

NAOMI LOPEZ BAUMAN • ANGELA C. ERICKSON • CHRISTINA SANDEFUR

THE ARIZONA MEDICAID EXPANSION EXPERIENCE

BEWARE THE PEDDLERS OF COST-SHIFTING CLAIMS



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EXECUTIVE SUMMARY

As state policymakers consider expanding their Medicaid programs under the Patient Protection and Affordable Care Act (ACA), they should closely evaluate the experiences of other states. One of the arguments that convinced Arizona lawmakers in 2013 to expand the program was that employers and employees were paying a “hidden healthcare tax.”

According to this theory, when hospitals treat the uninsured, they pass along the unpaid treatment costs to private payers, leaving employers and employees with higher health insurance premiums.

Arizona lawmakers passed Medicaid expansion based largely on the claim that more people receiving health insurance under Medicaid would mean fewer uninsured seeking treatment, and therefore a dip in unpaid bills passed along to private payers in the form of higher insurance premiums.

However, ACA Medicaid expansion has had unintended consequences. Our analysis using 2007-2016 data from the Healthcare Cost and Utilization Project, the American Hospital Association Annual Survey Database, and the Centers for Medicare and Medicaid Services’ Healthcare Cost Report Information System suggests the following:

- Arizona’s Medicaid expansion did not alleviate the so-called hidden healthcare tax on the insured. Before Medicaid was expanded, proponents in 2007 claimed that the cost shifting to private payers amounted to 14 percent above hospitals’ costs, and expansion was necessary to alleviate that number. But our study found that private payers paid 27 percent above hospital costs in 2016—yes, three years into the Medicaid expansion, the proportion of cost shifting had actually increased.
- Hospitals’ list prices for services increased more for insured patients than for the uninsured. Total charges for all payment groups (public and private) went up, but Medicaid charges in Arizona’s emergency departments alone increased more than 300 percent.

The Arizona experience is a cautionary tale for lawmakers: A program should be evaluated based on outcomes, not intentions. Arizona’s expansion not only failed to deliver on its promise to alleviate supposed cost burdens on private payers, it exacerbated them. ▲

Naomi Lopez Bauman is director of healthcare policy at the Goldwater Institute. Angela C. Erickson is an economist and public policy consultant. Christina Sandefur is executive vice president at the Goldwater Institute and was lead attorney in the Arizona legal challenge of Biggs v. Betlach (2017).

HOW ARIZONA EXPANDED MEDICAID¹

Arizona is a state with a rich history of resisting federal encroachment on healthcare. Although Medicaid was established in 1965, Arizona waited until 1982 and was the last state to join the program when it established the Arizona Health Care Cost Containment System (AHCCCS), the state's Medicaid department.²

The Medicaid program was established as a joint healthcare program operated and funded by the federal government and participating states. For every dollar the state spent in the administration and provision of healthcare services, the federal government would roughly match the state's contribution.

Arizona's AHCCCS program originally covered acute care services to about 150,000 low-income children, pregnant women, aged, blind, and disabled, but today's program goes far beyond that.³ Of the 1.6 million Arizonans currently enrolled in the program, about one-fifth are adults above the poverty level.⁴

Program history

Despite having 17 years of data and lessons from other states that participated in Medicaid, Arizona still encountered tremendous unanticipated costs. When in 2000 the state opted to open its Medicaid rolls to childless adults with incomes up to 100 percent of the federal poverty level, the expansion was supposed to be funded by money from the Arizona tobacco litigation settlement. But that fund was unable to meet the explosive growth in Medicaid spending that the state experienced.

The legislature made up the difference from the general fund—which plunged the state into a “deepening budget crisis.”⁵ In 2005, for example, the cost of expanding the program exceeded the state's expectations by almost one billion dollars.⁶ In response, the legislature passed a state law retaining coverage for current Medicaid recipients but suspending future enrollment for additional childless-adult enrollees,⁷ a measure signed by then-Governor Janet Napolitano and approved by the U.S. Department of Health and Human Services.

In 2010, the Patient Protection and Affordable Care Act (ACA), popularly known as Obamacare, increased federal eligibility for the Medicaid program from “medical services for four categories of the needy: the disabled, the blind, the elderly, and needy families with dependent children” to “the entire nonelderly population with income below 133 percent of the [federal] poverty level.” For the newly eligible, the federal match rates were 100 percent for calendar years 2014 to 2016, declining to 90 percent for calendar years 2020 and beyond.⁸ Although participation in the federal Medicaid program had always been voluntary for states, the ACA imposed harsh penalties on states that chose not to expand Medicaid eligibility: They would lose all federal Medicaid funding.⁹

Arizona, still recovering from its costly experiment with expansion, sought clarification from the federal government regarding its options. The Obama administration's letter responding to then-Governor Jan Brewer made clear that if Arizona did not expand its Medicaid enrollment to the full extent provided

under the ACA, the state would lose every dollar of federal Medicaid funds.¹⁰ That letter confirmed that Medicaid had been transformed from a voluntary federal-state partnership to a de facto mandate on the states since federal Medicaid funds comprised more than 20 percent of the average state's budget.¹¹ Arizona's Gov. Brewer and 25 other states challenged the ACA's expansion mandate.

In 2012, the U.S Supreme Court ruled 7-2 that the federal government cannot force states to expand their Medicaid rolls to unprecedented levels. The ACA's provisions force states to transform their Medicaid programs from "a program for the neediest among us" to "an element of a comprehensive national plan to provide universal health insurance coverage," the court said, exceeded Congress's power under the Spending Clause. Instead, states must remain free to choose whether or not to adopt Medicaid expansion.¹²

But the next year (and only two years after the state was forced to suspend future

enrollment due to unanticipated costs under the previous Medicaid expansion), Gov. Brewer inexplicably changed course and demanded that Arizona implement the new Medicaid program she had so successfully resisted. Many legislators objected to such an expensive and risky expansion, especially because the plan lacked any taxpayer protections, such as a guarantee that when the federal government scaled back financial assistance, Arizonans would not be stuck picking up the tab.¹³

Proponents argued that expansion would be funded in large part by federal assistance, and that remaining costs to Arizona would be covered by a provider tax levied on hospitals, not by the taxpayers at large. But the expansion plan did not require an independent audit to ensure that hospitals complied with rules forbidding them from passing on the cost of expansion to patients. Nor did it even establish an annual study on the program's quality of care. As a result, 38 of 90 legislators voted against expansion.¹⁴ ▲

Charges, Costs, and Payments

SIDEBAR 1

The key to understanding uncompensated care is grasping these three elements of hospital finances: charges, costs, and payments.

- Charges are the "list prices" for services and care. The list price is the amount the hospital charges with no applied discounts. In other words, this is the highest price the hospital will charge for a service.
- Costs are the amount hospitals must charge to break even for the provided services and care.
- Payments are what payers (private insurers, government insurance programs, individuals, etc.) actually pay the hospitals for the services and care.

Uncompensated care is defined as the total price of all healthcare services provided to patients who are either unable or unwilling to pay their bills. The amount is based on

hospital charges, not the actual cost the hospital incurs. The uncompensated care total can include both charity care (services the hospital willingly gives away for free) and bad debt (services the hospital expects to be paid for but is not).

Businesses often charge different prices to different customers. An auto repair shop might charge a lower labor rate to a taxicab company with a fleet of cars consistently needing service than to someone who walks in off the street seeking a repair.

Similarly, a department store might put a \$50 price tag on a sweater. The store may sell that same sweater to its credit card holders for a 10 percent discount or to its employees at a 20 percent markdown. Even if the store paid \$25 for the sweater, it might charge only \$20 during a seasonal clearance. The store is willing to sell the sweater for below actual cost because that revenue goes toward other expenses such as advertising and holiday personnel.

In much the same way, some hospital patients are charged full price for services. Preferred customers (whose insurance company includes the hospital among its network providers) might pay a lower price. The idea that different payers are charged different prices does not necessarily reflect cost shifting. ▲

CLAIMS TO JUSTIFY MEDICAID EXPANSION

The most common justification for Arizona's Medicaid expansion was that Medicaid expansion would reduce the "hidden healthcare tax," where employers and employees pay higher health insurance premiums to cover hospitals' uncompensated care charges¹⁵ and costs.

A 2009 study by the Lewin Group, an insurer-owned healthcare consulting and research firm, commissioned by the Arizona Chamber Foundation,¹⁶ claimed the following:

"Given the low margins and the level of cost efficiency, Arizona hospitals will need to recoup the AHCCCS payment shortfalls through higher payments from private payers in order to maintain the current levels of profitability, which could increase the cost

shift for each privately insured person by 16 percent from \$398 to \$462 by 2010."¹⁷

In other words, the Lewin Group study argued that if Arizona did not further expand its Medicaid population under the ACA, cost shifting from the uninsured to private payers would continue. The idea is that some payers pay higher prices (above cost) to offset the lower prices (below cost) of other payers.

Cost-shifting claims have been repeatedly debunked

But that conclusion is not supported by the substantial academic literature on hospital cost shifting and cost shifting related to uncompensated care for the uninsured,¹⁸ which generally concludes that prices move

in tandem across payers, either higher or lower.¹⁹ In addition, hospitals can afford to take below-cost payers for a variety of reasons.

For example, studies show that hospitals may rely on private payers to cover fixed costs such as physical infrastructure, and on lower-paying government programs to cover the variable costs of operations. Another theory posits that higher costs are the result of hospitals dominating a particular market where they can command higher

charges from private payers due to the lack of competition. This means that hospitals with significantly higher charges than costs can take bigger losses from government payers and uncompensated care. And they can do so with little pressure to contain costs.²⁰

The Lewin Group study offered a single-year snapshot of purported cost shifting. However, with multiple years of post-expansion hospital financial data now available, the usefulness of the Lewin Group's analysis warrants reexamination. ▲

Methodology SIDEBAR 2

To evaluate and analyze the hospital cost-shifting claim, we re-created the Lewin Group calculations for 2007 and replicated them for 2016. These years represent snapshots both before and after the Medicaid expansion in Arizona.

We used data from the American Hospital Association's (AHA) Hospital Financial Database. The AHA data for 2016 includes information from the Centers for Medicare and Medicaid Services' (CMS) Healthcare Cost Report Information System for 2013 through 2016. We compare these data to an analysis of the CMS's 2007 data. Specifically, we measured payment-to-cost ratios and percent of costs for different insurance groups for Arizona's community hospitals in 2007 and between 2013 and 2016.

We calculated patient service revenues by adding up the payment-to-cost ratios multiplied by the percent of costs for each insurance group. More detailed information on this analysis can be found in Appendix I.

To analyze whether Medicaid expansion alleviated any of the so-called hidden healthcare tax, we explored changes in emergency department usage and charges from the Healthcare Cost and Utilization Project's State Emergency Department's Databases (SEDD) for Arizona in 2007 and 2016.²¹ The SEDD data provided records of each use of a hospital's emergency department when that visit did not result in the patient being admitted to the hospital. We linked the data with information from the AHA survey for each hospital. To compare 2007 to 2016, only observations from hospitals that show up in both years were used.

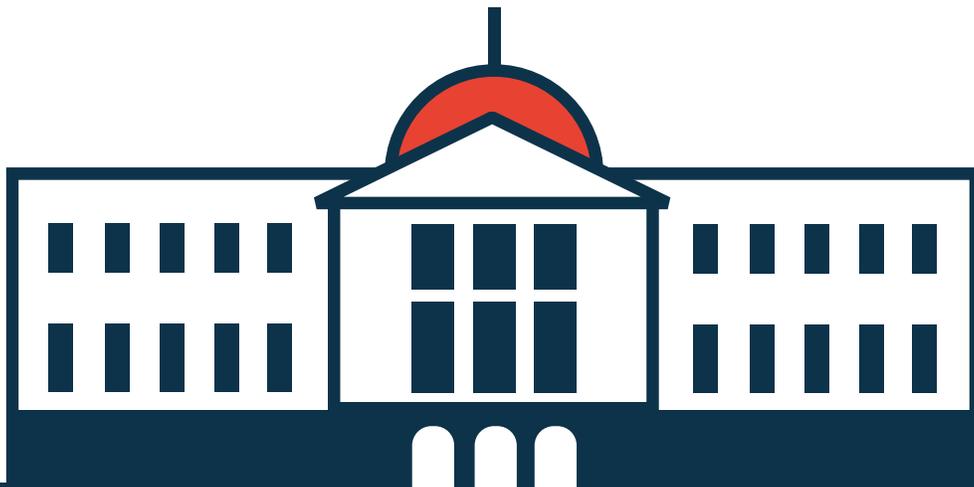
1. The Healthcare Cost and Utilization Project's State Emergency Department's Databases (SEDD) for Arizona in 2007 and 2016.
2. The AHA Annual Survey Databases for Arizona from 2007 and 2016.

If there is a hidden healthcare tax, we would expect the expansion of insurance to reduce the charges for the insured in comparison to the uninsured. We measure the hidden healthcare tax by conducting a difference-in-differences analysis. This analysis compares charges among the insured and uninsured groups in Arizona between 2007 and 2016.

The SEDD data provide charges only for emergency department use and not actual costs or payments/revenues. Charges are based on a set price for each service and item provided by a hospital. Charges are different from the actual cost to the hospital for providing those services or items. A review of charges for people of the same age, gender, and diagnosis shows a wide variation in charges between payer groups.

However, despite seeing this variation, it is possible any hidden healthcare tax is not measurable using charges because they should not vary based on whether the patient is insured. Also, every insurance provider, including the government, has negotiated a different amount it will pay. These negotiations may be where the tax lies. Given the data, charges are our best proxy to try to measure any hidden healthcare tax based on emergency department use. More information about the econometric model and results can be found in Appendix I.

We also analyzed total visits and median charges between 2007 and 2016. To test whether the changes were statistically significant and to control for the various factors that could affect the change in some visits between 2007 and 2016, this report relied on a basic ordinary least squares regression of the SEDD data (see Appendix I). ▲



ANALYSIS AND KEY FINDINGS

ACA Medicaid expansion enrollees joined the state’s program in January 2014, providing three full years of hospital finance data for evaluation. To evaluate if and to what extent the claims that Arizona’s Medicaid expansion was necessary to alleviate the shifting of uncompensated care costs to private payers, we analyzed private and public data sources for Arizona, comparing the state of hospital finances pre- and post-expansion. See Sidebar 2 and Appendix for more details on data sources and methodology.

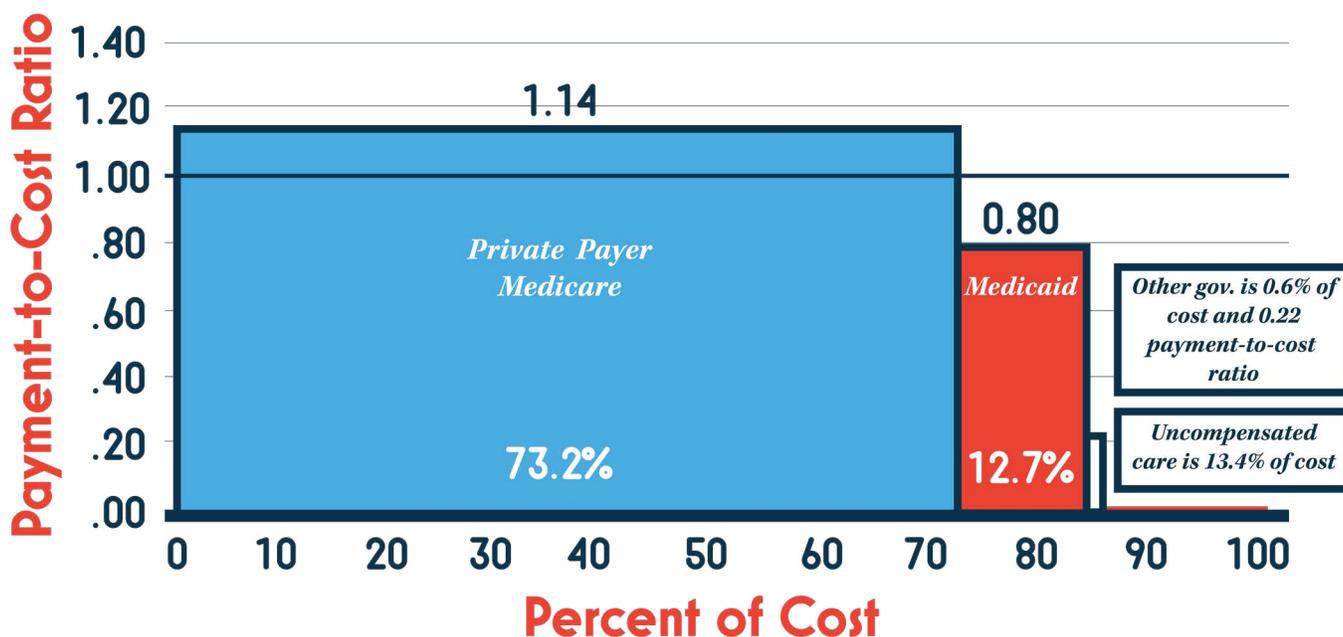
Arizona’s expansion increased private payer costs, with hospitals upping charges for all payers

1. Expansion did not alleviate the mythical “hidden healthcare tax.”

Our analysis suggests that private payers have not seen any relief from the expansion. The Lewin Group study calculated a cost shift “payment hydraulic” for Arizona community hospitals in 2007. Lewin’s researchers claimed that hospitals, to offset losses from the uninsured and government payers, were increasing prices on what the insured paid and that those increased costs were being passed along to private payers. The term “hydraulic” was used as an artful way to describe pressure to cost shift.

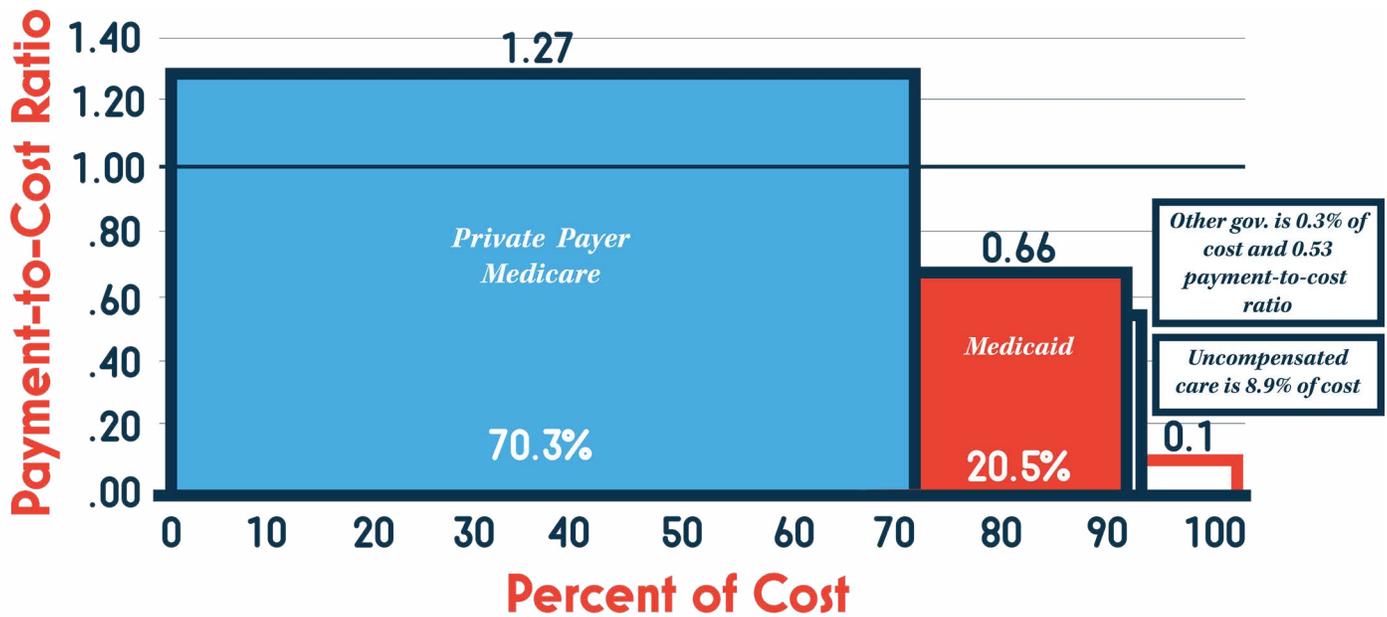
To evaluate the claims of cost shifting, as well as the impact of expansion on supposed cost

FIGURE 1:
2007 COST SHIFT PAYMENT HYDRAULIC FOR ARIZONA COMMUNITY HOSPITALS



Source: CMS’s Healthcare Cost Report Information System for Arizona 2007, and authors’ calculations.

FIGURE 2:
2016 COST SHIFT PAYMENT HYDRAULIC FOR ARIZONA
COMMUNITY HOSPITALS



Source: AMA's Hospital Financial Database for Arizona 2016, and authors' calculations.

shifting, we replicated the findings from the Lewin analysis of its 2007 data and used 2016 data to create a comparison (see Figures 1 and 2).

This analysis shows that private payers, which include insurance companies and individuals paying directly for care, are paying even more as measured by the payment-to-cost ratio than before Medicaid expansion. Using the Lewin Group study analysis, private payers and Medicare paid 14 percent more than the hospitals' costs—\$1.4 billion in 2007—to offset underpayments and losses from Medicaid and the uninsured.²² Using that same methodology, private payers and Medicare paid 27 percent more than the hospitals' costs, which was approximately \$2.1 billion. In other words, Medicaid expansion exacerbated the cost shift.

Since we know that Medicare underpays compared to private payers²³ and Medicare is included as a private payer in this analysis,²⁴ we can assume that the additional costs covered by private payers was even higher than this analysis suggests. Private payers and Medicare paid an additional \$700 million more than the hospitals' costs after the Medicaid expansion while underpayments and uncompensated care costs were reduced by only \$120 million. See Appendix I for calculations.

Arizona's Medicaid expansion did not alleviate any of the so-called hidden healthcare tax on the insured. Proponents of Medicaid expansion in Arizona expected the hidden healthcare tax to diminish as fewer uninsured sought hospital care. Instead, the supposed cost shift dramatically increased.

2. Expansion did alleviate emergency department use by the uninsured—but it now costs significantly more.

To help understand why private payers might now be paying more, we decided to examine hospital charges. Since available hospital data and utilization data are both available, we examined hospital emergency department data and charges. Hospital emergency departments, often referred to as “emergency rooms,” provide care for patients that present for unscheduled care.

Our analysis found that fewer uninsured patients (self-pay and charity) used emergency departments in 2016. There was no change in the numbers of privately insured who used emergency departments. However, there was a drastic increase in visits by patients covered by Medicaid and Medicare insurance in emergency departments. After controlling for changes in Arizona’s population, both the decrease in the number of uninsured and increase in the number of insured covered by government insurance using the emergency department

TABLE 1:
10-YEAR CHANGE IN EMERGENCY DEPARTMENT TOTAL CHARGES AMONG PRIMARY PAYER BASED ON VISITS AND MEAN CHARGES. ARIZONA

	2007 Visits	2016 Visits	Change In Visits	2007 Mean Charge	2016 Mean Charge	Change In Mean Charges	Change In Total Charges
Medicare	234,322	484,361	107%	\$2,831	\$8,123	189%	497%
Medicaid	547,942	1,005,214	83%	\$1,793	\$4,389	145%	349%
Private Insurance	532,938	539,639	1%	\$2,419	\$6,181	155%	159%
Self-Pay	241,367	167,186	-31%	\$2,110	\$4,535	115%	49%
Charity	2,822	2,282	-19%	\$2,326	\$5,897	154%	105%
Other	110,383	85,669	-22%	\$2,123	\$5,090	140%	86%
Total	1,669,774	2,284,351	37%	\$2,205	\$5,643	156%	250%

Source: Healthcare Cost and Utilization Project’s State Emergency Department Databases (HCUP SEDD) for Arizona (2007 and 2016), and authors’ calculations.

Note: SEDD data include only emergency department visits that do not result in hospitalizations. All charges are in 2016 dollars. Other includes TRICARE, worker’s compensation, Indian Health Services, and foreign nationals.

are statistically significant (see Table I.3 in Appendix I).

In addition to increased Medicaid emergency departments visits, median charges for visits more than doubled in the 10-year period. While the median charge for an insured patient increased more than for an uninsured one, total charges also dramatically increased across all payment groups. For Medicaid visits to the emergency department, total charges increased by nearly 350 percent over that period (see Table 1).

In other words, hospitals more than tripled the total charges for Medicaid patients (representing one million visits in 2016,

up from 548,000 visits in 2007) using the emergency department. This further suggests that market power, not cost shifting, is driving charges higher.²⁵

Urban vs. rural differences in emergency department visits

The changes in emergency department use had a larger positive effect on urban hospitals compared to rural hospitals. Total charges among urban hospitals increased by 255 percent. Rural hospitals saw an overall increase of 162 percent. Most of this growth difference is accounted for by urban hospital charges increasing at twice the rate of rural hospitals (see Table 2). These differences may

TABLE 2:
10-YEAR CHANGE IN EMERGENCY DEPARTMENT TOTAL CHARGES
BETWEEN RURAL AND URBAN HOSPITALS BASED ON VISITS
AND MEAN CHARGES. ARIZONA

	2007 Visits	2016 Visits	Change In Visits	2007 Mean Charge	2016 Mean Charge	Change In Mean Charges	Change In Total Charges
Rural	100.281	127.067	27%	\$1.839	\$3.798	106%	162%
Urban	1.569.641	2.157.309	37%	\$2.228	\$5.751	158%	255%
Total	1.669.922	2.284.376	37%	\$2.205	\$5.643	156%	250%

Source: HCUP SEDD for Arizona (2007 and 2016), and authors' calculations.

Note: SEDD data include only emergency department visits that do not result in hospitalizations. All charges are in 2016 dollars.

account for some of the difference in urban and rural hospital revenues.

Even after controlling for the shifting age and gender of Arizona's population, Arizona did not see a reduction in the use of emergency departments after Medicaid expansion. While there was a significant

reduction in emergency department visits by the uninsured, the overall number of emergency department visits increased (see Table I.3 in Appendix I). Meanwhile, hospitals dramatically increased the charges for these visits. Notably, the increase in both emergency department visits and charges increased more for urban hospitals. ▲

Another Cautionary Tale for Rural Hospitals

SIDEBAR 3

When proponents of Medicaid expansion were devising a plan to draw down federal subsidies, they did so without considering how future hospitals and patients would foot the bill. For example, Green Valley Hospital opened its doors in May 2015, two years after the statute expanding Medicaid was enacted.

Beginning in 2016, Green Valley Hospital was forced to pay the Medicaid tax, which cost it \$600,000 each year.²⁶ The hospital—located about 20 miles south of Tucson, where the average age is 72²⁷—overwhelmingly treats Medicare patients, which make up about 80 percent of its patients. The hospital sees a small number of Medicaid patients (they make up only about 7 percent of its total) and receives vanishingly few Medicaid payments.²⁸ It is still responsible for paying a full share of the Medicaid tax, as the statute prescribes.

By contrast, the Mayo Clinic received a special exemption from paying the tax at all, although it still collects millions annually in Medicaid subsidies—payments that are subsidized by taxes imposed upon hospitals like Green Valley.²⁹ Thus under Arizona's system, Green Valley is forced to pay the Medicaid tax even though it barely treats any Medicaid patients, and its money is being used to benefit other hospitals. ▲

CONCLUSION

While further study and continued evaluation are needed, the big lesson for state lawmakers from Arizona's experience is that the primary beneficiaries of Arizona's Medicaid expansion are not the people, but the politically connected hospitals. The most common justification for Arizona's Medicaid expansion was the reduction of the "hidden healthcare tax," where employers and employees are left

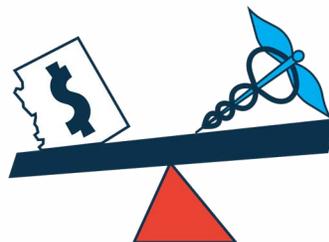
paying higher health insurance premiums resulting from hospitals' uncompensated care charges and costs.

- Arizona's Medicaid expansion did not alleviate the so-called hidden healthcare tax on the insured. This study found that if the cost shifting to private payers amounted to 14 percent more than

hospitals' costs in 2007 as Medicaid expansion proponents claimed, it increased to 27 percent in 2016.

- Hospitals' list prices, or "charges," for services increased more for the insured than the uninsured. Total charges for all payment groups (public and private) increased, but Medicaid charges reflect an increase of more than 300 percent to Arizona's Medicaid system from emergency departments alone.

Not only did Medicaid expansion fail to deliver on the promises of alleviating the hidden healthcare tax, it allowed urban hospitals to increase charges on private payers dramatically, and it created disproportionate financial benefits for urban hospitals at the expense of their rural counterparts. The experience and track record of Arizona should serve as a cautionary tale to states considering expansion. ▲

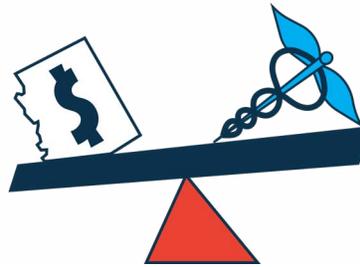


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Appendix I: Methodology and Results



HOSPITAL COST SHIFTING

We used data from the American Hospital Association's (AHA) Hospital Financial Database to analyze cost shifting. Only hospitals that reported for a full 365 or 364 days were included and those with a non-zero charge-to-cost ratio. In addition, we only looked at community hospitals, which are defined as "nonfederal, short-term general, and other special hospitals" whose services and facilities are accessible by the general public.¹ In 2016, 67 community hospitals provided data.

Below are the variables from the AHA Hospital Financial Database and the calculations used for the payment-to-cost ratios and percent of costs. We also conducted an analysis of the value of the cost shift. The calculations and totals are in Table I.1

To compare 2016 with 2007, we pulled the comparable data from the Centers for Medicare and Medicaid Services' (CMS) Healthcare Cost Report Information System for 2007 with one exception.² The net Medicaid revenue variable does not exist in the 2007 data. It was obtained by subtracting Medicaid cost from gross Medicaid revenue. In 2007, 54 community hospitals provided data.

We modeled our analysis off of the Lewin Group analysis of 2007 AHA data conducted in 2009.³ However, we were unable to perfectly replicate its analysis given the 2016 and 2007 data. Figure I.1 of the Lewin Group data is provided as a comparison to our results.

Payment-to-Cost Ratios

Private Payer & Medicare =
 (FY1 Net patient revenues - (FY1 Net revenue from Medicaid + FY1 Governmental appropriations + FY1 Revenues from state and local indigent care programs + FY1 Revenues related to SCHIP + FY1 Total other income))
 / ((FY1 Total patient revenues * FY1 Cost to charge ratio) - (FY1 Total gross Medicaid cost + FY1 Total state and local indigent care program cost + FY1 Total SCHIP cost))
 Medicaid =
 FY1 Net revenue from Medicaid / FY1 Total gross Medicaid cost

Other Government =
 (FY1 Revenues from state and local indigent care programs + FY1 Revenues related to SCHIP)
 / (FY1 Total state and local indigent care program cost + FY1 Total SCHIP cost)
 Uncompensated Care =

FY1 Governmental appropriations / FY1 Total uncompensated care cost

Percent of Patient Costs

Private Payer & Medicare =

$$\frac{((\text{FY1 Total patient revenues} * \text{FY1 Cost to charge ratio}) - (\text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost}))}{(((\text{FY1 Total patient revenues} * \text{FY1 Cost to charge ratio}) - (\text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})) + \text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})}$$

Medicaid =

$$\frac{\text{FY1 Total gross Medicaid cost}}{(((\text{FY1 Total patient revenues} * \text{FY1 Cost to charge ratio}) - (\text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})) + \text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})}$$

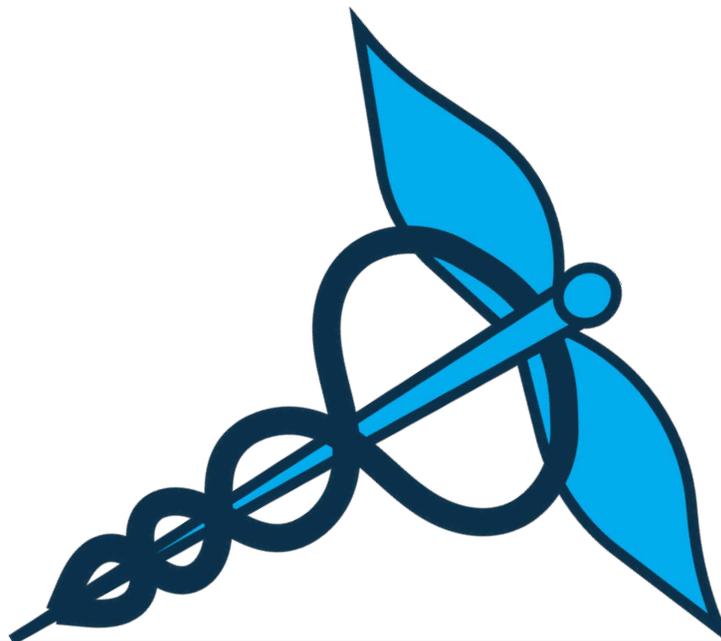
Total gross Medicaid cost + FY1 Total state and local indigent care program cost + FY1 Total SCHIP cost)

Other Government =

$$\frac{(\text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})}{(((\text{FY1 Total patient revenues} * \text{FY1 Cost to charge ratio}) - (\text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})) + \text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})}$$

Uncompensated Care =

$$\frac{\text{FY1 Total uncompensated care cost}}{(((\text{FY1 Total patient revenues} * \text{FY1 Cost to charge ratio}) - (\text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})) + \text{FY1 Total gross Medicaid cost} + \text{FY1 Total state and local indigent care program cost} + \text{FY1 Total SCHIP cost})}$$



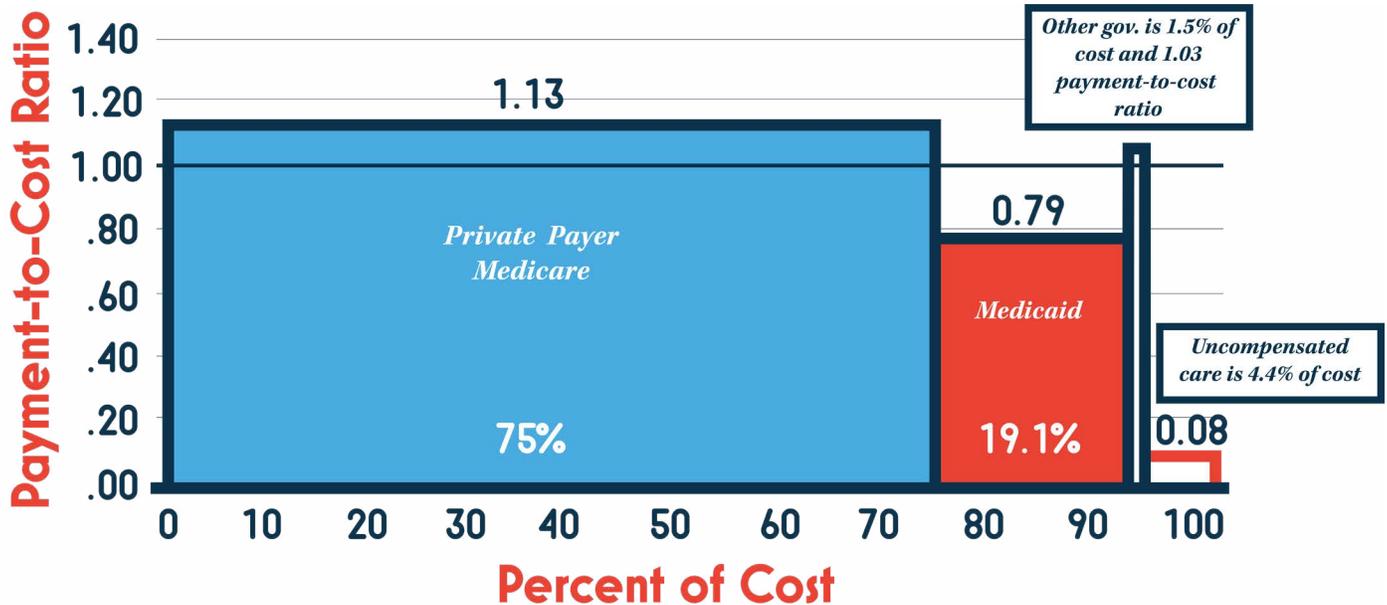
**TABLE I.1:
COST SHIFT CALCULATION, ARIZONA**

2007	(A) Total Revenue	(B) Total Expense	(C) = A/B Payment- To-Cost Ratio	(D) = B*C Total Revenue Assuming Average Ratio	(E) = A-D Cost Shift
Private Payer & Medicare	\$7.943	\$6.946	114%	\$6.537	\$1.406
Medicaid	\$969	\$1.209	80%	\$1.138	-\$169
Other Government	\$13	\$61	22%	\$57	-\$44
Uncompensated Care	\$1	\$1.270	0%	\$1.195	-\$1.194
Total	\$8.926	\$9.485	94%	\$8.926	\$0
2016	(A) Total Revenue	(B) Total Expense	(C) = A/B Payment- To-Cost Ratio	(D) = B*C Total Revenue Assuming Average Ratio	(E) = A-D Cost Shift
Private Payer & Medicare	\$11.552	\$9.111	127%	\$9.456	\$2.095
Medicaid	\$1.761	\$2.657	66%	\$2.758	-\$997
Other Government	\$23	\$45	53%	\$46	-\$23
Uncompensated Care	\$115	\$1.147	10%	\$1.191	-\$1.076
Total	\$13.451	\$12.959	104%	\$13.451	\$0

Source: CMS's Healthcare Cost Report Information System for Arizona (2007), AHA's Hospital Financial Database for Arizona (2016), and authors' calculations.

Note: Data are in millions of dollars and inflation adjusted to 2016 dollars.

FIGURE I.1:
LEWIN GROUP ANALYSIS OF 2007 AHA DATA



Source: The Lewin Group (2009), and authors' calculations.

Note: Private payer and Medicare information are combined to compare with our data. Other government is predominately TRICARE and CHAMPUS. ▲

"HIDDEN HEALTHCARE TAX" AND EMERGENCY DEPARTMENTS

To measure the "hidden healthcare tax" on those who are insured compared to those who are not, this analysis uses a difference-in-differences estimation to measure if and how Medicaid expansion reduced this tax on the insured group. Using HCUP SEDD data, total charges (y) were regressed on dummy variables representing the policy change (β_1), the insured group (δ_0), and the policy change's effect on the insured group (δ_1).⁴ We also controlled from some additional factors that may affect the difference between the

two groups and change over time. We used dummy variables for whether the hospital is located in an urban environment (γ), if the patient was female (θ), the age category of the patient (σ_x), and the length of the patient's stay (τ_x).

$$y = \beta_0 + \beta_1(\text{ACA}) + \delta_0(\text{Insured}) + \delta_1(\text{Insured*ACA}) + \gamma + \theta + \sigma_x + \tau_x + \vartheta_x + u$$

Table I.2 provides the results of the equation.

**TABLE I. 2:
DIFFERENCE-IN-DIFFERENCES
OUTPUT ON EFFECT OF ACA
CHARGES ON INSURED GROUP,
ARIZONA, 2007 AND 2016**

	Coefficient	Robust SE	p
ACA	2076.706	14.155	0.00
Insured	57.116	6.252	0.00
Insured*ACA	442.357	14.905	0.00
Urban	982.300	8.823	0.00
Female	69.011	5.048	0.00
DAYS IN EMERGENCY DEPARTMENT			
1	3049.554	8.980	0.00
2	20050.930	73.284	0.00
3	25964.570	183.155	0.00
AGE CATEGORY			
10-19	1242.362	6.914	0.00
20-29	1888.763	6.413	0.00
30-39	2229.210	7.053	0.00
40-49	2592.572	7.801	0.00
50-59	2974.572	9.247	0.00
60-69	3478.972	11.669	0.00
70-79	3745.472	12.997	0.00
80-89	3806.133	13.617	0.00
Intercept	-1242.152	10.978	0.00

Source: HCUP SEDD for Arizona (2007 and 2016) and authors’ calculations.

Note: SEDD data include only emergency department visits that do not result in hospitalizations. Charges are inflation adjusted to 2016 dollars.

The urban and rural hospital comparisons use the Census Bureau statistical area type from the AHA survey. All “metro” observations are considered urban and all “rural” observations are considered rural. The “micro” observations are considered rural unless in one of the years the hospital was labeled as “metro.”

To compare emergency department visits before and after Medicaid expansion, this analysis uses the Healthcare Cost and Utilization Project (HCUP) State Emergency Department Databases (SEDD) data and an ordinary least squares (OLS) regression with robust standard errors. To control for changes in Arizona’s demographics, specifically shifts in age and gender, we grouped patients into 10-year age categories up to 80 years and over by gender. We then calculated per capita rates of use by the insured and uninsured groups for each age-gender category and regressed on year, gender, and age category. The per capita rate—by gender and age category—of use for the insured and uninsured (y) was regressed on dummy variables for the year 2016 (β), female (θ), and age categories (σ_x). The following model was used:

$$y(\text{visits per capita}) = \alpha + \beta 2016 + \theta(\text{female}) + \sigma_x(\text{age category}) + \varepsilon$$

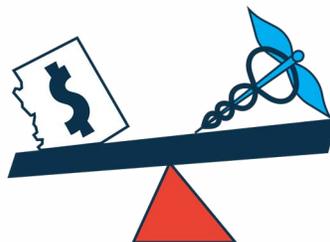
Table I.3 provides the results of the equation.

TABLE I.3:
OLS REGRESSION OUTPUT OF PER CAPITA
EMERGENCY DEPARTMENT VISITS, ARIZONA, 2007 AND 2016

	Coefficient	Uninsured Robust SE	P		Coefficient	Insured Robust SE	P
2016	-10.584	2.323	0.00		91.726	20.806	0.00
Female	-4.335	2.323	0.07		90.546	20.806	0.00
AGE CATEGORY				AGE CATEGORY			
10-19	-0.401	2.836	0.89		-117.737	56.830	0.05
20-29	40.450	7.460	0.00		-30.368	51.899	0.56
30-39	19.836	3.519	0.00		-51.015	50.550	0.32
40-49	9.829	1.771	0.00		-66.828	50.157	0.20
50-59	-4.062	3.026	0.19		-79.531	50.844	0.13
60-69	-15.995	3.260	0.00		-104.797	50.138	0.05
70-79	-22.016	3.461	0.00		-47.136	49.994	0.36
80-89	-22.397	3.652	0.00		100.631	86.074	0.25
Intercept	33.703	2.650	0.00		229.391	52.611	0.00

Source: HCUP SEDD for Arizona (2007 and 2016), and authors' calculations.

Note: Rate of emergency department use is per 1,000 people calculated by age and gender groupings. SEDD data include only emergency department visits that do not result in hospitalizations. The overall rate of emergency department use has increased and is statistically significant. The regression results for the overall rate can be provided upon request. ▲



WORKS CITED

1. AHA, Fast Facts on U.S. Hospitals, 2018, <https://www.aha.org/statistics/fast-facts-ushospitals>.
2. To link the data fields from AHA to the 2007 CMS data, we used the following two sources: AHA, Custom Report Data Elements: Financial Database Fields, August 2014, https://www.ahadataviewer.com/Global/Database%20Fields/AHA%20DataViewer%20Financial%20Database%20glossary_August%202014.pdf, and CMS, http://www.nber.org/hcris/2552-10/docs/HOSP2010_CROSSWALK.xlsx.
3. The Lewin Group, “Analysis of Hospital Cost Shift in Arizona,” final report, prepared for the Arizona Chamber Foundation, March 6, 2009.
4. Total charges do not reflect the actual revenue recovered from primary payers. Charges are the best proxy we have for actual revenue from the insured and uninsured groups within HCUP SEDD.