NORTHWEST ARKANSAS HEALTHCARE

Assessment

◆

Economic Impact

◆

Vision for the Future

Prepared for the Northwest Arkansas Council by Tripp Umbach

Northwest Arkansas' economic future will be strengthened by targeted health-sector growth initiatives.

THE REGION IS CURRENTLY LOSING $950 MILLION A YEAR.

If specialty services are added to satisfy regional demand, we can add more than $2 billion a year to the heathcare economy by 2040 and transform Northwest Arkansas into a thriving healthcare destination.

Contents

Northwest Arkansas Healthcare by the Numbers

$3.4 billion
will be added to the Northwest Arkansas annual healthcare economy by **2040** if every recommendation in this report is accomplished.

6,000 jobs
are recommended to be added to the Northwest Arkansas healthcare economy.

1,400 hospital beds
in Northwest Arkansas are serviced by acute care, critical access, psychiatric, military, rehabilitation and women's healthcare providers.

7% of Northwest Arkansas employees are working in the healthcare sector.
Peer regions such as Madison, Wis., and Des Moines, Iowa, have higher portions of their economies focused on healthcare. (9% and 8.6%, respectively)

5,840
Estimated annual hospital stays occur outside Northwest Arkansas because residents seek treatment for advanced cancer care elsewhere. Those hospital stays have an average estimated cost of $37,000.

Northwest Arkansas has room to grow the economy's healthcare sector.

An additional **8.5 cardiologists** are needed to serve Northwest Arkansas' current population. The region has 23 cardiologists in 2018.

$950 million
leaves Northwest Arkansas each year as residents travel to hospitals and physicians in other regions to provide the services they seek.

The healthcare sector currently adds **$2.7 billion** to Northwest Arkansas' economy annually.

200 additional residency positions are recommended to be pursued in Northwest Arkansas.

There are **3,490 registered nurses** in Northwest Arkansas.
Peer Evansville, Ind., has a smaller population but has 4,450 RNs.

Only 5% of the nation's medical schools offer **research** as a key curriculum component.

Healthcare accounts for about **$3.2 trillion**, or **17.8%** of the nation's gross domestic product

In 2018, there were **22,450** healthcare-related jobs in Northwest Arkansas.

58 years
Average age of Northwest Arkansas' specialty care physicians. As physicians are recruited, many will replace "aging out" retirees rather than add to the number of physicians serving the growing population.

300 medical students will graduate within 70-miles of Springdale, Ark., by 2022.
Medical programs in Fort Smith, Ark., Joplin, Mo., and Tahlequah, Okla. will reach full enrollment by that year.

NORTHWEST ARKANSAS has much to celebrate:

The region has experienced fast job growth over 25 years,

expanded workforce training programs, new recreational and cultural venues, improved infrastructure, and revitalized downtowns. The Northwest Arkansas Council creates overall regional strategic plans to push forward critical economic and quality-of-life initiatives. These plans incorporate input from stakeholders across all sectors. The region has a strong history of thinking about the highest priorities and pursuing them collaboratively. Past successes have included the opening of the Northwest Arkansas Regional Airport, the establishment of the Benton/Washington Regional Public Water Authority, and the consistent development and updating of regional highway priorities at the Northwest Arkansas Regional Planning Commission. Additionally, Northwest Arkansas has a wealth of resources dedicated to serving medical needs, including hospitals, physicians, clinicians, community leaders, educators, and supporters. The 2018 opening of Arkansas Children's Hospital Northwest and the $277 million being spent on expansions at Mercy Northwest Arkansas are examples of the region's willingness to expand and meet identified needs.[1]

The Northwest Arkansas Council's strategy for the region includes a goal of establishing Northwest Arkansas as a regional healthcare destination.[2] Regional healthcare providers and academic institutions continue to expand service offerings in a bid to keep pace with population growth, and workforce development efforts are ongoing. Thus, recognizing the need to enhance the economic vitality of the region's healthcare sector[3], the Northwest Arkansas Council hired Tripp Umbach, a nationally recognized consulting firm with expertise in community health needs and healthcare economic impact, to gain a comprehensive understanding of the relationship between healthcare and economic success. Tripp Umbach serves hundreds of communities at the intersection of health, education, and economic development. The Northwest Arkansas Council serves as a convener for regional economic and community initiatives.

The Northwest Arkansas Council serves as a convener for regional economic and community initiatives.

Unlike traditional healthcare assessments with the purpose of focusing exclusively on the access, quality, or capacity of healthcare services, this report also recommends actions intended to drive regional economic prosperity, advance quality of life, reduce costs, and increase productivity through collaboration. A critical step in this assessment was to create a Regional Healthcare Steering Committee, including an array of leaders from education, healthcare, economic development, nonprofit organizations, and bioscience (See Appendix E). The Regional Steering Committee members provided guidance and support for this assessment.

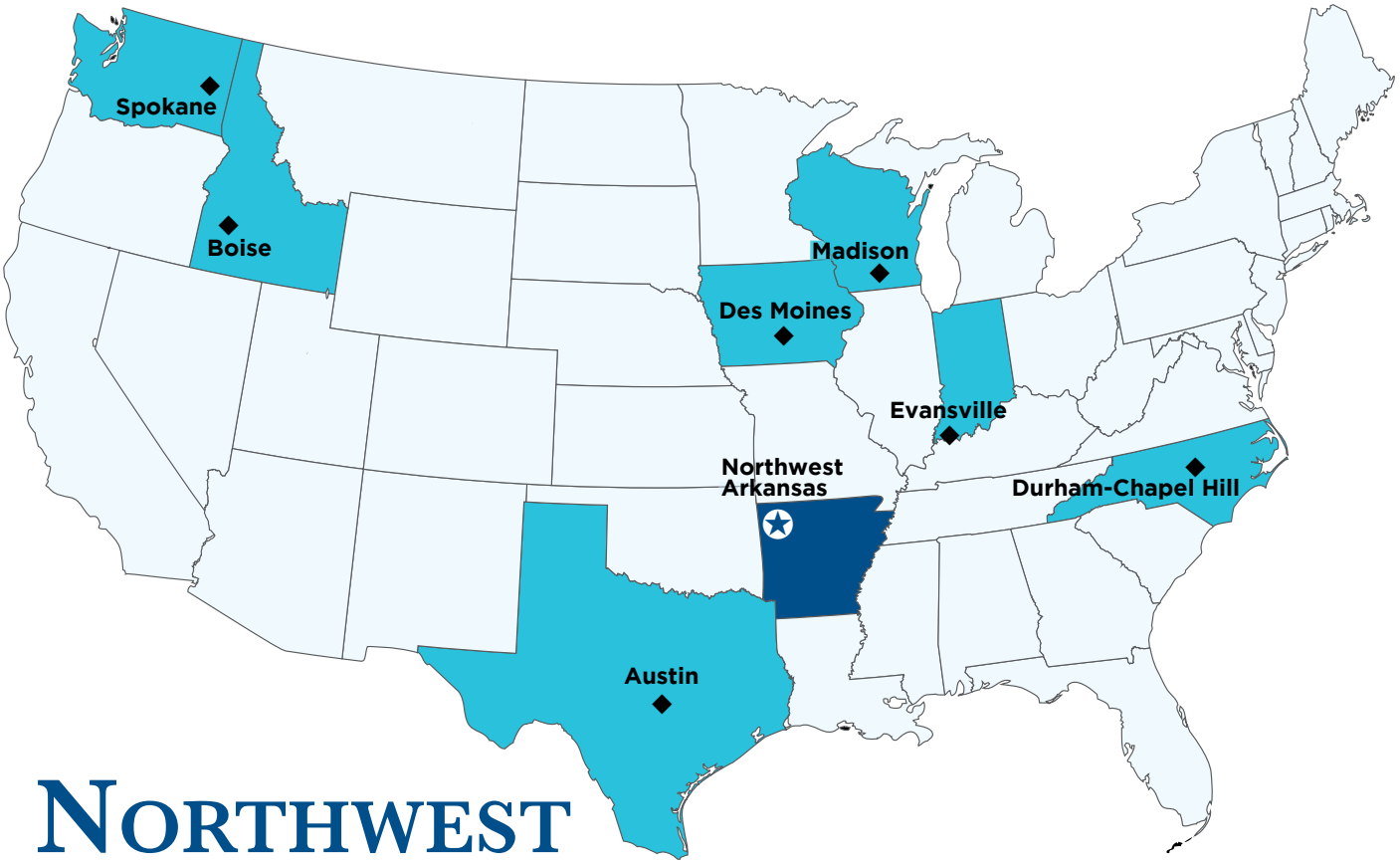
Tripp Umbach facilitated work sessions, one-on-one interviews, and site visits over a 10-month period. To supplement interviews and face-to-face engagement, the firm examined quantitative data to define the region's strengths and challenges.

Early in the assessment, Tripp Umbach identified that the region's strengths include an established primary care base with relatively high-quality, low-cost healthcare compared to other regions across the United States. These strengths align well with the "Triple Aim"

[1] Mercy Northwest Arkansas and Arkansas Children's Hospital Northwest expansions drew the most attention, but Washington Regional Medical Center in Fayetteville and Northwest Medical Center in both Springdale and Bentonville are investing in healthcare improvements as well. Northwest Medical spent $3.7 million on a behavioral health unit addition that finished in 2018. Washington Regional's growth included major 2016 and 2017 expansions as well as more than $40 million expansion that should finish up in 2019.

[2] For this report, Northwest Arkansas is defined as Benton, Madison, and Washington counties in Arkansas.

[3] Nationally, the healthcare sector is defined as the economic sector concerned with provision, distribution, and consumption of healthcare services and related products.



Northwest Arkansas' Peer Regions

The peer regions for Northwest Arkansas are defined as: Austin-Round Rock, Texas; Boise City-Nampa, Idaho; Des Moines-West Des Moines, Iowa; Durham-Chapel Hill, N.C.; Evansville, Ind.-Ky.; Madison, Wis.; and Spokane-Spokane Valley, Wash.

of national healthcare reform, namely quality, access, and cost effectiveness.[4] However, additional work is required to increase the health status of the region through coordinated population health strategies,[5] which is important to maintaining and strengthening quality and cost effectiveness. It also sets the stage for growth in advanced specialty care.

Enhancing a region's healthcare sector requires a multi-pronged approach that reaches beyond training and retaining physicians. A key element of the equation is not only the size of the workforce, but also the availability of a quality, well-trained physician workforce. Support is required from both the public and private sectors, as well as an increased willingness to collaborate and adopt innovative models that leverage the current primary care base while enhancing and attracting the next generation of advanced specialists, clinicians, researchers, and scientific leadership. The region also must leverage new and innovative technologies to enhance quality, increase access, and manage healthcare costs.

Healthcare and higher education institutions in a region have tremendous impact on the built environment and on the health of those who live and work in Northwest Arkansas. A coordinated initiative through an aligned vision will shape the healthcare sector growth of Northwest Arkansas in a way that supports healthy lifestyles, while enabling regional organizations to collaborate and innovate in ways that support the business of healthcare. Northwest Arkansas can create more connected, cohesive communities that align and support monumental, sustainable, regional initiatives focused on both healthcare transformation and community health improvement. Doing so will give an edge to Northwest Arkansas in competing as a healthcare destination in the heartland of America and eventually on a national level. ◆

[4] The Triple Aim focuses on improving the health of the population, improving the experience of care – the subjective experience, as well as the objective experience of care, resulting in care that is safe, equitable, timely, efficient, person- and family-centered – and lower costs.

[5] Population health is defined as "the health outcomes of a group of individuals, including the distribution of such outcomes within the group." It is an approach to health that aims to improve the health of an entire human population.

photo courtesy Arkansas Department of Parks and Tourism

Key Findings and Recommendations

This unique study, positioned at the intersection of healthcare, education, and economic wellbeing, is intended to guide the transformation of Northwest Arkansas healthcare. It can serve as the platform for generating billions of healthcare dollars in the economy. The following key findings form the foundation for a series of recommended actions to undertake during the next 10 years to ensure Northwest Arkansas has a vibrant healthcare economy that grows to become a healthcare destination by 2040.

Independent analysis completed by Tripp Umbach confirmed that the Northwest Arkansas healthcare sector is underperforming in economic impact compared to peer markets.[6] For example, the healthcare sector in Spokane, Wash., a region with the same population as Northwest Arkansas, generates $4.5 billion annually. The current economic impact of the healthcare sector in Northwest Arkansas is only $2.7 billion. This difference is largely attributable to the Northwest Arkansas region's lack of specialty healthcare, medical education, and research and development (R&D) spending and commercialization. According to a recent report entitled "The American Heartland's Position in The Innovation Economy" by the Walton Family Foundation, Arkansas is in the 46th position in academic R&D and 49th for overall R&D.

Further, the Tripp Umbach analysis indicated that when comparing the healthcare economy in Northwest Arkansas to the average economic impact of its peers, the regional economy is missing the opportunity to collect $950 million annually, as well as fill more than a potential 6,000 jobs. This loss to the regional economy relates to high out-migration and low in-migration of patients. Tripp Umbach found Northwest Arkansas hospitals do not attract many patients from outside the region for advanced healthcare services, largely due to underdeveloped sub-specialty service lines, including advanced cardiology and oncology. The region also loses patients to other medical regions in Arkansas and outstanding healthcare destinations such as the Mayo Clinic in Rochester, Minn. and the Houston Medical Center.

Northwest Arkansas can create more connected, cohesive communities that align and support monumental, sustainable, regional initiatives focused on both healthcare transformation and community health improvement.

With few people from outside the region making Northwest Arkansas their healthcare destination, the economic and employment impact of the healthcare sector places Northwest Arkansas far behind its peers. Feedback obtained from stakeholders during the assessment presented the reality that employers evaluating the region as a potential expansion site are examining the Northwest Arkansas healthcare sector and recognizing its challenges. Less investment from outside the region related to Northwest Arkansas' underperforming healthcare sector have long-term effects on a region's overall economic health. Northwest Arkansas must either catch up or lose ground to competing regions as it joins the nation's 100 largest metropolitan areas in 2019.

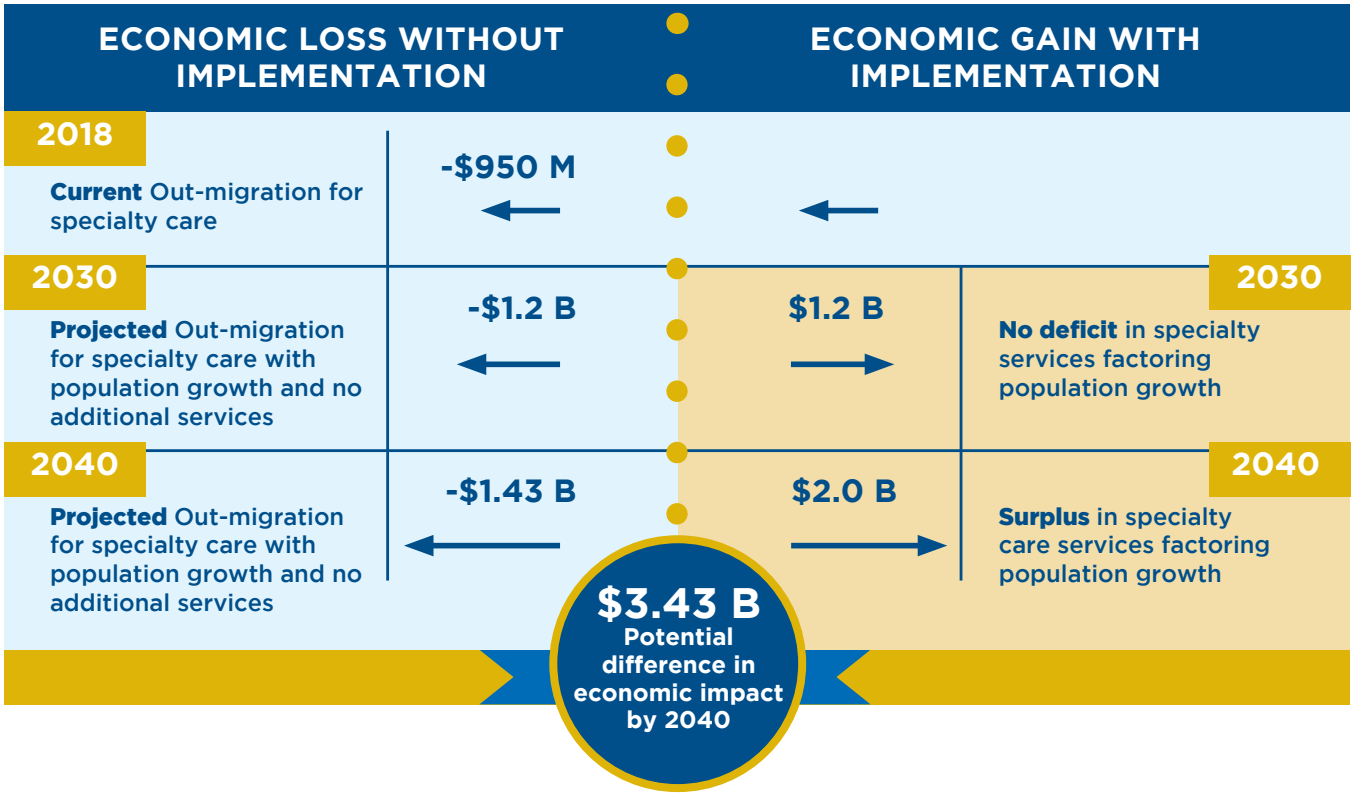
Northwest Arkansas, in fact, is well positioned to focus on eliminating the $950 million that leave the region due to out-migration. With the right steps to advance the healthcare economy, the region can add $2 billion to the sector. This strategic growth could lead to more than a $3 billion improvement achieved by 2040. (See Table 1.)

The Council's "Greater Northwest Arkansas Development Strategy: Targeting Transformational Innovation," a plan made public in July 2018, represents an important milestone in a rich and ongoing planning process to create a more collaborative and robust infrastructure. The plan focuses heavily on improvements needed to develop, attract, and retain top talent – generating pioneering ideas and growing tomorrow's great companies. Most importantly, the plan emphasizes the need for increased collaboration among healthcare providers, researchers, universities, and the business community and the need for a dedicated roadmap for future healthcare sector investments.

[6] The defined peers are either historical peers used by the Northwest Arkansas Council or communities recommended by Tripp Umbach based on the firm's familiarity with their medical community growth.

Table 1: Current and Projected Economic Implications

Northwest Arkansas can make significant additions to its $2.7 billion healthcare sector by reducing how many residents seek healthcare services elsewhere. The right combination of community investments can result in a $3.43 B economic gain by 2040.



Key Finding 1

Without a healthcare-focused regional strategy, the underperformance of the healthcare sector will negatively impact future health status, economic development, and Northwest Arkansas' population growth.

Changing demographics and national healthcare reform strain the region's strong primary care foundation, while continuing to burden its underdeveloped specialty care market. Tripp Umbach analyzed publicly available data sources and obtained confidential data from regional health systems specific to physician need by service area demand and supply within the region as well as patient migration data. Without specific, coordinated data showing in- and out-of-region migration, which is not available in Arkansas, Tripp Umbach used data showing the shortage of sub-specialist physicians based on national averages as a proxy for measuring the out-migration of patients and relatively low in-migration. Based on the aforementioned, Tripp Umbach determined the most economically impactful deficits to the regional economy are advanced cardiology and oncology. Additionally, according to 2016 data from the Arkansas Department of Health, the average age of primary care providers in the region is 52 years old and between 50 and 69 years old for specialty physicians.

Key Finding 2

Changing demographics and population growth are impacting current capacity to provide healthcare services while the healthcare industry nationally and regionally is experiencing dramatic transformation.

United States Census Bureau statistics show Northwest Arkansas was the 14th-fastest-growing metro area nationwide from 2016-17, and the state's fastest-growing region. As the region's population ages and diversity increases, healthcare organizations are adapting to meet patients' changing needs. This dramatic change is occurring while the healthcare sector addresses new health-reform requirements and

financial challenges related to growing both primary care access and advanced specialty healthcare services. A coordinated effort among healthcare, higher education, industry, and government is required to advance the healthcare sector to meet current and future needs.

Key Finding

3 **Compared to peer markets, Northwest Arkansas has relatively high-quality and low-cost healthcare services.**

Given the relative strengths and weaknesses of the regional healthcare sector, the Northwest Arkansas Council should play a leadership role in encouraging healthcare-focused innovation and collaboration. As outlined in this report, Northwest Arkansas is the poorest-performing region among peer markets in nearly every measure of healthcare sector economic development, having the fewest specialty care services and lowest per-capita health sector economic impact. However, the region has relatively strong healthcare quality and relatively low healthcare costs compared to its peers. Some of the lower costs are attributable to residents with advanced cases of non-communicable diseases seeking specialized care outside of Northwest Arkansas. Medical costs associated with treating patients with later-stage disease are higher.

Building a healthcare economy based on improving the perception that the region has high quality and cost effectiveness provides Northwest Arkansas with an advantage over other regions. Providing healthcare that is high-quality, low-cost, and accessible to all is a significant challenge for the U.S. and the world. As the healthcare sector in Northwest Arkansas leverages strengths in quality and cost and adds specialty healthcare services, cross-industry collaboration and inter-professional cooperation are keys to success. Developing an innovative platform where research conducted at colleges and universities in the region is focused on healthcare quality and cost effectiveness is a winning long-term strategy.

Key Finding

4 **Improved connectivity among employers, community health initiatives, and healthcare providers is important to achieving long-term economic and social outcomes.**

Employers and healthcare providers lack connectivity related to healthcare coverage that encourages coordinated care across health systems.

As payments to healthcare providers move from the volume of care provided to the outcome of such care, the cost of healthcare in the region will be unsustainable for individuals and employers and the financial burden of an unhealthy population will result in massive losses to the overall healthcare sector. Patients with medical complexities, who see multiple specialists for more than one chronic condition, are more likely to have healthcare needs go unmet and experience poorer outcomes. Therefore, a highly coordinated regional healthcare delivery system will form the foundation for healthcare growth and development.

Arkansas is at a great disadvantage at the core of national reimbursement methodologies as the payment formulas for Medicare are based on 60-year-old cost data when the entire state of Arkansas, including Northwest Arkansas, was severely disadvantaged in most all measures compared to the nation. This accumulating impact has been a monumental challenge for growth and development of healthcare services. These payment formulas are built into payment formulas for private insurers. Currently, reimbursement methodologies are limited for innovative medical models, which inhibit growth of emerging strategies such as virtual care.

Key Finding

5 **Limited Graduate Medical Education (GME) in Northwest Arkansas holds back needed healthcare sector expansion.**

The need for GME[7] expansion is a national challenge. The only way to become a practicing physician in the U.S. is to complete three to seven years of residency training after graduation from medical school. Currently, hospitals throughout Northwest Arkansas are funding and paying more for resident training than is being reimbursed by the federal government. Northwest Arkansas' teaching hospitals/training entities indicated that without additional alternative funding, it is unlikely they'll be able to add residents and fellows or make bigger investments in residency programs. Opportunities will continue to be missed if Northwest Arkansas does not devise an efficient system that encourages and incentivizes institutions and foundations to participate and fund additional residency training. ◆

[7] Graduate Medical Education (GME) refers to any type of formal medical education, usually hospital-sponsored or hospital-based training, pursued after receipt of the M.D. or D.O. degree in the U.S. This education includes internship, residency, subspecialty, and fellowship programs and leads to state licensure and board certification.

Recommendations

Recommendation

1 **Establish a division of the Northwest Arkansas Council focused on healthcare transformation by July 1, 2019.**
(Immediate Focus Area)

Recognizing that no single organization has the resources required to maximize economic development potential, an umbrella organization should be utilized to coordinate regional focus areas related to healthcare sector economic development. It is recommended that an "expanded" Steering Committee, hereinafter referred to as the Healthcare Sector Transformation Division or the Transformation Division, be assembled. The Transformation Division will include the direct participation of senior executives and decision-makers of academic, research, and healthcare institutions, as well as foundations operating in areas such as improved quality of care, improved healthcare access, and sustainable economic impact; public health organizations; and key private and public industry leaders.

On or before July 1, 2019, the Council's Transformation Division should be in place and have a professional staff member working to coordinate a cohesive, regional-aligned, and connected final roadmap to deliver improved health and sustained economic growth. The new division of the Northwest Arkansas Council, funded by a broad range of stakeholders, should develop an implementation guide in alignment with this report's key findings and recommendations as its initial task.

Foundational elements of the healthcare sector are in place, as evidenced by a strong primary care base. However, gaps in specialty care, trauma care, tertiary subspecialty care, medical and bioscience research, virtual care, and graduate medical education must be addressed. As the region's healthcare sector leverages its strengths in high-quality and low-cost

photo by Russell Cothren

While Northwest Arkansas fares better

than the rest of the state, Arkansas is consistently ranked as one of the least healthy states in the nation, and the current trends are mostly negative with higher rates of obesity and chronic illnesses projected.

The trends will lead to increased healthcare costs in Northwest Arkansas, and impact workers' productivity. There is currently high interest in improving overall well-being and health, and some of the transition is evident in the increasing focus on outdoor activities and the growing popularity in cycling.

That transition led Tripp Umbach to suggest the region consider regional collaborations to improve the overall health and well-being. As a result, the Northwest Arkansas Council is working with the Blue Zones Project on a potential Northwest Arkansas collaboration. Blue Zones are regions around the world with increased wellness and life expectancy. The Blue Zones Project takes lessons from those exceptional regions, places with increased physical activity, healthier diet, and reduced stress, and it works with U.S communities to make healthier options easier for residents. The project has led to measurable reductions in obesity, reduced smoking, and increased life expectancy.

Great for Business. Great for Life.

Blue Zones® Power 9®

1. **Move Naturally**
2. **Purpose**
3. **Down Shift**
4. **80% Rule**
5. **Plant Slant**
6. **Wine @ 5**
7. **Belong**
8. **Loved Ones First**
9. **Right Tribe**

The recommended areas of priorities must be undertaken to measurably increase the economic impact, health status, and overall competitiveness of the region.

Short Term (1-2 YEARS)	Mid Term (1-5 YEARS)	Long Term (2-7 YEARS)
Expand Graduate Medical Education (GME)	Develop an Interdisciplinary Research Institute	Expand Medical Education/Develop a Medical School

healthcare, cross-industry collaboration and inter-professional cooperation through the Council will be essential to providing an accelerated, efficient implementation process. Developing an innovative platform where research conducted at universities in the region is focused on healthcare advances, quality and cost effectiveness is a vital strategy. Specifically, the Transformation Division will develop a comprehensive resource strategy to support key priorities that leverage the University of Arkansas for Medical Sciences Northwest, the University of Arkansas, and regional healthcare systems.

Lastly, Tripp Umbach recommends the Transformation Division interface with other regional policy initiatives to align resources. For example, communities around the globe are developing "Blue Zone" strategies dedicated to creating healthy communities, and economic impact is associated with these strategies.[8] The interrelationship between the healthcare sector and community health improvement, if strengthened, will enable the region to achieve its maximum economic development potential.

The following priorities must be undertaken to measurably increase the economic impact, health status, and the region's overall competitiveness. The implementation of these strategies fills current gaps, allowing the region to achieve its full economic development potential. The Transformation Division plays an important role in coordinating efforts toward implementation and consists of short-term (1-2 years), mid-term (1-5 years), and long-term (2-7 years) focus areas.

[8] Blue Zones did pre- and post-testing of the participants in its first project in Albert Lea, Minn., and found that Blue Zones added an estimated 3.7 years of longevity to the residents. www.BlueZones.com; apps.BlueZones.com/en/vitality/background.

Recommendation 2

Expand Graduate Medical Education (GME)

(Short-Term Focus Area)

Graduate medical education and fellowship programs to encourage growth in the physician workforce (in both primary care and medical sub-specialties) are critical to long-term success and must become a regional funding priority. The Healthcare Sector Transformation Division should facilitate a detailed medical education and advanced graduate-level program strategy that focuses on identifying alternative funding to support the training of residents and advanced health professionals.

To support the recommended expansion of GME and advanced health professionals, beyond finances, the region must cultivate faculty engagement in clinical practice environments to provide continued connection to clinical training environments as a crucial component of recruiting physician faculty to teach medical students, residents, and advanced health professionals. Being a "teaching hospital" is a mission- and culture-changing decision for a hospital, and almost all of the nation's top-ranked hospitals are teaching hospitals. GME must be integrated into the clinical enterprise. Thus, the strategy must analyze the level of physicians that would be interested in resident training to ascertain current workload and educational obligations with medical students and other learners as well as specific concerns and needs related to the integration of expanded GME.

Through expanded GME, the region will not only secure more high-level specialists, but the additional physicians will work to grow future physicians in disciplines and service lines most needed in Northwest Arkansas. Tripp Umbach recommends that a goal be set to establish a minimum of 200 additional residency positions. It is important to acknowledge that recruitment and development of physicians to teach medical residents is a high priority and financial incentives must be in place to encourage physicians to engage in medical education and research.

Lastly, a key consideration, stated by steering committee members during the study process as an immediate strategy to address access to specialists, is strengthening referrals, specifically subspecialty rotations between health systems to enhance quality and build trust. This strategy can establish a strong platform for collaboration to support expanding medical education expansion.

Recommendation 3

Develop an Interdisciplinary Research Institute

(Mid-Term Focus Area)

An institute focused on quality, access, and cost-effective care can become a national destination for population health improvement, outcome evaluation, and improvement in the economic design of the healthcare delivery system. The concentration of Fortune 500 companies in Northwest Arkansas suggests the opportunity for a higher ratio of industry-backed research.[9] A foundational element of the research institute should be a coordinated data-sharing infrastructure to bridge all segments of the healthcare industry. Interoperability among key segments of the industry has been a limiting factor, and a unified regional platform capable of linking these segments together can have a significant impact on the economic impact of the healthcare sector. The University of Arkansas and the University of Arkansas for Medical Sciences should increase collaboration with each other and with healthcare providers to heighten health sciences research productivity and provide clinical care education experiences. The partnership should be leveraged through the development of research labs as well as clinical spaces designed to deliver advanced care to the community. The clinical space should also afford an important research and learning environment for disciplines that include health professions, biomedical engineering, science, and business.

Purposeful collaborative research among the University of Arkansas, UAMS Northwest, regional health systems, and industry will generate knowledge and translate discoveries into useful applications in the clinical and community settings. Innovation stemming from the research institute will serve as a regional magnet for patients, providers, faculty, researchers, and health technology companies. Lastly, the research institute will provide a collaborative platform for Northwest Arkansas to attract external and internal resources to support research and growth.

Recommendation 4

Expand Medical Education/ Develop Medical School

(Long-Term Focus Area)

Based on Tripp Umbach's national experience, expanded medical education serves as the capstone for a vibrant healthcare sector. While all of the peer markets studied currently have four-year medical schools, several of the communities have only recently added a school or expanded medical education as part of a regional healthcare sector development strategy. The peer markets developed medical education strategies around identified strengths. Therefore, Tripp Umbach recommends that Northwest Arkansas medical education be expanded within seven years either through the expansion of the existing medical education program at UAMS Northwest or through the development of an independent medical school. The region should keep in mind that the process to become a practicing physician in the U.S. requires four years of college, four years of medical schooling, and three to seven years of graduate medical education training.

Tripp Umbach's analysis identified that Northwest Arkansas' regional strengths exist within biomedical engineering, biological sciences, computer science, and population health management. The regional health systems will be required to collaborate with universities to drive growth in medical education, innovation, and population health research. The region should evaluate expanding highly specialized medical education programs as additional clinical training sites and residency programs are in place and the research institute is established.

[9] Greater Northwest Arkansas Development Strategy: The 2018 Blueprint. Northwest Arkansas Council.

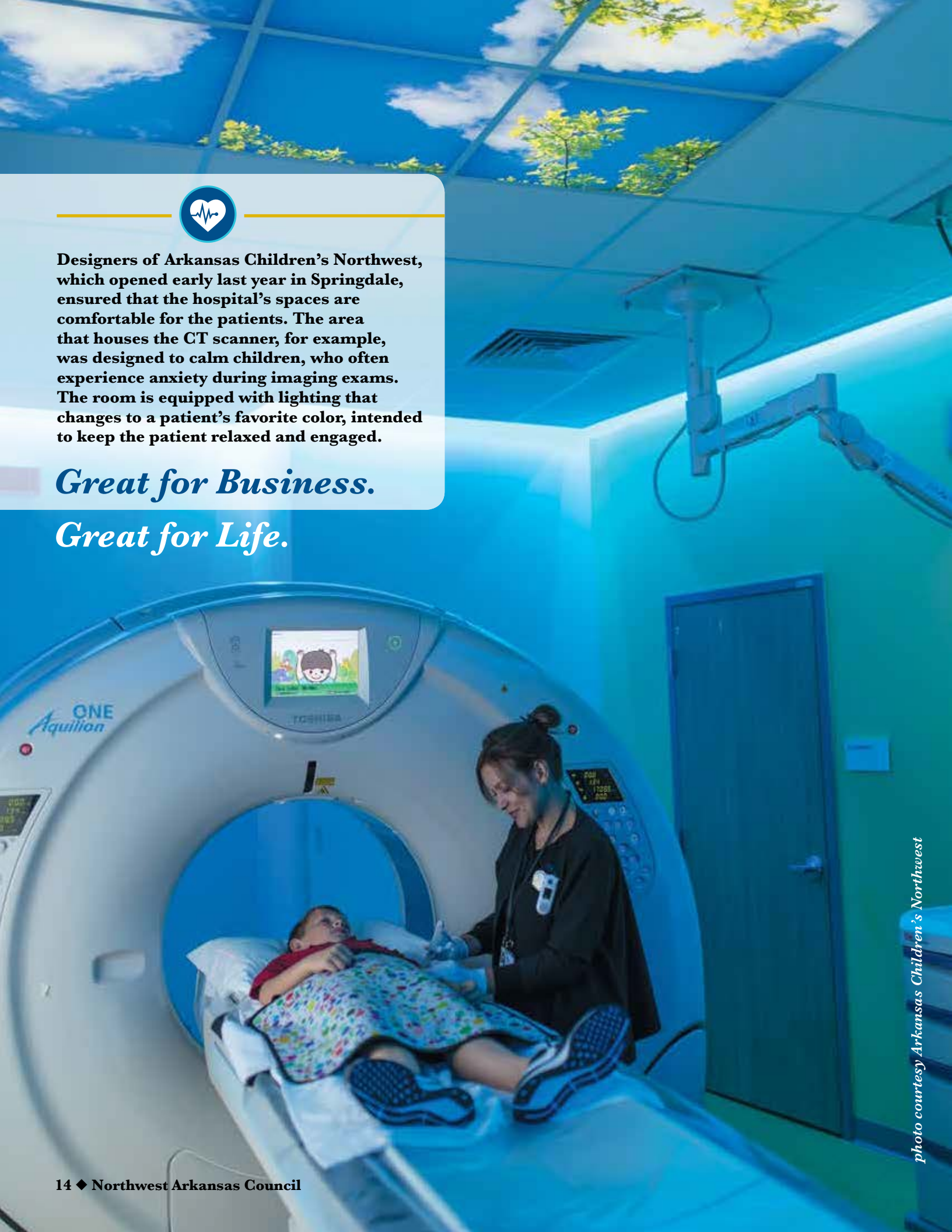
photo courtesy Arkansas Department of Parks and Tourism

Conclusion

The economic future of Northwest Arkansas will benefit from the careful planning and implementation of health-sector growth initiatives, and regional leaders should act to align its distinctive advantages to grow and strengthen the healthcare sector. Northwest Arkansas has the significant benefit of timing as upcoming changes in healthcare align well with the region's strengths. The region has a long history of offering quality, affordable healthcare, which provides a valuable and necessary foundation for expansion through existing infrastructure and assets with multiple partners. Expanding medical education and related population health research focused on the strengths of quality and cost-effectiveness will help establish Northwest Arkansas as a premier national health-sector growth market. The region will have a platform for community health and quality that will be sustainable through a commitment to long-term collaboration. All parties will play an important role in communicating the needs and benefits of attracting and fostering talent to advance healthcare delivery and research in Northwest Arkansas.

Development and implementation of a healthcare transformation roadmap will result in:

- Higher quality of care through collaboration and innovation.
- Stronger fiscal health of each organization by retaining and attracting new dollars into the region.
- Economic benefits associated with quality outcomes.
- Billions of dollars that remain in the regional economy and that come to the region, as it becomes a healthcare destination.
- Better health and quality of life for Northwest Arkansas' growing population. ◆



Designers of Arkansas Children's Northwest, which opened early last year in Springdale, ensured that the hospital's spaces are comfortable for the patients. The area that houses the CT scanner, for example, was designed to calm children, who often experience anxiety during imaging exams. The room is equipped with lighting that changes to a patient's favorite color, intended to keep the patient relaxed and engaged.

Great for Business.

Great for Life.

photo courtesy Arkansas Children's Northwest

ADVANCING THE QUALITY OF AND ACCESS TO

healthcare is a recognized priority for Northwest Arkansas community leaders.

Since 2015, the Northwest Arkansas Council's strategy included a goal of establishing Northwest Arkansas as a "healthcare destination." Working in partnership with local healthcare providers, the University of Arkansas for Medical Sciences, and other partners, the region has made improvements surrounding the quality and availability of healthcare. Providers continue to expand services to keep pace with population growth, and workforce development efforts are ongoing. Nevertheless, service offerings in specialized medical areas fall short relative to local needs. Focused work going forward needs to be accomplished to meet the "healthcare destination" goal of the region.

The region is not without resources providing quality care, but it is without a cohesive, integrated healthcare quality initiative that spans organizations and county boundaries. The magnitude of challenges and the importance to success demand engagement of all forces and a regional view.

Northwest Arkansas has a wealth of resources dedicated to serving medical needs, including hospitals, physicians, clinicians, community leaders, and supporters. Specifically, the region has more than 1,400 beds among a variety of hospital types, including general acute care, critical access, psychiatric, military, rehab, and women's care. Additionally, Mercy Northwest Arkansas is investing $277 million on capital projects and equipment between 2016 and 2021, an expansion in healthcare facilities and services that is expected to create 1,000 healthcare jobs.[10] Washington Regional Medical Center is completing a $43 million Core Renewal Project that includes interior renovation with technology updates and also will include adding approximately 20,000 square feet (atop its existing footprint) for patient rooms. Lastly, Northwest Medical Center - Springdale recently completed a major expansion of its behavioral health unit, adding 18 adult behavioral health beds for acute care to the existing 29 beds. Northwest Medical Center - Springdale is the only acute-care hospital offering adult behavioral health inpatient services in the region.

Hospitals in Northwest Arkansas are consistently recognized by Healthgrades for Hospital Quality Awards. Healthgrades ratings demonstrate how well a hospital performed in providing patient care (See Appendix A). The region has 10 Federally Qualified Health Centers (FQHCs)[11] and three Rural Health Clinics. Notably, Community Clinic and Boston Mountain Rural Health Center are the two largest FQHC providers in the region, serving more than 50,000 patients with the majority of those patients being under 200 percent of the federal poverty level. In February 2018, the first and only pediatric emergency room in Northwest Arkansas opened.

The region is not without resources providing quality care, but it is without a cohesive, integrated healthcare quality initiative that spans organizations and county boundaries. The magnitude of challenges and the importance to success demand engagement of all forces and a regional view.

In March 2018, the Northwest Arkansas Council Executive Committee approved the development of an independent, comprehensive healthcare needs and economic impact analysis. The scope included developing an understanding of the healthcare service offerings; the projected state of growth of those offerings; the economic impact of healthcare, including the economic impact of expanded healthcare offerings; and the potential expansion of a research-based, biosciences industry. Tripp Umbach was hired by the Northwest Arkansas Council to complete the analysis and needs assessment.

The analysis presented is intended to guide decisions by healthcare providers, government officials, business leaders, nonprofit organizations, and other

[10] A 190,000-square-foot patient tower will grow Mercy Hospital Northwest Arkansas from 200 beds to more than 300 beds. It will accommodate future growth with the goal of 360 beds.

[11] Federally Qualified Health Centers are nonprofit clinics that provide primary and preventative healthcare to medically underserved regions.

photo courtesy Mercy Northwest Arkansas

Technicians with Mercy Heart and Vascular Center demonstrate equipment in Mercy Hospital's hybrid catheterization laboratory and operating room. The lab was one of the first projects completed in Mercy's ongoing $277 million expansion. Among the procedures performed in the lab is transcatheter aortic valve replacement, also known as TAVR, in which a cardiology team replaces a patient's heart valve without open-heart surgery.

Great for Business. Great for Life.

stakeholders to ensure that the healthcare sector is a defining contributor to the region's success. The report serves to answer important questions, such as:

- Professional and business services industries in Northwest Arkansas are growing, but is the healthcare sector growing and evolving at the same pace?
- How can the region position itself to serve the healthcare needs of its growing, increasingly diverse population while strengthening its healthcare delivery and population health improvement?
- How can the health of the region drive future economic development and quality of life?

Coordinated efforts among healthcare organizations, higher education institutions, government entities, and research-intensive bioscience companies become the springboard for strong healthcare sector economic development. Peer communities Evansville, Ind., and Spokane, Wash., have successfully transformed their healthcare sectors by identifying key initiatives to galvanize their communities. Platforms such as the development of a comprehensive health science education research center, expanded medical education, and regionally integrated information systems are catalyzing innovation, insight, entrepreneurship, and investment in communities across the U.S. These initiatives provide the foundation for opportunities to launch new industries and add value to existing industries, creating new, high-paying jobs in healthcare, higher education, and related industries.

Population health improvement and other innovations in healthcare delivery will result in efficiencies as well as increased access to high-quality healthcare. Providing efficiencies in the healthcare delivery system and increasing access to high-quality, cost-effective care for the underserved will have economic and social benefits. However, the economic and social benefits projected in this report cannot occur without broad-based public and private financial support and active involvement from community leaders dedicated to making the investments required to achieve the full vision of a complete transformation of healthcare and the economy. ◆

Study Findings

Results from the assessment of secondary data; healthcare industry and trend analysis, including benchmarking analysis; market needs; and in-depth stakeholder feedback during the planning process identified the following driving factors that guided Tripp Umbach in formulating strategic focus areas.

Study Finding 1

Changing demographics and national healthcare reform strain the region's strong primary care foundation while continuing to burden a historically underdeveloped specialty care market.

Without a regional strategy to address the healthcare sector, the relatively weak position of healthcare services may affect future economic development and population growth in Northwest Arkansas. When considering physician supply, analysts and academics are near unanimous in their projection of current and growing doctor shortages in primary care (i.e., family medicine, general internal medicine, pediatrics, etc.). Less known is that medical specialist shortages are challenging the ability of the United States healthcare system to provide patients with timely, appropriate care. The U.S. primary care physician shortfall for 2030 will range from 14,800 to 49,300 full-time-equivalent (FTE) physicians, according to a 2017 study by the Association of American Medical Colleges (AAMC). Projected shortfalls in non-primary care specialties by 2030 range from 20,700 to 30,500 for surgical specialties and 20,300 to 36,800 for the "other" physician specialties category.[12]

Patients with medical complexities, who see multiple specialists for more than one chronic condition, are more likely to have a healthcare need go unmet. Moreover, gaps in quality and connectivity due to workforce shortages threaten the provision of quality services.[13] As the occurrences of chronic diseases rise due to a growing elderly population, the demand for specialists will increase. Demographics, specifically population growth and aging, will continue to be primary drivers of increasing demand from 2016 to 2030.

A national study conducted by Doximity indicated that in 2017, geriatrics saw the most growth, at 164 percent, compared to only 23 percent increase in cardiology.[14] According to a 2017 AAMC study: "Currently, 43 percent of physicians in the U.S. are 55 years or older, which means along with the age wave, a retirement wave is looming. In addition, certain specialties have a higher percentage of physicians over the age of 55. Pulmonology has the highest number of physicians over 55 years old (73 percent), followed by psychiatry (60 percent), non-invasive cardiology (54 percent), and orthopedic surgery (52 percent)."

According to 2016 data from the Arkansas Department of Health, the average age of primary care providers working in Northwest Arkansas is 52 years old and the average age for specialty physicians is 58. Furthermore, although quality payment programs such as a merit-based incentive payment system (MIPS) and alternative payment models (APMs) technically started several years ago, 2018 was expected to be the year when the programs had a tangible impact on patient care. With the penalty phase for MIPS beginning in 2019, it is likely that more independent specialty physicians, particularly those 65 years old and older, may take steps to end their practice by retiring, selling the practice or merging with another practice rather than make the changes necessary to operate under a value-based reimbursement model. [15]

[12] The Complexities of Physician Supply and Demand: Projections from 2016 to 2030 – 2018 Update. Prepared for: Association of American Medical Colleges. Submitted by: IHS Markit Ltd. March 2018.

[13] Cooper RA. Testimony at: Delivery Reform: The Roles of Primary and Specialty Care in Innovative New Delivery Models: Hearing before the U.S. Senate Committee on Health, Education, Labor, and Pensions. 111th Cong., 1st sess. (2009). Google Scholar.

[14] Doximity is the largest secure medical network in the nation with more than 70 percent of U.S. physicians as members, enabling collaboration across specialties and major medical centers.

[15] Trends That Will Affect Specialty Health Care into the Future. Bruce Feinberg, DO, Vice President and Chief Medical Officer, Cardinal Health Specialty Solutions | March 15, 2018.

Table 2: Impactful Deficits in Specialty Shortage for Northwest Arkansas

Information from the National Center for the Analysis of Healthcare and the U.S. Census Bureau indicates Northwest Arkansas counties have deficits in cardiologists, endocrinologists, and oncologists.

SPECIALTY	NATIONAL SPECIALTY RATIO	SHORTAGE IN BENTON CO.	SHORTAGE IN MADISON CO.	SHORTAGE IN WASHINGTON CO.	TOTAL SHORTAGE IN NORTHWEST ARKANSAS
Cardiologist	1:16,854	-5.54	-0.97	-2.03	-8.54
Endocrinologist	1:79,555	-0.77	-0.2	-1.55	-2.52
Oncologists	1:28,900	-7.48	-0.56	-0.6	-8.64

Workforce projections are often difficult to calculate as healthcare is changing at a tremendous pace, often in unpredictable ways. The projected ranges reflect uncertainties about how emerging care-delivery and financing models might change healthcare use and delivery patterns, as well as uncertainties about participation patterns in the physician labor force. This high level of uncertainty, combined with the need to incorporate new research and updated data on physician supply and demand, underscores the importance of continually monitoring the projected future adequacy of physician and other healthcare provider supply.[16]

Tripp Umbach analyzed public data sources and obtained confidential data from regional health systems specific to physician need by service area demand and supply as well as patient migration data. Without specific coordinated data showing in- and out-of-region migration, which is not available in Arkansas, Tripp Umbach used data showing the shortage of sub-specialist physicians based on national averages as a proxy for measuring the out-migration of patients and relatively low levels of in-migration.

Tripp Umbach determined the most impactful deficits to the regional economy are advanced cardiology and oncology. Deficits range widely based on the data collection mechanisms and specialty focus. However, the confidential data supplied by the health systems generally supports the findings, showing a current surplus of family medicine/general practice based on demand; a slight surplus in neurological surgeons; and deficits in cardiologists, endocrinologists, oncologists, and neurologists.

Peer Market Comparisons

While Northwest Arkansas is above the national average in family medicine providers and geriatric specialists, it is below the national average in multiple sub-specialties, including cardiology, endocrinology and neurology. While the Northwest Arkansas Neuroscience Institute provides a variety of highly specialized services, feedback from stakeholders indicated that many patients are leaving the region for neurosurgery.[17] Therefore, by adding additional neurosurgeons and related support services and state-of-the-art technology and equipment, the region could support Level 1 trauma care. Tripp Umbach found that the region ranks last or near the bottom among seven peer markets in every area of primary and specialty care.

Though primary care physicians are in strong demand, a growing volume of recruitment activity is shifting toward medical specialists, according to an annual report by Merritt Hawkins that tracks physician starting salaries and recruiting trends.[18]

Nationally, part of the decline in primary care searches is attributed to the growing use of nurse practitioners (NPs) and physician assistants (PAs). Mandates create the impetus in many states to expand payment policies for non-physician practitioners. State Medicaid payment policies are often less restrictive than those of the Medicare program. However, not all states are receptive to policy expansions and do not cover non-physician practitioner services to the extent that professional practice acts allow. For instance, the state of Arkansas does not credential PAs in the care of the Medicaid population. Medicaid is the single largest health insurer for children. It is also the primary source of healthcare for low-income parents and other non-elderly adults, the elderly, and people with disabilities. In Arkansas, Medicaid covers: 1 in 7 adults (ages 19-64), 4 in 9 children, 2 in 3 nursing home residents, 1 in 2 individuals with disabilities, and 1 in 5 Medicare beneficiaries.[19] Northwest Arkansas' employment of PAs is less prevalent than the national average and a majority of peer markets. (See Table 4.)

[16] The Complexities of Physician Supply and Demand: Projections from 2016 to 2030 – 2018 Update. Prepared for: Association of American Medical Colleges. Submitted by: IHS Markit Ltd. March 2018.

[17] Washington Regional offers the only neurosurgeons in Northwest Arkansas who perform brain surgeries.

[18] Merritt Hawkins is a national healthcare search and consulting firm specializing in the recruitment of physicians in all medical specialties, physician leaders, and advanced practitioners.

[19] Medicaid in Arkansas. September 2018. Henry J. Kaiser Family Foundation.

Table 3: Peer Market Medical Specialty Comparisons (Physician statistics per 1,000 population)

Information from the National Plan and Provider Enumeration System shows Northwest Arkansas exceeds the national average in its number of family medicine physicians per 1,000 residents, but it's below average and behind peer regions when it comes to medical specialists.

SPECIALIST	NATIONAL	AUSTIN	BOISE	DES MOINES	DURHAM-CHAPEL HILL	EVANSVILLE	MADISON	NORTHWEST ARKANSAS	SPOKANE
Family Medicine	4.81	5.75	8.95	10.29	8.70	9.82	8.90	6.52	8.07
OB/GYN	1.49	1.86	1.74	1.42	3.89	2.50	1.90	0.97	1.35
Internal Medicine	5.85	5.64	4.59	6.55	16.14	4.98	7.83	3.07	5.61
Hematology/ Oncology	0.45	0.3	0.36	0.4	2.56	0.48	0.88	0.3	0.49
Cardio Disease	1.0	0.92	0.66	1.02	3.99	1.99	1.70	0.5	1.44
Endocrinology	0.29	0.25	0.18	0.3	0.39	0.29	0.74	0.17	0.28
Neurology	0.68	0.65	0.52	0.54	2.56	0.74	1.45	0.37	0.99
Psychiatry	1.79	2.13	1.07	1.09	7.40	1.67	3.62	1.45	2.08
Geriatric FM	0.08	0.08	N/A	N/A	0.18	0.10	N/A	0.12	0.06

Table 4: Advanced Health Professionals

(Ranked by Top Location Quotient Nationally and Compared by Peer Markets)

Information from the U.S. Bureau of Labor Statistics shows Northwest Arkansas trails some of its peers in its number of nurse practitioners, physician assistants and registered nurses. A location quotient greater than 1 indicates the occupation has a higher share of employment compared to the national average, and less than 1 indicates the occupation is less prevalent than average.

NURSE PRACTITIONER	AUSTIN	BOISE	DES MOINES	DURHAM-CHAPEL HILL	EVANSVILLE	MADISON	NORTHWEST ARKANSAS	SPOKANE
Employed (Employment per 1,000 Jobs)	800 (0.799)	260 (8.57)	290 (7.88)	760 (2.542)	290 (1.875)	330 (0.850)	**320 (1.342)**	360 (1.548)
Location Quotient	0.69	0.73	0.69	**2.18**	1.61	0.73	**1.15**	1.33

PHYSICIAN ASSISTANT	AUSTIN	BOISE	DES MOINES	DURHAM-CHAPEL HILL	EVANSVILLE	MADISON	NORTHWEST ARKANSAS	SPOKANE
Employed (Employment per 1,000 Jobs)	400 (4.13)	190 (0.616)	280 (0.77)	390 (1.139)	120 (8.09)	420 (1.082)	**110 (0.441)**	140 (0.622)
Location Quotient	0.54	0.80	1.00	**1.72**	1.06	1.41	**0.58**	0.81

REGISTERED NURSE	AUSTIN	BOISE	DES MOINES	DURHAM-CHAPEL HILL	EVANSVILLE	MADISON	NORTHWEST ARKANSAS	SPOKANE
Employed (Employment per 1,000 Jobs)	12,990 (13.037)	6,040 (19.587)	7,310 (20.104)	11,700 (39.185)	4,450 (28.967)	7,570 (19.537)	**3,490 (14.535)**	5,200 (22.317)
Location Quotient	0.64	0.96	0.99	**1.92**	1.42	0.96	**0.71**	1.09

Study Finding

2 **Changing demographics and population growth are impacting current capacity to provide healthcare services while the healthcare industry nationally and regionally is experiencing dramatic transformation.**

Changes in population size, age, race, and ethnicity impact a region's healthcare resources needed, the cost of care provided, and even the health conditions associated with each population group. Northwest Arkansas' healthcare organizations have adapted to meet patients' changing needs – all while addressing health-reform requirements and maintaining financial sustainability. As Northwest Arkansas becomes larger, older, and more diverse, the ever-evolving composition of the population will continue to have profound effects on the healthcare sector and its residents. Furthermore, parts of the three counties that comprise the region for purposes of this study are federally designated as primary care, mental health, and dental Health Professional Shortage Areas (HPSAs) by the U.S. Department of Health and Human Services (HHS).[20]

[20] HPSAs are designated as having shortages of primary care, dental care, or mental health providers and may be geographic (a county or service area), population (e.g., low income or Medicaid eligible) or facilities (e.g., federally qualified health centers, or state or federal prisons) – more about shortage areas.

Specifically, according to results from the Arkansas 2016 Behavioral Risk Surveillance Survey, 20.2 percent of Benton County residents (approximately 38,000 people) and 17.6 percent of Washington County residents (approximately 30,000 people) stated they had no doctor or healthcare provider.

Northwest Arkansas is among the fastest growing regions in the U.S. In addition, economic growth has led to an increasingly diverse population. This diverse community includes a large Hispanic population and a burgeoning Marshallese community of more than 11,000 people, representing one of the largest communities of Marshallese in the U.S.. More than half of the region's residents were not born in Arkansas, and about one-third came from other countries, primarily Mexico, El Salvador, India, or China.[21] Simultaneously, important indicators such as gross domestic product, business establishment growth, average annual wages, and university R&D expenditures show strong increases from the previous year, while improvements in poverty rate and higher education attainment were more limited.[22]

The health and wellness of older people must remain a priority, as the 21st Century will be characterized by active aging. Nearly 20 percent of the region's population is age 60 or older. According to the Centers for Disease Control and Prevention (CDC), people age 65 or older visit physicians at three times the rate of those age 30 or younger. Many inpatients, who typically have acute medical problems, receive care from expensive medical specialists trained to deal with serious medical conditions. Growth of the senior population will accelerate the need for more specialists. It is largely specialists such as cardiologists, orthopedic surgeons, neurologists, rheumatologists and vascular surgeons who care for the declining health of elderly patients and a growing number will be needed as the population ages. Statewide, 56 counties have no actively licensed cardiology specialist (MD/DO).[23]

As Northwest Arkansas becomes larger, older, and more diverse, the ever-evolving composition of the population will continue to have profound effects on the healthcare sector and its residents.

In addition, while advancements in diagnostic technology and the use of physician assistants and nurse practitioners may help alleviate the shortage of primary care physicians, the advancements are less likely to do so in specialty care.

The Institute of Medicine defined primary care as "the provision of integrated, accessible healthcare services by clinicians who are accountable for addressing a large majority of personal healthcare needs, developing a sustained partnership with patients, and practicing in the context of family and community."[24] The primary care clinician not only functions as a patient's point of entry to the healthcare system but also coordinates care among any specialists that the patient may need to see. Studies have shown, by fulfilling these functions, primary care clinicians can mitigate the fragmentation of the healthcare system, dramatically reduce costs caused by redundant or unnecessary procedures, and produce better patient outcomes.

Based on findings from a recent physician needs assessment shared with Tripp Umbach by a Northwest Arkansas health system, the primary care workforce in the region will experience shortages within the next few years. According to the Arkansas Department of Health, the Central and Northwest regions accounted for approximately 75 percent of the primary care physicians in the state in 2016. Data obtained from stakeholders during this assessment shows a slight surplus of family medicine/general practice physicians compared to demand and a deficit for internal medicine and pediatrics. However, the data displays a deficit in all primary care specialties by 2021 and 2023 as the supply of healthcare services struggles to keep pace with the rising population.[25]

As the population grows and ages, primary care caseloads will include more people with multiple chronic conditions and disabilities. This is significant for many reasons; notably, the cost of healthcare is

[21] Kim Souza, Talk Business & Politics. Income inequality in NWA widens, child poverty rates remain high. Sept. 13, 2018.
[22] 2018 State of the Northwest Arkansas Region Report. Northwest Arkansas Council and University of Arkansas Sam M. Walton College of Business Center for Business and Economic Research.
[23] National Center for the Analysis of Healthcare Data (NCAHD), 2016-17.
[24] National Research Council. "Front Matter." Primary Care: America's Health in a New Era. Washington, DC: The National Academies Press, 1996.
[25] Primary care specialties are family medicine/general practice, internal medicine, obstetrics/gynecology, pediatrics, and geriatric medicine.

Table 5: The Blue Cross Blue Shield Health Index

The Blue Cross Blue Shield Health Index is derived from claims data of the company's commercially insured members. Tripp Umbach considers it to to be a compelling proxy measure of health in counties.

Conditions with greatest impact on health of the commercially insured[26]	National Impact	Benton County Impact	Madison County Impact	Washington County Impact
Hypertension	12.5%	11.4%	15.2%	12.2%
Major depression	9.0%	10.7%	6.7%	10.8%
Coronary disease	8.6%	9.2%	9.0%	7.4%
High cholesterol	7.0%	7.4%	6.9%	6.3%
Diabetes Type 2	5.5%	6.2%	8.3%	6.0%
Health Index*	0.915	0.921	0.921	0.92

*** In this index, optimal health is 1.0**

significantly higher in populations with multiple chronic conditions. According to the Blue Cross Blue Shield (BCBS) Health Index, which provides a comprehensive measure of health by quantifying how more than 200 health conditions impact the health and well-being of commercially insured Americans[26], the top five conditions within the region that have the greatest impact on both the health and cost of the commercially insured are hypertension, major depression, coronary disease, high cholesterol, and Type 2 diabetes. (See Table 5.)

The health impact of a condition is the proportion of adverse health that specific condition contributes to a defined population (by national, state, or county groupings). The national impact is derived from insurance claims data of more than 41 million BCBS commercially-insured members per year, with all identifying information removed. Despite its focus on the commercially insured population, the BCBS Health Index serves as a compelling proxy measure of a county's overall population health. The BCBS Health Index assigns defined populations a health index core of 0 to 1, where 1 represents optimal health and anything less than 1 represents the adverse impact of illness or disease on longevity and quality of life. The Health Index of .915 at the national impact level means that Americans lived at 91.5 percent of their optimal health in 2016.

Disparities in health and healthcare affect the groups, and they also limit overall gains in quality of care and health for the broader population and result in unnecessary costs. For instance, Marshallese are among the highest risk for Type II diabetes of any population in the world. Health screenings by UAMS found that 41 percent have diabetes, compared to the national average of 9.3 percent of the U.S. population.

Since 2014, more than $10 million has been awarded to the UAMS Northwest to reduce health disparities in Marshallese and Hispanic residents of Benton and Washington counties.[27] Additionally, according to the Arkansas Behavioral Risk Factor Surveillance System 2016 county estimates, more than 29,000 residents in the three Northwest Arkansas counties in this assessment were informed by a healthcare provider that they have coronary heart disease or angina.

Study Finding 3

Northwest Arkansas lags in healthcare sector economic impact but has relatively high quality and low costs healthcare services.

Healthcare is the largest sector in the U.S. economy. It accounts for 17.8 percent of Gross Domestic Product (GDP), or $3.2 trillion in 2017.[28] Healthcare accounts

[26] Excludes Medicaid/Medicare

[27] UAMS Northwest Awarded $2.1 Million for Marshallese Diabetes Prevention Research. Medicine.uams.edu/news/2-1-million-for-marshallese-diabetes-prevention-research/ May 23, 2017.

[28] U.S. Centers for Medicare & Medicaid Services, U.S. Department of Health and Human Services, NHE Fact Sheet. Baltimore: 2017.

Table 6: Healthcare Sector Economy by Peer Market

AUSTIN	BOISE	DES MOINES	DURHAM-CHAPEL HILL	EVANSVILLE	MADISON	NORTHWEST ARKANSAS	SPOKANE
$14.3 B HEALTHCARE SECTOR OUTPUT	$5.0 B HEALTHCARE SECTOR OUTPUT	$5.2 B HEALTHCARE SECTOR OUTPUT	$12.4 B HEALTHCARE SECTOR OUTPUT	$3.4 B HEALTHCARE SECTOR OUTPUT	$6.3 B HEALTHCARE SECTOR OUTPUT	$2.7 B HEALTHCARE SECTOR OUTPUT	$4.5 B HEALTHCARE SECTOR OUTPUT
$228.0 B OVERALL OUTPUT	$66.1 B OVERALL OUTPUT	$83.0 B OVERALL OUTPUT	$72.9 B OVERALL OUTPUT	$56.0 B OVERALL OUTPUT	$82.8 B OVERALL OUTPUT	$48.0 B OVERALL OUTPUT	$44.0 B OVERALL OUTPUT

Table 7: Healthcare Sector Employment by Peer Market

AUSTIN	BOISE	DES MOINES	DURHAM-CHAPEL HILL	EVANSVILLE	MADISON	NORTHWEST ARKANSAS	SPOKANE
POPULATION 2,056,405	POPULATION 664,707	POPULATION 634,725	POPULATION 520,251	POPULATION 362,967	POPULATION 630,573	POPULATION 525,032	POPULATION 556,634
101,089 HEALTHCARE SECTOR JOBS	43,419 HEALTHCARE SECTOR JOBS	39,154 HEALTHCARE SECTOR JOBS	63,122 HEALTHCARE SECTOR JOBS	25,795 HEALTHCARE SECTOR JOBS	43,527 HEALTHCARE SECTOR JOBS	22,450 HEALTHCARE SECTOR JOBS	36,743 HEALTHCARE SECTOR JOBS
7% OF JOBS IN HEALTH SECTOR	10% OF JOBS IN HEALTH SECTOR	8.6% OF JOBS IN HEALTH SECTOR	17% OF JOBS IN HEALTH SECTOR	11% OF JOBS IN HEALTH SECTOR	9% OF JOBS IN HEALTH SECTOR	7% OF JOBS IN HEALTH SECTOR	12% OF JOBS IN HEALTH SECTOR

for approximately one in every 10 jobs.[29] In 2017, healthcare became the economy's largest employment sector for the first time, exceeding retail and employing 12.4 million healthcare professionals.[30]

Peer market benchmarking indicates that Northwest Arkansas lags behind peers in the economic impact of its healthcare sector, with a healthcare sector impact of $2.7 billion in 2017. Des Moines, Iowa has twice as much impact from healthcare and there's five times as much in Durham-Chapel Hill. To meet the median of peer markets per population, the Northwest Arkansas healthcare economy would equal $3.6 billion annually – approximately $950 million more than currently. An economic impact assessment by Tripp Umbach shows the "missing" $950 million in the healthcare economy is mostly attributable to patients leaving the region for specialty care services and relatively few patients traveling to Northwest Arkansas to receive healthcare services.

Cooperation and regional goal-setting are present in Northwest Arkansas as evidenced by recent planning and prioritization of infrastructure assets. Through the Northwest Arkansas Council, there's a strong history of considering regional priorities and pursuing them collaboratively. Past collaborative successes include the opening of the Northwest Arkansas Regional Airport, the establishment of the Benton/Washington Regional Public Water Authority, and the consistent development and updating of regional highway priorities at the Northwest Arkansas Regional Planning Commission. However, the region is lagging in the arena of healthcare-focused collaboration to foster service growth and meet the needs of a growing population with innovation. Metros across the nation have their own innovation assets, requiring leaders to employ unique strategies to leverage them. The peer markets analyzed for this assessment have strong anchor institutions surrounding academic medicine and a high concentration of health-related research, with deep specializations in areas such as health information technology.

Peer markets noted in this report are successfully expanding their healthcare sectors in big ways, making positive impacts on the economies, healthcare services, and quality of life.

[29] "Health Care Employment as a Percent of Total Employment." The Henry J. Kaiser Family Foundation. Last modified: May 2015. KFF.org/other/state-indicator/health-care-employment-as-total.
[30] *The Atlantic*. Jan. 10, 2018.

Spokane, Wash., and other peer markets, for example, analyzed how their healthcare economies are clustered, how these clusters align with existing infrastructure or physical/locational assets, and which areas are most ripe for healthcare innovation and strategic investment. Collaborative innovation is necessary to advance in healthcare; thus, within the peer markets, coalitions and councils to build on both the innovation and place-making strengths within the healthcare sector of that region have been developed. Specifically, in healthcare, life science breakthroughs are coupling with information technology in areas such as personalized medicine and health IT to redefine the care continuum, creating wide openings for technology and life science capitals such as Austin, Texas.

Durham-Chapel Hill, N.C., and Madison, Wis., are metros with historically strong academic health-related research platforms and world-renowned healthcare facilities. Those have led to strong foundations of medical specialties per capita and relatively high percentages of employment and economic output from their healthcare sectors. Des Moines, Iowa, Evansville, Ind.-Ky., and the Spokane metro are mature healthcare markets that have recognized the need to make investments in health science, medical education, and health-related research.

The Austin, Texas, metro has a strong technology foundation and is an up-and-coming healthcare market. It made investments in research and medical education through a new medical school and in a teaching hospital through a community integrated partnership with the county (See Appendix B). Meanwhile, the Boise City-Nampa, Idaho metro is a relatively weak healthcare market, related to specialty care. However, the area is now making investments in research and medical education with the addition of the only medical school in the state.

To evaluate and benchmark Northwest Arkansas' healthcare sector to peer markets, Tripp Umbach developed an industry sector for "Healthcare" based on the IMPLAN industry codes that apply to the healthcare industry. [31]

The "missing" $950 million in the healthcare economy is mostly attributable to patients leaving the region for specialty care services and relatively few patients traveling to Northwest Arkansas to receive healthcare services.

The key to long-term success in healthcare sector transformation is the identification of platforms for economic growth and development that are rooted in historical strengths and future aspirations. Tripp Umbach identified specific healthcare growth platforms within the seven peer markets. The table in Appendix B summarizes the various platforms for peer markets and the relative position of the healthcare sector within their overall economies.

Table 8 (next page) shows that all of the peer markets have healthcare or higher education among their top two employment sectors. Northwest Arkansas, however, has retail trade and manufacturing as its top sectors. It's likely that those two sectors will remain centerpieces of the future Northwest Arkansas economy as the region's largest employers are making new, strong commitments to the region. Walmart, for example, plans to build a world-class new headquarters in Bentonville and expects that project to take several years. Tyson Foods opened a new technology hub in downtown Springdale in 2017, and J.B. Hunt Transport Services completed an impressive expansion that same year, which led to new jobs in Northwest Arkansas. In 2018, J.B. Hunt began work on a new technology center that will house hundreds of workers.

The concentration of Fortune 500 companies in Northwest Arkansas suggests the opportunity for a higher ratio of industry-backed research.[32] However, according to the recent report by The American Heartland's Position in The Innovation Economy | Walton Family Foundation, Arkansas, is in the 46th position in academic R&D and 49th for overall R&D. Additionally, the National Science Foundation ranks 900 universities on annual R&D expenditures. The University of Arkansas ranked 130th out of 900 universities in 2016. Compared with other flagship, land-grant universities, Arkansas ranked near the bottom in terms of industry-funded R&D. Additionally, the 2016 study by the Arkansas Department of Health regarding projected job growth for 2022 stated that healthcare jobs will grow dramatically in Northwest Arkansas, but the growth in that sector is still less than the national level growth.

[31] Scientific research and development services, offices of physicians, offices of dentists, offices of other health practitioners, outpatient care centers, medical and diagnostic laboratories, home healthcare services, other ambulatory healthcare services, hospitals, nursing and community care facilities, and residential mental retardation, mental health, substance abuse, and other facilities.

[32] Greater Northwest Arkansas Development Strategy: The 2018 Blueprint. Northwest Arkansas Council. .

Table 8: Occupation and Industry Profiles by Peer Market

Information about Northwest Arkansas and its peer regions provided by Data USA, which shares government statistics, indicates the largest industries and the college majors that are most prevalent.

	Largest Industries (2016)	Most Popular Majors (2015)
Northwest Arkansas	**Retail trade, Manufacturing, and Healthcare & Social Assistance**	**General Finance, Registered Nursing, and General Biological Sciences**
Peer Regions:		
Austin-Round Rock, Texas	Professional, Scientific, Tech Services, Retail Trade, and Healthcare & Social Assistance	General Biological Sciences, General Psychology, and Other Multidisciplinary Studies
Boise City-Nampa, Idaho	Healthcare & Social Assistance, Retail Trade, and Manufacturing	Registered Nursing, Speech Communication & Rhetoric, and Other Health Professions & Related Clinical Sciences
Des Moines-West Des Moines, Iowa	Finance & Insurance, Healthcare & Social Assistance, and Retail Trade	Liberal Arts & Sciences, Registered Nursing, and Criminal Justice - Police Science
Durham-Chapel Hill, N.C.	Educational Services; Professional, Scientific, Tech Services; and Healthcare & Social Assistance	General Biological Sciences, General Psychology, and General Economics.
Evansville, Ind.-Ky	Manufacturing, Healthcare & Social Assistance, and Retail Trade	Registered Nursing, Health Care Administration & Management, and Kinesiology & Exercise Science
Madison, Wis	Healthcare & Social Assistance, Educational Services, and Retail Trade	General Economics, General Biological Sciences, and General Psychology
Spokane-Spokane Valley, Wash.	Healthcare & Social Assistance, Retail Trade, and Educational Services	General Psychology, General Biological Sciences, and General Business

Note: For a map of peer regions, see page 4.

As recently stated within the Greater Northwest Arkansas Development Strategy, prepared by the Northwest Arkansas Council, the entrepreneurial support system is fractured and must be regionalized to build critical mass in industry clusters, talent, and capital. Additionally, the strategy stated the region must build better connectivity among regional employers, the University of Arkansas, and entrepreneurial support organizations to capitalize on the organic growth potential of the region's three Fortune 500 companies and a Class I Carnegie research institution. The peer markets evaluated for this study have strengths within major research universities, academic medical centers, and research-oriented medical hospitals with extensive research and development, and in some cases, strong industry anchors in technology.

Northwest Arkansas is home to one major research university and several other institutions of higher education. The University of Arkansas educates about 70 percent of the more than 38,000 students enrolled in the region's higher education institutions. The university's College of Education and Health Professions focuses on two important areas – education and health – with diverse disciplines including teaching,

nursing, community health promotion, human resource development, kinesiology, recreation and sport management, and communication disorders. Other schools, including NorthWest Arkansas Community College (NWACC) and John Brown University (JBU), also play important roles in the region.

The UAMS Northwest campus is an extension of the UAMS medical education, research, and clinical mission in Northwest Arkansas. Academic programs through the Colleges of Medicine and Pharmacy allow UAMS third- and fourth-year students to complete their degrees in Northwest Arkansas. Medical students spend a significant portion of the third and fourth years of medical school in hospitals and clinics learning under the supervision of experienced physician educators. In addition, the regional campus includes graduate-level nursing programs, a doctoral physical therapy program, and an undergraduate program in radiologic imaging. UAMS Northwest offers residencies in family medicine, internal medicine, psychiatry, and pharmacy, along with a fellowship in sports medicine.

Strong academic and research programs serve as a catalyst with hospitals and health systems in a region, leading to medical education expansion, clinical research, basic science, and new sub-specialty programs. A strong academic medicine base that includes clinical and industry affiliations leverages and enhances a region's healthcare sector, including but not limited to the bio/life science and tech industry, which diversifies its offerings. This approach creates jobs by attracting and retaining quality workforce and sparking potential commercialization and spinoff business, and it simultaneously keeps residents from seeking services elsewhere. It helps capture and keep dollars in the region.

The benchmarked peer markets in this assessment have moved beyond the traditional model where healthcare entities interface only with academic medicine to provide clerkships for undergraduate medical students and/or sponsorship of a residency program. They have evolved to a model where expansion of clinical programs and services are closely tied to both teaching and research programs. Research opportunities between faculty at academic institutions and physicians translate into expanded clinical programs for patients in the region as well as those who travel to the area for advanced care. The attraction of increased volumes of patients from outside of the region due to "destination healthcare" stimulated by state-of-the-art, specialized clinical care and integrated research and teaching support increased economic activity throughout the peer regions.

Study Finding 4

Improved connectivity among employers, community health initiatives, individuals, and healthcare providers is critical to achieving long-term economic and social outcomes.

The U.S. healthcare delivery system has been evolving over decades, from the "golden age" of fee-for-service in the 1960s, '70s, and '80s to the proliferation of managed care in the '90s to the increasingly corporatized and value-driven system in place today.[33] Throughout the U.S., health insurance premiums are expected to rise in the coming years and the number of people covered by insurance exchanges is likely to decline. Rather than more uniform coverage and regulations, insurance costs, options, and regulations are expected to vary more from state to state. Nationally, a modern managed healthcare model is growing out of a desire to reform the traditional healthcare system, or the fee-for-service method of charging for healthcare. The U.S. healthcare system continues to evolve its focus on quality care and population health.

Arkansas is moving to a value-based system and has utilized creative solutions to expand healthcare coverage to individuals. The Arkansas Department of Human Services has made quality improvement and performance assessment a cornerstone in its efforts to improve healthcare delivery for all Arkansans. Most notably, Arkansas was the first state to receive a Medicaid 115 waiver from the Patient Protection and Affordable Care Act, and studies conducted by the Commonwealth Fund indicate Arkansas is on the road to success with its waiver program for low-income adults.[34] Additionally, the Arkansas Foundation for Medical Care (AFMC) is a leading quality improvement organization committed to improving healthcare. AFMC works in collaboration with Arkansas Medicaid to help the state's healthcare professionals and hospitals offer the best quality care.

In 2014, the Centers for Medicare & Medicaid Services (CMS) transitioned the Quality Improvement Organization program to a regional structure, now referred to as the Quality Innovation Network-Quality Improvement Organization program. The new region, led by the Texas Medical Foundation Health Quality Institute and including Arkansas, Missouri, Oklahoma and Puerto Rico, is responsible for assisting providers in

[33] 2018 Review of Physician and Advanced Practitioner Recruiting Incentives. Merritt Hawkins.
[34] www.CommonwealthFund.org/publications/issue-briefs/2017/feb/evidence-private-option-arkansas-experience

Table 9: Hospital Referral Region by Employer-Sponsored Insurance

Data collected by the Commonwealth Fund compares healthcare spending and quality. The chart shows how Northwest Arkansas compares to its peers when it comes to employer-sponsored insurance.

	Total spending per enrollee and affect on overall quality score		Hospital 30-day readmission rate, per 1,000 enrollees vs. quality score		Potentially avoidable ED visits, per 1,000 enrollees vs. quality		Preventable hospitalization, per 1,000 enrollees	
Referral Region	**Total spending per enrollee**	**Quality score**	**Rate**	**Quality score**	**Visits**	**Quality score**	**Prevent-ables**	**Quality score**
Austin	$4,423 (7% lower)	2% higher	3.2	1% lower	141.2	1% lower	6.6	0% difference
Boise	$5,403 (13% higher)	0% difference	5.2	2% lower	136.6	2% higher	6.4	3% higher
Des Moines	$4,023 (16% lower)	9% higher	3.3	3% lower	120.7	15% higher	6.3	5% higher
Durham-Chapel Hill	$4,261 (11% lower)	1% higher	2.9	7% higher	145.8	5% lower	6.5	2% higher
Evansville	$5,352 (12% higher)	4% lower	3.5	10% lower	144.7	4% lower	7	6% lower
Madison	$6,517 (37% higher)	0% difference	3.4	8% lower	147.1	5% lower	6.6	0% difference
Northwest Arkansas	$3,694 (23% lower)	2% higher	2.9	9% higher	127.9	9% higher	6.0	10% higher
Spokane	$4,334 (9% lower)	13% higher	2.5	26% higher	121.5	14% higher	5.6	18% higher

Arkansas.[35] Arkansas has emerged as a leader through the design and implementation of its innovative Arkansas Payment Improvement Initiative (APII) in 2011. From its onset, APII has been a collaborative effort among Arkansas Medicaid, Arkansas Blue Cross and Blue Shield, and QualChoice of Arkansas.

Working with hundreds of physicians, hospital executives, patients, families, and advocates, the APII team created a new patient-centered healthcare system. The system will transition Arkansas from a passive payer for medical services to an active purchaser of healthcare that embraces the "Triple Aim" of improving the health of populations and communities, enhancing the patient experience of care, and reducing the rapidly rising and unsustainable costs of care through quality improvement. Though some aspects of the initiative exist elsewhere in the country, Arkansas is the first Medicaid program to use this approach statewide with both public and private payers.[36]

In spite of dramatic healthcare transformation at the national and state levels, hospitals in Northwest Arkansas are still largely funded through a fee-for-service model, where doctors and hospitals get paid for each service performed. According to interviews and work sessions completed by Tripp Umbach with top regional healthcare leaders, local hospitals are in a crucial transition period from a historic fee-for-service payment model to a value-based payment model in which healthcare systems receive payment for providing quality care and managing a set patient population.

Managing a set population of patients is challenging in Northwest Arkansas, where the majority of insurance plans provided by employers allow patients to choose specialty care from multiple providers in and outside the region. In an environment with mixed primary-specialty, mixed-employee, and mixed-systems, it is difficult to control where patients go to see specialists. Furthermore, a lack of coordinated care makes efforts to improve overall population health difficult. Northwest Arkansas' efforts toward strengthening the region's integrated medical practices, patient home structure and deployment of

[35] AFMC.org/quality/
[36] HumanServices.arkansas.gov/about-dhs/dms/aqg/aqg-state-of-health-care

Table 10: Hospital Referral Region by Medicare Enrollee

The Commonwealth Fund maintains a database about the quality of care and healthcare spending in regions across the U.S., including people who are Medicare enrollees.

	Total inpatient spending per beneficiary and affect on overall quality score		Inpatient spending per beneficiary vs hospital quality score		Hospital 30-day readmission rate; Percent of hospitalizations		Patients received patient-centered care		All four conditions combined (i.e., heart attack, heart failure, stroke, pneumonia): 30-day mortality among hospitalized patients	
Referral Region:	**Total**	**Quality score**	**Amount**	**Quality score**	**Rate**	**Quality score**	**Rate**	**Quality score**	**Rate**	**Quality score**
Austin	$9,890 (7% higher)	2% higher	$2,350 (6% lower)	3% higher	15.4%	5% higher	71.1%	4% higher	13.8%	4% higher
Boise	$7,812 (15% lower)	22% higher	$2,048 (19% lower)	7% higher	12.6%	28% higher	70%	2% higher	14.4%	1% lower
Des Moines	$7,624 (17% lower)	12% higher	$2,087 (17% lower)	3% higher	13.8%	17% higher	70.3%	3% higher	15.2%	6% lower
Durham-Chapel Hill	$8,747 (5% lower)	5% lower	$2,558 (2% higher)	2% lower	17.2%	6% lower	66.7%	2% lower	14.5%	1% lower
Evansville	$9,524 (3% higher)	6% lower	$2,688 (7% higher)	0% difference	16.6%	3% lower	70.8%	4% higher	14.8%	3% lower
Madison	$7,185 (22% lower)	14% higher	$2,049 (18% lower)	5% higher	14.7%	10% higher	72.9%	7% higher	14.4%	1% lower
Northwest Arkansas	$8,808 (4% lower)	5% higher	$2,433 (3% lower)	3% higher	14.3%	13% higher	67.3%	1% lower	15.7%	9% lower
Spokane	$7,778 (16% lower)	16% higher	$2,047 (19% lower)	5% higher	13.4%	21% higher	69.7%	2% higher	15.2%	6% lower

**Note: all metrics are based on relative to US median*

technology, as well as defined referral processes, have been somewhat successful toward population management – managing both utilization and overall hospitalization cost. Continued improvement through the aforementioned efforts along with connectivity among employers and healthcare providers related to healthcare coverage that encourages coordinated regional care is critical. Leaders from healthcare and industry must share insights, expertise, and responsibility for population health and quality outcomes.

Healthcare is both an asset and liability to metropolitan regions and the nation. On the one hand, employment and spending in the sector has outpaced all other economy sectors.[37] On the other hand, the nation's healthcare costs continue to rise faster than incomes and corporate profits. Nationally, healthcare costs have increased at a higher rate than GDP each year for three decades – an unsustainable pace, although the rate of growth in healthcare costs has slowed significantly in recent years.

Productivity growth in healthcare is lower than in any other sector of the economy, with the exception of construction, and a significant body of research has highlighted areas of weakness in quality of care, the prevalence of medical errors, and inconsistent access

[37] In the 10 years preceding 2014, employment in the healthcare sector grew 24.8 percent, while the economy as a whole grew 5.8 percent. Brookings Institution analysis of Moody's Analytics estimates.

to care and outcomes.[38] Hospitals are evaluated across a wide range of conditions and procedures. Within that range, hospitals perform differently. Viewed most broadly, the purpose of quality measurement is to secure the most healthcare value for society's very large investment. Knowledge about the state of quality is essential if policymakers are to understand the effects of health of services that are provided and how these effects may differ for different patient populations, health conditions, and settings of care.[39] Quality is related but not identical to good outcomes. Services provided will offer more benefit than harm, based on the best available information about the patient and about the effectiveness of a particular kind of treatment for patients with similar health problems.

In terms of clinical quality, such measurement often focuses on the diagnosis and management of disease and will address preventive care such as screening for disease. Performance measures may include interpersonal aspects of care, service, timeliness, and convenience. Technical aspects of care include the timeliness and accuracy of diagnosis, the appropriateness of therapy, complications and mishaps during treatment and coordination of care across delivery settings, episodes of care, and professional disciplines.

The Robert Wood Johnson Foundation publishes annual county health rankings for each state. Health outcomes in the three Northwest Arkansas counties that are the focus of this assessment represent a wide variance. Health rankings are based on two measures: how long people live and how healthy people feel while alive.

Similarly, the foundation ranks counties based on health factors that influence the county. The ranking is based on four measures: health behaviors, clinical care, social and economic factors, and physical environment. Benton and Washington counties rank No. 1 and No. 2 in Arkansas for Health Outcomes, 2018 County Health Rankings show, but it is important to note that Arkansas is ranked among the bottom in all these measures (See Appendix C).

Because comparisons to Arkansas have limitations due to the state's low national rankings in health quality and health outcomes, Tripp Umbach benchmarked Northwest Arkansas with national averages and the seven peer regions. Data tools available through the Commonwealth Fund provide ways to compare healthcare spending, relative to quality of care, in all states, as well as in the nation's 300-plus local healthcare markets, called hospital referral regions (HRRs). Within all tables, the data is shown relative to the median for the U.S. In some instances, HRRs spend less but achieve higher quality, and some spend more but achieve lower quality. As capitated payments to healthcare providers in the future are tied to healthcare quality and outcomes, it is important for quality and outcome scores to remain higher than the U.S. median as Northwest Arkansas adds subspecialty services.[40]

Northwest Arkansas has slightly above average healthcare quality compared to the U.S. median among the employer-sponsored insurance enrollees and significantly lower healthcare spending, due in large part to a high percentage of the insured population leaving the region for high-cost specialty care. Quality is slightly higher, but cost is only slightly lower for the Medicare population as more than 80 percent[41] of Medicare enrollees remain in Northwest Arkansas for their inpatient care.

The benchmarked metros studied by Tripp Umbach with the highest percentage of specialty care such as Madison, Wis., have significantly higher spending per employer-sponsored insurance and only average quality. One of the methods for higher quality of care is a strong network of integrated primary care and specialty physicians. Currently, network integration in Northwest Arkansas is scattered throughout the region, and continued movement toward closer integration is critical. Lastly, most commercial payers are moving to additional reimbursements for quality compliance, and patient satisfaction. Commercial payers account for the majority (61 percent) of the Northwest Arkansas population. Medicare has the most growth at 1 percent, while commercial and uninsured are expected to decrease 1 percent.[42]

Study Finding

5 **Limited Graduate Medical Education (GME) in Northwest Arkansas is holding back needed healthcare sector expansion.**

The need for GME expansion is a challenge facing the entire country, not just Northwest Arkansas. Nationally, the number of students graduating from

[38] Brookings Metropolitan Policy Program | August 2016
[39] Measuring the Quality of Health Care. 1999. A policy paper that extended the Institute of Medicine's efforts to inform policymakers, provider organizations and clinicians, purchasers, and consumers about the measurement of healthcare quality—its uses, methods, promise and current challenges.
[40] Revenue under these arrangements is earned as a result of agreeing to provide services to enrollees for a per-member, per-month fee without regard to the actual amount of services provided.
[41] Percent obtained through non-disclosure agreement data presented by a hospital-specific assessment.
[42] Source: IBM Insurance Coverage Estimates, 2018-2023.

photo courtesy UAMS Northwest

Great for Business.
Great for Life.

At the Jean Tyson Child Development Study Center in Fayetteville, Kemmian Johnson and Anna Nguyen, fourth-year medical students at the University of Arkansas for Medical Sciences (UAMS), talk with preschoolers about healthy eating and staying active as part of a balanced life. UAMS is an important part of expanding the healthcare economy in Northwest Arkansas.

medical school keeps increasing. Some 21,000 first-year students enrolled in allopathic medical schools in 2016-17, which amounts to a 28 percent increase since 2002-03, the AAMC reports in an annual survey of medical school deans. During that same 14-year period, first-year enrollment at osteopathic schools increased 148 percent, reaching 7,369 in 2017.

There are many new medical colleges in the pipeline. By 2022, when full enrollment occurs at Kansas City College of Osteopathic Medicine in Joplin, Mo., a new medical school in Fort Smith, Ark., and a new regional campus of the Oklahoma State University College of Osteopathic Medicine in Tahlequah, approximately 300 medical student graduates will be within a 70-mile radius of the Northwest Arkansas city of Springdale. Additionally, the New York Institute of Technology opened a College of Osteopathic Medicine at the Jonesboro campus of Arkansas State University in 2016, and some of those students may be interested in careers in Northwest Arkansas.

It's worth noting that simply increasing the number of medical students does not lead to more physicians remaining in a region to practice. Nationally, there is a 60 percent chance that a person who completes medical school and graduate medical education training in a region will remain in the region to practice. It's even more challenging when a person completes only medical school in a region. The chance of that person remaining to practice in the area drops to approximately 20 percent.

Although there has been a significant increase in medical school enrollment in the past decade, the number of governmental-funded residency training positions available to new medical school graduates has remained almost flat.[43] That limitation, and the move to a single accreditation process for American Osteopathic Association (AOA) and Accreditation Council on Graduate Medical Education (ACGME) graduate training programs, will increase the competition for residency training positions among graduates. If new medical school graduates do not matriculate into residencies,

[43] Effective Oct. 1, 1997, to the extent the number of allopathic or osteopathic residents being trained at a teaching hospital exceeds the 1996 limit, teaching hospitals receive no additional Independent Medical Evaluation or Direct Graduate Medical Education payments. Podiatry and dental residents are excluded from the resident limits.

photo courtesy Washington Regional Medical Center

Abbi Hopper and Elizabeth Reynebeau, who work in the neonatal intensive care unit at Washington Regional Medical Center in Fayetteville, are among the 3,490 registered nurses who work in Northwest Arkansas. There are more than 22,450 healthcare workers in the region, accounting for 7 percent of the workforce.

Great for Business. Great for Life.

they won't practice, offering no relief to the nation's physician shortage. Additionally, the number of non-physician providers is growing steadily. Almost 28,000 nurse practitioners graduated in 2017 alone. However, the potential of non-physician providers to deliver care is hindered by state-to-state laws that can limit their ability to diagnose and treat patients on their own.

The future of medical education and healthcare requires innovation and collaboration. Patients, providers, academic institutions, community organizations, and industry must work together in innovative ways to provide high-quality care with better outcomes at lower costs. That's especially important considering healthcare's transition to value-based care. GME is an essential public investment in tomorrow's healthcare system that furthers the nation's goal of attaining the Triple Aim of better health, better healthcare, and lower costs.[44] Ideally, GME is tied closely to research infrastructure, providing essential training in research methods directly relevant to discovering new ways to keep patients healthy, diagnose and treat illness, and improve the delivery of care.[45]

In the past few years, the debate on how to best fund and reform GME has moved up the health policy agenda. The dominant public funder of GME is Medicare, with Medicaid and the Veterans Administration also contributing significantly to GME funding. Proposals to reform GME have focused on funding, governance, and the prioritization of specialties. Most proposals come from national organizations offering national solutions. Generally absent from the discussion is the important role state, regional, and local leaders play in reforming GME. A few states have pioneered methods and organizational structures to target GME positions relative to state health workforce needs and have offered creative

[44] Berwick DM, Nolan TW, Whittington J. The Triple Aim: care, health, and cost. Health Aff (Millwood). May-Jun 2008;27(3):759-769.

[45] COGME: Twenty-first Report, August 2013.

mechanisms to support GME.[46] Ultimately, regional economies have a strong stake in developing GME programs to meet the needs.

More than 20 years ago, the federal government decided to limit the number of residents Medicare helped subsidize to curb associated costs. The number of residents a hospital was teaching at the end of 1996 is the cap to which that hospital is limited today; meaning fast-growing regions such as Northwest Arkansas must find other ways to pay for their medical residents. Since 1997, there have been many federal government proposals where increasing GME funding was considered, including the Medicare Payment Advisory Commission (MedPAC) 2010 report, the 2011 Joint Committee on Deficit Reduction ("Super Committee"), the Simpson-Bowles Commission, and the Obama Administration's 2013 budget.[47] In Congress, a bill that would increase Medicare-funded residency slots for hospitals continues to circulate. Regardless, the GME spending cap remains in place.

Currently, hospitals throughout Northwest Arkansas are funding and supporting residents beyond their federally funded cap. Although Medicare remains the primary formal financier of programs, contributing a majority of all tax-financed support, it is not the only funding option. Other federal payers include Medicaid, the U.S. Department of Veterans Affairs, the U.S. Department of Defense, and the Bureau of Health Professions. States are realizing they must develop innovative funding mechanisms for GME expansion. For example, beyond traditional and non-traditional federal and state funding sources, private insurers, hospitals, universities, physicians' organizations, collaborative consortium efforts, and private philanthropy from industry and individuals have funded GME programs across the country.

GME is an essential public investment in tomorrow's healthcare system that furthers the nation's goal of attaining the Triple Aim of better health, better healthcare, and lower costs.

Without additional alternative funding, Northwest Arkansas' teaching hospitals/training entities reported they are unlikely to add residents or make further investments in programs. Opportunity will continue to be missed if Northwest Arkansas does not devise an efficient system that encourages and incentivizes institutions to participate in residency training. Ultimately, the overall shortage in residency positions means fewer Arkansas medical students and talented out-of-state students have the opportunity to remain in the state to complete training and to practice medicine.

With the most recent GME residency match in 2018, 66 UAMS medical student seniors matched with Arkansas residency positions and 89 received out-of-state residencies in 33 states. Fifty-one percent of the students received residencies in a primary care specialty. Only four graduates matched to a residency in Northwest Arkansas (three in internal medicine, one in family medicine). Providing the third and fourth years of undergraduate medical education in Northwest Arkansas allows students to gain valuable skills and training. Once they graduate from medical school, these students then apply to GME programs. Residency training is a critical component of the medical education continuum and is critical for the retention of physicians. UAMS has extensive history in medical education and provides resources to current and potential statewide partners. The presence of regional medical campuses in Northwest Arkansas provide administrative infrastructure to support the development of new residency programs and should be leveraged through public and private investment beyond the federal government. ◆

[46] Spero JC, Fraher EP, Ricketts TC, Rockey PH. GME in the United States: A Review of State Initiatives. Cecil G. Sheps Center for Health Services Research, The University of North Carolina at Chapel Hill. September 2013.

[47] Holt KD, Miller RS, Philibert I, Nasca TJ. Effects of potential federal funding cuts on graduate medical education: results of a survey of designated institutional officials. J Grad Med Educ. 2014;6(1):183-188. Holt KD, Miller RS, Philibert I, Nasca TJ. Patterns of change in ACGME-accredited residency programs and positions: implication for the adequacy of GME positions and supply of physicians in the United States. J Grad Med Educ. 2014;6(2):399-403.

Recommended Approach

Northwest Arkansas should establish an ongoing, coordinated Healthcare Sector Transformation Division

through the Northwest Arkansas Council to develop a Healthcare Sector Roadmap and collaborative strategy to transform the healthcare sector into a driver of the regional economy and to establish Northwest Arkansas as a healthcare destination.

Based on stakeholder interviews and the collective experience of seven peer regions, the key to transforming the economic and health benefits of the healthcare sector is strong alignment among healthcare, education, industry, research, and community health programs. For example, the Nashville Health Care Council, founded in 1995, has an annual budget of $3.3 million to bring together dozens of healthcare CEOs monthly for meetings, hold public forums, and host a leadership fellowship that grooms up-and-coming executives for their challenge.[48]

The key to transforming the economic and health benefits of the healthcare sector is strong alignment among healthcare, education, industry, research, and community health programs.

Additionally, the Austin Healthcare Council (AHC) is a non-profit organization created by healthcare industry leaders working together to further establish Austin's position as a global healthcare innovation center.[49] The AHC recently looked to Nashville for guidance – healthcare leaders are trying to replicate the success that Nashville has enjoyed as a national incubator of healthcare innovation and services. The AHC facilitates collaboration as an agent of change to improve health for the community, educates and grows leadership to move Austin toward better healthcare, and supports the entrepreneurial and technology ecosystem to advance the development of better products and services. Members represent a spectrum of organizations, including hospitals, academia, digital health, medical technology, government agencies, and device manufacturers.

Recognizing that no one organization has the resources to maximize economic development potential, an umbrella organization is needed to coordinate regional focus areas related to healthcare sector economic development. It is recommended that an expanded Steering Committee, hereinafter referred to as the Healthcare Sector Transformation Division or the Transformation Division, be developed. The Transformation Division should include the direct participation of senior executives and decision-makers of academic, research, healthcare institutions, and foundations operating in areas such as improved quality of care, improved healthcare access, and sustainable economic impact; public health organizations; and key private and public industry leaders.

The aforementioned will develop the foundation toward the Northwest Arkansas Health Sector Roadmap by providing a framework for an effective tool to achieve alignment and enhance accountability. Tripp Umbach recommends as a vital next step that the Transformation Division evaluate individual strategic plans to discover alignment areas and, where appropriate, identify shared resources to avoid duplication.

The Transformation Division must leverage shared data, expertise, resources, and local leadership perspectives and priorities to implement elements through a collaborative approach. It should flesh out the recommended key strategic areas with more specific feasibility studies, capital and operational budgets, and outcome evaluation methods focusing on the return on investment for dollars invested in such strategies. Details will continue to emerge and evolve through focused work sessions. This will further efforts already underway to meet the demands of the new healthcare landscape, with a specific focus on population health.

Tripp Umbach recommends that the organizational infrastructure for ongoing development and implementation of the recommended areas of priority outlined below be rooted in the Northwest Arkansas Council. Currently, the Northwest Arkansas

[48] HealthCareCouncil.com/about/
[49] AustinHealthcareCouncil.org/

Council acts as a convener for multiple parties. The Council's 2018 Targeting Transformational Innovation blueprint suggests new foundations for success through an expanded role for the Northwest Arkansas Council as regional stewards. Throughout this assessment, the Council was mentioned as a strong asset through its ability to convene key leaders who have the power and influence for affecting change. The ability to convene and view progress on a regional level, across all stakeholders and across "the system" recognizing its diverse components and interdependencies, is unique and demonstrates value. Strengthening the regional healthcare sector relies on actively demonstrating how the region can collaboratively align to maximize resources and expertise. For the healthcare sector to be sustained at an economically and fiscally responsible pace, it must be a collaborative effort, requiring input from diverse stakeholders and key players in the industry. A collaborative model that includes information sharing, cross-industry cooperation, and open innovation can lead to beneficial industry practices such as cost reduction and time efficiency. Together, these practices set a precedent for growth and development at a more rapid pace.

Even though health policy may be set at the national level, healthcare is transformed at local and regional levels. To make measurable impacts, an all-inclusive and neutral group that understands the local culture can work with systems in place and leverage relationships to make positive changes in the healthcare sector. Regional health collaborative models play a critical role across the country to implement and execute healthcare transformation at a local level.[50]

The Transformation Division will have the mission to mobilize strong partnerships with business, higher education, and healthcare organizations to coordinate and drive implementation of all healthcare education, research activities, and economic development.

Key short-term and long-term objectives of the Healthcare Sector Transformation Division should be as follows:

- Establish a staff position at the Northwest Arkansas Council responsible for healthcare transformation activities related to the development of a comprehensive strategy to communicate the vision to build strong regional support for enhancing the healthcare sector, and engage community leaders, foundations, employers, and healthcare sector leaders to raise awareness and encourage participation and financial contributions.
- Commission a feasibility and business plan for expanding GME in Northwest Arkansas to ensure that undergraduates from multiple partner medical schools are able to complete their residency training in Northwest Arkansas.
- Commission feasibility studies, funding, planning, design, and construction of a collaborative research institute.
- Within three to five years: commission feasibility studies, funding, planning, and design of a new medical school focused on population health research.
- Develop a comprehensive resource strategy to support key priorities in the roadmap such as GME expansion, a national population health research institute, and a future medical school focused on healthcare quality, access, and cost that leverages UAMS Northwest, the University of Arkansas, and regional healthcare systems.

To accomplish the tasks, Tripp Umbach recommends that the Transformation Division of the Northwest Arkansas Council have dedicated staff focused on initiatives that will impact better health and healthcare with the goal being to establish a thriving community of health excellence and economic development. The formal, multi-stakeholder committee's core foundation should be established to address solutions to health and healthcare problems that can be found and designed at a regional level, accelerating regional competitive advantages and sustainability.

By July 1, 2019, the Transformation Division should be in place and have a professional staff member working to coordinate a cohesive, region-aligned and connected final roadmap to deliver improved health and sustained economic growth. Tripp Umbach estimates that a fully staffed Transformation Division will require an annual operating budget as determined by stakeholders. It is recommended that the Transformation Division be initially funded through annual contributions from various stakeholders.◆

[50] Regional Health Collaboratives Are Key to Healthcare Transformation. Dec. 30, 2013. Patricia Montoya, MPA, BSN - Executive Director New Mexico Coalition for Healthcare Value, HealthInsight.

Areas of Priority

Short-Term Area of Priority: (1-2 years)

Expand Graduate Medical Education (GME)

The number of graduate medical education positions in Northwest Arkansas is limited. The importance of developing undergraduate medical education (UME) and graduate medical education (GME) through a coordinated approach is critical to long-term economic success. This approach is a proven model to ensure medical students receive a quality education and eventually increase the physician workforce through a defined regional pipeline. Thus, a regional effort among key healthcare, medical education, industry, and foundation partners is recommended to evaluate and identify funding streams beyond federal CMS dollars to provide additional opportunities for current graduates, graduates from newly developed medical schools, and graduates from a potential medical school.

An important aspect of GME is the impact the training program has on residents' decisions about where to continue the practice of medicine. Increasing the number of GME positions in the right distribution of specialties to meet regional needs is an important component of the ideal medical education expansion plan and will require a great deal of coordinated regional effort as it relates to public and private funding mechanics and resource development. Nationally, various models and strategies for addressing GME funding gaps are being evaluated and should be further reviewed and discussed at the regional level by healthcare and educational leadership.

Tripp Umbach recommends setting a goal to establish a minimum of 200 additional residency positions in the next seven years, with the acknowledgement that recruitment and development of faculty to teach is a high priority. Additionally, financial incentives must be in place to encourage physicians to engage in medical education and research. It is clear that balanced and cooperative efforts among those involved in medical education and advanced health professionals' workforce expansion throughout Northwest Arkansas is needed. This includes providing necessary funding for graduate medical education and advanced health professionals training on the federal, state, and private level, as all three need to work together to support the physician training.

Another important element to consider is the need for extensive faculty development that is critical to medical education expansion's long-term success. Faculty at teaching hospitals must thrive while fulfilling productivity expectations related to the institutional missions. Those faculty members should have exemplary clinical skills so they can serve as mentors and role models for students and residents as well as being sources of referrals. Ideally, they also would be involved in clinical research as part of their clinical and research mission. Being a teaching hospital is a mission- and culture-changing decision for a hospital. GME must be integrated into the clinical enterprise.

It is recommended that health systems engage physicians who would be interested in resident training to ascertain current workload and educational obligations with medical students and other learners as well as specific concerns and/or needs related to the integration of expanded GME. In the setting of limited resources, appreciating a resident's relative importance from the physician's perspective is crucial. Ultimately, residents can be empowered to improve the quality and value of care. Leaders of healthcare organizations need to see them as part of the solution. When appropriately

trained, deployed, and incented, residents comprise a talented workforce that can help achieve institutional goals to improve quality, safety and efficiency.

It is not uncommon for shortages to arise in certain specialty areas of medicine, such as in Northwest Arkansas, due to changes in medicine, technology, and practice. In these instances, some areas of the country may have a shortage of training positions for these specialties due to the dynamics of the medical marketplace and the longitudinal development of teaching programs.[51] Increasing GME positions in the right distribution of specialties to meet needs is an important component of the ideal medical education expansion plan and requires a great deal of coordinated regional effort.

Nationally, communities are developing and expanding GME through a consortium model with hospitals, FQHCs, clinics, and academic institutions. GME consortia are formal associations of medical schools, teaching hospitals, and other organizations involved in residency training, with central support, direction, and coordination allowing members to function collectively and act as the vehicle to expand physician training in the region.

The consortium can be an independent 501(c)3 not-for-profit corporation that establishes bylaws, financial participation agreements, and contractual agreements. Consortium models increase opportunities to attract funding from federal and state sources and private and public funders looking for collaborative initiatives. For example, the Southwestern Indiana Graduate Medical Education Consortium (SIGMEC) in Evansville represents four independent hospitals that have come together with the Indiana University School of Medicine to provide GME, attract new physician residents, and increase the potential of retaining healthcare providers. The SIGMEC represents a number of newly formed ACGME residency programs slated to begin accepting residents in 2019.

Mid-Term Area of Priority: (1-5 years)

Develop an Interdisciplinary Research Institute

Providing a platform that enables knowledge to flow freely, an interdisciplinary research institute has the opportunity to gather widely divergent groups with little common ground and establish an aligned research community with a wealth of initiatives, both structural and topic-related, bringing researchers and various public and private stakeholders together to develop fundable research. Density and proximity help facilitate this type of collaboration. While labor moves within a shed of approximately 40 miles, knowledge sharing occurs at a scale of less than one mile.[52]

Alignment of the partners that comprise the institute anchored in the region is critical. In a fully aligned organization, entities share common goals. The value added from a research institute is the creation of a central, unified platform for all interested entities through one administration structure. Furthermore, it is intended the institute be used as a platform to disseminate knowledge broadly to government policy makers, health professionals, and all other interested parties because steps must be taken to ensure that knowledge has a real impact on the interventions, services, and products that can promote overall health and wellness.

The research institute should build on the University of Arkansas' and UAMS Northwest's current framework and support and promote the excellence and relevance of research to respond to expressed needs and to achieve tangible impacts. For instance, in the areas of prevention and of care and services, the institute should support and assist research and the scientific community in the development of creative, effective solutions, emphasizing impacts that can have a positive influence on the health and wealth of the region. An initial focus should be engaging and networking with researchers, strategic community partners, and other stakeholders to foster implementation and dissemination of evidence-based approaches in the community and clinical settings. Furthermore, a strategy internally to reach out to community partners to identify and understand their needs and address value in healthcare service delivery will be required.

The research institute should focus on diversifying the region's research workforce. It will be crucial to address current barriers to cross-campus adjunct or joint appointments. These barriers must be addressed, and mechanisms to encourage faculty to pursue such appointments should be implemented. The appointments can lead to greater access to journals, core infrastructures, and more across campuses. It is important to provide volunteer faculty and office staff inter-professional training with clear, measurable outcomes for both learning and patient benefit.

Currently, the University of Arkansas and UAMS Northwest serve the region by educating health professionals, conducting applied research in health

[51] AAMC.org/advocacy/gme/71178/gme_gme0012.html

[52] Carlino & Kerr, 2014.

photo courtesy Northwest Medical Center

Clint Weigel, cardiovascular services director at Northwest Medical Center in Springdale, talks with members of the Springdale Chamber of Commerce's Experience Springdale class about what happens in a cardiac catheterization laboratory. The Northwest Arkansas hospital has expanded its facilities in recent years to keep up with population growth.

Great for Business. Great for Life.

fields, and in some instances, delivering healthcare through various mechanisms. These areas are strategic assets that provide invaluable service to residents of Northwest Arkansas. However, its individual initiatives and efforts must be leveraged to have a stronger impact on the regional healthcare sector. As a first step, leadership could develop a pilot grant program to support faculty and staff across institutions to collaborate and in developing protocols and collecting feasibility data to prepare them for submitting competitive grants to NIH, NSF, and foundations.

The recommendation for the creation of a research institute provides a pathway to make a national model in integrated healthcare education, delivery of healthcare, and research. The institute can increase scientific productivity, enhance academic visibility and leadership role opportunities, and, eventually, lead to meaningful changes in healthcare delivery. In addition to contributing ultimately toward a healthier Northwest Arkansas, the institute will provide a platform to generate knowledge and training opportunities for professionals across health, medical, social service, and industry.

Concurrently, the world continues to adopt digital technologies that have led to the rapid expansion of the digital healthcare market – an expansion fostered by collaboration. The partnership between major players in the private and public sectors has engineered a growing list of innovative digital healthcare solutions. Technology is reshaping the healthcare industry,

providing new ways for care providers to connect with patients and streamline workflows. The integration of virtual care is the next major step in restructuring care delivery – a true patient-focused care continuum. Access to a large patient population, talent, and a cohesive business community are critical factors for health and life science companies as they grow in an environment characterized by price pressures, fast technological changes, and increasingly sophisticated consumers. Northwest Arkansas' rapid population growth provides the patient population; however, talent and a cohesive community must be enhanced. To say Information Technology (IT) has disrupted nearly every other sector of the economy is an understatement. Yet its most disruptive opportunities are yet to come in healthcare, a field that has historically lagged in adopting IT and data-driven innovation.[53]

National trends require that both insurgent and incumbent healthcare companies take their capabilities seriously and adopt new levels of sophistication in the collection, analysis, and use of health data.

Nationally, research institutes provide a foundation to house a variety of initiatives, each representing different yet interconnected areas of focus. Driven by their inquisitive nature, investigators have the freedom to follow their research wherever it leads and work closely with their colleagues to probe important questions in biomedicine. Most importantly, this framework champions highly interactive, creative, and mold-breaking approaches to science as they seek prevention, treatments, and cures for major diseases. Research institutes should be supported by state-of-the-art core facilities and professionally-trained staff who rely on the latest technologies to advance their work and to deliver results to patients, as urgently as possible.

For instance, Mercy, as a system, opened the world's first virtual care center in 2015. The four-story, 125,000-square-foot building is the cornerstone of Mercy's virtual care program and serves as a nationally recognized center for developing and delivering telehealth. Mercy designed the Virtual Care Center to bring together the best minds to provide patient-centered care, advance technological innovations, and identify opportunities to make care more accessible, more affordable, and more comprehensive. The system is collaborating with bedside clinicians, primary providers, and specialists to maximize patient data in real time. The research institute could use this framework as a springboard to adopt digital technologies that will establish a digital health infrastructure in Northwest Arkansas.

A foundational element of the research institute is a coordinated, data-sharing infrastructure, designed to collate big data and bridge the distant segments of the healthcare industry, which will mark up the necessity of innovation in the sector. One of the great opportunities for our 21st-Century health and care system is harnessing the power of integrated and coordinated data, research, and technology, as currently data is collected from fragmented sources. A coordinated, data-sharing infrastructure provides a platform for the region to move the needle on health outcomes. The effort will identify specific characteristics and follow a controlled population of patients until the conclusion of treatment, research, or study to improve the delivery of effective health and care services. National trends require that both insurgent and incumbent healthcare companies take their capabilities seriously and adopt new levels of sophistication in the collection, analysis, and use of health data.

Interoperability between key segments of the industry has always been a limiting factor. A unified regional platform capable of linking these segments together can have a significant impact on the healthcare sector. Therefore, regions such as Northwest Arkansas must invest in coordinated framework for data sharing among all healthcare providers. Currently, related initiatives planned within the state include a program that will collect and analyze hospital discharge data, including patient migration trends.

An example of such is in Kansas. The Kansas Hospital Association (KHA) provides data, information, and assistance for hospitals, healthcare organizations, and the public. KHA collects, analyzes, and presents data to illustrate where patients obtain hospital care when they seek care in Kansas. In 40 of the 105 Kansas counties, more than 50 percent of the residents

[53] For a comprehensive review of the impact of IT on these industries, see Robert Atkinson and Daniel Castro, "Digital Quality of Life: Understanding the Personal and Social Benefits of the Information Technology Revolution" (Washington: Information Technology and Innovation Foundation, 2008).

Innovation capacity can take many forms and originate from many places, from research hospitals that cure disease to engineering schools that reduce local emissions and from socially conscious startups that create new ways to educate children to smart city partnerships that deploy technology to help workers get to jobs. Industry leaders are scouting extensively for academics and startups around the world that can lend insights to the care they provide to patients, whether in raising understanding of the diseases, improving diagnoses, enhancing treatment, or supporting long-term management.

remained within their county for hospital care. Twenty Kansas counties with hospitals retained 25 percent or fewer of their county discharges, and 12 Kansas counties retained more than 75 percent. Nine Kansas counties do not have hospitals.

The data also provides a mechanism to analyze patients leaving Kansas for care. For instance, recent data showing the migration to surrounding states for inpatient services found a slight decrease from 25,123 patients in 2016 to 24,908 in 2017. The in-migration from Missouri increased from 25,053 in 2016 to 26,666 in 2017.

Long-Term Area of Priority: (2-7 years)

Expand Medical Education/Develop Medical School

Academic excellence is recognized as the capacity to deliver education, research, and service delivery programs that best respond to health challenges and needs in society and that have positive health impacts. And, as Northwest Arkansas continues to strive for excellence in the medical field, it becomes clear that the region will need to expand its capacity in each key area. While it is the view of the working group preparing this report that a four-year medical school in Northwest Arkansas should be a long-term goal, increasing academic excellence, innovation, and increasing the availability of healthcare can be addressed, at least partly, through other key initiatives.

For example, the University of Arkansas and UAMS Northwest should expand collaborations in engineering and medicine where there is strong expertise. The University of Arkansas College of Engineering offers access to faculty and infrastructure that has the potential to shape the development of physicians who know how to harness the power of technology and "big data" to improve cost-effective care. The region has the opportunity to forge together two of its assets – engineering and medicine – leading to practical applications for scientific discoveries, a critical resource for developing a stronger biomedical industry. Program alignment can lead to exponential growth in clinical trials due to innovations resulting from engineering approaches.

The University of Arkansas' College of Engineering is uniquely situated to collaborate with healthcare providers and researchers to train physicians who can deliver high-quality, cost-effective care by developing and using new technologies that allow for earlier and more accurate detection and diagnoses, more efficient patient monitoring, and seamless data

sharing. Expanding opportunities for engineers, researchers, and medical students to learn side-by-side in Northwest Arkansas will leverage existing resources and enhance regional infrastructure, while at the same time provide opportunities for greater access to quality and cost-effective healthcare. This concept can also serve as a platform for the development of a research institute that can focus on translational research to boost the growing biomedical industry and beyond.

Additionally, several biomedical engineering students at the University of Arkansas and local healthcare providers joined forces to try to solve everyday problems for providers and their patients. The program sent 16 students to watch University of Arkansas for Medical Sciences therapists and residents at work. The program is growing, with the next group expected to number 25-30 students. Philanthropic funding associated with this concept has already been received. In 2018, University of Arkansas researchers received $500,000 to continue work at the Membrane Science, Engineering and Technology Center, a multi-campus partnership between academic and industry partners.[54]

Increasing these collaborations is also a priority for the state given that Arkansas ranks near the bottom of states in research and commercialization. According to the State Technology and Science Index Report, which measures state performance in the areas of research and development, risk capital, entrepreneur support, and human capital investment, Arkansas ranked 49th in 2016. Innovation capacity can take many forms and originate from many places, from research hospitals that cure disease to engineering schools that reduce local emissions and from socially conscious startups that create new ways to educate children to smart city partnerships that deploy technology to help workers get to jobs. Industry leaders are scouting extensively for academics and startups around the world that can lend insights to the care they provide to patients, whether in raising understanding of the diseases, improving diagnoses, enhancing treatment, or supporting long-term management. Extensive partnerships among academics, industry, and health systems exist to help support research into areas such as machine learning and advanced analytics, with the wider ecosystem of government and corporations to help bring fresh innovations to market.

Academic excellence is recognized as the capacity to deliver education, research, and service delivery programs that best respond to health challenges and needs in society and have positive health impacts.

With respect to strengthening the healthcare workforce, Northwest Arkansas has many assets. First, Northwest Arkansas is the home to one major research university and several other institutions of higher education. The University of Arkansas educates about 70 percent of the more than 38,000 students enrolled in the region's higher education institutions. The university's College of Education and Health Professions focuses on education and health, officering disciplines as diverse as teaching, nursing, community health promotion, human resource development, kinesiology, recreation and sport management, and communication disorders. As mentioned earlier in this report, both NWACC and JBU are important to strengthening the healthcare workforce as well.

Finally, UAMS Northwest has an opportunity to greatly impact the education, research, and clinical programs in Northwest Arkansas. Currently, academic programs through the College of Medicine and College of Pharmacy allow UAMS third- and fourth-year students to complete degrees in Northwest Arkansas. Medical students spend a significant time hospitals and clinics, learning under the supervision of experienced physician educators. In addition, the regional campus includes graduate-level nursing programs, a doctoral physical therapy program, and an undergraduate program in radiologic imaging. UAMS Northwest offers residencies in family medicine, internal medicine, psychiatry, and pharmacy, along with a fellowship in sports medicine.

The question at hand is whether UAMS Northwest, with existing constraints, can expand its role in Northwest Arkansas and have a greater impact on health systems performance and on people's health. Medical schools, which are often key parts of successful healthcare expansions, must recognize the various social determinants of health – political, demographic, epidemiological, cultural, economic, and environmental in nature – and direct their education, research, and service delivery programs accordingly. ◆

[54] News.uark.edu/articles/42699/center-receives-500-000-from-nsf-to-continue-membrane-research

Economic Considerations and Impact

A thriving healthcare sector can contribute billions to a regional economy and create thousands of jobs.

This section of this assessment outlines multiple economic considerations and impacts for the region to consider as it implements a comprehensive 20-year healthcare sector roadmap.

For the purpose of this report, economic impacts are organized to match four recommendations:

- **Grow specialty care in the region**
- **Grow graduate medical education**
- **Develop an interdisciplinary research institute focused on population health management**
- **Develop a new medical school**

If growth in advanced specialty healthcare services increases to exceed regional demand and attract patients from outside Northwest Arkansas, the local healthcare sector can be at par with peer markets by 2040.

Economic Impact of Growing Specialty Care

The healthcare sector in Northwest Arkansas generates approximately $2.7 billion annually in the region and supports more than 22,000 jobs. As mentioned earlier in this report, the Northwest Arkansas economy is missing out on $950 million annually and more than 6,000 additional jobs largely because of high out-migration and low in-migration of patients. Additionally, Steering Committee members stated technological equipment required to support advanced specialty care is expensive and requires a higher density of patients to justify purchases. The region currently does not possess this diagnostic equipment because of the out-migration of patients. However, by 2030, more than $1.2 billion could be added to the region's healthcare economy from increasing specialty care services at a level required to satisfy regional needs. Having sufficient specialty services by 2030 would create 8,360 new jobs in the healthcare sector.

$950 million

leaves Northwest Arkansas each year as residents travel to hospitals and physicians in other regions to provide the services they seek.

For example, a deficit of 10 surgical oncologists in the region results in 5,840 hospital stays for advanced cancer care occurring outside of the region. At $37,000 in revenue per hospital stay, the total loss to the Northwest Arkansas economy just from advanced cancer care is $219 million. The annual revenue loss for cancer alone would support 1,460 direct jobs if 10 more surgical oncologists were in practice. Similar analysis completed by Tripp Umbach focused on deficits for cardiology

Table 11: Estimated Northwest Arkansas Economic Loss Due to Out-migration

Information about Northwest Arkansas and its peer regions provided by Data USA, which shares government statistics, indicates the largest industries and the college majors that are most prevalent.

SPECIALTY SERVICE	DIRECT LOSS TO ECONOMY	TOTAL LOSS TO ECONOMY	TOTAL EMPLOYMENT LOSS
Oncology	$219 Million	$438 Million	2,920
Cardiology	$180 Million	$360 Million	2,400
Other Sub-Specialties	$76 Million	$152 Million	1,013
TOTAL	**$475 Million**	**$950 Million**	**6,333**

services showed at least $180 million is being lost. When accounting for total deficits in sub-specialty care, Tripp Umbach estimates $475 million in annual revenue is being lost in the region.

Using the assumption that every dollar lost to hospitals and physicians for in-patient sub-specialty care equals another dollar in total loss in the healthcare sector, Tripp Umbach estimates the Northwest Arkansas healthcare economy missed out on $950 million in activity in 2018. The healthcare sector economy would be significantly strengthened if sub-specialty care services matched local patient demand.

Northwest Arkansas is well positioned to reverse economic losses through out-migration. With the right steps to advance the healthcare economy, the region can add **$2 billion** to the sector.

This strategic growth could lead to more than a **$3 billion improvement achieved by 2040.**

Continued growth in specialized healthcare services by 2040 could result in Northwest Arkansas not only satisfying the demands of the growing region but also serving as a magnet for patients from outside the region to seek services. Tripp Umbach estimates more than $2 billion can be added to the regional healthcare economy by 2040, if specialty services are added to satisfy regional demand and the region becomes a healthcare destination. If growth in advanced specialty healthcare services increases to exceed regional demand and attract patients from outside Northwest Arkansas, the local healthcare sector can be at par with peer markets by 2040.

Economic Impact of Expanding Graduate Medical Education

Increasing residency programs in the region is a key strategy to growing the physician workforce, increasing quality of care, and adding specialty healthcare services. Residency training programs carry the added benefit of growing the economy as regional investments made in faculty, staff, capital improvements, and goods and services to develop and operate residency programs generate economic activity. The benefits stem from the spending by residency programs on capital improvements and goods and services, as well as the spending of staff and faculty; the spending of residents; and the spending of visitors to programs, staff, faculty, and residents.

Economic benefits include increased business volume, job creation, and tax revenue being generated for local and state governments. Those benefits grow annually in size and scope.

photo courtesy Arkansas Department of Parks and Tourism

Tripp Umbach research indicates:

- **Cost Saving of Hiring Residents:** Each retained physician in the region from a regional residency training program creates $50,000 in cost savings for a health system.

- **Economic Impact of Each New Physician:** Each retained physician generates $1.8 million each year in regional economic impact.

- **Economic Impact of Resident Training**: If the region expanded GME to the level of peers, 200 additional residents would be working in the region. The cost associated with supporting these new slots[55], provided that federal funds are not available, would equal $30 million. Assuming that 75 percent of graduates from residency stay in the region to practice, the economic impact of additional physicians would be more than $100 million annually and would support 750 jobs.

- **Economic Impact Related to Specialists:** Communities within 100 miles of a primary care residency program have more physicians per capita than communities with identical demographics but without such programs. That's because the programs lead to the recruitment and retention of subspecialty physicians who not only train medical students but also provide clinical services not available previously in the community. These physicians often prefer to practice in an academic medicine environment. Subspecialty physicians provide health systems with the opportunity to expand access to care and to generate significant clinical revenue associated with this care.

- **Healthcare Cost Savings:** GME programs are drivers of healthcare quality, access, and economic development. Each resident in a community-based residency program generates $200,000 in direct economic benefits to the community while completing the program and $3.4 million in healthcare cost savings every year that he or she remains in the area to practice after training. ◆

[55] A residency slot is defined as one year of residency training. For example, if a family medicine program enrolls eight residents per year and the program takes three years to complete, this program would have 24 slots.

National Examples of Economic Impact in Areas Recommended for Northwest Arkansas

The Translational Genomics Research Institute (TGen)

Since its inception, TGen has established itself as a global genomics leader. In 2002, an assembly of more than 50 leaders and visionaries in science, medicine, government, and business gathered at the state capitol in Arizona to discuss establishing Arizona as a player in the biotechnology industry. The goal was to set up a one-of-a-kind genomics research institute. A positive group consensus decided the idea was not only feasible but represented a unique opportunity for Arizonans to rally together for a shared vision. With an unprecedented cooperative spirit, the group rallied to the task of securing support for TGen on the order of $90 million. The fundraising goal was achieved in five months.Less than a year after the gathering at the capitol, TGen began operations. TGen serves as one of the anchors of the Phoenix Biomedical Campus and is an economic engine, providing a significant return on investment to the state and region.[56]

In 2006, the TGen Foundation Board commissioned Tripp Umbach to conduct a comprehensive study of TGen's economic impact. To ensure the continuing viability of the data, TGen commissioned updates to the report in 2009, 2011, 2015, and 2018.

TGen continues its role as an important economic engine for Phoenix, the region, and Arizona. TGen operations generated $93 million in economic impact in 2014 and provided a substantial return on investment. One of the most important findings in the economic impact studies came in 2014. That study shows that even in an increasingly competitive funding environment, TGen's impact had increased significantly since 2010. The total impact of TGen operations, the operations of business spinoffs, and the commercialization of research equaled $174 million in business volume impact for Arizona.

Research and medical innovation provide multiple benefits beyond the economic and employment impacts generated by the operations of TGen. TGen and its collaborating partners, the employment of world-class researchers, and the attraction of additional federal research funding create significant additional economic expansion and employment through the commercialization of research activities in Arizona.

TGen is strategically focused on collaborative translational research efforts with biomedical research, education, and healthcare stakeholders in Arizona and throughout the nation and world. It serves as a catalyst to create economic and societal impact by attracting new research dollars, researchers, and investment into the state.

The Carle Illinois College of Medicine

The Carle Illinois College of Medicine is envisioning a future where, by leveraging engineering and advanced technology, doctors provide more humanistic care for patients. As the first college of medicine in the world with a curriculum that fuses engineering, medicine, and the humanities, it is creating an innovative future.

The Carle Illinois College of Medicine is a partnership between Carle Health System, an Urbana-based system of hospitals and physician groups, and the University of Illinois in Urbana-Champaign. In 2013, a $100 million gift from The Grainger Foundation[57] went to the university's College of Engineering. The funds are being used to support faculty, students, and facilities at the College of Engineering to increase the university's ability to attract and retain top-tier faculty and students, which will ultimately benefit the new College of Medicine. In addition, $100 million was secured from the Carle Health System for the new College of Medicine.

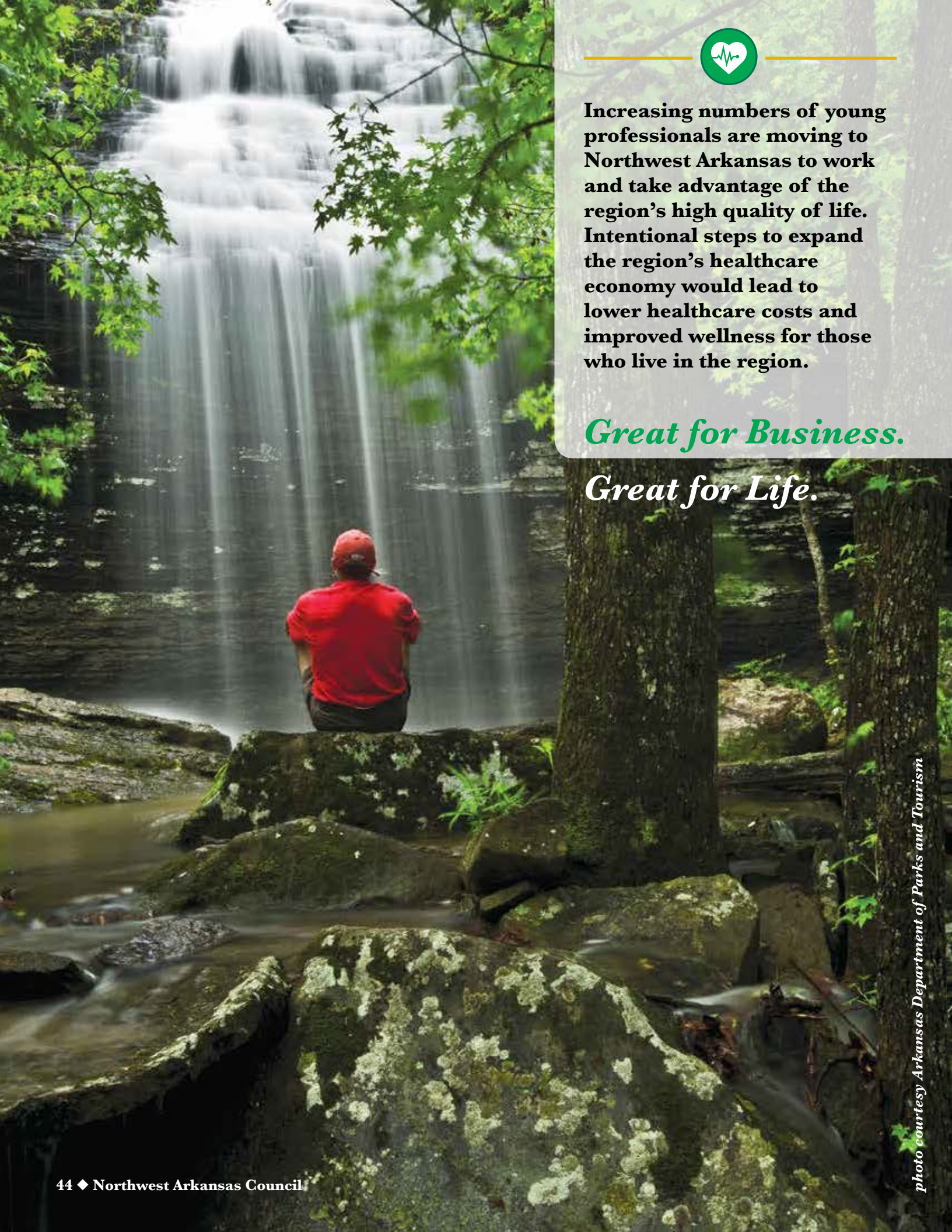
The economic impact of the new College of Medicine enterprise on the state of Illinois is expected to exceed $1 billion annually by 2035, when the College of Medicine is at maturity. Further, the new College of Medicine is expected to sustain more than 7,600 jobs[58] statewide by 2035. The projections are based on analysis completed by Tripp Umbach using benchmarks for mature academic medical centers in the U.S.

Economic benefits of the new College of Medicine will accrue from the spending by the new College of Medicine, Carle Health System, and related research institutes on capital improvements and goods and services, as well as the spending of staff and faculty, the spending of medical trainees, and the spending (external to the institution) of visitors to the new College of Medicine. The College of Medicine offers new opportunities for securing federal research funds from numerous agencies, including the National Institutes of Health, Department of Defense, Department of Energy, and the Defense Advanced Research Projects Agency, which will drive innovation and technology-driven growth. Startups formed through research and innovation from the new technology-driven College of Medicine will attract private equity funding to the region.◆

[56] The Phoenix Biomedical Campus (PBC) is an urban medical and bioscience campus planned for more than 6 million square feet of biomedical-related research, academic, and clinical facilities. Located in downtown Phoenix, the PBC is a premier and dynamic environment for research activities. The PBC contains among the highest concentrations of research scientists and complementary research professionals in the region..

[57] The Grainger Foundation has donated millions to University of Illinois College of Engineering projects, including $100 million for the Grainger Engineering Breakthroughs Initiative in 2013. The gift funded student scholarships, faculty positions, research and new facilities, including $20 million for renovation of Everitt Lab to house Department of Bioengineering.

[58] Includes direct, indirect, and induced jobs.



Increasing numbers of young professionals are moving to Northwest Arkansas to work and take advantage of the region's high quality of life. Intentional steps to expand the region's healthcare economy would lead to lower healthcare costs and improved wellness for those who live in the region.

Great for Business.

Great for Life.

photo courtesy Arkansas Department of Parks and Tourism

Appendix A: CMS Quality Measures: Northwest Arkansas

Information from the Centers for Medicare and Medicaid Services shows what patients who visited Mercy Northwest Arkansas, Northwest Medical Center and Washington Regional Medical Center experienced as compared to patients at hospitals nationwide.

Quality Measure	Nationally	Northwest Arkansas
Average median time patients spent in the emergency department, before they were admitted to the hospital. (The lower, the better.)	334 minutes	234-276 minutes
Average median time patients spent in the emergency department before they were seen by a healthcare professional.	26 minutes	14-34 minutes
Rate of readmission after discharge from hospital.	15.3	15.3
Deaths among patients with serious treatable complications after surgery.	161.73	161.73
Patients who gave their hospital a rating of 9 or 10 on a scale from 0 (lowest) to 10 (highest).	73%	71-76%
Patients who reported, "YES, they would definitely recommend the hospital."	72%	72-78%

The most expedient of Northwest Arkansas' emergency departments boast a median patient wait time that is 12 minutes shorter than the national average. All Northwest Arkansas' emergency departments come in under the national average for median patient wait time in the emergency department, before they were admitted to the hospital.

Shorter wait times give Northwest Arkansas residents a chance to enjoy life on their terms.

Great for Business.
Great for Life.


Ark. Dept. of Parks and Tourism

Appendix B: Peer Market Platforms

The Northwest Arkansas Council worked with Tripp Umbach to identify peer regions to use for comparisons throughout this report. The traditional group of Northwest Arkansas peers were selected (Austin, Des Moines, Durham-Chapel Hill, and Madison) as well as regions where intentional steps are occurring to expand healthcare in significant ways (Boise, Evansville, and Spokane). For a map of peer regions, see page 4.

Peer Region	Market Platform	Highlights
Austin	**Biotech and community-based medical education**	◆ Focused on remaking medical campus to benefit adjacent communities while facilitating innovation ◆ Welcomed first class at Dell Medical School (2016) ◆ Opened Dell Seton Medical Center, school's 211-bed teaching hospital (2017) ◆ Life and physical scientists account for 5,100 people in Austin metro's workforce
Boise	**Agriculture technology and bioscience bechnology**	◆ Invested $34 million to open 94,000-square-foot Idaho College of Osteopathic Medicine (2018) ◆ Idaho was the nation's largest state without med school ◆ State ranks No. 49 in physicians per capita
Des Moines	**Bio-life science**	◆ Creating Iowa Bioscience Development Center with Iowa Economic Development Authority providing $4.5 million for the project (2018) ◆ State's research and development spending is 12 percent higher than national average ◆ Des Moines University is home of nation's second oldest college of osteopathy

Peer Region	Market Platform	Highlights
Durham-Chapel Hill	**Medical research**	◆ Founded North Carolina Biotechnology Center in Research Triangle Park (1984) ◆ University of North Carolina in Chapel Hill established nation's first university-sponsored School of Medicine (1879) ◆ UNC School of Medicine ranked No. 1 in nation for primary care by U.S. News & World Report (2018) ◆ Duke University School of Medicine in Durham ranked No. 10 in nation in research (2018) ◆ Duke opened first physician assistant program in nation (1965)
Evansville	**Health sciences education**	◆ Three Indiana universities opened Evansville hub for health sciences education (2018) ◆ Evansville campus is one of nine Indiana University School of Medicine campuses statewide ◆ Downtown Evansville campus expected to have as much as $340 million economic impact by 2020
Madison	**Population health leader**	◆ University of Wisconsin School of Medicine and Public Health ranked No. 24 in nation for primary care training and No. 28 for research by U.S. News & World Report (2018) ◆ Study in 2018 showed hospitals received $1.5 billion of the $24 billion a year in economic impact from University of Wisconsin System
Spokane	**Health science education and research**	◆ Largest healthcare, health sciences and medical education hub between Seattle and Minneapolis, Calgary and Salt Lake City ◆ 240 first- and second-year medical students are attending one of two state university-operated medical schools in Spokane ◆ Spokane's University District is a globally-recognized hub of education, innovation, research, and healthcare

Appendix C: 2018 Arkansas Health Rankings by County

Arkansas counties were ranked (1-75), according to research by the Robert Wood Johnson Foundation, based on the metrics of Health Outcomes and Health Factors. Benton, Faulkner, Saline, and Washington counties lead the state. Health Factors represents what can influence peoples' health, including the county's healthcare quality, air and water quality, residents' education, physical activity, tobacco use, and diet. Health Outcomes represents the overall health of people who live in the county regardless of the health factors. Outcomes includes how long residents live as well as residents' quality of life.

Arkansas County:	Health Outcomes	Health Factors
Arkansas	57	27
Ashley	48	59
Baxter	24	3
Benton	1	1
Boone	5	6
Bradley	73	69
Calhoun	30	40
Carroll	13	12
Chicot	69	70
Clark	29	30
Clay	46	52
Cleburne	10	18
Cleveland	36	13
Columbia	54	54
Conway	27	46
Craighead	14	7
Crawford	15	16
Crittenden	66	67
Cross	51	58
Dallas	58	34
Desha	74	72
Drew	50	53
Faulkner	4	4
Franklin	44	21
Fulton	25	19
Garland	41	24
Grant	8	9
Greene	37	23
Hempstead	56	62
Hot Spring	47	26
Howard	42	36
Independence	26	20
Izard	23	39
Jackson	53	68
Jefferson	62	66
Johnson	12	43
Lafayette	71	65
Lawrence	49	42

Arkansas County:	Health Outcomes	Health Factors
Lee	64	74
Lincoln	19	56
Little River	43	33
Logan	55	35
Lonoke	6	8
Madison	34	41
Marion	39	17
Miller	28	49
Mississippi	72	73
Monroe	63	64
Montgomery	18	50
Nevada	70	55
Newton	9	15
Ouachita	65	37
Perry	38	28
Phillips	75	75
Pike	45	32
Poinsett	67	63
Polk	32	31
Pope	7	10
Prairie	17	29
Pulaski	21	11
Randolph	40	22
St. Francis	59	71
Saline	3	2
Scott	33	44
Searcy	31	25
Sebastian	11	14
Sevier	20	57
Sharp	52	48
Stone	68	45
Union	60	47
Van Buren	16	51
Washington	2	5
White	22	38
Woodruff	61	61
Yell	35	60

Appendix D: County-Related Funding for Medical School

Dell Medical School at the University of Texas at Austin

The Dell Medical School at The University of Texas at Austin used a transformative public investment to improve health in Austin and Travis County.[59,60] Dell Med is an active partner with Central Health – the healthcare district serving Travis County. The shared goal is better health for the people of Austin and Travis County, especially those with low incomes or without insurance. In 2014, the University of Texas created the medical school with an ongoing $35 million annual investment from the Community Care Collaborative (CCC), the nonprofit partnership of Central Health and Seton Healthcare Family, which is a member of Ascension. That happened less than two years after Travis County voters approved a tax increase to create and support the school and other health-related priorities.[61] Every year, in accordance with Proposition 1 – the ballot measure Travis County voters approved in 2012 that supports the school and other health-related priorities through a higher tax rate – Dell Med receives $35 million in funding from the CCC that is guaranteed by Central Health.

As part of this partnership, Dell Med is working closely with the CCC to implement models of care in hospitals and community health centers serving the underserved. The school has used local funding to launch and build out programs that will define its work to create a model healthy city and community in Austin and Travis County. The funds are committed, as part of the budgeting process, to supporting the school's growing capacity and scope of work, consistent with the permitted uses in their affiliation agreement.

Increasing the number of physicians in the community – providers who are focused on patients' diverse needs – is a primary reason Travis County voters approved the proposition in 2012 to create and support the medical school. Since Dell Med opened, its community-focused origins and distinct mission have attracted healthcare leaders from around the country who want to help improve the way communities receive care.

Also, The Design Institute for Health, a unique collaboration between Dell Med and the UT Austin College of Fine Arts, practices a human-centered design approach that actively invites new voices to co-design solutions to health system challenges.[62] The Design Institute seeks out partners in every part of the community, especially patients, to gather perspectives about how to design to the specific needs within the community.

Additionally, Dell Med and the McCombs School of Business created the Value Institute for Health and Care. The Value Institute at Dell Med guides outcome- and cost-measurement efforts for their clinical services. The institute also develops and delivers education on high-value healthcare strategy for clinical and administrative leaders. The institute's courses offer healthcare leaders in Central Texas specific tools to implement value-based care. Additionally, the institute is exploring ways to provide strategic resources to Central Health and the Community Care Collaborative and their clinical initiatives as they plan for the transformation toward a value-based system.

Lastly, in January 2018, it was announced the Dell Med will lead a $15.5 million redesign of the Austin State Hospital – taking it from a critical but outdated and deteriorating mental health facility to the cornerstone for an improved system of collaborative, community-focused care that helps people across Central Texas.[63] The planning funds come through a 2018-19 budget provision, championed by state Sens. Kirk Watson and Charles Schwertner, aimed at improving failing mental health facilities across the state. [64] ◆

[59] Dellmed.utexas.edu/about

[60] Travis County is in south central Texas. As of the 2010 census, the population was 1,024,266; the estimated population in 2017 was 1,226,698. It is the fifth-most populous county in Texas. Austin is the capital of Texas.

[61] Central Health Proposition 1 – Approved by Travis County voters, Nov. 6, 2012

[62] Dellmed.utexas.edu/units/design-institute-for-health

[63] A 299-bed psychiatric hospital located in Austin, Texas. It is the oldest psychiatric facility in the state.

[64] Dellmed.utexas.edu/news/15-million-for-austin-state-hospital-redesign. January 2018.

Appendix E: Regional Healthcare Steering Committee

The Northwest Arkansas Council identified stakeholders from across the region to become members of its Regional Healthcare Steering Committee. The steering committee members met as a group with Tripp Umbach and Council staff throughout 2018 to discuss aspects of the work that was being conducted.

Arkansas Children's Northwest

- **Trisha Montague**, Senior Vice President and Administrator

Arvest Bank

- **Craig Rivaldo**, President, Benton County

Ascendant Diagnostics

- **Omid Moghadam**, CEO

Better Medicine

- **Daniel Stein,** CEO

Boston Mountain Biotech

- **Ellen Brune**, Founder and CEO, Senior Entrepreneur in Residence at Startup Junkie

Community Clinic

- **Kathy Grisham**, Chief Executive Director

HARK at the Center for Collaborative Care/Endeavor Foundation

- **Dr. Nick Ogle**, Executive Director, Program Director of Behavioral Health at Mercy

Lineus Medical

- **Spencer Jones**, CEO

Mercy Hospital Northwest Arkansas

- **Martine Pollard**, Executive Director, Community and Public Relations, Northwest Arkansas Communities
- **Eric Pianalto**, President
- **Susan Barrett**, CEO Emeritus

Northwest Arkansas Regional Campus of the University of Arkansas for Medical Sciences

- **Pearl McElfish**, Vice Chancellor

Northwest Medical Center

- **Denten Park**, CEO

NOWDiagnostics

- **Kevin Clark**, CEO

OurPharma

- **Peter Kohler**, CEO, President Emeritus at Oregon Health & Science University

Simmons Food

- **Mark Simmons**, Chair of the Board

Tyson Foods

- **Archie Schaffer III**, consultant and retired Executive Vice President at Tyson Foods

University of Arkansas for Medical Sciences

- **Stephanie Gardner**, Senior Vice Chancellor for Academic Affairs and Provost

University of Arkansas

- **Daniel Sui**, Vice Chancellor for Research and Innovation at the University of Arkansas
- **Dan Ferritor**, Chancellor Emeritus

University of Arkansas, College of Education and Health Professions

- **Reed Greenwood**, Dean Emeritus

Walton Family Foundation

- **Ross DeVol**, Walton Fellow

Washington Regional Medical Center

- **Larry Shackleford**, CEO
- **Dr. Mark Thomas**, Family Medicine, Vice President and Medical Director of Population Health

Northwest Arkansas Council

- **Nelson Peacock**, President and CEO
- **Rob Smith**, Communications and Policy Director

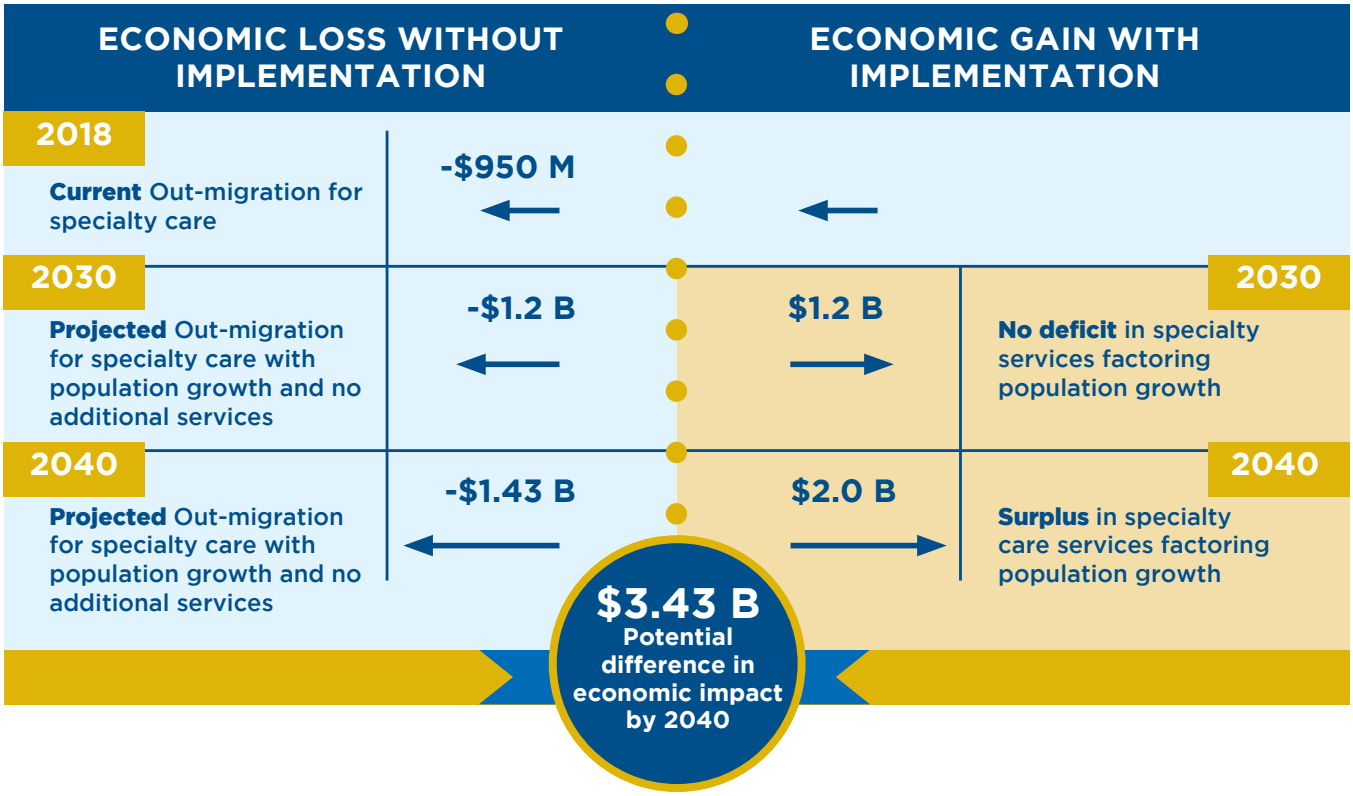
Appendix F: Glossary of Abbreviated Terms

Acronyms are common in healthcare and familiar to medical professionals, but they may be unfamiliar to many readers. This page defines all the acronyms used in this report.

AAMC – Association of American Medical Colleges
ACGME – Accreditation Council on Graduate Medical Education
AFMC – Arkansas Foundation for Medical Care
AHC – Austin Healthcare Council
AOA – American Osteopathic Association
APII – Arkansas Payment Improvement Initiative
APMs – Alternative payment models
CCC – Community Care Collaborative
CDC – Centers for Disease Control and Prevention
CMS – Centers for Medical & Medicaid Services
DO – Doctor of osteopathy
FQHCs – Federally Qualified Health Centers
FTE – Full-time equivalent
GDP – Gross Domestic Product
GME – Graduate Medical Education
HHRs – Hospital referral regions
HHS – U.S. Department of Health and Human Services
HPSAs – Health Professional Shortage Areas
IT – Information technology
JBU – John Brown University
KHA – Kansas Hospital Association
MD – Doctor of Medicine
MedPAC – Medicare Payment Advisory Commission
MIPS – Merit-based incentive payment system
NPs – Nurse practitioners
NWACC – NorthWest Arkansas Community College
PAs – Physical assistants
PBC – Phoenix Biomedical Campus
R&D – Research and development
SIGMEC – Southwestern Indiana Graduate Medical Education Consortium
TGen – The Translational Genomics Research Institute
UAMS – University of Arkansas for Medical Sciences
UME – Undergraduate medical education

Current and Projected Economic Implications

Northwest Arkansas can make significant additions to its $2.7 billion healthcare sector by reducing how many residents seek healthcare services elsewhere. The right combination of community investments can result in a $3.43 B economic gain by 2040.



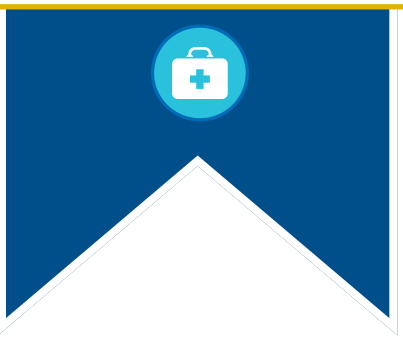
The analysis, recommendations, and statistical data for this report were prepared by:

Tripp Umbach
trippumbach.com

Visual messaging and communication strategy, including layout and design by:

Amanda Cothren
creative communication strategist
amandacothren.com

Consultant Conclusions



Northwest Arkansas should act to align its distinctive advantages to grow and strengthen the regional healthcare sector. Distinguished faculty, researchers, and other physicians, as well as their next-generation equipment and other advanced technologies, should be leveraged to become the preferred providers in the region. With healthcare reform dramatically shifting how hospitals operate, industry experts believe traditional academic medical centers could become obsolete if they don't quickly adapt to today's economic realities. Northwest Arkansas has the distinct advantage of timing. The region has a long history of providing medical education, which provides a valuable and necessary foundation for expansion through existing infrastructure and assets with multiple partners. Expanding medical education and related population health research focused on regional strengths of quality and cost-effectiveness will help establish Northwest Arkansas as a premier national healthcare market by 2040.◆

Tripp Umbach

Great for Business.

Great for Life.

NORTHWEST ARKANSAS
COUNCIL

www.nwacouncil.org