



CAUS

Concerned Actuaries of the U.S.

Analyzing the financial realities of our nation's public finance and social insurance programs.

A Pathway to Better Informed Healthcare Policy Decision- Making in and for Rural America

Comparative Actuarial Assessment Model (CA2M)
Rural Health Beta-Test
Phase 1 Report
Preliminary Findings
September 2022

Introduction

The Concerned Actuaries of the United States (CAUS) is a 501(c)(3) non-partisan organization dedicated to providing full, accurate, and easily understood analyses of the financial realities affecting the funding and security of our nation's public finance and social insurance programs. Our goal is to ensure that the nation's public finance and social insurance programs are designed and managed with the actuarial discipline and transparency such programs deserve and should require. To that end, CAUS:

- seeks illumination and understanding of and agreement about, the facts affecting the nation's public finance and social insurance programs and their stakeholders;
- shares information with the nation's public finance and social insurance programs' stakeholders including beneficiaries, current and future taxpayers and policy makers; and,
- advocates for rigorous standards, disciplined program costing, management metrics, and transparency.

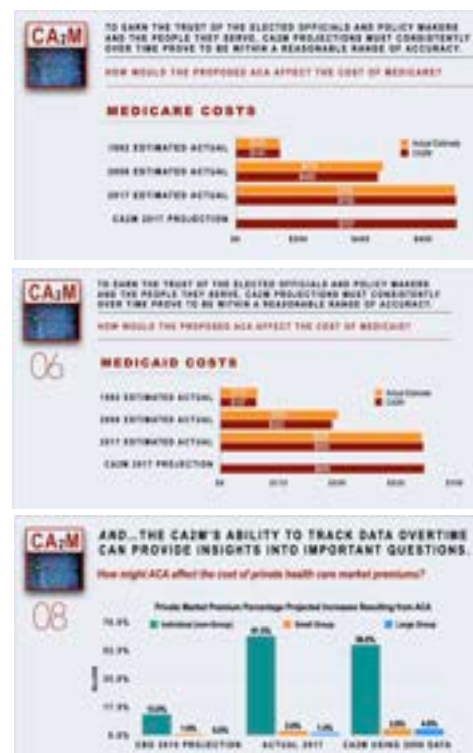
Over the past three years, we have spent considerable time and money developing an analytical tool, the **Comparative Actuarial Assessment Model (CA2M)**, capable of providing decision-makers in both the public and private sector with a more holistic understanding of the challenges and opportunities they face and the potential impact of the decisions they are considering. Given the magnitude of the dollars involved and the impact of the COVID pandemic on the system itself, CAUS has focused early usage of the CA2M on healthcare policy decision-making.

While still a work in progress, the CA2M has performed well on two major beta-tests. The first test was designed to test the CA2M's ability to predict healthcare policy decision outcomes. More specifically, the test was run on the Affordable Care Act as proposed and enacted in 2010 *utilizing only data and information that was available in 2008*. The results of that test were very encouraging. (See figure 1)

The second test was designed to test the CA2M's ability to provide decision-makers with timely, relevant analytical information that would help them determine whether or not a proposal would in-fact yield the outcomes they desired. That test was run on the *Biden for President Campaign's* proposed "Public Choice" option. CAUS has not released these test results, but once again, the test confirmed both our belief that an analytical tool such as the CA2M is needed and our confidence in its operational potential.

Both tests underscore the fact that the problems plaguing the American healthcare system are tied directly to the consistent failure to apply proven professional principles to the design, management and financing of American health care. More specifically, it is a matter of historic record that when constructing and enacting the original "system," policy makers largely ignored the critical professional principles embraced by at least five professions essential to the success and viability of

Figure 1: CA2M Affordable Care Act Beta Test



a health care system.¹ Since then, rather than recognizing the need for holistically informed, systemic reform, every major effort at reform over the past fifty years was eventually narrowly targeted at addressing a specific problem with a politically viable “solution,” none of which corrected the significant violations of basic principles that were and are making the system as a whole increasingly less effective and sustainable.

CAUS is now preparing to run a series of beta-tests dedicated to refining our understanding of, and the model’s usefulness in, the policy-development phase (i.e., the phase that proceeds and often informs legislative action). CAUS has identified rural healthcare policy development as a priority and is seeking collaborative opportunities to pursue this area of interest.

Executive Summary

A CAUS CA2M Rural Health Care Beta-Test: Phase 1 - A look at what could happen if there are no changes in federal policy

CA2M Rural Beta Test: Phase 1 Analytics

The CA2M provides holistic assessments of forty-eight intersections in a matrix measuring activity across six major market signals within eight health care coverage/reimbursement platforms. The analytics are driven by massive amounts of data, informed assumptions of behavioral patterns; and algorithms that project likely trends and outcomes.

The current CA2M data and assumptions are built on national data. The first phase of the Rural Beta-Test focused on the disconnects currently affecting rural health care on a national basis and projecting what happens to costs and health status if no changes are made in those areas.

MARKET IMPACT SIGNAL AREAS						
COVERAGE DELIVERY MECHANISMS	COST	COVERAGE	ACCESS	HEALTH STATUS	ECONOMY	SUSTAINABILITY
LARGE GROUP	1	9	17	25	33	41
SMALL GROUP	2	10	18	26	34	42
INDIVIDUAL	3	11	19	27	35	43
MEDICAID ACUTE	4	12	20	28	36	44
MEDICAID DISABLED	5	13	21	29	37	45
UNINSURED	6	14	22	30	38	46
MEDICARE	7	15	23	31	39	47
OTHER	8	16	24	32	40	48

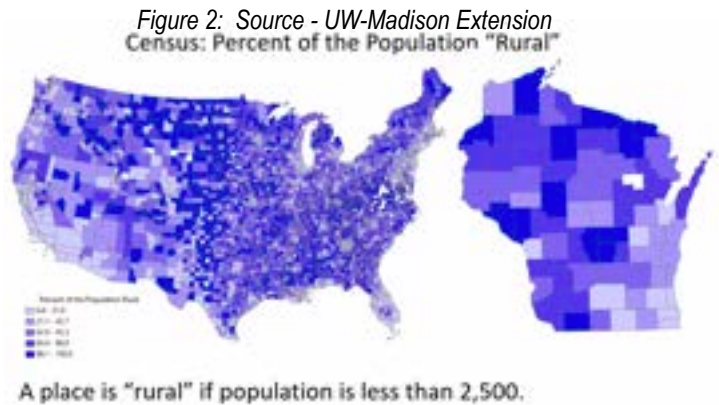
I. CA2M Rural Beta Test: Phase 1 Methodology

A. Enhance and expand the existing CA2M data-base.

In order to apply the CA2M’s current analytical capabilities to the issues described above, it was necessary to strengthen the model’s ability to qualify and quantify data points as “rural” as opposed to “urban” or “suburban.”

¹ For example, Actuaries, Health Care Professionals, Economists, Accountants, and Lawyers

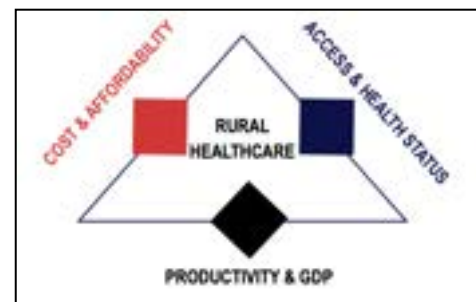
Fortunately, there is a good deal of publicly available pertinent data generated by both the public and the private sectors. In reviewing, testing and incorporating data from these sources, however, it became increasingly apparent that there is no are significant gradations of demographic (e.g., age, gender, income, location) and behavioral profiles (e.g., lifestyle, employment) within any definition of rural. As a result, it seems fair to suggest that current assessments of “rural” data may not be providing the definitional precision or meaningful behavioral assessments required to support either the design or the management of a “rural” health care system.



B. Explore assessment hypotheses relevant to the operations and needs of current rural health circumstances.

The essential value of holistic analysis is that when appropriately applied it has the power to reveal direct, indirect and induced actions, interactions and reactions across a wide range of behaviors and outcomes. Such analytical insights can in turn highlight the potential policy options most likely to produce desired outcomes while also reducing the frequency and severity of adverse unintended consequences.

Based on both its ACA and Biden Campaign Public Option beta-tests, CAUS identified three specific analytical inter-dependent intersections in which outcome improvement in rural health care is critical including: 1) cost and affordability; 2) access and health status; and 3) productivity and GDP.



In cooperation and collaboration with professionals from the provider, insurer, economist, and academic communities, CAUS then developed an assessment hypotheses for each of the three intersections that it believed would provide guidance on how best to approach the second phase of this important work.

Specifically, CAUS determined that Phase 1 of this work would test the following hypotheses:

1. **Cost & Affordability Hypothesis:** Previous CA2M Beta-tests suggested that rapidly rising enrollments in public health care programs coupled with deeper and deeper reimbursement discounts and workforce shortages had adversely impacted access to and the cost of care for those in rural areas. With that in mind, CAUS should test the hypothesis that *without significant systemic changes, health care costs will rise more significantly in rural areas than other areas over the next three and seven years.*
2. **Access and Health Status Hypothesis:** The earlier CA2M findings also indicated that provider shortages coupled with demographic shifts that increased the percentage of elderly in rural populations paralleled higher incidents of acute and chronic illnesses and shorter life

- expectancy in rural areas. With that in mind, CAUS should test the hypothesis that *without significant systemic changes, both access and rural health status will continue to deteriorate compared to non-rural areas.*
3. **Productivity and Gross Domestic Product (GDP) Hypothesis:** There is a substantial body of research highlighting the relationship between health status and workforce productivity. Similarly, public health and health status data suggest a strong correlation between income levels, strength of the tax base, economic growth and health status at the local level. With that in mind, CAUS should test the hypothesis that *without significant systemic changes that address the affordability, availability and quality of rural health care, health care status will continue to adversely affect economic productivity and GDP in rural areas.*
- C. Conduct a preliminary CA2M beta-test of the three hypotheses relevant to the operations and needs of current rural health circumstances.**
- D. Finalize the Phase 1 findings and prepare the Phase 2 scope of work.**

II. CA2M Rural Beta Test: Phase 1 - Preliminary Findings

A CAUS CA2M Rural Health Care Beta-Test: Phase 1 - A look at what could happen if there are no changes in federal policy

A. Enhanced and expanded CA2M data-base.

Between January and May 2022, CAUS identified and explored publicly available data bases to identify with more precision what constituted a rural area and population, including among others:

- U.S. Census Bureau Data: Demographic data such as ages and incomes plus data on numbers and types of providers
- AHRQ (Agency for Healthcare Research and Quality): Number of physicians, hospital beds,
- Rural health Info.org: Data on social determinants of health, numbers of facilities, incomes,
- Kaiser Family Foundation: Incomes. Differences in Hospital Bed and ICU Capacity,
- Pew Research Center: Demographics and risk characteristics of rural, suburban and urban populations over time.
- Senior Living .org: Changes in rural /urban populations over time
- Milliman: Relative differences in health care costs by area including charge and utilization levels.

The expanded data bases added a great deal of new information while also confirming earlier fundamental CA2M rural demographic trends, including that America's rural population is:

1. shrinking as a percentage of total population;²
2. aging faster than that of the nationwide population;³

² Rural population declined from 23% in 1992 to 19% in 2019.

³ In 1992 the average age of these populations was about the same, in 2008 the rural population average age was 3-4 years higher and in 2019 it was 5-6 years higher.

3. earning less than non-rural areas;⁴
4. experiencing a faster deterioration of health status;⁵
5. Having less access to providers.⁶

B. Preliminary findings from an assessment hypotheses relevant to the operations and needs of current rural health circumstances.

During the Spring and Summer of 2022, CAUS used the CA2M (newly enhanced and enriched with more rural data and information) to beta-test three hypotheses.

1. Cost & Affordability Hypothesis: Without significant systemic changes, health care costs will rise more significantly in rural areas than other areas over the next two, four and ten years.

Preliminary Findings

- a. The 1992 to 2008 to 2019 trend lines indicated that health care costs were rising more significantly in rural areas and would continue to do so over the next five and ten years.

The Preliminary Findings confirm that expectation. For example:

- i. There is a drop in percentage of rural population in the national total between 1992 and 2008, but both rural and non-rural populations have started to level off at about 19% rural. (See below Figure 1)
- ii. In both 2024 and 2029, the rural population continues to age more than the non-rural population. (See below Figure 2. Note: Every one year difference in average age translates to a 2-4 % difference in cost, depending on population age distributions.)

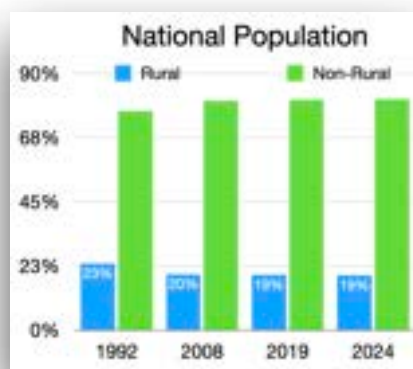


Figure 1

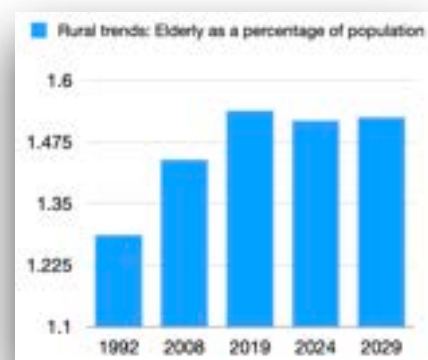


Figure 2

- ⁴ Average income in rural areas is estimated to be 20-25% lower than that of nationwide income in all years from 1992-2019.
- ⁵ Beta tests indicate that health status is deteriorating slightly faster in rural than in non-rural areas in recent years.
- ⁶ Provider Availability/Access in rural areas is roughly 88% of that nationwide in 2019. The ratio was a little higher in 1992 and 2008.

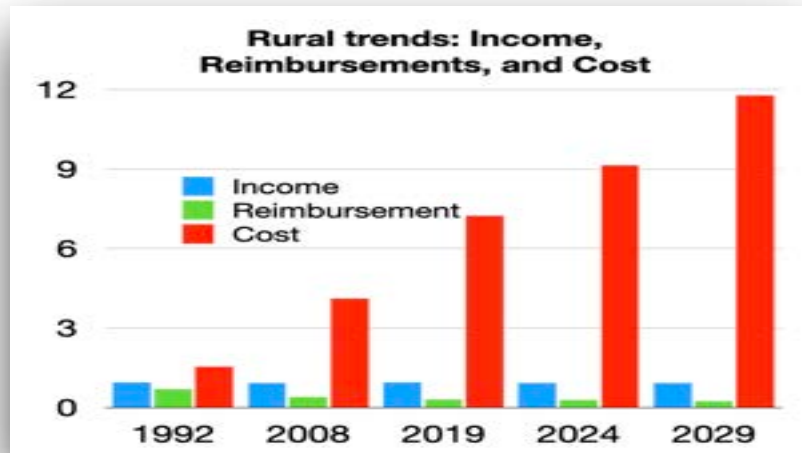


Figure 3

- iii. Deficits at Federal and State Levels created by rural populations are a significantly higher percentage of total deficits than indicated by rural population percentages. (See below Figure 3 - Note a sustained trend line in which income has essentially flatlined, while costs have increased and reimbursements have declined).

2. Access and Health Status Hypothesis: Without significant systemic changes, both access and rural health status will continue to deteriorate compared to non-rural areas.

Preliminary Findings

- a. Rural health status was already lagging behind nationwide health status thirty years ago and has continued to do so, even as the entire system grappled with rising provider workforce shortages and the Great Recession driven unemployment. Barring significant changes, this pattern is likely to worsen.
- b. 1992 to 2008 to 2019 trend lines suggest that without significant systemic changes, rural health status will continue to deteriorate compared to health status in non-rural areas.
 - i. Access continues to erode. (See below Figure 4. Note: Out-of-Pocket costs for the rural population are estimated to be roughly 25% of nationwide out-of-pocket costs in 2019 vs 15-20% in the earlier time periods, despite higher subsidies.)
 - ii. Health status is deteriorating. (See below Figure 5. Note: In aggregate, reimbursements in rural areas are 15-20% below that nationwide. This has stayed fairly consistent over the years despite all of the changes in market distributions and other factors. In addition, the ratio of rural to nationwide total costs with and without administrative costs are projected at 11-13% in all three years, with the 2019 being at the top of the range and trending upwards in 2024 and 2029.)
 - iii. Access to health care and rural health status started to lag behind nationwide health status by 2008 and like the nation's health status, was exacerbated by the Great Recession and the ACA (see below Figure 6).

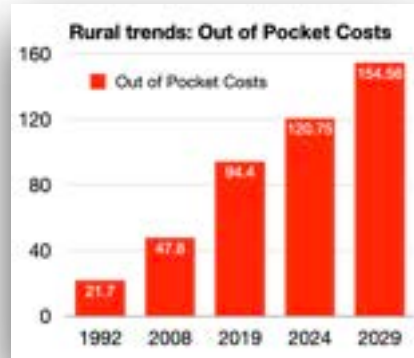


Figure 4

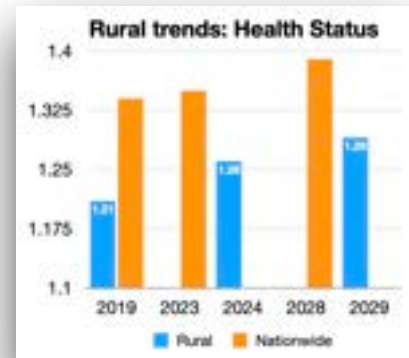


Figure 5

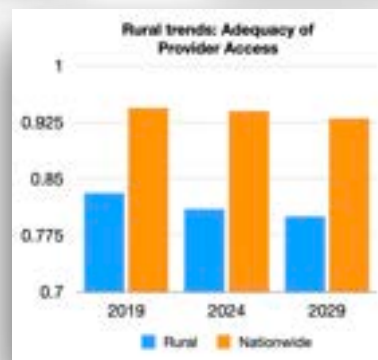


Figure 6

3. Productivity and Gross Domestic Product (GDP) Hypothesis: Without significant systemic changes that address the affordability, availability and quality of rural health care, health care status will continue to adversely affect economic productivity and GDP in rural areas.

- i. A significant increase in the percentage of national health care subsidies going to rural populations reflects lower-income levels and faster aging, both of which adversely affect rural economies (see Figure 7).

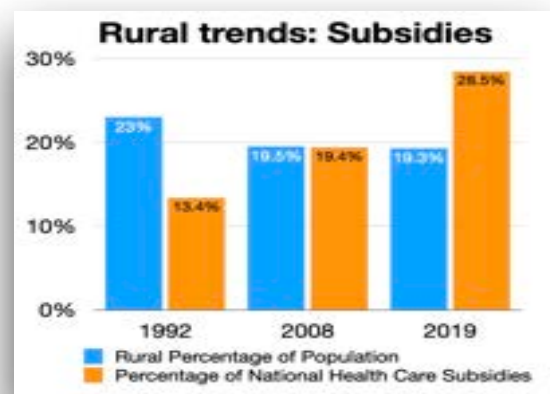


Figure 7

- ii. The share of costs paid for under private sector coverage reveals a stark example of cost shifting from the public sector to the the private sector both to employers and to employees paying out of pocket costs which in turn diverts private capital from investments in growth and productivity in rural areas (See Figure 8).

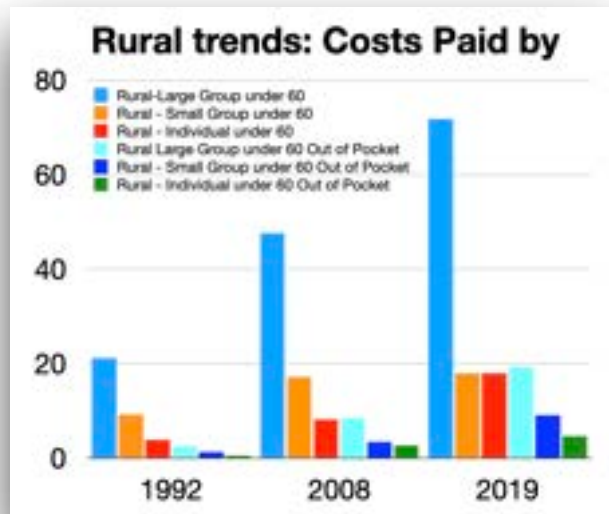


Figure 8