AN ARIZONA POLICY PRIMER

Graduate Medical Education in Arizona: Growing the Physician Pipeline

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Policy Primers: *a nonpartisan guide to a better understanding of key terms and issues in the Arizona health policy landscape.*

Graduate Medical Education in Arizona

Growing the Physician Pipeline

A Collaborative Project of St. Luke's Health Initiatives, Greater Valley Health Education Center and the Arizona Chamber Foundation

Ready access to health care affects the overall health status, quality of life and life expectancy of Arizonans. Improving access to care could help our state detect and treat health conditions earlier, prevent disease and disability and diminish the number of preventable deaths among Arizonans. It could also help drive efficiencies in care delivery, allowing the state to more effectively contain costs over the long term.

An adequate number of healthcare workers plays an important role in ensuring that Arizonans have ready access to care. However, Arizona has far fewer physicians and residents per capita than the national average. Beginning in 2014, demand for these physicians is likely to increase due to the expansion of health coverage contained in the federal health reform law known as the Patient Protection and Affordable Care Act. Additionally, the demand for healthcare services is expected to increase due to the aging of the national population and the continued growth of the obesity epidemic. In particular, there will be greater demand for primary care doctors as the healthcare system puts increased emphasis on delivering care in the most cost-effective setting before conditions become acute.

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Graduate medical education (GME), more commonly known as a residency, plays an important role in training and retaining physicians in our state. Unfortunately, Arizona ended its financial support for graduate medical education in 2010 – an important component for training and retaining physicians in this state – as a result of the economic downturn and recent budget cuts. While other funding streams still exist, current workforce shortages and the prospect of increased future demand for services suggest the need to explore new models for funding, sustaining and growing residency programs in Arizona. This policy primer explores some of those options, examining publicly and privately financed models used in other states, as well as new opportunities that exist as a result of changes in federal law. We even share some "out-of-the-box" ideas.

At a time when our state is short on jobs and revenue, support for residencies may be a means to achieving economic growth.

Growing our healthcare workforce is not only a strategy for ensuring access to care. It is also an economic development tool. A study by the American Medical Association found that practicing office physicians in Arizona contribute nearly $18 billion in economic output and support over 70,000 jobs throughout the Arizona economy.[1] And there are additional economic benefits to strengthening our healthcare workforce. A high-quality healthcare system may attract businesses and individuals to the state. Augmenting the number of residency programs in Arizona may also be a quality improvement tool, allowing expert faculty to be involved in patient care.

Let's begin by exploring the role that graduate medical education plays in the creation of our healthcare workforce.

Role of Graduate Medical Education in Building a Healthcare Workforce

The quality of the U.S. healthcare system is highly dependent on the skills and talent of the healthcare workforce. Physicians make up a core component of the overall healthcare workforce. Ensuring an adequate supply of skilled medical labor requires a robust and dynamic medical education system. For aspiring physicians, this training consists of two steps. The first step is completion of medical school, and the second step is completion of a medical residency.[2] Together, these two training programs equip doctors with the skills needed to practice medicine in the United States. For the purpose of this brief, the terms graduate medical education, GME and residency will be used interchangeably.

Medical School

The first step in becoming a physician is completion of a four-year, postgraduate educational program at an accredited allopathic or osteopathic medical school. While attending medical school, students develop a knowledge base that prepares them for graduate training in one of the many medical specialties. All graduates earn one of two degrees: a Doctor of Medicine (MD) for graduates of allopathic medical schools or a Doctor of Osteopathy (DO) for graduates of osteopathic medical schools.

Graduate Medical Education

After graduating from medical school, physicians complete a GME program, or residency, in a medical specialty or subspecialty. The Accreditation Council for Graduate Medical Education (ACGME) recognizes 26 different specialties and over 100 subspecialties. During these residencies, which typically occur in a hospital setting, physicians acquire the knowledge and develop the skills required to practice independently.

Funding Graduate Medical Education

Graduate medical education programs are supported with a combination of private and public funding.

Medicare

Medicare is the largest source of public funding for graduate medical education, contributing $9.5 billion in 2009. Three billion dollars of these payments were categorized as Direct Graduate Medical Education and $6.5 billion were categorized as Indirect Graduate Medical Education. The Medicare Payment Advisory Commission, the independent Congressional agency that advises Congress on issues affecting the Medicare program, distinguishes between Direct and Indirect payments in the following way:[3]

- **Direct** payments are "intended to support the teaching aspects of residency programs, such as resident stipends and benefits, supervisory physician salaries, and administrative overhead expenses."
- **Indirect** payments are "designed to support the higher costs of patient care associated with teaching, such as residents' 'learning by doing,' greater use of emerging technologies, and patient severity."

While Medicare remains the largest public financial supporter of GME, since 1997 there has been a limit on the number of residency slots for which teaching hospitals can receive Medicare funding. For hospitals that had existing residency programs in place when the Balanced Budget Act was passed in 1997, Medicare continues to provide funding for those slots that existed in 1996. However, Medicare does not fund any new positions at those hospitals. For hospitals that did not have residency programs when the Balanced Budget Act was passed, Medicare will provide funding. However, three years after the establishment of the program, a cap goes into effect at these hospitals as well. The cap is set at the number of slots that exist in the third year, and any additional growth of the program is not eligible for Medicare funding.[4]

Medicaid

Medicaid is the second largest source of public funding for graduate medical education, accounting for $3.8 billion in 2009. Each state decides whether to fund GME through its Medicaid program. In 2009, forty-one state governments chose to participate. This is down from 48 states in 2005. Arizona is among the minority of states that no longer provides state general fund support for GME.[5]

Arizona is among the minority of states that no longer provides state general fund support through Medicaid for GME.[5]

Medicaid is funded jointly between the federal government and the states. The degree to which the federal government contributes toward the cost of each state's Medicaid expenses depends on each state's Federal Medical Assistance Percentage, or FMAP. This number, which varies by state between 50 percent and 85 percent, is determined annually by the U.S. Department of Health and Human Services. In Arizona the FMAP is 65.85 percent, meaning that the federal government pays for 65.85 percent of Arizona's Medicaid expenses and the state pays for the remaining 34.15 percent. This means that a one dollar investment in GME yields approximately two dollars in federal matching funds. Likewise, a one dollar reduction in state Medicaid spending results in a loss of two additional federal dollars. In 2009, the last year Arizona contributed towards GME, the state contribution of $15.3 million triggered $29.6 million in federal funding.

Department of Veterans Affairs and Department of Defense

While the amount of funding is unknown, the U.S. Department of Veterans Affairs directly supports 9,000 residents and also allows 30,000 residents from other GME programs to complete rotations at Veterans Affairs facilities nationwide. In addition, the Department of Defense supports another 3,000 residents nationally.[6]

Health Resources and Services Administration

The Health Resources and Services Administration is the operating division within the U.S. Department of Health and Human Services that administers programs aimed at improving access to healthcare services for people who are uninsured, isolated or medically vulnerable. Created by Congress in 1999, the Children's Hospital Graduate Medical Education Payment Program provides federal funding to 56 freestanding children's hospitals. In 2009, the $300 million program supported 5,631 residents, but the future of this program is uncertain.[7] President Obama's FY 2012 budget proposal called for the elimination of Children's Hospital GME funding. While Congress did appropriate $268 million to the program for FY 2012, legislation that would reauthorize the program through 2016 is still pending.[8]

Private Funding

While teaching hospitals are recipients of the public funding described above, many also invest their own money into residency programs. It is estimated that teaching hospitals have fully funded the establishment of 8,000 new residency positions since Medicare capped the number of positions that would be eligible to receive funding.[9] While the cost of training a resident varies considerably based on specialty and location, in most cases it is a substantial investment on the part of hospitals to create residencies that exceed their Medicare cap.

Healthcare System Changes and Workforce Implications

Arizona, like the nation as a whole, has a shortage of physicians.

Arizona, like the nation as a whole, has a shortage of physicians. Before discussing graduate medical education in Arizona in greater detail, it is helpful to understand a number of the trends and transformations that are occurring in the healthcare sector at a national level. Changes to the physician supply, the required specialty mix, healthcare delivery models and the role of government funding are four factors that help provide context for the discussion of GME in Arizona.

Physician Shortage

In 2008, the Association of American Medical Colleges (AAMC) released a study that identified a looming crisis for the U.S. healthcare sector. The study projected that there will be a national shortage of 124,000 physicians by 2025, driven in large part by a growing and aging national population. In addition, the demand is on the rise for treatment of conditions related to the obesity epidemic. A June 2010 update to the study indicated that the passage of federal healthcare reform will further increase the demand for physician services by expanding insurance coverage to approximately 30 million previously uninsured individuals. This newly insured population is likely to initially utilize physician services at a higher rate than average due to the fact that ailments went untreated for numerous years. As a result, the shortage grows to 130,600 physicians.[10] Table 1 shows how the physician shortage will grow over time.

TABLE 1: Projected National Physician Shortage: 2010-2025

YEAR	SUPPLY	DEMAND	SHORTAGE
2010	709,700	723,400	13,700
2015	735,600	798,500	62,900
2020	759,800	851,300	91,500
2025	785,400	916,000	130,600

Source: AAMC. *The Complexities of Physician Supply & Demand: Projections through 2025*. November 2008. Updated June 2010.

The Association of American Medical Colleges uses four measures of physician supply.

- **ACTIVE PHYSICIANS:** This includes physicians who work in administration, direct patient care, medical research, medical teaching and other roles.
- **ACTIVE PATIENT CARE PHYSICIANS:** Subset of active physicians. This includes only those physicians who engage primarily in direct patient care.
- **ACTIVE PRIMARY CARE PHYSICIANS:** Subset of active physicians. This includes the specialties of adolescent medicine, family medicine, general practice, geriatric medicine, internal medicine and pediatrics.
- **ACTIVE PATIENT CARE PRIMARY CARE PHYSICIANS:** Subset of both active patient care physicians and active primary care physicians. This includes only those primary care physicians who engage primarily in direct patient care.

A common metric that is used to compare the physician supply in different geographic regions is *physicians per 100,000 of population.* As Table 2 indicates, Arizona's concentration of physicians falls well below the national concentration under all four measures of supply.

TABLE 2: 2010 Physician Supply, by AAMC Physician Category, U.S. and Arizona

	U.S.		ARIZONA		STATE MEDIAN	ARIZONA RANK
	Number	Rate per 100,000	Number	Rate per 100,000	Rate per 100,000	Out of 50 States
Active Physicians	799,509	258.7	14,694	220.1	244.2	33
Active Patient Care Physicians	678,324	219.5	12,904	193.3	215.1	36
Active Primary Care Physicians	279,719	90.5	5,151	77.1	91	41
Active Patient Care Primary Care Physicians	245,367	79.4	4,544	68.1	80.4	43

Source: AAMC. *2011 State Physician Workforce Data Book*. November 2011. Assumes U.S. population 309,050,816 and Arizona population 6,676,627.

Table 3 shows the number of additional physicians in each category that Arizona needs to meet national concentration rates:

TABLE 3: Number of Arizona Physicians Needed to Meet U.S. Rate per 100,000

	CURRENT SUPPLY	CURRENT RATE	TARGET SUPPLY	TARGET RATE	PHYSICIANS NEEDED
Active Physicians	14,694	220.1	17,272	258.7	2,578
Active Patient Care Physicians	12,904	193.3	14,655	219.5	1,751
Active Primary Care Physicians	5,151	77.1	6,042	90.5	891
Active Patient Care Primary Care Physicians	4,544	68.1	5,301	79.4	757

Source: Calculations based on data from: AAMC. *2011 State Physician Workforce Data Book*. November 2011. Assumes U.S. population 309,050,816 and AZ population 6,676,627.

Specialization

The compensation of primary care physicians is well below that of other specialties and has been shown to reduce the odds that physicians pursue careers in primary care or family medicine by nearly half.[12]

A quality healthcare system requires a diverse group of physicians practicing in a wide range of specialties. One factor for policy makers to consider when evaluating graduate medical education is the balance between the number of physicians practicing in primary care and those in more targeted specialties. The Accreditation Council for Graduate Medical Education recognizes 26 core specialties and, within each specialty, there are a number of subspecialties that require additional training. Increasingly, physicians are electing to complete a subspecialty as part of their training. In 2001, subspecialties accounted for 49 percent of the total number of residency programs and 13 percent of the total number of residents. Today, those percentages have risen to 55 percent and 17 percent respectively.[11]

Financial considerations are a key reason for this shift. The compensation of primary care physicians is well below that of other specialties and has been shown to reduce the odds that physicians pursue careers in primary care or family medicine by nearly half.[12] In particular, Medicare and Medicaid compensation policies pay higher rates for specialized services, which create an incentive for physicians to enter sub-specialty fields. While researchers have yet to find a definitive link between student debt and specialty choice, members of Arizona's GME community with whom we spoke consistently expressed concern over the impact of rising levels of medical student debt. Of the 85 percent of U.S. medical school graduates who graduated with outstanding loans in 2010, the average debt burden was $158,000.[13]

Changing Delivery Models

Changes to the way that healthcare services are delivered are likely to change the way that healthcare training is conducted. Growth in the cost of health care is forcing healthcare providers to rethink the way in which health care is delivered. New delivery models such as Accountable Care Organizations and medical homes emphasize coordinated care among teams of providers that include primary care physicians, specialists, behavioral health providers, and mid-level providers such as physician's assistants and nurse practitioners. Technology will be used to facilitate communication between members of these teams. The transition to this type of model will accelerate as public and private health insurance reimbursement policies shift towards paying for outcomes and cost effective management of chronic disease and away from the current practice of paying for procedures.

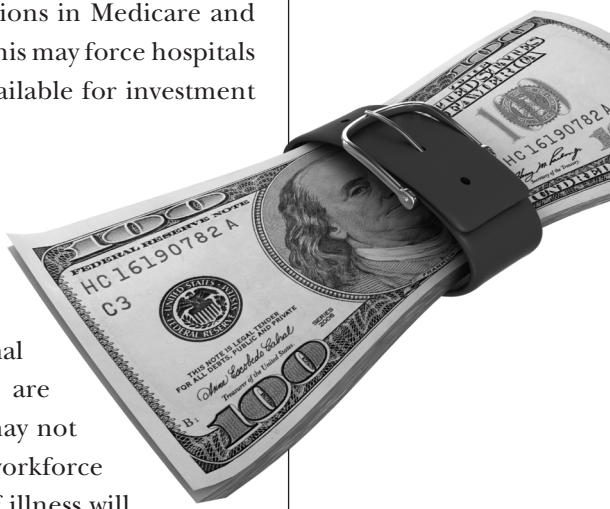
Both Accountable Care Organizations and medical homes require a different mix of medical professionals than the current system, and the education and training policies will

have to adapt. In particular, a greater emphasis on prevention and wellness will increase the demand for physicians in primary care specialties.

Declining Government Funding Levels

Government funding for graduate medical education is coming under increased scrutiny in light of the fiscal challenges facing both the federal and state level. Beginning in 1997, Medicare capped the number of residency slots that are eligible to receive funding at hospitals with existing programs. Recently, President Obama's deficit reduction commission recommended an additional reduction in Medicare payments for indirect medical education. At the state level, Arizona stopped funding GME in FY 2010. Government funding reductions for GME at a time when there is a need to train more physicians creates challenges for the system and forces stakeholders to find creative ways to meet the training needs of the U.S. healthcare system.

Despite the Medicare cap, and the more recent elimination of state funding, the total number of residents and residency programs in Arizona continued to increase between 2000 and 2010. This implies that Arizona hospitals invested their own resources into residency programs even after they reached their Medicare cap. Nationally, it is estimated that teaching hospitals funded the establishment of 8,000 new residency positions since the Medicare cap went into place.[14] However, relying exclusively on hospitals to pay for the required expansion of residency slots is unrealistic for a number of reasons. First, reductions in Medicare and Medicaid reimbursement rates are reducing hospital revenues. While this may force hospitals to improve efficiency, it also reduces the amount of capital that is available for investment in residency programs.



Second, hospitals are motivated to establish residency programs, in part, by the hope that the physicians will stay and practice at the hospital after completion of the program. As a result, teaching hospitals are likely to establish new residency programs in those specialties of greatest need to the hospital. Such a decision is perfectly rational from the perspective of the hospital, especially when public funds are not supporting the program. However, these decisions by hospitals may not yield the optimal mix of specialties from a broader state or national workforce perspective. Greater emphasis on the prevention and management of illness will increase the demand for physicians in less hospital-centric specialties, but there is little incentive for hospitals to invest their own capital into these types of programs.

In addition to government funding *levels*, there are challenges related to the distribution of those funds. For example, some hospitals are still under their Medicare cap and are therefore eligible for federal funding when they establish a new residency program. However, there is often a lag in the receipt of first-year direct GME payments because direct GME payments are determined using a per-resident amount from the previous year's cost report.[15] The hospitals are still entitled to the direct payments during the first year, but in many cases they need to support the program with their own funding until the payments are subsequently recovered. While there is no lag associated with indirect GME payments, the unrecoverable start-up costs and the initial delay in receipt of direct GME payments may prohibit the hospital from establishing the residency, even with the availability of future federal funding. Further, these new programs are capped after their third year which means that hospitals must ramp up the programs quickly in order to maximize their future funding.

Physician Training in Arizona

Physician training in Arizona includes both medical schools and residency programs.

Medical Schools

Between 2000 and 2010, Arizona was the second fastest growing state in the number of medical students, expanding 117 percent.

Two major types of medical schools exist: allopathic schools which train physicians for the credential of Medical Doctor (M.D.) and osteopathic schools which train physicians for the credential of Doctor of Osteopathy (D.O.). Between 2000 and 2010, Arizona was the second fastest growing state in the number of medical students, expanding by 117 percent. The number of allopathic medical students studying at the University of Arizona College of Medicine campus in Tucson and the new Phoenix campus grew from 427 to 650, while the number of osteopathic students grew from 482 to 1,322. The 174 percent expansion in osteopathic students is attributable to the growth of Midwestern University/Arizona College of Osteopathic Medicine and the establishment of the A.T. Still School of Osteopathic Medicine in Arizona. In September of 2011, the Mayo Clinic Medical School announced plans to add a new medical school campus at the Mayo Clinic in Scottsdale. In collaboration with Arizona State University, the new Mayo Medical School-Arizona Campus will enable students to earn both a medical degree from Mayo Medical School and a specialized master's degree in the Science of Health Care Delivery from ASU. Annual enrollment is projected at 48 students, and the first class could begin as early as September 2014.[16]

In 2012, the Creighton University School of Medicine in Omaha will open a new campus at St. Joseph's Hospital and Medical Center in Phoenix. Under this unique arrangement, 42 Creighton University medical students will move to Phoenix annually to complete their third and fourth years at the St. Joseph's campus after completing the first two years in Omaha.[17]

TABLE 4: 2010 Medical School Student Supply, U.S. and Arizona

	U.S.		ARIZONA		ARIZONA RANK
	Number	Rate per 100,000	Number	Rate per 100,000	Out of 50 States
Total	**97,188**	**31.4**	**1,972**	**29.5**	**20**
Allopathic	77,761	25.2	650	9.7	45
Osteopathic	19,427	6.3	1,322	19.8	4

Source: Calculations based on data from: AAMC. *2011 State Physician Workforce Data Book*. November 2011. Assumes U.S. population 309,050,816 and Arizona population 6,676,627.

Graduate Medical Education

Both the Accreditation Council for Graduate Medical Education (ACGME) and the Association of American Medical Colleges (AAMC) track the supply of residents in the United States, and they each published new 2011 data in August and November respectively. Due to some minor differences in methodology and timing, their numbers are slightly different. For example, ACGME reports that the number of residents in Arizona is 1,430 and AAMC reports the number is 1,452. When applicable, we will present the statistics as measured by both organizations, but in some cases only one organization measures a certain aspect of the supply.

There are two residency accreditation bodies in the United States: the Accreditation Council for Graduate Medical Education and the American Osteopathic Association (AOA).

As shown in Tables 5 and 6, there are currently 117 ACGME accredited residency programs and seven AOA accredited residency programs in Arizona. It is worth noting that osteopathic medical students are able to enroll in many of the programs in Table 5, but allopathic medical students cannot enroll in the programs in Table 6. Combined, these programs have an approved capacity of 1,803 and are sponsored by the following entities:[18]

TABLE 5: ACGME Accredited Residency Program Sponsors in Arizona

HOSPITAL	SPONSORED RESIDENCY PROGRAMS
Banner Good Samaritan Medical Center	15
Maricopa Medical Center	8
Mayo Clinic	23
Phoenix Baptist Hospital and Medical Center	1
Phoenix Children's Hospital	7
Scottsdale Healthcare-Osborn	1
St. Joseph's Hospital and Medical Center	12
Tucson Hospitals Medical Education Program	1
University of Arizona College of Medicine	42
University of Arizona/UPHK GME Consortium	7
TOTAL	**117**

Source: ACGME List of Programs by Sponsor. Accessed at www.acgme.org/adspublic/.

TABLE 6: AOA Accredited Residency Program Sponsors in Arizona

HOSPITAL	SPONSORED RESIDENCY PROGRAMS
Verde Valley Medical Center	1
Kingman Regional Medical Center	2
Alta Dermatology	1
Advanced Desert Dermatology	1
Sierra Vista Regional Health Center	2
TOTAL	**7**

Source: American Osteopathic Association. Accessed at http://opportunities.osteopathic.org/search/search.cfm.

There are currently 117 ACGME accredited residency programs and seven AOA accredited residency programs in Arizona.

The Association of American Medical Colleges tracks the number of residents in ACGME accredited programs by degree type. Table 7 excludes 5,805 residencies that are approved by the American Osteopathic Association because the osteopathic data includes fewer details and limits the ability to conduct additional analysis.[19]

TABLE 7: 2010 Resident Supply, U.S. and Arizona (AAMC)

	U.S.		ARIZONA		ARIZONA RANK
	Number	Rate per 100,000	Number	Rate per 100,000	Out of 50 States
Total Residents	**110,692**	**35.8**	**1,452**	**21.7**	**37**
MDs	102,518	33.2	1,274	19.1	38
DOs	8,172	2.6	178	2.7	18

Source: Calculations based on data from: AAMC. *2011 State Physician Workforce Data Book*. November 2011. Assumes U.S. population 309,050,816 and Arizona population 6,676,627.

As shown in Table 8, the actual numbers from the Accreditation Council for Graduate Medical Education are slightly different. However, the numbers in both cases lead to the same conclusion: the concentration of residents in Arizona is well below the national concentration.

TABLE 8: 2010 Resident Supply, U.S. and Arizona (ACGME)

	U.S.		ARIZONA		ARIZONA RANK
	Number	Rate per 100,000	Number	Rate per 100,000	Out of 50 States
Total Residents	**113,142**	**36.2**	**1,430**	**22.4**	**38**
MDs	104,710	33.5	1,255	19.6	40
DOs	8,432	2.7	175	2.7	19

Source: Calculations based on data from: ACGME. *Data Resource Book 2010-2011*. August 2011. Assumes U.S. population 312,471,327 and Arizona population 6,392,017.

The Association of American Medical Colleges also measures the number of residents in primary care specialties.

TABLE 9: 2010 Primary Care Resident Supply, U.S. and Arizona (AAMC)

	U.S.		ARIZONA		ARIZONA RANK
	Number	Rate per 100,000	Number	Rate per 100,000	Out of 50 States
Total Primary Care Residents	**41,339**	**13.4**	**593**	**8.9**	**35**
MDs	37,395	12.1	494	7.4	38
DOs	3,943	1.3	99	1.5	13

Source: Calculations based on data from: AAMC. *2011 State Physician Workforce Data Book*. November 2011. Assumes U.S. population 309,050,816 and Arizona population 6,676,627.

In addition, AAMC reports the growth in number of residents between 2000 and 2010. During this time, Arizona was the fourth fastest growing state, growing by 37.7 percent (398 additional residents). Nationally, the number of residents grew by 15.3 percent.

Both Schools and Residencies Needed

To meet the growing demand for physicians' services in the U.S., the Association of American Medical Colleges recommended in 2006 that, by 2015, U.S. medical schools increase enrollment by 30 percent over 2002 levels. As of 2010, enrollment had increased by 13.2 percent and is projected to reach 27.6 percent by 2015. This growth is the result of expansions at existing medical schools and the establishment of new medical schools since 2002. During the same time periods osteopathic medical school enrollment grew by 70 percent and is projected to reach 102 percent growth by 2015.

Taxpayers are making a significant investment in this expansion. Nationwide, 59 percent of the 3,963 additional medical students will be enrolled at public medical schools in 2015.[20] In Arizona, enrollment at the University of Arizona's College of Medicine grew by 52 percent between 2000 and 2010, from 427 students to 650 students. A significant portion of this growth was a result of the University of Arizona College of Medicine expansion of its Phoenix campus, which enrolled its first full, four-year class of medical students in August 2007. In addition, Midwestern University/Arizona College of Osteopathic Medicine and A.T. Still School of Osteopathic Medicine in Arizona have made significant investments in Arizona that have resulted in rapid growth in the number of osteopathic medical students. Expansion plans at both schools and the recent announcement by Mayo Clinic Medical School suggest that growth in Arizona's medical student population will continue.

The expansion of medical school capacity is a positive development for Arizona. The investment of public funds is justified when those students choose to practice in Arizona. Of the 3,583 active physicians nationwide who graduated from Arizona medical schools, 43.8 percent are currently practicing in Arizona. This ranks as the 18th best retention rate in the country and well above the national rate of 38.6 percent.

The justification for using tax revenues to fund medical education in Arizona is that a larger supply of doctors in the state will improve the general welfare of Arizona citizens. As Table 10 indicates, 75 percent of Arizona graduates who complete a residency in Arizona stay in the state to practice, while only 28 percent of Arizona graduates who complete a residency in another state return to practice. These statistics indicate that there is an opportunity to capture more of the benefits that Arizona's medical schools are generating by expanding residency opportunities in Arizona.

TABLE 10: Practicing Graduates of Arizona Medical Schools, by Current Location and Residency Location

	TOTAL	RESIDENCY IN ARIZONA	RESIDENCY OUTSIDE OF ARIZONA
Practicing Arizona Medical School Graduates	3,583	1,222	2,361
Number Currently Practicing in Arizona	1,571	916	655
Percentage Currently Practicing in Arizona	44%	75%	28%

Source: Calculations based on data from: AAMC. *2011 State Physician Workforce Data Book*. November 2011.

From a public policy perspective, these numbers indicate that simply increasing medical school enrollment is insufficient. To maximize the impact of those additional medical students, there should be a corresponding expansion of graduate medical education. Only 34 percent of Arizona medical school graduates completed their residency in Arizona, which ranks 23rd among the 45 states with medical schools and below the national rate of 39 percent. Increasing the percentage of graduates who stay in Arizona to train will generate a higher return on the public investment in the form of economic benefits and greater access to care for Arizona residents.

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The Need

Next, we use the two sources of data from above to determine the number of additional residency slots that Arizona needs to meet the national levels. As Table 11 shows, Arizona needs to add 848-885 residency slots, and around 300 of the needed slots should be in primary care in order to achieve the national rate of primary care residents.

TABLE 11: Number of Arizona Residencies Needed to Meet U.S. Rate per 100,000

	CURRENT SUPPLY	CURRENT RATE	TARGET RATE	TARGET SUPPLY	RESIDENCY POSITIONS NEEDED
AAMC	1,452	21.7	35.8	2,390	848
ACGME	1,430	22.4	36.2	2,315	885
Primary Care (AAMC)	593	8.9	13.4	895	302

Source: Calculations based on data and assumptions from Table 7, 8, and 9.

It is important to keep in mind that this level of expansion in Arizona will put the state on par with the national rates of physician training. That does not suggest that the national

rate of physician training is generating a sufficient supply of physicians. In fact, numerous reports suggest that the nation is already experiencing a shortage. However, it is a useful starting point for assessing Arizona's options. While the number of total residency positions will be a key focus of our analysis and is an important metric for evaluating the graduate medical education system both nationally and in Arizona, it is important to understand the limitations of the data. First, consider a three-year family medicine residency and a seven-year neurosurgery residency. If each program admits two new residents per year, both programs produce two new physicians annually. However, in terms of measuring the number of residents, the family medicine residency counts for six residents (two per year for three years) and the neurosurgery residency counts for 14 residents (two per year for seven years). Therefore, the number of residency slots does not fully capture the impact that those residencies have on physician supply. For lawmakers who are attempting to design policies aimed at increasing physician supply, it is important to consider the type of residency and, in particular, the number of first year residents entering the program each year.

GME funds became subject to an annual legislative appropriation in FY 1999. Since 2010, state funding has been eliminated and, as a result, the federal funding as well.

Additionally, the rate at which current physicians are retiring impacts the rate at which the training programs need to produce new physicians. Nationally, over one-third of the physician population is age 55 or older.[21] If current physicians start to retire earlier, an increase in training capacity will be required in order to maintain the current ratio of physicians per 100,000 of population. This implies that capacity will be required to expand by even more if the shortage is to be addressed. On the other hand, if current physicians continue working longer, increases in training capacity will be able to impact the shortage more directly.

Baseline

Arizona began contributing to graduate medical education in 1993. Initially, the money was embedded in each Medicaid capitation payment made to teaching hospitals. In 1997 the legislature established a separate program that would pay hospitals one annual payment for GME. Under this new program that went into effect in FY 1999, GME funds became subject to an annual legislative appropriation. As Table 12 indicates, the legislature chose to fund GME every year until 2010. Since then, the state funding has been eliminated and, as a result, the federal funding as well.

TABLE 12: Medicaid Funding for GME in Arizona, 1999-2012

	STATE	FEDERAL	TOTAL
1999	$9,243,900	$ 9,045,900	$ 18,289,800
2000	$9,247,300	$ 9,042,500	$ 18,289,800
2001	$7,766,700	$ 10,523,100	$ 18,289,800
2002	$6,508,500	$ 15,174,700	$ 21,683,200
2003	$6,490,400	$ 16,037,700	$ 22,528,100
2004	$6,706,200	$ 13,770,700	$ 20,476,900
2005	$6,883,500	$ 14,264,000	$ 21,147,500
2006	$7,179,300	$ 14,640,700	$ 21,820,000
2007	$11,519,800	$ 26,993,000	$ 38,512,800
2008	$14,894,000	$ 29,262,600	$ 44,156,600
2009	$15,323,100	$ 29,583,100	$ 44,906,200
2010	$0	$0	$0
2011	$0	$0	$0
2012	$0	$0	$0

Source: Arizona Joint Legislative Budget Committee. *Appropriation Reports, FY 2000-FY 2012*.

Some public hospitals have still been able to access federal Medicaid funds through the intergovernmental transfer mechanism.

While the general fund support for GME has been eliminated, some public hospitals have still been able to access federal Medicaid funds through the intergovernmental transfer mechanism. This mechanism allows local governments and public universities to provide funding that is then used by Medicaid to draw down matching funds from the federal government. The FY 2012 state budget anticipates that local governments and universities will contribute $38 million that will be used to draw down $73 million in federal funds. However, these funds will only be used to fund programs at public and university affiliated teaching hospitals. Given the continued stress on local government and university budgets, it is unclear whether the anticipated levels can be met and sustained.[22]

As Table 13 shows, the per-resident support for GME rose between 2000 and 2009.[23] For the purposes of evaluating potential funding alternatives, it will be assumed that the goal is to return to 2009 per-resident funding levels. That per-resident amount will then be used to determine the size of investment that is required to expand by 848-885 residents and reach the national rate.

TABLE 13: Per-Resident Medicaid Funding in Arizona, 2000 and 2009

	NUMBER OF RESIDENTS	STATE FUNDING PER RESIDENT	FEDERAL FUNDING PER RESIDENT	TOTAL FUNDING PER RESIDENT
2000	1,038	$8,909	$8,711	$17,603
2009	1,296	$11,823	$22,826	$34,650

Source: Calculation based on expenditure data in Table 12, 2000 resident count from Arizona Primary Care Residency Training Assessment and Development Project, and 2009 resident count from the *ACGME Data Resource Book 2008-2009*. Excludes Osteopathic residents.

Calculation

To determine the amount of money that is needed to A) restore support for current residencies and B) expand by 848-885 residencies to meet the national rate of physicians, we made the following calculations and assumptions.

- We assumed that the distribution of Medicare and Medicaid funding for GME in Arizona was two-thirds Medicare and one-third Medicaid. The following chart shows actual Medicare GME payments to Arizona hospitals from 2000-2007 and estimated payments for 2008 and 2009.[24] The 2008 and 2009 estimates assume 5.7 percent annual growth in the size of Medicare payments, which was the average from 2000-2007. As the table shows, the Medicaid contribution was between 21 percent and 25 percent from 2000 and 2006, but jumped to 32 percent in 2007. This is a result of 2007 legislation that increases Arizona's level of financial participation in GME. That funding level continues in 2008 and 2009, yielding the one-third proportion.

TABLE 14: Medicare and Medicaid Payments to GME in Arizona, 2000-2009

	MEDICARE PAYMENTS	MEDICAID	TOTAL	% MEDICARE	% MEDICAID
2000	$55,916,077	$18,289,800	$74,205,877	75.35%	25%
2001	$61,075,177	$18,289,800	$79,364,977	76.95%	23%
2002	$66,708,162	$21,683,200	$88,391,362	75.47%	25%
2003	$66,758,645	$22,528,100	$89,286,745	74.77%	25%
2004	$76,360,514	$20,476,900	$96,837,414	78.85%	21%
2005	$79,233,704	$21,147,500	$100,381,204	78.93%	21%
2006	$79,701,193	$21,820,000	$101,521,193	78.51%	21%
2007	$81,554,415	$38,512,800	$120,067,215	67.92%	32%
2008	$86,166,442*	$44,156,600	$130,323,042	66.12%	34%
2009	$91,039,285*	$44,906,200	$135,945,485	66.97%	33%

Source: Medicare payment data from Robert Graham Center, Medicaid data from Table 12. * Estimate.

- We used the 2009 per-resident Medicaid support levels as the baseline for determining the cost of restoring funding for residencies that currently exist and for calculating the level of Medicare support. The 2009 resident count was 1,296.

TABLE 15: 2009 Per-Resident GME Support Level for 1,296 Arizona Residents

FUNDING	MEDICAID (STATE)	MEDICAID (FEDERAL MATCH)	MEDICARE	TOTAL
Total	$15,323,100	$29,583,100	$91,039,285	$135,945,485
Per Resident	$11,823	$22,826	$70,246	$104,896

Source: Calculations based on data from Table 13 and 14.

- Since 2009, the resident population has grown to between 1,430 and 1,452. Using the per-resident Medicaid support levels from 2009, the state cost of restoring funding for GME is between $16.9 million and $17.2 million.

TABLE 16: Funding for Current Arizona Resident Population, 2009 Per-Resident Support Level

	FUNDING	MEDICAID (STATE)	MEDICAID (FEDERAL MATCH)	MEDICARE	TOTAL
1,430 Residents (ACGME)	Total	$16,906,890	$32,641,180	$100,451,780	$149,999,850
	Per Resident	$11,823	$22,826	$70,246	$104,895
1,452 Residents (AAMC)	Total	$17,166,996	$33,143,352	$101,997,192	$152,307,540
	Per Resident	$11,823	$22,826	$70,246	$104,895

Source: Calculations based on data from Table 11, and Table 15.

- Expanding by 848-885 residents requires an additional $89 million to $93 million in total funding. Since 1997, there have been federal caps on the number of residency slots that are eligible for Medicare funding. While Medicare does provide funding for a limited number of residency slots at new teaching hospitals, we assume for the purpose of this analysis that the Medicare contribution to the expansion is zero. Using the 2009 per-resident support level, Arizona would spend an additional $10 million, which would trigger an additional $19 million to $20 million in federal matching funds. Table 17 shows the amount of money generated by this level of contribution, and the shortfall that results from the elimination of Medicare funding.

TABLE 17: Arizona Resident Expansion. 2009 Per-Resident Support Level, No Medicare Funds

	FUNDING	MEDICAID (STATE)	MEDICAID (FEDERAL MATCH)	TOTAL	TOTAL NEEDED	SHORTFALL
885 Residents (ACGME)	Total	$10,463,355	$20,201,010	$30,664,365	$92,832,075	$62,167,710
	Per Resident	$11,823	$22,826	$34,649	$104,895	$70,246
848 Residents (AAMC)	Total	$10,025,904	$19,356,448	$29,382,352	$88,950,960	$59,568,608
	Per Resident	$11,823	$22,826	$34,649	$104,895	$70,246

Source: Calculations based on data from Table 11 and Table 15.

To summarize, the funding need can be divided into three categories: Medicaid support for current residents, Medicaid support for expansion residents and Medicare elimination shortfall.

TABLE 18: Summary: Arizona Residency Funding Needs

	STATE	FEDERAL	TOTAL
Current Medicaid	$16.9M-$17.1M	$32.6M-$33.1M	$49.5M-$50.2M
Expansion Medicaid	$10M-$10.5M	$19.4M-$20.2M	$29.4M-$30.7M
Medicare Elimination	N/A	$59.6M-$62.1M	$59.6M-$62.1M
TOTAL			**$138.5M-$143M**

In total, there is a need to generate around $140 million.

In total, there is a need to generate around $140 million. This number will be used as a reference point for evaluating the funding options that are presented below.

Considering Potential Funding Sources

Now that an estimate for Arizona's residency funding need has been developed, the remainder of the paper will present potential funding sources that could be used to meet this $140 million need.

Evaluation Framework

In assessing potential funding sources, we analyze each according to three primary criteria:

- **SUFFICIENCY.** Could the source provide enough money to meet the need? As indicated in the analysis, approximately $50 million is needed to return to where the state was prior to the elimination of the general fund appropriation for graduate medical education. One hundred forty million is needed to more fully address the physician shortage. In evaluating each option, we look at how much money it is likely to generate relative to the need.
- **STABILITY.** Would the source provide a funding stream that is relatively consistent from year to year? One of the themes that the research team heard repeatedly was that hospitals need predictable funding levels in order to justify the enormous time and private financial resources that are necessary to start up and sustain a residency program. Public funding that is not "dedicated" to GME could be reallocated or "swept" by the legislature. Similarly, private grants or investments that are not guaranteed over a period of several years could also be deemed as too risky. Measures that are passed by a ballot proposition are "voter-protected" as a result of Proposition 105. This means that the legislature cannot alter the ballot proposition except to further the cause and by a two-thirds vote of both the House and the Senate. Therefore, funding streams that are enacted by way of ballot proposition would be more stable than those passed by the state legislature.

Most of the funding source options would require either legislative action or a vote of the people of Arizona.

- **POLITICAL VIABILITY.** Does the funding source stand a chance in today's political environment? There are several facts that come into play in assessing political viability:
  - Any increase in revenue by the state legislature requires a two-thirds vote of both the House and the Senate as a result of Proposition 108.
  - Eighteen members of the legislature have signed "no new tax" pledges. Three of the thirty members of the Arizona Senate (10 percent) and 15 of 60 members of the Arizona House of Representatives (25 percent) have signed the pledge. With the upcoming election in November 2012, these numbers are likely to change.
  - Taking a measure to the ballot requires either a referral of the legislature or a citizens' initiative. In the case of a citizen's initiative, signatures must be collected from 10 percent of the electorate (153,365) or 15 percent of the electorate (230,047) for a constitutional amendment. The signatures must be filed with the secretary of state at least four months prior to the election.[25] Generally, it is necessary to pay petition circulators. For all ballot measures, it is necessary to have a strong campaign to educate the voters on the merits of the proposition. Funding this type of campaign could be expensive and requires significant commitment on the part of the proponents.
  - Ongoing state budget deficits have resulted in funding reductions for most programs as well as increased state debt. As the state's fiscal situation shows signs of gradual improvement, there will be many competing demands on resources in order to restore funds and repay debts.

Funding Options

The following are potential sources of funding for graduate medical education. These options are not mutually exclusive and each could contribute at some level.

General Fund Appropriation

This is essentially the "status quo" approach. While a strong argument can be made that the benefits of graduate medical education are realized by the general public and should therefore be funded with general fund dollars, recent history demonstrates the risk associated with this approach.

Sufficiency

Around 90 percent of general fund revenue is generated by the sales and use tax, individual income tax and corporate income tax. The table below shows general fund revenue levels since 2000. Strictly in terms of the ability to generate revenue, the general fund is capable of supporting GME. However, the challenge relates to the distribution of those funds through the appropriation process.

TABLE 19: Arizona General Fund Revenue, 2000-2012

YEAR	REVENUE (BILLIONS)	YEAR	REVENUE (BILLIONS)
FY 2012 (budgeted)	$8.8	FY 2005	$7.9
FY 2011	$8.4	FY 2004	$6.7
FY 2010	$8.3	FY 2003	$6.2
FY 2009	$8.2	FY 2002	$6.2
FY 2008	$9.6	FY 2001	$6.2
FY 2007	$9.6	FY 2000	$5.9
FY 2006	$9.3		

Source: Arizona Joint Legislative Budget Committee. Appropriation Reports, FY 2000-FY 2012.

Stability

From 1999 through 2009, the general fund was a relatively stable source of funding for GME. However, the level of support dropped from $15 million in 2009 to $0 in subsequent years. The elimination of general fund support was the result of the budget deficits caused by the economic downturn.

When there is a state budget deficit, the legislature must make difficult decisions about where to reduce spending. To complicate matters further, the demand for Medicaid (AHCCCS) is counter-cyclical, meaning when the economy falters, more people become eligible for Medicaid due to unemployment or underemployment. GME expenditures will be evaluated in the context of other healthcare spending. This puts GME funding at significant risk because cuts to GME funding will have less of an immediate impact on the public than controversial reductions in AHCCCS eligibility levels or covered services. When faced with the option of making a spending reduction that will immediately impact the public, or a spending reduction that will not impact the public for a number of years, the lawmaker is more likely to cut the long-term investment. Even if funding for GME is restored, this dynamic will still exist during the next economic downturn.

Political Feasibility

Convincing legislators to direct scarce general fund dollars to graduate medical education will require an extensive lobbying effort. Of the ninety members of the legislature, only fifty-five were in office the last time that Arizona funded GME and more turnover is expected as a result of the next election cycle. Educating the new members on the value of GME is an important component of the lobbying effort. Certain members of the current legislature are opposed to the entire Medicaid program, so convincing them to direct taxpayer dollars to support physician training could be a challenge.

Of the ninety members of the legislature, only fifty-five were in office the last time GME was funded. There is a need to educate lawmakers on its importance.

Job Training Fund

Administered by the Arizona Commerce Authority, the Job Training Program supports the design and delivery of customized training plans for employers creating new jobs or increasing the skill and wage level of current employees.[26] All Arizona employers contribute to the fund through the Job Training Employer Tax. The annual tax is levied at a rate of 0.1 percent on the first $7,000 of each employee's taxable wages. For most employers, this translates to an annual payment of $7 per employee. As Table 20 indicates, the tax generates between $11 million and $16 million per year.

TABLE 20: Job Training Tax Revenue, 2002-2011

YEAR	REVENUE	YEAR	REVENUE
2011	$11,784,372	2006	$14,653,279
2010	$12,041,812	2005	$13,317,153
2009	$14,878,923	2004	$12,350,720
2008	$16,226,493	2003	$12,549,532
2007	$15,973,538	2002	$13,371,382

Source: JLBC *2011 Arizona Tax Handbook*.

Grants from the Job Training Fund cover between 50 percent and 75 percent of the training cost for each position. The per-employee grant size is capped at $5,000 for urban employers with 100 or more employees and $8,000 for rural employers or urban employers with 100

or fewer employees. The aggregate amount that a single employer can receive is $1.5 million. At the conclusion of the training program, the average wage of trainees must meet or exceed the qualifying wage rate, which is between $18,000 and $40,000 depending on the size of the company and the county in which it is located.[27]

Companies in the healthcare industry are among the recipients of job training grants, but the funds have not been used for residency positions. Residencies are not explicitly excluded, but the administrative rules that govern the program require that training be completed within two years, which essentially eliminates residency programs.[28]

Sufficiency

Under the current structure of the program, the benefit of a job training grant would be limited. For a three year residency at a rural hospital, an $8,000 grant would contribute $2,667 per year, or 2.5 percent of the 2009 support level of $104,896. Increasing both the size of the job training fund and the maximum size of the grant is possible legislatively, although increasing the size of the fund requires increasing the job training tax. This increase in state revenue would require a two-thirds majority in both the House and Senate to pass.

Stability

The job training tax is a relatively stable source of funding, consistently generating between $11 million and $16 million annually. However, from 2008 to 2010, the legislature transferred $65 million from the job training fund to the general fund to help balance the budget.[29] As a result, those funds were not available for distribution as job training grants. During future economic downturns, the legislature may turn to fund sweeps again.

Political Feasibility

Expanding the scope of the job training program to include residency programs would likely generate opposition from entities that are currently participating in the program. Making residencies eligible without a corresponding increase in funding will increase the competition for the available funds. Passage of an increase in the job training tax rate would require a two-thirds majority in both the House and Senate. This could be difficult to achieve in a tax-averse legislature, and it could also generate opposition from industries that do not utilize the job training program, but still pay into the program.

Provider Assessment

In recent years, there has been discussion in the Arizona hospital community about the possibility of establishing a "provider assessment" that would be used to provide funding for Arizona's childless adult Medicaid population. This group is often referred to as the Proposition 204 population because they became eligible for AHCCCS as a result of a ballot initiative. In addition to funding the childless adult population, the provider assessment could be expanded to contribute to graduate medical education programs. The basic structure of a provider assessment is the following:

1. Healthcare providers make a payment to a government entity. There are many ways to determine the size of the payment made by each provider. Some examples include:
    - Alabama collects a $0.10 fee on each prescription that is greater than $3.
    - Tennessee collects a $2,225 annual fee per nursing home bed.
    - Kansas collects an annual 1.83 percent assessment on hospital inpatient operating revenues.

2. The money collected from the providers is dedicated to the Medicaid program. For a provider assessment levied at the state level, the money collected would be appropriated to the AHCCCS program. For a provider assessment levied by another government entity, such as a city or county, the funds would be transferred to AHCCCS using an intergovernmental transfer (IGT). An IGT is a mechanism whereby funds are transferred between different levels of government. For example, funds raised from a provider assessment at a county level could be transferred to AHCCCS, which is a state level government entity.[30] This Medicaid spending triggers federal matching funds at the pre-determined FMAP rate.

3. Monies derived from the assessment are used to reimburse providers for the cost of treating Medicaid patients.

Sufficiency

The degree to which the provider assessment is able to generate a sufficient revenue stream to support GME depends on the negotiations that take place between the hospitals and the government entity levying the assessment regarding the size of the assessment. For example, an assessment that generates $50 million from the providers will leverage an additional $100 million in federal dollars for a total of $150 million. However, an assessment that generates $100 million from the providers leverages $200 million from the federal government for a total of $300 million.

Stability

The length of time that the provider assessment remains in effect is another item that would be negotiated between the hospitals and the government entity. It could be structured so that it remains in effect for multiple years or it may require annual legislation to renew. When considering the stability of a provider assessment, it is important to recognize that the current debate in Congress related to federal deficit reduction has prompted a discussion of curtailing or eventually eliminating the use of provider assessments. While the use of a provider assessment[31] is still currently a viable vehicle, policy makers should be aware that federal changes could make this option unavailable in the future.

Political Feasibility

Passage of a provider assessment requires a two-thirds majority in both the House and Senate, which could create challenges at the legislature. The provider assessment also faces challenges within the hospital community. The funding generated by a provider assessment is used to pay hospitals that serve the Medicaid population. However, in accordance with federal regulations, the assessment is collected from all hospitals, regardless of patient mix. As a result, hospitals that treat a high proportion of Medicaid patients receive more of the benefit than hospitals with a low proportion of Medicaid patients. Adding a GME component to the provider assessment could potentially help alleviate some of the concerns that hospitals with low levels of Medicaid have with the proposal that covers only the childless adult population.

In addition to funding the childless adult population, the provider assessment could be expanded to contribute to graduate medical education programs.

New Dedicated Funding Stream

Arizona levies a number of taxes that generate revenue for specific purposes. Some examples include an aviation fuel tax that funds airport construction, development and improvements; an underground storage tank tax that funds cleanup costs associated with certain petroleum products and hazardous substances; and a cigarette and tobacco tax that funds various health, education, and corrections programs.[32]

One option would be to levy a tax on members of the healthcare sector such as pharmaceutical manufacturers, insurance companies, medical device manufacturers and so forth. Another option could be a tax on hospitals that do not currently participate in residency training.

A new funding stream dedicated to graduate medical education could be collected from a number of sources. One option would be to levy a tax on members of the healthcare sector such as pharmaceutical manufacturers, insurance companies, medical device manufacturers and so forth. The state of New York takes a variation of this approach, charging health insurance consumers an annual fee that is paid as part of their annual premium. The amount collected from each consumer varies depending on the exact location where they live. For example, the purchaser of a family policy in the Utica/Watertown region is charged $25.35, while a purchaser located in New York City pays $608.42.[33] Another option could be a tax on hospitals that do not currently participate in residency training. These hospitals have a vested interest in a strong GME system because they depend on residency programs at other hospitals to train their future employees.

Sufficiency

For some context, there were 880,431 Arizonans enrolled in private insurance in 2007.[34] Charging each enrollee a $25 fee could raise around $22 million. The annual revenue for Arizona hospitals that do not participate in GME totals around $12 billion.[35] A 0.5 percent tax on gross revenue could generate $60 million.

Stability

Dedicated funding streams are more stable than a general appropriation because, once in place, the revenue automatically flows to that purpose. However, during economic downturns, the legislature has demonstrated a willingness to balance the budget by "sweeping" funds that are dedicated for other purposes. Any revenue that flows to a GME fund would be susceptible to that type of sweep in the future, unless the funding stream is established at the ballot and therefore subject to Proposition 105 protections.

Political Feasibility

The creation of a new revenue stream will require a two-thirds majority in both the House and Senate or a citizens' initiative. A new fee on consumers of insurance is a tax increase on individuals who purchase their own insurance and employers who purchase health insurance on behalf of their employees. Both groups have faced significant increases in the cost of health insurance in recent years, and a new fee could be difficult to afford. Hospital revenues are facing pressures from reductions in government reimbursement rates, and further reductions in revenue that result from a tax could create additional challenges. However, a strong argument can be made that the long-term viability of a hospital depends on a sufficient supply of physicians and all hospitals should invest in the future physician workforce.

Income Tax Withholding

While income taxes are due to the state of Arizona on an annual basis, they are typically collected over time through a withholding tax that is remitted by the employer. For every paycheck, a portion of an employee's anticipated income tax liability is withheld and sent to the Department of Revenue. The amount withheld depends on the withholding rate chosen by the employee. At the end of the year, the taxpayers either receive a refund if they overpaid during the year or make an additional payment to the Department of Revenue if they underpaid.

In most cases, income tax revenues are deposited into the general fund and then used to pay for various state programs. However, it is possible to divert withholding revenues to a different fund that is dedicated to a specific purpose. An example is the Job Creation

Withholding Clearing Account, which is used to fund the Arizona Commerce Authority. The fund receives $31.5 million of withholding revenues that would otherwise be deposited into the general fund. A similar fund could be established to fund graduate medical education.[36] The withholding could be structured in a way that diverts revenue from net new job creation in the healthcare sector to the new GME fund. This structure would ensure that current revenues to the general fund would not be reduced, but new revenues, or some percentage of new revenues, say 50 percent, would be allocated to fund GME.

Sufficiency

Over the past decade, the individual income tax generated between $2.1 billion and $3.7 billion that was deposited into the general fund.[37] Arizona's healthcare sector employment is projected to grow by 44,000 by 2018. Seventeen thousand of these jobs are projected to be in the healthcare support field and the remaining 27,000 jobs in the healthcare practitioners and technical field.[38] In 2010, the median annual income for jobs in the healthcare support and healthcare practitioner fields were $25,750 and $61,152 respectively.[39] The most recent available income tax data from the Arizona Department of Revenue indicates that the average Arizona income tax liability for all returns in the $20,000 to $30,000 income tax bracket was $329 in 2006. For returns in the $50,000 to $75,000 bracket, the liability was $1,096.[40] Assuming that the new jobs pay the median wage and generate the average tax liability, the jobs will generate around $35 million in annual revenue.

Stability

Individual income tax revenues fluctuate with the economy. In addition, unpredictable levels of job growth would impact the level of funding generated for the new GME fund. However, this is a much more stable funding source than a general fund appropriation. It is using the same revenue source, but the annual appropriation process is avoided.

Political Feasibility

Diverting an existing revenue stream could be enacted by the legislature with a simple majority. Legislators may be reluctant to give up their authority to distribute funds through the appropriation process. However, diverting net new revenue is likely to be more palatable than redirecting existing revenues that would result in a reduction in current levels of general fund revenue.

Income tax withholding could be structured in a way that diverts revenue from net new job creation in the healthcare sector to the new GME fund.

Support from Private Industry

Private sector industries that sell goods and services to healthcare providers have a vested interest in supporting physician training. For example, pharmaceutical and medical device manufacturers depend on a robust healthcare system to support their businesses. There are ethical concerns related to direct contributions by private companies to teaching hospitals in support of graduate medical education, but these concerns could be addressed by creating a non-profit entity that pools funds from various industry sources and distributes them to residency programs. For example, the pharmaceutical industry, through their trade association, could establish a foundation that raises money from individual pharmaceutical companies. This money would then be distributed to teaching hospitals, but the money would not be associated with any particular company.

Sufficiency

The sufficiency of private industry funding depends on the size of the contribution by industry. State and local governments would not be involved in this type of funding arrangement, so these dollars would not trigger any federal matching funds. In order to maximize

the financial participation of private companies, advocates need to make the argument that support for GME makes sense from a business perspective. It should be framed as an investment in the healthcare system as opposed to a charitable contribution. There is a benefit to helping train physicians who will be future customers.

Stability

Expenditures that are not seen as being related to core business operations are likely to face scrutiny, particularly during economic downturns. As a result, contributions from private companies may fluctuate with the economy.

Political Feasibility

Lawmakers would not participate in the creation of this type of foundation.

Other Considerations

There are strong perceptions that any industry participation in medical education generates ethical conflicts. As a result, the design and governance of the foundation needs to be carefully structured so that there is no perception of unethical behavior. Additionally, it is important for members of the medical education community to be realistic about the future role of government funding for GME. This may require a reevaluation of funding sources that have been dismissed in the past.

The legislature does have the authority to change the way that lottery funds are distributed and could conceivably direct some of the money toward graduate medical education.

Lottery

The Arizona Lottery was established by voter initiative in 1980. Since 1980, both voters and the legislature have chosen to extend the lottery multiple times, including most recently in 2010 when the legislature extended the lottery through 2035. After prizes and administrative costs, excess funds are used to support state programs that fall into four categories: Economic and Business Development, Education, Environment, and Health and Public Welfare. During FY 2011, $146 million was distributed as follows:[41]

TABLE 21: Distribution of Arizona Lottery Revenues, 2011

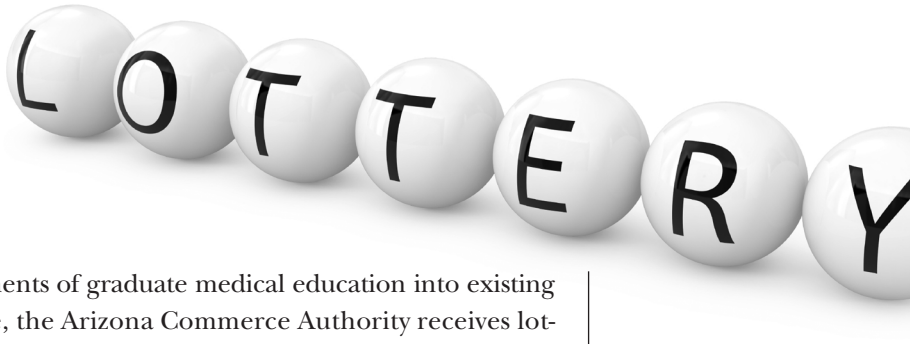
BENEFICIARY	AMOUNT	PERCENTAGE
Economic and Business Development	$3.2 million	2%
Education	$80.4 million	55%
Environment	$10.4 million	7%
Health and Public Welfare	$52.3 million	36%
TOTAL	**$146.3 million**	**100%**

Source: Arizona Lottery. http://www.arizonalottery.com/beneficiaries.html.

While the existence of the lottery is voter protected and cannot be eliminated without voter approval, the legislature does have the authority to change the way that lottery funds are distributed and could conceivably direct some of the money toward graduate medical education.

Sufficiency

The money generated by the lottery is significant. The degree to which it could sufficiently support GME depends on the distribution formula enacted by the legislature. Adding GME as a lottery beneficiary would reduce the level of funding that is available for the other programs that are already receiving funding. For example, dedicating $20 million to GME would require a 14 percent across the board cut from all other lottery beneficiaries.



It may also be possible to incorporate components of graduate medical education into existing programs funded by the lottery. For example, the Arizona Commerce Authority receives lottery funds to support economic development efforts in rural or economically disadvantaged areas. As noted at the beginning of this report, doctors have a significant economic impact on the communities in which they operate, so it could be possible for the lottery funds to serve the dual purpose of supporting economic development and physician training. In the same way, lottery funded healthcare programs such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Healthy Families, Health Start and Pregnancy Prevention provide services that could potentially be delivered by residents.

Stability

As a revenue generating mechanism, the lottery is reliable. The instability results from the distribution of those revenues. Historical revenues and distributions are presented in Table 22.[42]

Table 22: Arizona Lottery Revenue and Distribution, 2000-2010

YEAR	REVENUE (MILLIONS)	DISTRIBUTION (MILLIONS)
2010	$552	$130
2009	$484	$126
2008	$472	$142
2007	$462	$137
2006	$469	$138
2005	$398	$114
2004	$367	$105
2003	$322	$92
2002	$295	$85
2001	$273	$78
2000	$259	$75

Source: JLBC *2001 Appropriation Report*.

Political Feasibility

Redirecting existing lottery revenue would not increase state revenue and would not require a super majority. There would likely be significant opposition to this proposal from current lottery beneficiaries. The legislature would need to evaluate the current distributions and prioritize which programs are most important to Arizona going forward.

Arizona Area Health Education Center

Founded in 1984, The Arizona Area Health Education Center's (AHEC) mission is to recruit students from under-represented racial and ethnic groups into the health professions, and to support healthcare professionals in underserved communities statewide. The Arizona AHEC Program is comprised of five strategically located regional centers and an administering home central office based at the University of Arizona Health Sciences Center. Each regional center collaborates with postsecondary institutions and community organizations to coordinate and support activities that target workforce development to meet the needs of Arizona's medically underserved rural and urban populations.

Founded in 1984, The Arizona Area Health Education Center's (AHEC) mission is to recruit students from under-represented racial and ethnic groups into the health professions, and to support healthcare professionals in underserved communities statewide.

Currently there are many ways AHECs support and promote the recruitment and retention of primary care professionals including financial support for housing during residency rotations and travel support. This financial assistance supports students who currently exist in the training pipeline as opposed to increasing the numbers of individuals in the pipeline.

To increase the number of student in the pipeline, AHEC could become a resource to help develop and financially support innovative approaches to training in rural and underserved areas. An example of this support has already been demonstrated when the AHEC state program office awarded funding to the Northern Arizona Area Health Education Center (NAHEC), which applied for a federal grant as a Teaching Health Center, to support the development costs for this approved family residency program.

In Arizona, AHEC could develop a residency training program that coordinates GME with community health centers, clinics and urban-based hospitals and clinics, providing the students with a diverse and quality experience. This would not compete with existing residency programs but rather open up additional training slots in rural settings without any one rural hospital or clinic taking on the entire financial burden of the residency program.

For residents, this model would create more opportunities to receive a valuable and culturally diverse learning experience. Rural hospitals and clinics do not see the same complexity and diversity of cases that are more common in urban settings. In contrast, urban settings do not provide the exposure of the challenges and access to care issues that are often experienced in rural healthcare settings. Furthermore, without experience in rural settings, it becomes more challenging to attract practitioners to these areas.

Sufficiency

The Arizona Lottery is the primary funding source for AHEC, contributing around $4.6 million in FY 2011. AHEC also received a small $500,000 federal grant from the Health Resources and Services Administration.

In addition to using its existing funding sources, the AHEC program office could also serve as an administrator of financial contributions from the private sector. Funds could be collected by a foundation or other independent non-profit agency and AHEC could identify the current healthcare workforce needs and develop a method to distribute the funds.

Pharmaceutical, medical device and biotech firms all benefit from an adequate and well-prepared workforce. Contributions could be collected and distributed in a manner that was ethical and free of bias thereby eliminating any potential conflict of interest. Universities and other agencies have strict policies in place that forbid private sectors firms (such as pharmaceutical companies) from making contributions to programs for fear of ethical violations. However, given the dire circumstances, there seems to be interest in looking at options to engage the private sector in workforce development efforts. These funds could be directed in a number of ways to increase the recruitment of physicians into rural or underserved areas. Loan repayment, preceptor development, technology enhancements and innovative interdisciplinary training demonstration projects, in addition to residency development and support, are all examples that enhance or support graduate medical education.

Stability

Funding for the AHEC model is essentially a hybrid between lottery and private funds. As a result, the stability of the funding stream shares the characteristics described in the previous discussions of lottery funds and private funds. The lottery dollars are fairly stable, while the private funding will be subject to increased scrutiny during economic downturns.

Political Feasibility

Any opposition to changes in the use of existing AHEC funding is more likely to come from parties that are involved in the current system rather than from the lawmakers. Other challenges to this approach include the perception of conflicts of interest, the potential ethical violations, as well as the public's perception that health care is being "bought out" by private industry. The fact that AHEC is housed within the University of Arizona could also pose difficulties for accepting private funding. Physicians, accrediting agencies, even hospital systems may be resistant to this type of supplemental funding as well.[43]

Summary

Table 23 summarizes the sufficiency, stability, and political feasibility of each option. Each factor is rated on a scale of one through three, with a one being the most sufficient, stable or politically feasible, and a three being the least sufficient, stable or politically feasible.

Table 23: Summary of Funding Options

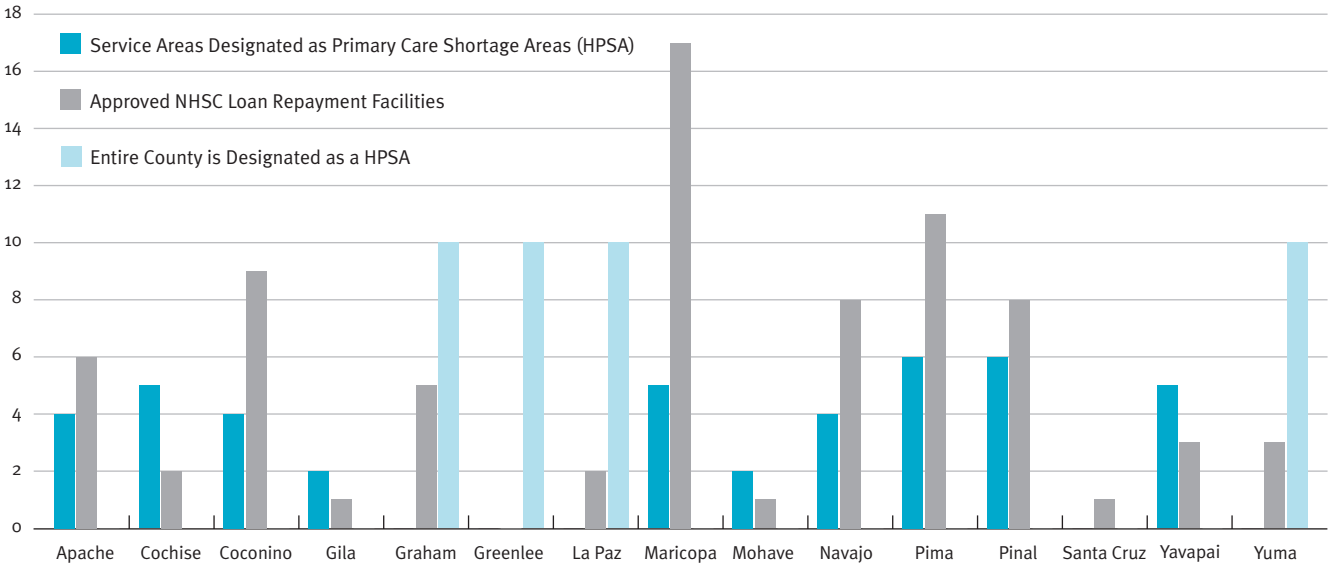
	SUFFICIENCY	STABILITY	POLITICAL FEASIBILITY
General Fund Appropriation	1	3	2
Job Training Fund	3	2	2
Provider Assessment	1	2	3
New Dedicated Funding Stream	2	2	3
Income Tax Withholding	2	1	1
Support from Private Industry	3	3	N/A
Lottery	2	2	2
AHEC	2	2	2

Other Ways to Support GME in Arizona

Loan Repayment

Rising levels of medical student debt reduces the return on investment in a medical career and can discourage talented students from choosing to pursue a career in medicine. The National Health Service Corps offers loan repayment to licensed health professionals, including primary care physician, nurse practitioners, and physician assistants, dental, and mental and behavioral health providers. It provides an opportunity for these professionals to have their student loans repaid for serving communities in need. To qualify, the practitioner must be matched with an approved NHSC facility. Chart 1 shows the distribution by county of the 77 National Health Service Corp approved facilities in Arizona.

CHART 1: Health Professions Shortage Areas (HPSA) Service Areas Vs. NHSC Approved Loan Repayment Facilities



Source: U.S. National Health Service Corps. http://nhsc.hrsa.gov/loanrepayment/index.html.

In Arizona, the Arizona Association of Community Health Centers also offers loan repayment programs through the SEARCH (Student/Resident Experiences and Rotations in Community Health) program which is for students and residents to experience medicine in an underserved primary care setting. It provides access to high quality learning experiences in Arizona's health centers and safety net providers who serve diverse populations in urban and rural areas. Training sites can be found throughout the state and offer placements for primary care disciplines such as physicians, physician assistants, nurse practitioners, dentists, dental hygienists and psychiatric/mental health professionals.

Loan repayment programs at the state and university level, such as the Arizona Medical Student Loan Program at the University of Arizona, are also incentives that attract students to careers in primary care and practice in rural and underserved areas of Arizona. At its peak in the mid 2000s, the annual general fund appropriation to this program was $1.5 million, but the legislature stopped appropriating funds for new students in the FY 2012 budget.[44]

A "tuition rebate" is another model that could be developed by a medical school. For example, all students would pay the same tuition while enrolled, but at the completion of a residency program in a primary care specialty, the school would either pay off a percentage of the student's loan or actually write a check to the physician. In effect, physicians who enter higher paying specialties would end up subsidizing the education of physicians who enter primary care.

Loans for Residency Establishment

As previously noted, hospitals begin to receive federal funding during the first year of a residency program, although there can sometimes be a delay. However, not all of the initial startup costs are eligible for federal funding, which can make the establishment of a new residency program challenging. A hospital's future federal funding is based in part on the number of residents in place at the end of a three-year start-up phase. Therefore, hospitals have an incentive to ramp up the number of residents quickly in order to maximize future federal funding even though doing so is a very costly endeavor.

Loans or grant programs can help hospitals deal with the high startup costs associated with establishing a residency program. In Arizona, a hospital loan program exists in statute, but it has only been funded once in 2007 when it received a one million dollar appropriation.[45] Through the program, hospitals that establish a new residency with at least six residents or add a new specialty with at least four residents can access up to $500,000 of interest-free financing. The program gives priority to hospitals located in rural counties.

Teaching Health Centers

The Affordable Care Act provides some opportunity for expansion of graduate medical education through the establishment of teaching health centers. Teaching health centers can include community based ambulatory care centers, federally qualified health centers, community mental health centers, rural health clinics, health centers operated by the Indian Health Service, an Indian tribe, or an urban Indian organization, or an entity receiving funding under Title X of the Public Health Service Act. According to HRSA, development grants were awarded to establish or expand primary care residency training programs in community-based ambulatory patient care centers such as federally qualified health centers and rural health clinics.[46]

The law also authorizes the National Health Service Corps to count as much as 50 percent of time spent teaching by a Corps member in a qualified teaching health center toward fulfillment of the service obligation and directs HHS to make GME payments to teaching health centers.[47]

As healthcare delivery models continue to evolve in the U.S. and in Arizona, residency programs will play an increasingly important role in training the future physician workforce.

Conclusion

Physicians play a critical role both in delivering healthcare services to communities and generating a positive economic impact. As healthcare delivery models continue to evolve in the U.S. and in Arizona, residency programs will play an increasingly important role in training the future physician workforce. During these transformative times, it is critical that policy makers consider innovative ideas to support graduate medical education programs. It is possible that no single source of funding at the state level will be sufficient to meet the need and that a combination of public and private sources will ultimately be necessary to ensure Arizona develops a sufficient pipeline of physicians.

With the suspension of state funding for graduate medical education, Arizona is forfeiting millions in federal matching funds that could be utilized to ensure that existing programs stay in place and that new ones are created to meet our current and future needs. Maintenance and expansion of residencies will help Arizona to better leverage new public and private investments in medical schools by creating an environment where physicians are able to complete all of their training in state. Further, residents play a critical role in training medical students in the clinical portion of their educational program. Support of physician training is a wise investment to improve quality of life for all Arizonans, as well as strengthen the economy through a more vibrant healthcare sector.

Interview List

As part of the research that was conducted for this project, we interviewed stakeholders from Arizona's GME community.

ORGANIZATION	NAME	TITLE
A.T. Still University	Dr. Tom McWilliams	Interim Dean, School of Osteopathic Medicine in Arizona
AARP	Len Kirschner	Arizona AARP State President. Former AHCCCS Director
Arizona Association of Community Health Centers	Wendy Armendariz SEARCH Program	Director of Outreach & Enrollment/
Arizona Governor's Office	Don Hughes	Policy Advisor, Health Care
Arizona Hospital and Healthcare Association	Laurie Liles	President and CEO
Arizona Hospital and Healthcare Association	Pete Wertheim	VP of Strategic Communications
Arizona Medical Association	Dr. David Landrith	Vice President of Policy and Political Affairs
Arizona Osteopathic Medical Association	Amanda Weaver	Executive Director
Banner Health	Dr. Alan Leibowitz	Chief Academic Officer
Banner Health	Jason Bezozo	System Director Government Relations
Catholic Healthcare West	Dr. Charles Daschbach	Director of Academic Affairs and Continuing Medical Education
Catholic Healthcare West	Mark Hillard	CEO, CHW Service Area, Physician Integration
Catholic Healthcare West	Dr. James Balducci	Academic Chairman of the Division of Obstetrics and Gynecology in the Center for Women's Health at St. Joseph's Hospital and Medical Center
Kingman Regional Medical Center	Dr. Kelli Ward	Director of Osteopathic Medical Education
Maricopa Integrated Health Systems	Dr. Michael Grossman	Vice President of Academic Affairs
Midwestern University	Dr. Lori Kemper	Dean, College of Osteopathic Medicine
Midwestern University	Dr. Howard Shulman	Associate Dean of Postgraduate Medical Education
Midwestern University	Dr. Greg Gaus	Senior Vice President/Chief Financial Officer
Midwestern University	Dr. Dennis Paulson	Vice President/Chief Academic Officer
Phoenix Children's Hospital	Erin Kuroiwa	Residency Academic Coordinator
Phoenix Children's Hospital	Dr. Grace Caputo	Director, PCH/MMC Pediatric Residency Program
Scottsdale Healthcare	Michelle Pabis	Director of Government Relations
Scottsdale Healthcare	Dr. Michael Foley	Chief Medical Officer
University of Arizona	Dr. Conrad Clemens	Interim Associate Dean for GME
University of Arizona College of Medicine — Phoenix	Dr. Stuart Flynn	Dean

ORGANIZATION	NAME	TITLE
University of Arizona College of Medicine – Phoenix	Dr. Ron Weinsten	Pathology Professor
University of Arizona College of Medicine – Phoenix	Dr. Michael Whitcomb	Flinn Medical Innovation Visiting Scholar
University of Arizona College of Public Health	Dr. Doug Campos-Outcalt	Associate Head, Family and Community Medicine
University of Arizona College of Public Health	Dr. Joe Tabor	Assistant Professor
University of Arizona College of Medicine	Dr. Jacqueline Chadwick	Former Associate Dean for Phoenix Programs
University of Arizona/ University Physicians Hospital Kino GME Consortium	Dr. Victoria Murrain	Assistant Dean for GME
Vanguard Health Systems	Reginald M. Ballantyne III	Senior Corporate Officer
Vanguard Health Systems	Dr. Tod Sugihara	Assistant Program Director, Phoenix Baptist Family Medicine Residency Program
Vanguard Health Systems	Carol Bailey	Senior Vice President of Reimbursement
Yuma Regional Medical Center	Patrick Waltz	President and Chief Executive Officer
Yuma Regional Medical Center	Dr. Ed Paul	Director of Medical Education
Yuma Regional Medical Center	Brian Bridges	Controller
Yuma Regional Medical Center	Tony Struck	Chief Financial Officer
Yuma Regional Medical Center	Dr. Stewart Hamilton	Chief Medical Officer

Reviewed By

ORGANIZATION	NAME	TITLE
Arizona State University	Dr. William Johnson	Director, Center for Health Information and Research
University of Arizona	Dr. Michael Grossman	Associate Dean of Graduate Medical Education and Vice President of Academic Affairs for Maricopa Integrated Health Services
University of Arizona/ Flinn Foundation	Dr. Michael Whitcomb	Flinn Medical Innovation Visiting Scholar
University of Arizona College of Public Health	Dr. Doug Campos-Outcalt	Associate Head, Family and Community Medicine

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Our Mission

To inform, connect and support efforts to improve the health of individuals and communities in Arizona. In all that we do, St. Luke's Health Initiatives seeks to be a catalyst for community health.

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