



**Actuarial and Economic Modeling of West
Virginia's Health Insurance Exchange**

RAND Health

response to

WV Office of the Insurance Commissioner

Request for Information No INS11012

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2011 APR 28 A 10:08

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1. Introduction

The Patient Protection and Affordable Care Act (P.L. 111-148, or ACA), along with amendments attached through the Reconciliation Act (P.L. 111-152), introduced new obligations for states pertaining to health care coverage. Among these requirements are mandatory expansion of Medicaid to cover individuals in households with incomes below 133 percent of the federal poverty level (FPL) (\$14,404 for a single person; \$29,327 for a family of four), and a requirement that states develop and run health insurance exchanges through which individuals and small businesses can purchase health care coverage. The exchange, which shares many similarities with the Massachusetts Connector, is an organized marketplace of insurance offerings designed to allow individuals and small businesses an accessible array of insurance choices in a format that allows direct comparisons of plans on dimensions of price, benefits and quality. Those exchanges must be operational and self-sustaining by 2014.

Considerable flexibility exists in the details of setting up the exchange, including the option to set up multi-state exchanges or even to elect not to operate an exchange and, instead, have the Department of Health and Human Services establish and operate an exchange in the state. West Virginia is seeking outside assistance in making some of those design choices and in understanding likely future outcomes to help in planning for the exchange.

2. RAND Health response to West Virginia Request for Information

To meet the needs of WV, a successful team would be comprised of experienced health economists, an actuarial services firm familiar with the issues involved in setting up and running such an exchange, and the possibility of one or more additional outside consultants.

Health comprises the second-largest division of RAND. RAND health advances understanding of health and health behaviors and examines how the organization and financing of care affect costs, quality, and access. RAND's body of research includes innovative studies of health insurance, health care reform, health information technology, and women's health, as well as topical concerns such as obesity, complementary and alternative medicine, and post-traumatic stress disorder in veterans and survivors of catastrophe. RAND health has partnered with actuarial services firms on many occasions in the past.

The following sections describe more specifically the skills and capabilities required to make the many policy decisions required of WV in setting up its exchange in compliance with PPACA.

3. Actuarial services and economic modeling

3.1 Micro-simulation modeling

Because of the many concurrent policy changes involved in PPACA combined with the complexity of the US health insurance system, a micro-simulation model would be essential toward providing guidance on many of the questions posed in the RFI. A micro-simulation model typically uses thousands of ‘agents’, whose characteristics (usually initially populated based on survey data) can be made to resemble those of the population of a state or the US, who are able to react to stimuli and change the choices they make. In the case of health insurance modeling, those agents are individuals who are able to make decisions as individuals, as a family or as a firm. The stimuli are policy changes such as those imposed by PPACA that change insurance choices and the desirability of those choices.

In a complex system such as the health insurance system in the US, micro-simulation models are used because, unlike typical spreadsheet-based models, they allow for dynamic interactions between agents. For example, federal and state governments send a signal to firms, insurers, and people about health insurance requirements. These agents then react to the new information. For example, workers may opt to enroll in employer provided health insurance coverage because of the individual mandate. This new enrollment affects the premiums, which—in turn—may influence firm decisions. There is a domino effect—if the firm changes its decision, other workers are affected. They may then respond by altering their existing health insurance enrollment decisions. The model allows for this dynamic back-and-forth to go on until a steady state, or equilibrium, is reached.¹ Allowing for these

¹ Some micro-simulation models such as that used by the Congressional Budget Office in analysis of health reform, are not equilibrium-based. That is, agents react to policy changes, and the simulation stops. RAND’s micro-simulation model is an equilibrium-based model which allows for multiple rounds of behavior and counter-behavior until a new equilibrium is reached in which all agents are optimizing their situation.

complicated interactions is crucial to fully understand the implications of state policy decisions.

Another key advantage of a micro-simulation model in such analyses is that the output of the simulation could be easily analyzed at a later point in time along any dimension or combination of dimensions - by simply collecting the behavior changes of the relevant agents - as long as the relevant variables were present in the original dataset (for example, the number of newly insured who are age 18-24 with income between 300 and 400% of the FPL). Such requests could not be made of a spreadsheet-based model unless the exact 'cell' (population of interest) happened to be specified beforehand.

3.1.1 Desired model capabilities

As noted in the RFI, there are a number of key questions that a model should answer that would be critical to the state for planning its exchange. Some questions hinge on the model's ability to capture key characteristics of the state's population and insurance marketplace to forecast future outcomes, and some are directly related to policy and design parameters that the state will be grappling with.

Examples of effects of the ACA in West Virginia that should be answered through modeling include:

- How many people live in West Virginia, and what are their characteristics in terms of family structure, income and health status who will take up coverage both in the exchange and in Medicaid?
- How many will take up coverage at the different actuarial value tiers in the exchange?
- How will the employer insurance market change, in terms of number of employees being dropped from coverage, newly offered, or taking up coverage via the exchange?
- How will grandfathering of employer-sponsored insurance plans affect ultimate firm and individual involvement in the exchange?
- What level of competition will the exchange enjoy and what will be the implication for premiums within and outside of the exchange?

Examples of policy choices that should be answerable via the simulation model are:

- The impact of the self-insured market and policy options affecting that market on the exchange and employer coverage
- How will West Virginia's decision about firm eligibility for exchange participation influence outcomes? (That is, are firms with more than 100 workers eligible to offer coverage through the exchanges?).
- How will West Virginia's decisions about whether to combine or split the individual and small group markets for the purpose of premium determination influence outcomes?

3.1.2 RAND COMPARE

While several existing microsimulation models including that used by the Congressional Budget Office are able to incorporate many of these factors, the RAND COMPARE model incorporates all of them – most of which are showcased in recent publications using COMPARE. Critically, in the 5-state reports highlighted, the COMPARE model was adjusted so that the simulation population mimicked the population of each of the states in question (CA, TX, IL, MT, CT) using state-specific data from the American Community Survey, the Kaiser Family Foundation, the State Health Expenditure Accounts from the Center for Medicaid and Medicare Services (CMS) and other sources describing state-specific insurance or subsidy programs. The analysis done in those reports would naturally handle nearly all of the modeling-based requests in the RFI, as noted below. Other capabilities could be added if desired, using additional programming resources, or could be discussed and analyzed outside of the context of the formal model.

The following sections describe in more detail the workings of the COMPARE model, how it was adjusted to model the effects of the ACA at the state level, and summarizes several recent publications based on the model.

3.1.2.1 Using COMPARE to do State-level Estimates

The COMPARE model is based on a nationally representative population of synthetic individuals and firms derived from data sources including the Survey of Income and

Program Participation (SIPP), the Medical Expenditure Panel Survey (MEPS), and the Kaiser/Health Research and Educational Trust (Kaiser/HRET) employer survey. Individuals in the model make decisions about health insurance enrollment by comparing the benefits of an option (e.g., reduced out-of-pocket expenditure, lower risk) to its costs (e.g., higher premiums). Firms in the model decide whether and what type of insurance to offer based on a “group choice” algorithm, in which they consider preferences of their workers and the costs of providing coverage. The firm decisionmaking process accounts for the fact that some workers may be eligible for Medicaid or subsidized coverage on the exchanges, both of which reduce the incentives to the employer to offer company-sponsored health insurance. It also accounts for penalties that may be levied on firms with 50 or more workers that do not offer coverage and for the fact that firms with 100 or fewer workers will have the option to offer coverage from the exchanges. A full description of the model methodology can be found in Eibner et al. (2010).

While the original COMPARE microsimulation model was nationally representative, the underlying population in the model was adjusted using additional data sources so that it was representative of one of the 5 states for which the effects of the ACA were recently analyzed. Specifically, we reweighted all of the data in the COMPARE model to reflect the distribution of workers and firms in the state.² The reweighting procedure accounted for race, insurance status (public, employer-based, nongroup, other insurance, or uninsured), employment status, firm size, and the joint distribution of age and poverty category among all Montana residents. We also re-calculated the Medicaid eligibility status of modeled individuals using criteria specific to each state and based on a Congressional Research Service report and information from the Kaiser Family Foundation. To account for population changes over time, we calibrated the model to reflect state-specific population projections based on data from the U.S. Census and the American Community Survey. Population adjustments account for changes in the total size of the population and the distribution of the population by age, race, and sex. We did not adjust for possible differences in health status for the given state’s residents versus the nation as a whole. More important, we did not attempt to separately account for undocumented residents, as noted previously. Medicaid enrollment in the state under the status quo was adjusted to match estimates from the Kaiser Family Foundation.

² The reweighted procedure that we use is known as iterative proportional fitting.

We adjusted health care spending in the model to match the state health insurance expenditure accounts (SHEAs) reported by the Centers for Medicare and Medicaid Services (CMS). Since state health expenditure data from CMS are available only through 2004, we projected expenditures forward using historical expenditure growth rates for Montana derived from the SHEAs. In reconciling our figures with the SHEA data, we accounted for both overall spending and for spending for particular categories of payer (e.g., private expenditure, Medicaid, Medicare, other federal, and other state and local expenditures).

3.1.2.2 Recent publications using RAND COMPARE

1) How Will Health Care Reform Affect Costs and Coverage? Examples from Five States

Decisionmakers often use models, which are simplified mathematical representations of systems, to help them understand the effects of policy choices. To demonstrate the usefulness of modeling for state-level decisionmaking, RAND researchers undertook a preliminary analysis of how the ACA's key coverage-related provisions would affect insurance coverage and state government health care spending in five states — California, Connecticut, Illinois, Montana, and Texas. These states were chosen because they provide a good geographical distribution. They range in size from the two largest states (California and Texas) to one of the smaller ones (Montana).

Outcomes analyzed and included in the reports are Medicaid enrollment (both among previously and newly eligible individuals), Medicaid costs, exchange enrollment, both among individuals and employees through their employers, and changes in state employee health insurance costs.

The research brief summarizing the five state reports, along with links to each of the individual reports, can be found at http://www.rand.org/pubs/research_briefs/RB9589.html.

2) Establishing State Health Insurance Exchanges: Implications for Health Insurance Enrollment, Spending, and Small Businesses

In a project for the US Department of Labor, we used the COMPARE model to assess the effects of the ACA on employers and enrollees in *employer-sponsored health insurance*, with a focus on small businesses and businesses offering *coverage* through health insurance exchanges. Outcomes assessed include the proportion of nonelderly Americans with insurance coverage, the number of employers offering health insurance, *premium* prices,

total employer spending, and total government spending relative to what would have been observed without the policy change.

3) In addition, RAND provided analysis to assist the US Departments of Labor (DOL) and Health and Human Services (HHS) in determining the effects of employer self-insurance decisions on adverse selection in the health insurance exchanges. The study addressed the possibility that, because self-insured firms can avoid many of the small group rating regulations required by the ACA, lower risk firms would opt to self insure. This effect could lead premiums in the exchanges to rise, a phenomenon known as “adverse selection.” RAND’s analysis concluded that adverse selection is unlikely to occur unless low cost reinsurance (or “Stop Loss”) policies for self-insured firms become widely available after the ACA takes full effect.

3.2 Additional RAND experience and expertise

There are many additional questions that would be important for the state to answer in setting up its exchange, as detailed in the RFI. Many of these would require extensive expertise in insurance markets and dynamics but are not directly tied to a micro-simulation model. For example, the analysis of state-mandated requirements and of risk adjustment mechanisms, of the decision whether to merge small and non-group markets, whether to partner with other states to create regional exchanges, the marginal cost of state-mandated benefits, features of the open enrollment process and their effect on adverse selection, governance issues related to the exchange, and how the mechanisms of eligibility determination could affect churning could be partly informed by simulation modeling, but partly would require extensive knowledge and expertise on the part of the contractor – knowledge that is present at RAND. For example, the issue of whether to create regional exchanges would be informed by the potential for adverse selection and stability of the WV exchange – which are related to its ultimate size and characteristics of individuals who take up coverage as revealed by simulation modeling. But other considerations such as governance structures and working with regulatory frameworks across multiple states would also enter into the decision.

As examples of that expertise, RAND health economists and other health researchers have recently published RAND reports and peer-reviewed articles in major journals on such topics as health care spending and preventive care in high deductible plans, an analysis of payment reform models in health care, an analysis of aspects of health reform that could bend the nation's cost curve depending on how they are implemented, and an analysis of whether the US system of employer-based coverage discourages entrepreneurship.³

3.3 Desired actuarial capabilities

Other questions are more actuarial in nature such as operationalizing the actuarial value tiers, evaluating the impact of various degrees of standardization among the tiers, recommending how to enforce the minimum loss ratio, and providing additional insight into some of the questions discussed above such as features of the open enrollment process, exchange governance given West Virginia's current resources and regulatory infrastructure, and exchange/Medicaid eligibility determination would also be informed by expertise on the part of the actuarial consultant.

There are several actuarial firms that have extensive experience working with state and federal government agencies on these and related questions. RAND has worked with Actuarial Research Corporation in the past, for example, and could naturally partner with them to help evaluate the questions discussed in the RFI.

4. Recommended budget

For the aspect of the project that would be performed by RAND analysts (micro-simulation modeling and economic analysis), a rough budget would be in the range of \$100,000 to \$250,000. A key determinant of the budget would be whether additional features or functionality would have to be incorporated into the simulation model. Currently, the model has the capability to project exchange enrollment, Medicaid enrollment, take-up of employer-sponsored coverage, and state spending, under various assumptions about risk

³ For a current list of recent publications of RAND health, see <http://www.rand.org/topics/health-and-health-care.html>.

pooling and employer eligibility to participate in the exchanges. The 5 state reports described above provide examples of the type of analysis that can currently be done with the model at the lower end of the stated range. Additional investments would be required to incorporate risk adjustment and reinsurance policies into the model, to provide input on the advantages and disadvantages of a basic health plan, or to shed light on how open enrollment strategies would influence premium prices. Additional resources would likely be required to partner with outside consultants who could provide guidance on issues such as how best to enforce the MLR requirements.

5. References

Eibner, Christine, Federico Girosi, Carter C. Price, Amado Cordova, Peter S. Hussey, Alice Beckman, and Elizabeth A. McGlynn, *Establishing State Health Insurance Exchanges: Implications for Health Insurance Enrollment, Spending, and Small Businesses*, Santa Monica, Calif.: RAND Corporation, TR-825-DOL, 2010. As of March 24, 2011: http://www.rand.org/pubs/technical_reports/TR825.html

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