AN ARIZONA POLICY PRIMER

Health Workforce, Healthy Economy

ARIZONA HEALTH FUTURES

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

Health Workforce, Healthy Economy

A Collaborative Project of St. Luke's Health Initiatives, City of Phoenix, Phoenix Workforce Connection and the Maricopa County Department of Public Health

Arizona has wrestled with creating a highly paid workforce for decades. Even when the economy was strong and housing starts were rising, policymakers, educators, business leaders and engaged Arizonans sought ways to create jobs that would drive future economic growth.

The Great Recession heightened and sharpened the focus on developing high-paying jobs in growing sectors. Increasingly, policymakers and business leaders began focusing on the healthcare sector as a key area for potential economic growth.

While Arizona was slowly recovering from the severe economic downturn, substantial changes in healthcare were emerging. The restoration and expansion of Medicaid coverage and the implementation of the Patient Protection and Affordable Care Act meant that more people were likely to be insured, potentially increasing the demand for healthcare in the future. Simultaneously, changes in healthcare delivery were becoming apparent (such as increased emphasis on primary care and integrated care) that have the potential to shift future health professional and training needs. These changes, coupled with a long-standing concern about access to care in rural areas and increased demand for healthcare due to an aging population, resulted in heightened emphasis on access to care, including how to address existing and future healthcare workforce needs.

St. Luke's Health Initiatives

City of Phoenix

Phoenix Workforce Connection

Maricopa County Department of Public Health

What is the Linchpin Holding Together the Dual Challenges of Economic Development and Access to Care?

Workforce.

Growing, training and retaining needed healthcare workers are promising strategies for stimulating and stabilizing economic development. Identifying needed healthcare workers – both in terms of types of needed health professionals and gaps in the geographic distribution of health professionals – is an important precursor to developing strategies to effectively meet our state's future workforce and economic development needs.

(There is) a unique opportunity to simultaneously improve access to healthcare while growing high paying jobs in the process.

This report is an important first step to identifying those needs. It provides a glimpse of what we know – and do not know – about existing gaps in our healthcare workforce. Gathering data from a variety of sources, this report provides information on the number of health professionals in a variety of areas, including ratios of various health professionals to the population at large. Regional and geographic data is included where available.

In many instances, more information will be needed to further refine our understanding of our state's health workforce needs. Additional data collection may be required. We may also need to refine our understanding of how future healthcare workforce needs may be different than the demands that exist today. Finally, states and localities may have to identify and refine strategies to address our workforce needs. This may include: 1) ensuring that an adequate number of training opportunities exist for needed health professionals; 2) incentivizing health professionals to practice in underserved communities or professions; and 3) leveraging funding to address shortage areas.

This report aims to advance our understanding of our state's health workforce needs. By doing so, we hope that Arizonans recognize the unique opportunity to simultaneously improve access to healthcare while growing high-paying jobs in the process.

Methodology and Report Limitations

Attempting to define and count the entire healthcare workforce can be daunting. The healthcare workforce is broad in scope. It includes much more than doctors, nurses and dentists. For the purposes of this report, we loosely define healthcare workers as those who are licensed or certified to provide health or allied health services. There are many Arizonans employed among these various health professions. However, information on those professionals is extremely limited. Appendix I provides the best data available on a broad section of healthcare professionals in Arizona.

This assessment specifically provides data on licensed professions. Even when looking at licensed individuals, there are no clear, undisputed figures on the number of health professionals by specialty. Additionally, challenges in collecting data are numerous, including:

- renewal cycles that can impact real-time data collection;
- licensing reciprocity with other states;
- professionals holding active licenses in more than one state;
- data not reflecting Full-Time Equivalent (FTE) information for professionals; and
- inability to identify licensees who provide direct patient care.

However, a number of surveys, assessments and reporting have been completed that provide insight and obtainable data on Arizona's healthcare workforce. This summary pulls together those figures to provide the best available information. It is organized by profession. Recognizing that there is often conflicting data, all information is sourced. When data permits, information is also presented to highlight workforce in both rural and urban settings statewide. Data indicating shortages can potentially identify a need to explore increasing the workforce, or even to redistribute the existing workforce.

When available, the most recent administrative data on licensees is also provided with a focus on licensees practicing in the state. However, there is one critical caveat that must be kept in mind when reviewing licensing data. An active license does not necessarily mean that the licensee is practicing directly in healthcare delivery or even practicing at all. As with all data presented, it is designed to provide a best available estimate of different specialties.

Bureau of Labor Statistics (BLS) data is also presented. This data measures employed personnel by surveying establishments covered by employment insurance. As a result, licensing data can, and often does, conflict with BLS data. Both are presented to ensure a more complete picture.

When available, national provider-to-population ratios are presented to give national context. However, as with any national comparison, it does not tell the entire story in that it cannot account for the nuances and differences among states in delivery systems and population health needs.

Finally, it is also important to highlight that this summary does not, and cannot, encompass all of the work currently being done by stakeholders, and specifically the state universities, around healthcare workforce and access.

We look at this report as an important first step to understanding Arizona's health workforce needs.

Overview of Arizona's Health Workforce Needs

In 2004, the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), declared Arizona's healthcare workforce 49th among states in per capita employment.[1] While a majority of states report shortages, there are unique Arizona characteristics that individualize and heighten the challenge of recruiting and retaining a robust healthcare workforce.

Arizona's Unique Circumstances

According to the Arizona Department of Health Services, Arizona needs a total of 442 primary care professionals, 441 dentists and 204 psychiatrists to eliminate Health Professional Shortage Area designations.

Who we are as a state – our erratic spurts of growth and unique population characteristics – creates particular challenges for recruiting and retaining an adequate healthcare workforce.

Arizona's population growth has been substantial over the years. While the explosive expansion of just a few years ago is no longer a given, the U.S. Census reports that Arizona's population increased at a rate of 3.7 percent between April 2010 and July 2013.[2] Population projections estimate the state's total population will increase by 2.3 million by 2030.[3] That population includes a significant and growing proportion of older adults. With an estimated 15.4 percent of Arizonans 65 years or older (higher than the national average[4]), the unique healthcare challenges of a "graying" population are acute.

The impact of aging Baby Boomers is not only a concern for such patients, but also for healthcare professionals. One assessment estimated that 51 percent of Arizona's practicing physicians are 50 years or older.[5] As with many healthcare challenges, this potentially could have a much greater impact in rural communities because a larger proportion of this group practices in Arizona's rural counties.[6]

Arizona's geography and population distribution also create challenges. While most Arizonans live in urban areas, more than half of Arizona's geography is designated by the federal government as frontier or remote. Statewide, there are 56.3 persons per square mile, compared with a national average of 87.4.[7] Two counties – Maricopa and Pima – are home to large urban areas and have the greatest concentration of both population and healthcare professionals. Rural counties tend to be older, less healthy and poorer.[8]

Arizona is also home to a large American Indian population, which has higher incidences of diabetes, heart disease and obesity.[9] Finally, Arizona shares a border with Mexico, and border communities have some of the "highest rates of poverty, unemployment, uninsured people, and lack of access to health care in the nation."[10]

National and State Challenges

In addition to demographic challenges, expansion of health coverage is likely to result in increased demand for healthcare services, potentially straining already existing workforce shortages. While it is unclear what specific effect the Patient Protection and Affordable Care Act will have on Arizona's healthcare system, recent history suggests it may result in increased demand for healthcare. Massachusetts, which implemented expanded statewide healthcare coverage in 2006, experienced a 31 percent increase in patient care at community health centers in the years following implementation (specifically calendar years 2005 to 2009).[11] As more Arizonans gain access to covered medical care, it stands to reason the demands on the professionals who provide that care will continue to increase. Further, as more individuals become covered, it may mean that different professionals are needed to deliver that care.

In Arizona, the restoration and expansion of Medicaid also plays into both supply and demand concerns for healthcare. As with the Patient Protection and Affordable Care Act, it is likely that there will be more Arizonans who will seek care from healthcare professionals as coverage increases.

Adding to these challenges, many regions of our state are defined as Medically Underserved Areas (AzMUAs) or Health Professional Shortage Areas (HPSAs).

A region is deemed medically underserved based on criteria such as the availability of services based on the population to primary care ratio; the area's geographic accessibility to healthcare services; and the percentage of the area's population that is at or below a designated federal poverty level.[12] Looking at the designation of medically unserved areas in Arizona (see Appendix II), the extent of the problem is clear: AzMUAs encompass most of Arizona's geographic area, including the entirety of Apache, Cochise, Graham, Greenlee, La Paz, Navajo and Yuma counties. There are also AzMUAs in every county, including in the urban area of Maricopa County.

Of particular concern as the state population grows is access to primary care. As with the AzMUA designation, much of the state is currently designated as a Primary Care Health Professional Shortage Area (see Appendix III). "Primary Care HPSA designations refer to a shortage of non-federal doctors of allopathic or osteopathic medicine providing direct care in the fields of family practice, general practice, pediatrics, internal medicine (outpatient based) and obstetrics gynecology."[13] Further, "Primary medical care professionals in contiguous areas are over-utilized, excessively distant, or inaccessible to the population of the area under consideration."[14] The Primary Care HPSA designation utilizes the population-to-primary care physician ratio. To be designated as a HPSA, the ratio must be at least 3,500:1 for a determined geographic designation; 3,000:1 for a geographic designation with unusually high needs such as a poverty rate of 20 percent or greater; or 3,000:1 for a determined population group designation.[15] All of Apache, Cochise, Graham, Greenlee, La Paz and Yuma counties are designated as Primary Care HPSAs. Additionally, large areas of Coconino, Gila, Mohave, Navajo and Pima counties are designated as Primary Care HPSAs. Just like the AzMUA designation, there are also urban areas of Maricopa County that are defined as Primary Care HPSAs. According to the Arizona Department of Health Services, "As of June, 2014, there are a total of 418 federally designated Health Professional Shortage Areas (HPSAs). Arizona needs a total of 1,087 full-time providers to practice in underserved areas (442 primary care, 441 dentists, and 204 psychiatrists) to eliminate these designations."[16]

Arizona needs a total of 1,087 full-time primary care and other providers to practice in underserved areas.

Source: Arizona Department of Health Services, as of June 2014.

A Closer Look at Workforce Needs

To better understand specific workforce shortages by profession and geographic area, existing information from a variety of published sources was analyzed. Below you will find a summary of what we know (and by inference, what we don't know) about workforce needs among various health professions.

Pharmacists and Pharmacy Technicians

Data indicates the number of Arizona pharmacists is increasing. However, with the state's growing population – and specifically the growing, aging population – there is still concern that the number of licensed pharmacists will not be enough to meet demand.

As each section will demonstrate, when comparing workforce data, depending on the source or point-in-time measured, statistics can vary. However, the most recent data available provides:

- Pharmacy is the third-largest health profession in the U.S.[17]
- Per the Bureau of Labor Statistics (BLS), which bases its estimates on surveying establishments covered by unemployment insurance, in 2012, Arizona had 5,260 pharmacists and 6,740 pharmacy technicians.[18]
- Per the Arizona State Board of Pharmacy, in 2011, there were 6,131 active, licensed pharmacists in Arizona, an increase of 11 percent from 2008; there also were 9,345 active, licensed pharmacy technicians in Arizona, an increase of 29 percent from 2008.[19]

Active, Licensed Pharmacists per 100,000, by County

COUNTY	2010 RATIO
Apache	18.1
Cochise	35.7
Coconino	80.2
Gila	59.7
Graham	64.7
Greenlee	0.0
La Paz	14.7
Maricopa	105.8
Mohave	60.9
Navajo	43.7
Pima	110.8
Pinal	38.6
Santa Cruz	29.5
Yavapai	73.9
Yuma	40.7

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010*. Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

While there are healthcare specialties seeing stagnation or loss, pharmacy is one specialty where growth is anticipated. One estimate projected a 23 percent growth in pharmacist positions between 2010 and 2020 with 240 anticipated annual openings in Arizona.[20] An April 2009 report from the Center for Health Information & Research at Arizona State University cited U.S. Census data from 2006 that anticipated growth in the number of pharmacists in the 10 years between 2006 and 2016.[21] However, even with this continued growth, a shortage was still considered possible.[22] Driving this concern was the issue of "the growing and aging population, growth in prescription medication use, and (the) evolving role of pharmacists with more responsibility on disease medication management and patient counseling."[23]

Data by County: Pharmacists

The most recent figures available to examine the pharmacy workforce by county are from a study using 2010 data. At that time, it was determined there were 5,933 active Arizona licensed pharmacists and 8,679 pharmacy technicians.[24]

Examining professionals-to-population ratios, the report found that in 2010, the statewide ratio of pharmacists per 100,000 population was 93.0, up from 86.0 in 2007. In that same timeframe, La Paz County had the largest percentage increase (from 4.8 to 14.7) and Pinal County saw the largest percentage decrease from (47 to 39).[25]

Greenlee County had no practicing pharmacists from 2007 through 2010.

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010.* Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

National comparative data are limited, however, the national ratio in 2008 was reported as 79.5 per 100,000, which compared to an Arizona ratio of 79.4.[26]

This statewide assessment also determined that in 2010, 93.4 percent of pharmacists and 91 percent of pharmacy technicians were located in urban areas. Inequalities between counties were most pronounced when comparing Pima County, with 111 pharmacists per 100,000 population to Greenlee County, who had no practicing pharmacists from 2007 through 2010.[27]

Additionally, 2008 survey data indicated the state's pharmacy workforce is younger, with a plurality of respondents aged 30 to 40.[28] A 2009 report surveyed pharmacists and pharmacy technicians in Maricopa County and also found pharmacists in the county tended to be younger – with 54 percent 44 years or younger.[29]

Data by County: Pharmacy Technicians

The statewide ratio for pharmacy technicians per 100,000 increased from 112 in 2007 to 135 in 2010. Additionally, all counties saw an increase in the ratio for technicians in that timeframe. Greenlee County had the smallest ratio in 2010 at 23.9 and Maricopa had the largest at 155.1.[30]

Framing the Data

Trying to frame these workforce numbers can be difficult. However, a 2009 report examining 2008 license renewal data stated, "The ratio of pharmacist to population in Arizona is higher than the national average and the predicted trend is for it to remain so. The increase may not however, represent a sufficient increase to offset increase in demand for services associated with the rapid aging of Arizona's population." This same assessment determined that the shortage of pharmacists was the most severe in rural areas.[31] Using 2008 data, this study determined the statewide ratio of pharmacists per 100,000 was 79.4 compared to a national average of 79.5.[32]

This is demonstrative of the difficulty in identifying consistent data. The ratio of pharmacists identified in this report using 2008 data was 79.4,[33] lower than the ratio of 86 pharmacists in 2007 from the 2010 workforce study.[34]

Projection data available published in 2009 estimated:

- Arizona's ratio of pharmacists to residents will continue to be higher than the national through 2020; however
- When projecting the ratio of active pharmacists per 100,000 population age 65 or older, we fall behind the national average.[35]

The shortage of pharmacists was the most severe in rural areas.

In 2008, the statewide ratio of pharmacists per 100,000 was 79.4, compared to a national average of 79.5.

Source: Johnson WG, Wilson BL, Edge M, Qiu Y, Oliver EL, Russell KM. (April 2009). *The Arizona health care workforce: nurses, pharmacists, & physician assistants*. (Prepared under contract with the Arizona Hospital and Healthcare Association.) Phoenix, AZ: Center for Health Information & Research, Arizona State University.

Nurses and Certified Nursing Assistants

Perhaps the most robust and conflicting data surrounds nursing. Up until recently, there was substantial concern about both a national and state nursing shortage, however more recent data indicate it is possible Arizona now could be experiencing a nursing surplus.

Nursing professionals include registered nurses (RNs), licensed practical nurses (LPNs) and advance practice nurses (APNs). Nurses serve in a variety of settings and in certain instances provide primary care. According to the most recent data on nursing professionals:

- Per administrative licensing data, in 2013 there were 65,213 RNs with active licenses in Arizona; 9,838 active LPNs; and 4,253 active APNs. This is a total nursing workforce of 79,304, and a 17 percent increase in the total workforce between 2008 and 2013.[36]
- According to BLS 2012 survey data, there were 45,600 RNs, 6,440 LPNs and licensed vocational nurses, 1,900 nurse practitioners and 440 nurse anesthetists.[37]

Active, Licensed RNs per 100,000, by County

COUNTY	2010 RATIO
Apache	384
Cochise	665
Coconino	1,116
Gila	713
Graham	808
Greenlee	383
La Paz	284
Maricopa	901
Mohave	737
Navajo	608
Pima	1,017
Pinal	670
Santa Cruz	293
Yavapai	991
Yuma	558

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010.* Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

The Arizona State Board of Nursing (AZBN) tracks a variety of data on the nursing workforce to assess needs and opportunities. One item is nursing program enrollment, utilized to get a sense of the "pipeline" for nursing professionals. For calendar years 2007 through 2010, there was year-to-year growth in nursing enrollment for RNs and LPNs combined. Enrollment dipped slightly in 2011, but increased again in 2012 by 1.3 percent. Since 2010, total statewide program enrollment has been at least 6,800 individuals.[38]

When examining the data more closely to compare RN to LPN enrollment, the AZBN found a slight increase in 2012 over 2011 in RN enrollments, which the Board described as "stagnant." Meanwhile, there was a 22 percent decrease in LPN enrollments between 2011 and 2012.[39] A component of this was the significant decrease in LPN program admissions those two years, resulting in the lowest enrollment since 2004.[40]

Data by County: RNs

The most recent nursing data available by county is from 2010. It is important to note that nurses can have more than one license type, so this analysis merged the data and the license which would most likely carry the highest wage was assigned to eliminate potential double-counting of licensees.[41]

In 2010 there were a total of 55,936 RNs with active Arizona licenses, 90 percent of whom were located in urban areas.[42] The total number of RNs increased by over 2,000 between 2007 and 2010, with 1,937 employed in urban areas.[43] The 2010 statewide RN to 100,000 population ratio was 872, a decrease from 874 in 2007.[44]

For the RN workforce, much of the research material provided focused on a desired RN to 100,000 population ratio of 825. This national comparative does not provide guiding ratios by nursing specialization or license type such as LPN, nurse practitioner or certified nurse anesthetist. In one Arizona-specific assessment, it was estimated the goal of 825 per 100,000

population would be met by 2017.[45] This goal was then adopted by the Arizona Hospital and Healthcare Association.[46] Of note, once adopted, the national average ratio increased to 841.[47]

The study broke the state into four geographic classifications: urban, large rural town areas, small rural town areas and isolated rural town areas. Looking at the ratio of RNs to 100,000 population in 2010 by geographic classification showed:

- Urban: 922 RNs per 100,000
- Large rural town: 689 RNs per 100,000
- Small rural town: 570 RNs per 100,000
- Isolated small rural town: 377 RNs per 100,000[48]

These ratios demonstrate the additional challenge in recruiting and retaining healthcare professionals in rural areas, which encompass the vast geographic majority of Arizona.

Coconino County had the highest ratio per 100,000 with 1,116; La Paz County had the lowest at 284. Between 2007 and 2010, Pinal County experienced the largest decrease in RN-to-population ratio, while Greenlee County experienced the largest county increase in the ratio.[49]

Data by County: LPNs

For licensed practical nurses in 2010, 88 percent of the 8,846 practiced in urban areas. From 2007 to 2010 the study found the number of LPNs decreased by 676 statewide. The ratio of LPNs per 100,000 population dropped between 2007 and 2010 to 138 from 154.[50] Further, La Paz was the only county that experienced an increase in their LPN-to-population ratio between 2007 and 2010.[51]

Data by County: APNs

Advanced practice nurses are RNs with additional training and licensure and can practice in a variety of settings. One study using 2008 renewal cycle data estimated that 92.5 percent of APNs work in direct patient care.[52]

The 2010 assessment by county examined four specific APN license types: certified registered nurse anesthetists (CRNAs); nurse practitioners (NPs); certified nurse midwives (CNMs); and clinical nurse specialists (CNSs).

Certified Registered Nurse Anesthetists: In 2010, there were 310 CRNAs statewide with active Arizona licenses. This is an increase of 50 CRNAs statewide between 2007 and 2010. The study found 85.5 percent of CRNAs were in urban areas, and the largest increase in CRNAs between 2007 and 2010 was also in urban areas at 24.4 percent.[53] In 2010, the statewide ratio for CRNAs was 4.8 per 100,000.[54]

Nurse Practitioners: In 2013, there were 3,068 NPs in the state, with the majority in urban areas.[55] 2013 survey data also indicated that many NPs are approaching retirement, with about 31 percent of survey respondents stating they were over age 55.[56] Further, the 2013 assessment looked at NPs trained in the state and found "the yearly increase in Arizona NPs is only slightly due to the production and retention of Arizona-trained NPs. The steady annual increase in number of NPs licensed in Arizona is primarily from out-of-state recruitment."[57] One potential reason for this could be that Arizona is one of only 18 states that allow NPs to practice without physician supervision.[58]

Perhaps the most robust and conflicting data surrounds nursing. Up until recently, there was substantial concern about both a national and state nursing shortage. However, more recent data indicate it is possible Arizona now could be experiencing a nursing surplus.

2010 data, which examine NPs by county, found nurse practitioners outnumbered physician assistants by more than 1,000 licensed individuals for a total of 2,957 NPs – an important comparative since both professions are critical to providing primary care, especially in rural areas.[59] Between 2007 and 2010 the NP ratio rose from 37 to 46 per 100,000 statewide. Apache County saw the largest increase in its provider ratio.[60] This compares to a 2013 provider-to-population ratio of 30 per 100,000,[61] lower than the 2010 ratio, even though 2013 data indicates there were more NPs statewide than in 2010. A 2013 assessment found Arizona's NP ratio of 30 per 100,000 to be lower than the national average of 58.[62]

It's not just the sheer volume of RNs that should be considered when determining if there is sufficient supply. It is also important to consider whether available nurses have the right level of training.

However, another assessment of 2008 renewal data on APNs and NPs determined the ratio of nurse practitioners to population was higher in Arizona than the nation, while all other APN specialty groups were below the national average.[63]

In 2013, there were five Arizona NP programs approved by the AZBN and accredited.[64]

Certified Nurse Midwives: In 2013, there were 182 CNMs with an active license and practice address in Arizona.[65] The 2013 data also indicated that retiring CNMs could be a future concern for healthcare delivery. Specifically, 70 percent of rural CNMs were age 55 or older and the ratio of CNMs is higher in rural areas. As a result, retirement of CNM professionals could have a disproportionate impact on rural communities.[66] Additionally, Arizona has no in-state CNM training programs.[67]

To examine CNM data by county, 2010 data needs to be reviewed. In 2010, there were 140 certified nurse midwives statewide, with 85 percent located in urban areas.[68] The statewide ratio was 11.1 to 100,000 women of childbearing age (15-44). There were no CNMs in the years between 2007 and 2010 in Gila, Greenlee, La Paz or Santa Cruz counties. Additionally, there were no CNMs in Cochise County 2007 through 2008 or in 2010.[69]

Clinical Nurse Specialists: In 2010, there were 122 CNSs statewide. The ratio of CNSs to 100,000 population was 1.9. The counties of Apache, Gila, Graham, Greenlee, La Paz, Santa Cruz and Yuma had no CNSs any of the four years from 2007 to 2010.[70]

Data by County: Certified Nursing Assistants

Certified Nursing Assistants (CNAs) are "persons who assist individuals with healthcare needs that are associated with daily living and provide bedside care, including basic nursing procedures, all under the supervision of an RN or LPN."[71]

In 2010, there were 24,564 CNAs statewide and 81 percent were located in urban areas. There was a 16 percent increase in the number of CNAs between 2007 and 2010.[72] The statewide ratio in 2010 was 383 CNAs per 100,000 population.[73] No national comparative ratio was found. Greenlee County had the largest population ratio increase in CNAs between 2007 and 2010 and the urban areas had lower CNA ratios than the other three geographic designations of large rural town, small rural town and isolated small rural town.[74]

Shortage or Surplus?

In 2004, HRSA stated that Arizona was 45th in the nation for nursing ratios.[75] In 2012, the AZBN published the *Arizona State Board of Nursing Summary and Analysis of Annual Reports from Arizona Nursing Education Programs Calendar Year 2012*. This summary addressed the size of the current and future RN workforce, noting a 166 percent increase in the number of graduates from RN programs between 2002 and 2012.[76] However, AZBN noted that it is not just sheer volume of RNs that should be considered when determining if there is sufficient supply. The AZBN report cited research that recommends 80 percent of RNs have a baccalaureate degree and/or the minimum ratio of bachelor-level nurses to associate-level nurses should be 60/40.[77] By either measure, in 2012 the AZBN concluded, "The AZ RN workforce may be educationally unprepared to meet future health care needs with only 32.5 percent of newly licensed nurses educated at BSN level and 54 percent of all RNs educated at the bachelor's level or higher, not necessarily in nursing."[78] Additionally, approximately 45 percent of RNs have a bachelor degree or higher specifically in nursing.[79]

The report concluded: "There is expected to be a shortage of registered nurses in the Western states, including Arizona, within the next decade. Due to the complexity of health care, the nursing workforce must be educated beyond the associate-degree level."[80]

However, while the AZBN expected a shortage as recently as 2012, in 2009 it received conflicting feedback about the supply and demand for RNs in the state. It is important to note, while data indicates a recognized increase in the number of individuals with active RN licenses, this does not necessarily translate into RNs employed directly in healthcare, or even actively engaged in the workforce.

In addition to admissions, enrollment and administrative data, the AZBN annually surveys all Arizona nurses recently licensed by exam. The survey was created in 2009 in response to national survey data that indicated new nurses were having difficulty finding employment. The Arizona report provided, "We recruited persons into the profession with promises of easy employment, job mobility and high salaries. Then the economy took an unprecedented nose-dive and suddenly we have an oversupply of novice nurses."[81] AZBN continued to survey newly licensed nurses and found:

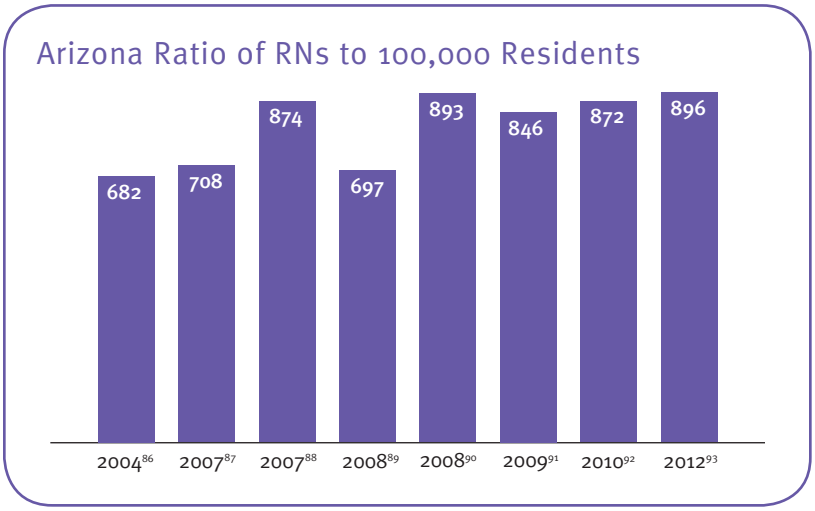
- In 2010, 21 percent of respondents were not practicing. Length of licensure was a factor, with 67 percent of non-practicing nurses licensed three months or less. The reason most cited by non-practicing nurses (85 percent) was "not enough jobs for new RN grads in the area."[82]
- In 2011, 17 percent of respondents were not practicing and 91 percent of those respondents indicated it was because of a lack of jobs.[83]
- In 2012, 21 percent of respondents were not practicing and 56 percent of those not practicing indicated it was because of a lack of jobs.[84]

After years of focus and effort to address a nursing shortage, a nursing workforce study published in December 2013 found "the predictions did not include the effects of the economic recession that began in 2007-2008," and "the 2017 target ratio of 825 registered nurses per 100,000 population was reached in 2010 and continues to increase."[85] It is worth noting, that nursing shortages have tended to dissipate during times of economic downturn and often have returned when the economy improves.

"The AZ RN workforce may be educationally unprepared to meet future health care needs with only 32.5 percent of newly licensed nurses educated at BSN level and 54 percent of all RNs educated at the bachelor's level or higher, not necessarily in nursing."

Source: Randolph, Pamela K. 2012. *Arizona State Board of Nursing Summary and Analysis of Annual Reports from Arizona Nursing Education Programs Calendar Year 2012*. Arizona State Board of Nursing.

Trying to assess the most accurate ratio is one of the primary challenges when examining RN workforce data. The chart below highlights some of the conflicting ratios reported at different times, from different sources, in just the last decade. These ratio differences can reflect the challenges previously identified with workforce data collection. For example, some may utilize data for all licensed nurses, while some may estimate ratios utilizing only estimated employed nurses. However, it is still valuable to examine the data and compare.



There seems to be an emerging belief that after years of a nursing shortage, Arizona is now dealing with a surplus, with a 2012 estimated RN to 100,000 population ratio of 896.[94] The study that identified this apparent surplus also identified possible contributors, including Arizona going from one of the most rapidly growing states in the nation to suffering a drastic decline in population growth beginning in 2008-2009.[95] The report continues, "Furthermore, the population declined in absolute terms between 2009-2010 and growth rates in subsequent years are low. Between 2007-2011 the RN workforce increased, respectively by 4.5 percent, 3.5 percent and 2.7 percent. In absolute terms the number of RNs employed in nursing jobs increased from 48,300 in 2008 to 54,100 in 2011."[96]

The study concluded that the "primary impact of the recession on the employment of RNs, including employment in health care in a nursing job, occurred in 2008," and that while Arizona is seeing a slow but steady population growth again, the RN labor force in 2012 was "one of the highest rates in recent years. The ratios of RNs to population levels exceed conventional targets for an adequate supply of RNs and first-time applications have not slowed. Taken together, these facts suggest the possibility of a surplus of RNs in the near future."[97]

The increase in the RN workforce in 2012 was the next to highest rate in five years and "a continuation of these trends predicts that a surplus of RNs could occur in the next two-three years unless the aging population combines with other factors such as increased health care coverage increase the demand for care among the members of a more slowly growing population."[98]

Allopathic (MD) and Osteopathic (DO) Physicians

This section summarizes the data available for both MDs and DOs. Where data were available regarding specialties such as primary care or obstetrics and gynecology, it is also presented. As with all segments of the healthcare workforce, concerns about physician shortages in Arizona are long-standing. There is particular concern regarding the size and reach of the primary care workforce, which includes physician assistants and nurse practitioners. Specifically:

- Per administrative licensing data, in 2013 there were 13,517 active MDs and 1,952 active DOs practicing in Arizona for a total physician workforce of 15,469.[99]
- Based on administrative licensing data, growth in the number of active, licensed DOs in Arizona has been slow. Between 2004 and 2013, the number of active, licensed DOs increased by 715 and the DO workforce saw a 58 percent growth in this same timeframe.[100]

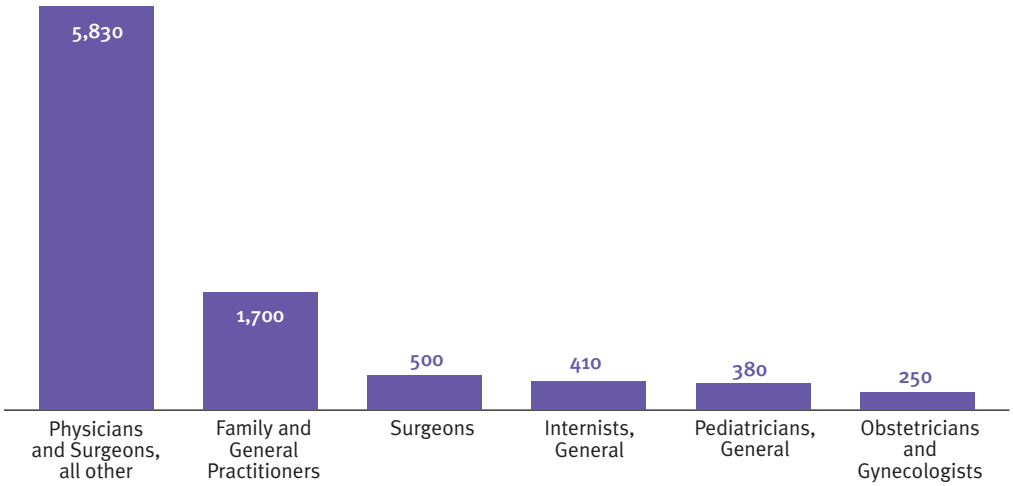
- Growth in MDs has been relatively slow and steady; however between 2008 and 2009, the number of active licensed MDs actually dropped by over 200, and then was relatively stagnant between 2009 and 2010. There has been upward growth since 2010. The number of active licensed MDs has increased by 2,730 between 2004 and 2013. This is an increase of 25 percent.[101]
- The overall physician workforce – MDs and DOs – has increased by 3,445 licensees and by 29 percent between 2004 and 2013.[102]

BLS data (employment data based on surveying establishments covered by unemployment insurance), which does not break out by MD or DO classification, provides survey data on a variety of physician specialties. This 2012 data is not meant to be inclusive of all specialties, but to provide another snapshot of the estimated coverage of physicians in Arizona.

Arizona had a ratio of 230.9 active physicians per 100,000 population, ranking the state 32nd nationally.

Source: 2013 State Physician Workforce Databook.

Physician Specialties, Estimated Number by Occupation



Source: Johnson, WG, Linan, M (March 2014). *Phoenix Healthcare Sector Partnership Inventory of Information on the Healthcare Workforce in Arizona*. College of Health Solutions. Arizona State University.

Concerns about a physician shortage in Arizona are not new. Despite the increase in the physician workforce outpacing the increase in the population in the decade of 1994-2004, in 2004, the state's physician to population ratio of 207 to 100,000 was well below the 2004 national average of 283.[103] And while the ratio increased between 2004 and 2005 to 219, it still fell below the national average.[104] To provide national context, according to the *2013 State Physician Workforce Databook*, in 2012, there were 260.5 total active physicians per 100,000 population in the U.S.[105]

Another concern is the lack of homegrown physicians. The state concern is not the quality of out-of-state-trained physicians, but instead the lost economic opportunity to create high-paying jobs for Arizona residents.

Sources: Johnson, WG, Rimsza M, Garcy A, Grossman M. 2005. The Arizona physician workforce study part 1: The numbers of practicing physicians 1992-2004. Tempe (AZ). Center for Health Information & Research, Arizona State University.

Data by County: MDs and DOs

In 2004, physician shortages were most acute in rural communities. Pima County's physician-to-population ratio was 276 to 100,000 population, compared to Apache County, which experienced a coverage ratio of 48 to 100,000.[106] Disparities continued in 2005, with a ratio of 292 in Pima County compared to 50 in Apache County.[107]

Active, Licensed Physicians per 100,000, by Geographic Classification

CLASSIFICATION	2010 RATIO
Urban	250.3
Large Rural Town	151.4
Small Rural Town	119.8
Isolated Small Rural Town	69.9

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010*. Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

Examining 2010 data provides the capacity to look at licensees more recently by geographic area. Using this data, it was calculated that in 2010, there were 14,839 physicians with active Arizona licenses.[108] Between 2007 and 2010, allopathic physicians had a greater increase in numbers, but a smaller percentage increase when compared to osteopathic doctors.[109] Additionally, 92 percent of physicians were located in urban areas.[110]

Examining the physician to 100,000 population ratio in 2010, it was estimated there were 231.4 physicians for every 100,000 Arizonans statewide.[111] From 2007 to 2010, Pinal County experienced the largest decrease in ratio and Apache County had the largest increase in ratio. In 2010, Pima County had a ratio of 301 at the high end and Pinal County had the lowest at 56.8.[112]

Framing the Data

To provide national context, according to the 2013 State Physician Workforce Databook, in 2012 there were 260.5 total active physicians per 100,000 population in the U.S.[113] Arizona had a ratio of 230.9 per 100,000, ranking the state 32nd nationally.[114] The national rate of physicians in active patient care was 225.6 per 100,000 in 2012; Arizona had an estimated rate of 206.6, ranking Arizona 31st nationally.[115]

Another concern is the lack of homegrown physicians. The concern is not the quality of out-of-state-trained physicians, but instead the lost economic opportunity to create high-paying jobs for Arizona residents. In 2004, approximately 90 percent of Arizona allopathic doctors were not trained in Arizona.[116] In 2008, nearly 31 percent of Arizona primary care physicians were foreign-trained.[117] The *2013 State Physician Workforce Databook* estimated that nationally 24.1 percent of physicians were International Medical Graduates; the Arizona estimate was 22.9 percent, ranking the state 16th nationally.[118]

Retention of physicians is as important as growing a strong workforce. Understanding what motivates physicians to leave Arizona is another important component of framing the data. A 2008 survey of allopathic physicians who still retained an Arizona license but opted to practice out of state sought answers as to why those physicians left. For those who responded, the two most common reasons identified for leaving were "wanted to be closer to friends/family" and "better salary/reimbursement in other state."[119] The survey also discovered, "another interesting and unexpected finding is the number of physicians who indicated they were unable to find a position in their specialty in Arizona. Given the existence of a physician shortage in the state, the responses deserve additional attention to determine the reasons for the physicians' inability to find a position in Arizona."[120]

The survey respondents also expressed the "importance of a concern with the quality of children's schools." The report continued, "The influence is not typically mentioned in discussions of attracting or retaining physicians in a state or the differences between rural and urban settings. The relatively high rank of the influence is more significant when one recognizes that the responses are not, as yet, adjusted for the ages or marital status of the respondents."[121]

Active, Licensed Primary Care DOs & MDs per 100,000, by County

COUNTY	2010 RATIO
Apache	27.9
Cochise	49.3
Coconino	99.5
Gila	74.7
Graham	78.1
Greenlee	47.9
La Paz	58.7
Maricopa	84.3
Mohave	57.9
Navajo	66.9
Pima	97.8
Pinal	32.3
Santa Cruz	48.5
Yavapai	72.5
Yuma	64.6

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010.* Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

Primary Care Physicians

Much of Arizona falls within a currently designated Primary Care Health Professional Shortage Area (HPSA) (see Appendix III). "Primary Care HPSA designations refer to a shortage of non-federal doctors of allopathic or osteopathic medicine providing direct care in the fields of family practice, general practice, pediatrics, internal medicine (outpatient based) and obstetrics gynecology." Further, "Primary medical care professionals in contiguous areas are over-utilized, excessively distant, or inaccessible to the population of the area under consideration."[122]

The Primary Care HPSA designation utilizes the population-to-primary care physician ratio. To be designated as a HPSA the ratio must be at least 3,500:1 for a determined geographic designation; 3,000:1 for a geographic designation with unusually high needs such as a poverty rate of 20 percent or greater; or 3,000:1 for determined population group designation.[123] The entirety of Apache, Cochise, Graham, Greenlee, La Paz and Yuma counties are considered Primary Care HPSAs. Additionally, a large portion of Coconino, Gila, Mohave, Navajo and Pima counties are considered HPSAs.

HPSAs are not just found in Arizona's rural areas. When considering areas that include low-income populations, there are portions of Phoenix, including Central and South Phoenix, as well as Avondale, Tolleson and Glendale, that qualify. According to the Arizona Department of Health Services, "Arizona needs a total of 442 primary care professionals to practice in underserved areas to eliminate existing health professional shortage area designations."[124]

Primary care coverage is of particular concern for rural areas. In 2010, 89 percent of primary care doctors served in urban areas and there were 79.6 primary care doctors per 100,000 population statewide.

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010.* Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

Looking at the primary care workforce a decade ago, it was estimated that in 2004, approximately 41 percent of Arizona's doctors were primary care physicians.[125] No national comparative was provided. In 2008, survey data estimated that the percentage of physicians practicing in primary care remained relatively unchanged from 2004.[126] Specifically, "Based on our surveys, the percent of physicians in primary care increased from 37.4 percent in 2004 to 39.3 percent in 2008. However, the percent of physicians in primary care ranges from 40 percent to 41 percent if both MDs and DOs in primary care are included."[127] In 2008, this percentage translated to approximately 6,300 doctors.[128]

By 2010, it was estimated nearly a third of all Arizona physicians practiced in primary care – a total of 5,106 professionals.[129] At that time, there were almost twice as many non-primary care doctors compared to primary care physicians.[130] Between 2007 and 2010, there was a greater increase in the number of non-primary care doctors compared to primary care – 620 non-primary care compared to 554 primary care.[131] No national comparative was found.

Physician assistants (PAs) and nurse practitioners (NPs) can, and often do, provide primary care, especially in rural communities. Between 2007 and 2010, the percent growth in both numbers and coverage for PAs and NPs was more than double primary care doctors.[132] Between 2007 and 2010, there was a 12 percent increase in the number of primary care physicians.[133]

Data by County: Primary Care Physicians

Primary care coverage is of particular concern for rural areas. In 2010, 89 percent of primary care doctors served in urban areas and there were 79.6 primary care doctors per 100,000 statewide.[134] The disparities between the counties were notable, with Coconino County having the highest ratio at 99.5 primary care doctors per 100,000; and Apache County the lowest at 27.9.[135]

Framing the Data: Primary Care Doctors

Examining primary care data is becoming even more important as the demand for primary care services are likely to increase as new models of healthcare delivery are implemented.

Even though the 2007 to 2010 data comparisons pointed to growth in the number of primary care physicians in Arizona, 2012 data indicated coverage may be decreasing:

- The number of osteopathic primary care doctors per 100,000 was static between 2006 and 2010; the ratio also decreased from 14.6 per 100,000 in 2010 to 14.2 in 2011.[136]
- The number of non-primary care DOs per 100,000 residents exceeded the ratio for primary care DOs for the first time in 2011.[137] However, it is important to note, "the 2006 to 2010 static trend does not appear for primary care and non-primary care allopathic physicians."[138]

To provide national context, according to the *2013 State Physician Workforce Databook*, in 2012, there were 90.1 primary care physicians per 100,000.[139] Arizona had a ratio of 79.2 primary care physicians per 100,000, ranking 36th.[140] The national rate of primary care doctors in active patient care per 100,000 was 80.7.[141] Arizona's rate was 72.1, ranking 37th nationally.[142]

Arizona's ratio of non-primary care doctors to 100,000 population was 151.8 per 100,000; markedly higher than the 2010 primary care physician ratio of 79.6.

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010.* Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

Data by County: Non-Primary Care Doctors & Specialists

In 2010, the Arizona ratio of non-primary care doctors to 100,000 population was 151.8 per 100,000; markedly higher than the 2010 primary care physician ratio of 79.6.[143] Additionally, in 2010, 93 percent of non-primary care doctors were located in urban areas.[144] County specific data include:

- Between 2007 and 2010, Cochise County had the largest percentage decrease in ratio for non-primary care doctors and Graham County had the largest increase. In 2010, Pima County had the largest ratio at 203.1 per 100,000; Pinal County had the lowest at 24.5.[145]
- In 2010 there were a total of 784 obstetrics and gynecology physicians in Arizona.[146] For OB/GYNs the ratio utilized was the number of OB/GYNs per 100,000 women of child-bearing age (15-44). Using this metric, statewide the ratio rose from 60.2 to 62.0 per 100,000 women of childbearing age between 2007 and 2010.[147]
- The counties experiencing the largest decreases in OB/GYN to population ratio were Apache and Cochise; the counties with the largest increases were Pinal and Graham.[148] Examining individual county ratios in 2010, the county with the highest ratio of OB/GYNs to women of child-bearing age was Coconino at 73.1 per 100,000; the lowest was Greenlee County, who had zero OB/GYNs every year from 2007 through 2010.[149]

The national rate of primary care doctors in active patient care per 100,000 population was 80.7. Arizona's rate was 72.1, ranking 37th nationally.

Source: 2013 State Physician Workforce Databook.

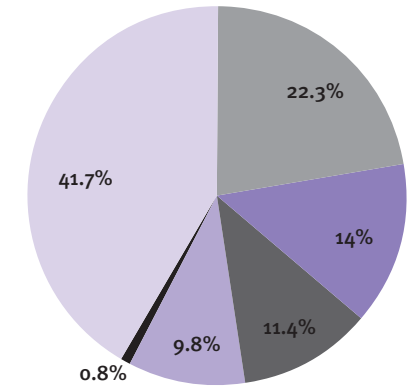
Physician Assistants

Physician assistants (PAs) serve a growing role in providing primary care. Specifically, "physician assistants are a very important component of the health care workforce since they disproportionately practice in rural areas, partially compensating for the pronounced shortage of physicians in these areas."[150]

According to national data referenced in a 2009 state workforce study, it is estimated that "nationally approximately 37 percent of PAs practiced in primary care in 2008."[151] 2013 data provided by the American Academy of Physician Assistants (AAPA) Annual Survey estimated Arizona PA specialties. No corresponding national survey data were provided. The AAPA estimated that 47.3 percent of Arizona PAs practiced in a physician group or solo practice.[152]

PA data is provided below, starting with the most recent, for years 2008 and 2010-2013. There appears to be some inconsistencies – certain years appear to have fewer PAs than prior years – however, all years are presented to provide the broadest insight into PA data.

Estimated Percent of Physician Assistants Practicing by Specialty Area



Source: The 2013 American Academy of Physician Assistants Annual Survey. Arizona State Practice Profile. Available at http://www.aapa.org/threeColumnLanding.aspx?id=328

Examining the number of PAs practicing in Arizona, the most recent figure available reports that in 2013 there were 2,005 PAs with an active license and practice address in Arizona, the majority of whom resided in urban areas (89 percent).[153]

2013 data estimated there were 28 PAs in Arizona per 100,000 population, slightly higher than the national average of 27.[154] Twenty-two states had higher provider to population ratios.[155] While the 2013 data does not provide ratio data by county it does provide comparative data based on rural urban commuting area classification:

- Urban: 32.2 PAs per 100,000
- Large Rural Town: 29.1 PAs per 100,000
- Small Rural Town: 25.1 PAs per 100,000
- Isolated Small Rural Town: 19.6 PAs per 100,000[156]

2012 BLS data estimated Arizona had 1,610 physician assistants; administrative licensing data for 2012 provided that 3,256 PAs had an active license.[157] Unfortunately, the 2012 administrative data does not distinguish how many of those licensees were active in Arizona versus licensed in Arizona. Per 2011 data, there were 1,746 active PA licensees.[158]

2013 survey data also estimated that the majority of PAs in the state were under 40 and that "the age distribution is similar for urban and rural areas."[159] The survey further found that while the majority of PAs in Arizona were trained in other states, "the annual increase in PAs can be attributed to the production and retention of Arizona-trained PAs.'"[160]

Data by County: Physician Assistant

To provide insight as where PAs practice in the state, 2010 figures need to be examined. The rural workforce study breaking out PAs by county found a total of 1,833 active PAs licensed in Arizona in 2010, compared to 1,457 in 2008.[161]

The number of active PAs increased 26 percent between 2007 and 2010, and 86 percent of PAs in 2010 were located in urban areas.[162]

The statewide ratio of PAs per 100,000 population increased from 24 to 29 between 2007 and 2010. Greenlee County had the highest PA to resident ratio at 47.9 per 100,000; Santa Cruz County was the lowest at zero.[163]

Arizona had 32 physician assistants for every 100,000 population, higher than the national average or 27 per 100,000 in 2010.

Source: The Henry J. Kaiser Family Foundation. State Health Facts.

Framing the Data

Citing national projections, the Center for Health Information & Research at Arizona State University in 2009 indicated that after a rapid expansion of PAs that stabilized in the 1990s, "the number of PAs entering the workforce is expected to increase by 27 percent by the year 2016 (Occupational Outlook Handbook, 2008-2009 Edition, 2007)."[164] Utilizing 2010 data, *State Health Facts* estimated Arizona had 32 physician assistants for every 100,000 population, higher than the national average of 27 per 100,000.[165] While the state average is higher than the national, this may be because these health professionals are serving to fill gaps in areas where health shortages exist, particularly areas experiencing primary care physician shortages.

In 2013, there were three accredited PA programs in the state, namely the Arizona School of Health Sciences, Midwestern University, and Northern Arizona University.[166]

Psychiatrists, Psychologists and Behavioral Health Professionals

There is no question Arizona is experiencing a statewide shortage in mental health and behavioral health providers. However, specific data on this segment of the healthcare workforce is limited. According to the state's Mental Health Professional Shortage Areas map (see Appendix IV), the entire state of Arizona is currently designated as a shortage area.

Psychiatrists

The data on the number of licensed Arizona psychiatrists can vary depending on the source. Per BLS data for Arizona, in 2012 there were 500 psychiatrists employed statewide. The data also identified 1,350 psychiatric technicians employed.[167]

Beyond the high-level estimates provided by BLS, the most recent assessment of the size of the state's psychiatric workforce examined health professionals by county. This report found:

- There were 748 licensed active psychiatric physicians statewide in 2010, 36 more psychiatrists than in 2007.[168]
- In 2010, 94 percent were located in urban areas, with both Graham and La Paz counties having no active psychiatrist.[169]
- The statewide ratio of psychiatrists per 100,000 population increased from 11.5 in 2007 to 11.7 in 2010.[170]
- Pima County had the highest ratio in 2010 at 18.9. Also, from 2007 to 2010, six of Arizona's 15 counties saw a decrease in the ratio of psychiatrists to population.[171]

Data from 2004 indicates that this segment of the healthcare workforce has fallen behind the pace of population growth. A 2004 report of the statewide psychiatric workforce found there were 691 active psychiatrists statewide and a statewide ratio of 12.03 psychiatrists per 100,000 population.[172] While the total number of psychiatrists increased between 2004 and 2008, the ratio decreased.

The most recent national comparative was for the year 2000, with a professional to population ratio of 16.5 psychiatrists per 100,000.[173] This is higher than Arizona's 2010 ratio.

According to the Arizona Department of Health Services, "Arizona needs a total of 204 psychiatrists to practice in underserved areas to eliminate the medically underserved area, medically underserved population and health professional shortage designations."[174]

There is no question Arizona is experiencing a statewide shortage in mental health and behavioral health providers.

Psychologists

The most recent data on psychologists is from 2010, when there were 1,424 licensed active psychologists.[175] This was nearly double the number of 2010 licensed active psychiatrists identified in the same report.[176]

This study also found 95 percent of psychologists were in urban areas and there was an increase statewide of only two psychologists between 2007 and 2010.[177] During this same timeframe, the ratio of psychologists per 100,000 decreased from 23 to 22.2.[178]

As with many of the healthcare professions discussed in this summary, there were notable inequalities among Arizona's counties. For example, in 2010, Coconino County's ratio of psychologists to population was 55 per 100,000; Greenlee and La Paz counties had no psychologists.[179]

Behavioral Health Professionals

According to a 2012 performance audit of the Arizona Board of Behavioral Health Examiners conducted by the Office of the Auditor General, in May of 2012 there were 8,639 active behavioral health licensees.[180] There are ten license types issued by the board in four areas: counseling, marriage and family therapy, social work and substance abuse counseling.[181] Specifically:

- Counseling licensees, including associate and professional counselor: 3,167
- Marriage and family therapy licensees, including associate and marriage and family therapist: 445
- Social work licensees, including bachelor, master and clinical social worker: 3,405
- Substance abuse counseling licensees, including substance abuse technician, associate substance abuse counselor and independent substance abuse counselor: 1,622[182]

Unfortunately, the 2012 data is not broken out geographically. The only data provided to do so examined behavioral health professionals by county in 2002. At that time there were 5,545 behavioral health professionals statewide.[183] In 2002, 82 percent of behavioral health professionals were in urban counties and there were 101.32 behavioral health professionals per 100,000 population statewide.[184] No national comparative was provided.

Dentists and Dental Hygienists

While discussions regarding healthcare access may often fail to mention oral health, access to consistent preventative dental care, as well as treatment when needed, is part of overall health.

Dentists

The Dental Health Professional Shortage Areas (HPSA) map (see Appendix V) shows a sizable portion of the state's geographic area is currently designated as a Dental HPSA, including the entirety of Graham, Greenlee, La Paz, Santa Cruz and Yuma counties. According to the Arizona Department of Health Services, "Arizona needs a total of 441 dentists to practice in underserved areas to eliminate existing dental health professional shortage area designations."[185]

Per BLS numbers for Arizona, in 2012, there were a total of 2,440 general dentists employed statewide; 130 orthodontists; and 140 dentists comprising all other specialties.[186] The data also identified 3,390 dental hygienists. Additionally, there were 6,160 dental assistants.[187]

A sizable portion of the state's geographic area is currently designated as a Dental HPSA, including the entirety of Graham, Greenlee, La Paz, Santa Cruz and Yuma counties.

Source: Arizona Department of Health Services

Data by County: Dentists

The most recent assessment examining dental services by county uses 2010 data. One particular issue with the data on dental health providers that the report authors identified was a change in 2010 in the way licensees reported information on multiple practice locations. In the past, dentists could report practicing in more than one place allowing for "more precise estimates of workforce coverage, especially in rural areas." In 2010, the board data only provided one practice location. This didn't impact statewide reporting, but did impact finer geographic reporting with "under-reporting in rural areas likely" because dentists often work at more than one location.[188]

In 2010, there were 3,558 active licensed dentists with a dip in the number of licensed dentists between 2009 and 2010 – a decrease of 75 licensees – after an increase of 101 licensees between 2007 and 2009.[189]

In 2010, 92 percent of dentists reported working in urban areas.[190] Specifically, 91 percent of general dentists and 96 percent of specialist dentists practiced in urban areas.[191] The study estimated that statewide coverage for all dentists "peaked" in 2009 at 57 per 100,000, and dropped to 55.5 per 100,000 in 2010.[192] The National Center for Health Statistics estimated Arizona had 54.7 dentists per 100,000 in 2010, but did not provide a national comparative.[193]

Active, Licensed Dentists per 100,000, by County

COUNTY	2010 RATIO
Apache	16.7
Cochise	31.9
Coconino	76.5
Gila	35.5
Graham	51.2
Greenlee	23.9
La Paz	4.9
Maricopa	64.5
Mohave	36.0
Navajo	38.1
Pima	54.1
Pinal	22.9
Santa Cruz	16.9
Yavapai	51.2
Yuma	21.4

Source: Tabor, J. and H.J. Eng, 2012. *Arizona Rural Health Workforce Trend Analysis 2007-2010*. Arizona Area Health Education Centers and Center for Rural Health, the University of Arizona. Tucson, Arizona. pp138.

Coconino County had the highest ratio in 2010 at 76.5 per 100,000; La Paz County had the lowest at 4.9.[194] Eleven counties saw a percentage drop in the ratio of dentists to population from 2007 to 2010, with La Paz experiencing the largest drop at 66.4 percent.[195] The four counties experiencing growth between 2007 and 2010 were Coconino, Greenlee, Maricopa and Yavapai.[196]

In 2010, 82 percent of active dentists were general and the ratio of general dentists to population was 45.3 per 100,000. The ratio of specialist dentists to population was 10.2 per 100,000.[197] Greenlee County had no specialist dentists in the years 2007 through 2010 and La Paz County had no specialist dentists 2008 through 2010.[198]

Dental Hygienists[199]

There were 3,200 active hygienists licensed in Arizona in 2010, with 91.4 percent located in urban areas. The number of licensed hygienists increased by 362 between 2007 and 2010, with a 2010 statewide ratio of 50 to 100,000 population. Apache County had the greatest percentage increase in the hygienist ratio at 94 percent with a 2010 ratio of 14.0. Coconino County had the highest ratio in 2010 at 77.2 hygienists per 100,000; La Paz and Greenlee counties had no dental hygienists.

Physical Therapists and Assistants and Occupational Therapists and Assistants

Physical and occupational therapists, two specialties within the allied healthcare workforce, are professionals whose services will continue to increase in demand as Arizona's population grows and ages.

Physical Therapists and Physical Therapist Assistants

In 2010, there were an estimated 3,610 physical therapists in Arizona.[200] Physical therapy is a profession that is expected to see significant growth, with a projected 38 percent increase in employment opportunities in the decade between 2010 and 2020 and a projected 180 job openings annually in Arizona.[201] The median annual salary for Arizona physical therapists in 2013 was $77,000.[202]

BLS 2012 survey data estimated there were 4,040 physical therapists licensed in Arizona.[203] BLS 2012 survey data also estimated there were 870 physical therapist assistants.[204]

That same estimate of 870 physical therapist assistants was cited by an additional source in 2010, with a projected 40 percent increase in employment opportunities between 2010 and 2020.[205] It is also estimated there will be 50 annual projected job openings for physical therapist assistants in Arizona.[206] The median annual salary for Arizona physical therapist assistants in 2013 was $44,500, nearly $9,000 less than the national average.[207]

Occupational Therapists and Occupational Therapist Assistants

In 2010, there were an estimated 1,630 occupational therapists (OTs) in Arizona.[208] Like physical therapy, occupational therapy is a profession that is expected to see growth in employment opportunities, with a projected 26 percent increase in the decade between 2010 and 2020 and a projected 70 job openings annually in Arizona.[209] The median annual salary for Arizona occupational therapists in 2013 was $76,700.[210]

BLS 2012 data estimated a smaller number of occupational therapists, with a total of 1,180.[211] BLS survey data also estimated a total of 460 occupational therapist assistants in Arizona in 2012.[212]

2010 estimates for the number of occupational therapist assistants determined there were approximately 210 in Arizona.[213] However, as with physical therapist assistants, occupational therapist assistants are expected to see growth in employment opportunities, with an estimated increase of 30 percent from 2010 to 2020, with 10 projected openings annually.[214] The median salary in 2013 for an occupational therapist assistant in Arizona was $43,500, nearly $12,000 less than the national average.[215]

The only occupational therapy program at a state university in Arizona is at Northern Arizona University. NAU is also the only Arizona program offering an Occupational Therapy Doctoral (OTD) degree. According to data provided by NAU, Arizona's OT-to-resident ratio is substantially lower than the national average. The OT national ratio is 1 to 2,485; Arizona's rate is 1 to 3,523.

Source: Provided by Dr. Patricia Crist, July 2, 2014. Source provided by The National Board for Certification in Occupational Therapy.

Framing the Data

Currently, the only occupational therapy program at a state university in Arizona is at Northern Arizona University. NAU is also the only Arizona program offering an Occupational Therapy Doctoral (OTD) degree. According to data provided by NAU, Arizona's OT-to-resident ratio is substantially lower than the national average. The OT national ratio is 1 to 2,485; Arizona's rate is 1 to 3,523.[216]

Emergency Medical Technicians (EMTs)

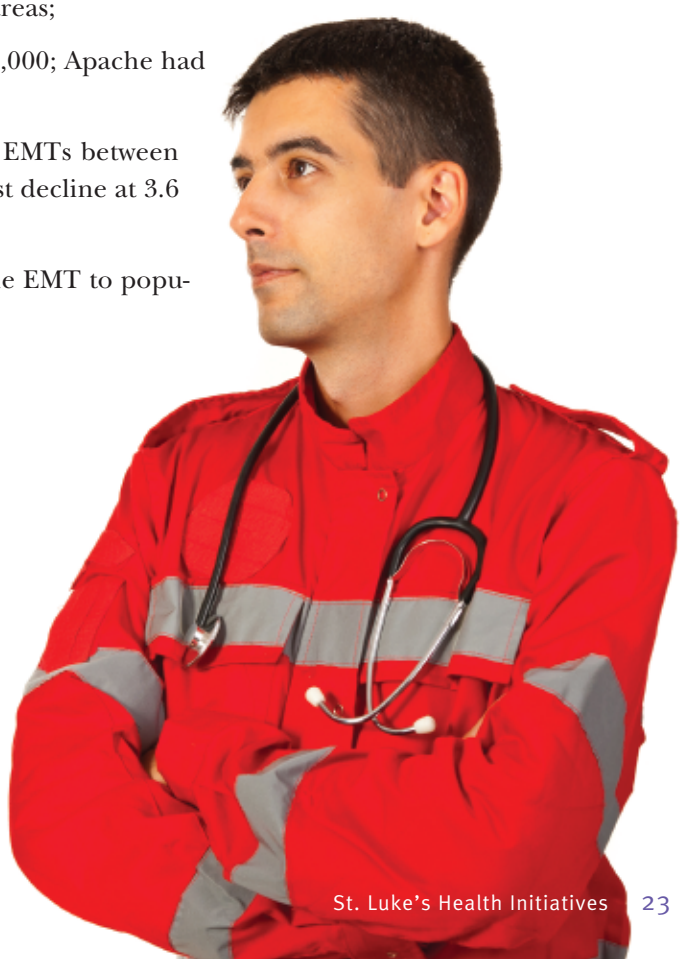
EMTs, including EMT-Basic, EMT-Intermediate and EMT-Paramedic are licensed by the Arizona Department of Health Services. According to BLS data, there were 3,650 EMTs and paramedics in Arizona in 2012.[217] Another source estimated that in 2010 there were 3,580 EMTs and paramedics in Arizona. In the decade between 2010 and 2020, EMT and paramedic employment opportunity is expected to increase 44 percent, with an estimated annual 230 job openings in Arizona.[218]

The most recent geographic data on EMTs is from 2010. Due to data limitations, the levels of EMT licensure could not be broken out, so numbers are for all EMT levels. Additionally, due to data errors the authors had to use 2006 and 2008 data to interpolate 2007 figures.

Specifically, in 2010 there were 16,619 certified EMTs in Arizona.[219] It is estimated the number of EMTs increased by 1,368 between 2007 and 2010.[220] This is a substantially different figure than the 2012 number reported by BLS, which estimated Arizona had approximately 12,950 fewer EMTs in 2012 than this study identified in 2010. However, as previously noted, licensing data and BLS data measure workforce differently.

Using licensing data, the ratio of EMTs per 100,000 Arizona population increased from 247 in 2007 to 259 in 2010.[221] No national comparison was found. Additionally:

- 80.5 percent of EMTs in 2010 were located in urban areas;
- Coconino County had the highest ratio at 516 per 100,000; Apache had the lowest at 174;
- Four counties experienced a decrease in the ratio of EMTs between 2007 and 2010, with Coconino experiencing the largest decline at 3.6 percent; and
- Mohave County experienced the largest increase in the EMT to population ratio at 15.5 percent.[222]



Additional Allied Health Professionals

The healthcare workforce extends far beyond doctors and nurses. As Arizonans age, battle heart disease and cancer, deal with the obesity epidemic and seek both preventative care and treatment, allied health professionals are critical to the state's healthcare delivery system. To give a sense of the reach of allied health professionals, a 2006 assessment reported that approximately one-third of the approximately 12 million workers in U.S. health at that time were graduates of an allied health program.[223] The 2006 assessment further highlighted the shortages in allied health in comparison to the focus at the time on nursing shortages, "in comparing the extent of the nursing shortage with that of many of the allied health professions, one finds a greater percentage shortage in many of the professions, and a greater percentage growth that is needed."[224]

Examining employment figures, as well as expected employment and compensation trends, provides a working start to assessing the reach of allied professionals.

Projected Need for Allied Health Professionals

PROFESSION	ARIZONA 2010 EMPLOYMENT ESTIMATES	PROJECTED INCREASE IN ARIZONA 2010-2020	PROJECTED ANNUAL JOB OPENINGS IN ARIZONA	2013 MEDIAN ARIZONA ANNUAL SALARY
Medical Assistants	13,210	40%	730	$30,700
Medical & Clinical Laboratory Technicians	3,850	29%	190	$36,600
Medical & Clinical Laboratory Technologists	3,480	25%	160	$60,000
Speech-Language Pathologists	2,630	22%	110	$67,200
Nuclear Medicine Technologists	360	25%	20	$78,900
Radiation Therapists	630	39%	40	$70,700
Radiologic Technologists & Technicians	5,310	36%	280	$58,700 For Radiologic Technologists
Diagnostic Medical Sonographers	920	56%	70	$78,000

Source: http://www.onetonline.org/find/career?c=8&g=Go

Community healthcare workers (CHWs) are also key players in healthcare delivery, with an increased role in the new healthcare landscape ushered in by extended coverage. A 2011 report noted that the "2010 Patient Protection and Affordable Care Act (PPACA) included community health workers in several sections, including the classification of CHWs as 'health professionals' and as part of the 'health care workforce.'"[225]

Data for community and social service specialists, one manner in which CHWs are identified, estimated there were 1,540 in Arizona in 2010, with a projected growth of 22 percent between 2010 and 2020 and an annual projected 70 openings.[226] Data provided for health educators, another way in which CHWs are classified, estimated there were 1,360 health educators in Arizona in 2010 and anticipated job growth of 35 percent between 2010 and 2020, with 80 projected annual job openings.[227] While these classifications can encompass more than CHWs, they still provide insight into the growing need for these professionals.

Final Thoughts

This summary pulled together a variety of best-estimate data to provide insight into different sectors of the healthcare workforce, including numbers, reach and geographic location. It is important to acknowledge that data by nature lags. Therefore, the most recent assessment information available likely does not reflect the current point-in-time. Going forward, professionals, educators and policymakers need to have access to more frequent, accurate and comparable data regarding the healthcare workforce. Policymakers need to explore more permanent solutions to maintaining this ongoing data collection and assessment.

It is also important to acknowledge Arizona was substantially affected by the Great Recession. We fell faster and are taking longer to recover than many other states. As a result, it is still unclear what long-term population and employment trends may be.

However, growing and supporting the healthcare workforce remain primary tools that Arizona can use to stimulate and stabilize economic development. The value of this data, however incomplete and inexact, is in assessing supply and demand for healthcare. Decisions and planning can be made accordingly to fill existing gaps and anticipate new ones.

There are many looming questions related to the healthcare workforce and our state's future, and economic development factors are just one of them. Arizona's population is diverse, with a large component of aging residents and a booming segment of young, minority residents. More Arizonans now have healthcare coverage of some kind and more Arizonans are going to want, and need, access to care. The critical question is, will there be enough professionals to provide it?

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Appendix I

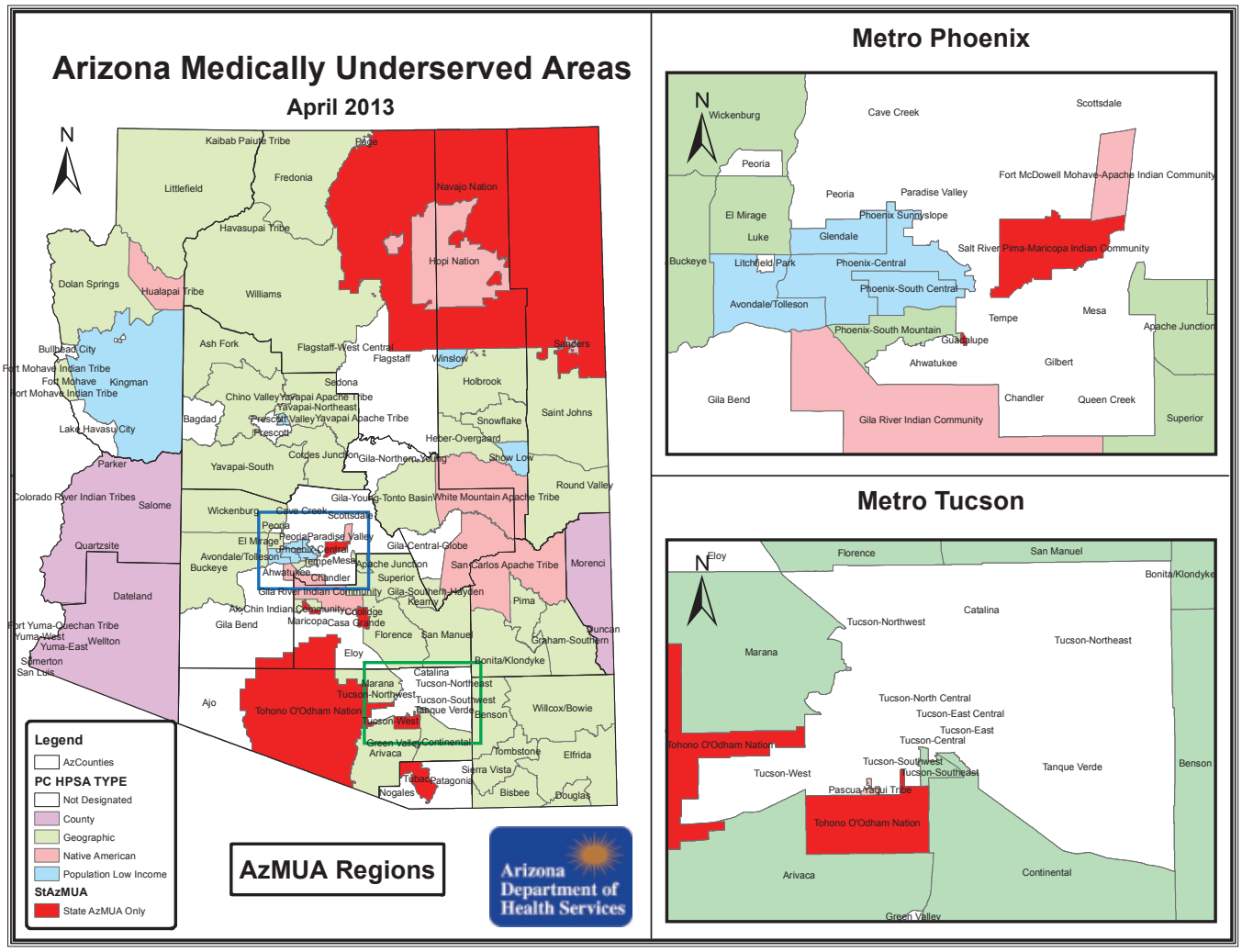
Healthcare Workforce in Arizona by Number Employed, 2012

CODE	OCCUPATION	NUMBER
29-0000	Healthcare Practitioners and Technical Occupations	134,010
31-0000	Healthcare Support Occupations	65,450
29-1141	Registered Nurses	45,600
31-1011	Home Health Aides	17,260
31-1014	Nursing Assistants	14,900
31-9092	Medical Assistants	13,350
29-2052	Pharmacy Technicians	6,740
29-2061	Licensed Practical and Licensed Vocational Nurses	6,440
31-9091	Dental Assistants	6,160
29-1069	Physicians and Surgeons, All Other	5,830
29-2071	Medical Records and Health Information Technicians	5,300
29-1051	Pharmacists	5,260
29-1123	Physical Therapists	4,040
29-2034	Radiologic Technologists	3,820
29-2041	Emergency Medical Technicians and Paramedics	3,650
29-2012	Medical and Clinical Laboratory Technicians	3,450
29-2021	Dental Hygienists	3,390
31-9011	Massage Therapists	3,390
29-2011	Medical and Clinical Laboratory Technologists	3,040
29-1021	Dentists, General	2,440
29-1126	Respiratory Therapists	2,440
29-2056	Veterinary Technologists and Technicians	2,070
29-2055	Surgical Technologists	1,990
29-1171	Nurse Practitioners	1,900
29-1127	Speech-Language Pathologists	1,790
31-9099	Healthcare Support Workers, All Other	1,780
29-1062	Family and General Practitioners	1,700
31-9097	Phlebotomists	1,650
29-1071	Physician Assistants	1,610
29-2099	Health Technologists and Technicians, All Other	1,610
31-9094	Medical Transcriptionists	1,400
29-2053	Psychiatric Technicians	1,350
29-1131	Veterinarians	1,240
29-1122	Occupational Therapists	1,180
29-2032	Diagnostic Medical Sonographers	1,160
29-9011	Occupational Health and Safety Specialists	1,000
29-1031	Dietitians and Nutritionists	980
29-2031	Cardiovascular Technologists and Technicians	930
29-2081	Opticians, Dispensing	930
31-9096	Veterinary Assistants and Laboratory Animal Caretakers	900
31-2021	Physical Therapist Assistants	870
29-2051	Dietetic Technicians	820
31-9093	Medical Equipment Preparers	810
31-2022	Physical Therapist Aides	760
29-1199	Health Diagnosing and Treating Practitioners, All Other	740
29-2035	Magnetic Resonance Imaging Technologists	720
31-1015	Orderlies	710
29-1011	Chiropractors	690
29-1061	Anesthesiologists	690
29-9099	Healthcare Practitioners and Technical Workers, All Other	620
29-1124	Radiation Therapists	550
29-1066	Psychiatrists	500
29-1067	Surgeons	500
31-2011	Occupational Therapy Assistants	460
29-1151	Nurse Anesthetists	440
29-9091	Athletic Trainers	440
29-1063	Internists, General	410
29-2033	Nuclear Medicine Technologists	400
29-1041	Optometrists	390
29-2054	Respiratory Therapy Technicians	390
29-1065	Pediatricians, General	380
29-2057	Ophthalmic Medical Technicians	320
29-1125	Recreational Therapists	310
29-1081	Podiatrists	280
29-1064	Obstetricians and Gynecologists	250
29-1181	Audiologists	230
31-9095	Pharmacy Aides	210
29-2092	Hearing Aid Specialists	200
29-1128	Exercise Physiologists	170
29-2091	Orthotists and Prosthetists	170
29-1029	Dentists, All Other Specialists	140
29-1023	Orthodontists	130
29-9012	Occupational Health and Safety Technicians	90
29-1129	Therapists, All Other	50
29-1022	Oral and Maxillofacial Surgeons	40
29-1161	Nurse Midwives	**
31-1013	Psychiatric Aides	**

Source: Johnson, WG, Linan, M (March 2014). *Phoenix Healthcare Sector Partnership Inventory of Information on the Healthcare Workforce in Arizona*. College of Health Solutions. Arizona State University.

Appendix II

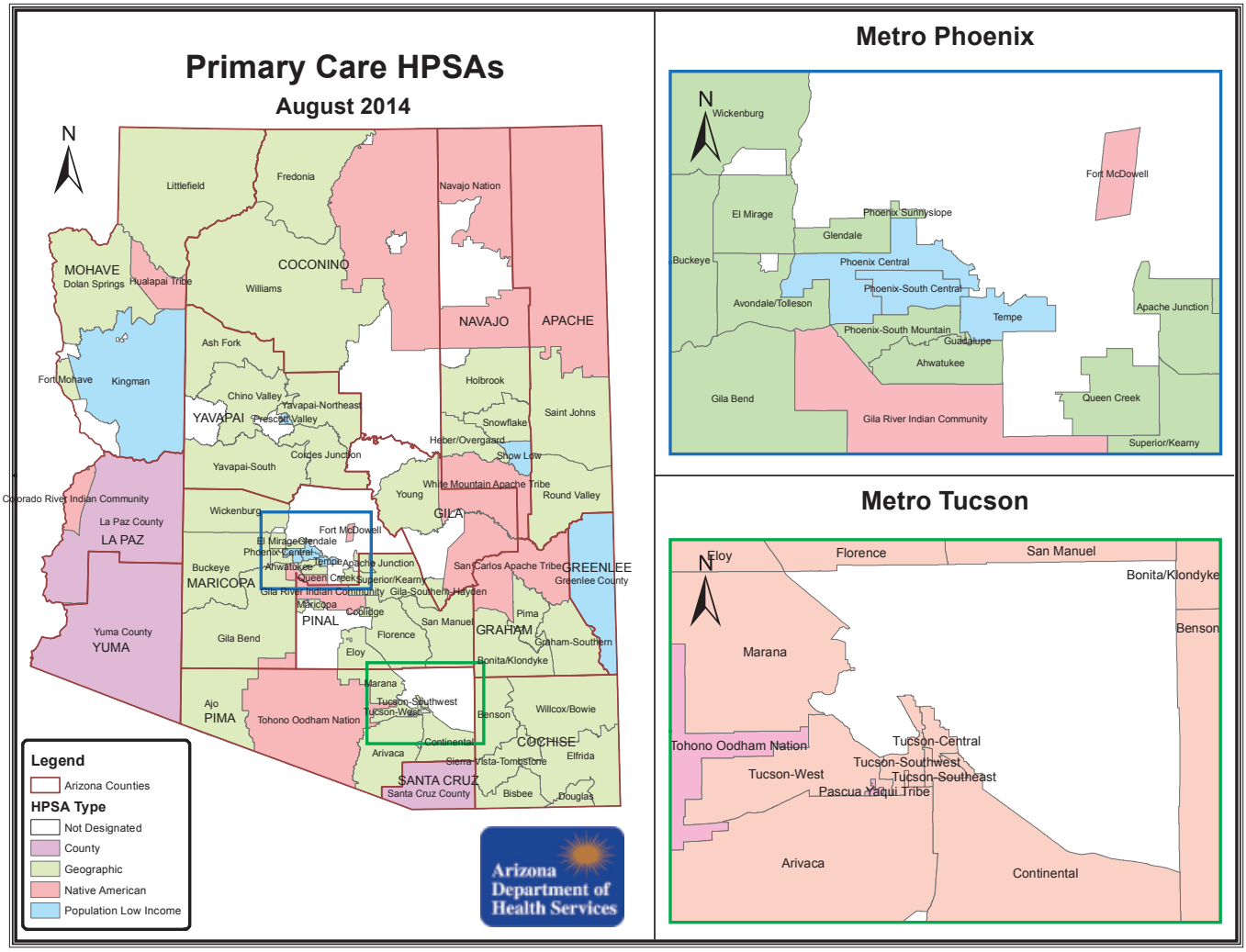
Arizona Medically Underserved Areas



Source: Arizona Department of Health Services.

Appendix III

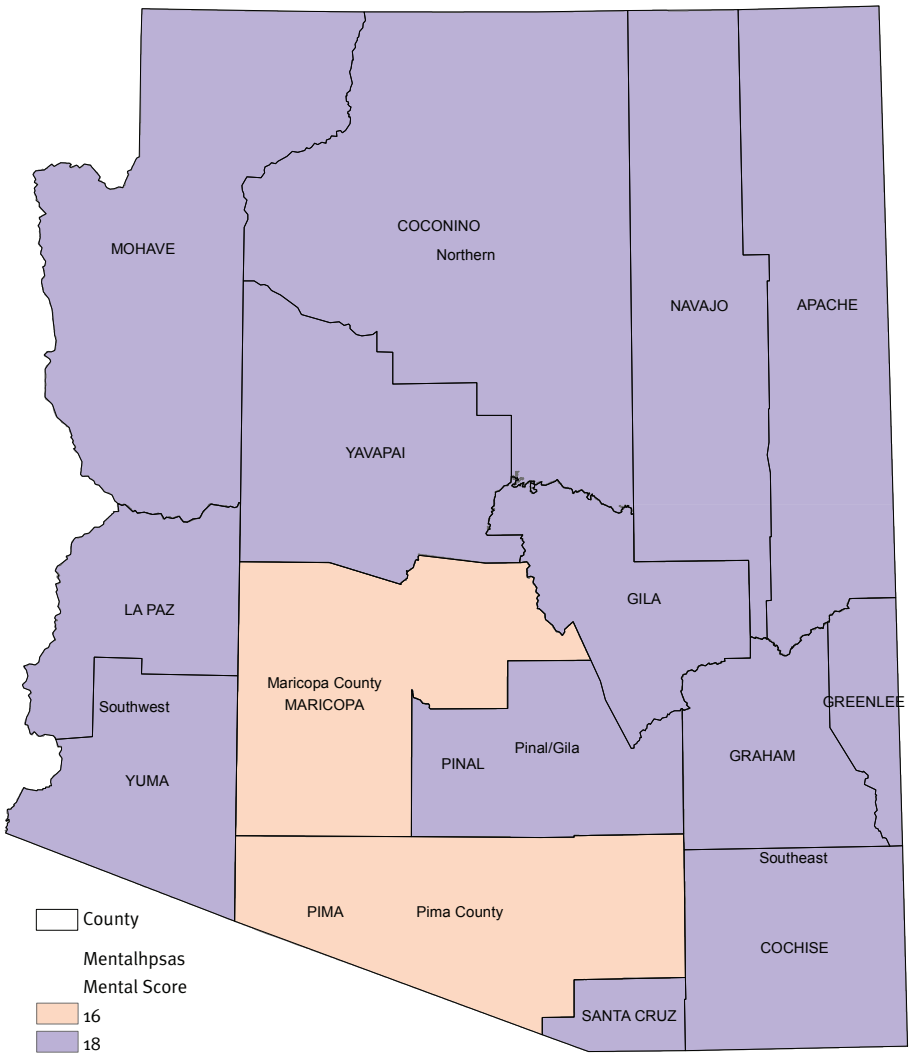
The Primary Care Health Professional Shortage Areas



Source: Arizona Department of Health Services.

Appendix IV

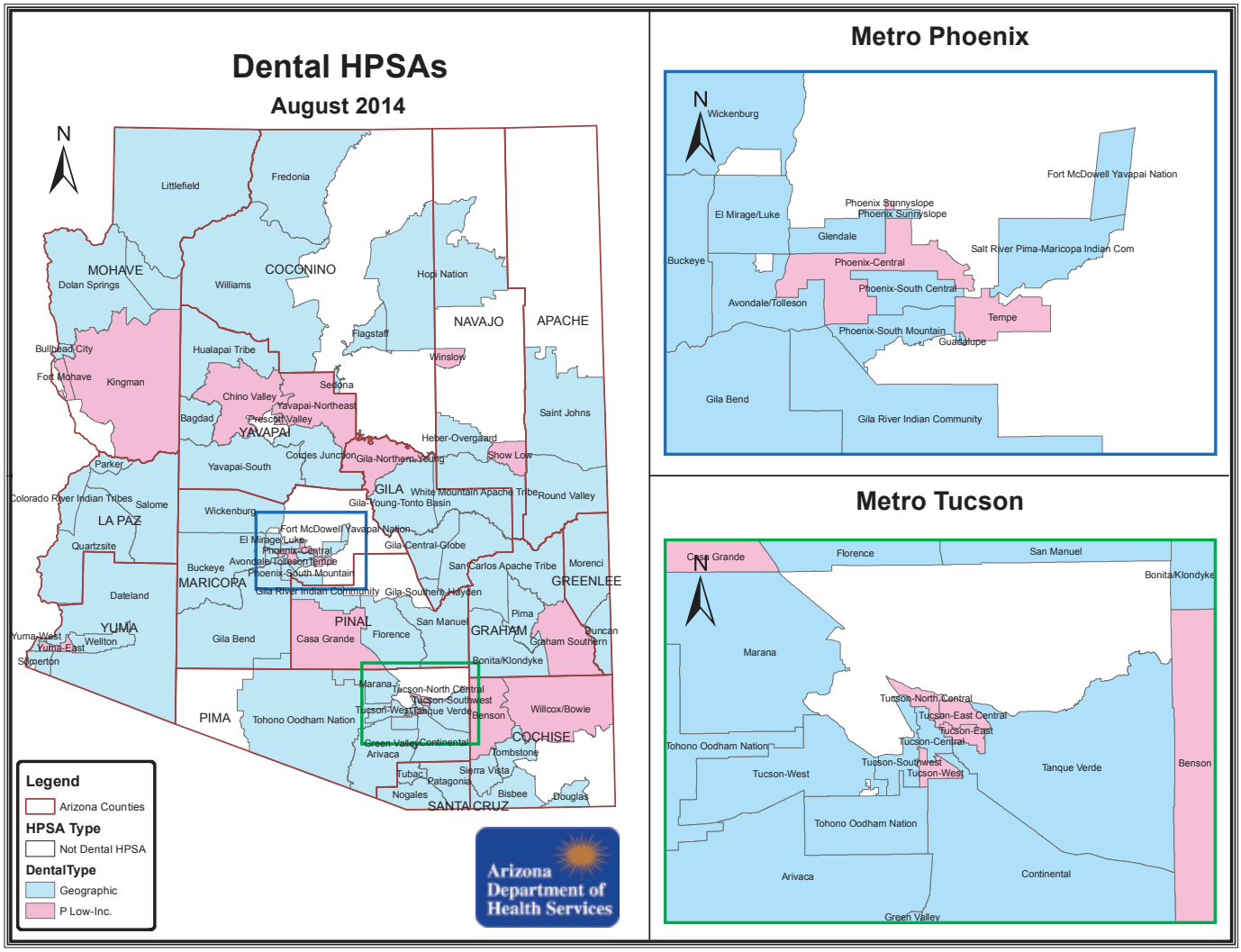
Arizona Mental Health Professional Shortage Areas, 2014



Source: Bureau of Health Systems Development, Arizona Department of Health Services.

Appendix V

Dental Health Professional Shortage Areas



Source: Arizona Department of Health Services.

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Our Mission

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

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