Arkansas
Health Care Workforce

A Guide for Policy Action

ACHI
Arkansas Center for Health Improvement

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List of Abbreviations Used

AACF	Arkansas Advocates for Children and Families
ACHI	Arkansas Center for Health Improvement
AEBD	Arkansas Employee Benefits Division
AFMC	Arkansas Foundation for Medical Care
AHEC	Area Health Education Center
ANP	advanced nurse practitioner
APN	advanced practice nurse
ARSBN	Arkansas State Board of Nursing
BCBS	(Arkansas) Blue Cross and Blue Shield
CNS	clinical nurse specialist
CNM	certified nurse-midwives
CNS	certified nurse specialists
CPA	collaborative practice agreement
CPCI	Comprehensive Primary Care Initiative
CRNA	certified nurse anesthetist
DNP	doctor of nursing practice
FNP	family nurse practitioner
FTC	Federal Trade Commission
MCD	Medicaid
MCR	Medicare
MD	medical doctor
NP	nurse practitioner
PA	physician assistant
PANCE	Physician Assistant National Certifying Examination
PCMH	patient-centered medical home
PPACA	Patient Protection and Affordable Care Act
QC	QualChoice (of Arkansas)
RN	registered nurse
RNP	registered nurse practitioner
SP	standardized procedure
UAMS	University of Arkansas for Medical Sciences

Summary

Our health care system is at a tipping point. Arkansans are faced with a system of care that is unsustainable, fragmented, and overburdened by rising costs and an increasingly unhealthy population. A health system that fails to meet the needs of its citizens—individuals both as patients and as providers making up the clinical workforce—has far-reaching consequences. It adversely affects not only quality of life and personal finances, but also many other important aspects of our society, including the economy, jobs, and education.

Recognizing the critical need for restructuring health care in our state, Arkansans have taken action. A broad collaboration of stakeholders, including policymakers, state agencies, private sector businesses, advocacy organizations, clinicians, health industry associations, and many others are now engaged in a coordinated effort called the **Arkansas Health System Improvement Initiative**. The aim is to create a high-quality system of care that is focused on better meeting the needs of our citizens and improving cost efficiency. To this end, work has been undertaken in four interrelated areas:

- Accelerating use of health information technology
- Restructuring the health care payment system to improve the quality of medical care and curb rising costs
- Reducing the number of uninsured Arkansans
- Planning for a health workforce that provides appropriate access to medical services, particularly in underserved areas

More information on the Arkansas Health System Improvement Initiative and its components is available at www.achi.net.

The report, *Arkansas Health Care Workforce: A Guide for Policy Action*, provides a vital resource for guiding the Health System Improvement Initiative. Developed by the Arkansas Center for Health Improvement (ACHI) and funded by the Blue & You Foundation for a Healthier Arkansas, this unique report takes a multi-dimensional look at how and where health care is provided in Arkansas. It brings together for the first time a comprehensive set of analyses that clearly portrays a current picture of the statewide availability of primary care and specialty care providers, including location, office capacity, acceptance of patients covered by Medicare and Medicaid, and patient experience.

Importantly, findings in this report shed new light on a number of previous ideas and concerns. For example, much discussion has centered on the idea that we have a serious statewide shortage of doctors and that this shortage will worsen due to an aging health care workforce. Information in this report quantifies our statewide shortage but highlights a far greater problem—maldistribution of providers. There may actually be an excess supply in the central part of the state and data suggest a severe shortage in our Southeast and Southwest regions. Further, a survey of clinic management indicates that rather than diminishing in size due to retirements, most clinics expect to maintain present staff and in many cases have plans to add new physicians.

These data clearly illustrate the importance of an accurate assessment of Arkansas's health care workforce and provide a view of information not previously compiled. The solutions we pursue must not only address potential provider shortages, but also must incorporate strategies to connect patients to providers in critical shortage areas of our state.

Report Objective

Arkansas consistently ranks at the bottom of national health indicators and there is little question that a largely unhealthy population puts pressure on a health system that frequently does not meet acute health care needs, does not achieve health promotion objectives, and is financially unsustainable.

Access to care, including availability of medical services, is believed to be a key factor in improving health. Yet there has been a pronounced lack of accurate and consistent data available for measuring our current and future health workforce who will provide access to health care. The objective of the report is to provide a clearer picture of Arkansas's health care workforce capacity and consumer access needs now and for the future. Further, this up-to-date information provides an actionable guide for important decisions as policymakers look to address the state's health issues.

Do we have enough primary and specialty care providers for all parts of the state? Will we have enough to meet future demand? What role are advance practice nurses and physician assistants fulfilling in various parts of the state? Should that role be changed and, if so, what are the barriers to change? Can Medicare and Medicaid patients get the care they need? How far must they travel and how long must they wait to see a primary or specialty care provider? These are all questions explored in this report to identify needed change and the important policy implications for meaningful solutions.

Comprehensive Approach to Objective

A thorough review of existing data sources, reports, and other available information showed inconsistent and sometimes unreliable profiles of the Arkansas health care workforce. These disparate findings often provide widely different estimates of the health care workforce supply in Arkansas and impair the state's ability to adequately develop policy strategies and implement potential solutions. These challenges are illustrated in Table A by the varying numbers of physicians in Arkansas reported by different sources.

Table A: Physician Workforce Supply in Arkansas*

	Family & General Practice	Internal Medicine	Pediatrician	Geriatrician	OB-GYN	Specialists
Arkansas state licensing board(s)	1,464	881	466	4	292	3,447
American Medical Association Masterfile	857	228	209	50	213	1,906
Arkansas Department of Health	1,427	890	488	Not given	291	Not given
Arkansas Medicaid	925	282	276	16	Not given	Not given
Arkansas Medicare	1,127	471	129	35	244	3,511
Arkansas Employee Benefits Division	1,192	486	369	70	321	4,842

*Details of how counts were extracted are provided in Appendix A (*Physician Workforce Supply Methodology*) of the main report.

In addition to the varying estimates, there was limited information about where and when providers' practice—for example, actual practice location, time spent practicing, specialty, and population served—and thus their contributions to the workforce capacity in meeting Arkansans' needs. Detailed provider information of this sort has not been previously compiled and analyzed.

To provide a more precise profile of Arkansas's health care workforce capacity and consumer access needs now and for the future, ACHI built off of an ongoing dialogue with provider associations, health care institutions, and consumer groups. ACHI undertook this assessment by conducting extensive literature reviews, legal analyses, and nationwide assessments of state activities; collaborating with the Arkansas Foundation for Medical Care (AFMC) to design and execute surveys focused on medical clinic office managers and primary care physicians; working with Arkansas Advocates for Children and Families (AACF) to obtain input from consumer focus groups; and compiling multiple sources of health care professional data for more detailed analyses. In addition, ACHI contracted with IHS Global Insight (IHS) to generate estimates of health care workforce supply and demand on a county level under baseline and alternative scenarios compared with national provider availability. This work resulted in the unique integration of the following study components:

- Micro-simulation model of primary care workforce supply and demand
- Specialty physician supply analysis
- Drive-time analysis for primary and specialty care physicians
- Physician payer-mix analysis
- Office capacity and primary care physician surveys
- Consumer focus groups

For the first time, demand represented by various aspects of health has been assessed at the county level and compared to supply of available health care professionals.

Why this Information is Important

Imagine this likely scenario: three legislators are considering legislation to improve access to care in rural regions of the state. Each seeks information from a different source. One looks for the percentage of uninsured in his district. Another tries to determine the number of primary care providers per 1,000 citizens in her district, while the third wants to know how many of his constituents must drive more than 30 minutes to reach a primary care provider. Each of these measures is an appropriate assessment of access to care, and each is fraught with variables that make it difficult to answer the ultimate question of whether access is the right issue to address and, if so, how best to address it.

Despite various approaches in measuring access to care, there is little doubt of the role and importance of clinical providers in communities across our state. Access to comprehensive, quality care impacts overall physical, social, and mental health status; prevention of disease and disability; detection and treatment of health conditions in the earliest stages when they are most effectively managed or reversed; and life expectancy. Barriers to accessing care can lead to unmet health needs, delays in receiving appropriate care, inability to obtain preventive services, and avoidable hospitalizations.

Providing access to insurance coverage—a financial barrier to access—increases uptake of preventive services, results in more patients having a routine primary provider, decreases reports of depression, and reduces the number of bankruptcies stemming from medical expenses. However, providing someone with insurance does not always ensure access to care. A payment source is not

much good if there are no health care providers available and willing to accept payment from that source.

Federal policy efforts under the Patient Protection and Affordable Care Act (PPACA) strive to improve access to care by providing enhanced insurance coverage options. In fact, recent estimates show that the current uninsured population in Arkansas will decrease by more than half if the state chooses to fully implement provisions in PPACA. But, the law does little to address other access components. As the state and/or federal government implements PPACA, accurate information to guide legislation and policy initiatives to assure availability and accessibility of clinical providers is critical to meet the goals of the Arkansas Health System Improvement Initiative.

Important Observations

Physician Workforce

There are 2,077 primary care physicians practicing in the state. To match current estimated demand, we need 2,437, leaving us with about 360 or 15 percent fewer primary care doctors than we need (Table B).

Table B: Regional Adequacy of Physician Supply (2012)

Physicians	Region					State Total
	Central	Northeast	Northwest	Southeast	Southwest	
Supply	761	340	684	145	148	2,077
Demand	621	465	869	217	266	2,437
Difference	140	–125	–185	–72	–118	–360
Percent Difference	23%	–27%	–21%	–33%	–44%	–15%

Note: A positive difference shows an estimated oversupply; a negative difference shows an estimated shortage.

We have a shortage—but the greater problem is maldistribution of our physician workforce.

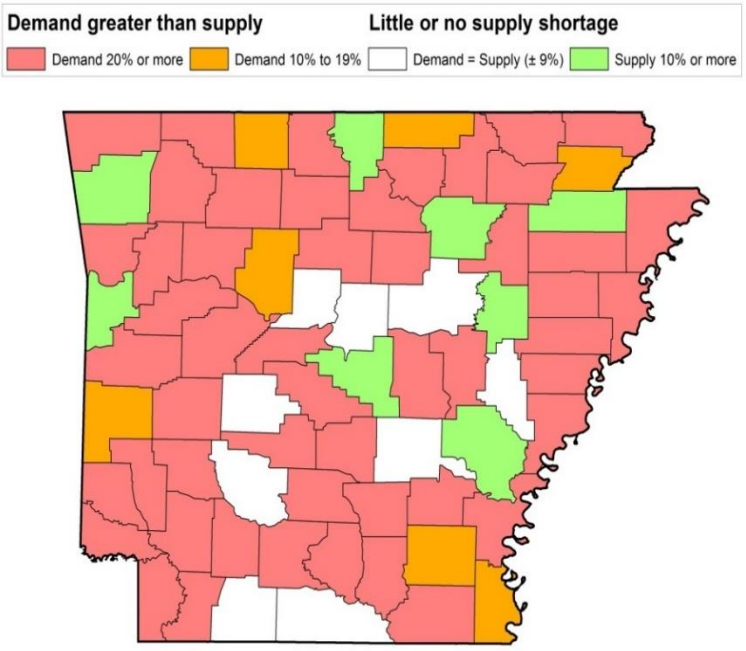
The largest problem for many Arkansans is where our primary care doctors choose to practice (Figure A). A person living in Pulaski, Craighead, Sebastian, or one of 14 other counties with larger metropolitan areas will find that there are enough or more than enough primary care providers to go around. It's a completely different story for people living in 61 of our 75 counties where the demand for primary care exceeds the supply of care providers. The shortage is most severe for people living in Newton, Calhoun, Lafayette, Cleveland, and Scott counties where demand outpaces supply by 75 to 85 percent.

Focus groups conducted in rural Arkansas counties revealed that half of those participating drive between 20 and 90 minutes to see a primary care provider. The ability to get an appointment with a nearby doctor was also an issue in these medically underserved areas. Participants indicated that it can be difficult in rural communities to find primary care at hours convenient to work schedules. They also noted that in communities with only one primary care physician, on-call hours were not available.

What happens when primary care is not available when needed? Half to three-quarters of focus group participants reported seeking care in local emergency rooms because they did not have access to a primary care provider when they needed one.

In a large part of the state, the availability of specialty care is even more challenging with many Arkansans driving 60 minutes or more to reach a surgeon or other specialist.

Figure A: Adequacy of Supply and Demand of Primary Care Providers by County (2012)



How do we provide care to Arkansans living in underserved areas of the state? For a more in-depth look at this issue see Section II of this report and Appendix B, *The Primary Care Workforce in Arkansas: Current and Future Supply and Demand*, which also provides county-level information.

Additional Workforce Assets

Arkansas's use of APNs and PAs as physician extenders helps reduce the state's primary care shortage.

Our state uses other professionals, particularly advance practice nurses (APNs), trained to provide some services that might otherwise be performed by a doctor. Overall, approximately two-thirds of our primary care workforce are physicians and one-third are APNs or physician assistants (PAs). Compared to national experience of provider types and distribution, Arkansas has more practicing APNs than national rates and fewer PAs. Combining primary care physicians with 946 APNs and PAs practicing in the state closes our shortage of available primary care providers compared with national experience to approximately 138—an estimated 4 percent shortfall (Table C).

Table C: Regional Adequacy of Primary Care Supply (2012)

Total Primary Care Supply	Region					State Total
	Central	Northeast	Northwest	Southeast	Southwest	
Supply	1,107	528	953	206	231	3,023
Demand	803	605	1,126	282	346	3,161
Difference	304	–77	–173	–76	–115	–138
Percent Difference	38%	–13%	–15%	–27%	–33%	–4%

Note: A positive difference shows an estimated oversupply; a negative difference shows an estimated shortage.Totals may be slightly off due to rounding.

Under Arkansas law, APNs currently have the authority to diagnose and treat patients without physician supervision and the authority to prescribe certain drugs in collaboration with a physician.

Of the physicians responding to our survey with at least one APN associated with their practice, nearly half indicated that the APNs acted as primary care clinicians with their own patients; the

remainder indicated that the APNs primarily assisted in seeing the physicians' patients. Physician supervision of or collaboration with APNs varied greatly across the state. About one quarter of responding physicians working with APNs indicated that they review a sample of APN charts, and approximately a quarter of physicians indicated that they review all APN charts. Slightly more than a quarter indicated that they do not require but are available for consultation by their APNs.

Among the responding physicians who had no APNs or PAs associated with their practice, more than half indicated they would consider employing them to expand office capacity. The types of services they would consider adding an APN or PA to provide included preventive screening, preventive counseling, chronic disease management, well-child exams, adult wellness visits, and acute care.

A majority of the adult participants in the consumer focus group study included in this report had seen an APN or PA instead of their primary care physician. Of those participants, most had seen an APN while a few had seen a PA. Participants were highly satisfied with the care they received from APNs and PAs and they felt that APNs listened better than physicians, were not as rushed, were more in-depth, and seemed genuinely concerned with their needs.

For a discussion of APN and PA education, scope of practice, reimbursement and more, see Section III of this report.

Future Supply and Demand

Approximately 60 providers will be needed to meet future demand projections (a one-time 2.5 percent increase) if the state chooses to expand health care coverage under the PPACA in 2014. More importantly, because of Arkansas's relatively unhealthy and aging population, approximately 261 providers, or an increase of 7.7 percent, will be required to meet estimated demand by 2020.

Arkansas's high use of APNs and high rates of training new APNs and PAs will result in a gradual increase in the total supply of primary care providers approaching the national capacity of primary care clinicians available for care needs by around 2022.

Our office capacity survey found that currently nearly half of responding clinics had at least one APN on staff while the majority of clinics (79 percent) indicated that their practice had no PAs. There are ten times more APNs licensed in Arkansas than there are authorized PAs reflecting the longer history and greater number of APN training opportunities. Through existing APN and PA training opportunities with planned expansions, new roles and responsibilities will require thoughtful exploration as the delivery system moves toward team-based patient-centered care.

APNs and PAs are no more likely to serve in rural, underserved areas than their physician counterparts. Thus while APNs and PAs help close the gap in Arkansas's provider shortage, they have not to date helped resolve maldistribution. The geographic concentration of physicians in urban and surburban areas is mirrored for APNs and PAs resulting in the same oversupply in urban areas and shortages in rural parts of the state for these providers.

The geographic maldistribution observed for physicians is equally present for APNs and PAs

The Path Forward

What does all of this mean for Arkansans? It boils down to this: **absent some immediate intervention that makes rural practice more enticing, our health care workforce will continue to locate in metropolitan areas and individuals living in rural areas will continue to have issues accessing health care**.

Expanded insurance coverage in rural areas could be a financial shot in the arm, drawing some providers into rural areas—as our survey of physicians in this report indicates. However, the lure of income is only one reason for permanently locating a practice in a particular area. There are also lifestyle issues to consider including professional isolation, the quality of local educational opportunities, access to the arts, shopping, and restaurants.

To address maldistribution issues, **we cannot rely on traditional solutions alone**. Simply producing more physicians, APNs, and PAs is not a long-term solution. Estimates show that the current production rate could give our state enough providers, but we have to find ways to get them in the areas with the most demand with appropriate support to deliver quality care. Funding for loan repayment programs—marginally effective historically—cannot keep pace with the significant debt that medical students are accruing and financial incentives often don't overcome lifestyle issues. Finally, moving toward more independent practices for APNs or PAs is inconsistent with Arkansas's initiative to improve health care through reimbursement for team-based care and, perhaps more importantly, does not guarantee that those providers would serve in rural and/or underserved areas.

So what's the call to action? **We have the health workforce assets to provide a solution but must turn our attention to policies that address maldistribution.**

We have a prime opportunity to address this issue with ongoing patient-centered medical home (PCMH) initiatives that offer team-based efficiencies to provide improved capacity in rural areas. We should optimize these initiatives by exploring financial arrangements that will promote the use of APNs and PAs in remote locations. We should also continue to improve health information technology capabilities for telemedicine and common electronic health record systems to extend reach for urban providers and to further promote team-based care. We should better utilize existing local health care resources such as pharmacists, local health units, and emergency medical technicians.

We should also explore transportation opportunities—either transporting primary care teams from urban areas to rural locations on a daily basis or transporting patients to urban areas—to improve access where problems persist. Arkansas has kernels of promise—a successful trauma system is building a network of resources; the University of Arkansas for Medical Sciences and Arkansas Children's Hospital have historically provided residents to health department clinics for physician referrals; private sector cardiologists have traveled to rural Arkansas to address critical needs of rural citizens; and, finally, video links and telemedicine offer support today for obstetric and stroke care with broad opportunities for distance referral to ameliorate other shortages and enhance capacity.

We have a great need to provide better access to a quality health workforce for all Arkansans. With a little creativity we can find solutions. This report provides a valuable resource to help inform this important undertaking.

Rose's Story

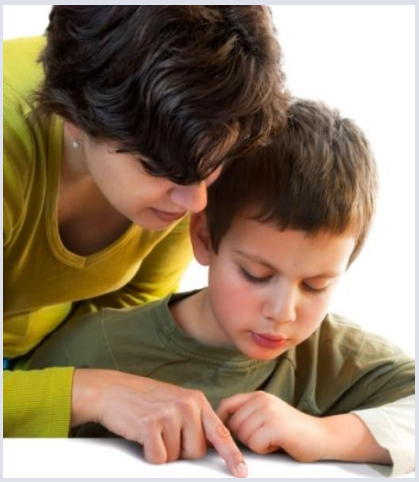
Rose received her insurance card in the mail today. What a relief! This is the first time she has had a way to pay for her medical care since she was pregnant with her son six years ago. She has been worried about the sharp pains she's been having in her abdomen over the past year that seem to be happening more often.

Rose is a single mom and lives with her young son near Mount Ida in Montgomery County. Her son is enrolled in Medicaid and has a pediatrician whose office is five miles away. Rose, on the other hand, had to drive over to the National Park Medical Center's emergency room in Hot Springs a few times when the pains were especially bad. In the emergency room she got some medications that gave her a little relief, but never found out the cause and from time to time the pain came back. Now that she too has Medicaid coverage she expected that she could finally get her problem straightened out.

Finally having coverage is the good news. But, she was worried about bad news. She thought she would have to go through the same thing she did while she was pregnant. At that time she found that of the few doctor's offices near where she lived, most weren't accepting new adult Medicaid patients and those who were didn't have an appointment available for nearly a month. She ended up having to drive 35 minutes away to see a doctor in Hot Springs. She missed a lot of work which put her job at risk. Her employer doesn't provide sick leave and assesses "points" for missing work regardless of the reason. If she reaches a certain number of points, she gets fired.

After calling around, she found out that one of the patient-centered medical home clinics in Hot Springs has a satellite office in Mount Ida just a few miles from where she lives. She scheduled an appointment to see an advanced practice nurse the next week. Best of all, she was able to get an evening appointment after she got off work.

Since she couldn't have anything to eat or drink before having the blood work done for her checkup, the clinic arranged for her to stop in to have the blood drawn on her way to work the morning of her appointment. It took about ten minutes and she got to work on time.



That evening during her appointment, the APN reviewed the results with Rose and gave her a routine physical examination. Rose told her about the pains she was having. The next day, after a telephone consultation with the patient-centered medical home's lead physician in Hot Springs, the APN called Rose to recommend that she have an endoscopy to take a look inside her stomach for the source of Rose's pain. This had to be done in Hot Springs but they were able to schedule it for a Saturday morning. The endoscopy revealed a serious ulcer.

In a follow up phone call with the APN, Rose was told about the ulcer and that it was the likely cause of the pain she had been having. The APN described the medication that would be prescribed to help clear up the ulcer, asked Rose which pharmacy she wanted to use, and let her know that her prescription would be sent electronically to the pharmacy. Rose was also told that it was a good thing they were able to find and treat the ulcer since it had reached a critical stage and may have perforated without treatment, causing serious complications and possibly death. The APN set up a follow-up appointment with Rose and asked her to call if she had any questions or problems.

Rose tucked her little boy into bed that night and then sat down in her living room and cried tears of relief, feeling that a great burden had been lifted off her. Finally she was able to take care of her health and she could do it without having to risk her job. Now she didn't have to worry about not being able to take care of her son. And that meant the world to Rose.

Arkansas Health Care Workforce: A Guide for Policy Action

Section I: Overview

Introduction

Access to health care has been described as "the timely use of personal health services to achieve the best health outcomes."[1] It can be measured in many ways, including the presence or absence of health insurance, ease of access to a health care location where needed services are provided in a timely way, and available workforce.[2] Funded by the Blue & You Foundation for a Healthier Arkansas, this study aims to provide up-to-date and accurate information about the Arkansas health care workforce and other measures of access to care as policymakers look to address the state's access issues.

The three objectives of this study are to:

- Understand the current and expected primary and secondary workforce capacity and shortfalls in Arkansas.
- Explore options for extending the capacity for primary care providers through use of physician extenders and financing incentives, with a particular focus on the scope of practice for advanced practice nurses (APNs) to determine what services may be safely and effectively provided by APNs and the impediments to them for providing those services.
- Identify potential strategies to meet current and future primary and specialty care workforce needs for consideration.

To meet these objectives, the Arkansas Center for Health Improvement (ACHI) conducted extensive literature reviews, collaborated with the Arkansas Foundation for Medical Care (AFMC) to design and execute surveys targeted at medical clinic office managers and primary care physicians, worked with Arkansas Advocates for Children and Families (AACF) to obtain input from consumer focus groups, and compiled multiple sources of health professional data for more detailed analysis. Additionally, ACHI with IHS Global Insight (IHS) generated estimates of health care workforce supply and demand on a county level under baseline and alternative scenarios.

Background

Measuring access to health care can be a challenging and complex process. While policymakers may recognize that thousands of Arkansans are unable to obtain adequate health care and that informed debate is necessary to reach viable solutions, rationale debate is difficult when research has widely varying estimates informed by widely different variables or methods.

Imagine this scenario: three legislators are considering legislation to improve access to care in the mountain regions of Arkansas, and each seeks information from different sources. One wants to know the percentage of uninsured in the mountain regions. Another seeks information about the number of primary care providers per 1,000 population in the mountain regions, while the third wants to know how many individuals must drive more than 30 minutes for a primary care provider. Each of these measures is an appropriate assessment of access to care, but the answer to each may differ greatly for the ultimate question of whether access is an issue that must be addressed.

Despite various approaches in measuring access to care, there is little doubt that it should and can be measured. Access to comprehensive, quality care impacts overall physical, social, and mental health status; prevention of disease and disability; detection and treatment of health conditions; and life expectancy. Barriers to accessing care can lead to unmet health needs, delays in receiving appropriate care, inability to obtain preventive services, and avoidable hospitalizations.[3]

A recent study has shown that merely providing access to insurance coverage—a monetary barrier to access—increases uptake of preventive services, results in patients having a routine primary provider, decreases reports of depression, and reduces the number of bankruptcies stemming from medical expenses.[4] However, providing someone with insurance does not always ensure access to care. A payment source is no good if there are no capable health care providers available and willing to accept payment from that source.

Federal policy efforts under the Patient Protection and Affordable Care Act (PPACA)[5] can improve access to care by providing enhanced insurance coverage options. Indeed, recent estimates show that the current uninsured population in Arkansas will decrease by more than half if the state chooses to fully implement provisions in PPACA,[6] but the law does little to address other access components. Knowing of this gap, Arkansas policymakers independently forged ahead with a strategy to address the state's access to care issues.

Arkansas Health Workforce Strategic Plan[7]

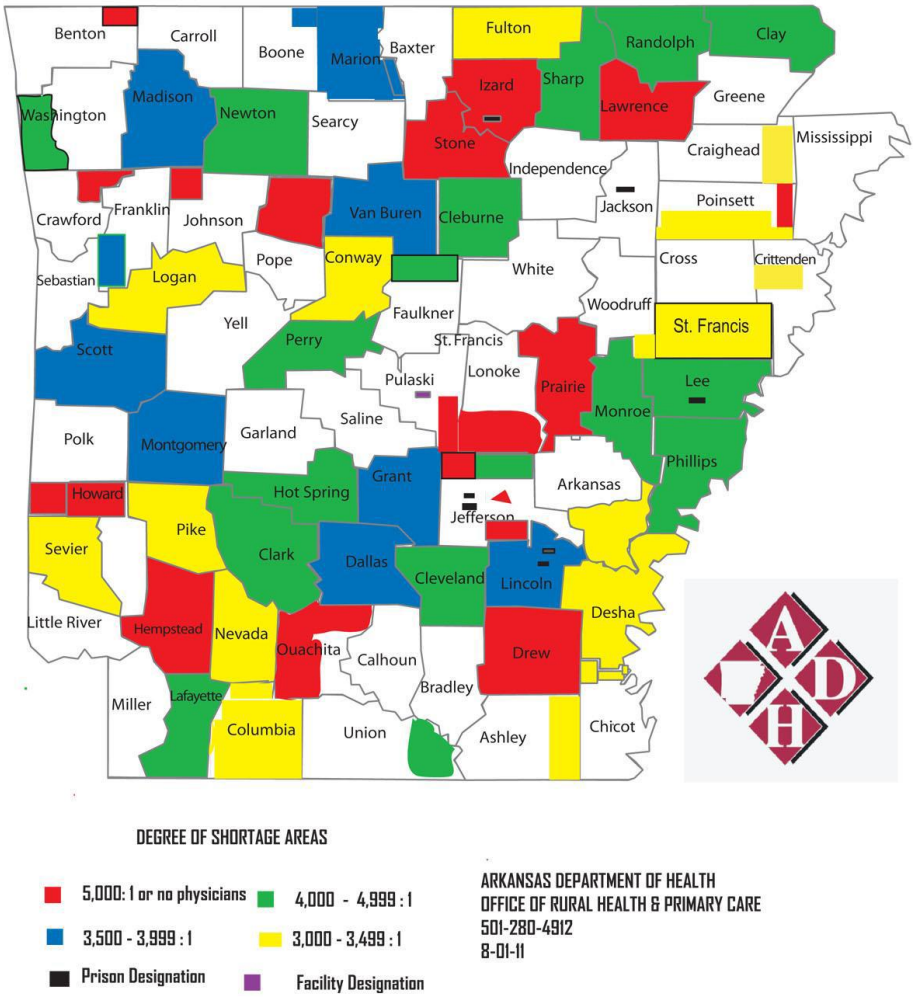
In early 2011, Arkansas Governor Mike Beebe and Arkansas Surgeon General Dr. Joe Thompson charged a core group of health professionals to assess health workforce-related issues and propose recommendations to address any access issues discovered in the assessment. The core group, co-chaired by University of Arkansas for Medical Sciences Chancellor Dr. Dan Rahn and State Health Officer and Director of the Arkansas Department of Health Dr. Paul Halverson, submitted the *Arkansas Health Workforce Strategic Plan: A Roadmap to Change* to Governor Beebe in April of 2012.

During the group's workforce assessment, it became evident that existing data sources, reports, and other available information were inconsistent and sometimes unreliable, often providing widely different estimates of the health workforce supply in Arkansas. For example, according to the Health Resources and Services Administration (HRSA), more than 500,000 Arkansans live in areas designated as primary care health professional shortage areas (HPSAs).[8] HPSAs are areas designated by HRSA as having shortages of primary medical care, dental, or mental health providers. Thirty-six entire Arkansas counties are designated as primary care HPSAs, representing almost half of the counties in the state (Figure 1).

A 2011 study by the Association of American Medical Colleges shows that Arkansas is third lowest among states for active physicians per 100,000 population. The study estimated the number of active physicians in Arkansas at 5,518, and among those classified 2,223 as primary care physicians.[9]

A 2011 study by the University of Arkansas for Medical Sciences Center for Rural Health indicated that there were 514 current vacancies for primary care physicians in Arkansas and 860 expected vacancies within the next 5 years.[10]

Figure 1: Arkansas Primary Care Health Professional Shortage Areas (HPSA)[11]



The *Strategic Plan* itself included a chart of the varying estimates of primary care physician supply in Arkansas from different sources (Table 1).

Table 1: Physician Workforce Supply* in Arkansas[12]

	Family & General Practice	Internal Medicine	Pediatrician	Geriatrician	OB-GYN	Specialists
Arkansas state licensing board(s)	1,464	881	466	4	292	3,447
American Medical Association Masterfile	857	228	209	50	213	1,906
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Arkansas Employee Benefits Division	1,192	486	369	70	321	4,842

*Details of how counts were extracted are provided in Appendix A (*Physician Workforce Supply Methodology*).

In addition to the varying estimates, there was limited information about providers' contribution to the workforce capacity, which raised concerns about several variables:

- *Actual location of practice*. Providers' addresses may be a residence, or providers may live in one county but work in another county or even another state. Even if the address is a practice location, the provider may work at multiple practice locations.
- *Time spent practicing*. Providers may be working part time, may be working more than full time, or may be retired but still have an active license. Some providers may be licensed but not providing direct patient care, such as faculty or researchers.
- *Specialty*. The specialty of some providers is difficult to determine, either because it is not reported at all or because the way it is reported is not specific.
- *Population served*. Providers may be providing direct patient care but may be limiting who they serve based on type of payment source.

Despite limited and varying estimates, the core group recognized that the state's health workforce nonetheless needed to be better equipped to meet the demands of a population that is aging and burdened with chronic disease. The group further recognized that expanded insurance coverage among Arkansans provided the state with an opportunity to transform the health care system to more effectively and efficiently deliver quality care at reduced costs. Consequently, the core group adopted and worked under the following assumptions:

- The supply, capacity, and distribution of primary care clinicians in Arkansas is not sufficient to meet the health care needs of Arkansans and is not likely to change in the short term.
- There are serious gaps in health care quality and safety, racial and ethnic disparities, and geographic barriers that negatively impact care in rural and underserved communities and populations.
- Approximately 251,000 Arkansans may become eligible for Medicaid and approximately 323,000 Arkansans will qualify for subsidies to pay health insurance premiums in 2014.[i]
- Even absent the changes brought about by implementation of the Patient Protection and Affordable Care Act, the demand for health care services will be driven by a rapidly increasing population of elder Arkansans and a general population that experiences differentially high rates of chronic disease.

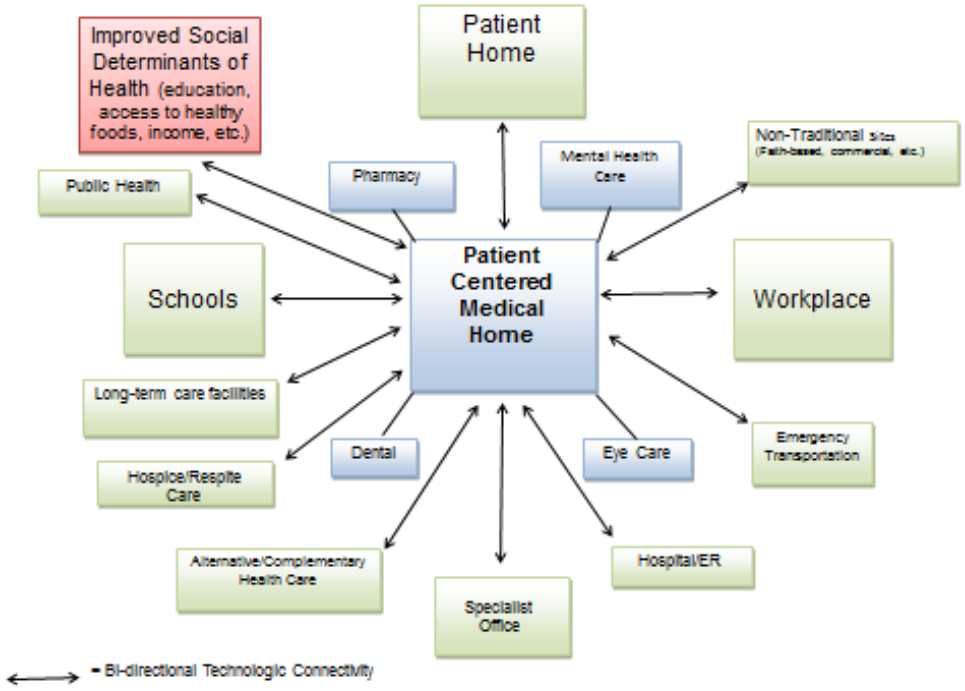
Working under these assumptions, the *Strategic Plan* offered numerous recommendations centered on four major goals:

- Support the implementation of and transition to team-based care that is patient-centered, coordinated, evidence-based and efficient.
- Enhance and increase the use of health information technology.
- Increase the supply and improve the equitable distribution of primary care providers.
- Adopt new financing, payment, and reimbursement policies and mechanisms.

[i] Recent projections from Arkansas Medicaid Director Andy Allison indicate that expansion in 2014 would provide subsidies for health care coverage to an estimated 200,000 Arkansans earning 139–400 percent of federal poverty level. (FPL) and approximately 250,000 Arkansans earning less than 139 percent of the FPL will be newly eligible for Medicaid.

The *Strategic Plan* also called for broad implementation of patient-centered medical homes (PCMH), a delivery model that promises comprehensive, coordinated care, timely access, and a systems-based approach to quality and safety for Arkansans. Figure 2 depicts a structure for a vision of ideal health care delivery in Arkansas, such that care and services received at any site would be patient-centered and integrated.

Figure 2: Vision for Health Care Delivery in Arkansas



An enormous step toward statewide implementation of the PCMH model recently occurred with the Center for Medicaid and Medicare Innovation's awarding of the Comprehensive Primary Care Initiative (CPCI) to the Arkansas market. A multi-payer effort, the CPCI will provide physician practices with a per-member per-month payment, which will incentivize practices to optimize prevention and chronic care management while enhancing patient-centered care.

With the significant headway achieved with the awarding of the CPCI and with the *Strategic Plan's* assumptions and goals in mind, ACHI embarked on this study with a goal to fully and accurately understand primary and specialty care capacity and consumer access needs in Arkansas.

Section II: Data Analyses

The following section details ACHI's assessment of the health care workforce in Arkansas and perspectives from health care providers and consumers. It is divided into several subsections: a micro-simulation study detailing supply and demand of the primary care workforce in Arkansas, a payer mix analysis detailing which patient populations physicians serve, highlights from the office capacity and physician surveys, and highlights from the consumer focus group report.

The Primary Care Workforce in Arkansas

Accurate information about primary care provider supply and demand is necessary to ensure that shortages are properly identified and solutions to those shortages are accurately informed. This new analysis estimates the current and future supply of and demand for primary care providers in Arkansas, including doctors, advanced practice nurses, and physician assistants using higher-quality supply data and a detailed micro-simulation model for demand based on health and demographic characteristics of the population.

County-level estimates are reported for current supply, current demand, and projected demand under two scenarios, while projected supply is reported at the state level. The full report of this study, *The Primary Care Workforce in Arkansas: Current and Future Supply and Demand*, is included as Appendix B, including county-level data tables.

Prior Studies

In many studies, provider supply is based on raw numbers of licensed providers and their self-reported specialties; this does not measure whether or not a provider is actively practicing and the actual specialty being practiced. In supply growth studies, projections do not always take into account specific changes that are being implemented in an area, such as the opening of a new educational program or the expansion of existing programs. These changes can affect the availability of health care, which will then not be accurately reflected in reports that do not consider them.

Some studies that attempt to measure demand for providers or adequacy of supply typically estimate demand based on population averages, not on the specific needs of a population. Other studies focus on just one area of demand, such as increased demand due to Medicaid expansion or demand for specific special needs populations. In general studies, demand is often not specifically discussed, but is demonstrated by generating a ratio of providers-to-population or population-to-providers using the general population.

This type of analysis does not account for variables such as age, higher or lower rates of chronic disease, or those without health care coverage, all of which affect the utilization of providers. The older or sicker people are, the more providers they will need to care for them. Intuitively, Vermont and New Hampshire, found to be the healthiest states in the country, should require fewer providers per thousand citizens than Louisiana and Mississippi, the least healthy states in the country.[14] And, because the uninsured use less health care than the insured, states like Massachusetts, which has the highest rate of insured people, should utilize more providers than Texas, which has the highest rate of uninsured people.[15]

Therefore, ratios or studies that rely on national population statistics would not depict demand in Arkansas as accurately as if these variables were more specific to the state.

Methods

To get a more accurate measure of the supply of and demand for primary care providers in Arkansas, this study included several specific improvements to the data and methodologies previously used in the *Arkansas Health Workforce Strategic Plan* and similar analyses. Importantly, no source of information exists that accurately and completely captures the practicing health care workforce in the State of Arkansas. Through use of licensing board information supplemented with public and private payer data, ACHI generated a master file of practicing clinicians. After initial assessments of provider supply described below, estimates of the existing provider supply, and current and future provider demand were modeled using micro-simulation techniques based upon validated national utilization profiles. These results incorporated characteristics of the workforce including age, gender, specialty, retirement patterns, etc., and underlying health care needs of individuals at the county level including age, health risks, existing conditions, education, and income.

Provider Supply

The supply of physicians, APNs and PAs working in primary care was obtained from Arkansas state licensing boards with additional descriptive information including location, active/retired status, and declared specialty. Using this information, the initial supply of providers used in this analysis included 2,077 physicians, 1,081 advanced practice nurses, and 101 physician assistants. Further detail is provided below regarding the exact methods used to derive the supply of each type of provider.

Physicians

The initial primary care supply count included 2,077 physicians. A physician was included only if she or he met all of the following criteria:

1) Licensed as a doctor by the Arkansas State Medical Board[ii]
2) Holds a DO or MD degree[ii]
3) Living or practicing in a county in Arkansas[ii]
4) Filed at least one claim with any participating payer or appeared at least once in the active physician file of any participating payer[iii]
5) Is a primary care provider (see "Specialty Assignment" methodology below)

Physicians were assigned to a county's supply based on their self-reported address in the Arkansas State Medical Board file. Some addresses are office locations and some are residential.

Payer-specific information in the study included that from Medicare, Medicaid, Arkansas Blue Cross and Blue Shield, and the Arkansas Employee Benefits Division.

APNs

The initial primary care supply count included 1,081 advanced practice nurses. An APN was included only if she or he met all of the following criteria:

1) Licensed in Arkansas by the Arkansas State Board of Nursing
2) Holds a license of advanced nurse practitioner (ANP) or clinical nurse specialist (CNS) (certified nurse midwives and certified registered nurse anesthetists were not included in supply)
3) Living or practicing in Arkansas
4) Is a primary care provider (see "Specialty Assignment" methodology below)

[ii] Arkansas State Medical Board file dated January 13, 2012
[iii] Arkansas Blue Cross and Blue Shield, Medicaid, Medicare, and State Employee Benefits Division

Because APNs do not typically file claims independently of physicians, the supply of APNs could not be independently verified by active status. APNs were assigned to a county's supply based on their self-reported address in the Arkansas State Board of Nursing file. Some addresses are office locations and some are residential.

PAs

The initial primary care supply count included 101 physician assistants. A PA was included if she or he met all of the following criteria:

1) Licensed as a PA by the Arkansas State Medical Board or the supervising physician is licensed and/or living or practicing in Arkansas[ii]
2) The PA and/or the PA's supervising physician are living or practicing in a county in Arkansas[ii]
3) Is a primary care provider (see "Specialty Assignment" methodology below)

Because PAs do not typically file claims independently of physicians, the supply of PAs could not be independently verified by active status. PAs were assigned to a county's supply based on their self-reported address in the Arkansas State Medical Board file. Some addresses are office locations and some are residential.

Specialty Assignment

For purposes of this study, primary care providers were restricted to those practicing in general medicine (including family medicine), internal medicine, pediatrics, or geriatrics. Although obstetrics and gynecology are frequently included in primary care studies, those specialties were not included in this analysis because they only treat about half the population (females). To count only primary care providers in the supply, a single or split specialty was assigned to each provider. All providers who were deemed specialists were excluded from the supply.

Physicians

Specialties were assigned to physicians based on specialty data from the Arkansas State Medical Board and four participating payers: Medicare, Medicaid, Arkansas Blue Cross and Blue Shield (BCBS), and the Arkansas Employee Benefits Division (AEBD).

To normalize language across data sets, a workforce codebook was created that assigned a category to each specialty indicator, including language and provider codes from all participating data sources. For example:

Workforce Category Assigned	Arkansas State Medical Board	AEBD	Medicaid
Gastroenterology	Gastroenterology, hepatology, pediatric gastroenterology	Gastroenterology	Gastroenterology
General	Family practice, general practice, internal medicine - pediatrics	General practice, family practice	General practice, family practice

Using the assigned workforce categories, if a physician's specialty was the same across all participating data sets, that specialty was assigned to the physician. Approximately two-thirds of the supply matched with a single specialty. For example:

Medical Board	AEBD	Medicaid	Medicare	BCBS	FINAL
General	General	N/A	N/A	General	General
Pediatrician	Pediatrician	Pediatrician	N/A	Pediatrician	Pediatrician
Orthopedic surgeon	Orthopedic surgeon	N/A	Orthopedic surgeon	Orthopedic surgeon	Orthopedic surgeon

For the approximately one-third of physicians whose specialty was different across data sources, an equal percent was assigned to each specialty that appeared, regardless of the number of times that specialty appeared in the data sets. For example:

Medical Board	EBD	Medicaid	Medicare	BCBS	FINAL
Internal medicine	N/A	Pediatrician	N/A	Pediatrician	50% internal medicine; 50% pediatrics
General	Pediatrician	N/A	N/A	Allergy	1/3 general, 1/3 pediatrician, 1/3 allergy
Orthopedic surgeon	Orthopedic surgeon	Internal medicine	Orthopedic surgeon	Orthopedic surgeon	50% orthopedic surgeon, 50% internal medicine

For physicians with split specialties—e.g., a physician with a specialty of 50 percent internal medicine and 50 percent pediatrics—half of a physician was counted in each of those supplies, but because they are both included in primary care, one full physician was included in the primary care supply. If a physician was included as 50 percent internal medicine and 50 percent orthopedic surgeon, half of a physician was included in the primary care supply (the 50 percent internal medicine), but the other half (50 percent orthopedic surgeon) was considered a specialist and was not included in the primary care supply.

APNs

Specialties were assigned to APNs based on the certifying exam each APN must complete to be licensed as an APN in Arkansas.[iv] APNs were included in the primary care supply if the certifying exam listed was acute care nurse practitioner, adult nurse practitioner, community health clinical specialist, family nurse practitioner, gerontological nurse, pediatric nurse practitioner, or school nurse.

PAs

No information is regularly reported to the Arkansas State Medical Board or any other certifying or licensing body regarding the specialties of PAs. However, Arkansas law requires PAs to have a supervising physician and to practice in the same specialty as that physician. Thus, PA specialties were assigned based upon the specialties of their supervising physicians.[v]

If a PA's supervising physician was assigned a split specialty, that PA was assigned the same split specialty. A PA with multiple supervising physicians was assigned a split specialty based on the specialties or split specialties of the supervising physicians. For example:

Supervising Physician #1	Supervising Physician #2	PA Specialty
Family Practice	Family Practice	Family Practice
Internal Medicine	Cardiology	50% Internal Medicine; 50% Cardiology
Family Practice/ Internal Medicine	Cardiology	1/3 Family Practice; 1/3 Internal Medicine; 1/3 Cardiology

Supply Projections

Supply projections in this analysis are based on individual provider characteristics such as age, gender, specialty, and national retirement patterns. Future supply is projected based on the assumption that current patterns of retirement and hours worked will remain unchanged within a given age group and gender.

These projections also consider information and patterns unique to the state, such as Arkansas's high retention rate of UAMS medical school graduates in Family Medicine residency programs

[iv] Arkansas State Board of Nursing files dated January 18, 2012 and June 5, 2012

[v] Arkansas State Medical Board file, Physician Assistants and Supervising Physicians, dated February 12, 2012

within the state (69.2 percent).[16] Also included in the supply growth projections are specific changes to the Arkansas educational pipeline that had been announced as of June 2012, such as the expansion of the PA program at Harding University, the new PA program at UAMS, and the addition of six new primary care residency slots in the state each year from 2011 to 2016.

Projections are also based on the number of new entrants to the physician workforce gradually increasing from 80 per year to 95 per year by 2017, that entrants into the PA workforce will grow from 8 to 10 per year, and that new APN entrants will grow from 49 to 62 per year. This scenario represents the best estimate of future supply under the status quo.

In addition to these expected growth projections, two alternative supply scenarios model the implications if the growth in the Arkansas workforce is 10 percent higher or 10 percent lower than is assumed.

Provider Demand

Traditional models for demand have examined patterns of care delivery for large population groups resulting in less precision in estimated need. The modeling approach used in this study examined the underlying health burden of each citizen at the county level and, based upon observed individual use patterns from a representative national sample of patients, projected local demand estimates for physicians, APNs, and PAs. Thus, in this analysis, demand for primary care providers is based on actual health and demographic characteristics of each county's population, taking into account demographic characteristics such as sex and age, health characteristics such as hypertension and obesity, and socioeconomic characteristics such as insurance status.

For primary care provider assessments, county-specific assessments were generated and are included for each county and aggregated by the ADH regions to provide sub-state assessments of projected demand. Provider demand is reported as the number of primary care providers needed to meet the health care utilization needs of all people in that county. Based upon national utilization profiles that encompass provider productivity, full-time status, and type of provider, estimates of the needed full-time-equivalent positions were generated. The demand estimated reflects actual care-seeking behavioral patterns of Americans reflected in the Arkansas population and, is not based on how often people with certain conditions "should" use providers.

Demand Projections

Two demand scenarios are projected—one based upon existing insurance coverage patterns and existing health risks and disease burden, the second projecting a significant decrease in the rate of uninsured in 2014, when the majority of the uninsured population could become eligible for coverage under provisions of the Patient Protection and Affordable Care Act.

In these two scenarios, the variable that produces change/different outcomes is the insurance status. Because people who are insured typically see a provider more often, the demand for providers will increase as people become insured.

Results

The results of the analysis estimate that Arkansas currently has 2,077 primary care physicians, 865 advanced practice nurses, and 81 physician assistants. Based upon modeled estimates of the existing need for primary care clinicians compared with national patterns of utilization, adequacy of the existing workforce is depicted in Table 2.

Table 2: Regional Adequacy of Primary Care Supply (2012)

	Region					State Total
	Central	Northeast	Northwest	Southeast	Southwest	
Physicians						
Supply	761	340	684	145	148	2,077
Demand	621	465	869	217	266	2,437
Difference	140	–125	–185	–72	–118	–360
Percent Difference	23%	–27%	–21%	–33%	–44%	–15%
Advanced Practice Nurses*						
Supply	319	173	242	59	73	865
Demand	130	98	182	45	55	510
Difference	189	75	60	14	18	355
Percent Difference	145%	77%	33%	31%	33%	70%
Physician Assistants*						
Supply	27	15	27	2	10	81
Demand	52	42	75	20	25	214
Difference	–25	–27	–48	–18	–15	–133
Percent Difference	–48%	–64%	–64%	–90%	–60%	–62%
Total Primary Care Supply*						
Supply	1,107	528	953	206	231	3,023
Demand	803	605	1,126	282	346	3,161
Difference	304	–77	–173	–76	–115	–138
Percent Difference	38%	–13%	–15%	–27%	–33%	–4%

Note: A positive difference shows an estimated oversupply; a negative difference shows an estimated shortage. State totals may be slightly off due to rounding.

**Each APN or PA counted as 0.8 physician in total estimates of primary care providers. While there is little published research to suggest the degree to which APNs and PAs offset the workload of a primary care physician, productivity data from the Management Group Medical Association's annual Productivity Survey lends support to using a weight of approximately 0.8. Currently, Medicare reimburses APNs at 0.85 the rate of reimbursement for primary care physicians when the APN provides care in the absence of a supervising physician.*

This analysis of Arkansas's localized need and existing assets compared with national patterns of utilization provides important insights into the current challenges facing the state:

- The total state supply of primary care clinicians approaches the current demand estimated for the underlying population.
- Arkansas utilizes more non-physician providers than national utilization patterns, reflected in a 15 percent shortage statewide of primary care physicians.
- Compared with national utilization patterns, the Arkansas health care workforce depends upon more APNs than PAs, reflected in an estimated oversupply of APNs and undersupply of PAs—substitution of APNs for PAs addresses much of the demand shortage.
- There is a substantial maldistribution of primary care clinicians with a concentration (and oversupply) in central Arkansas and moderate undersupply in the Northwest and Northeast regions with marked undersupply in the Southeast and Southwest regions.

Important qualifications of this model include the following:

- The distribution of physician, APN, and PA demand is modeled on utilization patterns for a nationally representative population. Policy strategies to meet need should anticipate substitution based upon available providers.

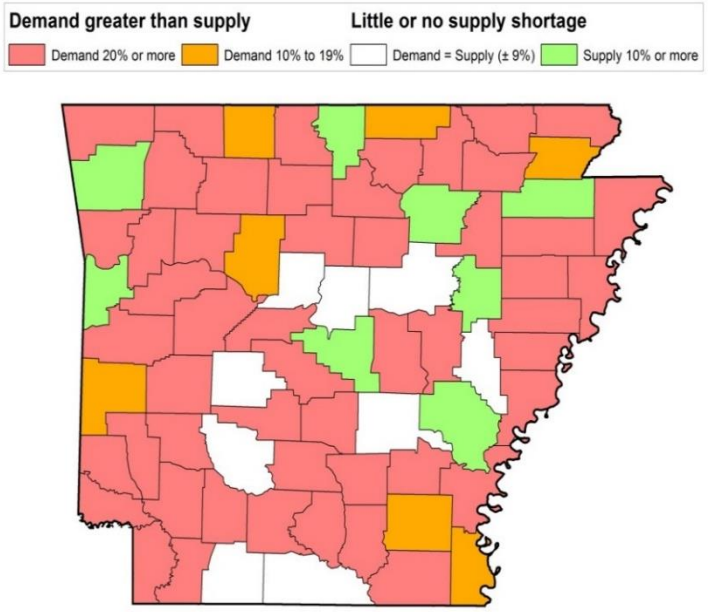
- Because of the lack of independently verifiable information on active FTE status, the estimates for APN and PA availability may overestimate their contribution to the available workforce.

On a county level, the distribution of providers varies even more widely than from region to region. Arkansas's delivery system has historically concentrated specialty providers in central Arkansas. Anticipating continued concentration of specialty providers, strategies to decentralize primary care providers are needed to enable more local accessibility for patients. The counties with the largest shortages are noted (Table 3) and a statewide map of oversupply and shortages is shown (Figure 3).

Table 3: Arkansas Counties with the Largest Shortages in Supply of Primary Care Providers by Number (2012)[vi]

County	Total Supply of PCPs	Total Demand for PCPs	Current Shortage
Benton	188.5	244	–55.5
Crawford	29	69.5	–40.5
Lonoke	37.5	77	–39.5
Saline	19	52	–35.5
Washington	104.5	134	–35.5
Miller	17	49	–32

Figure 3: Adequacy of Supply and Demand of Primary Care Providers by County (2012)



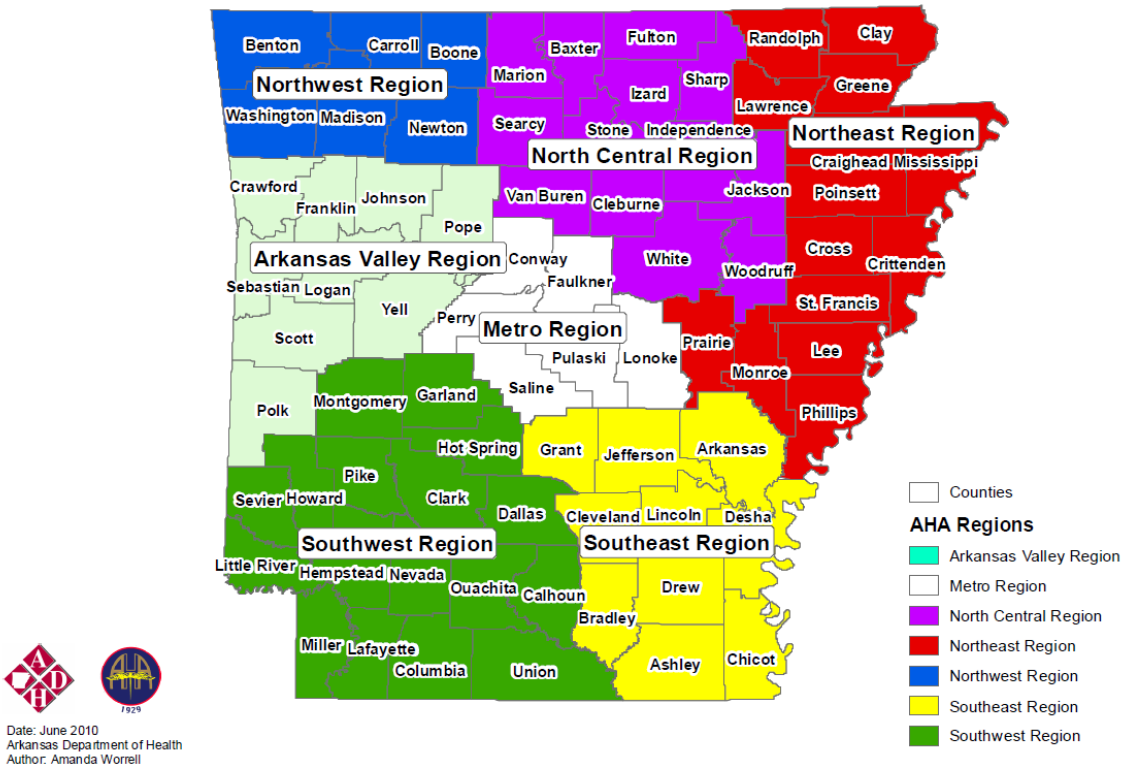
When looking at the entire state, the counties with the most adequate supply or oversupply are primarily the more urbanized counties with larger populations, with rural counties having the most inadequate supply. All of these projections are shown using the 2012 status quo scenario. Under the alternative scenario of expanded coverage in 2014, the available workforce is projected to not meet demand. Importantly, a majority of the overall growth projected is from increased health risks and disease burden of the existing population, not the expanded demand of newly insured increasing utilization (see Appendix B for future projections under alternative scenarios).

[vi] Totals are weighted for APNs and PAs.

Specialty Care Physician Workforce in Arkansas

Health care workforce analyses often focus on primary care as the paramount concern with respect to access and fail to recognize specialty shortages. According to the Council on Graduate Medical Education (COGME), "In rural areas, there is a clear need for specialty care…. Though primary care [is] an essential area of medical service and training, subspecialty and surgical disciplines are also sorely needed in underserved areas."[17] Hospitals are a major source of specialty care, and the following analysis of access to specialty care has been conducted by Arkansas Trauma System region (Figure 4).[18]

Figure 4: Arkansas Trauma System Regions



Date: June 2010
Arkansas Department of Health
Author: Amanda Worrell

Methods

Using the ACHI physician file, providers were identified as specialists. Specialists were identified as any active physician[vii] within the Arkansas Medical Board file and with a National Provider Identifier as of January 15, 2012 that was classified in any one of the Arkansas Employee Benefit Division, Medicaid, Medicare, or Blue Cross and Blue Shield provider files as practicing specialty care. Total populations per county and statewide were obtained using data from the 2010 U.S. Census Bureau.

This information was compiled into one file and then cross-linked and aggregated by zip code to one of the seven Arkansas Trauma System regions. These regions are established pursuant to Rules and Regulations for Trauma Systems as promulgated by the Arkansas State Board of Health, Section of Emergency Medical Services and Trauma Systems. [19] A value for the number of specialists per 100,000 residents in each region was obtained. Finally, these values were rounded per 100,000 residents in each trauma region. Statewide values were obtained using the same overall methodology as the trauma region values.

[vii] "Active physician" is any physician with a single claim from any single payer.

Results

The COGME, which is part of the U.S. Department of Health and Human Services, has set supply benchmarks at 85–105 specialists per 100,000 persons.[20] The state exceeds this benchmark at 123 specialists per 100,000 (Table 4), while three regions individually exceed the benchmark: Metro (224), Southwest (110), and Northwest (106). The other regions—Arkansas Valley (47), North Central (84), Northeast (79), and Southeast (74), fall short of the benchmark. Supply of select specialties can be found in Appendix C.

Table 4: Specialists by Trauma System Region in Arkansas

Region	# of Specialists per 100,000 Persons by Region (Rounded)
Arkansas Valley	47
Metro	224
North Central	84
Northeast	79
Northwest	106
Southeast	74
Southwest	110
Statewide[viii]	123

Next Steps and Additional Research

A more in-depth look at the supply and demand of primary and specialty care providers is important to accurately assess the issue of provider shortages and maldistribution, as well as to inform potential solutions. For instance, although it was assumed in this study that every active provider is a full-time provider, that is not the case. A provider may be working part-time, may have limited office hours, or may limit the types of insurance accepted.

Analysis of claims data along with survey data will help provide a more accurate picture of ability and willingness to carry higher patient load, access to care in terms of hours of operation and cultural accessibility, and willingness to accept various types of insurance.

Arkansas Primary Care Physician and Clinician Supplies and National Benchmarks

Background

Based on national benchmarks, Arkansas is frequently cited as having significant shortages of health care providers. The most recent Association of American Medical Colleges assessment of active primary care physicians cited Arkansas as having 76.4 active primary care physicians (ranked 42nd) per 100,000 population, compared with 90.5 per 100,000 population for the entire country.[9] In addition, local assessments of health workforce vacancies from the University of Arkansas for Medical Sciences Center for Rural Health study, *Health Workforce Vacancies in Arkansas*, have reported a statewide shortage of primary care physicians.[10]

The U.S. DHHS Health Resources and Services Administration (HRSA) defines health care workforce shortages using ratios of primary care physicians to underlying population. A geographic primary care Health Professional Shortage Area (HPSA) is defined as (a) an area with a population to full-time equivalent primary care physician ratio of at least 3,500:1 or (b) the area's ratio is less than 3,500:1 but greater than 3,000:1 and it has unusually high needs for primary care services or insufficient capacity of existing primary care providers. HRSA has indicated that areas with ratios of 2,000:1 or less have a primary care physician workforce that meets the needs of the population.

[viii] 42% of these specialists were also categorized by at least one source as primary care physicians varying from pediatrics, internal medicine, geriatrics and general medicine. When using physicians exclusively categorized as specialists, there are 72 specialists per 100,000 persons statewide.

Methods

For descriptive purposes of this analysis, a category for excess capacity has been added and the HRSA benchmarks have been categorized as follows:

- **Excess capacity**: Less than 1,000 individuals per primary care physician
- **Adequate supply**: 1,000–2,000 individuals per primary care physician
- **Stressed supply**: 2,001–3,499 individuals per primary care physician
- **Critical shortage**: 3,500 or more individuals per primary care physician

To address reported shortages and more accurately characterize available resources, efforts were undertaken to evaluate **how our existing supply and projected demand for primary care clinicians compare with national standards both statewide and at the local level?**

As described earlier (see p. 7), ACHI developed a master data file that is the best available descriptive roster of primary care physicians and identified the current supply in each county. The primary care clinician supply includes 865 advanced practice nurses (APNs) and 81 physician assistants (PAs), as described earlier (p. 7). Using national benchmarks for population-to-primary care physician[8] ratios from HRSA for projected need, we projected the demand based upon the raw population-to-primary care physician ratios.[ix] From estimates modeled of primary care demand through population assessments of disease burden, risk factors, socio-demographic profiles, age and gender, we integrated demand estimates with available data to generate supply ratios comparable to national indices.

Results

Table 5 reflects the state and county-specific populations, the number of primary care physicians and clinicians, and the results of the population to primary care ratios for each of the four targets—critical shortage, stressed supply, adequate supply, and excess capacity. In addition, we generated a ratio using the supply estimates from the micro-simulation model that included age and gender of provider, hours worked, retirement patterns, and new entrants to the provider supply.

Results show several counties with severe shortages of both primary care physicians and clinicians—e.g., Newton and Calhoun counties. Many more counties have a shortage of physicians but the presence of advanced practice nurses (APNs) and physician assistants (PAs) help alleviate the shortage—e.g., Conway and Arkansas counties. Counties that have experienced an out-migration have maintained an adequate supply of primary care clinicians. Counties that have experienced rapid growth (e.g., Benton and Crawford counties) are experiencing overall shortages of primary care clinicians—both physicians and APNs and PAs. Finally, several counties, particularly in urban central Arkansas appear to have an excess capacity of primary care clinicians.

Using the demand results from the micro-simulation model reflecting underlying population characteristics, disease burden, and risk factors, results in Table 6 show local shortages and potential oversupply although in a greater magnitude than the raw ratios suggest.

These findings reflect a wide variety of primary care resource allocations across the state. Clearly some counties have significant shortages of primary care clinicians even when counting non-physician provider assets. Conversely, central Arkansas and other select counties have an adequate or excess supply of primary care clinicians. Focus group respondents reported frequently driving 30–

[ix] HRSA defines primary care physicians as physicians in general or family practice, general internal medicine, pediatrics, obstetrics and gynecology. Our micro-simulation model primary care physician supply data excludes physicians in obstetrics and gynecology and includes physicians in geriatrics, pediatrics, general or family practice, and general internal medicine.

60 minutes to avail themselves of primary care suggesting the counties with excess supply serve underserved areas albeit at the expense—accessibility, time, and travel—of the patient. Rapidly growing counties in northwest Arkansas have outstripped their available primary care supply while many other counties, particularly in the southeast and southwest, appear to have a chronic shortage of primary care clinicians.

Table 5: Comparison of Primary Care Physician and Clinician Supply Ratios with National Benchmarks

County	Total Population	Primary Care Physician* Supply and Ratio					Primary Care Clinician†* Supply and Ratio				
		Supply	3500:1 (Critical Shortage)	3000:1 (Stressed System)	2000:1 (Adequate supply)	1000:1 (Excess capacity)	Supply	3500:1 (Critical Shortage)	3000:1 (Stressed System)	2000:1 (Adequate supply)	1000:1 (Excess capacity)
State	2,915,918	2,076.5	1243.4	1104.5	618.5	–839.4	3,020.0	2186.9	2048.0	1562.0	104.1
Arkansas	19,019	10.0	4.6	3.7	0.5	–9.0	23.5	18.1	17.2	14.0	4.5
Ashley	21,853	11.5	5.3	4.2	0.6	–10.4	14.0	7.8	6.7	3.1	–7.9
Baxter	41,513	41.5	29.6	27.7	20.7	0.0	60.5	48.6	46.7	39.7	19.0
Benton	221,339	133.5	70.3	59.7	22.8	–87.8	188.5	125.3	114.7	77.8	–32.8
Boone	36,903	27.0	16.5	14.7	8.5	–9.9	36.5	26.0	24.2	18.0	–0.4
Bradley	11,508	6.5	3.2	2.7	0.7	–5.0	8.0	4.7	4.2	2.2	–3.5
Calhoun	5,368	1.0	–0.5	–0.8	–1.7	–4.4	1.0	–0.5	–0.8	–1.7	–4.4
Carroll	27,446	17.0	9.2	7.9	3.3	–10.4	22.0	14.2	12.9	8.3	–5.4
Chicot	11,800	7.5	4.1	3.6	1.6	–4.3	10.0	6.6	6.1	4.1	–1.8
Clark	22,995	14.0	7.4	6.3	2.5	–9.0	23.0	16.4	15.3	11.5	0.0
Clay	16,083	7.0	2.4	1.6	–1.0	–9.1	14.0	9.4	8.6	6.0	–2.1
Cleburne	25,970	10.0	2.6	1.3	–3.0	–16.0	17.0	9.6	8.3	4.0	–9.0
Cleveland	8,689	1.0	–1.5	–1.9	–3.3	–7.7	2.5	0.0	–0.4	–1.8	–6.2
Columbia	24,552	12.5	5.5	4.3	0.2	–12.1	23.0	16.0	14.8	10.7	–1.6
Conway	21,273	14.0	7.9	6.9	3.4	–7.3	23.0	16.9	15.9	12.4	1.7
Craighead	96,443	120.0	92.4	87.9	71.8	23.6	163.5	135.9	131.4	115.3	67.1
Crawford	61,948	22.0	4.3	1.4	–9.0	–39.9	29.0	11.3	8.4	–2.0	–32.9
Crittenden	50,902	22.0	7.5	5.0	–3.5	–28.9	33.0	18.5	16.0	7.5	–17.9
Cross	17,870	7.0	1.9	1.0	–1.9	–10.9	14.0	8.9	8.0	5.1	–3.9
Dallas	8,116	3.5	1.2	0.8	–0.6	–4.6	5.0	2.7	2.3	0.9	–3.1
Desha	13,008	7.5	3.8	3.2	1.0	–5.5	9.0	5.3	4.7	2.5	–4.0
Drew	18,509	11.0	5.7	4.8	1.7	–7.5	16.0	10.7	9.8	6.7	–2.5
Faulkner	113,237	63.0	30.6	25.3	6.4	–50.2	114.0	81.6	76.3	57.4	0.8
Franklin	18,125	5.5	0.3	–0.5	–3.6	–12.6	12.5	7.3	6.5	3.4	–5.6
Fulton	12,245	6.0	2.5	1.9	–0.1	–6.2	12.0	8.5	7.9	5.9	–0.2
Garland	96,024	84.5	57.1	52.5	36.5	–11.5	129.5	102.1	97.5	81.5	33.5

County	Total Population	Primary Care Physician* Supply and Ratio					Primary Care Clinician†* Supply and Ratio				
		Supply	3500:1 (Critical Shortage)	3000:1 (Stressed System)	2000:1 (Adequate supply)	1000:1 (Excess capacity)	Supply	3500:1 (Critical Shortage)	3000:1 (Stressed System)	2000:1 (Adequate supply)	1000:1 (Excess capacity)
Grant	17,853	2.5	–2.6	–3.5	–6.4	–15.4	9.5	4.4	3.5	0.6	–8.4
Greene	42,090	17.5	5.5	3.5	–3.5	–24.6	38.5	26.5	24.5	17.5	–3.6
Hempstead	22,609	7.0	0.5	–0.5	–4.3	–15.6	9.0	2.5	1.5	–2.3	–13.6
Hot Spring	32,923	9.5	0.1	–1.5	–7.0	–23.4	14.5	5.1	3.5	–2.0	–18.4
Howard	13,789	7.5	3.6	2.9	0.6	–6.3	10.0	6.1	5.4	3.1	–3.8
Independence	36,647	38.5	28.0	26.3	20.2	1.9	47.5	37.0	35.3	29.2	10.9
Izard	13,696	2.0	–1.9	–2.6	–4.8	–11.7	7.0	3.1	2.4	0.2	–6.7
Jackson	17,997	8.5	3.4	2.5	–0.5	–9.5	11.0	5.9	5.0	2.0	–7.0
Jefferson	77,435	56.0	33.9	30.2	17.3	–21.4	73.5	51.4	47.7	34.8	–3.9
Johnson	25,540	10.0	2.7	1.5	–2.8	–15.5	13.5	6.2	5.0	0.7	–12.0
Lafayette	7,645	1.0	–1.2	–1.5	–2.8	–6.6	2.0	–0.2	–0.5	–1.8	–5.6
Lawrence	17,415	10.0	5.0	4.2	1.3	–7.4	10.0	5.0	4.2	1.3	–7.4
Lee	10,424	4.0	1.0	0.5	–1.2	–6.4	6.5	3.5	3.0	1.3	–3.9
Lincoln	14,134	1.5	–2.5	–3.2	–5.6	–12.6	4.0	0.0	–0.7	–3.1	–10.1
Little River	13,171	4.5	0.7	0.1	–2.1	–8.7	9.5	5.7	5.1	2.9	–3.7
Logan	22,353	10.0	3.6	2.5	–1.2	–12.4	14.0	7.6	6.5	2.8	–8.4
Lonoke	68,356	16.5	–3.0	–6.3	–17.7	–51.9	37.5	18.0	14.7	3.3	–30.9
Madison	15,717	4.0	–0.5	–1.2	–3.9	–11.7	5.0	0.5	–0.2	–2.9	–10.7
Marion	16,653	3.0	–1.8	–2.6	–5.3	–13.7	6.5	1.7	0.9	–1.8	–10.2
Miller	43,462	8.0	–4.4	–6.5	–13.7	–35.5	17.0	4.6	2.5	–4.7	–26.5
Mississippi	46,480	18.5	5.2	3.0	–4.7	–28.0	26.0	12.7	10.5	2.8	–20.5
Monroe	8,149	5.5	3.2	2.8	1.4	–2.6	8.5	6.2	5.8	4.4	0.4
Montgomery	9,487	1.5	–1.2	–1.7	–3.2	–8.0	8.0	5.3	4.8	3.3	–1.5
Nevada	8,997	2.5	–0.1	–0.5	–2.0	–6.5	4.5	1.9	1.5	0.0	–4.5
Newton	8,330	1.5	–0.9	–1.3	–2.7	–6.8	1.5	–0.9	–1.3	–2.7	–6.8
Ouachita	26,120	13.0	5.5	4.3	–0.1	–13.1	20.5	13.0	11.8	7.4	–5.6
Perry	10,445	1.5	–1.5	–2.0	–3.7	–8.9	4.0	1.0	0.5	–1.2	–6.4
Phillips	21,757	10.5	4.3	3.2	–0.4	–11.3	15.5	9.3	8.2	4.6	–6.3

County	Total Population	Primary Care Physician* Supply and Ratio					Primary Care Clinician†* Supply and Ratio				
		Supply	3500:1 (Critical Shortage)	3000:1 (Stressed System)	2000:1 (Adequate supply)	1000:1 (Excess capacity)	Supply	3500:1 (Critical Shortage)	3000:1 (Stressed System)	2000:1 (Adequate supply)	1000:1 (Excess capacity)
Pike	11,291	4.5	1.3	0.7	–1.1	–6.8	9.5	6.3	5.7	3.9	–1.8
Poinsett	24,583	2.5	–4.5	–5.7	–9.8	–22.1	9.5	2.5	1.3	–2.8	–15.1
Polk	20,662	14.0	8.1	7.1	3.7	–6.7	19.5	13.6	12.6	9.2	–1.2
Pope	61,754	36.5	18.9	15.9	5.6	–25.3	52.5	34.9	31.9	21.6	–9.3
Prairie	8,715	1.5	–1.0	–1.4	–2.9	–7.2	4.0	1.5	1.1	–0.4	–4.7
Pulaski	382,748	567.0	457.6	439.4	375.6	184.3	757.5	648.1	629.9	566.1	374.8
Randolph	17,969	8.0	2.9	2.0	–1.0	–10.0	15.0	9.9	9.0	6.0	–3.0
St Francis	28,258	11.0	6.1	5.2	2.4	–6.3	11.0	2.9	5.2	2.4	–6.3
Saline	107,118	42.5	34.4	33.1	28.4	14.2	92.0	61.4	82.6	77.9	63.7
Scott	11,233	1.0	–29.6	–34.7	–52.6	–106.1	2.0	–1.2	–33.7	–51.6	–105.1
Searcy	8,195	5.0	1.8	1.3	–0.6	–6.2	6.5	4.2	2.8	0.9	–4.7
Sebastian	125,744	148.0	145.7	145.3	143.9	139.8	174.0	138.1	171.3	169.9	165.8
Sevier	17,058	11.5	–24.4	–30.4	–51.4	–114.2	11.5	6.6	–30.4	–51.4	–114.2
Sharp	17,264	7.0	2.1	1.3	–1.5	–10.1	12.0	7.1	6.3	3.5	–5.1
Stone	12,394	6.0	2.5	1.9	–0.2	–6.4	7.0	3.5	2.9	0.8	–5.4
Union	41,639	32.0	20.1	18.1	11.2	–9.6	42.5	30.6	28.6	21.7	0.9
Van Buren	17,295	6.5	1.6	0.7	–2.1	–10.8	9.5	4.6	3.7	0.9	–7.8
Washington	203,065	168.5	110.5	100.8	67.0	–34.6	240.5	182.5	172.8	139.0	37.4
White	77,076	43.0	21.0	17.3	4.5	–34.1	80.0	58.0	54.3	41.5	2.9
Woodruff	7,260	6.0	3.9	3.6	2.4	–1.3	9.0	6.9	6.6	5.4	1.7
Yell	22,185	12.5	6.2	5.1	1.4	–9.7	16.5	10.2	9.1	5.4	–5.7

†A positive ratio shows an excess supply at the ratio stated and a negative number indicates a shortage at the given ratio. Each APN or PA counted as 0.8 physician in total estimates of primary care providers. While there is little published research to suggest the degree to which APNs and PAs offset the workload of a primary care physician, productivity data from the Management Group Medical Association's annual Productivity Survey lends support to using a weight of approximately 0.8.
*Primary care clinicians include MDs, DOs, APNs, and PAs.

Table 6: Modeled Primary Care Physician and Clinician Supply, Demand, and Difference

County	Total Population	Primary Care Physicians			Primary Care Clinicians†		
		Supply	Demand	Difference (# FTEs)*	Supply	Demand	Difference (# FTEs)*
State	2,915,918	2,076.5	2,437.0	–360.5	3,020.0	3,159.0	–139.0
Arkansas	19,019	10.0	15.5	–5.5	23.5	20.0	3.5
Ashley	21,853	11.5	18.0	–6.5	14.0	23.5	–9.5
Baxter	41,513	41.5	40.0	1.5	60.5	52.5	8.0
Benton	221,339	133.5	189.5	–56.0	188.5	244.0	–55.5
Boone	36,903	27.0	32.0	–5.0	36.5	41.5	–5.0
Bradley	11,508	6.5	9.0	–2.5	8.0	12.0	–4.0
Calhoun	5,368	1.0	4.0	–3.0	1.0	5.5	–4.5
Carroll	27,446	17.0	21.5	–4.5	22.0	28.5	–6.5
Chicot	11,800	7.5	9.5	–2.0	10.0	12.5	–2.5
Clark	22,995	14.0	17.5	–3.5	23.0	23.0	0.0
Clay	16,083	7.0	14.5	–7.5	14.0	19.0	–5.0
Cleburne	25,970	10.0	23.0	–13.0	17.0	30.0	–13.0
Cleveland	8,689	1.0	8.0	–7.0	2.5	10.5	–8.0
Columbia	24,552	12.5	18.5	–6.0	23.0	24.0	–1.0
Conway	21,273	14.0	17.0	–3.0	23.0	22.0	1.0
Craighead	96,443	120.0	84.0	36.0	163.5	108.5	55.0
Crawford	61,948	22.0	53.5	–31.5	29.0	69.5	–40.5
Crittenden	50,902	22.0	42.0	–20.0	33.0	54.0	–21.0
Cross	17,870	7.0	14.5	–7.5	14.0	19.0	–5.0
Dallas	8,116	3.5	6.5	–3.0	5.0	8.5	–3.5
Desha	13,008	7.5	10.0	–2.5	9.0	13.0	–4.0
Drew	18,509	11.0	14.5	–3.5	16.0	18.5	–2.5
Faulkner	113,237	63.0	93.0	–30.0	114.0	120.0	–6.0
Franklin	18,125	5.5	16.5	–11.0	12.5	21.5	–9.0
Fulton	12,245	6.0	11.5	–5.5	12.0	15.0	–3.0
Garland	96,024	84.5	93.5	–9.0	129.5	121.0	8.5
Grant	17,853	2.5	16.0	–13.5	9.5	21.0	–11.5
Greene	42,090	17.5	35.5	–18.0	38.5	46.0	–7.5
Hempstead	22,609	7.0	17.5	–10.5	9.0	22.5	–13.5
Hot Spring	32,923	9.5	27.5	–18.0	14.5	36.0	–21.5
Howard	13,789	7.5	11.0	–3.5	10.0	14.0	–4.0
Independence	36,647	38.5	30.5	8.0	47.5	39.5	8.0
Izard	13,696	2.0	12.0	–10.0	7.0	15.5	–8.5
Jackson	17,997	8.5	14.5	–6.0	11.0	19.0	–8.0
Jefferson	77,435	56.0	62.0	–6.0	73.5	80.0	–6.5
Johnson	25,540	10.0	20.5	–10.5	13.5	27.0	–13.5
Lafayette	7,645	1.0	6.0	–5.0	2.0	8.0	–6.0
Lawrence	17,415	10.0	15.0	–5.0	10.0	19.5	–9.5
Lee	10,424	4.0	8.0	–4.0	6.5	10.5	–4.0
Lincoln	14,134	1.5	11.5	–10.0	4.0	14.5	–10.5
Little River	13,171	4.5	10.5	–6.0	9.5	13.5	–4.0
Logan	22,353	10.0	18.5	–8.5	14.0	24.0	–10.0

County	Total Population	Primary Care Physicians			Primary Care Clinicians†		
		Supply	Demand	Difference (# FTEs)*	Supply	Demand	Difference (# FTEs)*
Lonoke	68,356	16.5	59.5	–43.0	37.5	77.0	–39.5
Madison	15,717	4.0	13.5	–9.5	5.0	17.5	–12.5
Marion	16,653	3.0	15.0	–12.0	6.5	19.5	–13.0
Miller	43,462	8.0	38.0	–30.0	17.0	49.0	–32.0
Mississippi	46,480	18.5	35.5	–17.0	26.0	46.5	–20.5
Monroe	8,149	5.5	6.5	–1.0	8.5	8.5	0.0
Montgomery	9,487	1.5	8.5	–7.0	8.0	11.0	–3.0
Nevada	8,997	2.5	7.0	–4.5	4.5	9.5	–5.0
Newton	8,330	1.5	7.0	–5.5	1.5	9.0	–7.5
Ouachita	26,120	13.0	20.5	–7.5	20.5	26.5	–6.0
Perry	10,445	1.5	9.5	–8.0	4.0	12.0	–8.0
Phillips	21,757	10.5	16.5	–6.0	15.5	21.0	–5.5
Pike	11,291	4.5	9.0	–4.5	9.5	12.0	–2.5
Poinsett	24,583	2.5	22.5	–20.0	9.5	29.5	–20.0
Polk	20,662	14.0	18.0	–4.0	19.5	23.5	–4.0
Pope	61,754	36.5	48.0	–11.5	52.5	63.0	–10.5
Prairie	8,715	1.5	7.0	–5.5	4.0	9.0	–5.0
Pulaski	382,748	567.0	310.0	257.0	757.5	400.5	357.0
Randolph	17,969	8.0	16.0	–8.0	15.0	21.0	–6.0
St Francis	28,258	11.0	21.0	–10.0	11.0	27.5	–16.5
Saline	107,118	42.5	98.5	–56.0	92.0	127.5	–35.5
Scott	11,233	1.0	9.5	–8.5	2.0	12.0	–10.0
Searcy	8,195	5.0	7.0	–2.0	6.5	9.5	–3.0
Sebastian	125,744	148.0	108.5	39.5	174.0	140.0	34.0
Sevier	17,058	11.5	13.5	–2.0	11.5	17.5	–6.0
Sharp	17,264	7.0	15.5	–8.5	12.0	20.5	–8.5
Stone	12,394	6.0	11.0	–5.0	7.0	14.5	–7.5
Union	41,639	32.0	32.5	–0.5	42.5	42.5	0.0
Van Buren	17,295	6.5	15.0	–8.5	9.5	19.5	–10.0
Washington	203,065	168.5	159.0	9.5	240.5	205.0	35.5
White	77,076	43.0	61.5	–18.5	80.0	80.0	0.0
Woodruff	7,260	6.0	6.0	0.0	9.0	7.5	1.5
Yell	22,185	12.5	17.5	–5.0	16.5	22.5	–6.0

*A positive ratio shows an excess supply at the ratio stated and a negative number indicates a shortage at the given ratio.
†Primary care clinicians include MDs, DOs, APNs, and PAs. Each APN or PA counted as 0.8 physician in total estimates of primary care providers. While there is little published research to suggest the degree to which APNs and PAs offset the workload of a primary care physician, productivity data from the Management Group Medical Association's annual Productivity Survey lends support to using a weight of approximately 0.8.

Drive-time Analyses for Primary Care

Background

From the national benchmarking and modeling scenarios of primary care physician supply, marked variation in adequacy was suggested. However, recognizing the concentration of medical resources in communities across the state and Arkansas's rural aspects, implications of distance and "drive time" for patients in accessing needed care are evident. Analyses similar to those for primary care physician accessibility (presence) and availability (capacity) were undertaken.

To ascertain the degree to which Arkansas citizens may have "reasonable" access defined as a primary care physician presence within a 30-minute drive one way (60-minute round trip), geographic information system mapping and drive-time analyses were explored. In addition, recognizing the maldistribution reflected in the supply analyses, analyses to answer additional questions about the availability or capacity of primary care physicians were undertaken.

30-Minute Drive-Times from Cities with Primary Care Physicians

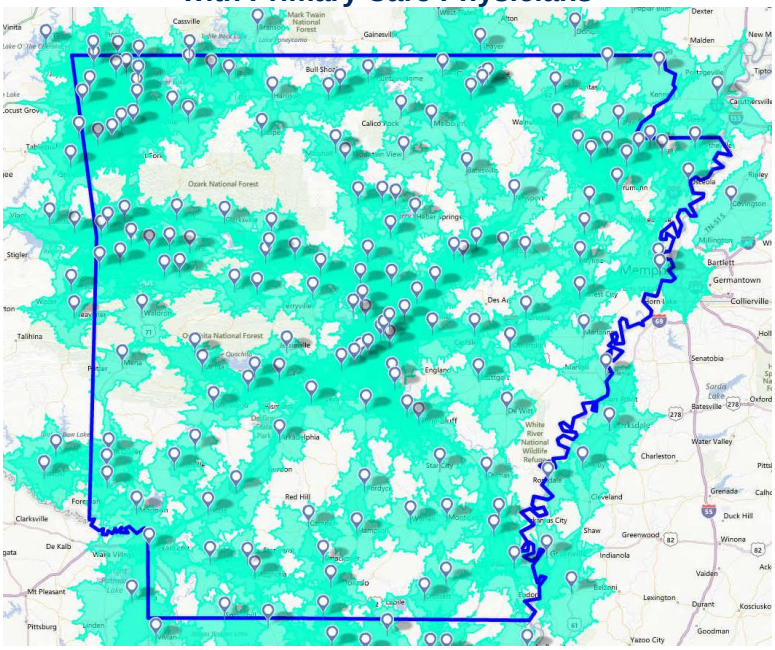
Methods

Using the master physician data file, primary care physicians with addresses in Arkansas were mapped according to the city in the master data file. These data were supplemented by a systematic search of cities in surrounding states within 30 minutes of the Arkansas border for primary care physicians[x] whose office locations were in those cities. Using geographic information system mapping software by esri®, areas within a 30-minute drive-time[xi] were mapped from each city in which a primary care physician was located.

Results

Figure 5 represents cities with at least one primary care provider and the catchment area within a 30-minute drive-time. Large portions of Arkansas are within a 30-minute drive to a primary care physician. Areas lacking any access include the sparsely populated Northwest Ozark mountains, the Western Ouachita mountains, pockets in South-Central and Northeastern Arkansas, and portions of the Mississippi Delta geographically isolated by the Mississippi River barrier.

Figure 5: 30-Minute Drive-Times from Cities with Primary Care Physicians



Cities are noted by a point. The light green color indicates areas in which individuals may reach a primary care physician within a 30-minute drive time.

[x] To remain consistent with the definition of primary care physicians elsewhere in the primary document, the search was restricted to internal medicine, general and family medicine, pediatrics, and geriatrics.

[xi] 30-minute drive-times for primary care are a geographic access standard by the federal government for TRICARE and by many states for Medicaid managed care organizations.

While most Arkansans are within driving distance to a primary care physician, availability of an adequate primary care physician capacity suggested by our provider supply analyses was highly questionable in many areas.

Primary Care Physician Capacity in Selected Cities

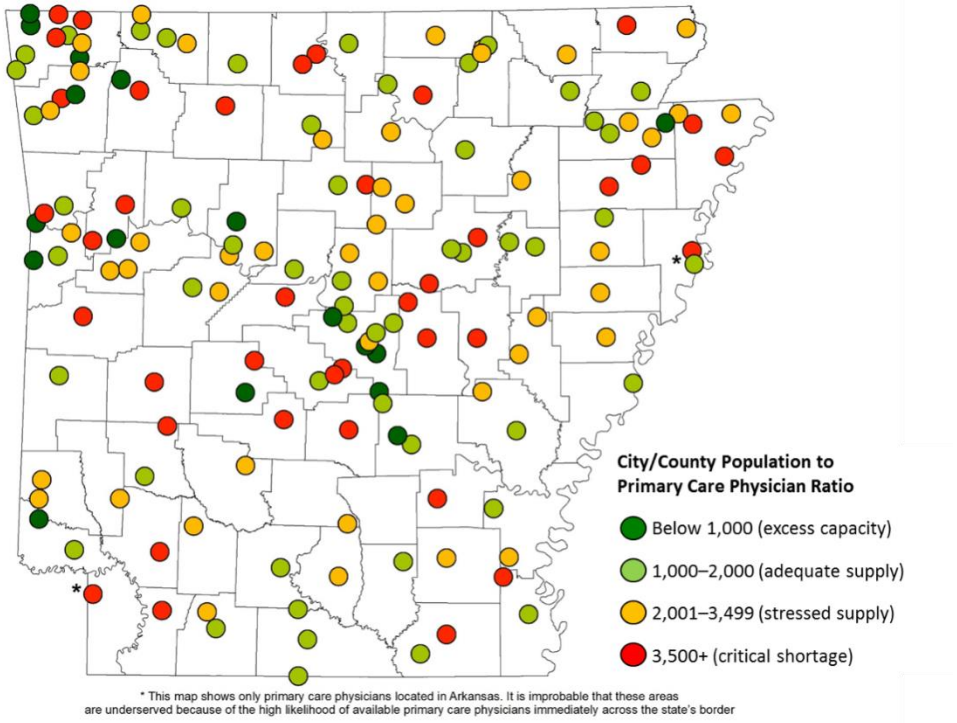
Methods

To analyze primary care physician capacity, we classified each of the cities shown in Figure 5 into four categories: critical shortage, stressed supply, adequate supply, and excess capacity. After restricting data to cities for which a primary care provider reported a location, the attributable city population was generated from each city's reported population plus a prorated proportion of the non-city population residing in the county. The number of primary care physicians in each city was determined from the master provider file. Ratios of population to primary care physician were then generated for each city with assignments of excess capacity (below 1,000 individuals/primary care physician), adequate supply (1,000–2,000 individuals/primary care physician), stressed supply (2,001–3,499 individuals/primary care physician), and critical shortage (3,500 or more individuals/primary care physician).

Results

Figure 6 reflects cities containing primary care physicians with an assigned color signifying a primary care supply of excess capacity (dark green), adequate (light green), stressed (yellow), or critically short (red).

Figure 6: City/County Population to Primary Care Physician Ratio



*This map shows only primary care physicians located in Arkansas. It is improbable that the two "red" cities marked with an asterisk are underserved because of the high likelihood that primary care physicians are available across the state's border.

This map reveals a number of counties—many concentrated in Central and Northwestern Arkansas—where the primary care physician supply is adequate or more than adequate. On the other hand, there are many counties—such as Lincoln, Newton, Calhoun, Jackson, and St. Francis—with a supply that is either stressed or inadequate to serve the surrounding population.

30-Minute Drive-Times from Cities with an Adequate or More Than Adequate Supply of Primary Care Physicians

Methods

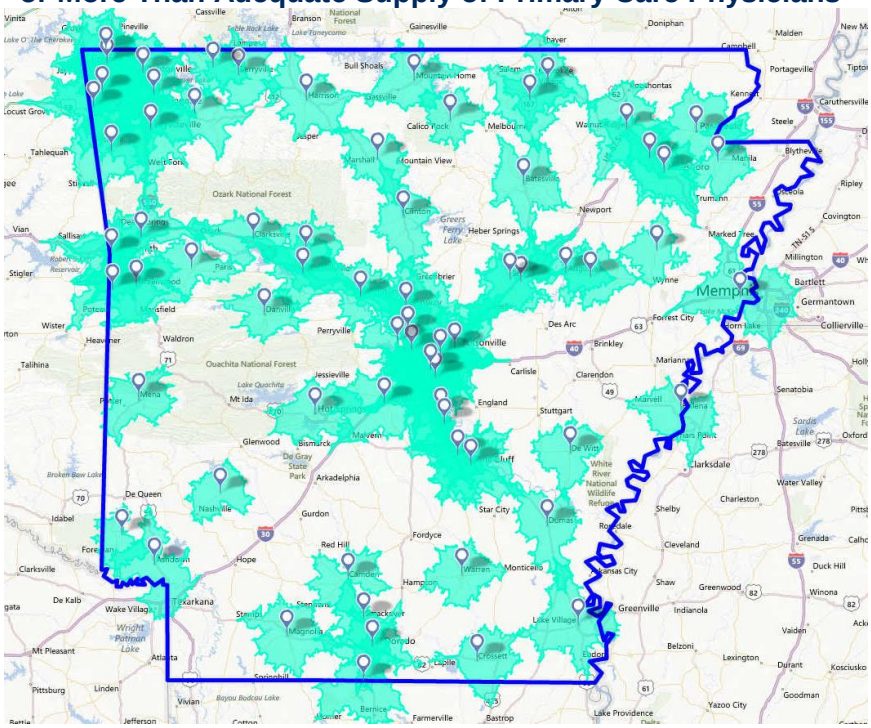
Demand on primary care is expected to increase if private sector coverage is expanded through Arkansas's federally facilitated exchange partnership and if low-income adults become eligible for Medicaid through Affordable Care Act (ACA) implementation. Thus, an emerging question we sought to answer related to the availability of providers from communities with adequate or more than adequate supply. To assess the availability of primary care physicians for new patients, we used communities determined to have adequate supply or excess capacity and calculated the 30-minute drive-times from those cities.

Results

As shown on Figure 7, many parts of the state lack capacity to absorb additional demand. Consistent with the provider supply ratios above, many of these areas are rural, not on major transportation routes, and not near metropolitan areas.

Clear areas of primary care availability shortages emerge including not only the Ozark and Ouachita Mountains, but also large swaths of Southern and Eastern Arkansas. Major transportation routes and major cities are clearly delineated representing the concentration of physician supply and the challenges facing rural Arkansas.

Figure 7: 30-Minute Drive-Times from Cities with an Adequate or More Than Adequate Supply of Primary Care Physicians*



*Texarkana, Texas and Memphis, Tennessee are not depicted on this map as cities with an adequate supply of primary care physicians because, although a search determined that there are primary care physicians in those cities, we were unable to determine the total supply of primary care physicians, thereby limiting our ability to determine adequacy.
Cities are noted by a point on the map. The light green color indicates areas in which there is an adequate or more than adequate supply of primary care physicians.

Drive-time Analyses for Specialty Care

Background

Because of both the concentration of specialty care in major metropolitan areas and the significant disease burden in citizens across the state, further analyses evaluated accessibility and availability of specialty care. For ongoing health care needs, a full complement of specialists are needed; for acute issues facing Arkansans, a skeletal team of an internist and general surgeon is required.

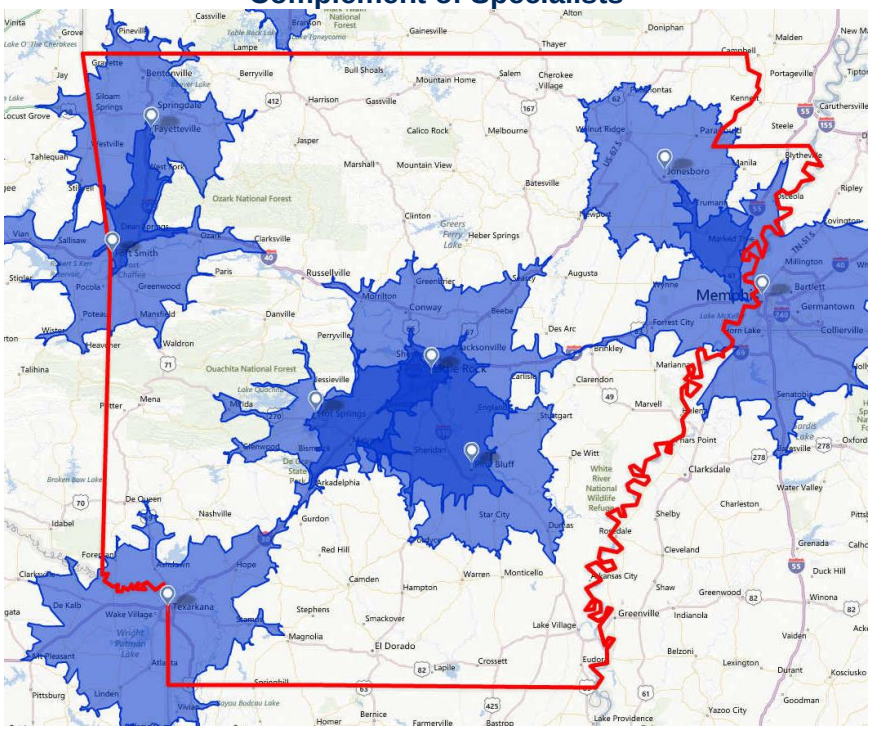
Methods

Analyses similar to those for primary care physician accessibility (presence) and availability (capacity) were undertaken to assess the full complement and partial complement of specialty care available. Full complement was defined as those cities that have met Level I or II Arkansas Department of Health Trauma System designation or those cities that through examination of the master provider file could meet Level I or II criteria. Analysis for 60-minute drive-times[xii] were conducted for cities with a full complement of specialty care. Using geographic information system mapping software by esri®, we separately mapped cities in which there is a "full complement" versus a "partial complement" of specialists consisting of at least an internist and a general surgeon.

Results

Figure 8 reflects the concentration of specialty resources in major metropolitan areas. Access and availability of specialty care requires substantial travel for many Arkansans. Northwest Arkansas, Fort Smith, Texarkana, Memphis, and Jonesboro each serve as major specialty assets for their regions. In Central Arkansas, Pine Bluff, Hot Springs, and the greater Little Rock area offer reinforcing capacity. However, large portions of the state require transit of the patient and/or outreach from the specialist to achieve accessible and available services. The opportunities to use telemedicine and new technologies offer a mitigating strategy to this concentration of resources.

Figure 8: 60-Minute Drive-Times from Cities with a Full Complement of Specialists

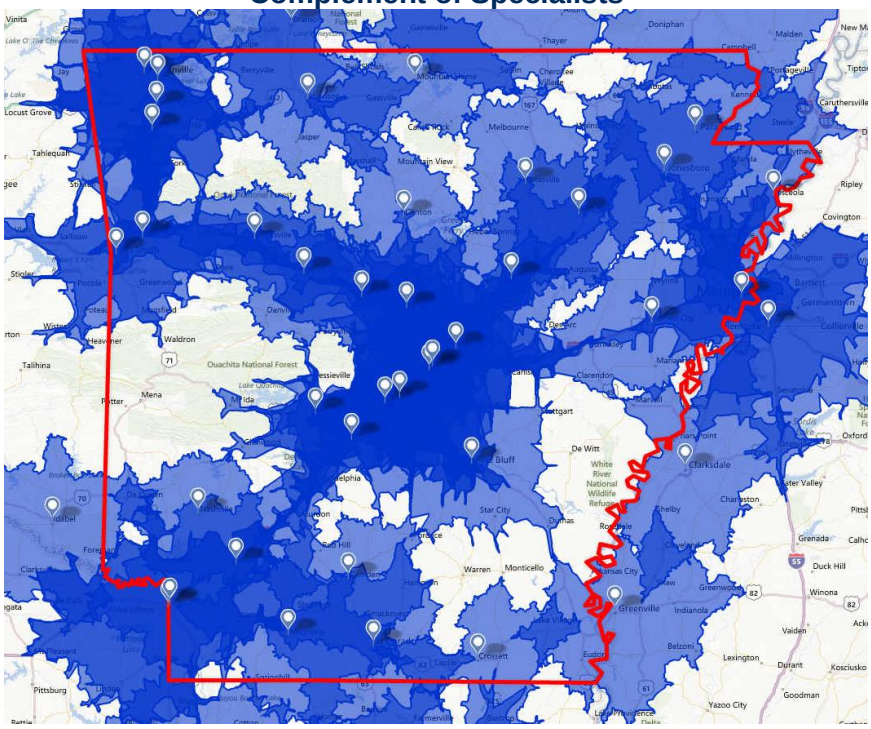


Cities in which there is a full complement of specialists are noted by a point on the map. The blue color indicates areas in which individuals may reach a full complement of specialists within a 60-minute drive-time.

[xii] 60-minute drive-times for specialty care are a geographic access standard required by the federal government for Medicare Advantage plans and TRICARE.

Many cities (Figure 9) have a partial complement of specialists—at least an internist and general surgeon—for both chronic care management and acute care stabilization and treatment. However, rural areas without cities and/or not on major transit corridors are relatively isolated. Currently, transportation efforts for both patients to the specialist (e.g., CareLink) and specialist (e.g, cardiologists) to underserved communities are underway. Efforts to support local health care professional personnel with technology-facilitated solutions (e.g, telemedicine) to increase availability and accessibility of specialist providers are clearly warranted.

Figure 9: 60-Minute Drive-Times from Cities with a Partial Complement of Specialists



Cities in which there is a partial complement of specialists are noted by a point on the map. The blue color indicates areas in which individuals may reach a partial complement of specialists within a 60-minute drive-time.

Payer Mix Analysis

Evidence suggests that the state has a shortage of primary care providers with some regions experiencing severe shortages. Moreover, specialists are in short supply in some regions. These shortages—or lack of available providers—may be exacerbated when one examines populations served by the limited number of available providers.

Methods

The following analysis is intended to examine those practice patterns. Specifically, it identifies the mix of populations being served by providers according to their ages and the type of payer who provides insurance for the services (i.e., the payer mix).

Results

Before discussing payer mix from a provider perspective, it is important to understand the age demographic covered by each payer source, because different age groups access health care providers more often and differently than do other age groups. Table 7 shows the percentage of

patients served in 2009 by age group for the following payers: private (i.e., Arkansas Blue Cross and Blue Shield (BCBS) and QualChoice of Arkansas), Medicare, and Medicaid.[xiii]

Table 7: Percent of Patients Served in 2009 by Payer and Age Group

	All Ages	18 and Under	19–64	65+
Private	34.54	24.71	59.05	11.95
Medicaid	28.09	75.25	22.51	2.15
Medicare	37.37	0.04	18.44	85.90
TOTAL	100.00	100.00	100.00	100.00

As depicted in Figure 10, more than two-fifths of patients (41.5 percent) served by these payers in 2009 were ages 19 to 64. This compares to an estimate of 59.1 percent of the general population for the state that are within this age group (see Figure 11 for Census 2000 estimates). More than one-third (34.6 percent) of patients served by these payers were ages 65 and over, while in the state's general population only 14.0 percent are ages 65 and over. Nearly one quarter (24.0 percent) of the patients served were 18 and under, and this age group represents 26.9 percent of the state's general population.

Figure 10: Insured Patients Served in 2009 by Age Group

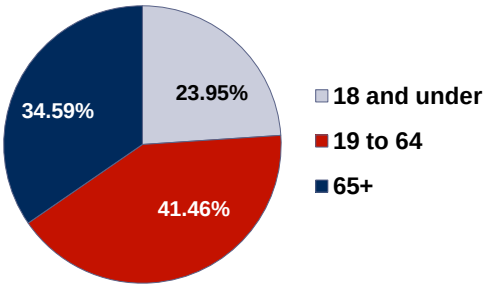


Figure 11: 2000 Census—Arkansas Population by Age Group

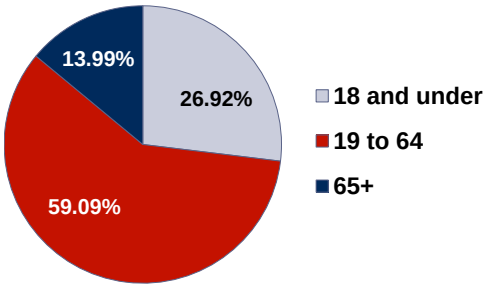


Figure 12 shows the percentage of patients served in 2009 by each payer. It shows that of the patients who were captured by one of the four included payer sources, Medicare served the highest percentage (37.4 percent), followed by private payers (34.5 percent) and Medicaid (28.1 percent).

Figure 12: Percent of Patients Served in 2009 by Payer

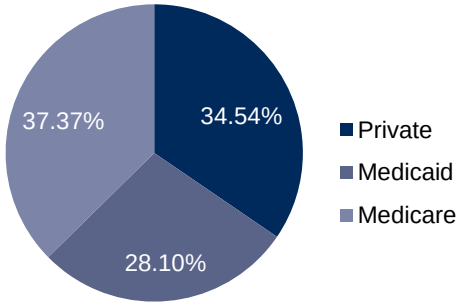


Table 7 also provides a breakdown of each age group by the percent of payers who provided coverage for services (note: columns of percentages will sum to 100, but not rows). It shows, for

[xiii] This analysis does not include up to 10 percent of patient claims because not all payer groups are included, e.g., TRICARE, United Healthcare, Humana. Therefore, our subsample in this analysis may overestimate those that are young and elderly because all of the public program claims are included but only part of the private payer groups. All graphics from the analysis in this section reflect a physician population of 4,202 unless otherwise noted.

example, that Medicaid served more than three-quarters (75.3 percent) of all patients ages 18 and under, whereas Medicare served 85.9 percent of all patients 65 and over.

A similar analysis was conducted for office visits[xiv] by age group for each payer. Figure 13 shows the distribution of all visits in 2009 by for each payer.

Figure 13: Distribution of Visits in 2009 by Payer

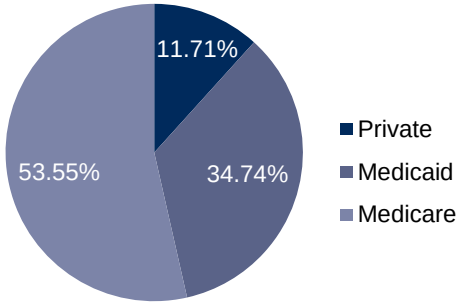


Table 8 provides the breakdown of visits within each age group by payer (note: columns of percentages will sum to 100, but not rows). By combining information from Tables 5 and 6, it is apparent that there are differences between the frequency and type of patients and visits between publically paid and privately paid service providers. Medicare, for example, funded services for 37.4 percent of all patients, but the total percentage of physician visits that were covered by Medicare was 53.5. A similar pattern is true for services and patients paid for by Medicaid. Conversely, while private payers served 34.5 percent of all patients, they covered only 11.7 percent of all physician visits. These patterns of utilization reflect the increased demand for care by children (primarily covered by Medicaid) and the elderly (primarily covered by Medicare).

Table 8: Percent of Visits in 2009 by Payer and Age Group

	All Ages	18 and Under	19–64	65+
Private	11.72	9.78	26.46	2.46
Medicaid	34.74	90.15	40.12	3.80
Medicare	53.54	0.07	33.42	93.74
TOTAL	100.00	100.00	100.00	100.00

Other patterns can be found within important age groups. While Medicaid covered about three-quarters of the 18 and under population, it covered more than nine out of 10 visits (90.2 percent) by this age group. Conversely, commercial payers served 25 percent of the 18 and under population, but covered less than 10 percent of their total visits.

Medicare served 18.4 percent of patients ages 19 to 64, but covered 33.4 percent of the visits for this age group. Conversely, private payers served 59 percent of all patients ages 19 to 64, but covered 26.5 percent of visits for this age group.

Examining the distribution of each physician's patient panel composed of individuals with different types of insurance (see Table 9; rows will sum to 100%) provides insight into the participation rates of providers across commercial, Medicaid, and Medicare programs. This analysis shows, for example, that only 4.8 percent of physicians[xv] have a patient panel that contains no Medicaid patients; whereas 11 percent of physicians have patient panels consisting of more than 75 percent

[xiv] A visit is a unique "service from" day with the same physician; A person who has multiple claims to the same physician on the same day would be classified as having only have 1 visit.
[xv] Physicians not living or practicing in Arkansas were excluded from this analysis.

Medicaid patients. Table 10 presents the breakdown of physicians by the percent of their visits by payer group.

Table 9: Percentage of Physicians with Distribution of Patients in Each Payer Group

	0%	1-10%	11-25%	26-50%	51-75%	76-90%	>90%
Private	5.24	14.99	24.20	33.25	15.85	3.95	2.52
Medicaid	4.76	28.03	23.01	20.78	12.83	6.76	3.83
Medicare	8.71	10.71	13.83	32.60	26.65	5.43	2.07

Table 10: Percentage of Physicians with Distribution of Visits in Each Payer Group

	0%	1-10%	11-25%	26-50%	51-75%	76-90%	>90%
Private	5.24	48.86	28.53	11.90	2.95	0.88	1.64
Medicaid	4.76	20.44	23.63	21.89	13.49	7.66	8.12
Medicare	8.71	9.00	7.31	19.66	30.63	19.01	5.69

Compared with Figure 12 reflecting the population distribution covered by private (~34%), Medicare (~37%), and Medicaid (~ 28%), findings in Tables 7 and 8 suggest varied acceptance by different providers. One-third of physicians have practice panels limited to less than 10% Medicaid clientele with more than 160 not seeing any Medicaid patients. Conversely, Medicare constitutes the largest majority of most patient visits in physician workloads with over half of their visits constituting care for Medicare beneficiaries (the ~300 physicians not seeing Medicare patients include pediatricians for which eligibility is likely the cause plus a small set of adult providers restricting their practice panels).

To better understand the patient panels of physicians who primarily work with adults ages 19 and older, additional analyses were conducted with a subset of physicians from the original 4,202 in this analysis. For this analysis, only physicians who had patient panels consisting of more than 50 percent adults aged 19 and older were included (n=3,554). The analysis then replicated what was conducted with all physicians to explore the percentage of patients and visits for each physician by the type of payer group that provided insurance for the patients. Results from this subset of physicians indicate the following:

- 75 percent of physicians who primarily served an adult patient panel[xvi] had 20 percent or less of all visits paid for by private payers.
- 75 percent of physicians who primarily served an adult patient panel[xvi] had more than 50 percent of all visits paid for by Medicare.
- Only 25 percent of physicians who primarily served an adult patient panel[xvi] had 28 percent or more of all visits paid for by Medicaid, in large part reflecting the limited benefit coverage to the pregnant and disabled individuals over age 19.

Additional results are included in Appendix D (*Payer Mix Graphics*).

[xvi] These are physicians whose patient panel comprises 50 percent or more of individuals over the age of 18.

Supplemental Primary Care Physician Payer Mix[xvii] Analysis

Background

With increasing demand and relative shortages statewide, providers' willingness to participate and current levels of participation in Medicaid and Medicare have been questioned. Expansion of coverage, both private and public, under the ACA has been identified as a concern for increasing pressure on a system with limited capacity. Lower payment rates of public programs compared with private carriers combined with ongoing uncertainty related to the lack of a long-term Congressional solution for the Sustainable Growth Rate reductions (SGR) in payments for Medicare beneficiaries add to concerns about seniors' access to health care. Finally, results from our micro-simulation model including underlying population characteristics, disease burden, and risk factors suggested demand for services would grow by 7.5 percent due to increased needs of an older and sicker population compared with 2.5 percent based upon ACA expansion. In combination, these influences suggest the potential for providers limiting practice to commercial patients and thus exacerbating access and availability issues for those on Medicaid or Medicare.

Methods

To evaluate the extent to which providers do not participate in public programs—Medicaid or Medicare—we examined participation through paid claims for providers of children's care (for which Medicaid is a primary payer) and adult care (for which Medicare is a primary payer). In addition, differences in a physician's patient panel mix in rural counties (more often counties with inadequate supply) were compared with urban counties (more often those with an adequate or excess capacity of providers.

Medicaid benefits are largely limited to children, pregnant women, the disabled, and seniors requiring long-term support. Medicare, conversely, offers full benefits to most individuals once they reach 65 years of age. Commercial carriers offer full benefits to most individuals from birth through age 65. We limited our assessment to those services provided by primary care providers (physician or nurse practitioner) who billed Medicaid, Medicare, or the two largest commercial carriers in the state.

Using the master provider file, patient profiles from each identified provider within the state were collected from Medicaid, Arkansas BlueCross BlueShield, or QualChoice of Arkansas, or were generated from Medicare data housed by the Arkansas Health Data Initiative. The analyses were limited to physicians in primary care. Information on the aggregate number of patients served and patient visits were stratified by age into children (0–18 years of age) and adults (19 years of age and older). From each payer source, this information was then aggregated and analyzed to generate for each provider the proportion of patients and number of visits provided to each major payer source—Medicaid, Medicare, or private.

Results

County-level Provider Payer Mix

Data from three counties—Desha, Stone, and Saline—are provided in detail as examples of physician payer mix for care provided to both children and adults in 2009.

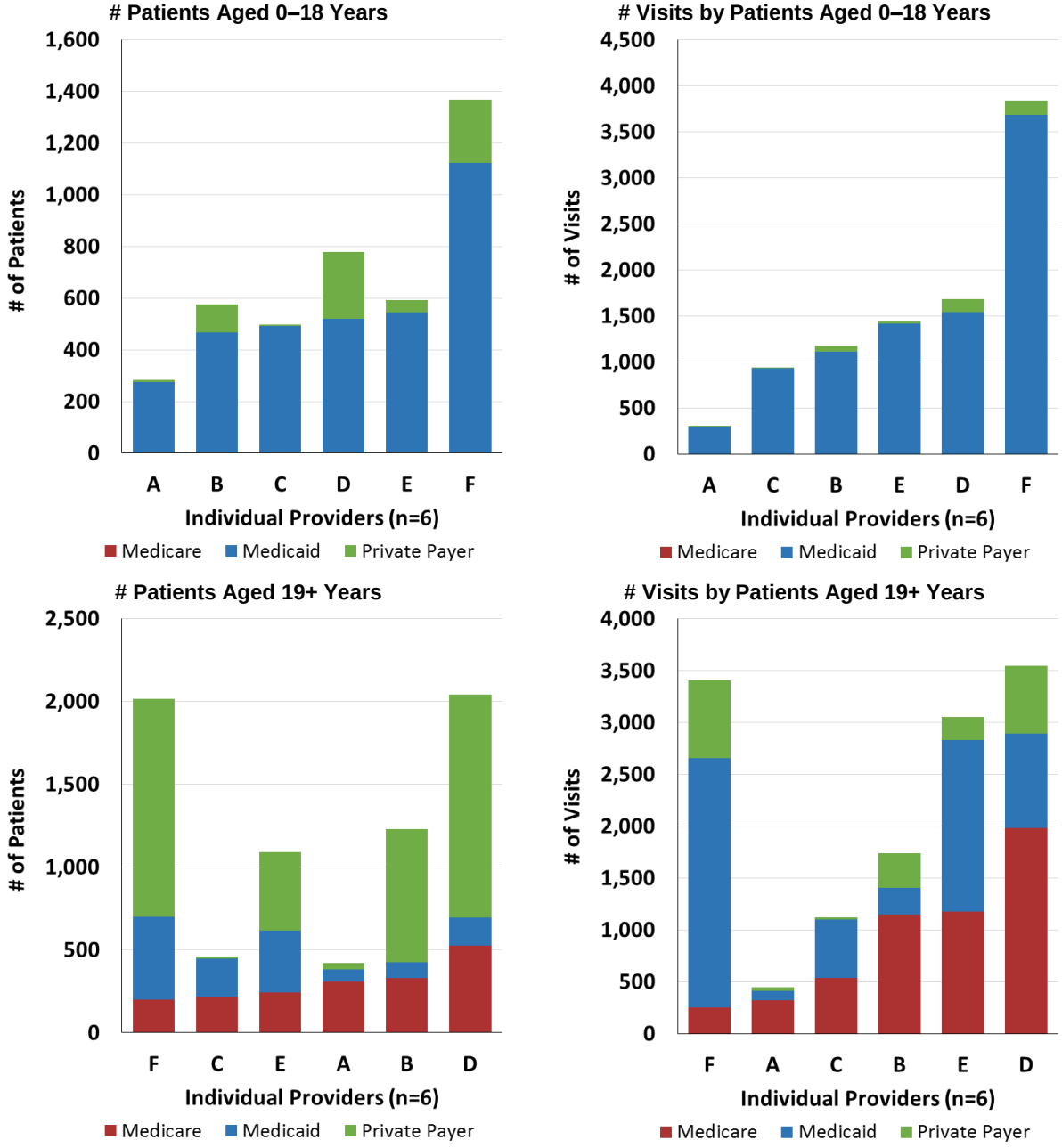
The number of observations (e.g., physicians) within each county reflects the larger number in Saline county (39 physicians) compared with Desha (6 physicians) or Stone (6 physicians) Counties.

[xvii] Source for all graphics is the ACHI Physician Master Data File, Secondary Analysis Physician File 2010

In Figures 14–16, each bar represents an individual physician and his/her patient panel and number of visits. In these three selected counties, physicians do not appear to restrict patient panels to privately insured individuals. Medicaid appears to be a dominant payer in each physician's panel for pediatric patients. For adult patients, most physicians have a more balanced profile of commercial and Medicare patients with a larger proportion of commercial coverage in the county with higher private insurance rates.

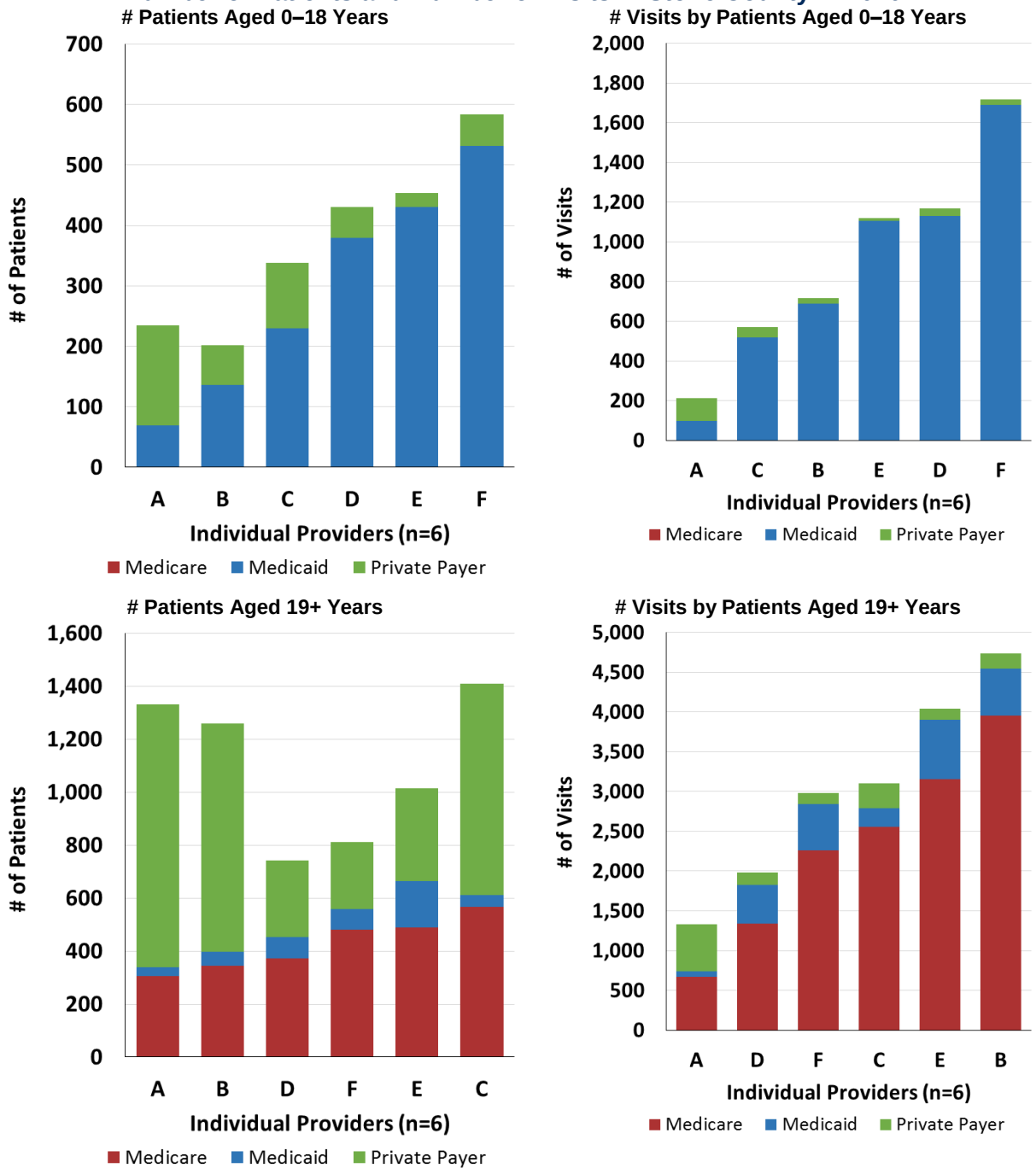
On a county level, these examples show that the relative volume of Medicaid visits for physicians in rural counties is higher than the volume of Medicaid patients for similar physicians in more metropolitan counties, irrespective of patient age. For example, the majority of Saline County physicians in this analysis (Figure 16) had fewer than 500 visits from Medicaid patients of all ages, while the overwhelming majority of Desha County physicians (Figure 14) had more than 500 visits from Medicaid patients. This suggests that physicians in rural areas such as Desha County are more reliant on Medicaid as a payer source when compared to more metropolitan counties, where physicians may have the flexibility to limit the number of patients from public payer sources.

Figure 14: Comparison of Primary Care Physicians' Number of Patients and Number of Visits in Desha County in 2010



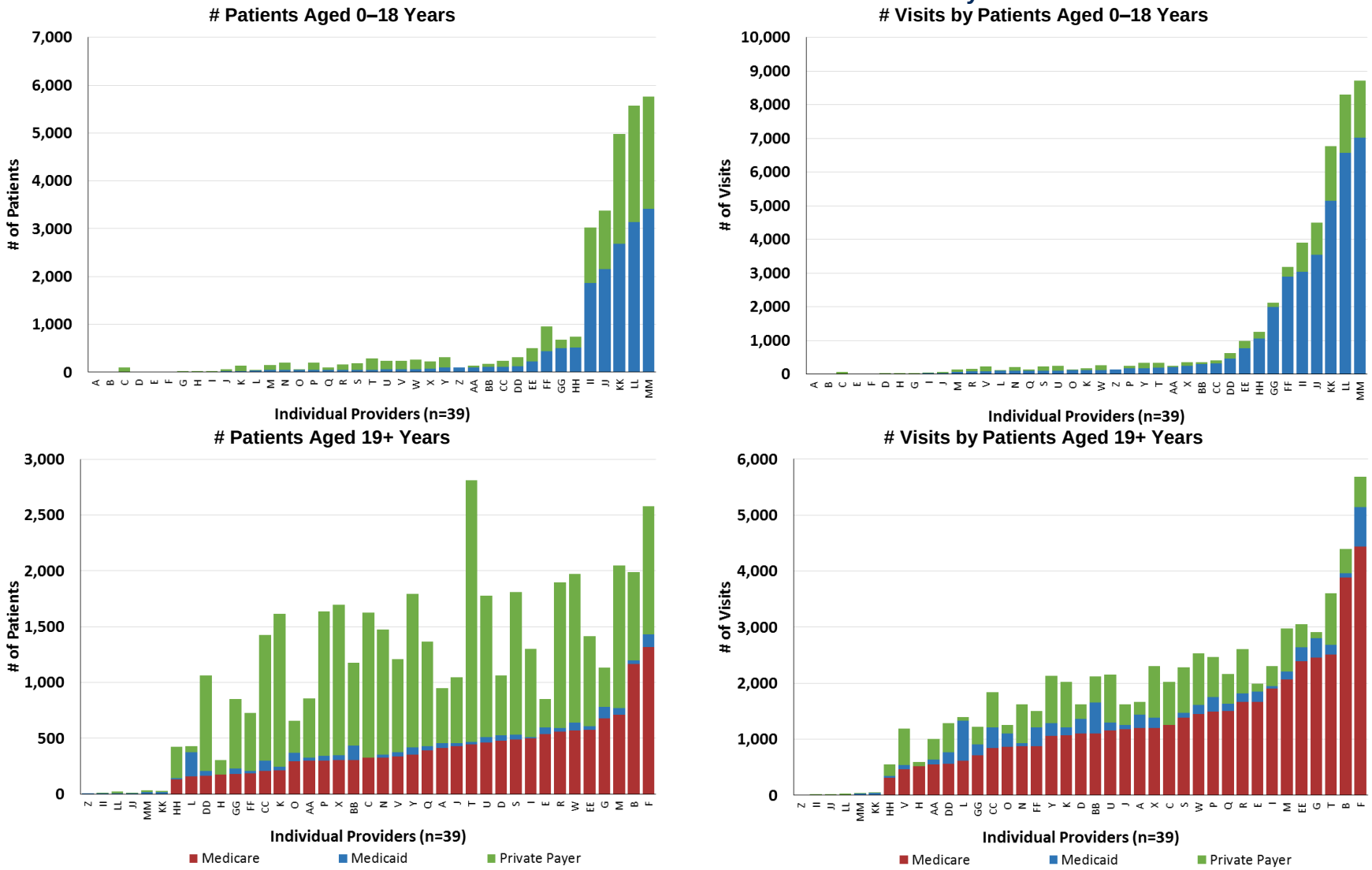
Source: ACHI Physician Superfile, Arkansas Health Workforce – Solutions for a Patient-Centered Future Secondary Analysis Physician File; 2010; PCP = General/Family Medicine, Internal Medicine, Pediatrics, Geriatrics

Figure 15: Comparison of Primary Care Physicians' Number of Patients and Number of Visits in Stone County in 2010



Source: ACHI Physician Superfile, Arkansas Health Workforce – Solutions for a Patient-Centered Future Secondary Analysis Physician File; 2010; PCP = General/Family Medicine, Internal Medicine, Pediatrics, Geriatrics

Figure 16: Comparison of Primary Care Physicians' Number of Patients and Number of Visits in Saline County in 2010



Source: ACHI Physician Superfile, Arkansas Health Workforce – Solutions for a Patient-Centered Future Secondary Analysis Physician File; 2010; PCP = General/Family Medicine, Internal Medicine, Pediatrics, Geriatrics

Table 11 presents total numbers of patients and visits for both children and adults by payer source for the three selected counties. In both rural counties (Desha and Stone), around 4 out of 5 children (0–18 years) were covered by Medicaid (84 percent in Desha, 79 percent in Stone) and Medicaid paid for the vast majority of visits (96 percent in Desha, 95 percent in Stone). For adults in these two counties, almost half of patients were covered by Medicaid and Medicare (45 percent in Desha and 46 percent in Stone) with public programs paying for the majority of visits—private payers covered only 15 percent of adult visits in Desha County and 8 percent of adult visits in Stone County.

In the more densely populated county of Saline, among children, Medicaid was the primary insurance source for just over half of the children (55 percent) and covered almost 4 out of 5 visits (79 percent). Importantly, however, visits for children in Saline County were four times more frequent for private coverage than in the rural counties—21 percent versus 4 to 5 percent. For adults in Saline County, the majority were covered by private payers (65 percent) with Medicare covering just under one-third (31 percent). However, the total number of visits were predominantly paid for by Medicare (66 percent), which covers those over 65 years of age.

Table 11: Comparison of Provider Payer Mix for Selected Counties in 2010

County	Type/Age	Total	Medicaid	Medicare	Private
Desha	(6 providers)				
	Patients 0–18 years	4,096	84%	0%	16%
	Visits for Patients 0–18	9,388	96%	0%	4%
	Patients 19+ years	7,260	20%	25%	55%
	Visits for Patients 19+	13,312	44%	41%	15%
Stone	(6 providers)				
	Patients 0–18 years	2,243	79%	0%	21%
	Visits for Patients 0–18	5,505	95%	0%	5%
	Patients 19+ years	6,567	7%	39%	54%
	Visits for Patients 19+	18,172	15%	77%	8%
Saline	(39 providers)				
	Patients 0–18 years	29,629	55%	0%	45%
	Visits for Patients 0–18	45,112	79%	0%	21%
	Patients 19+ years	45,096	4%	31%	65%
	Visits for Patients 19+	70,309	10%	66%	24%

Statewide Physician Payer Mix

Similar analyses were conducted for a statewide assessment. From the 1,782 primary care physicians[xviii] listed in the dataset, 1,564 physicians each had a minimum of 500 visits; 718 physicians had at least 500 visits from children (ages 0–18 years) and 1,257 physicians had at least 500 visits from adults. These 1,564 physicians were included in the statewide analyses. The minimum visit was set at 500, representing an average of ~10 visits per week, to eliminate providers who provided minimal contributions to the workforce. Examining the 1,564 primary care physicians statewide, most primary care physicians serve both children and adults with a subset of pediatricians serving only children and similarly some family physicians and internists serving only adults.

Figures 17 and 18 depict the number of patients aged 0–18 and the number of visits for these patients by payer source. Each bar represents an individual provider. Similarly, Figures 19 and 20

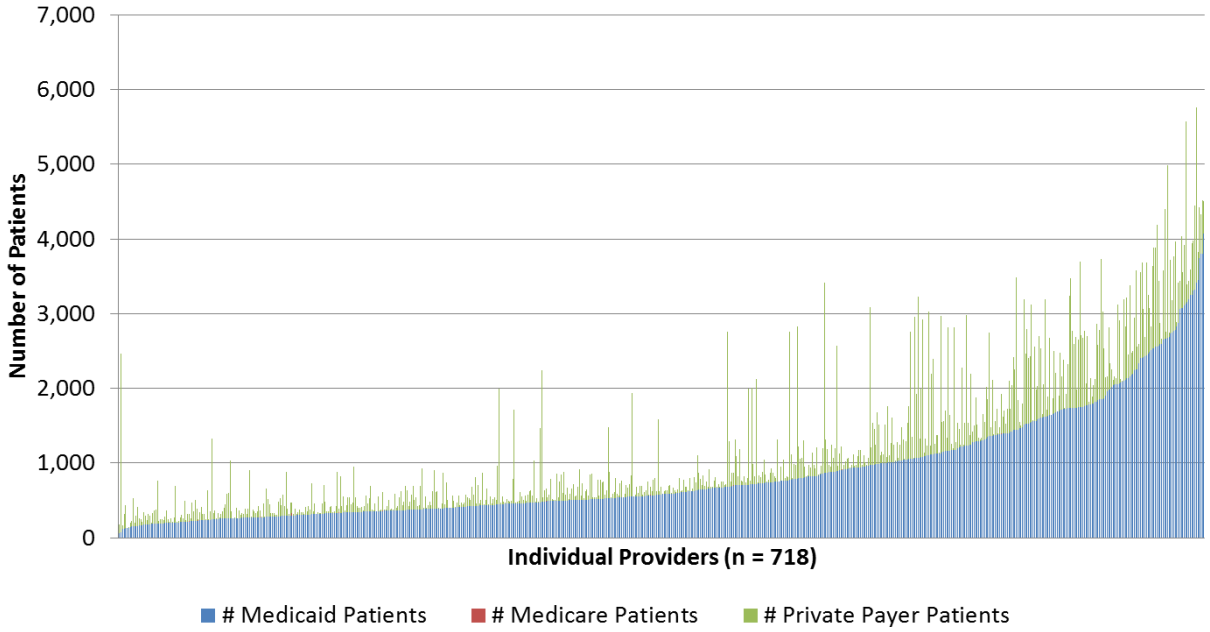
[xviii] Primary care physicians are defined as internal medicine, general/family medicine, geriatrics and pediatrics for purposes of this analysis. Obstetricians/gynecologists have been excluded for purposes of this analysis.

depict the number of patients and visits by payer for the patients aged 19+ years. The proportion of each payer is represented—blue for Medicaid, green for commercial, red for Medicare.

In Figure 17, patient volume for each provider increases horizontally by Medicaid with Figure 18 maintaining the same sequence of providers to enable comparison between Figures 17 and 18. In Figure 19, patient volume is oriented to the proportion of Medicare patients with a similar maintenance of sequence by providers in Figure 20. Providers with minimal availability for patients (e.g., family physicians who only see a few teens in children's care or pediatricians who see some kids over age 18) are represented by low-volume providers on the left of each graphic.

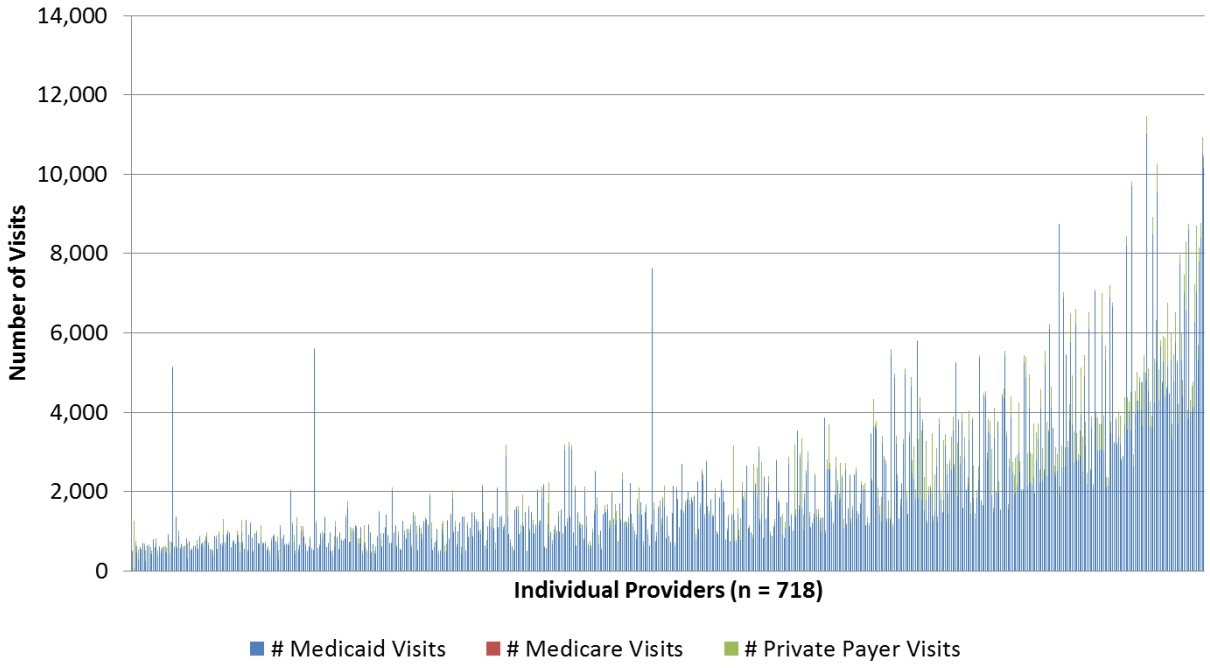
Medicaid is the primary insurer for children in Arkansas. For adults in the state, a more even balance of private and public (Medicaid and Medicare) patients is observed. A few individual providers appear to restrict populations served to predominantly privately insured individuals. However, when examining the number of visits, the increased disease burden and health care needs of the Medicare population is reflected in the predominance of visits for which Medicare is the payer.

Figure 17: Arkansas's Primary Care Physicians:* Number of Patients Aged 0–18 Years



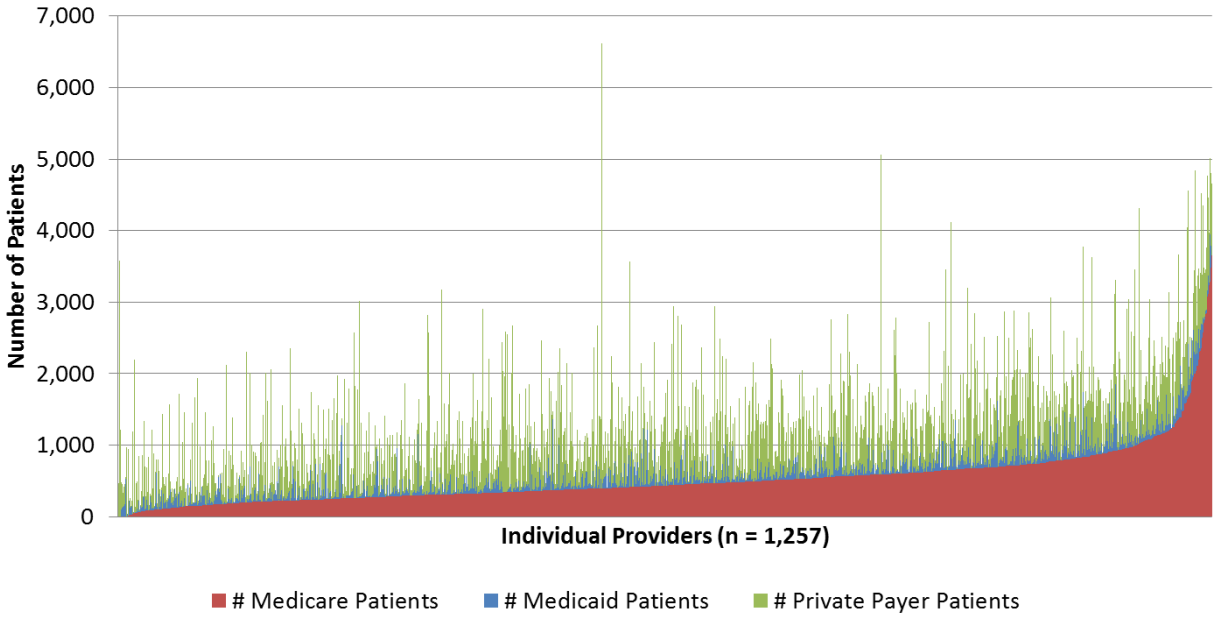
Source: ACHI Physician Superfile, Arkansas Health Workforce – Solutions for a Patient-Centered Future Secondary Analysis Physician File; 2010; PCP = General/Family Medicine, Internal Medicine, Pediatrics, Geriatrics
*Includes only physicians who had at least 500 patient visits annually.

Figure 18: Arkansas's Primary Care Physicians:* Number of Visits by Patients Aged 0–18 Years



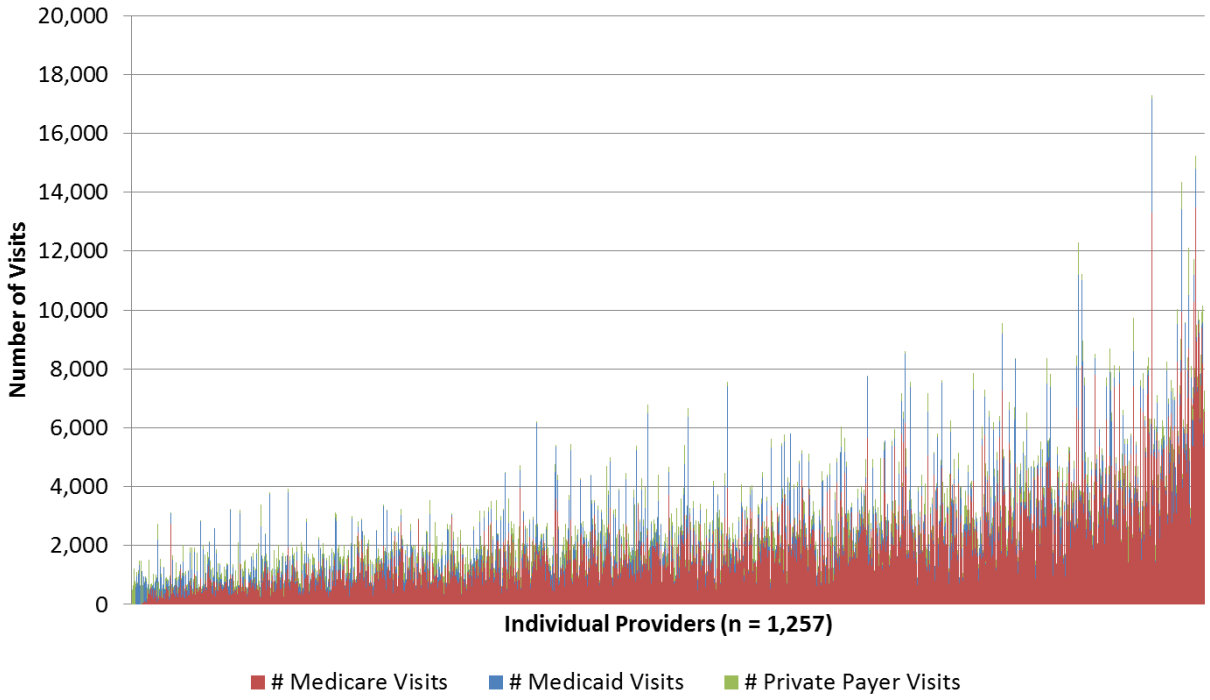
Source: ACHI Physician Superfile, Arkansas Health Workforce – Solutions for a Patient-Centered Future Secondary Analysis Physician File; 2010; PCP = General/Family Medicine, Internal Medicine, Pediatrics, Geriatrics
*Includes only physicians who had at least 500 patient visits annually.

Figure 19: Arkansas's Primary Care Physicians:* Number of Patients Aged 19+ Years



Source: ACHI Physician Superfile, Arkansas Health Workforce – Solutions for a Patient-Centered Future Secondary Analysis Physician File; 2010; PCP = General/Family Medicine, Internal Medicine, Pediatrics, Geriatrics
*Includes only physicians who had at least 500 patient visits annually.

Figure 20: Arkansas's Primary Care Physicians:* Number of Visits by Patients Aged 19+ Years

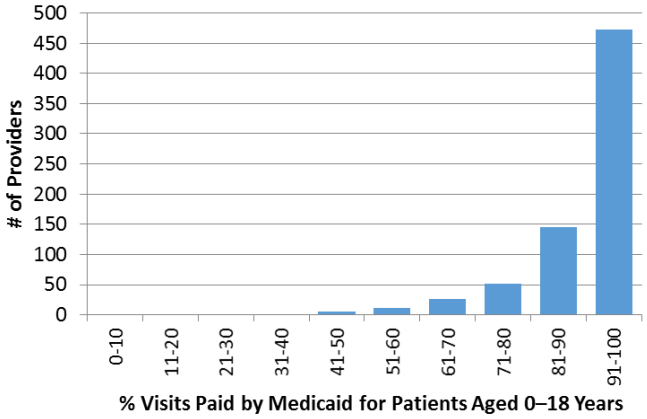


Source: ACHI Physician Superfile, Arkansas Health Workforce – Solutions for a Patient-Centered Future Secondary Analysis Physician File; 2010; PCP = General/Family Medicine, Internal Medicine, Pediatrics, Geriatrics
*Includes only physicians who had at least 500 patient visits annually.

For children in Arkansas, ARKids covers 60 percent of the population (844,365 individuals).[21] This is reflected in the statewide display (Figure 17) where for most providers a majority of their patients are in ARKids (represented by blue bars in the graphic); private coverage is relatively limited represented by the green bars with a few select providers having a majority of privately insured patients represented by those with green only.

For the 718 providers with at least 500 visits by children in the year, 8 (1 percent) have less than half of their child patient visits paid for by ARKids and 210 physicians (29 percent) had 50–90 percent of their child patient visits paid by ARKids. Conversely, the majority (500 providers, 70 percent) had more than 90 percent of their payments for child visits paid by ARKids (Figure 21). This suggests that for children's care the ability to restrict to private insurance only is limited.

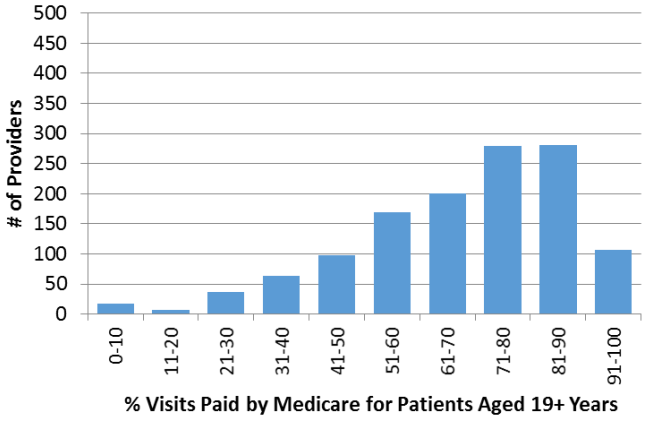
Figure 21: Number of Providers by Percent of Visits Paid by Medicaid (patients aged 0–18 years; 718 providers)



For adults, Medicare covers most individuals over age 65 (population = 419,987 in 2010 according to the US Census Bureau). Those under age 65 who are insurance are predominantly commercially covered. Importantly, 25 percent of Arkansans 19–64 years are not insured therefore, when seen by providers, were not reflected in these distributions because they generated no claim. From Figure 19, a balanced distribution of private and Medicare patients are seen across most providers serving adults.

Because of the higher disease burden and clinical needs, visits by Medicare beneficiaries far exceed those of their commercial counterparts. For the 1,257 providers with at least 500 visits by adults in the year, only 1 percent (17 providers) have fewer than 10 percent of their adult patient visits paid for by Medicare; 17 percent (213) have at least half of their adults visits paid by Medicare. Conversely, 45 percent (567) of these physicians have more than three-fourths of adult patient visits paid by Medicare (Figure 22). Unlike children's care, more providers may restrict their practice to predominantly private patients, although the majority continue to serve both private and Medicare beneficiaries.

Figure 22: Number of Providers by Percent of Visits Paid by Medicare (patients aged 19+ years; 1,257 providers)



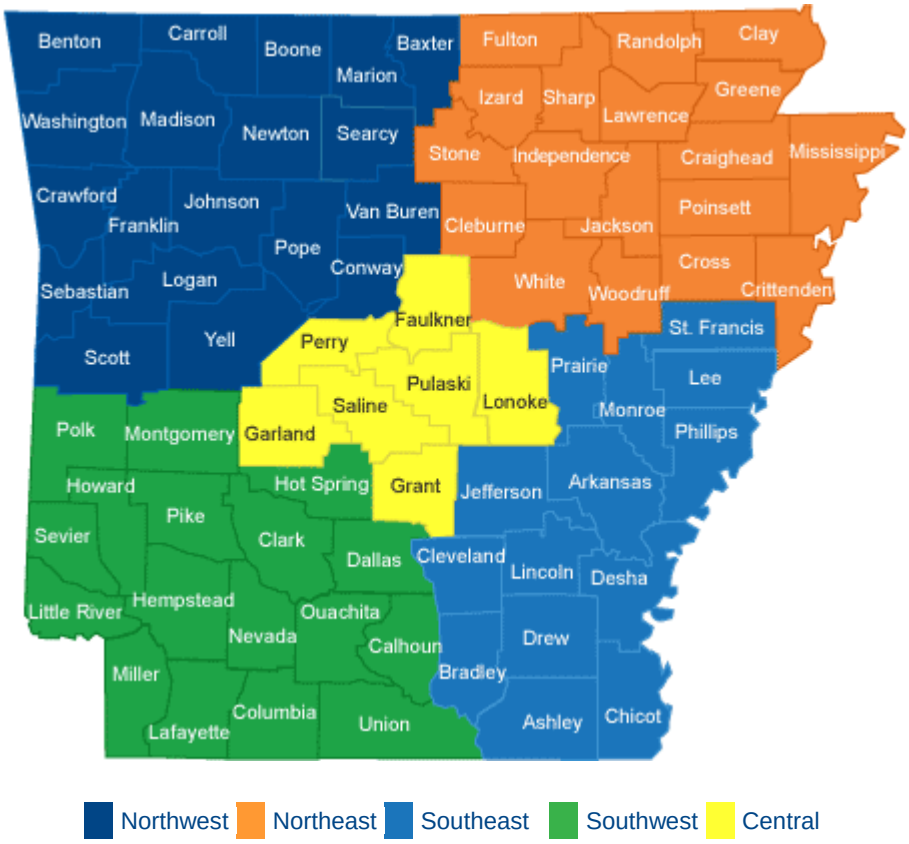
Health Care Workforce Survey Highlights

Analysis of claims data substantially curtails the information deficit regarding physician payer mix, but such analysis is limited when it comes to detailing daily practice patterns and office capacity. To better understand these aspects of the health care workforce, ACHI worked with AFMC to design and field two statewide surveys.

The first survey, the *Office Capacity Survey*, was targeted to office managers of physician practice locations, with the intent to obtain information about type of practice, office personnel, hours of operation, and billing and other practice patterns. The second survey, the *Physician Survey*, was targeted at primary care physicians,[xix] with the intent to obtain information about retirement plans, reasons for choosing practice location, use of APNs and PAs, and plans for meeting expected demand for preventive services.

Regional distinctions in the survey results align with the Arkansas Department of Health's public health regions (Figure 23)[22] and are as follows.

Figure 23: Arkansas Department of Health's Public Health Regions



- **Northwest**: Baxter, Benton, Boone, Carroll, Conway, Crawford, Franklin, Johnson, Logan, Madison, Marion, Newton, Pope, Scott, Searcy, Sebastian, Van Buren, Washington and Yell counties

[xix] Primary care physician status was determined by each physician's categorization as such in Arkansas Blue Cross and Blue Shield or Arkansas Medicaid physician files.

- **Northeast**: Clay, Cleburne, Craighead, Crittenden, Cross, Fulton, Greene, Independence, Izard, Jackson, Lawrence, Mississippi, Poinsett, Randolph, Sharp, Stone, White and Woodruff counties
- **Central**: Faulkner, Garland, Grant, Lonoke, Perry, Pulaski and Saline counties
- **Southwest:** Calhoun, Clark, Columbia, Dallas, Hempstead, Hot Spring, Howard, Lafayette, Little River, Miller, Montgomery, Nevada, Ouachita, Pike, Polk, Sevier and Union counties
- **Southeast**: Arkansas, Ashley, Bradley, Chicot, Cleveland, Desha, Drew, Jefferson, Lee, Lincoln, Monroe, Phillips, Prairie and St. Francis counties

Highlights of the surveys are presented here, but full results may be found in Appendix E (*Office Capacity Survey*) and Appendix F (*Physician Survey*).

Office Capacity Survey Highlights[xx]

Methods

The Office Capacity survey was mailed to 1,906 identified provider clinics including 1,576 identified Blue Cross and Blue Shield clinics supplemented by 330 additional Medicaid clinics not accounted for in the Blue Cross and Blue Shield list. For a subsample of the Office Capacity survey population, AFMC initiated follow-up to increase response rates, as displayed in the full results.

Of the 1,906 mailed surveys, 802 analyzable[xxi] surveys were returned, for a 42.1 percent response rate. Response rates by region did not vary greatly. The use of follow-up prompts may inject potential response bias and while the full survey report shows separated results using the different collection methods, for purposes of presenting the survey highlights, only combined results are shown here. The information reported reflects the responses and perspectives of respondents to the Office Capacity survey and should be interpreted in the context of larger, more complete quantitative studies presented elsewhere in this report.

Type of Care Provided

Nearly half (49.7 percent) of the respondents statewide indicated that they classified the majority of care provided at their practice as primary care. Slightly over one quarter (26.2 percent) indicated the majority of care provided was in a medical specialty, while another 14.7 percent indicated that the majority of care was in a surgical specialty.[xxii]

Clinician Capacity

When asked about the number and types of clinicians associated with their practice site, more than two-thirds of respondents (69.9 percent) indicated their practice had two or fewer physicians. About one quarter (25.4 percent) indicated that their practice site had three to eight physicians, while only 4.7 percent indicated that their practice site had eight or more physicians.

Nearly four-fifths (78.6 percent) of respondents statewide indicated that their practice site had no physician assistants. Nearly one-fifth (19.6 percent) had one or two physician assistants, and no

[xx] For a subsample of the Office Capacity Survey population, AFMC initiated follow-up to increase response rates, as displayed in the full results. The use of different data collection methods in a subsample introduces coverage bias, i.e., possible exclusion of representative units of the targeted population. The full survey report in Appendix E shows separated results using the different methods; for purposes of presenting the survey highlights, only combined results are shown here.

[xxi] Thirty returned surveys were excluded as ineligible or for containing invalid responses.

[xxii] Where "specialists" or "specialty" physicians are referenced throughout the Office Capacity Survey Highlights, the term includes both medical and surgical specialty physicians. ACHI conducted its own analysis of raw survey data for specialists.

practice site had more than five physician assistants. Respondents statewide split fairly evenly regarding the use of APNs. More than half (53.7 percent) of respondents indicated that they had at least one APN at their practice site.

When asked whether any of the clinicians associated with their practice site saw patients at other locations (not including hospitals), 30 percent of respondents indicated that they did. When clinicians did so, nearly half (47.5 percent) billed those services from the respondent's practice site, while 40.3 percent billed those services at the other practice site. Among specialty practice sites, 35.7 percent indicated that their clinicians saw patients at other practice locations.

Access to Clinicians

When asked on which days practice sites were open for appointments, more than 95 percent of respondents indicated that they were open for appointments Monday through Thursday, and approximately nine out of ten (88.4 percent) indicated that they were available for appointments on Fridays. With respect to weekend availability, fewer than one out of ten (9.8 percent) indicated they were available for appointments on Saturdays, and 4 percent indicated they were offered appointments on Sundays.

Fewer than one-tenth of respondents indicated that their practice had available appointments after 6 p.m. on any day, and fewer than 2 percent of respondents indicated available appointments after 6 p.m. on Saturday or Sunday. Approximately one-eighth of respondents indicated available appointments before 8 a.m. during the week, while fewer than 2 percent indicated available appointment at that time on weekends. Nearly four-fifths (79 percent) of respondents indicated that their practice set aside time for same-day appointments.

Respondents were asked what happens when patients call the practice site after regular office hours and were instructed to check all answers that applied. More than one quarter (28 percent) indicated that patients could speak with a live person either at the practice or through an answering service, while slightly less than one quarter (24.9 percent) indicated that patients could leave a message on an answering machine. About 37 percent indicated that patients were instructed to go to the emergency room if urgent care was needed.

More than two-thirds of respondents (70.7 percent) indicated that existing patients can get an appointment at their practice within a week. Another 18.9 percent indicated that existing patients can get an appointment in 1 to 2 weeks, while 8.3 percent indicated that it takes 3 weeks or more for existing patients to get an appointment. Wait times for appointments with specialists for existing patients are generally longer than they are for all respondents. Fewer than half of respondents (46.5 percent) from specialty practices indicated that existing patients could get an appointment within a week.

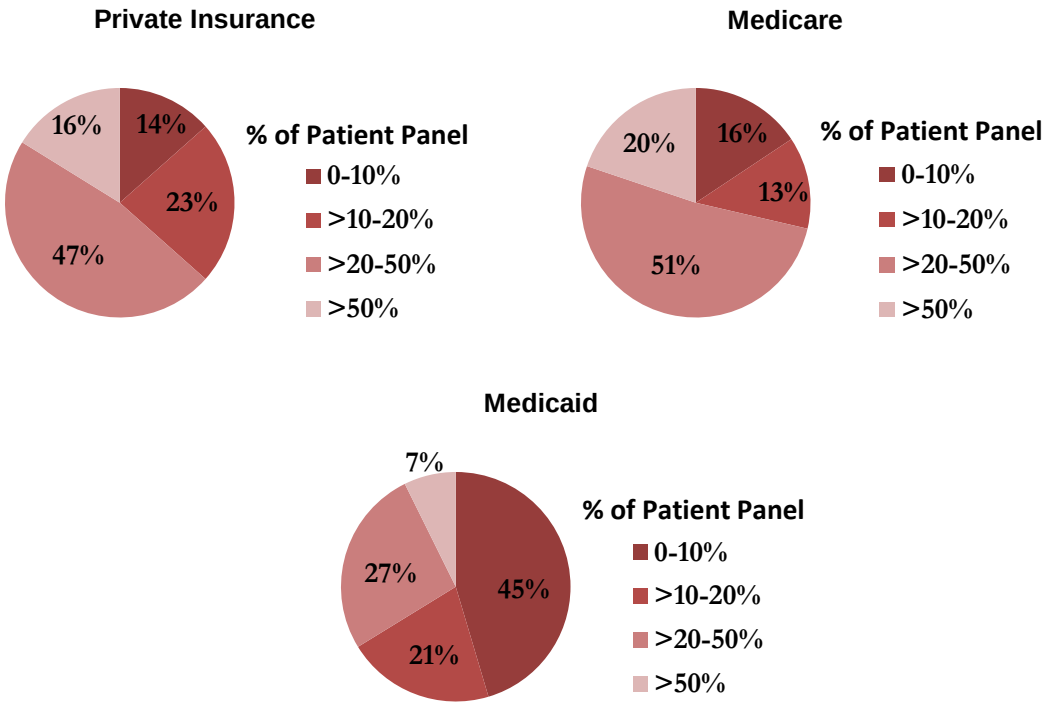
Nearly all of the respondents (95 percent) indicated that their practices were accepting new patients, but respondents noted that it took longer for new patients to get an appointment. About half (50.7 percent) indicated that new patients could get an appointment within a week, while another 29.3 percent indicated that they could do so in 1 to 2 weeks. Nearly one-fifth (18.4 percent) indicated that new patients would have to wait 3 weeks or more for an appointment. Wait times for appointments with specialists for new patients were again longer than they were for all respondents. Approximately a third (32.5 percent) of new patients could get an appointment with a specialist within a week.

Of all practices accepting new patients, nearly all (98.8 percent) indicated they were accepting patients with private insurance. Nearly nine out of ten were accepting new patients with Medicare (89.6 percent) and Medicaid (88.7 percent). Among respondents at specialty practices accepting new

patients, 94 percent were accepting patients with Medicare, while 92.3 percent were accepting new patients with Medicaid.

All respondents were asked what percentages of their current patients had the following payment sources: private insurance, Medicare, Medicaid, self-pay, and other (e.g., TRICARE). The pie charts below (Figure 24) represent the percentage of respondents indicating that that their practice's payment source fell within the percentages on the right of the chart, i.e., 0–10 percent. Only 14 percent of respondents indicated that privately insured patients comprised 10 percent or less of their current patients, while 45 percent indicated that Medicaid patients comprised 10 percent or less of their current patients.

Figure 24: Percentage of Physician Patient Panel by Payer Source



Building Clinician Capacity

When asked whether their practice sites planned on adding new clinicians in the next 2 years, more than half (54.7 percent) had no plans to do so. Nearly one quarter (24.8 percent) indicated that they planned to add clinicians, while 20.5 percent were unsure. Among respondents from specialty practices, only 19 percent indicated plans to add clinicians in the next 2 years.

Of all respondents from practices that planned to add clinicians, 62.7 percent indicated plans to add one physician, and another 29.8 percent indicated plans to add two or more physicians. More than three-fifths (61.6 percent) of those with plans to add clinicians had no plans to add physician assistants. Slightly more than half (50.8 percent) indicated plans to add one APN, while another 18.3 percent indicated plans to add two or more APNs.

When asked whether any of the clinicians at their practice site were planning on retiring or permanently leaving the practice for other reasons in the next 2 years, only 8.6 percent indicated that any of the clinicians had plans to do so. More than three quarters (76.4 percent) indicated that none of the clinicians at their practice had plans to retire or permanently leave the practice in the next 2 years, while another 15 percent were unsure.

Discussion

The results of the Office Capacity Survey reveal some interesting aspects of physician practice patterns. Physician practice size in the state is much smaller than it is nationwide. Nearly seven out of ten practices in Arkansas have one or two physicians, while nationwide only 32 percent of practices have one or two physicians.[23] These practice patterns could have significant implications for team-based care concepts, since many of the practices are likely accustomed to working in isolation.

More than half of responding practices in the state had an APN, while less than one-fifth had a PA. Given the greater supply of APNs in the state, it is not surprising that they are utilized with higher prevalence in physician practices when compared with PAs. The use of PAs could increase with a corresponding increase in their availability.

Patient access to clinicians beyond regular business hours and on weekends is limited. Less than one-tenth of practices were available for appointments on Saturdays and Sundays or after 6 p.m. on any day. A recent study has shown that patients having usual source of care offering evening and weekend office hours had lower total health care expenditures than those without extended-hours access.[24] The patient-centered medical home (PCMH) delivery model has the potential to address such limited access by offering expanded hours of availability.

With expanded insurance coverage in 2014, new patients should expect longer wait times for appointments—particularly with specialists—compared with existing patients. Survey respondents indicated that only about half of new patients could get an appointment within a week. Less than a third of patients can get an appointment within a week at specialty practices.

New patients with Medicaid or Medicare paying sources may have a more difficult time finding a provider than those with other paying sources. Fewer practices were accepting new Medicaid or Medicare patients compared with private paying sources. Patients with Medicaid may experience even greater difficulty, since nearly half of all respondents indicated that their Medicaid patient population comprises less than 10 percent of all patients. This suggests that while many practices indicate that they are accepting new Medicaid patients, they are likely limiting or "capping" the number of patients with a Medicaid paying source, especially given that the Medicaid population comprises 26 percent of the state's population.[25]

Responses regarding retirement and building clinician capacity suggest that many practices are preparing to maintain or expand capacity in light of anticipated retirements. Fewer than nine out of ten practices expected clinicians to leave the practice in the next two years, while nearly a quarter expected to add clinicians. Potential reasons for these patterns include physicians deferring retirement in a down economy, expected growth among insured populations with corresponding demand for services, or anticipated capacity-building for comporting with PCMH delivery models. Whatever the reason, these patterns suggest growth in physician practices and expanding capacity in the coming years.

Physician Survey Highlights

Methods

The Physician Survey was mailed to a sample of 2,122 physicians derived from a list of Blue Cross and Blue Shield physicians identified as primary care physicians. Of the mailed surveys, 513 analyzable[xxiii] surveys were returned, for a statewide response rate of 24.2 percent. Regional response rates were higher in the southeast (32.2 percent) and southwest (31.2 percent) areas of the state, while the central region (18.7 percent) had the lowest response rate. Response rates in the northwest

[xxiii] Thirteen returned surveys were excluded as ineligible or for containing invalid responses.

(26.3 percent) and northeast (26.9 percent) most closely aligned with the statewide response rate. As with the Office Capacity survey, the information reported reflects the responses and perspectives of respondents to the Physician Survey and should be interpreted in the context of larger, more complete quantitative studies presented elsewhere in this report.

Type of Care Provided

Although payers had identified all of the physicians in the survey as primary care physicians, 83.4 percent of the physician respondents statewide considered the majority of the care they provided as primary care. The remaining respondents considered the majority of care provided as either medical specialty (9.5 percent), surgical specialty (0.6 percent), or another type of care altogether (6.4 percent).

Length of Time Practicing in Current Location

Physician respondents in the southwest and southeast parts of the state have been practicing at their current location for longer periods than their counterparts in other parts of the state. Nearly one-third of physician respondents in southeast Arkansas (30.4 percent) reported having been at their current location for more than 20 years, and more than one-third in southwest Arkansas (37.0 percent) reported having been at their current location that length of time. Conversely, only 22.6 percent of physician respondents in northwest Arkansas reported having been at their current location for more than 20 years. Indeed, more than one-third of physician respondents in northwest Arkansas (35.0 percent) had been at their current location for 0–5 years.

Choice of Practice Location

Proximity to family and friends was the most important factor in choice of practice location among physician respondents statewide (28.6 percent). Among physician respondents in southeast Arkansas, the most important factor in choosing current practice location was having grown up in a rural area (26 percent), while among physician respondents in southwest Arkansas the most important factor was the need for physicians (21.9 percent).

Use of APNs

Statewide, nearly half of physician respondents indicated that they had at least one APN associated with their practice. Of those, 47.9 percent indicated that the APNs acted as primary care clinicians with their own patients, while 36.4 percent indicated that the APNs primarily assisted in seeing the physician's patients.

Physician respondents in central Arkansas indicated significantly different APN utilization patterns than other parts of the state. Only 22 percent of physician respondents in central Arkansas indicated that APNs associated with their practice acted as primary care clinicians with their own patients, while 58 percent indicated that APNs assist physicians with their own patients.

Physician supervision of or collaboration with APNs varied greatly across the state. One quarter of physician respondents working with APNs indicated that they review a sample of APN charts, while another 24.4 percent indicated that they review all APN charts. Slightly more than a quarter (27.3) indicated that they do not require but are available for consultation by their APNs.

APN billing practices also varied greatly across the state. Among physician respondents working with APNs, 42.2 indicated that the APNs bill for services under their own name/provider identifier, while 39.3 percent indicated that the APNs bill for services under the physician respondent's name/provider identifier.

Use of PAs

Few physician respondents (6.6 percent) had one or more physician assistants associated with their practices. Given the limited number of respondents having physician assistants associated with their

practices, supervision, billing and practice patterns are not reported here but can be found in the full report.

Building Capacity

Among physician respondents who had no APNs or PAs associated with their practice, 51 percent indicated they would consider employing them to expand office capacity. When this same group was asked about the types of services they would consider adding an APN or PA to provide, they indicated the following:

Table 12: APN or PA Services Considered by Physicians for Expansion

Types of Service	Would consider
Preventive screening	90.2%
Preventive counseling	92.4%
Chronic disease management	75.8%
Well-child exams	73.7%
Adult wellness visits	66.1%
Acute care	70.8%

When physician respondents who had APNs or PAs associated with their practices were asked what types of services their APNs and PAs currently provide, they indicated the following:

Table 13: APN and PA Services Currently Provided through Physician Practices

Types of Service	Currently provide
Preventive screening	83.9%
Preventive counseling	82.0%
Chronic disease management	81.1%
Well-child exams	71.6%
Adult wellness visits	72.8%
Acute care	84.07%

When asked how they planned to provide preventive screening and behavioral counseling services for weight control, tobacco cessation, depression and alcohol/substance abuse, all of which are now required to be reimbursed by Medicare and other payers at no cost to the beneficiary, 60.4 percent indicated that they would use current staff. Nearly one-fifth (19.5 percent) indicated that they did not know yet, while only 4 percent indicated that they would hire additional staff.

Physicians were also asked about retirement plans. Among respondents 60 and older, 32.4 percent indicated plans to retire in 2 to 5 years, and another 31.6 percent indicated plans to retire in 5 to 10 years. Nearly one-tenth (9.6 percent) indicated plans to retire in more than 10 years.

Of respondents 50 and older,[xxiv] nearly a third (31.7 percent) indicated that they planned to retire in 5 to 10 years, while another 28.1 percent indicated plans to retire in more than 10 years. Nearly one-fifth (19.2 percent) indicated plans to retire in 2 to 5 years.

[xxiv] About a quarter (26.5 percent) of analyzable surveys were from physicians 60 and older, and more than half (54.7 percent) of analyzable surveys were from physicians 50 and older.

Opinions about Practicing Medicine

Respondents were asked an open-ended question about what would make their practice more enjoyable and fulfilling. The multitude of answers centered on several themes:

- Less government regulation and oversight
- Reduction in administrative burden, particularly prior authorization requirements
- More time spent with patients, less time in front of a computer
- Higher, fairer, and more timely reimbursement
- Shorter working hours and more vacation time
- Tort reform

Many responded that they were quite content with their practice, indicating that they would not change anything.

Discussion

The Physician Survey data contain multiple findings that are noteworthy. Nearly 17 percent of physician respondents indicated that they were not primary care, although the identifying file for the underlying sample indicated that they were. This finding suggests that the way that physicians categorize their practice specialty is often different than how a single insurer categorizes them. It also emphasizes that researchers who are categorizing physicians by specialty should consider multiple sources, as has been done with analysis in this report.

Compared to their counterparts in urban areas, physician respondents in more rural parts of Arkansas—particularly the southwest and southeast regions—have been practicing in those locations for longer periods of time. This suggests that a greater percentage of physicians in these regions are older and closer to retirement. As a result—and consistent with the simulation model detailed earlier in this report—individuals living in these regions may experience an increasing physician supply gap over the next decade.

Although the top choice statewide was proximity to family and friends, reasons for choice of practice location among physician respondents differed considerably by region. Those in more rural areas of the state were more likely to choose their practice location because they grew up in a rural area or saw a need for physicians. The former factor—growing up in a rural area—is consistent with a finding from a study that has shown that physicians raised in smaller rural communities are more than twice as likely as those from non-rural communities to practice in a rural community immediately after residency.[26] Another study has shown that the latter factor—need for physicians—is associated with graduating family medicine residents choosing rural practice, although it was the twelfth most important factor in that report.[27]

Use of APNs among physician respondents is rather ubiquitous when compared with PA use. This pattern largely reflects the greater supply of APNs statewide, as noted in previous sections of this report. The use of APNs and PAs, along with supervision and billing practices, widely varied statewide. This variability in APN and PA use and supervision could be a result of a number of things, such as years of experience, employment relationship, or clinician preference. It also suggests that physician respondents appear to have different interpretations of the quality assurance requirement associated with collaborative practice agreements.

Consumer Focus Group Report Highlights

Researchers often focus solely on provider perspectives when assessing access to care and fail to consider consumer perspectives. With that in mind, ACHI worked with Arkansas Advocates for Children and Families (AACF) to conduct a series of consumer focus groups in rural Arkansas to gather data on the access to and quality of health care services for both publicly and privately insured individuals in rural Arkansas. In collaboration with ACHI, AACF chose focus group locations represented in Table 14, using criteria designed to demonstrate the diversity of health care experiences for the insured in rural Arkansas.

Table 14: Focus Group Locations

City	County	Public Health Region	Type of Insurance	Spanish Speaking
Berryville	Carroll	Northwest	Private	Yes
Blytheville	Mississippi	Northeast	Public	No
Booneville	Logan	Northwest	Private	No
DeQueen	Sevier	Southwest	Public	Yes
Greenbrier	Faulkner	Central	Private	No
Hamburg	Ashley	Southeast	Public	Yes
Hampton	Calhoun	Southwest	Private	No
Jasper	Newton	Northwest	Public	No
Lake Village	Chicot	Southeast	Public	No
Marianna	Lee	Southeast	Private	No
Melbourne	Izard	Northeast	Private	No
Prescott	Nevada	Southwest	Private	No
Sheridan	Grant	Central	Private	No
Wynne	Cross	Northeast	Private	No

The focus groups examined access to care related to primary care and specialty physicians for adults and children. AACF asked questions about the use of primary care and specialty physicians, how individuals chose their physicians, the customer service they received from physicians and staff, the quality of care received, use of APNs or PAs, experience with office and billing staff, and use of pharmacists and emergency rooms.

The full consumer focus group report, *Access to Quality Health Care in Rural Arkansas: Patient Perspective*, may be found in Appendix G.

Focus Group Participant Recruitment

In addition to identifying individuals who either had private or public insurance, AACF asked local partners to recruit individuals who would reflect the communities' demographics in terms of sex, age, race, marital status, number of children, and income. Overall, 134 individuals participated in the focus groups. Demographics of the participants are represented in Table 15.

Table 15: Focus Group Participant Demographics

Sex	Number	Percentage
Male	28	21%
Female	106	79%
Age (years)		
Under 18	1	1%
18–35	48	36%
36–49	32	24%
50–64	39	29%
65+	14	10%

Race/Ethnicity		
African American	28	21%
Asian/Pacific Islander	0	0%
Caucasian	73	54%
Hispanic	33	25%
Other	0	0%
Marital Status		
Married	82	61%
Single	31	23%
Divorced	7	5%
Widowed	10	7%
No Answer	4	3%
Have Children		
Yes	73	54%
No	61	46%
Annual Income		
<$10,000	22	16%
$10,000–$20,000	22	16%
$20,000–$30,000	26	19%
$30,000–$40,000	12	9%
$40,000–$50,000	8	6%
$50,000–$60,000	15	11%
$60,000–$70,000	11	8%
>$70,000	15	11%
No answer	3	2%
Total Participants	**134**	**100%**

Note: Because of rounding, subtotals may not equal 100%

Dialogue on Primary Care

Of the adult focus group participants who had health care coverage for themselves, 85 percent had a regular primary care physician. Almost all (98 percent) of the children who had health care coverage had a primary care physician. The majority (64 percent) of children saw a physician in family practice instead of a pediatrician.

When asked to describe the selection criteria for a primary care physician, participants touched on many topics—distance, limited options, reputation, experience, bedside manner, approach to medicine, hours of operation, scheduling of appointments, waiting time, and ability to speak Spanish. The most important factors, however, were the proximity of the physician to the participant's home or work and the number of physicians from which to choose in a given community. Participants indicated several additional reasons for choosing a primary care physician for their children, including finding a pediatrician in a city that was near a good hospital, working with a pediatrician who practiced alone to ensure continuity of care, and choosing the same physician who delivered the child.

About half of the adult participants indicated that they had to drive anywhere between 20 minutes and an hour and a half to get to their primary care physician, but few had to drive their children as far. Participants additionally indicated that it can be difficult in rural communities to find primary care at hours convenient to work schedules. In communities with only one primary care physician, on-call hours were not available. Indeed, between one half to three-quarters of the participants reported seeking care in the local emergency room (ER) because of the unavailability of a primary care physician or specialist.

Despite issues with distance and unavailability of clinicians after regular business hours, most participants could schedule appointments with their primary care physicians on the same day or next day. Participants indicated that being open to seeing another physician or a nurse practitioner in the practice could increase the likelihood of getting a more timely appointment.

Some participants felt that many primary care physicians automatically prescribe medicine without assessing the patient's preferences for treatment. They expressed concern regarding limited interaction with the physician. "My doctor just rushes me through," one participant said. "He wants to get me in, give me some medicine, and get me out of there." Participants were also dissatisfied with the information, education, and support for self-care that they received regarding issues such as diabetes, high cholesterol, and smoking.

Dialogue on Specialty Care

Almost three-quarters (74 percent) of the adult participants and a little over half (54 percent) of the children had seen a specialist. None of the participants was able to find a specialist whose primary office was located in his or her community. All had to travel, usually about 30 minutes to an hour and a half. A couple of participants noted that they had to seek specialty treatment out-of-state because there were no Arkansas specialists who could meet their medical needs.

Reasons for choosing a specialist were similar to those for choosing a primary care physician, but reputation and experience were the most important. Some participants relied on the referral of their doctor, but others sought out additional information from friends, family, health care professionals, and the Internet. Several noted that acceptance of their insurance was a determining factor.

Participants indicated that wait times for an appointment with a specialist were significantly longer than that for a primary care physician. They noted that wait times of a month were typical, and quite a few people waited longer. Two factors that seemed to shorten the time to see a specialist were being an established patient and having the referring doctor make the appointment for the patient.

Use of APNs and PAs

Fifty-seven percent of the adult participants had seen an APN or PA instead of their primary care physician. Of those participants, most had seen an APN, while a few had seen a PA. The use of APNs or PAs was more prevalent among primary care physicians serving adults. Participants were highly satisfied with the care they received from APNs and PAs, and they felt that APNs listened better, were not as rushed, were more in-depth, and seemed genuinely concerned with their needs.

Additional Dialogue

In addition to discussions about primary and specialty care, participants made a few other observations about access to quality care in rural communities, noting specifically:

- Limited number of employers in rural communities providing health insurance
- Spanish-speaking participants had difficulty finding a practice with clinicians or staff who could speak their language
- Lack of insurance coverage for alternative providers such as chiropractors and midwives
- Key role that pharmacists play in monitoring medications and saving patients money
- Superb access to care provided by school-based wellness centers
- Frustrations with hospital billing
- Challenges with ambulance service in rural areas

Section III: Literature Review

Now with more robust knowledge of the status of its health care workforce, the state must advance policies that will address workforce shortages and maldistribution. An oft-explored option for mitigating gaps in health care workforce—especially in primary care—is better utilizing the services offered by APNs and PAs. This section describes some of the educational, legal, clinical, and more practical aspects typically considered with this option. It is divided into the following subsections: APN and PA Education, Scope of Practice Regulation, APN and PA Reimbursement, and Effectiveness and Safety of APN and PA Services.

APN and PA Education

APN Education

In response to a nationwide shortage of primary care providers in urban and rural areas, the original program for nurse practitioners started at the University of Colorado in 1965 as a master's degree program for pediatric nurses. The National Organization of Nurse Practitioner Faculties developed guidelines for nurse practitioner programs in 1995 and by the late 1990s almost all educational programs for nurse practitioners were in higher education settings with a master's degree awarded upon completion of the program.[28] There are currently three accredited nurse practitioner programs in Arkansas: the University of Arkansas for Medical Sciences, Arkansas State University, and the University of Central Arkansas.[29]

In Arkansas, APN is an umbrella term given to a registered nurse who has met advanced educational and clinical practice requirements beyond that for registered nurse (RN) licensure. There are four types of APNs: clinical nurse specialists, nurse practitioners, certified nurse midwives, and certified registered nurse anesthetists.[30]

APN education occurs at the graduate level (master's or doctorate) and builds upon undergraduate RN education. Graduate programs require students to already have a bachelor of science in nursing, and most require applicants to have 2 or more years of experience as a registered nurse. At the conclusion of the program, graduates receive a master's of science degree. APN programs usually require 1½ to 2 years of full-time study, build on the basic arts and science courses of the baccalaureate programs, and teach content at an advanced level. The APN curriculum has courses in advanced health assessment, physiology, advanced path physiology, pharmacology, advanced therapeutics and specialty preparation, as well as research methodology and utilization.[31]

As a condition of licensure, most states require APNs to be nationally certified in their specialty area by the APN specialty's professional organization. The American Academy of Nurse Practitioners and the American Nurses Credentialing Center are two credentialing bodies that offer certifications in nursing. These certifications must be renewed every 5 years to continue development within the profession. Other certifying bodies include the National Certification Board of Pediatric Nurse Practitioners and Nurses (NCB), National Certification Corporation for the Obstetric, Gynecologic and Neonatal Nursing Specialties (NCC), American Academy of Nurse Practitioners (AANP), and Nurse Practitioners in Women's Health (NPWH).[32]

PA Education

The physician assistant profession began at Duke University when Navy hospital corpsmen were trained to offset the shortage of physicians.[33] It was not until 1970 that the American Medical

Association passed a resolution to develop educational guidelines and certification procedures for PAs.[34]

PAs must obtain formal training through an educational program approved by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA).[35] These programs often require applicants to have bachelor's degrees and some amount of experience in health care upon admission. Most students serve as emergency medical technicians, nurses, or paramedics before pursuing admission to PA programs.[36]

PA programs are approximately 27 months long and include classroom instruction and clinical rotations. Most students complete a 2-year master's PA program. During the first year, the curriculum consists of basic medical science courses such as biochemistry, pathology, anatomy, physiology, disease prevention, and pharmacology. In the second year, study shifts to clinical experience in primary care medicine, inpatient medicine, surgery, obstetrics and gynecology, geriatrics, emergency medicine, psychiatry, and pediatrics. During these rotations, students gain first-hand experience in patient care under the supervision of licensed physicians.[63]

PAs must be licensed by the state in which they practice. The licensing process requires a passing score on the Physician Assistant National Certifying Examination (PANCE). Administered by the National Commission on Certification of Physician Assistants (NCCPA), PANCE evaluates fundamental medical and surgical comprehension. Candidates who pass the PANCE may use the Physician Assistant-Certified (PA-C) designation. PAs maintain the PA-C designation by earning 100 continuing education credits every 2 years. They must also pass a recertifying exam every 6 years.[37]

PAs may choose to specialize in a particular field of medicine, such as internal medicine, surgery, or pediatrics. Becoming a specialist entails completion of an additional postgraduate training program and certification from the NCCPA. Candidates must hold PA-C certification, have 2 years of experience, and complete a specialty certification program. They may then become certified by passing a specialty exam. Specialty certification must be renewed every 6 years.[38]

Degrees Required and Time to Completion

Figure 25 represents a comparison of education required to become a family physician versus the education required to become an APN or PA.

Figure 25: Comparison of Education Requirements for MDs, APNs, and PAs

**While a standard 4-year degree, preferably a BSN, is recommended, alternate pathways exist for an RN without a bachelor's degree to enter some master's programs.*

APN and PA Education Trends

An important trend in medical education is the increasing emphasis on inter-professional training among medicine, nursing, and other disciplines. As the health care system in Arkansas is transitioning to a PCMH model and shifting to team-based practice, opportunities and challenges exist for educators to better tailor the training of physicians, APNs, and PAs.

As noted in the previous section, APNs can deliver a broad range of primary care services as effectively as physicians. As more APNs move toward independently providing primary care services nationwide, schools of nursing have expanded their training programs up to the doctoral level, broadening the training experience to embrace comprehensive care, and granting degrees in doctor of nursing practice. During the past decade, more than 200 such programs have been established, and the profession is now examining ways to ensure that the graduates of these programs are held to rigorous standards.

As APNs increasingly trend toward primary care delivery settings, PAs are increasingly being utilized in specialty care settings. In the past, PA training has typically been oriented toward primary care, and most PAs practiced in primary care settings, but only about one third do so now.[39] Since they are typically employed by physicians, PA workforce trends mirror that of the physician workforce in the United States. The majority of PAs practiced in primary care disciplines until the mid-1990s, but since then the percentage of PAs in primary care has steadily declined. [40] The majority of PAs fill the need for skilled assistants in specialty physicians' practices. In response to this need, the PA profession is developing various mechanisms to train and credential PAs in particular specialties.[41]

The intricacies associated with specialization have helped support an argument for postgraduate education for PAs. In recent years there has been growth in PA postgraduate residency programs, and currently there are 50 such advanced training programs throughout the United States.[42] Postgraduate education for APNs has also been on the rise. The proportion of APN programs offering advanced clinical education has increased in the last decade. The greatest growth has been in family nurse practitioner (FNP) education, with approximately 90 percent of APN programs

offering this credential. The combination of the increase in the proportion of APN programs offering FNP education and the proportion of graduates choosing that pathway has led to a sharp increase in the number of FNP graduates in the past several years. The absolute number of FNP graduates per year has doubled since 1996 to just over 4,000.[43]

Recent studies show a robust pool of PA program applicants and support the trend that there is a growing demand for PA educational programs. Nationally in 2011 there were 17,000 PA program applicants competing for 5,500 openings. The generally positive exposure of PAs to the public in the media as a highly desirable profession, the institutional momentum of 84,000-plus PAs, the expanding recognition of the contributions of the profession by health policy makers, and acceptance of the PA role in all health care settings have driven a rising demand for PA education. As a result, about 90 percent of PA graduates have a job within 12 weeks of graduation.[44]

There has been a response to the educational demand in Arkansas. The addition of PA programs at Harding University in Searcy and, more recently, at the University of Arkansas for Medical Sciences (UAMS) will provide an influx of new PAs into Arkansas's health care workforce. Harding University has graduated 131 people from its PA program since it began in 2005 and is steadily increasing its class size.[45] The PA program at UAMS expects to enroll its first class by summer 2013.

Scope of Practice Regulation

Purpose of Regulation

The fundamental purpose of occupational and professional regulation is consumer protection. Regulations are intended to ensure protection of the public from "unscrupulous, incompetent, and unethical practitioners;" ensure regulated individuals "provide certain services in a safe and effective manner;" and provide a means to discipline licensed professionals, including revocation of licenses.[46]

At the core of medical professional regulation is the concept of **scope of practice**, which has been defined as the "rules, the regulations, the boundaries within which a fully qualified practitioner, with substantial and appropriate training, knowledge, and experience may practice in a field of medicine or surgery, or other specifically defined field."[47]

Regulating occupations, including medical professions, is generally within the states' authority.[48] The United States Supreme Court has consistently found that states have the power to regulate occupations.[49] Courts apply a "rational basis" standard that states must meet to justify the regulation, meaning that a state need only have a legitimate reason to enact the regulation.[50]

Some states define professional scopes of practice by statutes—often called **practice acts**—enacted by the state legislature, while others delegate this authority to licensure boards.[51] Practice acts in Arkansas generally define the scope of practice for a number of medical professions, including physicians and nurse practitioners. Through those practice acts, however, the legislature has also delegated authority to governing boards to further refine the scope of practice for those professions.[52]

Even in a state where the legislature has delegated this authority to a licensure board, the legislature reserves authority to modify a scope of practice by amending the law under which it delegated the authority. Scope of practice modifications—whether at the legislative or board level—may be generated, for example, by changes in education or training within a profession, advances in technology or research, or fluctuation in health care demand.

The process of defining or modifying scope of practice often pits one profession against others. The ensuing skirmishes before legislative or regulatory bodies can be costly and time-consuming for

everyone involved.[53] Some practitioners view attempts to broaden scopes of practice as encroaching into other practitioners' areas of practice and threatening to economic or other interests.

Figure 26: Arkansas Medical Practices Act Definition of the "Practice of Medicine"

- "Holding out one's self to the public within this state as being able to diagnose, treat, prescribe for, palliate, or prevent any human disease, ailment, injury, deformity, or physical or mental condition, whether by the use of drugs, surgery, manipulation, electricity, or any physical, mechanical, or other means whatsoever;
- Suggesting, recommending, prescribing, or administering any form of treatment, operation, or healing for the intended palliation, relief, or cure of any physical or mental disease, ailment, injury, condition, or defect of any person with the intention of receiving, either directly or indirectly, any fee, gift, or compensation whatsoever;
- The maintenance of an office or other place to meet persons for the purpose of examining or treating persons afflicted with disease, injury, or defect of body or mind;
- Using the title "M.D.," "M.B.," "D.O.," "Physician," "Surgeon," or any word or abbreviation to indicate or induce others to believe that one is engaged in the diagnosis or treatment of persons afflicted with disease, injury, or defect of body or mind, except as otherwise expressly permitted by the laws of this state relating to the practice of any limited field of the healing arts; or
- Performing any kind of surgical operation upon a human being." [54]

State Responses to Turf Battles

"Turf battles" are scope of practice conflicts between two or more health professional organizations and their members. States have attempted to mitigate turf battles through a variety of mechanisms. For example, Arkansas has a statute that provides a method for settling scope of practice issues between boards of the healing arts.[55] The statute provides that no board of the healing arts may take disciplinary action at the board level against a licensee of another board of the healing arts. It also provides a mechanism for a licensee of one board to file a complaint regarding a scope of practice issue against a licensee of another board.

Beyond curative mechanisms for solving turf battles once they arise, one preventive goal has been to route proposed changes to scopes of practice through a body that can consider the proposals in a more objective way than individual licensure boards or the legislature. Below are four examples that may be instructive for Arkansas.

Colorado (The "Blue Ribbon Commission" Approach)

In February 2008 the Governor of Colorado commissioned a "Collaborative Scopes of Care Advisory Committee" to study ways to limit barriers to scope of practice for non-physician health-care providers, such as advanced practice nurses and physician assistants. The Committee, with the assistance of the Colorado Health Institute, reviewed the practices and published a report in January 2009. It is unclear whether the Colorado legislature has enacted the Committee's recommendations, which included, for example, considering changes to reimbursement policies requiring state-sponsored programs to offer direct reimbursement to APNs for their services.

Iowa (The "Two-Step" Approach)

Under Iowa law, first, a reviewing committee reviews proposed scope-of-practice changes and makes a report to the Department of Public Health. The committee is limited to five members who are members of the profession seeking the change; a member of the profession opposing or directly impacted by the change; an impartial member of a health profession who is not impacted by the change; and two impartial members of the general public. Second, based on the report, the

Department of Public Health advises the legislature on whether the proposal presents a significant new danger and whether it will benefit the public. It is unclear whether the legislature has ever considered or adopted a proposal through this process.

Minnesota (Supra-Board Approach)

In 2001, the Minnesota legislature created the Council of Health Boards. Each of the 16 health licensing boards has a representative on the Council, along with the Executive Director for the respective licensing board. The Council meets periodically to discuss issues and concerns affecting all boards. It is required to review issues, such as proposals to scope-of-practice laws or regulations related to health professions. When reviewing legislative proposals related to health occupations, the Council must include the Minnesota Commissioner of Health. It is unclear whether the Board has made any recommendations related to scope-of-practice or whether the legislature has ever adopted a recommendation from the Board.

Virginia (Supra-Board Approach)

In Virginia, the Board of Health Professions consists of 18 members, one from each of the 13 health licensing boards, and five citizens who represent consumers. The Governor appoints all the Board members. Among its duties, the Board of Health Professions is responsible for evaluating and making recommendations related to scope-of-practice rules for the health care professions. It is unclear whether the Board has made any recommendations related to scope-of-practice or whether the legislature has ever adopted a recommendation from the Board.

History of Scope of Practice Regulation in Arkansas

Historical context is crucial to understanding regulation as it relates to scope of practice. Physician scope of practice is generally defined very broadly and was developed long before the advent of the APN or PA professions and scopes of practice. Consequently, it is not surprising that APN and PA scopes of practice overlap with physicians.

When APN and PA scopes of practice are vaguely defined to include diagnosis, treatment, prescriptive authority, and admission of patients to hospitals without further limitations,[56] there is little legal difference between the APN, PA, and physician scopes of practice. On the other hand, states such as Mississippi define physician scope of practice broadly[57]—effectively using the term "any" as a delimiting descriptor as it relates to prescribing, directing, or recommending drugs or treatment for ailments and diseases—while providing no parallel language in statute or regulation for APNs or PAs.

Physician Scope of Practice

According to the statutory history, the section of Arkansas law defining the "practice of medicine" has been amended a half dozen times since 1947, with many of the modifications occurring since 2000. Much like the Mississippi law, Arkansas law effectively uses the delimiting word "any" throughout its current statutory definition of the "practice of medicine."

Advance Practice Nursing Scope of Practice

Nurse practitioner scope of practice in Arkansas dates back to 1979. Legislation in that year authorized the Arkansas Board of Nursing to license registered nurse practitioners (RNPs). RNPs may deliver health care services beyond those considered to be activities recognized by the nursing profession only in "collaboration with and under the direction of a licensed physician or under the direction of protocols developed by a licensed physician."[58]

Act 409 of 1995 created APN licensure and scope of practice and has been largely unchanged since then. For those licensed as APNs, the legislation served to eliminate the RNP requirement for collaboration with and supervision by physicians such that APNs could practice autonomously.

Included in the legislation was a provision affording APNs prescriptive authority, but that authority was limited to APNs who had a "collaborative practice agreement" (CPA) with a licensed physician.

The legislation granted the Arkansas Board of Nursing the ability to grant certificates of prescriptive authority. For an APN to be qualified to apply for prescriptive authority, however, a CPA must be in effect and filed with the Board of Nursing.[59] The CPA must include, without limitation:

- "the availability of the collaborating physician for consultation or referral or both;
- methods of management of the collaborative practice, which shall include protocols for prescriptive authority;
- coverage of the health care needs of a patient in the emergency absence of the advanced practice nurse or physician; and
- quality assurance."[60]

Physician Assistant Scope of Practice

Physician assistant scope of practice was defined with the advent of the profession in Arkansas in 1999. Explicitly excluding only the practice of optometry, Act 851 of 1999 indicates that PAs may "perform those duties and responsibilities, including the prescribing, ordering, and administering drugs and medical devices, that are delegated by their supervising physicians."[61] The PA scope of practice has not undergone statutory change since 1999.

Mechanisms for Direct Restrictions on APN and PA Practice

Various indirect restrictions on independent APN and PA practice—that is, decisions often left to payers such as reimbursement variations and primary care provider designation—are discussed elsewhere in this report. Direct restrictions on practice—that is, those most often delineated by statute or regulation—are detailed in the next section and include physician supervision or collaboration requirements for diagnosis and treatment or prescriptive authority, limitations on the location in which an APN or PA may practice, and prohibitions on the types of drugs that APNs and PAs may prescribe.

Although a variety of nuances exist, there are generally three approaches used by states to regulate the relationship between physicians and APNs or PAs as it relates to diagnosis and treatment.[62] The different approaches are as follows:

- **Requirement for written documentation of physician involvement**—Twenty states[xxv] require written documentation of physician supervision or collaboration for an APN to diagnose and treat patients. "Supervision" or "collaboration" in each state varies, and may not require a physician to be on-site or have face-to-face interaction with the APN.
- **Physician involvement required, but written documentation is not required**—Four states[xxvi] require physician supervision or collaboration to practice as an APN, but these states do not require written documentation of the relationship.[xxvii]
- **No requirement for physician involvement**—The remaining states[xxviii] and the District of Columbia require no physician supervision or collaboration for an APN to diagnose and treat patients.

[xxv] Alabama, California, Delaware, Florida, Georgia, Illinois, Kansas, Louisiana, Mississippi, Missouri, Nebraska, Nevada, New York, North Carolina, Ohio, South Carolina, South Dakota, Texas, Virginia, and Wisconsin.
[xxvi] Connecticut, Indiana, Minnesota, Pennsylvania.
[xxvii] Practice authorities may include authority to diagnose, order tests, and refer.

State regulation of APN prescriptive authority can be divided into two categories:

- **Requirement for written documentation of physician involvement—**Thirty-two states[xxix] require physician supervision or collaboration and written documentation of the relationship for APNs to prescribe medications.
- **No requirement for physician involvement—**Eighteen states[xxx] and the District of Columbia have no requirement for physician supervision or collaboration for an APN to prescribe medications. Although categorized as requiring no physician involvement, some of these states nonetheless require articulated plans or attestations for physician collaboration or consultation for certain classes of drugs.

Even within these broad categories, there is a great deal of variety. For instance, *Michigan* has a statutorily defined scope of practice within which APNs may diagnose and treat independently, and anything beyond the statutory scope of practice must be provided under physician supervision. *California* uses the standardized procedure (SP) as the legal mechanism for nurse practitioners to perform functions that would otherwise be considered the practice of medicine. SPs are developed collaboratively by the departments of the health care system in which they will be used. Some states, such as *Maine* and *Missouri*, distinguish between "medical" and "nursing" diagnoses.

Scope of Practice & Liability

Currently, no uniform model of nurse practitioner regulation exists across the states. Each state independently determines scope of practice, roles that are recognized, criteria for advanced practice, and certification examinations accepted. There have been recent discussions among state boards, national accrediting bodies, professional associations, and others to align nurse practitioner education, accreditation, certification, and licensure across states, and these discussions have resulted in a consensus report.[63] The report indicates that the target date for full implementation of the regulatory model and recommendations from the consensus report is 2015.

APN Scope of Practice

According to current Arkansas law, advanced practice nurses, which include advanced nurse practitioners, certified registered nurse anesthetists, certified nurse midwives, and clinical nurse specialists, may provide health care services constituting the "practice of advanced practice nursing."[64] The discussion here will not include registered nurse practitioners.[xxxi] Notably, there are many different specialties in which APNs may be certified, such as family practice, psychiatric, and pediatrics.

[xxviii] Alaska, Arizona, Arkansas, Colorado, Hawaii, Idaho, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New Mexico, North Dakota, Oklahoma, Oregon, Rhode Island, Tennessee, Utah, Vermont, Washington, West Virginia, and Wyoming.

[xxix] Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, West Virginia, and Wisconsin.

[xxx] Alaska, Arizona, Colorado, Hawaii, Idaho, Iowa, Maine, Maryland, Montana, New Hampshire, New Mexico, North Dakota, Oregon, Rhode Island, Utah, Vermont, Washington, and Wyoming.

[xxxi] A separate category of nurses, registered nurse practitioners (RPNs), may practice registered nurse practitioner nursing, which is distinct from the practice of "advanced practice nursing" in that it requires the RPN to practice "in collaboration with and under the direction of a licensed physician or under the direction of protocols developed with a licensed physician." The major difference between an RPN and an APN is that the latter has national certification and the ability to gain prescriptive authority. As of 2000, the Arkansas State Board no longer provides initial licensure for RPNs.

The Arkansas law defining the scope of practice for APNs states that such practice is the "performance for compensation of nursing skills by a registered nurse who, as demonstrated by national certification, has advanced knowledge and practice skills in the delivery of nursing services."[64] Therefore, the scope of practice is defined, limited, or expanded—at least in theory—by a national certifying body and its requirements for demonstration of skills and techniques learned.

According to the law, APNs may practice independently—that is, without supervision or collaboration with a physician. For an APN to gain prescriptive authority, however, a CPA with an Arkansas-licensed physician who has a practice comparable in scope, specialty, or expertise to that of the APN is required.[60] The Arkansas State Board of Nursing (ARSBN) has issued a CPA template, along with guidance on the CPA.[65] The ARSBN has indicated that the CPA must meet the following guidelines:

- Must be complete and legible
- The collaborating physician must have a current Arkansas license to practice under the Medical Practice Act, § 17-95-201; the collaborating physician must also have an unrestricted DEA registration number for APNs who prescribe controlled substances
- The collaborating physician's practice must be comparable in scope, specialty, or expertise to that of the APN's practice/specialty
- Must include a statement that the "APN's prescribing will be limited to the area of educational preparation and certification"
- Provision addressing availability of the collaborating physician for consultation and/or referral
- Method of management of the collaborative practice (include a statement regarding protocols for prescriptive authority)
- Plans for coverage of the health care needs of the patient in the emergency absence of the APN or collaborating physician
- Provision for quality assurance (quality assurance plan that has been signed by the APN and the collaborating physician)
- Signatures of both the APN and the collaborating physician
- If signatures are on a separate sheet from the agreement, a statement indicating that there is mutual agreement to the terms and conditions of the CPA must be included on the signature page (so that it is clear what the signature indicates)
- License numbers and certification specialties of both the APN and the collaborating physician
- Address and phone number of the APN's and physician's practice site(s)

Importantly, the statute, the ARSBN guidance, and the CPA template do not indicate what types of quality assurance practices are adequate.

Arkansas APNs are limited to prescribing Schedule III, IV, and V drugs. Admitting privileges for APNs are determined on a hospital-to-hospital basis.[66]

PA Scope of Practice

A physician assistant according to Arkansas law is a graduate from an accredited program that has passed a national exam. A PA's duties are derived from a supervising physician, and the PA is an "agent" of the PA's supervising physician. In short, a PA is a "dependent medical practitioner" whose duties and responsibilities, including prescribing, ordering, and administering drugs and medical devices, are delegated by a supervising physician. A PA cannot, however, tend to medical issues related to the eye.

PAs provide health care services only under the supervision of a physician and pursuant to a physician-drafted protocol. The law does not require that the PA to be in the presence of the supervising physician when the services are provided, but the PA must be able to readily communicate with the physician.

Physician Supervision or Collaboration Requirements and Malpractice Liability

Physicians who supervise or collaborate with other health care professionals are exposed to potential liability for the negligent actions of those professionals. To show physician malpractice in these types of circumstances, a patient must show that a health care professional failed to act in a manner consistent with the professional standards of accepted practice, that the failure to do so resulted in the patient's harm, and that through the legal theories of *respondeat superior* (an employer is responsible for the actions of employees performed within the course of their employment) and vicarious liability the physician is liable.[67]

Applicability of vicarious liability largely depends on the extent to which the employer controls the conduct of the employee when he or she is performing the services. As modern APN practice evolves from one of dependence on physicians to independent practice, it is more difficult to establish the requisite level of control necessary to find liability. Some of the factors considered when determining level of control are the following.

- Extent of control granted under the terms of employment or other agreements
- Existence of protocols under supervision and collaboration routines
- Whether the physician has provided office space, supplies, and other instrumentalities for providing services
- Whether the APN bills separately for his or her services

With increased autonomy and more independence comes increased legal liability and malpractice exposure for APNs and PAs; conversely, increased autonomy for APNs and PAs diminishes the chances of liability for physicians. A physician's liability—especially for an APN's acts—heavily depends on whether a physician–patient relationship exists. For instance, if the physician meets with the patient and discusses treatment options, a duty of care is established. Additionally, if the APN merely presents a case, or if the physician reviews an active chart and recommends or approves a treatment plan, those actions may be interpreted as an implied relationship—and therefore a duty of care—causing the physician to be liable even though he or she never actually saw the patient.

Although not an Arkansas case, the 2003 case of *Quirk v. Zuckerman*[68] demonstrates the risks faced by physicians in collaborative relationships. In *Quirk*, a patient was treated by a nurse practitioner at a hospital emergency department for upper extremity pain diagnosed by the nurse practitioner as epicondylitis or "tennis elbow." The patient actually had a compartment syndrome necessitating later amputation of the arm. The nurse practitioner verbally consulted with the emergency department physician, but the physician never examined or spoke with the patient. The court found that "collaboration" implied a joint effort. It further found that an implied physician–patient relationship

existed and that under the reasonably prudent physician standard, it was incumbent on the physician to examine the patient's arm himself.

Medical malpractice claims against APNs rarely rest on allegations that the APN has exceeded scope of practice, although these types of claims have the highest average level of severity.[69] Indeed, the most common malpractice claims made against APNs by patients actually relate to improper diagnosis and treatment.[70] Appealed cases often involve a question of who is the actual negligent party when an APN is acting within his or her scope of practice and is under the supervision of a physician.[71] There are no reported appellate cases in which an APN has been sued for negligence on the basis that he or she should not have engaged in independent practice.[72]

APN malpractice cases gradually escalated between 2004 and 2008, and the same period saw an overall increase for other providers as well.[70] Of the claims data reported for this study, there were no estimates of how many claims were for APNs in independent practice. Indeed, many APN malpractice cases are often brought against the institutions that employ the nurse practitioners and not against the individual APNs, and the vast majority are settled out of court and therefore not reported publicly.[73]

Court Cases and Regulatory Agency Decisions

Scope of Practice Court Cases

Arkansas courts have handed down few decisions relating to scope of practice in recent decades. Indeed, only one published case has touched on the relationship between physicians and APNs. That case dates back to 1984, prior to legislation affording APNs autonomous authority to diagnose and treat patients.

In *Arkansas State Nurses Association v. Arkansas State Medical Board*[74] the Supreme Court of Arkansas invalidated a Medical Board regulation restricting the number of registered nurse practitioners that may be employed by a physician or group of physicians and declaring that any violation of the restriction was malpractice. In addition to finding that the legislature had not delegated to the Medical Board the authority to define punishable malpractice, the court found that the Medical Board's regulation was arbitrary on its face, "so clearly so that testimony about its purpose or effects could not change or justify the plain meaning of its language."[74]

The court noted that when enacting a similar statute regarding physician assistants (PAs) the state legislature prohibited a single physician from employing more than two PAs but that the limitation was not extended to groups of two or more physicians practicing together. The court reasoned that if one physician can adequately supervise two nurse practitioners, it is not unreasonable to suppose that a group of physicians can supervise more than two equally well. The court added, "The reality is that at a time when there is a need for additional medical care in some parts of the state, the effect of [the regulation] would be to discourage registered nurses from becoming nurse practitioners, for the regulation would undeniably limit the number of jobs available to them."[74]

Arkansas courts have heard several cases involving scope of practice and practitioners other than APNs and have rendered decisions that may be applicable in all scope of practice cases. In *Arkansas State Medical Board v. Schoen*[75] the Supreme Court of Arkansas considered whether it is proper for a court or the respective professional boards to determine if a dentist engaged in the unlawful practice of medicine by surgically removing a basal cell carcinoma from the forehead of a patient. The Arkansas State Dental Board argued in this case that such a procedure involves the practice of dentistry because the Dental Board recognizes the specialty practice of oral and maxillofacial surgery. Moreover, the Dental Board believed its administrative authority on the matter and the resulting decision determinative. The Medical Board, on the other hand, believed that the surgical

procedure constituted the practice of medicine and argued that the Dental Board's findings on the matter were not determinative.

The court in *Schoen* found that the administrative remedy provided by the Dental Board was inadequate and that the court should exercise jurisdiction over the matter. The court reasoned that if a court did not exercise its jurisdiction the Dental Board and a court could decide the issue differently, and the matter would not be resolved. The court added that it was "eminently preferable to have the legal and factual issues thrashed out in chancery court with the full participation of the Dental Board and the Medical Board."[75]

In *Teston v. Arkansas State Board of Chiropractic Examiners*[76] the Supreme Court of Arkansas addressed apparent conflicts between statutes governing the practices of chiropractic and physical therapy. In this case, the Chiropractic Board had determined that treatments provided by a licensed physical therapist that involved "spinal manipulations" constituted the practice of chiropractic and fined the physical therapist $10,000. The Physical Therapy Board, on the other hand, had determined that the treatments administered by the physical therapist were "within the scope of the practice of physical therapy."[76]

Instead of hearing all of the evidence again and rendering its own decision, the court in this case reviewed only whether the Chiropractic Board's decision was supported by substantial evidence and not arbitrary, capricious, or characterized by an abuse of discretion. The court reasoned that administrative agencies such as the Chiropractic Board are "better equipped by specialization, insight through experience, and more flexible procedures than courts, to determine and analyze legal issues affecting their agencies."[76] Ultimately, the court found that the evidence supported the Chiropractic Board's finding that the physical therapist's treatments were "spinal manipulations" that can only be performed by a licensed chiropractor.

Regulatory Agency Decisions

Regulatory bodies other than state courts and legislatures also confront these issues. The Federal Trade Commission (FTC), charged with "preventing unfair methods of competition and unfair or deceptive acts or practices in or affecting commerce,"[77] has recently issued two letters addressing the competitive impact of proposed scope of practice legislation in Texas and Florida. Both response letters address physician supervision requirements and discuss the consumer protection concerns raised by the proposed legislation.

A March 2011 FTC letter[78] provided comments on Florida House Bill 4103 of 2011, which would have rescinded physician supervision requirements for APNs and PAs adopted 5 years earlier. The FTC urged the legislature to carefully consider the impact of the supervision requirements and to avoid maintaining provisions that would limit APN and PA provision of services "more strictly than patient protection requires."[78] Despite the FTC's urging, the bill later died in a subcommittee.

In its letter the FTC noted that the bill appeared to represent a "procompetitive improvement in the law,"[78] one likely to benefit consumers. Agreeing with the Florida Department of Health's assessment of the bill, the FTC indicated that reducing the current supervision requirements—which consisted of limiting primary care physician supervision to no more than four offices and most specialty physician supervision to no more than two offices besides the primary practice location—would allow more access to health care. Additionally, the FTC indicated that by reducing barriers to innovation in health care delivery, "the Bill [would] permit health care providers greater flexibility to offer basic health care through [APN]-staffed clinics."[78]

While acknowledging that patient safety or consumer protection concerns can justify scope of practice restrictions and that particular procedures may require specialized training or heightened supervision to be safely administered, the FTC noted that the legislative history failed to

demonstrate patient harms justifying the restrictions. On the contrary, the legislative history—in addition to over 100 studies examined by legislative staff—suggested that APNs in general were safe providers of services within their scope of practice.

A May 2011 FTC letter,[79] which largely echoed the sentiment of the March 2011 letter, urged the Texas legislature to adopt either of two bills seeking to remove physician supervision and delegation requirements for APNs. Agreeing with a Texas Legislative Budget Board study and an Institute of Medicine report, the FTC noted that Texas's "site-based, delegated model of prescriptive authority limits patient access to affordable, quality health care providers, particularly in rural and professional shortage areas."[79] Despite the urging of the FTC, neither bill passed the Senate Finance Committee.

Scope of Practice Trends

Not unlike the phenomenon that occurred in response to increased health care demand from Medicare and Medicaid, many states are exploring options to respond to increased demand expected to result from the Patient Protection and Affordable Care Act. Indeed, many are heeding the call of the Institute of Medicine's 2010 *Future of Nursing Report*,[80] which called on state legislatures to examine statutes to reduce barriers to practice. While some states are currently exploring options relating to APN and PA scopes of practice, others have already taken steps to remove restrictions.[81]

Pennsylvania[80]

As a part of a comprehensive effort to address workforce shortages, eliminate disparities, and ensure cost-effective health care, Pennsylvania Governor Ed Rendell proposed "Prescription for Pennsylvania" in 2007, a proposal that was almost entirely adopted by the legislature by 2009. The proposal included recommendations to eliminate unnecessary restrictions that prevent licensed health care providers from practicing to the full extent of their education and training.

As it relates to APNs and PAs, the legislation resulting from the proposal accomplished the following:

- Removed limitations on the number of APNs and PAs a physician may supervise under a collaborative or written agreement
- Prohibited unreasonable restrictions on collaborative or written agreements
- Required establishing a complaint review and mediation process to resolve ongoing barriers to APN and PA practice
- Gave APNs additional authority to order various types of services, such as home and hospice care, and to perform various services, such as methadone treatment evaluations and disability assessments

Colorado

Governor Bill Ritter commissioned a Collaborative Scopes of Care Advisory Committee in 2008 to explore ways to remove barriers to utilization of non-physician providers such as APNs and PAs. The Committee identified as a barrier the unwillingness of primary care physicians to enter into CPAs with APNs for prescriptive authority and recommended flexibility in CPA requirements, as well as exploring policies promoting interdisciplinary team-based care.[82]

As a result, the process to obtain prescriptive authority was revised in 2010 to allow APNs to prescribe without a CPA with a physician and to increase the amount of required experience for APNs. Prescriptive authority now requires a 1,800-hour, physician-supervised preceptorship to achieve provisional prescriptive authority. APNs with provisional prescriptive authority have 5 years

to accumulate the additional required 1,800 hours of mentored experience and develop the articulated plan necessary to attain full authority.[83]

Other States

Legislatures in nine states considered legislation in 2011 from APN groups seeking complete statutory independence.[84] In North Dakota, the legislature passed a bill that removed a requirement for a physician's signature on prescriptions.[85] The Vermont legislature passed a "graduated autonomy" bill that provides for full autonomy to diagnose and treat and requires new graduate APNs to be mentored in prescribing by another prescribing APN or physician for 2 years or 2,400 hours before earning full statutory prescribing authority.[86]

Patient-Centered Medical Homes: APN and PA Roles

If expanded insurance coverage is made available through the PPACA resulting market demands will trigger health system integration, new financing arrangements, and more effective delivery models. Indeed, the United States Department of Health and Human Services' Center for Medicare and Medicaid Innovation (CMMI)—created by PPACA—has engaged states and health care providers in a number of demonstration initiatives to test new models that have the potential to meet this demand. Arkansas is participating in the CMMI Comprehensive Primary Care Initiative (CPCI), for example, which is a partnership between Medicare and state public and private insurers to provide funding to physician practices for care coordination, with the ultimate goal of transforming those practices into viable patient-centered medical homes.

Although the law includes funding for nurse-managed health clinics and nursing education at all levels—from entry-level preparation through the development of advanced practice nurses—the role of APNs and PAs in the reform process under PPACA is ill-defined. In fact, two of PPACA's recent initiatives have excluded APNs and PAs from participation: the CPCI and the Medicaid primary care provider reimbursement increase to Medicare levels. This has been the case despite previous inclusion of non-physician clinicians in the Medicare Medical Home Demonstration Project under the Tax Relief and Health Care Act of 2006.

For APNs and PAs to assume a credible and permanent role in primary care, their role in the PCMH should be more clearly defined both to the general public and to other health care professionals. Below are a couple of examples of how states have approached defining PCMH roles, the former being more open-ended and the latter being more specific.

New Mexico[87]

The New Mexico legislature passed legislation in 2011 creating a PCMH program under the state's Medicaid, State Children's Health Insurance Program and State Coverage Initiative Program Medical Home waiver by allowing home care services to be provided as a component of the medical home model. The legislation defines medical homes as "integrated care management model that emphasizes primary medical care that is continuous, comprehensive, coordinated, accessible, compassionate and culturally appropriate." It allows for assignment of recipients to a primary care provider, clinic, or practice that will serve as a medical home, and includes physicians, PAs, and APNs in its definition of primary care provider.

Kansas[88]

The Kansas legislature passed legislation in 2008 defining a PCMH as "a health care delivery model in which a patient establishes an ongoing relationship with a physician or other personal care provider in a physician-directed team, to provide comprehensive, accessible and continuous evidence-based primary and preventive care, and to coordinate the patient's health care needs across the health care system in order to improve quality and health outcomes in a cost effective manner."

Considerations for Change

The principal policy levers available to governments to shape the health care workforce include education, occupational regulation (licensure), health care financing, and organization (delivery model). The effective use of these policy levers is underpinned by the availability of quality information that enables policymakers to evaluate the basis of and justification for decisions and priorities.

Protection of the public is paramount when legislative or regulatory bodies consider changing scope of practice. Potential for patient harm, however, is difficult to prove or disprove as it relates to more relaxed scope of practice for APNs and PAs in Arkansas, especially given the current lack of independent practice. A strong basis for statutory or regulatory changes can be shown, though, if proponents focus on the history and evolution of the profession and its practice, the education and training and accompanying accreditation standards and certifications, the clinical evidence and expertise, and the regulatory environment.

APN and PA Reimbursement

The federal government, state legislatures, licensing boards, and private payers all determine the rate at which APNs and PAs are reimbursed.[89] The federal government controls its reimbursement rate through Medicare and Medicaid regulations, which either directly value APNs and PAs lower than physicians, or allow such valuation. Many states follow federal standards when implementing reimbursement procedures,[90] although some states have enacted legislation that specifically addresses either the rate of reimbursement or procedures for reimbursement.[91] Ultimately, there are no universal approaches with the treatment of different provider types and different situations having significant variation.

History of Health Care Professions and Reimbursement

To understand how and why reimbursement laws and practices for APNs and PAs exist as they are today, the history of these professions and their relationships with physicians must be understood. In general, physicians have been a more formalized profession longer than APNs and PAs, so physicians' educational, training, licensure, and reimbursement systems are older and more mature than those for APNs and PAs. Relationships between a physician and an APN or PA are usually considered collaborative, although physicians are almost always legally required to supervise these individuals. Few laws delineate what that supervision means, leaving the actual relationships very individual and unique.

In the United States, physicians formalized their education, training, licensing, and reimbursement structures much earlier than nurses. The first American medical school, University of Pennsylvania's Perelman School of Medicine, opened in 1765. The American Medical Association was formed in 1847 and established the Committee on Medical Education that same year. The Council on Medical Education was formed in 1904 to formalize education and residency standards. After the first educational standards for medical schools were published in 1905, standardized approval of residency programs began in 1927.[92] In contrast, the first complete nursing school did not open until 1909, at the University of Minnesota and the first PA school graduated the first class of PAs in 1967 from Duke University.[93] Dr. Eugene A. Stead, Jr. founded the Duke program with the idea that that PAs would help provide expanded access for health care consumers.[94]

Although the education, training, and licensing systems for APNs and PAs are now well-established, the reimbursement system has lagged in its development. Diverse state laws began to emerge before any federal legislation was put into place, creating a mishmash of laws throughout the country. The

Rural Health Clinic Services Act authorized the first Medicare coverage of services provided by PAs in 1977.[95] However, today there is not consistent language to refer to APNs, who are usually classified by their nursing specialty (e.g., certified nurse-midwife, certified nurse anesthetist) although exact terminology, educational requirements, and training requirements vary from state to state. These issues seem to have created confusion among insurance companies and individuals.

Relationship between Scope of Practice and Reimbursement

There is very little direct legal relationship between scope of practice and reimbursement. Other than some Medicare regulation (see below), there is little in most legislation, rules, or regulations regarding scope of practice that establishes reimbursement levels for APNs or PAs in relationship to physicians providing similar evaluations and procedures.

Historically, APNs and PAs were incorporated into the workforce to supplement existing physician manpower. Based upon access barriers, established clinical protocols, and primary care physician shortages, both APNs and PAs have been utilized in the primary care setting—both incorporated within a physician-led practice to expand capacity and independent of physician practices to enhance accessibility. APNs and PAs have also been integrated into the specialist practice providing both direct support to the specialist (e.g., surgical assistant) and indirect support (e.g., clinic follow-up and hospital rounds).

As educational criteria were strengthened and licensing boards established criteria for certification, increasing efforts to utilize APNs and PAs have resulted in broadened roles for these licensed providers. The growing challenge of underserved areas combined with studies (summarized below) suggesting adequate quality and satisfaction for care received by non-physician primary care providers have led to the call for more autonomous practice. To date, public and private payers have used independent reimbursement to achieve access in underserved areas and expand capacity of existing clinical sites; however, reimbursement rates are frequently at a discount for the same services provided by physicians. This differential valuation of services provided has been attributed to physicians' enhanced clinical and educational experience, the higher educational investment costs, and/or increased capability to identify and manage complex or rare conditions.[96]

Scope of practice and reimbursement procedures are undoubtedly different issues; however, the two become inextricably linked when implemented in the field. Because APNs are frequently reimbursed at a lower rate than physicians, they have a greater incentive to deliver care and bill through a physician rather than practicing independently. Collaborative practice agreements through which APNs are required to engage with physicians for quality assurance have frequently been cited as a further restriction to optimal use of ANPs in addressing barriers to clinical access. Opponents to autonomous ANP clinical care frequently cite lack of experience, quality concerns, and consumer expectations for comprehensive assessment, diagnosis, and treatment, and referral when needed. PAs are required to practice with their supervising physician and are frequently restricted under the licensed authority and malpractice coverage of their supervising physician, thus avoiding many of the issues related above.

Current Reimbursement Practices

When it comes to APNs and PAs, the federal government has not set a specific reimbursement standard required of all states, government payers, and private payers. Reimbursement practices are driven more by rules, regulations, and insurance companies' individual decisions rather than legal parameters. Currently, neither the federal government nor most state governments reimburse APNs or PAs at the full value of the same services rendered by a physician. APNs and PAs are typically reimbursed at 85 percent or less of the Medicare Physician Fee Schedule. This creates an incentive for APNs and PAs to practice under the supervision of physicians and bill under physicians, who are

allowed to be fully reimbursed, rather than to practice alone and receive lower reimbursements for their services.

Medicare

Medicare is the U.S. government-administered health insurance plan that covers approximately 48.7 million American seniors, disabled people, and people with chronic kidney failure.[97] The Medicare Claims Processing Manual mandates how various types of health care professionals are reimbursed for services by Medicare. The reimbursement structure is different for APNs and PAs. For example, while some APNs may be reimbursed directly, Medicare does not allow direct reimbursement for PAs,[98] unless they meet the criteria for limited exceptions.

Requirements for PAs

For PAs, "Medicare rules require that physicians maintain medical oversight of all patients and that they demonstrate ongoing involvement in patient care.... Medicare also requires that the PA and the physician have a common employer, meaning both must be employed by the same practice, group, hospital or corporate entity."[99] Most PAs are reimbursed at 85 percent of Medicare's physician fee scale for most services,[93] but Medicare generally does not directly reimburse PAs for their services.[100] Therefore, when a hospital is a PA's employer or contractor, the hospital must bill the program for the PA's professional services furnished to its patients.[100]

However, one Medicare billing provision, commonly called the "incident to" provision, allows reimbursement for services delivered by PAs. Effectively, utilizing the physician as the diagnosing and responsible party for establishment of the treatment plan, the PA is reimbursed at 100 percent for execution of the plan under the following conditions:

- The physician must have personally treated the patient on his or her initial visit for the particular medical problem and established the diagnosis and treatment plan. The physician must also diagnose and establish a treatment plan for any new medical conditions that may arise.
- The physician must be within the suite of offices when the PA renders the service. "Incident to" billing only applies in an office or clinic.
- The service must be within the PA's scope of practice in accordance with state law.

If the "incident to" criteria are not met, the PA may still perform and be paid for the service; however, the PA's services must be billed to Medicare under the PA's own number for reimbursement at 85 percent of the physician fee schedule. Payment for the PAs services must go to the PA's employer, not the PA himself. Additionally, there must be subsequent services performed by the physician of a frequency that reflects his or her continuing and active participation in patient management and course of treatment.

There are only a few other exceptions to the general 85 percent rule—for PAs administering outpatient mental health treatment, assisting in surgery, and services performed in a hospital.[100] Mental health treatment reimbursement is paid out at the full 85 percent of the physician's fee rate.[100] For services performed in a hospital, carriers must limit the payment to 75 percent of the lesser of the physician fee schedule amount and the actual charge for the service.[100] Medicare allows for full reimbursement for any PA service if the physician personally treats and diagnoses the patient with each new medical condition and the physician is physically on site when subsequent treatment is rendered by a PA.[99]

Requirements for APNs

For many types of APNs, including certified nurse-midwives (CNMs), nurse practitioners (NPs, also sometimes known as advanced nurse practitioners, or ANPs), certified nurse specialists (CNSs) and

certified nurse anesthetists (CRNAs), reimbursement rates are higher and reimbursement practices are more favorable than those for PAs. "As part of the Balanced Budget Act of 1997, the Primary Care Health Practitioner Incentive Act removed practice and setting restrictions for APNs allowing for direct Medicare reimbursement at 85 percent of physician reimbursement rates."[101] Many of these nurses are now reimbursed at rates greater than 85 percent and many may bill and receive payment directly, unlike PAs, but rates and practices differ for various types of APNs.

Medicare defines CNMs as registered nurses authorized to practice in their states who (1) have successfully completed a course of study and clinical experience for nurse-midwives that is accredited by a body approved by the U.S. Department of Education and (2) are certified by the American College of Nurse-Midwives or the American College of Nurse-Midwives Certification Council.[102] CNMs are reimbursed at 100 percent of the physician fee scale for the allowable scope of practice under state law. CNMs also may bill directly and receive payment directly, rather than through a physician or health care facility. Unlike other APNs, nurse-midwives need not be under the direction of a physician to qualify for reimbursement, unless required by state law.[103]

Nurse practitioners and clinical nurse specialists are considered advanced practice nurses.[104] For purposes of Medicare, an NP is a nurse who is certified as such by a recognized national certifying body, and possesses a master's degree in nursing or a doctor of nursing practice (DNP) degree.[105] A CNS must "(1) be a registered nurse who is currently licensed to practice in the State where he or she practices and be authorized to perform the services of a clinical nurse specialist in accordance with State law; (2) have a master's degree in a defined clinical area of nursing from an accredited educational institution or a Doctor of Nursing Practice (DNP) degree; and (3) be certified as a clinical nurse specialist by a national certifying body that is approved by the Secretary [of the U.S. Department of Health and Human Services]."[106] NPs and CNSs may bill directly and be directly reimbursed for covered services at 85 percent of the Medicare Physician Fee Schedule.[107] However, to qualify for reimbursement, the NP or CNS must have been working under the supervision of a physician.[108]

A "CRNA is a registered nurse who is licensed by the state in which the nurse practices and who is currently certified by the Council on Certification of Nurse Anesthetists or the Council on Recertification of Nurse Anesthetists; or has graduated within the past 18 months from a nurse anesthesia program that meets the standards of the Council of Accreditation of Nurse Anesthesia Educational Programs and is awaiting initial certification."[100]

Anesthesia services rendered by CRNAs are paid at the lesser of the actual charge, the physician fee schedule or the CRNA fee schedule, which was implemented by section 9320 of the 1986 Omnibus Budget Reconciliation Act.[100] CRNAs may bill Medicare directly for their services or have payment made to an employer or an entity (e.g., a hospital or physician) under which they have a contract.[100]

Medicaid and TRICARE

Medicaid and TRICARE have similar requirements to Medicare for non-physician reimbursement. As of January 2010, all 50 states and DC covered PAs' services under Medicaid at a full or slightly lower reimbursement rate of that provided to physicians.[99] In many states, reimbursement rates are between 80 and 85 percent. Under TRICARE, reimbursement for PAs is generally 85 percent of the rate for comparable service rendered by a physician.[99]

Arkansas

In Arkansas, the legal requirements for APNs and PAs to practice are different than those required federally. In terms of scope of practice and reimbursement, the only legal necessity for APNs is that they must have collaborative practice agreement in place to prescribe medication; they may do and bill for everything else within their scope of practice independently. PAs may not practice outside

the scope of practice as delineated by the Medical Practices Act. APNs are legally allowed to practice and be paid independently from physicians, and they carry their own malpractice insurance. The only legal requirement is a collaborative practice agreement with a physician, which allows the APN to prescribe medication. PAs, however, cannot practice independently; they must be supervised by a physician or health care facility, although that supervision can occur in many different ways. PAs are also included under the supervising physician's medical malpractice insurance. The difference in PAs' scope of practice may be because in Arkansas, as with most states, the laws and practices affecting APNs and PAs are "chasing" those of physicians. PAs may be less involved because there have historically been many fewer PAs than physicians, and a relationship with physician is legally required for a PA to practice at all. Regardless of the reasoning behind the rules, there are significant barriers to independent practice for both APNs and PAs.

Although there is no state law preventing any public or private payer from reimbursing APNs or PAs directly or independently from physicians, they are usually paid at a discounted rate compared with physicians for the same services and are often not paid independently. Although payers typically have a provider code to indicate an APN has performed a service, it usually goes unused for reimbursement purposes restricting thorough examination into the use and/or billing practices of APNs and/or PAs. Claims data suggest that for both APNs and PAs most claims are filed under the physicians' billing codes, so information is limited on services that are being performed by APNs and PAs within physician practices.

In 2010, Arkansas Medicaid reimbursed over 90 individual APNs or group APN practices in 29 counties, with an average reimbursement amount of less than $10,000 per practice.[109] Only four groups and one individual APN were reimbursed more than $50,000, and only 16 of these providers had more than 100 patients.[109]

Other States

Few states have developed their own legislative guidance for reimbursement of APNs or PAs. Rather, most states seem to rely on medical association boards or follow the federal government's lead, implementing its Medicare and Medicaid systems. Below are the states that currently have legislation on the books.

- **Florida:** As of 2010, Florida nurse practitioners cannot be reimbursed by HMOs.[110] The author defines nurse practitioners as "registered nurses with advanced training in preventing, diagnosing, and treating illness."[110]
- **Michigan:** Michigan's statute evidences a need-based reimbursement policy, by mandating reimbursement in rural areas and areas with few health professionals. Under its statute, a physician assistant who acts within the scope of practice must be reimbursed if a physician was present on the premises while services were performed and the physician's assistant performed the services in any of the following: (a) county with a population of 25,000 or less; (b) a certified rural health clinic; or (c) a health professional shortage area.[111]
- **Nevada:** A Nevada reimbursement statute covers registered nurses rendering emergency services. The statute allows—but does not mandate—direct reimbursement under the state Medicaid plan for "any registered nurse who is authorized . . . to perform additional acts in an emergency or under other special conditions as prescribed by the State Board of Nursing . . . if another provider of health care would be reimbursed for providing those same services."[112]
- **New Mexico:** New Mexico appears to follow the federal Medicare scheme. The state requires recognition of clinical nurse specialists as mid-level providers for Medicaid purposes so long as the services provided are reimbursable according the federal act.[113]

- **Tennessee:** Tennessee caps the amount of reimbursement from Medicaid funds at 60 percent of the reasonable local fee charged by licensed physicians.[114]
- **Vermont:** Vermont delegates the duty of creating a fee schedule to the secretary of the agency of human services.[115] However, the statute recognizes "reasonable cost differences between services provided by physicians and those provided by physician assistants."[116] This may indicate a policy toward less than full reimbursement for non-physicians.

Private Payers

The federal government does not have authority to direct reimbursement rates of private insurance companies except through federally administered programs. Private companies are free to establish independent rate structures subject to state standards or requirements to follow federal guidelines.

An example of a private insurance company that reimburses APNs is AETNA. AETNA's reimbursement policy is consistent with the Centers for Medicare and Medicaid Services payment policy. AETNA pays mid-level practitioners—i.e. NPs, PAs, CNMs, and RNs—at 85 percent of the contracted rates for covered professional services. This policy applies in all states except Alaska, Kansas, Maine, and Missouri.[117] The policy doesn't apply to CRNAs, behavioral health practitioners, and some other health care professionals.

Future Considerations

For private payers that do not currently reimburse APNs, some authorities suggest offering "'carrots' or 'sticks' that would facilitate third party payers to reimburse APRNs for their clinical services. Reimbursement for APRN [APN] clinical services also would help to provide care that has so far been unmet."[110] Studies suggest no significant difference in the quality of care rendered by physicians versus APNs and PAs with a potential for financial savings. One example is the University of Mississippi's TelEmergency program. In the program, NPs use a teleconference system to collaborate with consulting physicians to provide emergency care to patients in rural Mississippi. TelEmergency has treated over 150,000 since 2003. About half of the patients are treated independently by NPs and half are evaluated collaboratively.[118]

The outcomes of this program have been very positive for patient satisfaction, cost-effectiveness, and user satisfaction.[119] Using NPs in place of on-site physicians has resulted in a 25 percent reduction in staffing costs for hospitals even in light of a 20 percent increase in local hospital admissions. Patients have reported high satisfaction; 94 percent of the patients surveyed reported being comfortable or very comfortable with their care, and 87 percent said the NP's care was as good as or better than care from a doctor alone. Administrator satisfaction was also very high; 100 percent of the hospital administrators surveyed have reported that the level of care rendered was equal to or better than their prior staffing solution.[118]

There is a lack of federal guidance in the form of laws, rules or regulations, and state laws and regulations regarding reimbursement are virtually nonexistent across the United States. The current reimbursement practices of private payers generally seems to follow that of Medicare and Medicaid, which reimburse APNs and PAs at lower rates than physicians for the same services provided and procedures performed. This practice of differential reimbursement of physicians, APNs and PAs seems to be based not on measured quality of care but on perceived differences in value between physician and non-physician providers based upon educational or clinical experience.

Effectiveness

Available evidence consistently supports the effectiveness of the delivery of a variety of primary care and preventive services by advanced nurse practitioners and physician assistants.[120,121] The literature includes studies describing services for which APN care achieves equivalent patient outcomes when compared to care provided by MDs. Studies have examined APNs in a variety of roles, including providing first contact and ongoing care, urgent care, and care of chronic diseases. For the most part, available studies do not compare APNs to PAs; studies examine each clinician independently.

Limitations

Many studies have been conducted in settings in which APNs do not practice completely independently from physicians. In these instances, APNs may be acting as substitutes for MDs or may be working in a role that supplements the work of the primary care doctor.

Studies on clinical outcomes generally have not been able to control fully for differences in the complexity of patients. When billing codes are used to compare outcomes, the imprecision of billing codes leaves open the question of whether the same service is being provided.[122]

Physicians may see sicker patients and may be better prepared to diagnose and treat patients with severe illness of an acute, chronic, or recurrent nature. In the year 2000, for example, 84 percent of office-based services billed for Medicare beneficiaries by APNs and 86 percent of these services billed by PAs were of low complexity, compared with 76 percent of the services provided by primary care physicians.[122]

Most available studies comparing patients who had physician care to those with APN care assessed only relatively short-term outcomes (6 months or less), although one 2003 study found no differences in a select group of outcomes at 2-year follow-up.[123]

There are several other limitations in the available evidence. Many studies have focused only on patient satisfaction. Studies regarding PAs are scarce and generally occurred prior to 1980. PAs practice under state medical practice acts and as such have a statutorily defined relationship with a supervising physician; thus, controlled experiments concerning scope of practice are less frequent than for other non-physician primary care providers such as APNs. In one recent review, only nine studies of PA quality had sufficient evidence to be included.

Heterogeneity of studies available and the variety of measured outcomes and settings limits the opportunity for data synthesis and conclusions related to specific outcomes.

In addition to patient outcomes, efficiency of care delivery should be included in any discussion of effectiveness. Some studies that have addressed issues related to efficiency have found that nurses tend to order more tests and other services than physicians.[124,125,82] Thus, equivalent outcomes may have been achieved at greater downstream cost, patient inconvenience, and risks related to testing.

Safety

Safety has not been the primary focus of most published reports, and there is an important need to study the safety of APNs providing services in a variety of settings, particularly in settings in which there is not physician involvement. PAs generally work under the direct supervision of physicians.

The question of whether the difference in education and training among physicians and non-physician providers may influence patient safety has not been sufficiently addressed. The average

primary care physician has 4 years of medical school and a minimum of 3 years residency, while APNs are usually masters prepared, often with few years of practice experience as registered nurses.

PA programs have included certificate, associate degree, and master's level programs. The level of training required for APNs and PAs is not specified in most of the available studies and therefore limits the ability to generalize the outcomes to all APNs or PAs.[121] There is evidence that APNs experience a low rate of malpractice claims and adverse regulatory actions as compared to MDs and DOs, but this is a very limited and indirect measure of safety.[123]

Additional well-controlled trials that include long-term outcomes will be required to answer the question about the general effectiveness and safety of PA- and APN-provided primary care, especially where APNs practice independently of physicians.

Conclusions from Meta-analyses

A systematic review by RP Newhouse in *Nursing Economics* supports a high level of evidence that APRNs provide safe, effective, quality care to a number of specific populations in a variety of settings. He concludes that APRNs, in partnership with physicians and other providers, have a significant role in the promotion of health. American health care professionals will need to move forward with evidence-based and more collaborative models of care delivery to promote national unified health goals.[120]

The findings of M Laurant at the Cochrane Collaboration suggest that appropriately trained nurses can produce as high quality of care as primary care doctors and achieve as good health outcomes for patients. However, this conclusion should be viewed with caution given that only one study was powered to assess equivalence of care, many studies had methodological limitations, and patient follow-up was generally 12 months or less. While doctor–nurse substitution has the potential to reduce doctors' workload and direct health care costs, achieving such reductions depends on the particular context of care. Doctors' workload may remain unchanged either because nurses are deployed to meet previously unmet patient need or because nurses generate demand for care where previously there was none. Savings in cost depend on the magnitude of the salary differential between doctors and nurses, and may be offset by the lower productivity of nurses compared with doctors.[124]

According to Horrocks (*British Medical Journal*), patients are at least as satisfied with care at the point of first contact with nurse practitioners as they are with that from doctors. He concludes that although assessments of the quality of care and short-term health outcomes seem to be equivalent to that of doctors, further research is needed to confirm that nurse practitioner care is safe in terms of detecting rare but important health problems.[125]

Conclusions from Reports

Meta-analyses and evidence reviews of numerous pilots, controlled studies, and research projects, published by Dower and O'Neil for the Robert Wood Johnson Foundation, have found the quality of primary care—across the field's range of services—delivered by APNs practicing autonomously, to be at least as high as that of physicians. A large evidence review found that advance practice nurses such as APNs working as members of interdisciplinary health care teams deliver quality health care comparable to physicians in a variety of settings while receiving high patient satisfaction ratings.[126]

The Institute of Medicine reports that nurses should practice to the full extent of their education and training. Nurses should achieve higher levels of education and training through an improved education system that promotes seamless academic progression. Nurses should be full partners, with physicians and other health professionals, in redesigning health care in the United States.[80]

The evidence-based review of the Colorado Health Institute found that APNs working as members of interdisciplinary health care teams deliver quality health care comparable to physicians in a variety of settings while receiving high patient satisfaction ratings. Consultation and referral to other appropriate providers consistent with training and scope of practice is a necessary component of primary health care to be exercised by all primary care providers. The quality of care in the studies reviewed was found to be comparable among PAs, APNs, and physicians, particularly with regard to diabetic care.[82]

A summary of services for which APN primary care has been shown to have equivalent outcomes compared with physician care includes the following.[120]

- **Primary care outpatient settings:** Glucose control, lipid control, blood pressure, patient satisfaction, patient compliance, patient self-assessment of perceived health status, functional status, morbidity, mortality, consultation time, provision of screening, assessment, and counseling.
- **Settings other than primary care outpatient settings:** Emergency department or urgent care visits, hospitalization, length of hospital stay, duration of mechanical ventilation, mortality, primary HIV care.

Section IV: Conclusion

The research and observations in this report address important policy-relevant questions faced by the Arkansas health care workforce. The analyses in the report are necessary to characterize the health care workforce supply as well as the demand placed on the state's health care system. Results presented will serve as a guide for policymakers as the system undergoes transformation. The report's literature review provides a framework within which to consider the empirical data about the state's health care workforce. The various sections of the report explore the following:

- Arkansas's current experiences and expected experience of primary care clinician supply shortages relative to demand via micro-simulation modeling
- Arkansas's current experiences of specialty physician supply shortages relative to raw population-to-specialty physician ratios
- Comparison of primary care clinician supply and demand data from the micro-simulation model with national access benchmarks
- Geographic access barriers to primary and specialty care in Arkansas and where they exist
- Extent of physician participation in Medicare and Medicaid
- Office manager and physician survey information about practice patterns
- Focus group information from rural consumers about access to care
- Available literature regarding APN and PA education, scope of practice, reimbursement, and safety and effectiveness of services

Current primary care clinician supply in the state approaches overall demand, but the greater problem is maldistribution of the primary care workforce. A comparison of primary care physician and clinician supply and demand results from the micro-simulation model with the raw population-to-physician ratios based on national benchmarks showed shortages in rural areas and potential oversupply in some urban areas. However, the micro-simulation model results—which reflect underlying population characteristics, disease burden, and risk factors—suggest shortage and potential oversupply in greater magnitudes than the raw ratios suggest.

Mapping of drive-times for Arkansans to cities in which there is adequate access to primary and specialty care shows that some Arkansans—especially those in mountainous and Delta regions—face geographic barriers to access care. Focus group participants indicated that lengthy drives for primary care were commonplace among rural patients. Results also showed that the ability of physicians to restrict care to privately insured patients, especially in rural counties, is relatively limited, and therefore financial access for patients with public payer sources does not currently appear to be a barrier. Empiric data and survey information additionally suggest that patients with public sources of payment do not appear to face access barriers relative to those with private sources of payment.

Demand is expected to increase if private sector coverage is expanded through Arkansas's federally facilitated exchange partnership and if low-income adults become eligible for Medicaid through ACA implementation. However, age and disease burden in Arkansas will be the primary cause of increased stress on the health care workforce in areas where shortages exist and potentially in areas where supply is adequate. The expansion under ACA will exacerbate shortages because the uninsured are predominantly in areas of the state already experiencing shortages.

This report provides valuable empirical data that spotlight shortage areas, complementary survey and focus group information, and a framework for discussion through literature review that, when combined, will help focus policies on addressing maldistribution and guide policymakers to solutions that work for Arkansans.

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