

**Lessons from the Kansas
Reinsurance Modeling Project**

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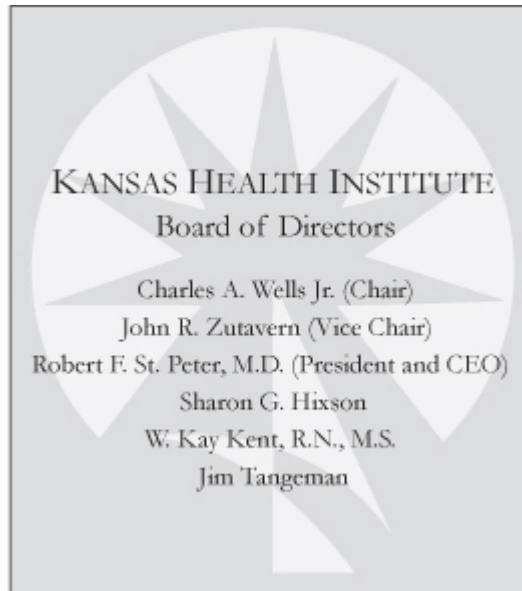
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The Kansas Health Institute is an independent, nonprofit health policy and research organization based in Topeka, Kansas.

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LESSONS FROM THE KANSAS REINSURANCE MODELING PROJECT

Kansas policymakers are interested in understanding reinsurance because of its potential to enhance access to health insurance coverage by reducing premium volatility and allowing small employers to forecast costs, thus increasing the likelihood that small employers will be able to offer health insurance to their employees. With funds received by the State Planning Grant awarded by the U.S. Health Resources and Services Administration, the Kansas Insurance Department (KID) retained Pool Administrators, Inc. (PAI) to conduct an analysis of potential reinsurance program designs. This summary highlights the basic features of the PAI analysis. The aim of this report is to simplify some of the technical issues introduced by PAI, so that this information can be more accessible to Kansans who are not technical experts. This report will also identify key assumptions and discuss how these assumptions affect some of the estimated costs of the reinsurance models. This information is important for policymakers to consider when utilizing PAI's results for policy discussions about reinsurance. For a primer on reinsurance, the reader is referred to the Kansas Health Institute (KHI) Issue Brief entitled "*Reinsurance and State Health Reform: The Role of Reinsurance as a Public Policy Tool in Kansas.*" This report is available online at www.khi.org.

BACKGROUND

The small-group insurance market is characterized by large fluctuations in premiums from year to year. This is due in part to the fact that the cost of health care is spread among relatively small groups of people. If one person suffers major illness or injury, the cost of that care is usually borne by the entire group in the form of higher premiums. Larger groups are less likely to experience sizeable premium fluctuations because their costs are distributed across a larger pool of people.

The unpredictability of future premiums may discourage small employers from offering coverage to their employees. A small business owner who wants to cover his or her employees may be able to afford the premiums one year but not the next if costs increase sharply. To guard against having to discontinue a benefit that could become unaffordable, many small employers may choose not to offer health insurance in the first place.

While this is a rational business decision, it helps to explain why the ranks of the uninsured are filled with people who work for small businesses. In Kansas, 36 percent of uninsured adults are employed by businesses of fewer than 25 people. Not surprisingly, policymakers in many states, including Kansas, are actively exploring innovative ways to make health insurance coverage more affordable for small employers.

A DESCRIPTION OF REINSURANCE

Reinsurance is among the policy options under consideration in Kansas to help stabilize the cost of health insurance for small employers. It is a mechanism for distributing risk across larger pools of people, thereby reducing premium volatility. More specifically, if a member of a small group suffers a major illness or injury, the primary insurer only pays a portion of the cost for their care; the rest is spread across other small-group insurers, to the large-group insurers and/or subsidized by the state.

To illustrate, an employee who suffers a major illness could accumulate \$50,000 in medical costs covered by insurance. Under a reinsurance plan, the cost to a primary insurer could be limited to \$5,000, leaving the remaining \$45,000 to be paid by a reinsurance carrier. This has the effect of dampening year-to-year fluctuations in costs that may be reflected in future premiums for the small group.

REINSURANCE ARRANGEMENTS: PROSPECTIVE OR RETROSPECTIVE

Reinsurance plans may have as many variations in designs as primary insurance plans. Reinsurance arrangements can be either prospective or retrospective. In prospective reinsurance, the primary insurer pays a premium to the reinsurance carrier to cover pre-defined group members — that is, specific employees and/or family members whom are at risk for high health care costs. Primary insurers identify members that have health conditions or other risk factors. This process is called ceding. Premiums are set high enough to discourage primary insurers from shifting large numbers of group members to the reinsurance carrier.

In a retrospective model, the primary insurer pays the reinsurance carrier to cover all group members if their accumulated claims exceed a certain amount. Thus, unlike prospective models, primary insurers do not have to pre-determine who may or may not incur high health care costs.

SPREADING THE COST FOR REINSURANCE

While any insurance or reinsurance program generates administrative costs as well as medical losses, there are options as to how these costs are shared. Reinsurance programs typically spread costs to groups across and outside the small-group market. Costs can be spread through a number of arrangements: across the small-group market; across the small-group and large-group markets; to only the large-group market; to all insured persons; or to all taxpayers. Some states directly subsidize the cost of reinsurance with general fund revenues, effectively spreading the cost of reinsurance to all taxpayers. Other states impose premium surcharges, spreading reinsurance costs among all insured persons. Still others use dedicated funds from tobacco taxes or tobacco settlement proceeds to pay for reinsurance programs.

LIMITATIONS OF REINSURANCE

Reinsurance is a mechanism for stabilizing health insurance costs for small employers. It is not a strategy to reduce overall medical care costs. It actually does little to address medical costs, but rather focuses on stabilizing large fluctuations in health insurance costs for small employers. This assumes that the stabilization of medical costs paid by primary insurers is actually passed on to employers through reduced premiums. However, PAI noted in their report that they are not convinced that primary insurers would respond by reducing small-employer premiums, nonetheless, they do believe that resulting price stability would enable more employers to maintain the coverage they already have.

Even with its limitations, reinsurance can be an effective strategy for helping to make health insurance more affordable for small employers in Kansas. Many states have implemented such programs and have achieved varying degrees of success. The key issues for Kansas policymakers are how such a program would be structured and funded, and how the costs of reinsurance would be shared.

PAI'S RECOMMENDATIONS FOR STRUCTURING AND FUNDING REINSURANCE IN KANSAS

Using 2000–2002 Kansas Health Insurance Information System (KHIIS) data, PAI modeled two prospective reinsurance and two retrospective reinsurance approaches. The data required significant “scrubbing” in preparation for analysis, but at the conclusion of that process PAI had information from 18 insurance carriers covering 940 small-employer groups. Based on analysis of KHIIS data and data from the U.S. Agency for Healthcare Research and Quality’s Medical Expenditure Panel Survey (MEPS), PAI recommended structuring the Kansas reinsurance program as a full retrospective reinsurance model.

THE FULL RETROSPECTIVE MODEL

PAI designed specific models of reinsurance for the purpose of their study. Based on their comparison of these models they recommended that Kansas use their full retrospective model because of its potential to remove the greatest cost from the small-group market. Based on PAI’s analysis of the full retrospective model, approximately 33 percent, or \$107 million, of small-employer claims would be paid by the reinsurer. The full retrospective model also would provide reinsurance for every group member of the primary insurer.

For modeling purposes, PAI identified \$5,000 as the cost threshold (the “attachment point”) that must be reached before the reinsurance carrier pays claims. Thus, the primary insurer is fully responsible for the first \$5,000 in covered health care claims from any single individual whom they insure. The reinsurance carrier pays 90 percent of claims between \$5,000 and \$75,000 and the primary insurer, rather than the reinsurer, is responsible for the other 10 percent (called retention). Claims in excess of \$75,000 are the responsibility of the primary insurer. This benefit limit, combined with the 10 percent retention, strongly encourages primary insurers to manage their own costs. PAI points out that this model has some similarity to the reinsurance mechanism currently being used in New York.

The full retrospective model recommended by PAI would be funded through an assessment on all regulated insurance carriers in the small- and large-group markets. The percent of costs spread outside the small-group market could vary. Based on PAI’s analysis and assumptions the percentage could be 5.95 percent or 12.91 percent. In other words, 5.95 percent or 12.91 percent

of the total costs of a full retrospective reinsurance program would need to be supported by the large-group market or through state subsidy. PAI recommended some level of state and/or federal subsidization of the reinsurance program.

THE HYBRID APPROACH

To cover the portion of claims that are not covered by the full retrospective model, those above \$75,000, PAI recommended a hybrid model. This hybrid approach would structure the reinsurance program in Kansas using the full retrospective model and a prospective model that would cover claims in excess of \$75,000. PAI recommended providing primary insurers the option to have another level of reinsurance for those individuals who incur health care claims beyond \$75,000. The primary insurer would pay a reinsurance premium for these individuals, which would contribute to a reinsurance pool. The primary insurer would have a guarantee that all claims beyond the \$75,000 would be reimbursed. It is important to note that PAI did not calculate cost estimates for a hybrid approach.

OTHER APPROACHES MODELED

Although PAI does not recommend using the following three models, it is helpful to understand the variations that were tested when considering options for reinsurance programs. The results of PAI's calculations for all four models are provided in the appendix.

The Diagnosis-Based Retrospective Model

This model resembles the full retrospective model in all respects but one. Like the full retrospective model, this model reinsures all group members of the primary insurer. However, unlike the full retrospective model, not all types of claims are covered through the reinsurance program. Only claims for health care services related to specific high-risk diagnostic codes are covered. This model encourages the reinsurance carrier to scrutinize the medical necessity and appropriateness of services related to the covered diagnoses.

The Prospective NAIC Model

Unlike the retrospective models, primary insurers in prospective models pay a premium to the reinsurance carrier for pre-determined high-risk individuals. The prospective NAIC model is based on one developed by the National Association of Insurance Commissioners (NAIC). For the high-risk individuals for which the primary insurer pays a premium, the attachment point is set at \$5,000, the reinsurance carriers pay 90 percent of costs between \$5,000 and \$75,000 and the other 10 percent remain the responsibility of the primary insurer. Unlike the full retrospective model, the reinsurance carrier would pay the full amount of claims over \$75,000.

The prospective NAIC model is funded using premiums paid by the primary carriers with identified high-risk individuals. PAI estimated, however, that in their benefit design the premiums would cover only about 60 percent of the reinsurance claims of the identified high-risk population. The remaining funding would be provided by a mandatory assessment levied against all state-regulated insurance carriers issuing policies in the small-group and large-group markets. Thus, the large-group market would subsidize the small-group market, so that the highest insurance risks of the small-group market would be spread among all insurance carriers.

The Prospective Modified NAIC Model

PAI modified the NAIC model to create the prospective modified NAIC model. The prospective modified NAIC model does not include a \$5,000 attachment point or the 10 percent retention amount for the primary insurer. In this model, the reinsurance carrier pays 100 percent of claims for the identified high-risk (ceded) individuals. Thus, there is not a \$75,000 cap like the full retrospective model. The funding approach does not differ from the prospective NAIC model.

IMPLICATIONS FOR POLICY DISCUSSIONS

Reinsurance deserves consideration as a public policy option for improving access to health insurance in Kansas. The work produced by PAI is a useful step in understanding the variety of ways reinsurance might be structured in Kansas. Using four models, the consultants illustrated a number of reinsurance designs and provided policymakers information that will inform further discussions regarding reinsurance options. However, like most studies on complex issues, there are limits to the issues studied and assumptions made. Understanding these limits and

assumptions is critical in interpreting the findings in the PAI report and in discussing what reinsurance model might be most successful in Kansas.

FACTORS FOR FUTURE REINSURANCE MODELING

The four models tested by PAI were based on mandatory participation. If policymakers do not choose to institute such a mandate, other factors could affect the outcomes presented in these models. Further analysis would be needed to test for reinsurance take-up rates by primary insurers and insurance take-up rates for small employers. The participation rates of insurance carriers and small employers could significantly affect the estimated costs and ultimate success of a reinsurance program.

Future studies should also consider dynamically modeling supply and demand behaviors over time, how insurance incentives could affect behaviors of insurance carriers and small employers, and the effect of choosing different diagnostic groups for ceding. For a clear understanding of how different factors unique to Kansas might affect a successful reinsurance model, future models could use Kansas-specific data to identify the diagnostic codes that represent high-risk Kansans to ensure that reinsurance models address these populations. Lastly, as noted in the PAI report, other states have made changes to the adjustment point, reinsurance carrier range of coverage, and the percent of retention. These adjustments were intended to make the reinsurance model best fit their individual state. Future models can test adjustments in these areas to determine the best reinsurance model for Kansas.

UNDERSTANDING KEY ASSUMPTIONS

In any study, results of analyses are affected by the data used and the assumptions made by the researchers. It is imperative to understand these key assumptions and how the findings would be affected by changes in assumptions. The following information addresses two key assumptions made in the PAI report and how estimated costs would change when different assumptions are introduced. The intent is to demonstrate that estimated costs of a reinsurance program can be affected by simple changes in assumptions.

The first assumption relates to what available data best represent the small-group market in Kansas. PAI's study used the MEPS data to calculate premium estimates. MEPS is an annual

survey conducted by the federal Agency for Healthcare Research and Quality (AHRQ). To study the small-group market in Kansas, ideally one would want data that is specific to that population. However, MEPS does not contain data that specifically represents small employers in Kansas. MEPS contains data that is specific to Kansas but is not limited to the small-group market. MEPS also contains data that represents the small-group market but it is not limited to Kansas. The choice of data elements can influence the calculation of the estimated composite premium. For example, when using MEPS data that is not limited to the small-group market but specific to Kansas, PAI’s estimated composite premium is \$5,984. Other analysts might choose to use MEPS data that is not specific to Kansas but is limited to the small-group market. In that case the estimated composite premium could be \$4,796. The number chosen for the estimated composite premium has a rippling effect on further cost estimates.

The next key assumption made was to determine how many people are insured by each employee premium. Premiums may cover an individual employee or the employee and his/her family members. If the assumption is that a premium represents more than one person, the question remains how many people the premium represents. PAI modeled two different assumptions, that 1 person was covered per premium and that 2.17 persons were covered per premium.

The following discussion demonstrates the significant effect of this assumption on the calculation of percentage of costs spread outside the small-group market. Using the estimated composite premium of \$5,984 and the assumption that a premium represents a single employee, the percentage of costs spread outside the small-group market is 5.95 percent for the full retrospective model. Of course, it is highly unlikely that 100 percent of the premiums represent only a single employee versus a single employee and his or her family. Using the calculation of 2.17 persons per premium and the estimated composite premium of \$5,984, the percentage of costs spread outside the small-group market is 12.91 percent for the full retrospective model. See Table 1 below.

Table 1: Costs spread outside the small-group market		Estimated lives covered per premium	
		1.00	2.17
Estimated composite premium	\$5,984	5.95%	12.91%

Table 2 illustrates the same information except it uses the estimated composite premium of \$4,796. Using this amount and the prior assumptions about persons covered by premiums, the percentage of costs spread outside the small-group market is as high as 16.11 percent for the full retrospective model.

Table 2: Costs spread outside the small-group market		Estimated lives covered per premium	
		1.00	2.17
Estimated composite premium	\$4,796	7.42%	16.11%

As illustrated in the above examples, the assumptions made can greatly affect the estimated costs. These costs are of great interest to policymakers. If a full retrospective reinsurance model was implemented in Kansas and participation was mandatory, the costs that would need to be paid by the large-group market and/or the state could be as low as 5.95 percent and could be as high as 16.11 percent depending on the assumptions made. With the use of different data and new assumptions, the percentage may differ even beyond what is represented in these two examples.

CONCLUSION

In conclusion, reinsurance can be an effective strategy to make health insurance more affordable for some small employers in Kansas. Many states have implemented such programs and have achieved varying degrees of success. The key issue for Kansas policymakers is how such a program would be structured and funded. PAI recommended a full retrospective reinsurance model funded through an assessment on all regulated carriers in the small- and large-group markets and some level of state and/or federal subsidization. To expand reinsurance coverage for claims in excess of \$75,000, PAI recommended a hybrid approach that combines a prospective with the full retrospective model.

Although PAI modeled four main approaches, a variety of other approaches should be modeled to fully inform policy discussions. The cost estimates for any reinsurance model can vary based on the assumptions made and built into the model. Policymakers should take this information into consideration when interpreting PAI's findings and recommendations. PAI's report is a useful step in understanding the variety of ways reinsurance might be structured. Other issues raised in this report should also be considered in future discussions of reinsurance.

APPENDIX

TABLE EXPLANATION

The first four rows (*a – d*) summarize the risk corridors, as described earlier in this report. The next two rows report the three-year dollar average of total small-group claims paid by the primary insurer (*e*), and the three-year average of the total insured small-group population (*f*), based on the consultants’ analysis of the KHIS data.

Row *g* (claims reimbursed by reinsurance) contains the results of the consultants’ repayment simulation based on the characteristics of each proposed reinsurance model. Row *h* expresses this amount as a percent of total claims in row *e*.

Row *i* contains the prospective reinsurance premium amounts specified by the actuaries. Row *j* (subtotal net losses to reinsurer) is the difference of rows *g* (claims reimbursed by reinsurance) and *i* (reinsurance premium). It also represents net savings to small-group insurance carriers. They are not liable for claims reimbursed by reinsurance, but they are liable for payment of premiums in the prospective models.

Row *k* divides row *j* by row *f*, yielding the net reinsurance “losses” per person in the insured population. Row *l* (assessment/pop) assumes that all of the reinsurance losses in row *k* are recovered through an assessment on all regulated insurance carriers in the small- and large-group markets. The small-group market represents 35.7 percent of the combined market, according to the consultant’s research using MEPS; thus, they bear the same percentage of the assessment. This is the mechanism by which risks are first reduced for, and then spread among, the small-group market.

Row *m* (assessment [small-group share]) restates row *l* as a total dollar amount rather than as a per-person rate. Row *n* subtracts the assessment amount in row *m* from the subtotal losses in row *j*, yielding reinsurance net losses in the small-group market after being offset by small-group assessments. This is equivalent to the amount by which small-group carriers’ losses are reduced through assessments to the large-group market. Row *o* states this amount as a percent of total small-group claims in row *e*.

Row p (assessed outside small groups — meaning “assessment on large groups”) restates row n . Row q (outside assessment/pop) divides row p by the total population in row f .

Row r (estimated composite premium per employee) has its source in a MEPS report issued by the U.S. Agency for Healthcare Research and Quality. MEPS reports do not actually provide premium amounts for small groups in Kansas, so PAI’s actuaries used average single and family premiums for all private establishments that offered health insurance in Kansas in 2002. They weighted these at 43% single and 57% family coverage, arriving at an estimate of \$5,984 per employee.

Row s shows PAI’s estimated percentage range for reduction of costs to the small-group market achieved by spreading costs outside that market. The estimated composite premium per employee was first reduced by 20% to eliminate the estimated administrative portion of the premium. This amount was then attributed to the total small-group population using a range of estimates of family size. The remaining medical component of the premium per person was divided into the outside assessment per person.

Table 3. Consultants' Calculations

	Source	Prospective NAIC Model	Prospective Modified NAIC Model	Full Retrospective Model	Diagnosis-Based Retrospective Model
a) Attachment point	PAI	\$5,000	\$1	\$5,000	\$5,000
b) \$5,000 – \$75,000	PAI	90%	100%	90%	90%
c) \$75,001 +	PAI	100%	100%	0%	0%
d) Funding limit	PAI	Up to 5% from SGF	Assessed over 5%	Assessment or SGF	Assessment or SGF
e) Total small-group claims	KHIIS	\$322,910,774	\$322,910,774	\$322,910,774	\$322,910,774
f) Total small-group population	KHIIS	242,100	242,100	242,100	242,100
g) Claims reimbursed by reinsurance	PAI	\$40,616,272	\$76,004,326	\$107,172,304	\$68,664,613
h) Claims reimbursed / total claims	g/e	12.6%	23.5%	33.2%	21.3%
i) Reinsurance premium	PAI	\$23,727,314	\$45,289,443		
j) Subtotal net losses to reinsurer	$g-i$	\$16,888,958	\$30,714,883	\$107,172,304	\$68,664,613
k) Net losses/pop	j/f	\$70	\$127	\$443	\$284
l) Assessment/pop (small-group share)	35.7% k	\$25	\$45	\$158	\$101
m) Assessment (small-group share)	$f * l$	\$6,029,358	\$10,965,213	\$38,260,513	\$24,513,267
n) Reins. net loss after sm. grp. assmt.	$j-m$	\$10,859,600	\$19,749,670	\$68,911,791	\$44,151,346
o) Losses as percent of claims	n/e	3.36%	6.12%	21.34%	13.67%
p) Assessed outside small groups	n	\$10,859,600	\$19,749,670	\$68,911,791	\$44,151,346
q) Outside assessment/pop	p/f	\$45	\$82	\$285	\$182
r) Estimated composite premium/EE	MEPS	\$5,984	\$5,984	\$5,984	\$5,984
s) Outside assess/pop as % of medical premium/pop	$q/(.8 * r/1.0)$	0.9%	1.7%	5.95%	3.8%
	$q/(.8 * r/2.17)$	1.95%	3.69%	12.91%	8.25%