

HEALTH WORKFORCE VACANCIES IN ARKANSAS

The Center for Rural Health

University of Arkansas for Medical Sciences



**The information
presents workforce
statistics and trends
to help educators and
policy makers address
key health workforce
issues in our state.**

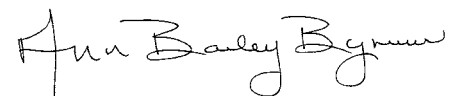
FROM THE DIRECTOR

This study was conducted by the University of Arkansas' Center for Rural Health to assess the demand for health providers in Arkansas. The information presents workforce statistics and trends to help educators and policy makers address key health workforce issues in our state.

Arkansas and the nation are facing health workforce crises, including inequitable distribution of providers. This has a large and negative impact on people's health, leading to preventable death and suffering. The present shortage in health providers comes at a time when it is estimated that an additional 250,000 Medicaid enrollees will be added to the rolls in Arkansas by 2014. In addition, like the rest of the United States, the number of elderly residents in Arkansas will begin growing more quickly between 2010 and 2030, as the baby boomer generation reaches retirement age. By 2025, Arkansas will have the fifth highest percentage of elderly population in the nation.

I am pleased to present the UAMS Center for Rural Health Workforce Vacancy Study for 2011. We hope this work will serve to inform you about the present and future demand for health providers and will contribute to the long range planning for addressing the workforce of all health professions in Arkansas.

Sincerely,



Ann Bynum, Ed.D.

Director, Center for Rural Health

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EXECUTIVE SUMMARY

Purpose of the Study: This statewide study is based on the demand for health providers as reported by health facilities in Arkansas. The results do not necessarily represent an available supply to fill the vacant positions. Some smaller facilities may indicate a need for specialist physicians but not have the population to support a specialist and therefore need to consider a provider that can serve their region rather than just a small community. This report assessed health workforce vacancies for 90 health professionals in Arkansas by type of health care facility, regions in Arkansas and in Pulaski County. Facilities that were surveyed included hospitals, nursing homes, medical clinics, county health units, community health centers, Area Health Education Center (AHEC) clinics, dentist offices, pharmacies, ambulance and home health care services. The following categories of health professions were assessed for current employment vacancies during 2011 and expected, employment vacancies within the next 5 years: Primary care physicians, physician specialists, nursing, allied health professions, and pharmacist and dentists.

Methods: A cross-sectional survey design was used with one assessment period to measure current and expected vacancies for the 90 health disciplines. Other descriptive variables include the type of healthcare facility, regions in Arkansas, and Pulaski County. Data were collected during March-July, 2011. Data were analyzed in the Statistical Package for the Social Sciences (SPSS), Version 15 and SASv9.2. The cross tabulations were used to count the number of vacancies for each health professional by type of health care facility, regions in Arkansas, and in Pulaski County.

The results do not necessarily represent that there is a supply that is available to fill the vacant positions.

Key Findings from the Study: Findings from the extrapolated current vacancies in the study population (N = 4,212 facilities) indicated that there were a total of 7,021 current vacancies for nursing, allied health, and pharmacy professions; and for primary care physicians and dentists. There were a total of 23,893 expected vacancies for nursing, allied health, and pharmacy professions; and for primary care physicians and dentists. Allied health professions had the highest number of current vacancies (4,335) and expected vacancies (16,468). Nursing had 1,970 current vacancies and 5,675 expected vacancies. Primary care physicians had 514 current vacancies and 860 expected vacancies. Family Practice physicians had the highest number of current vacancies (282) and the highest number of expected vacancies (473). Dentists had 131 current vacancies and 372 expected vacancies. The total number of current vacancies for pharmacists was 71 and the total number of expected vacancies for pharmacists was 518.

Medical clinics had the highest number of current vacancies for nursing (715) and medical hospitals reported 622 current vacancies for nursing. Medical hospitals had the highest number of expected vacancies for nursing (1,817). Medical clinics had the highest number of current vacancies for allied health (1,463) and nursing homes had the highest number of expected vacancies for allied health (4,137). Medical clinics had the highest number of current vacancies for primary care physicians (328) and the highest number of expected vacancies for primary care physicians (537).

INTRODUCTION

Arkansas is facing a growing shortage of health care workers. A shortage of health professionals is expected to worsen in Arkansas and throughout the nation as the baby boomers retire. A growing aging population will increase demand for health services that will include care for chronic diseases and medication management. In order to ensure that Arkansans have adequate health care in the future, it is vital that we take a comprehensive look at the current status of the existing health care workforce. Increasing the supply of health professionals takes a long-term approach, based on the number of years it takes to complete health professions training prior to entering practice.

The growing total populations, increased elderly and ethnic minority population in Arkansas are expected to increase the demand for health care services. There will be fewer uninsured patients as a result of health care reform initiatives, which will contribute to the increased demand for health care. The total population of Arkansas is expected to grow 12% between 2000 and 2020 (U.S. Department of Health and Human Services, 2004a). The population of elderly persons 65 years of age and over in Arkansas is projected to grow 68% between 2000 and 2020. The state's population will also become more diverse with the accelerated growth of non-white Arkansans (Wilson, 2006). A 16% increase in the minority population in Arkansas is predicted by 2020, to a total of 620,637, mainly due to the growing Hispanic population. The elderly and Black populations in Arkansas

have higher incidence and mortality rates and prevalence of chronic diseases, which increase the demand for health care services (Balamurugan, 2009).

Access to health care services depends on many factors, but the most essential of these is the availability of health professionals to provide these services. The knowledge of current supply and distribution of health professionals in Arkansas is fundamental to effective planning and construction of health policy, allocation of state and federal funds, and decision-making regarding education and recruitment of health professionals (American Hospital Association, 2010b; Fordyce, Chen, Doescher, & Hart, 2007; U.S. Department of Health and Human Services, Health Resources and Services Administration, 2005).

The U.S. Bureau of Health Professions projects a shortage of 109,600 physicians in the U.S. in 2020 (American Hospital Association, 2010b). There will be a shortage of 260,000 registered nurses in the U.S. in 2025 (Buerhaus, Auerbach, & Staiger, 2009); and major growth is expected in other health care occupations. Geographic maldistribution of health professionals must be addressed in strategies for solving shortages of health professionals in Arkansas. Primary care physicians have an important role in both rural and urban areas, but their function is especially important in isolated rural areas.

RURAL ARKANSAS

Rural Arkansas averages only 82 primary care physicians per 100,000 people compared to 130 per 100,000 persons in

Arkansas ranked 48th among states in physicians per capita, 33rd in nurses, 19th in pharmacists and 49th in Allied health professionals.

urban Arkansas. The greatest disparity is seen in Delta counties where there are only half as many primary care physicians per 100,000 people as in urban counties (University of Arkansas Division of Agriculture, 2007). Arkansas has 52 of the total 75 counties that are designated as Health Professional Shortage Areas (HPSAs) for primary medical care (U.S. Department of Health and Human Services, Health Resources and Services Administration, 2008). In addition, there are many counties in Arkansas that lack medical specialties (Redford, 2008).

There are many factors contributing to this shortage of health professions, including health care demands of the aging population; unfavorable work environment; more satisfying alternative job opportunities; aging and pending retirement of “baby boomers”; financial constraints with the current recession; and limitations in faculty, laboratory space, and clinical training sites for health education programs. As financial restrictions increase with Medicare, Medicaid, and growing hospital costs, it is difficult for hospitals to attract and retain health professionals (American Hospital Association, 2010b; McHugh, Aiken, & Cooper, 2008).

In addition, there has been a decline in the number of students choosing primary care careers. Problems with recruitment and retention of primary care providers in rural areas are related to low compensation, rising malpractice premiums, professional isolation, limited time off, and scarcity of jobs for spouses (Doescher, Skillman, & Rosenblatt, 2009; Rosenblatt, Andrilla, Curtin, & Hart, 2006). The decline in dentists has been linked to unwillingness to practice in rural areas, increased movement to dental specialties, closing of dental schools, decreases in dental class sizes, retirement of older dentists, and an increase in female dentists working fewer hours (Canadian Medical Association, 2009).

ARKANSAS HEALTH WORKFORCE NEEDS

Insufficient numbers of health care professionals in Arkansas can affect the ability of facilities to meet the health care needs of their communities. Arkansas has significant

workforce needs for medicine, nursing, pharmacy, and allied health professions.

Physicians. Arkansas ranked 48th among states in physicians per capita with 189 active physicians per 100,000 population in 2008, which was below the national ratio of 254.5 active physicians per 100,000 population (Association of American Medical Colleges, 2009). Arkansas had 75.8 (ranked 42nd) active primary care physicians per 100,000 population in 2008, compared to 89.6 per 100,000 for the entire country. In 2008, Arkansas ranked 43rd among states in nonfederal physicians in medical specialties with 60 physicians per 100,000 population, which was below the national rate of 97 physicians per 100,000 population (Morgan & Morgan, 2010). Arkansas ranked 39th among states in physicians in psychiatry per capita in 2008 with 8 physicians per 100,000 population, which was below the national rate of 13 physicians per 100,000 population. In 2008, there were 41 dentists per 100,000 population and Arkansas ranked 49th among the 50 states in dentists per capita.

Registered Nurses. In 2008, there were 802 registered nurses per 100,000 population in Arkansas, which was less than the national rate of 835 and ranked them 33rd among the 50 states (Morgan & Morgan, 2010).

Pharmacists. Workforce data on Arkansas pharmacists indicated that there were 97 pharmacists per 100,000 population in 2008, which ranked them 19th among the 50 states (Morgan & Morgan, 2010).

Allied health professionals. Workforce data on allied health professions in Arkansas in 2008 demonstrated that there were 5 physician assistants in clinical practice per 100,000 population, which was less than the national rate of 24 and ranked them 49th in the nation (Morgan & Morgan, 2010). Arkansas ranked 33rd in the nation in physical therapists per 100,000 population with 53 physical therapists per 100,000 population. There were 62 emergency medical technicians and paramedics per 100,000 population, which ranked Arkansas as 33rd in the nation and below the national rate of 68 technicians and paramedics per 100,000 population. Arkansas ranked 37th

among states in health care aides and assistants (home health aides, nursing aides, psychiatric aides, dental assistants, and pharmacy aides) with 1,122 aides and assistants per 100,000 population, which was below the national rate of 1,242 aides and assistants per 100,000 population.

IMPACT OF HEALTH WORKFORCE SHORTAGES ON QUALITY OF HEALTH CARE AND PATIENT OUTCOMES

Insufficient numbers and quality of health care professionals can affect the ability of health care facilities to meet the needs of their communities. National surveys of registered nurses (N = 657), physicians (N = 445), and hospital executives (N = 364) in 2004-2005 demonstrated that nursing shortages in hospitals had an impact on hospital capacity for the following indicators: 56%-78% of these respondents reported that the nursing shortages had reduced the number of available hospital beds; 50%-69% reported an impact of these shortages on delayed discharges; 45%-68% reported an impact of shortages on increased patient wait time for surgery or tests; and 20%-49% reported that these shortages had discontinued/closed patient care programs (Buerhaus, Donelan, Ulrich, Norman, DesRoches, & Dittus, 2007).

Results from a survey of U.S. hospitals from 11 states (N = 799 hospitals) demonstrated strong and consistent relationships between nurse staffing variables and five

patient outcomes, including urinary tract infection, pneumonia, length of hospital stay, upper gastrointestinal bleeding, and shock (U.S. Department of Health and Human Services, 2001). The findings indicated a strong and consistent relationship between nurse staffing and failure to rescue (death rate related to hospital complications) among major surgery patients. Higher nurse staffing was associated with a 2% to 25% reduction in rates of these patient outcomes.

The shortage of qualified staff is an immediate and long-term need at the same time that the demand for health care services is rapidly growing. These shortages can affect the health status of the residents of this state. In 2009, Arkansas ranked 40th in the nation for health status (United Health Foundation, 2009). Challenges for the health of Arkansas residents include a high prevalence of smoking at 22% of the population; a high prevalence of obesity at 30% of the population; a high occupational fatalities rate of 9 deaths per 100,000 workers; limited availability of primary care physicians; a high premature death rate with 9,601 years of potential life lost before age 75 per 100,000 population; and a high rate of cancer deaths at 213 deaths per 100,000 population. Adequate numbers of health care professionals are needed to address these causes of preventable, premature deaths and to promote continued improvement in the health status of Arkansans.

Purpose and Significance of the Study

The purpose of this study was:

- [1] To assess health workforce vacancies for 90 health professionals in Arkansas by type of health care facility, regions in Arkansas and in Pulaski County.
- [2] To assess vacancies in hospitals, nursing homes, medical clinics, county health units, community health centers, AHEC clinics, dentist offices, pharmacies, ambulance and home health care services.
- [3] To assess current, employment vacancies during 2011 and expected, employment vacancies within the next 5 years for the following categories of health professions: Primary care physicians, physician specialists, nursing, allied health professions, and pharmacy.

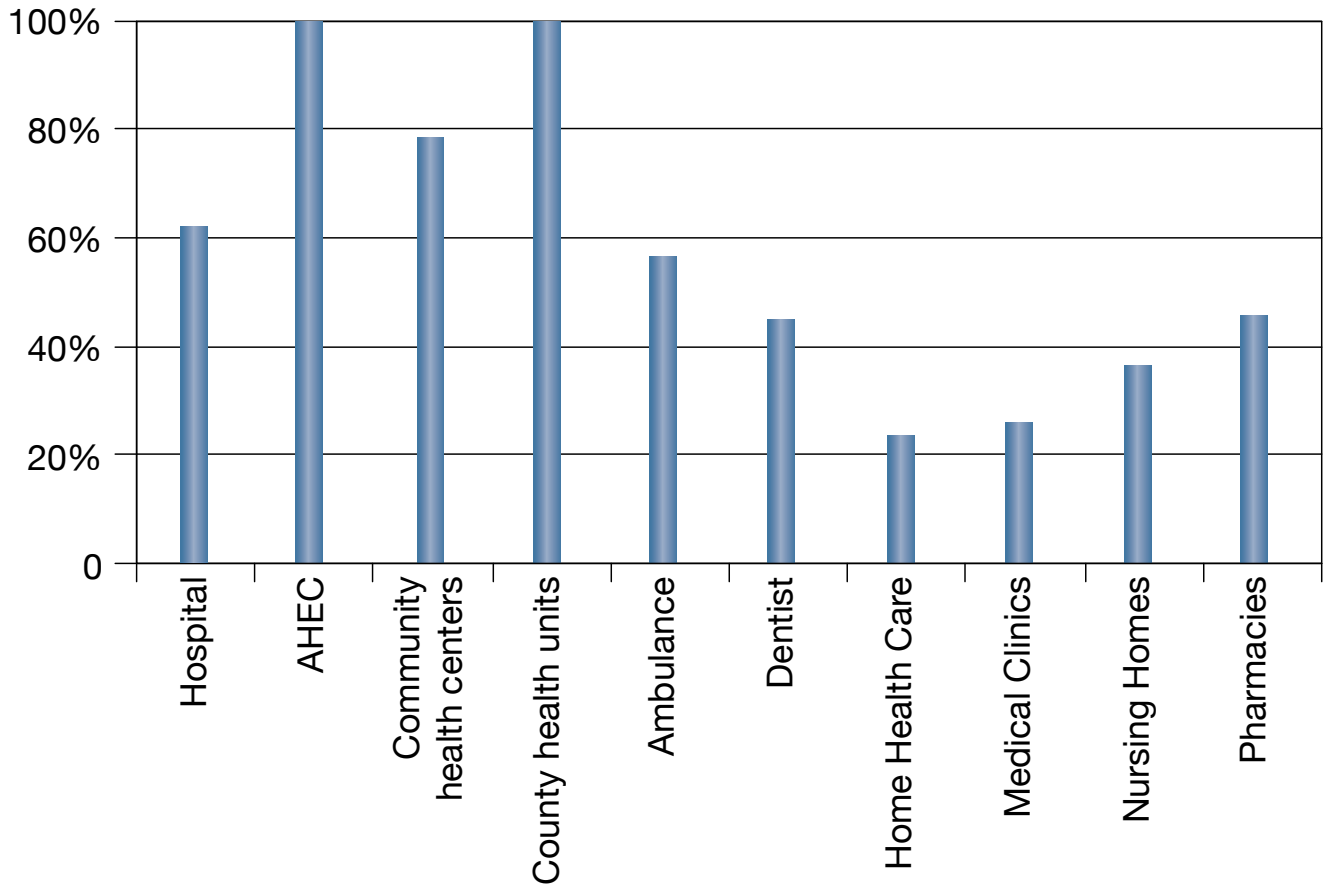
This study included all counties in the state. Regions of the state were divided according to the Area Health Education Centers (AHEC). The Delta Health Education Center includes: Crittenden, Saint Francis, Lee, Monroe, Phillips, Desha, and Chicot counties; the AHEC West includes: Crawford, Franklin, Johnson, Pope, Sebastian, Logan, Conway, Faulkner, Scott, Yell, Perry, Polk, and Montgomery counties; the AHEC Northeast includes: Randolph, Clay, Lawrence, Greene, Craighead, Mississippi, Poinsett, Jackson, Woodruff, and Cross counties; AHEC North Central includes: White, Marion,

Baxter, Fulton, Searcy, Stone, Izard, Sharp, Van Buren, Cleburne, and Independence counties; AHEC Northwest includes: Benton, Carroll, Boone, Washington, Madison, and Newton counties; AHEC South Central includes Garland, Saline, Lonoke, Prairie, Hot Spring, Grant, Jefferson, Arkansas, Cleveland, Lincoln, and Drew counties; AHEC South includes: Dallas, Ouachita, Calhoun, Bradley, Columbia, Union, and Ashley counties; AHEC Southwest includes: Sevier, Howard, Pike, Clark, Little River, Hempstead, Nevada, Miller, and Lafayette counties.

Results from this study may be used to provide an essential database for planning curricula and degree options for the health care industry in Arkansas. The information gathered in this study will be used in planning for a supply of health professionals that will meet the demand. Results could contribute to the attraction of health professionals to geographic areas with demand for specific health professions. In addition, the results will help the Center for Rural Health determine the needs of rural areas for health professionals. The survey findings will be communicated to the state's college deans and academicians, health care administrators, and key public policymakers within the state. Results may be used to plan strategies in clinical practice and health professions education for addressing current and expected workforce vacancies for health professionals in health care facilities in Arkansas.

Results from this study may be used to provide an essential database for planning curricula and degree options for the health care industry in Arkansas.

RESPONSE RATES



Type	Population	Sample Size	Response rate
Hospital (unique)	111	68	61.26%
Alcoholism or drug rehabilitation	7	3	42.86%
Medical hospital	87	59	67.82%
Psychiatric hospital	17	6	35.29%
AHEC	8	8	100.00%
Community health centers/clinics & dental centers	74	58	78.38%
County health units	102	102	100.00%
Ambulance	62	35	56.45%
Dentist	865	389	44.97%
Home Health Care	169	40	23.67%
Medical Clinics	2180	568	26.06%
Nursing Homes	246	90	36.59%
Pharmacies	395	181	45.82%
Total	4212	1539	36.54%

METHODS

Design and Sample

A cross-sectional survey design was used with one assessment period to measure current health workforce vacancies and expected vacancies within the next 5 years for 90 health professionals. Other descriptive variables include the type of health care facility, regions in Arkansas, and Pulaski County. Data were collected during March 15, 2011 to July 28, 2011. The study population (N = 4,212) included directors of the human resources department, administrators, and office managers in hospitals (n = 111), nursing homes (n = 246), medical clinics (n = 2,180) county health units (n = 102), Community Health Centers and dental clinics (n = 74), AHEC clinics (n = 8), dentist offices (n = 865), pharmacies (n = 395), ambulance (n = 62) and home health care (n = 169) services. These health care facilities are located in the eight regions in Arkansas and Pulaski County. These regions include all counties in the state. The sample included one key informant from each health care facility. The population that was surveyed in this study (N = 4,212) represented the total number of each type of health care facility in Arkansas. The hospitals included medical, psychiatric, and alcoholism/drug rehabilitation hospitals.

The sources for mailing lists for health care facilities in the study population include: The Arkansas Hospital Association; Arkansas Health Care Association (for nursing homes); Arkansas Department of Health, County Health Units; Community Health Centers of Arkansas, Inc.; and Arkansas Area Health Education Centers (AHEC). Contact information for the medical clinics, dentist offices, pharmacies, ambulance and home health care services were obtained through a professional sample provider.

Procedures

The responders had an option of completing the survey instrument via two different modalities, including paper and on-line via a website. The mailed survey also included the option of participating in the on-line version via a website. A cover letter was attached with the survey instrument, which informed participants about the purpose of the survey, its importance, how they were selected, and that their responses will be kept confidential. The researchers mailed one questionnaire to all population members. After a short, but adequate response time, a dual-purpose postcard was mailed to all population members. This postcard thanked those who have already responded and reminded nonrespondents to complete the survey. Allowing a sufficient time for response, a second questionnaire was mailed to all nonresponding population members. The

mailings for the two questionnaires also included cover letters and Business Reply Mail envelopes to encourage completion of the survey instrument. The questionnaires were faxed if the participants preferred to receive the questionnaire via fax. The second mailed questionnaire and cover letter to nonrespondents included the option of participating in the on-line version of the survey via a website.

For population members with email addresses, a pre-survey letter was mailed to inform these population members that they have been selected to participate in a survey, the purpose of the survey, its importance and how they were selected, and to alert them to look for an email about this survey. The pre-survey letter was followed by four follow-up emails to population members for whom functional email addresses were available. These emails included invitations to complete the on-line version of the survey via a website. The researchers mailed two questionnaires to population members for whom email addresses were available but who had not responded to emailed invitations to complete the on-line survey. The web address for completing the on-line survey was provided in both cover letters to nonrespondents with known email addresses.

The researchers conducted follow-up with nonrespondents via telephone. A telephone call was used to remind population members to complete the mailed survey or the Web-based survey. A telephone reminder followed the second mailed survey. Approximately 2.5 weeks after mailing the second questionnaire, the researchers telephoned population members to remind them to respond to the survey. As many as three reminder calls were made to nonrespondents. If the questionnaire was lost or another was needed, the address of the web survey was emailed or a replacement questionnaire was emailed or faxed. All correspondence provided a toll-free telephone number through which the population members may contact the researchers about questions regarding completion of the questionnaire.

Each survey instrument was assigned a code number to identify respondents along with their health care facility location. The code numbers were used to link the health care facility locations to zip codes. The zip codes were used to obtain the variable for corresponding region in Arkansas. In addition, the zip codes were used to determine the county in which each health care facility was located. Zip code-based population statistics were used to determine the size of the community in which each health care facility was

located. Web addresses and personal identification numbers (PINs) were provided for population members to complete the on-line survey. The PINs assured that each member of the population took the survey only once.

Instrument

The vacancy survey instrument was used to assess current vacancies and expected vacancies within the next 5 years for 90 health professionals. Eight survey instruments were tailored to measure vacancies due to differences based on facility type: 1) hospitals, 2) nursing homes, 3) medical clinics; 4) AHEC clinics, Community Health Centers, and county health units; 5) dentist offices, 6) pharmacies, 7) ambulance services, and 8) home health care services. These survey instruments include specific health professionals that are predominantly employed in these types of health care facilities.

The vacancy survey for this study was adapted from the eight-item vacancy survey that was developed by the Idaho Rural Health Education Center (Powell, 2001). The Idaho vacancy survey assessed current vacancies for 27 health professionals. The survey was revised for this study to include vacancies for 63 additional health professionals. In addition, expected vacancies within the next 5 years were included in the survey. The vacancy survey for this study includes 3-11 items that assess current vacancies and expected vacancies within the next 5 years for: primary care physicians (4 specialties); physician specialists (30 specialties); nursing (10 professions); allied health professions, (42 professions); and pharmacy (4 professions). Participants responded to each of these instrument items by listing the number of vacancies for each health professional.

In addition, one instrument item assesses information about the health care facility, which includes the contact person, facility name and type, hospital size/number of beds, address, telephone and fax numbers, and e-mail address. Participants were also asked if they would like to receive information about individuals in various professions that are seeking health care positions within Arkansas. The instrument for medical clinics included an item that assessed the medical specialties in the clinic. Two items assess the health care facility's use of Telemedicine and use of medical specialties with Telemedicine. The instrument also includes a section for comments.

Five additional items evaluate current posting of the health care facility's vacancies on the Med Job Arkansas website; previous contacts with the UAMS Center for Rural Health, Recruiting Service regarding these vacancies; the participant's interest in listing the vacancies with the Recruiting Service; and interest in filling the physician vacancy with a J1 VISA

candidate. Participants respond to these items with a yes-no response. The Med Job Arkansas website (<http://www.medjobarkansas.com>) is provided by the UAMS Center for Rural Health's Physician Placement service. It is designed to benefit health care facilities by advertising job opportunities at these facilities.

Statistical Procedures

Data were entered and analyzed in the Statistical Package for the Social Sciences (SPSS), Version 15 and SASv9.2. The cross tabulations were used to count the number of vacancies for each health professional by type of healthcare facility, by Arkansas regions and in Pulaski County. The data were assessed for duplicate vacancies. This problem occurred among reported vacancies for physicians in medical clinics and hospitals. Frequencies of the data were reviewed in order to identify potential duplicates in these facilities by Arkansas towns. These reviews were followed by calling respondents to verify potential duplicates for physicians' vacancies in these health care facilities. Current vacancies and expected vacancies within the next 5 years for health professions in the study population (N = 4,212 facilities) were extrapolated from the current and expected vacancies that were reported in the survey.

The current and expected vacancies for health professions in the population (N = 4,212 facilities) were calculated by multiplying the number of current and expected vacancies for each health profession within each facility type by a constant multiplier to adjust for nonrespondents. Each multiplier was specific to a facility type. This multiplier was a ratio of the total number of surveyed facilities for each facility type and the number of respondents for each facility type. The current and expected vacancies for primary care physicians in the population for medical clinics were calculated based on those vacancies found in the medical clinics for each primary care physician, e.g. family practice, internal medicine, pediatrics, and obstetrics/gynecology clinics. The current and expected vacancies for dentists in the population for Community Health Centers were calculated based on those vacancies found in Community Health Centers with dental clinics.

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WORKFORCE NEEDS FOR NURSING

Arkansas is facing a growing shortage of nurses. The shortage of nurses is expected to worsen in Arkansas and throughout the nation as the baby boomers retire. A growing aging population will increase demand for health services that will include care for chronic diseases and medication management. The growing total populations, increased elderly and ethnic minority population in Arkansas are expected to increase the demand for nursing services (U.S. Department of Health and Human Services, 2004a). Additional factors contributing to the shortage of nurses include unfavorable work environments; more satisfying alternative job opportunities; financial constraints with the current recession; and limitations in faculty, laboratory space, and clinical training sites for health education programs. As financial restrictions increase with Medicare, Medicaid, and growing hospital costs, it is difficult for hospitals to attract and retain nurses (American Hospital Association, 2010b; McHugh, Aiken, & Cooper, 2008). In addition, there are problems with recruitment and retention of nurses practicing in rural areas that are related to low compensation, rising malpractice premiums, professional isolation, limited time off, and scarcity of jobs for spouses (Doescher, Skillman, & Rosenblatt, 2009; Rosenblatt, Andrilla, Curtin, & Hart, 2006).

The demand for RNs is predicted to increase during the next 20 years, causing an estimated national shortage of about 285,000 full-time equivalent (FTE) RNs by 2015 and a larger shortage of 500,000 FTE RNs by 2025 (Buerhaus, 2008). Insufficient numbers and quality of nurses can affect the ability of health care facilities to meet the needs of their communities. National surveys of registered nurses (N = 657), physicians (N = 445), and hospital executives (N = 364) in 2004-2005 demonstrated that nursing shortages in hospitals had an impact on reduced available hospital beds, delayed discharges, increased patient wait time for surgery/ tests, and discontinued patient care programs (Buerhaus, Donelan, Ulrich, Norman, DesRoches, & Dittus, 2007).

Implications for Nursing Education, Clinical Practice, and Health Care Management

Results from this study present implications for nursing education, clinical practice, and health care management. The Patient-Centered Medical Home (PCMH) provides strategies for addressing the nursing shortages in Arkansas. PCMH involves nurses working in care teams to improve efficiency in the delivery of health care and patients' access to care (American Academy of Family Physicians, 2011). Practice organization strategies involve team meetings, stimulating and rewarding roles and responsibilities, shared vision among team members, value for contributions to the team, and ongoing education and leadership training. Quality measures are evaluated to improve quality and efficiency of care and to ensure adequate and fair distribution of work. Additional recommendations for addressing the nursing shortages include rural setting clinical training for nurses, which can be successful in increasing training for disadvantaged students and increasing the perception of rural practice (Guion, et al., 2006).

There needs to be increased recruitment and retention of nurses in rural areas. This can be improved by highlighting the positives of rural communities such as the family environment, positive interactions among the community, and ability to continue being respected and achieve future goals (MacDowell, Glasser, Fitts, Nielsen, Hunsaker, 2010).

The shortages of nursing in rural communities can be addressed through telemedicine, school telehealth programs, and the use of Advanced Practice Nurses (Gale & Lambert, 2006; Hartley, Hart, Hanrahan, Loux, 2004). Additional implications involve increased wages and job flexibility, improved workplace and job satisfaction, increased retention of current RNs, private sector initiatives such as the Johnson and Johnson Campaign for Nursing's Future, and mentorship programs (Buerhaus, 2009). Barriers for nursing practice need to be removed, such as entrance difficulties for qualified applicants to nursing schools and social stigma of male nurses. Nurses in rural communities feel they do not

have the resources for continued education, transportation, and security (Hunsberger, Baumann, Blythe, Crea, 2009). There is a need for better staffing and scheduling for nurses, which can be improved through scholarships and awareness in undergraduate nursing classes. Professional opportunities such as apprenticeships can expose students to nursing careers. Focusing on early and sustained education in nursing careers and flexible pathways that facilitate career development will help in preparing a pipeline of nursing professionals.

Current Vacancies for Nursing in Health Care Facilities

- The total number of current vacancies for nursing = 1,970.
- Licensed Practical Nurses (LPN) had the highest number of current vacancies (772).
- Diploma and Associate Degree Nurses (Non-BSN) had 495 current vacancies.
- Baccalaureate Prepared Nurses (BSN) had 307 current vacancies.
- Advanced Practice Nurses (APN) had 231 current vacancies.
- Medical clinics had the highest number of current vacancies for nursing (715).
- Medical Hospitals reported 622 current vacancies for nursing.
- Home Health Care Services reported 283 current vacancies for nursing.
- Nursing Homes reported 243 current vacancies for nursing.

Expected Vacancies Within the Next 5 years for Nursing in Health Care Facilities

- The total number of expected vacancies for nursing = 5,675.
- Licensed Practical Nurses (LPN) had the highest number of expected vacancies (2,288).
- Diploma and Associate Degree Nurses (Non-BSN) had 1,300 expected vacancies.
- Baccalaureate Prepared Nurses (BSN) had 1,268 expected vacancies.

- Advanced Practice Nurses (APN) had 526 expected vacancies.
- Medical Hospitals had the highest number of expected vacancies for nursing (1,817).
- Medical clinics reported 1,640 expected vacancies for nursing.
- Nursing Homes reported 948 expected vacancies for nursing.
- Home Health Care Services reported 672 expected vacancies for nursing.

**Note:* These results for current and expected vacancies for health professions in the study population (N = 4,212 facilities) were extrapolated from the current and expected vacancies that were reported in the survey.

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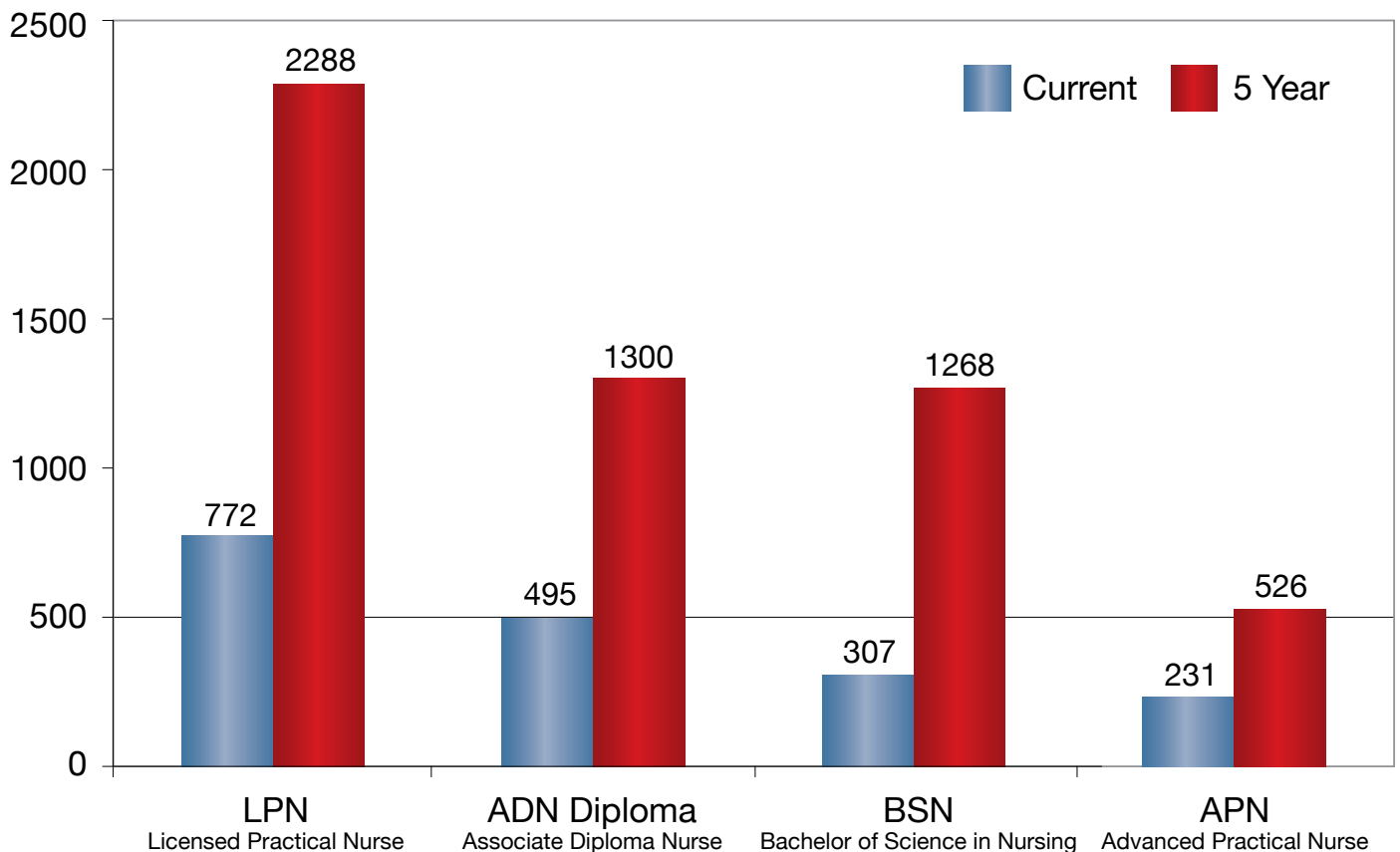
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Current and Expected Vacancies for Nursing Professions in Arkansas



Current and Expected Vacancies for Nursing in Arkansas Population Estimate

Type	Current	5 Year
ADN Diploma	494.6	1300.2
BSN Nurse	306.7	1267.8
Certified Nurse Anesthetist	22.1	35.1
Certified Nurse Specialist	17.3	29.7
Doctoral Nurse	11.8	21.3
LPN Nurse	771.8	2288.4
Masters Nurse Administration	10.2	58.2
APN Nurse	231.3	526.1
Nurse Educator	17.7	100.1
Nurse Midwife	1.5	0

Current Vacancies for Nursing Professions in Arkansas
by Facility Type

Region	ADN Diploma	BSN	Certified Nurse Anesthetist	Certified Nurse Specialist	Doctoral Nurse	LPN	Masters Admin	APN	Nurse Educator	Midwife
AHEC						6		2	1	
Ambulance										
Community Health or Dental Clinic		2.6				6.5		7.8		
County Health Clinic	28	3				6				
Dental Office										
Home Health	76.2	59				110		8.5	4.2	
Medical Clinic	84.3	84	19.1	11.4	7.6	295		175	3.8	
Medical Hospital	289.7	121	3	5.9	1.5	150	7.5	29.9	6	1.5
Nursing Home	13.6	14			2.7	191	2.7	2.7	2.7	
Pharmacy										
Psychiatric Hospital	2.8	23				5.6	2.8			
Rehab Hospital						2.3		2.3		
Total	495	307	22	17	12	772	10	231	18	2

NURSING

Expected Vacancies for Nursing Professions in Arkansas by Facility Type

Region	ADN Diploma	BSN	Certified Nurse Anesthetist	Certified Nurse Specialist	Doctoral Nurse	LPN	Masters Admin	APN	Nurse Educator	Midwife
AHEC						12	2	3	1	
Ambulance										
Community Health or Dental Clinic		11.5				47.4		23	2.6	
County Health Clinic	178	24.2				57				
Dental Office										
Home Health	178	203				199	8.4	30	46.5	
Medical Clinic	177	230	31	7.6	7.6	844		302	7.6	
Medical Hospital	645	649	4.5	22.1		330	17.8	130	17.8	
Nursing Home	46.3	51.8			13.7	760	27.2	19	24.6	
Pharmacy										
Psychiatric Hospital	76.6	90.7				28.4	2.8	14		
Rehab Hospital		7				11.7		4.7		
Total	1300	1268	35	30	21	2288	58	526	100	0

Team-based care and an expanded role for advance practice nurses and physician assistants could mitigate the shortage of primary care providers

Current Vacancies for Nursing Professions in Arkansas by Region

Region	ADN Diploma	BSN	Certified Nurse Anesthetist	Certified Nurse Specialist	Doctoral Nurse	LPN	Masters Admin	APN	Nurse Educator	Midwife
Delta	4	11.3			3.8	35		21.7		
Central (Little Rock)	92.9	80.5	3.8	7.6		182		42	7.2	
North Central	26.7	30.8	7.7			87		33.3	1.5	
North East	66	31.7	3.8	3.8		67	1.5	39.8		
North West	72.2	52.3	6.8		2.7	126	4.2	20.7	2.7	
South Arkansas	56.4	46.7				34		18.3	1.5	
South Central	100.3	4.4			5.3	72		19.7		
South West	6.9	4.5				41				
West	69.2	44.5		5.9		128	4.5	35.8	4.8	1.5
Total	495	307	22	17	12	772	10	231	18	2

Expected Vacancies for Nursing Professions in Arkansas by Region

Region	ADN Diploma	BSN	Certified Nurse Anesthetist	Certified Nurse Specialist	Doctoral Nurse	LPN	Masters Admin	APN	Nurse Educator	Midwife
Delta	31.7	18.6			3.8	96.4	4.2	28.1	4.2	
Central (Little Rock)	101	205.6	7.6	3.8		341.7	2.7	94	8.5	
North Central	98	187.5	5.3			197.6	1	69.5	7	
North East	91.2	63.7		3.8		341.3	4.2	57	2.7	
North West	212	191.8	3.8		13.7	358.6	20.7	69.5	20.5	
South Arkansas	66.6	8.9			3.8	97.4		15.9	3.8	
South Central	293	28.5	7.7			245.3		104.3	3	
South West	15.2	30.9	1.5			63.8	1	3.8	1	
West	392	532.3	9.2	22.1		546.3	24.4	84	49.4	
Total	1300	1268	35	30	21	2288	58	526	100	0

WORKFORCE NEEDS FOR ALLIED HEALTH PROFESSION

Workforce data on allied health professions indicate shortages of these professions in Arkansas. In 2008, there were 5 physician assistants in clinical practice per 100,000 population, which was less than the national rate of 24 and ranked them 49th in the nation (Morgan & Morgan, 2010). Arkansas ranked 33rd in the nation in physical therapists per 100,000 population with 53 physical therapists per 100,000 population. There were 62 emergency medical technicians and paramedics per 100,000 population, which ranked Arkansas as 33rd in the nation and below the national rate of 68 technicians and paramedics per 100,000 population. Arkansas ranked 37th among states in health care aides and assistants (home health aides, nursing aides, psychiatric aides, dental assistants, and pharmacy aides) with 1,122 aides and assistants per 100,000 population, which was below the national rate of 1,242 aides and assistants per 100,000 population. Statistics from the Arkansas Department of Health, in 2009, indicated that 18 to 40 counties in Arkansas had five or fewer of the following allied health professionals: Dental assistants, dental hygienists, physical therapists, respiratory therapists, social workers, and speech pathologists (Arkansas Department of Health, 2009). Ten counties had no occupational therapists and 23 had no occupational therapy assistants. Fifty-seven of Arkansas' 75 counties had no audiologists, dieticians, physician assistants, and psychologists.

Implications for Allied Health Professions Education, Clinical Practice, and Health Care Management

Results from this study present implications for allied health professions education, clinical practice, and health care management. Mentoring programs, financial support, academic enrichment, tutorials for admissions preparations and motivational programs can aid all students in pursuing allied health careers, particularly those from underserved areas. Strategies are recommended for recruiting new faculty to replace the aging faculty in health professions educational programs and for improving physical facilities and available

clinical placements for health professions education (Cooper, 2007; Kuehn, 2007; U.S. Department of Health and Human Services, 2005). These recommendations involve improving salaries for health professions faculty and partnering with private entities, federal agencies, health professional training programs, and hospitals to share facilities and provide funding for student loans and scholarships, additional faculty and educational programs for health professions.

Current Vacancies for Allied Health Professions in Health Care Facilities

- The total number of current vacancies for allied health professions = 4,335.
- Certified Nurse Assistants had the highest number of current vacancies (1,429).
- Home Health Aides had 339 current vacancies.
- Physical Therapists had 296 current vacancies.
- Occupational Therapists had 271 current vacancies.
- Medical Clinics had the highest number of current vacancies for allied health (1,463).
- Home Health Care Services reported 959 current vacancies for allied health professions.
- Nursing Homes reported 786 current vacancies for allied health professions.
- Medical Hospitals reported 629 current vacancies for allied health professions.

Expected Vacancies Within the Next 5 years for Allied Health Professions in Health Care Facilities

- The total number of expected vacancies for allied health professions = 16,468.
- Certified Nurse Assistants had the highest number of expected vacancies (5,660).
- Home Health Aides had 1,751 expected vacancies.
- Physical Therapists had 834 expected vacancies.
- Dietary Aides and Environmental Services had 728 expected vacancies.
- Nursing Homes had the highest number of expected vacancies for allied health (4,137).

- Home Health Care Services reported 4,044 expected vacancies for allied health.
- Medical Clinics reported 3,791 expected vacancies for allied health professions.
- Medical Hospitals reported 2,601 expected vacancies for allied health professions.

**Note:* These results for current and expected vacancies for health professions in the study population (N = 4,212 facilities) were extrapolated from the current and expected vacancies that were reported in the survey.

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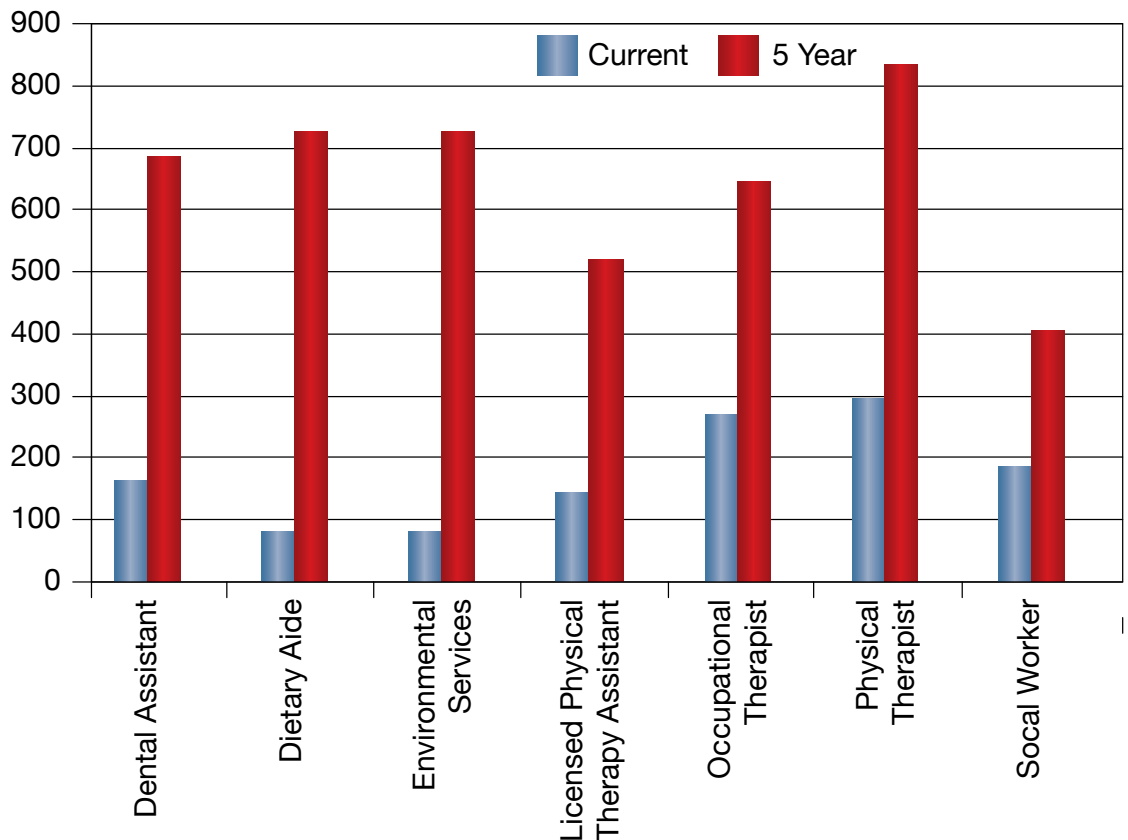
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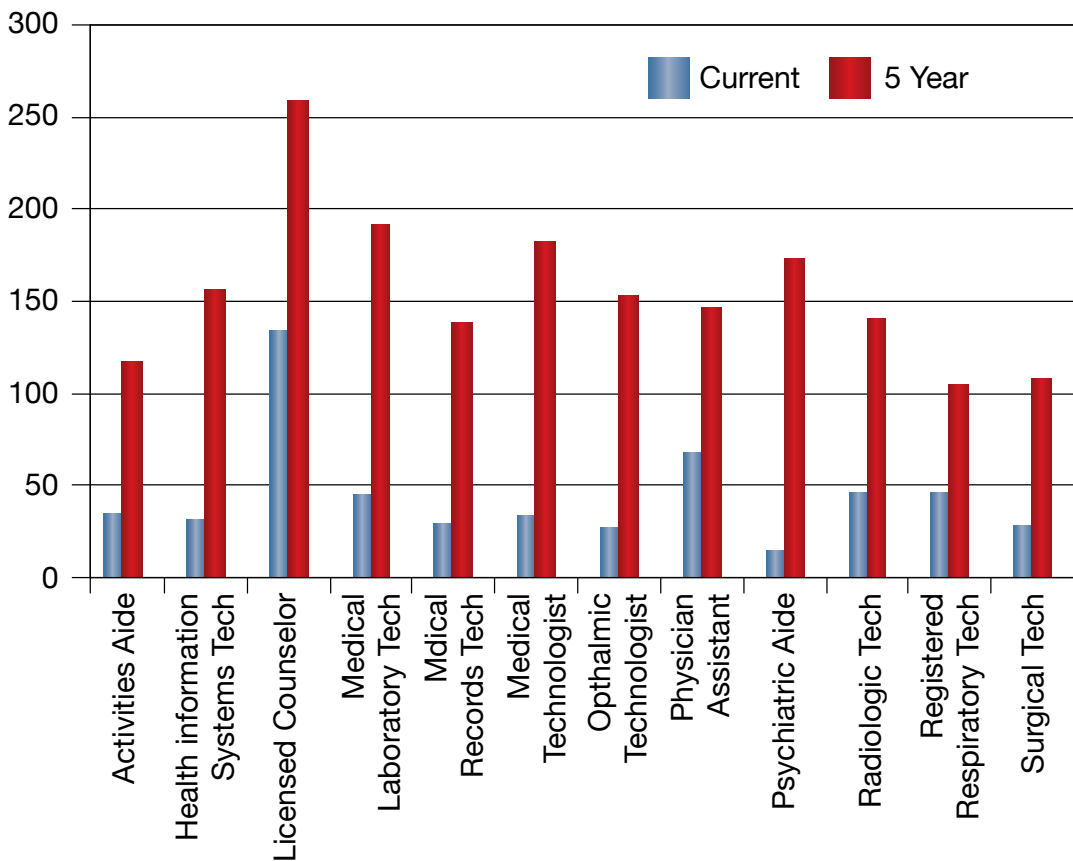
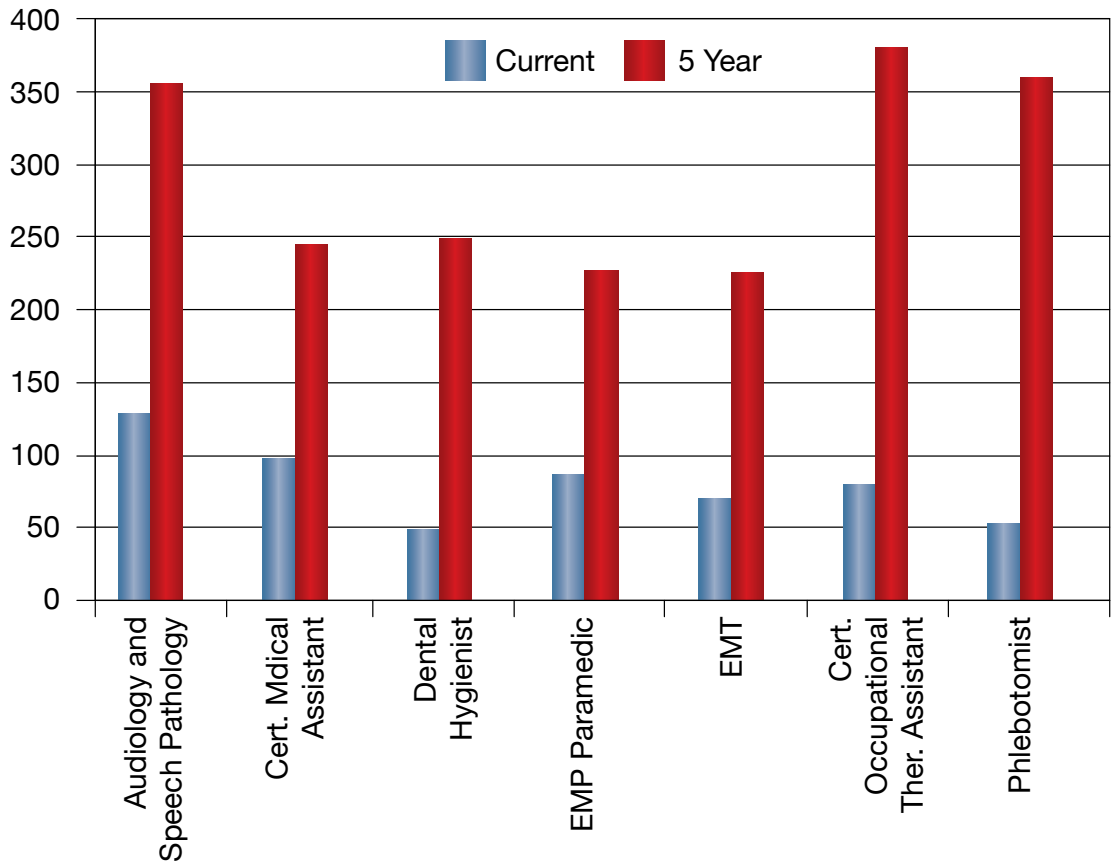
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Current and Expected Vacancies for Allied Healthcare Professions in Arkansas

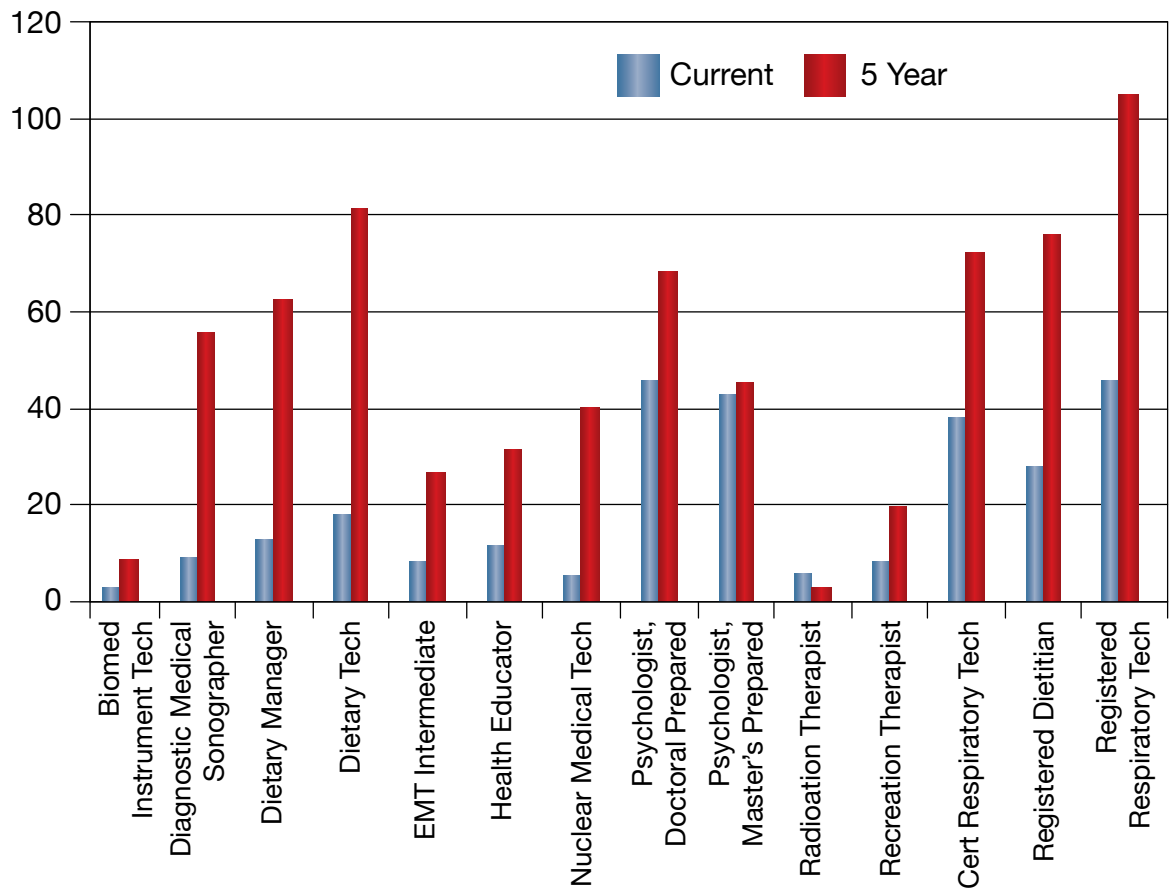


Allied Health

Current and Expected Vacancies for Allied Healthcare Professions in Arkansas



Current and Expected Vacancies for Allied Healthcare Professions in Arkansas



Current and Expected Vacancies for Allied Healthcare Professions by Facility

Facility	Current	5 Year
AHEC	1	14
Ambulance	135	376
Community Health or Dental Clinic	23	74
County Health Unit	0	2
Dental Office	234	1009
Home Health	959	4069
Medical Clinic	1463	3683
Medical Hospital	629	2537
Nursing Home	786	4142
Psychiatric Hospital	91	411
Rehab Hospital	14	47

Allied Health

Current Vacancies for Allied Healthcare Professions by Facility Type

	AHEC	Ambulance	Community Health	County Health clinic	Dental Office	Home Health	Medical clinic	Medical Hospital	Nursing Home	Psychiatric Hospital	Rehab Hospital
Activities Aide								4.5	29.2		
Audiology and Speech Pathology						12.6	103.2	7.5	5.4		
Biomed Instrument Tech								3			
Cert. Medical Assistant			1.3				83.9	13.4			
Cert. Nursing Assistant	1				499	164.8	155	607	2.8		
Cytotechnologist											
Dental Assistant			6.5		158.7						
Dental Hygienist			2.6		46.2						
Diag. Medical Sonographer							7.6	1.5			
Dietary Manager								7.5	5.4		
Dietary Tech								4.5	13.7		
Dietary Aide								34.2	43.5	2.8	
Dietician			1.3				15.2	6	2.7	2.8	
EMT		55						14.9			
EMT Intermediate		5.3						3			
EMT Paramedic		74						12			
Environmental Services								47.4	32.6	2.8	
Health Educator			1.3				7.6		2.7		
Health Info System Tech			3.9		15.4		7.6	1.5		2.8	
Home Health Aide						330		8.9			
Medical Lab Tech			1.3				19	25.3			
Medical Records Tech			1.3		13.2		11.5	3			

Current Vacancies for Allied Healthcare Professions by Facility Type

	AHEC	Ambulance	Community Health	County Health clinic	Dental Office	Home Health	Medical clinic	Medical Hospital	Nursing Home	Psychiatric Hospital	Rehab Hospital
Medical Technologist							19	14.9			
Nuclear Medical Tech							3.8	1.5			
Occupational Therapist						29.4	206.7	24	10.8		
Cert. Occupational Ther. Assistant						8.4	57.2	12	2.7		
Ophthalmic Tech							26.8				
Phlebotomist			1.3				11.4		39.9		
Physical Therapist						38	210	44.8	2.7		
Licensed Physical Therapy Assistant						16.8	102.9	23.9	2.7		
Licensed Professional Counselor			1.3				95.8	1.5	2.7	28.3	4.7
Physician Assistant							64.7	3			
Psychologist Masters							26.8		5.4	8.5	2.3
Psychologist Doctoral							38.1		2.7	2.8	2.3
Psychiatric Aide								3		11.4	
Radiation Therapist								5.9			
Radiologic Tech							19.1	26.7			
Recreation Therapist									5.4	2.8	
Cert. Respiratory Tech						12.7	7.6	18			
Registered Respiratory Tech						8.5	7.7	29.7			
Social Worker			1.3			4.2	133.9	10.5	8.1	22.7	4.7
Surgical Tech							11.5	16.4			
Total	1	135	23	0	234	959	1463	629	786	91	14

Allied Health

Expected Vacancies for Allied Healthcare Professions by Facility Type

	AHEC	Ambulance	Community Health	County Health clinic	Dental Office	Home Health	Medical clinic	Medical Hospital	Nursing Home	Psychiatric Hospital	Rehab Hospital
Activities Aide							8.9	109.1			
Audiology and Speech Pathology						21	296	11.9	27.2		
Biomed Instrument Tech								9			
Cert. Medical Assistant			12.8				195	37			
Cert. Nursing Assistant	3					2100	223	447	2859	28	
Cytotechnologist								1.5			
Dental Assistant			21.9		665						
Dental Hygienist			9		240						
Diag. Medical Sonographer							19.1	35.6			
Dietary Manager								16.5	43.2	2.8	
Dietary Tech								7.5	71.1	2.8	
Dietary Aide								191	508.7	28	
Dietician			1.3				22.8	32.7	16.3	2.8	
EMT		183						42.9			
EMT Intermediate		8.9						17.8			
EMT Paramedic		184						43			
Environmental Services								483	281.5	8.5	
Health Educator			6.5	2			11.5	8.9	2.7		
Health Info System Tech	2		5.2		57.2		38.3	50.5		2.8	
Home Health Aide						1682		69.4			
Medical Lab Tech	3		2.6				84.2	102			
Medical Records Tech			1.3		46.3		42	45.9		2.8	

Expected Vacancies for Allied Healthcare Professions by Facility Type

	AHEC	Ambulance	Community Health	County Health clinic	Dental Office	Home Health	Medical clinic	Medical Hospital	Nursing Home	Psychiatric Hospital	Rehab Hospital
Medical Technologist	2						92	88.8			
Nuclear Medical Tech							15.2	25.2			
Occupational Therapist						38	526	41.6	38.2		2.3
Cert. Occupational Ther. Assistant						12.6	311	32.6	24.5		
Ophthalmic Tech							153				
Phlebotomist	1		6.4				80.4	272			
Physical Therapist						63.4	629	90.3	49.1		2.3
Licensed Physical Therapy Assistant						38	399	50.3	30		2.3
Licensed Professional Counselor			1.3				161	3	2.7	79	11.7
Physician Assistant			3.9				111	29.6	2.7		
Psychologist Masters			1.3				22.9		10.8	5.7	4.7
Psychologist Doctoral							53.5		2.7	2.8	9.3
Psychiatric Aide								3		170	
Radiation Therapist								3			
Radiologic Tech			5.1				61	74			
Recreation Therapist								3	8.2	8.5	
Cert. Respiratory Tech	1					21.1	11.5	38.6			
Registered Respiratory Tech						25.4	3.8	75.5			
Social Worker	1		7.7			42.2	203	26.8	48.9	65	11.7
Surgical Tech							26.7	81.3			
Total	14	376	86	2	1009	4044	3791	2601	4137	411	44

Allied Health

Current Vacancies for Allied Healthcare Professions by Region

	Delta	Little Rock	North Central	Northeast	Northwest	South Arkansas	South Central	Southwest	West	Sums by Allied Health Profess
Activities Aide		16.4		4.2	4.2		4.2		5.4	34
Audiology and Speech Pathology	11.4	19.1	9.1	14.1	9.2	9.5	11.9	5.3	39.1	129
Biomed Instrument Tech									3	3
Cert. Medical Assistant	11.5	34.4		7.6	23.9		3.8		17.4	99
Cert. Nursing Assistant	42.4	319.2	228.8	134.9	192.8	85.3	136.5	57.4	232.1	1429
Cytotechnologist										
Dental Assistant	7.9	15.4	22	15.4	31.2	2.2	19.9	11.1	40.1	165
Dental Hygienist	2.2	2.2	6.6	4.4	8.8	4.4	2.2	4.4	13.6	49
Diag. Medical Sonographer	3.8		1.5						3.8	9
Dietary Manager			2.7	1.5		1.5	1.5	2.7	3	13
Dietary Tech				1.5	5.5		3	2.7	5.5	18
Dietary Aide	2.7	10.8	17.5	10.4	8.3	2.7	12.7	2.7	12.7	81
Registered Dietician	10.4	2.8		3.8	4.2		3	3.8		28
EMT	7.1	5.3	6.2	9.8	16	1.8	18.9	1.8	3	70
EMT Intermediate			3		3.5	1.8				8
EMT Paramedic	10.1	7.1	8.4	8.5	15.9	7.1	20.7	3.6	5	86
Environmental Services	2.7	8.2	26.1	5.9	4.2	2.7	14.8		18.2	83
Health Educator	1.3	3.8			6.5					12
Health Info System Tech	7	6.6	1.5	2.2	1.3		4.4	3.8	4.4	31
Home Health Aide		173.2	56.7	46.5	42.3		15.7		4.2	339
Medical Lab Tech	5.1		10.4	8.3	8.3	3.8			9.7	46
Medical Records Tech	6		10.7		3.5			2.2	6.6	29

Current Vacancies for Allied Healthcare Professions by Region

	Delta	Little Rock	North Central	Northeast	Northwest	South Arkansas	South Central	Southwest	West	Sums by Allied Health Profess
Medical Technologist	3.8	3.8			4.5	3.8			18	34
Nuclear Medical Tech	3.8			1.5						5
Occupational Therapist	19.1	29.5	27	33.7	56.2	9.5	14.9	5.3	75.7	271
Cert. Occupational Ther. Assistant	7.6	3.8	6.8	11.4	13.7		4.2	5.3	27.5	80
Ophthalmic Tech	3.8	11.5	7.7	3.8						27
Phlebotomist	5.1	3.8	4.5	3	4.4	3.8	4.4		23.6	53
Physical Therapist	22.9	46.5	30	15.2	65.4	9.5	30.7	6.8	68.5	296
Licensed Physical Therapy Assistant	11.4	19.1	9.8	18.1	8.4	5.3	17.1	5.3	41.8	146
Licensed Professional Counselor	15.4	10.4	13	16.2	30.4		26.6	5.7	16.6	134
Physician Assistant	3.8	15.2		7.6	7.6		18.2		15.3	68
Psychologist Masters	3.8	2.8	3.8	2.3	10.4		7.7	5.7	6.5	43
Psychologist Doctoral		25.7	3.8	2.3	6.5				7.6	46
Psychiatric Aide					8.7				5.7	14
Radiation Therapist									5.9	6
Radiologic Tech	5.3	3.8	10.4	1.5	3.8		10.3		10.7	46
Recreation Therapist		5.5			2.7					8
Cert. Respiratory Tech	1.5	12.7	3.8	1.5	6		7.5		5.3	38
Registered Respiratory Tech		8.5	7.4	3		7.7	4.5	1.5	13.3	46
Social Worker	3.8	51.3	16.8	8.5	53.3	3.8	31.4	5.7	10.8	185
Surgical Tech			7.7		4.5		3		12.7	28
Total	243	878	564	419	676	166	454	143	792	

Allied Health

Expected Vacancies for Allied Healthcare Professions by Region

	Delta	Little Rock	North Central	Northeast	Northwest	South Arkansas	South Central	Southwest	West	Sums by Allied Health Profess
Activities Aide	2.7	32.7	9.7	13.5	16.5	21.1			21.8	118
Audiology and Speech Pathology	15.3	24.5	54.1	22.2	64.9	11.5	19.6	11.9	131.6	356
Biomed Instrument Tech			6		1.5		1.5			9
Cert. Medical Assistant	15.3	91.8	11.5	11.2	42.6		38.3		34.5	241
Cert. Nursing Assistant	80.9	695.1	909	396.7	1331	48.3	358.2	41	1800	5660
Cytotechnologist							1.5			2
Dental Assistant	38.2	103.9	30.8	171	167.6	13.2	46.2	22.1	94.2	687
Dental Hygienist	22.4	37.4	17.6	15.4	61.1	13.2	33	8.8	40	249
Diag. Medical Sonographer			7.5	5.3	1.5	3.8	6.8	1	29.8	56
Dietary Manager		5.4	9.9	9.6	13.9	4.5	5.7		13.5	63
Dietary Tech			10	8.2	8.2				55	81
Dietary Aide	21.1	79.3	57.9	89.7	203.2	4.4	150.3		121.8	728
Registered Dietician	2.7	3.8	7.5	8.3	17.6		19.2	10.3	6.5	76
EMT	20.7		53.2	18.9	58.5	12.4	40.5	12.4	8.8	225
EMT Intermediate			3			8.9	14.8			27
EMT Paramedic	20.7		56.1	20.7	44.2	21.5	40.9	14.2	8.8	227
Environmental Services	8.2	54.7	66.1	101.2	126.2	22.1	185.2		164.6	728
Health Educator	4.9	1	3		5.5		7.7	3.8	5.7	32
Health Info System Tech	12.2	23.6	22	7.2	30.4	3	23.6	10.4	23.6	156
Home Health Aide		410	603.1	217.2	422.6	4.4	28.5		65.4	1751
Medical Lab Tech	8.1		37.2	10.3	33.6	4.4	40.8		57.6	192
Medical Records Tech	5.2	9.9	15.7		56.5		14.1	2.2	34.7	138

Current Vacancies for Allied Healthcare Professions by Region

	Delta	Little Rock	North Central	Northeast	Northwest	South Arkansas	South Central	Southwest	West	Sums by Allied Health Profess
Medical Technologist	6.8	11.5	16.6	5.8	11.2		41.4	19.2	70.3	183
Nuclear Medical Tech	5.3		3.8		3.8		8.9	3.8	14.8	40
Occupational Therapist	15.3	41.8	101.1	61.7	130	11.5	35.9	7.7	240.7	646
Cert. Occupational Ther. Assistant	11.4	11.5	49.4	9.3	42.6	11.5	22	7.7	215.1	381
Ophthalmic Tech	11.5	57.5	11.5	19.2	26.9		7.6	19.2		153
Phlebotomist	12	7.7	32.8	6	36.5		14.8	23	226.8	360
Physical Therapist	19.1	82.2	104.1	71.2	141.9	13	81.2	9.2	312.1	834
Licensed Physical Therapy Assistant	11.4	34.7	56.1	12.3	66.8	15.4	29.6	7.7	285.2	519
Licensed Professional Counselor	57.6	3.8	16.8	24.7	81.1	7.7	15.3	8.5	43.5	259
Physician Assistant		3.8		15.3	21.8	3.8	49.3	7.7	45.6	147
Psychologist Masters		9.2		4.7	11.6		7.7	5.7	6.5	45.4
Psychologist Doctoral		11.5	7.6	9.3	18	3.8	11.5	2.8	3.8	68
Psychiatric Aide			3		141.7				28.3	173
Radiation Therapist					3					3
Radiologic Tech	8.2	7.6	21.8	4.3	12.1	4.4	25.4	3.8	52.5	140
Recreation Therapist		2.7	1.5		14				1.5	20
Cert. Respiratory Tech		16.5	4	1.5	17.4	4.4	20.7		7.7	72
Registered Respiratory Tech	7.4	21.2	4.5		10.2		24.5		36.9	105
Social Worker	8	60.3	31.5	22.4	172.2	3.8	60.3	12.3	35.7	407
Surgical Tech	3		9.1	3.8	1.5	1.5	14.8		74.3	108
Total	456	1956	2466	1398	3672	278	1548	277	4419	

WORKFORCE NEEDS FOR PHARMACISTS

Workforce data on Arkansas pharmacists indicated that there were 97 pharmacists per 100,000 population in 2008, which ranked them 19th among the 50 states (Morgan & Morgan, 2010). Statistics from the Arkansas Department of Health, in 2009, indicated that nine counties in Arkansas had five or fewer pharmacists (Arkansas Department of Health, 2009).

Current Vacancies for Pharmacists in Health Care Facilities and Regions of Arkansas

- The total number of current vacancies for pharmacists = 71.
- Pharmacies had the highest number of current vacancies for pharmacists (50)
- Medical Hospitals had 13 current vacancies for pharmacists.
- The West Region had the highest number of current vacancies for pharmacists (17).
- The Northeast Region had 11 current vacancies for pharmacists.

Expected Vacancies for Pharmacists in Health Care Facilities and Regions of Arkansas

- The total number of expected vacancies for pharmacists = 518.

- Pharmacies had the highest number of expected vacancies for pharmacists (342).
- Medical Hospitals had 135 expected vacancies for pharmacists.
- The West Region had the highest number of expected vacancies for pharmacists (135).
- The Northeast Region had 89 expected vacancies for pharmacists.

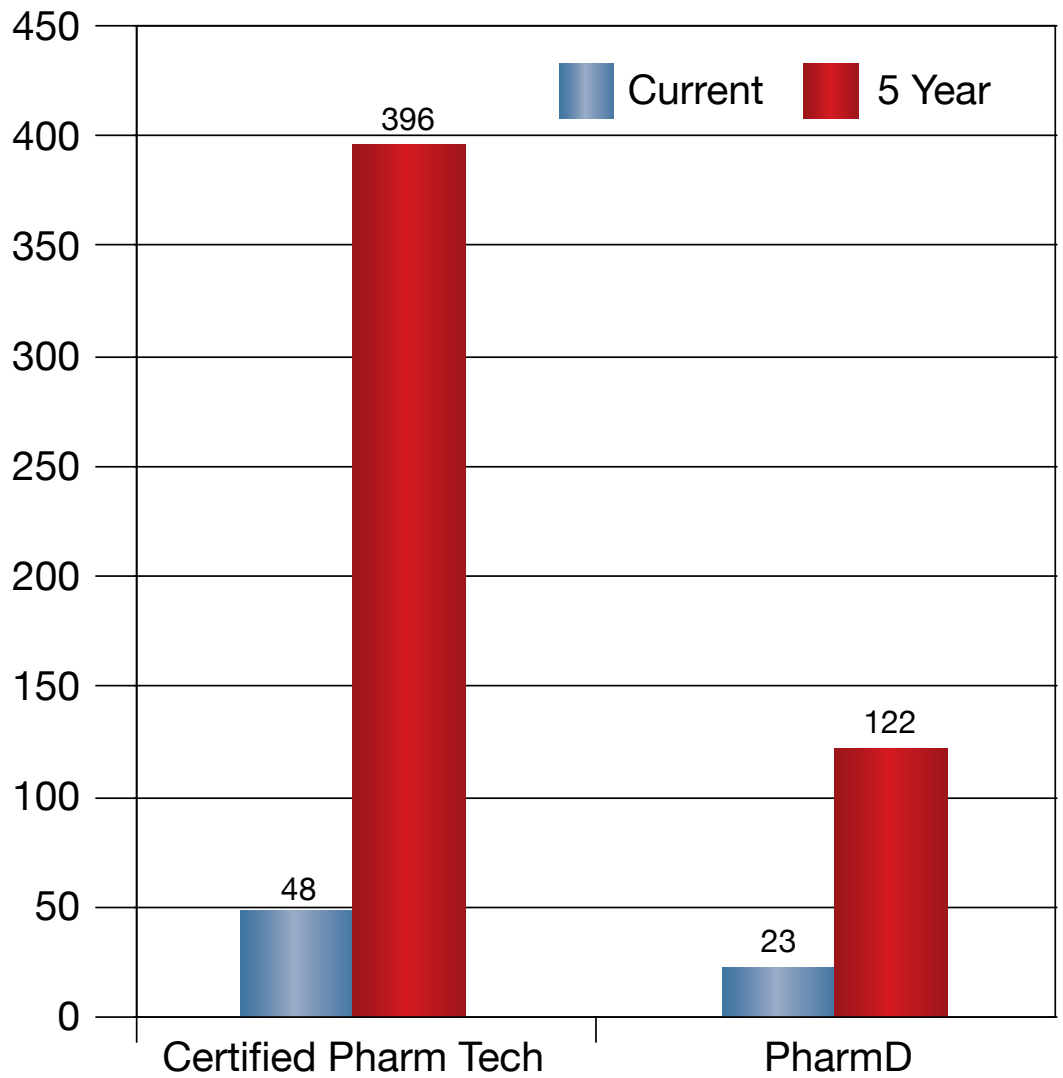
**Note:* These results for current and expected vacancies for health professions in the study population (N = 4,212 facilities) were extrapolated from the current and expected vacancies that were reported in the survey.

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Current and Expected Vacancies for Pharmacist in Arkansas



Current Vacancies for Pharmacist by Facility

Facility	Certified Pharm tech	PharmD
AHEC		
Community Health or Dental Clinic	1.3	
Medical Clinic		3.8
Medical Hospital	11.9	1.5
Pharmacy	35.2	15.3
Rehab Hospital		2.3
Total	48.4	22.9

Pharmacist

Expected Vacancies for Pharmacist by Facility

Facility	Certified Pharm tech	PharmD
AHEC		2
Community Health or Dental Clinic	5.1	1.3
Medical Clinic	15.2	7.6
Medical Hospital	114	20.9
Pharmacy	254.1	87.9
Psychiatric Hospital	5.7	
Rehab Hospital	2.3	2.3
Total	396.4	122

Current Vacancies for Pharmacist by Region

Region	Certified Pharm tech	PharmD
Delta	3.5	2.2
Little Rock	3.7	3.8
North Central	3.7	6.5
North East	8.9	2.3
North West		
South Arkansas	2.2	2.2
South Central	11	2.2
South West	2.2	
West	13.2	3.7
Total	48.4	22.9

Expected Vacancies for Pharmacist by Region

Region	Certified Pharm tech	PharmD
Delta	9.6	3.5
Little Rock	16.2	11.7
North Central	35.3	16.4
North East	72.8	16.6
North West	46.9	6.6
South Arkansas	16.1	8.8
South Central	59.4	20.6
South West	34.3	8.2
West	105.8	29.6
Total	396.4	122

WORKFORCE NEEDS FOR DENTISTS

In 2008, there were 41 dentists per 100,000 population and Arkansas ranked 49th among the 50 states in dentists per capita (Morgan & Morgan, 2010). Statistics from the Arkansas Department of Health, in 2009, indicated that five counties in Arkansas had no dentists and seven counties had one dentist (Arkansas Department of Health, 2009).

Current Vacancies for Dentists in Health Care Facilities and Regions of Arkansas

- The total number of current vacancies for dentists = 131.
- Dentist offices had the highest number of current vacancies for dentists (99)
- Community Health Centers had 32 current vacancies for dentists.
- The West Arkansas Region had the highest number of current vacancies for dentists (32).
- The Northwest Region had 26 current vacancies for dentists.
- The Delta Region had 19 current vacancies for dentists.

Expected Vacancies for Dentists in Health Care Facilities and Regions of Arkansas

- The total number of expected vacancies for dentists = 372.
- Dentist offices had the highest number of expected vacancies for dentists (324).
- Community Health Centers had 48 expected vacancies for dentists.

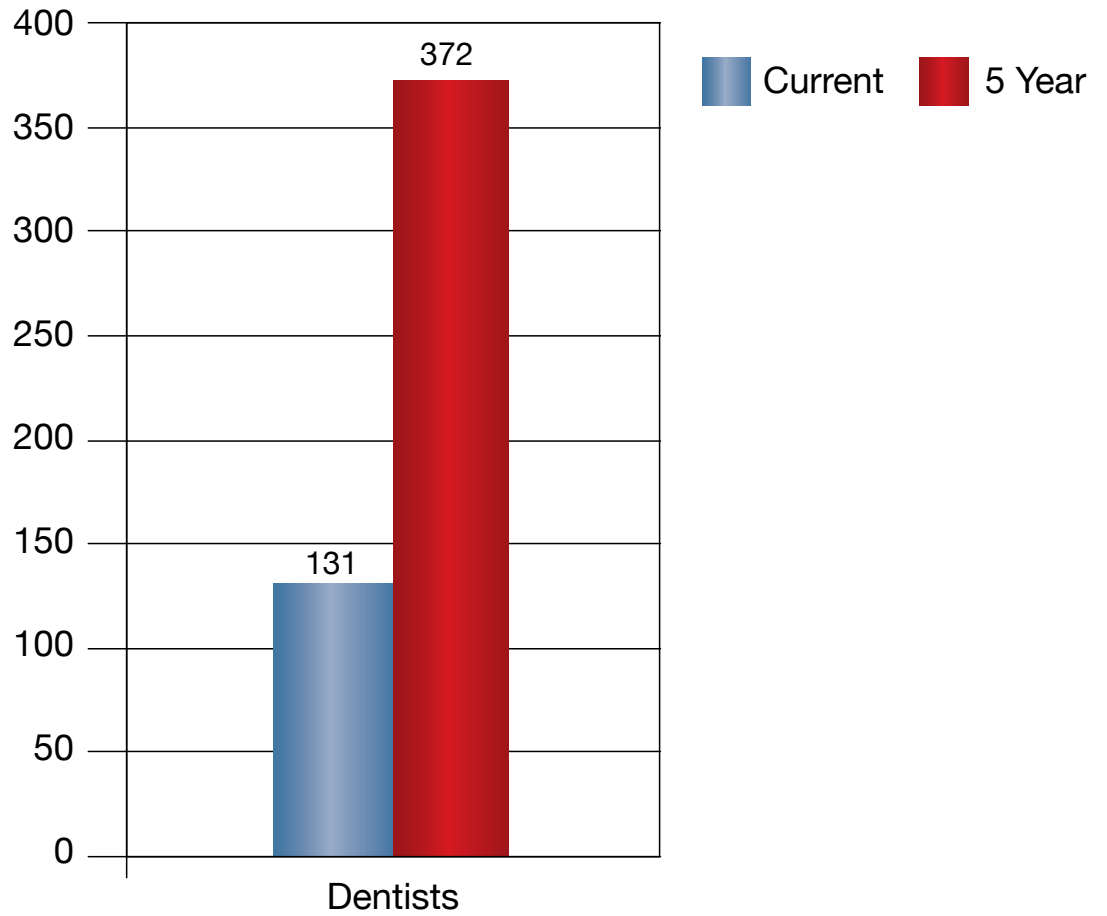
- The West Arkansas Region had the highest number of expected vacancies for dentists (90).
- The Northwest Region had 78 expected vacancies for dentists.
- The Northeast Region had 47 expected vacancies for dentists.

**Note:* These results for current and expected vacancies for health professions in the study population (N = 4,212 facilities) were extrapolated from the current and expected vacancies that were reported in the survey.

References

- Arkansas Department of Health, Health Statistics (2009). The Health Professions Manpower Assessment. Retrieved December 13, 2010, from <http://www.healthy.arkansas.gov/programsServices/healthStatistics/Documents/HealthProfessionals/HPD2009.pdf>
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Current and Expected Vacancies for Dentists in Arkansas



Current Vacancies for Dentists by Facility

Facility	Dentist
Community Health or Dental Clinic	32
Dental Office	99
Total	131

Expected Vacancies for Dentists by Facility

Facility	Dentist
Community Health or Dental Clinic	48
Dental Office	324.3
Total	372.3

Dentists

Current Vacancies for Dentists by Region

Region	Dentist
Delta	18.6
Little Rock	17.6
North Central	8.4
North East	13.2
North West	25.6
South Arkansas	
South Central	11
South West	4.4
West	32.2
Total	131

Expected Vacancies for Dentists by Region

Region	Dentist
Delta	39.8
Little Rock	46.4
North Central	19.4
North East	46.5
North West	77.7
South Arkansas	11
South Central	24.2
South West	17.6
West	89.7
Total	372.3

WORKFORCE NEEDS FOR PRIMARY CARE AND SPECIALIST PHYSICIAN

Increasing physician supply takes a long-term approach, based on the number of years it takes to complete medical school and residency training prior to entering practice. The state's aging population and increase in chronic disease among the elderly will continue to increase the demand for physicians' health care services. Access to physicians' services depends on many factors, but the most essential of these is the availability of physicians to provide these services. The knowledge of current supply and distribution of physicians in Arkansas is fundamental to effective planning and construction of health policy, allocation of state and federal funds, and decision-making regarding education and recruitment of physicians (Fordyce, Chen, Doescher, Hart, 2005; U.S. Department of Health and Human Services, 2005). Besides the absolute number of physicians' needs in Arkansas over the next 5 years, geographic maldistribution of physicians must also be addressed in strategies for solving shortages of primary care and specialist physicians in all types of health care facilities in Arkansas. Primary care physicians have an important role in both rural and urban areas, but their function is especially important in isolated rural areas. Rural Arkansas averages only 82 primary care physicians per 100,000 people compared to 130 per 100,000 persons in urban Arkansas. The greatest disparity is seen in Delta counties where there are only half as many primary care physicians per 100,000 people as in urban counties (University of Arkansas, Division of Agriculture, 2007).

In 2008, Arkansas ranked 48th among states in physicians per capita with 189 active physicians per 100,000 population, which was below the national ratio of 254.5 active physicians per 100,000 population (Association of American Medical Colleges, 2009). Arkansas had 75.8 (ranked 42nd) active primary care physicians per 100,000 population in 2008, compared to 89.6 per 100,000 for the entire country. In 2008, Arkansas ranked 43rd among states in nonfederal physicians in medical specialties with 60 physicians per 100,000 population, which was below the national rate of 97 physicians per 100,000 population

(Morgan & Morgan, 2010). Arkansas ranked 39th among states in physicians in psychiatry per capita in 2008 with 8 physicians per 100,000 population, which was below the national rate of 13 physicians per 100,000 population.

Statistics from the Arkansas Department of Health indicated that 13 of Arkansas' 75 counties had five or fewer total physicians in 2009, with one county that had no physicians (Arkansas Department of Health, 2009). Twenty-seven counties had no physician specialists and 11 other counties had only one physician specialist. The Association of American Medical Colleges, Center for Workforce Studies estimated that by 2020 there will be a national shortage of 45,000 primary care physicians and 46,000 physician specialists (Association of American Medical Colleges, 2010).

The shortages of physicians in Arkansas can affect the health status of residents of the state and the ability of health care facilities to meet the needs of their communities. In 2009, Arkansas ranked 40th in the nation for health status (United Health Foundation, 2009). Adequate numbers of physicians are needed to address causes of preventable, premature deaths and to promote continued improvement in the health status of Arkansans. Addressing shortages of physicians can have an impact on reducing avoidable hospital admissions and death rates. There are more avoidable hospitalizations for the elderly in rural communities compared to urban communities (Sutton, 2004). This difference could be due to non-elderly in rural communities being able to more easily travel the long distances to urban areas for primary care. The higher the physician supply with increased health care access, the lower the death rate among all age groups (J. Laditka, S. Laditka, Probst, 2005). Physicians are most difficult to access in inner cities where there are few insured patients and in rural communities where there is a high patient to doctor ratio. An increase in primary care physicians should lead to a decrease in deaths by 50,000 and a decrease in hospitalizations by 436,000 (Joelving, 2001).

Implications for Physicians' Education and Clinical Practice

Findings from this study present implications for physicians' education and clinical practice, which address the needs of a rapidly changing health care industry. In order to meet the health care challenges in Arkansas, strong support and collaboration from communities, government, business, education, and the health care industry will be needed to solve the shortages of physicians that exist. Innovative strategies that take into consideration demographic and socioeconomic factors, technological innovations, and the change to a preventive health system need to be developed. Rural health care systems face workforce issues that are as challenging as urban systems. Specific programs for rural Arkansas need to be developed with a focus on the strengths of the existing Arkansas Area Health Education Center (AHEC) program and the partnerships they have established. Additionally, individualized health care training programs for rural Arkansans delivered by distance education could provide a workforce to meet specific health care vacancies that exist in a given community.

Most physicians practice within 200 miles of where they complete their residency (University of Arkansas for Medical Sciences (UAMS), 2006). Increasing medical residencies at UAMS would increase the likelihood of larger numbers of young physicians practicing in the state. Applicants to the AHEC Program need to be increased through initiatives that encourage medical students who are interested in family medicine and rural practice during their medical school. Finally, for both UAMS College of Medicine and the AHEC program to expand the number of residents trained, the cap on number of residents' slots funded by Medicare to sponsoring hospitals would need to be lifted. Strategies are recommended for recruiting new faculty and expanding physical facilities and available clinical placements to meet the educational needs of the expanded medical school enrollment and increased medical residencies at UAMS.

Physicians should be encouraged to select specific specialties with shortages in Arkansas when planning their residency training. This selection could be facilitated by providing physicians information on practice opportunities by specialties and geographic location and by offering fiscal incentives, such as loan repayment opportunities for medical training costs. Additional incentives for physicians to select specific specialties with shortages in the state consist of a state tax relief for physician specialties in high demand and short supply, in return for entering practice and remaining in Arkansas for a specified period of time (University of Iowa Hospitals and Clinics, 2007). Low levels of reimbursement for physicians' services can decrease the demand below need. Recommendations include improving the low levels of reimbursement for primary care physicians in the reimbursement system, including Medicare, especially in rural areas. Lifestyle and environmental factors need to be addressed to solve the shortages of physicians in Arkansas. The environment for physicians' medical practice needs to be acceptable regarding their professional, economic, and social needs (Fordyce, et al., 2005; U.S. Department of Health and Human Services, 2005). Changing lifestyles for younger physicians, with the possibility of fewer working hours and limiting the number of patients in their case load, should be considered in strategies for solving physician shortages.

Current Vacancies for Primary Care Physicians in Health Care Facilities and Regions of Arkansas

- The total number of current vacancies for primary care physicians = 514.
- Family Practice physicians had the highest number of current vacancies (282).
- Medical Clinics had the highest number of current vacancies for primary care physicians (328).
- Medical Hospitals had 158 current vacancies for primary care physicians.
- The West Region had the highest number of current vacancies for primary care physicians (110).

- The North Central Region had 94 current vacancies for primary care physicians.
- The Northeast Region had 79 current vacancies for primary care physicians.

Expected Vacancies for Primary Care Physicians in Health Care Facilities and Regions of Arkansas

- The total number of expected vacancies for primary care physicians = 860.
- Family Practice physicians had the highest number of expected vacancies (473).
- Medical Clinics had the highest number of expected vacancies for primary care physicians (537).
- Medical Hospitals had 223 current vacancies for primary care physicians.
- The Northeast Region had the highest number of expected vacancies for primary care physicians (148).
- The North Central Region had 145 expected vacancies for primary care physicians.
- The West Region had 137 expected vacancies for primary care physicians.

**Note:* These results for current and expected vacancies for health professions in the study population (N = 4,212 facilities) were extrapolated from the current and expected vacancies that were reported in the survey.

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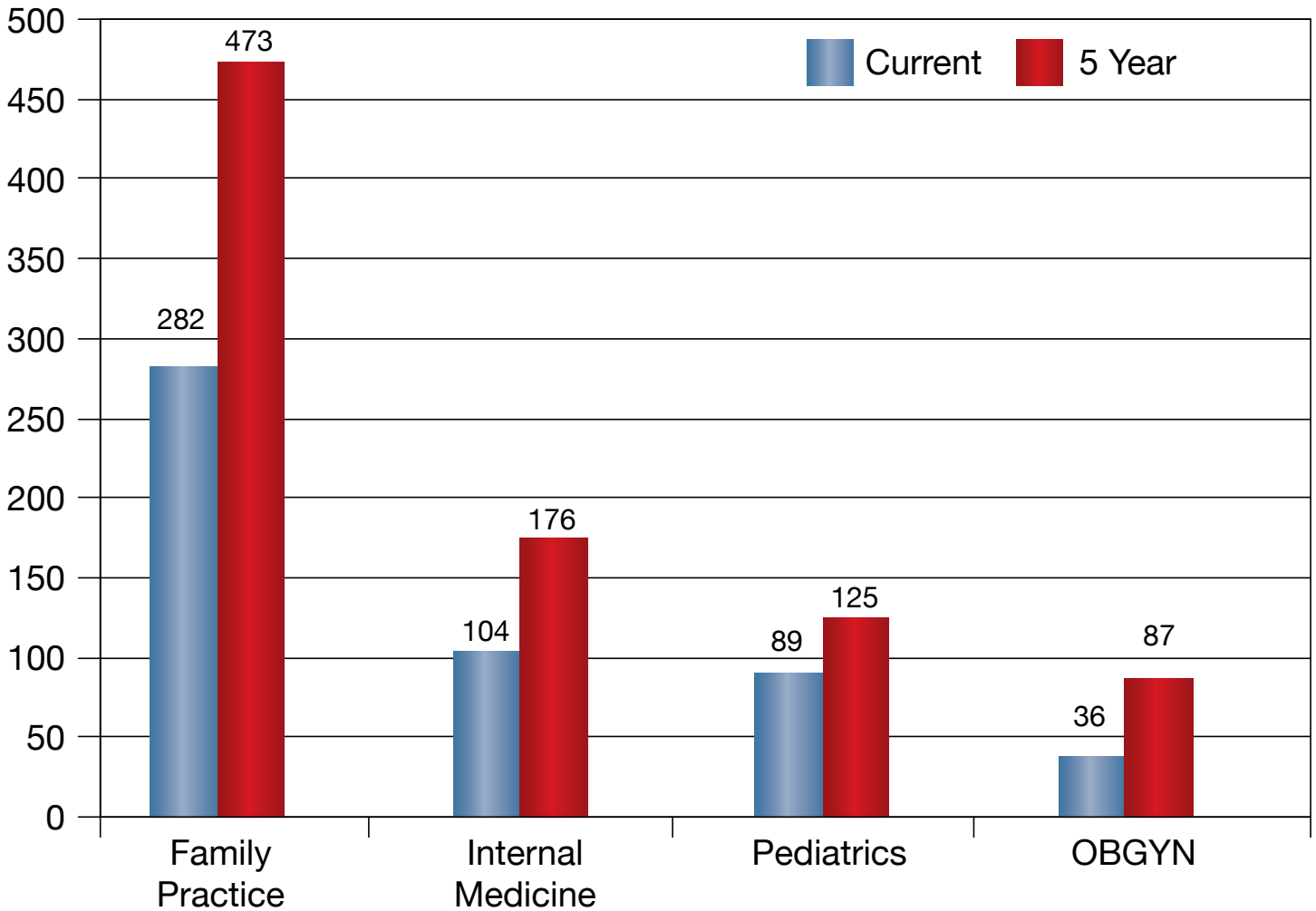
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Primary Care

Current and Expected Vacancies for Primary Care Professions in Arkansas



Current and Expected Vacancies for Primary Care Professions by Facility

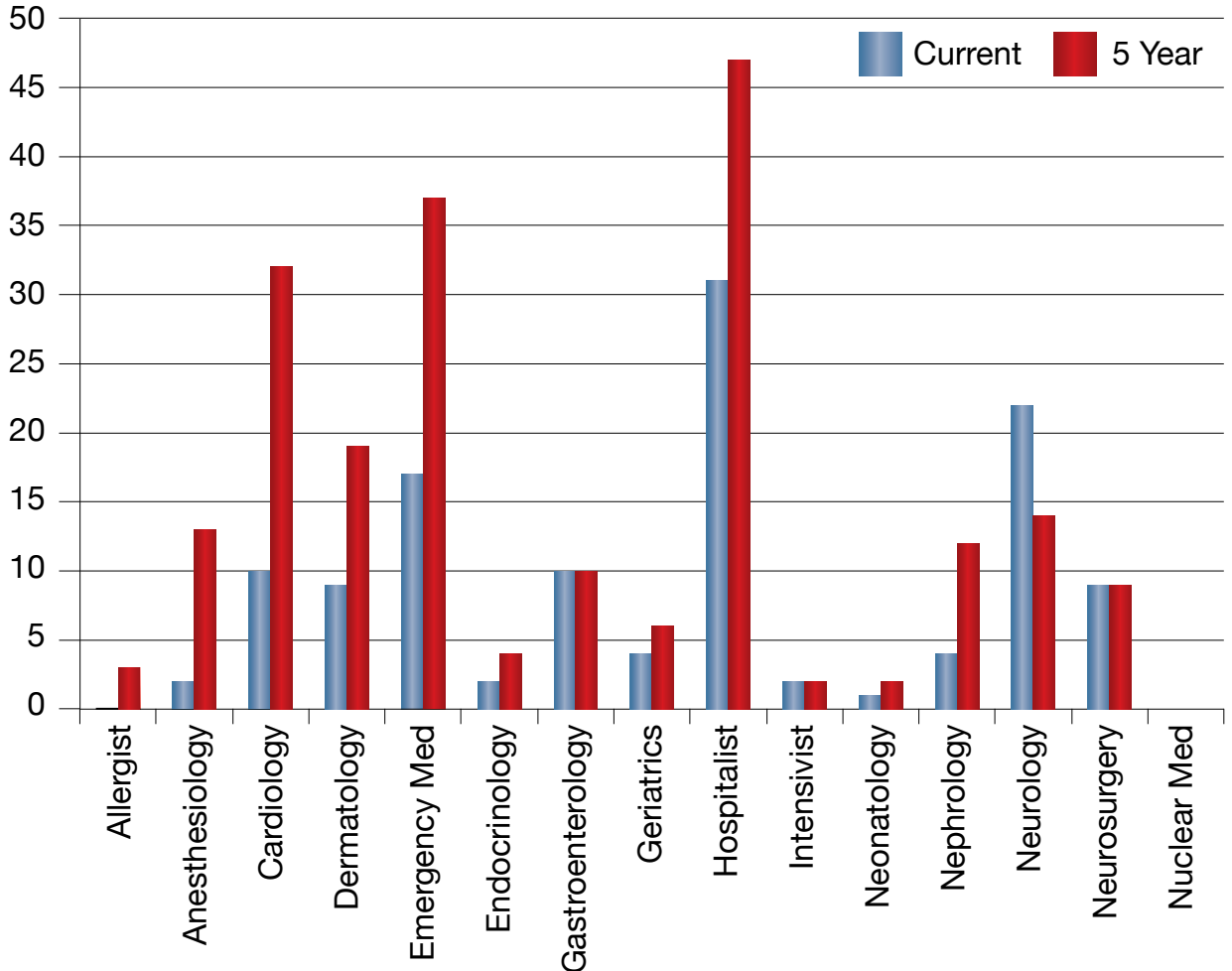
Facility	Current	Expected
AHEC	2	8
Community Health or Dental Clinic	20.2	61.8
Medical Clinic	327.5	536.9
Medical Hospital	158	223
Nursing Home	5.4	30
Total	514	860

Current Vacancies for Primary Care Professions by Region

Region	Current	Expected
Delta	41	48
Little Rock	39	57
North Central	94	144
North East	79	148
North West	61	101
South Arkansas	46	61
South Central	29	100
South West	16	65
West	110	137
Total	514	860

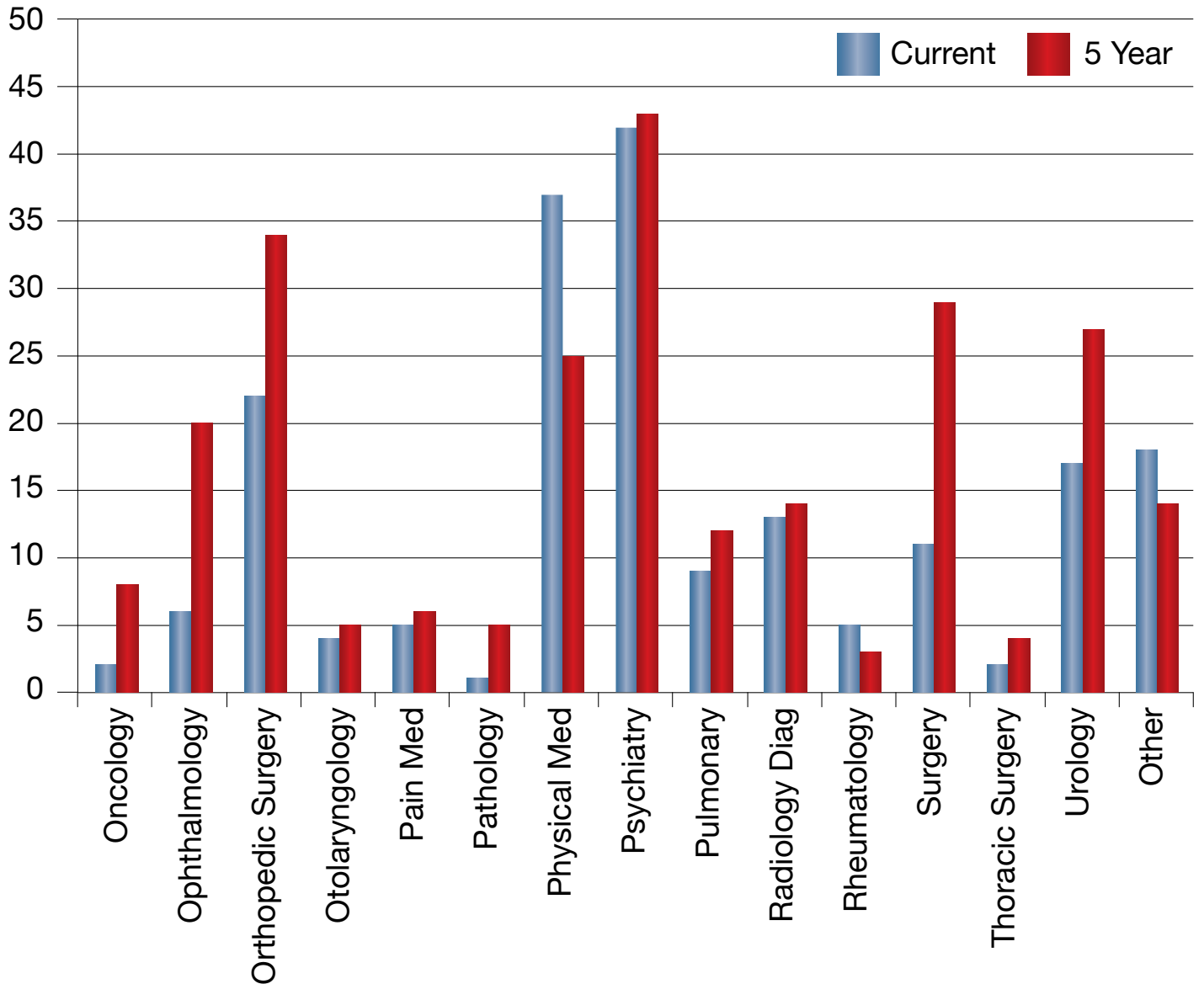
Physician Specialists

Current and Expected Vacancies for Physician Specialists



Physician Specialists

Current and Expected Vacancies for Physician Specialists



Student Medical school debt averages \$145,000 for those graduating from public medical schools and \$180,000 for those graduating from private schools, causing many to choose higher paying specialty areas of practice over primary care

Current and Expected Vacancies for Physician Specialists

Specialty	Current	Expected
Allergist	0	3
Anesthesiology	2	13
Cardiology	10	32
Dermatology	9	19
Emergency Medicine	17	37
Endocrinology	2	4
Gastroenterology	10	10
Geriatrics	4	6
Hospitalist	31	47
Intensivist	2	2
Neonatology	1	2
Nephrology	4	12
Neurology	22	14
Neurosurgery	9	9
Nuclear Medicine	0	0
Oncology	2	8
Ophthalmology	6	20
Orthopedic Surgery	22	34
Otolaryngology	4	5
Pain Medicine	5	6
Pathology	1	5
Physical Medicine	37	25
Psychiatry	42	43
Pulmonary	9	12
Radiology Diag	13	14
Rheumatology	5	3
Surgery	11	29
Thoracic Surgery	2	4
Urology	17	27
Other	18	14
Total	317	456

Physician Specialists

Current Vacancies for Physician Specialists by Facility

Facility	Allergist	Anesthesiology	Cardiology	Dermatology	Emergency Med	Endocrinology	Gastroenterology	Geriatrics	Hospitalist	Intensivist	Neonatology	Nephrology	Neurology	Neurosurgery	Nuclear Med
AHEC															
Ambulance															
Community Health or Dental Clinic															
County Health Unit															
Dental Office															
Home Health															
Medical Clinic		1	2	8	2	1	2	2	3	1		3	10	2	
Medical Hospital		1	8	1	15	1	8	2	28	1	1	1	12	7	
Nursing Home															
Pharmacy															
Psychiatric Hospital															
Rehab Hospital															
Total		2	10	9	17	2	10	4	31	2	1	4	22	9	

Current Vacancies for Physician Specialists by Facility

Facility	Oncology	Ophthalmology	Orthopedic Surgery	Otolaryngology	Pain Med	Pathology	Physical Med	Psychiatry	Pulmonary	Radiology Diag	Rheumatology	Surgery	Thoracic Sugery	Urology	Other
AHEC															
Ambulance															
Community Health or Dental Clinic															
County Health Unit															
Dental Office															
Home Health															
Medical Clinic		4	7	1	5	1	29	23	3	6	3	1		6	16
Medical Hospital	2	2	15	3			8	14	6	7	2	10	2	11	2
Nursing Home															
Pharmacy															
Psychiatric Hospital								3							
Rehab Hospital								2							
Total	2	6	22	4	5	1	37	42	9	13	5	11	2	17	18

Physician Specialists

Current Vacancies for Physician Specialists by Region

Region	Allergist	Anesthesiology	Cardiology	Dermatology	Emergency Med	Endocrinology	Gastroenterology	Geriatrics	Hospitalist	Intensivist	Neonatology	Nephrology	Neurology	Neurosurgery	Nuclear Med
Delta			2		2				4			1			
Little Rock				1			1						10	1	
North Central			1		4		2		7			1	3		
North East		1	1	2	1	1	3	1	7		1	2	1	3	
North West		1		3	1			3	6				2	2	
South Arkansas				1											
South Central			3		2		3		4	1			5	2	
South West							1								
West			3	2	7	1			3	1			1	1	
Total		2	10	9	17	2	10	4	31	2	1	4	22	9	

Region	Oncology	Ophthalmology	Orthopedic Surgery	Otolaryngology	Pain Med	Pathology	Physical Med	Psychiatry	Pulmonary	Radiology Diag	Rheumatology	Surgery	Thoracic Sugery	Urology	Other
Delta				1			2			1		1			1
Little Rock		3	4		2	1	2	12	1		1	1			3
North Central		1	3		2		3	5	3			1		1	
North East	1	1	4				7	4	3	1	1	2	1	4	5
North West							11	13	1				1	1	5
South Arkansas					1						1	1			
South Central	1		9	3			7	6	1	6	1	2		7	1
South West											1				
West		1	2				5	2		5		3		4	3
Total	2	6	22	4	5	1	37	42	9	13	5	11	2	17	18

Expected Vacancies for Physician Specialists by Facility

Facility	Allergist	Anesthesiology	Cardiology	Dermatology	Emergency Med	Endocrinology	Gastroenterology	Geriatrics	Hospitalist	Intensivist	Neonatology	Nephrology	Neurology	Neurosurgery	Nuclear Med
AHEC															
Ambulance															
Community Health or Dental Clinic															
County Health Unit															
Dental Office															
Home Health															
Medical Clinic	1	5	13	9	8	1	3	3	8			7	10	3	
Medical Hospital	2	8	19	10	29	3	7	3	39	2	2	5	14	6	
Nursing Home															
Pharmacy															
Psychiatric Hospital															
Rehab Hospital															
Total	3	13	32	19	37	4	10	6	47	2	2	12	14	9	

40 percent of practicing physicians are older than 55; about one-third of the nursing workforce is over age 50

Physician Specialists

Expected Vacancies for Physician Specialists by Facility

Facility	Oncology	Ophthalmology	Orthopedic Surgery	Otolaryngology	Pain Med	Pathology	Physical Med	Psychiatry	Pulmonary	Radiology Diag	Rheumatology	Surgery	Thoracic Sugery	Urology	Other
AHEC															
Ambulance															
Community Health or Dental Clinic															
County Health Unit															
Dental Office															
Home Health															
Medical Clinic	2	18	14		3	1	19	24	3	8	1	11		10	14
Medical Hospital	6	2	20	5	3	4	6	12	9	6	2	18	4	17	
Nursing Home															
Pharmacy															
Phychiatric Hospital								5							
Rehab Hospital								2							
Total	8	20	34	5	6	5	25	43	12	14	3	29	4	27	14

The first of the boomers turned 65 in January 2011 and became eligible for Medicare. A total of 78 million boomers will reach that age by 2030.

HealthCare Workforce: future Supply vs. Demand, Robert Wood Johnson Foundation

Expected Vacancies for Physician Specialists by Region

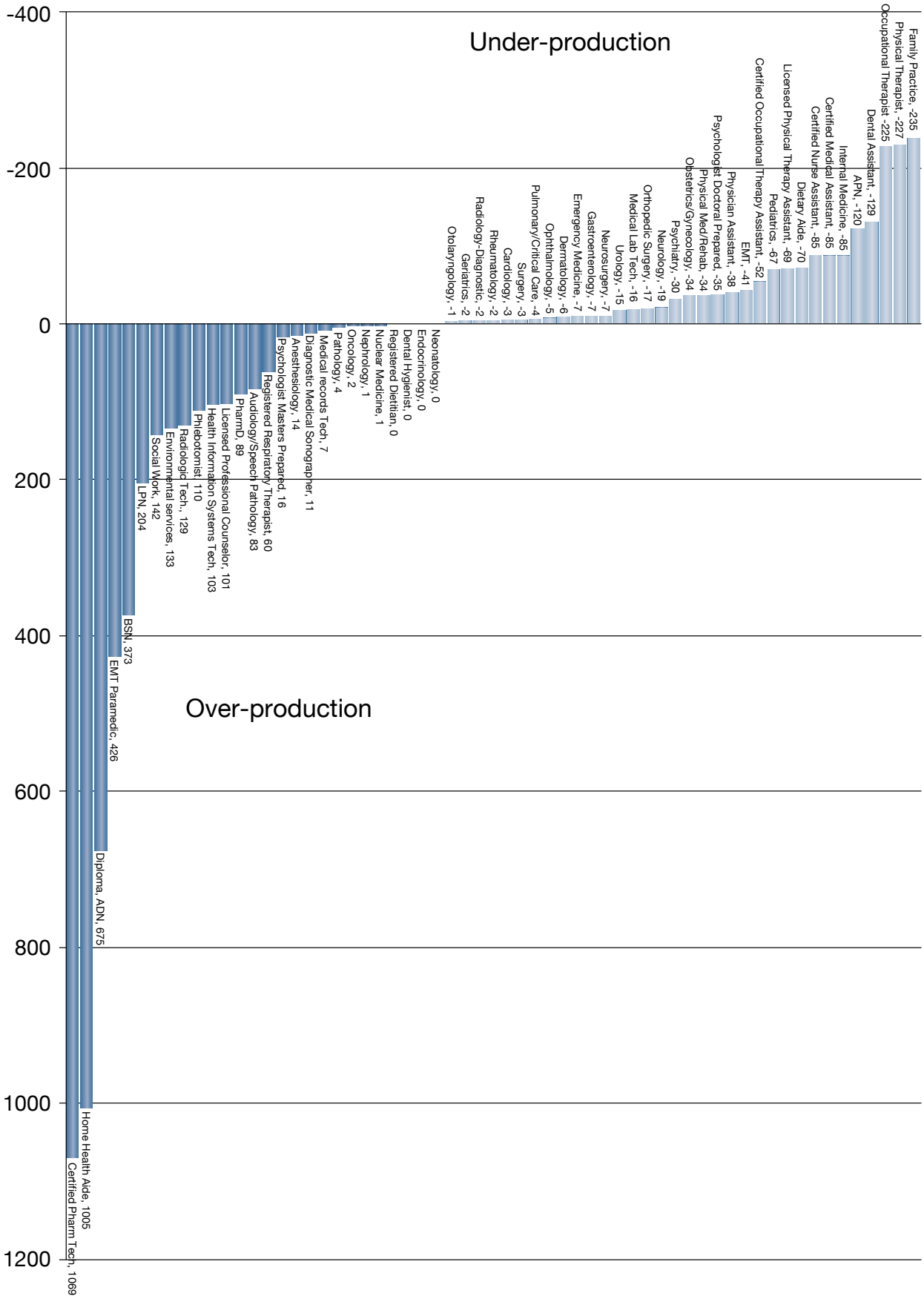
Region	Allergist	Anesthesiology	Cardiology	Dermatology	Emergency Med	Endocrinology	Gastroenterology	Geriatrics	Hospitalist	Intensivist	Neonatology	Nephrology	Neurology	Neurosurger	Nuclear Med
Delta					2				4			1			
Little Rock	1		5	1			1					2	10	1	
North Central	2	4	8	5	9	2	2		12			2	1		
North East		3	8	4	6	1	1	3	9		1	4	1	1	
North West		3		3	3		1	2	3		1		1	2	
South Arkansas				1											
South Central		1	7	3	10		3	1	11	2		3	1	3	
South West							1		3						
West		2	4	2	7	1	1		5					2	
Total	3	13	32	19	37	4	10	6	47	2	2	12	14		

Region	Oncology	Ophthalmology	Orthopedic Surgery	Otolaryngology	Pain Med	Pathology	Physical Med	Psychiatry	Pulmonary	Radiology Diag	Rheumatology	Surgery	Thoracic Sugery	Urology	Other
Delta			1				5			1		4			2
Little Rock	1	9	6		1		1	8	2			2		3	3
North Central	1	1	7	1	3	2	3	7	5	2	1	5	1	5	1
North East	3	2	6	2	1	2	1	5	2	3	1	5	2	6	2
North West		1	1				11	11	1			3			4
South Arkansas		1									1	1			
South Central	3	3	9	1		1	1	3	1	2		3	1	9	1
South West		1	1									1		1	
West		2	3	1	1		3	9	1	6		5		3	1
Total	8	20	34	5	6	5	25	43	12	14	3	29	4	27	14

CONCLUSIONS & RECOMMENDATIONS

- Findings from the extrapolated current vacancies in the study population (N = 4,212 facilities) indicated that there were a total of 7,021 current vacancies for nursing, allied health, and pharmacy professions; and for primary care physicians and dentists.
 - Findings from the extrapolated expected vacancies indicated that there were a total of 23,893 expected vacancies for nursing, allied health, and pharmacy professions; and for primary care physicians and dentists.
 - Allied health professions had the highest number of current vacancies (4,335) and expected vacancies (16,468).
 - Nursing had 1,970 current vacancies and 5,675 expected vacancies.
 - The total number of current vacancies for primary care physicians = 514.
 - The total number of expected vacancies for primary care physicians = 860.
 - Family Practice physicians had the highest number of current vacancies (282).
 - **Family Practice physicians had the highest number of expected vacancies (473).**
- ### Recommendations
- The Patient-Centered Medical Home (PCMH) provides strategies for addressing the shortages of health professions in Arkansas. PCMH involves health professionals working in care teams to improve efficiency in the delivery of health care and patients' access to care.
 - Additional recommendations for addressing the shortages of health professionals include rural setting clinical training, which can be successful in increasing training for disadvantaged students and increasing the perception of rural practice.
 - There needs to be increased recruitment and retention of health professionals in rural areas.
 - The shortages of health professionals in rural communities can be addressed through telemedicine, school telehealth programs, and the use of Advanced Practice Nurses.
 - Additional implications involve increased wages and job flexibility, improved workplace and job satisfaction, and mentorship programs.
 - There is a need for better staffing and scheduling for health professionals, which can be improved through scholarships and awareness in undergraduate health professions classes.
 - Professional opportunities such as apprenticeships can expose students to health careers. Focusing on early and sustained education in health careers and flexible pathways that facilitate career development will help in preparing a pipeline of health professionals.
 - Mentoring programs, financial support, academic enrichment, tutorials for admissions preparations and motivational programs can aid all students in pursuing health careers, particularly those from underserved areas.
 - Strategies are recommended for recruiting new faculty to replace the aging faculty in health professions educational programs and for improving physical facilities and available clinical placements for health professions education.
 - Additional recommendations involve improving salaries for health professions faculty and partnering with private entities, federal agencies, health professional training programs, and hospitals to share facilities and provide funding for student loans and scholarships, additional faculty and educational programs for health professions.

Arkansas Select Healthcare Workforce Needs (Based on the 2011 Health Workforce Vacancies Study)



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