more effective for reducing insurer risk.²⁵

Discussion

The future of the individual health insurance market remains uncertain. While more insurers are participating in the individual market in 2019 than in 2018, enrollment is down.²⁶ As of December 6, 2018, enrollment in the Federally Facilitated Marketplace had decreased by 10.5% relative to the previous year. Low enrollment may be a result of the changing regulatory environment for the individual health insurance market, which includes the elimination of the tax penalty associated with the individual mandate, new regulatory flexibility to allow for the marketing of noncompliant ACA health plans,²⁷ and decreases in funding for enrollee outreach.²⁸

Reinsurance, however, continues to enjoy broad bipartisan support as a means to stabilize the individual market. On November 29, 2018, CMS Administrator Seema Verma reiterated her support for state-based reinsurance programs as part of states' risk stabilization strategies through the ACA's 1332 waiver program.²⁹ Moreover, several more states are currently exploring and/or initiating the 1332 waiver process for reinsurance for their states.³⁰

Our model provides updated estimates of the cost of a 2020 reinsurance program. We project that a reinsurance program with an 80% payment rate and a \$40,000 to \$250,000 reinsurance corridor would cost \$9.5 billion in 2020, or \$30.1 billion for 2020-2022 (assuming 5.5% inflation in medical expenditures). The \$30 billion allotted for reinsurance-like programs in the Bipartisan Health Care Stabilization Act could thus support a federal reinsurance program with these parameters.³¹ Our estimates also describe the costs of reinsurance programs with other parameters. We find little heterogeneity in the costs of state-based reinsurance programs.

It is curious that currently only 9 states have submitted 1332 waivers to set up a reinsurance program despite their bipartisan appeal. A recent study by Hall talked to stakeholders across 10 states and provides some insight.³² First, the authors found that many stakeholders thought that reinsurance would have only a modest impact on premiums (ie, a one-time reduction of 10%-20%). Second, there were also stakeholders who felt that the continued pressure on the market with changing market rules would eventually completely disrupt that market with or without reinsurance. Finally, the required state contribution to the costs was seen by some as a barrier to participation, especially for those states with significant budget constraints. This issue might be resolved with a budget neutral reinsurance program in which each insurer is charged a per capita reinsurance program premium in the amount of expected per capita reinsurance payouts.³³ Such a reinsurance program would not require public financing and is similar to the one currently implemented through the CMS Marketplace risk adjustment program.

It is important to note that reinsurance should be considered as just one component of a successful stabilization package and, if implemented in isolation, can only do so much to lower premiums, increase enrollment, and encourage insurer participation. Altering risk adjustment payments, recreating a risk corridor program, and altering the structure of PTCs are all potential tools to help stabilize the market that could be implemented alongside reinsurance.

Reinsurance also comes with trade-offs. Insurers' incentive to contain health care expenditures for enrollees within reinsurance corridors is reduced as they do not bear the full cost of those expenditures. Uniformly increasing PTCs or directly subsidizing healthy individuals who otherwise would not join the individual market may be more efficient ways to increase enrollment and lower premiums,³⁴ though political support for such changes does not match the support enjoyed by reinsurance. Furthermore, allocating federal support to reinsurance programs may disproportionately benefit states with relatively sicker individual market risk pools. While this is an attractive feature for policy makers seeking to help those individual market enrollees with the greatest health care needs, this may pose an obstacle to gaining political support for such programs. We do not find evidence of differences between state reinsurance program costs in our analysis; however, this may yet be the case in smaller states that we were unable to include in our analysis due to lack of sample size.

As states continue to apply for and implement reinsurance programs, richer data will be necessary to examine the state-specific costs and benefits of such programs. To this effect, future researchers should leverage the increased availability of all-payer claims databases and the richness to better understand how insurer participation, insurer plan offerings, and public expenditures are affected by reinsurance programs.

Appendix

Table A1. Sample Size of Medical Expenditure Panel Survey by Insurance Market and Expenditure Range.

Expenditure range (\$)	Raw sample size			
	2007-2016 Medical Expenditure Panel Survey			2015-2017 Current Population Survey
	Group	Individual	Both	Individual (imputed)
0	23,953	1,845	25,798	8,055
1-20,000	101,816	4,723	106,539	25,938
20,001-40,000	3,285	108	3,393	631
40,001-60,000	1,004	36	1,040	192
60,001-250,000	1,098	48	1,146	217
250,001+	80	5	85	20
Total	131,236	6,765	138,001	35,053

Note. Expenditures are converted into 2020 dollars using the medical Consumer Price Index (2008-2017) and the National Health Expenditures Accounts projections (2018-2020).

Table A2. Range of Projected Total Reinsurance Costs for a Hypothetical 2020 Reinsurance Program by Payment Rate, Attachment Point, State, and Year.

Attachment point, \$	Minima and maxima of projected reinsurance costs, \$ billions				
	National	California	Florida	Illinois	Texas
90% Payment rate					
20,000	16.7	1.8	1.0	0.4	0.6
	19.7	2.9	2.1	1.2	1.6
40,000	9.6	0.9	0.5	0.2	0.3
	11.9	1.9	1.6	0.9	1.0
60,000	6.3	0.6	0.3	0.1	0.1
	8.2	1.4	1.2	0.7	0.7
80% Payment rate					
20,000	14.8	1.6	0.9	0.4	0.6
	17.5	2.6	1.8	1.1	1.4
40,000	8.5	0.8	0.5	0.2	0.2
	10.6	1.7	1.4	0.8	0.9
60,000	5.6	0.5	0.3	0.1	0.1
	7.3	1.3	1.1	0.6	0.7
70% Payment rate					
20,000	13.0	1.4	0.8	0.3	0.5
	15.3	2.3	1.6	1.0	1.2
40,000	7.4	0.7	0.4	0.1	0.2
	9.2	1.5	1.2	0.7	0.8
60,000	4.9	0.4	0.3	0.1	0.1
	6.4	1.1	1.0	0.5	0.6

Note. Projected costs and standard deviations are shown in Table 2. All hypothetical programs have a reinsurance cap of \$250,000. Expenditures are converted into 2020 dollars using the medical Consumer Price Index (2008-2017) and the National Health Expenditures Accounts projections (2018-2020). Payment rates are the percent paid to insurers within the reinsurance corridor (eg, \$40,000-\$250,000).

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The author received funding from Robert Wood Johnson Foundation.

ORCID iDs

Coleman Drake  <https://orcid.org/0000-0002-0618-0626>

Lynn A. Blewett  <https://orcid.org/0000-0003-0409-8394>

References

1. State Health Access Data Assistance Center. Resource: 1332 *State Innovation Waivers for State-Based Reinsurance*. <http://www.shadac.org/publications/resource-1332-state-innovation>

- waivers-state-based-reinsurance. Published September 18, 2018. Accessed December 10, 2018.
2. Howard H. More States Looking to Section 1332 Waivers. *State Health & Value Strategies* [Blog]. Woodrow Wilson School of Public and International Affairs. <http://www.shvs.org/more-states-looking-to-section-1332-waivers/>. Published August 22, 2018. Accessed August 2, 2018.
 3. Schwab R, Curran E, Corlette S. *Assessing the Effectiveness of State-Based Reinsurance: Case Studies of Three States' Efforts to Bolster Their Individual Markets*. Washington, DC: Georgetown University Health Policy Institute. file:///C:/Documents%20and%20Settings/NTOT5191/My%20Documents/Downloads/RWJF_Georgetown_StateBased-Reinsurance-11.30.18.pdf. Published November 30, 2018. Accessed December 7, 2018.
 4. Centers for Medicare & Medicaid Services. *Transitional Reinsurance Program: Pro Rata Adjustment to the National Coinsurance Rate for the 2014 Benefit Year*. Center for Consumer Information & Insurance Oversight. <http://www.cms.gov/CCIIO/Programs-and-Initiatives/Premium-Stabilization-Programs/The-Transitional-Reinsurance-Program/Downloads/RI-Payments-National-Proration-Memo-With-Numbers-6-17-15.pdf>. Published June 17, 2015. Accessed August 1, 2018.
 5. Uheroi NK, Liu EC. *The Patient Protection and Affordable Care Act's (ACA's) Transitional Reinsurance Program*. Congressional Research Service. <https://fas.org/sgp/crs/misc/R44690.pdf>. Published August 23, 2017. Accessed August 8, 2018.
 6. Jost T. CMS Finalizes New Marketplace Payment Rule, Effective January 17, 2017. *Health Affairs* [Blog]. <https://www.healthaffairs.org/doi/10.1377/hblog20161218.058014/full/>. Published December 18, 2016. Accessed August 1, 2018.
 7. Price TE. *Letter to State Governors*. Department of Health & Human Services. https://www.cms.gov/CCIIO/Programs-and-Initiatives/State-Innovation-Waivers/Downloads/March-13-2017-letter_508.pdf. Published March 13, 2017. Accessed August 9, 2018.
 8. National Academy for State Health Policy. *Letter to Congressional Leadership on Support of Reinsurance*. State Health Exchange Leadership Network. www.nashp.org/wp-content/uploads/2018/02/SBM_Letter_Reinsurance_1.30.18_Signatures.pdf. Published January 30, 2018. Accessed August 1, 2018.
 9. Senate Republican Policy Committee. *Legislative Notice: Bipartisan Health Care Stabilization Act of 2018*. <https://www.rpc.senate.gov/legislative-notices/bipartisan-health-care-stabilization-act-of-2018>. Published March 22, 2018. Accessed July 31, 2018.
 10. Busch F, Houchens PR. *Reinsurance and High-Risk Pools: Past, Present, and Future Role in the Individual Market*. Milliman. <http://www.milliman.com/insight/2017/Reinsurance-and-high-risk-pools-Past-present-and-future-role-in-the-individual-health-insurance-market/>. Published June 6, 2017. Accessed August 8, 2018.
 11. Blewett LA. How Minnesota is Stepping Up to Preserve Its Individual Market. *Health Affairs* [Blog]. <https://www.healthaffairs.org/doi/10.1377/hblog20170418.059687/full/>. Published April 18 2017. Accessed August 8, 2018.
 12. Centers for Medicare & Medicaid Services. *Alaska: State Innovation Waiver Under Section 1332 of the PPACA*. Center for Consumer Information & Insurance Oversight. <https://www.cms.gov/CCIIO/Programs-and-Initiatives/State-Innovation-Waivers/Downloads/Fact-Sheet.pdf>. Published July 11, 2017. Accessed August 2, 2018.
 13. State of Maine. Executive Summary and Application for Waiver Under Section 1332 of the Patient Protection and Affordable Care Act. https://www.maine.gov/pfr/insurance/mgara/section_1332_innovation_waiver_application.pdf. Published May 9, 2018. Accessed August 2, 2018.
 14. Record TM. *Executive Summary and Application for Waiver Under Section 1332 of the Patient Protection and Affordable Care Act*. State of Maine, Department of Professional and Financial Regulation. <https://www1.maine.gov/pfr/insurance/mgara/Complete%20Maine%201332%20Waiver%20Application%20and%20Exhibits.pdf>. Published May 9, 2018. Accessed August 7, 2018.
 15. Centers for Medicare & Medicaid Services. *Minnesota approval letter and signed Stated Terms and Conditions (STC)*. Center for Consumer Information & Insurance Oversight. <https://www.cms.gov/CCIIO/Programs-and-Initiatives/State-Innovation-Waivers/Downloads/Approval-Letter-MN.pdf>. Published October 16, 2017. Accessed July 31, 2018.
 16. Minnesota Department of Human Services. *Minnesota Care Funding*. https://mn.gov/dhs/assets/overview-minnesotacare_tcm1053-305568.pdf. Published February 16, 2018. Accessed August 7, 2018.
 17. Blewett LA. Minnesota's 1332 Reinsurance Waiver Dilemma. *Health Affairs* [Blog]. <https://www.healthaffairs.org/doi/10.1377/hblog20171204.352539/full/>. Published December 7, 2017. Accessed July 30, 2018.
 18. Centers for Medicare & Medicaid Services. *HHS-Operated Risk Adjustment Methodology Meeting: Discussion Paper*. Center for Consumer Information & Insurance Oversight. <https://www.cms.gov/CCIIO/Resources/Forms-Reports-and-Other-Resources/Downloads/RA-March-31-White-Paper-032416.pdf>. Published March 31, 2016. Accessed July 31, 2018.
 19. Little RJA, Rubin DB. *Statistical Analysis with Missing Data*. Hoboken, NJ: John Wiley & Sons; 1987.
 20. Aizcorbe A, Leibman E, Pack S, Cutler DM, Chernew ME, Rosen AB. Measuring health care costs of individuals with employer-sponsored health insurance in the United States: a comparison of survey and claims data. *Stat J IAOS*. 2012;28:43-51.
 21. Zuvekas S. *Comparing MEPS Use and Expenditure Estimates for the Privately Insured to Truven MarketScan and OptumLabs Claims Data, 2008-2013*. Agency for Healthcare Research and Quality. https://meps.ahrq.gov/data_files/publications/workingpapers/wp_17001.pdf. Published October 20, 2017. Accessed August 7, 2018.
 22. Mitchell EM, Machlin SR. Concentration of Health Expenditures and Selected Characteristics of High Spenders, U.S. Civilian Noninstitutionalized Population, 2015. Agency for Healthcare Research and Quality Statistical Brief #506. https://www.meps.ahrq.gov/data_files/publications/st506/stat506.pdf. Published December 2017. Accessed July 30, 2018.
 23. Jost T. The Tax Bill and the Individual Mandate: What Happened, and What Does It Mean? *Health Affairs* [Blog]. <https://www>

- .healthaffairs.org/doi/10.1377/hblog20171220.323429/full/. Published December 20, 2017. Accessed August 8, 2018.
24. Norris L. The ACA's Cost-Sharing Subsidies. *Healthinsurance.org* [Blog]. <http://www.healthinsurance.org/obamacare/the-acas-cost-sharing-subsidies/>. Published August 20, 2018. Accessed September 1, 2018.
 25. Arrow K. Uncertainty and the welfare economics of medical care. *Am Econ Rev.* 1963; LIII(5):941-973.
 26. Centers for Medicare & Medicaid Services. *Data on 2019 Individual Health Insurance Market Conditions*. <https://www.cms.gov/newsroom/fact-sheets/data-2019-individual-health-insurance-market-conditions>. Published October 11, 2018. Accessed December 7, 2018.
 27. Cox C, Levitt L, Claxton G. *Insurer Financial Performance in the Early Years of the Affordable Care Act*. Kaiser Family Foundation. <https://www.kff.org/health-reform/issue-brief/insurer-financial-performance-in-the-early-years-of-the-affordable-care-act/>. Published April 21, 2017. Accessed August 1, 2018.
 28. Pollitz K, Tolbert J, Diaz M. *Data Note: Further Reductions in Navigator Funding for Federal Marketplace States*. Kaiser Family Foundation. <https://www.kff.org/health-reform/issue-brief/data-note-further-reductions-in-navigator-funding-for-federal-marketplace-states/>. Published September 24, 2018. Accessed December 1, 2018.
 29. Centers for Medicare & Medicaid Services. *FACT SHEET: State Empowerment and Relief Waiver Concepts*. <https://www.cms.gov/CCIIO/Programs-and-Initiatives/State-Innovation-Waivers/Downloads/Waiver-Concepts-Fact-Sheet.pdf>. Published November 29, 2018. Accessed December 7, 2018.
 30. Cauchi R, Becker C. *Innovation Waivers: State Options and Legislation Related to the ACA Health Law*. National Conference of State Legislatures. <http://www.ncsl.org/research/health/state-roles-using-1332-health-waivers.aspx>. Published December 4, 2018. Accessed December 7, 2018.
 31. Fritzsche K, McNellis K, Laughlin A, Joint Committee on Taxation. *Bipartisan Health Care Stabilization Act of 2018: As Provided to CBO (version TAM18347)*. Congressional Budget Office. <https://www.cbo.gov/system/files?file=115th-congress-2017-2018/costestimate/bipartisanhealthcarestabilizationact.pdf>. Published March 19, 2018. Accessed August 2, 2018.
 32. Hall M. *Stabilizing and Strengthening the Individual Health Insurance Market: A View From Ten States*. USC-Brookings Schaeffer Initiative for Health Policy. <https://www.brookings.edu/wp-content/uploads/2018/07/Stabilizing-and-Strengthening-the-Individual-Health-Insurance-Market2.pdf>. Published August 13, 2018. Accessed August 21, 2018.
 33. American Academy of Actuaries. *Risk Assessment and Risk Adjustment* (Issue Brief). https://www.actuary.org/pdf/health/Risk_Adjustment_Issue_Brief_Final_5-26-10.pdf. Published May 2010. Accessed August 22, 2018.
 34. Geruso M, Layton T. Selection in health insurance markets and its policy remedies. *J Econ Perspect.* 2017;31(4):23-50.