

# **Nursing Workforce Shortage and Diversity Disparity in Northwest Arkansas**

*Prepared for the Terrapin Consulting, LLC.*



Center for Business and Economic Research  
Reynolds Center Building 217  
Sam M. Walton College of Business  
1 University of Arkansas  
Fayetteville, Arkansas 72701-1201  
(479) 575-4151  
Contact: Dr. Jeffery T. Collins, Director  
Ms. Yi Liu, Project Manager

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## **Project Background and Methodology**

The purpose of this analysis is to ascertain: **1)** if market conditions in Northwest Arkansas (the study area) are sufficient to support the proposed planning effort by Northwest Arkansas Nursing Education Consortium (NANEC) to create a bilingual nursing student recruitment model and **2)** to determine if that model is portable to other geographies.

Projected population growth and projected nursing workforce increase are used to assess the future nursing market demand and supply to illustrate the overall anticipated nursing shortage and nursing diversity disparity in Northwest Arkansas. The prevailing phenomenon of a nursing workforce shortage at the national and state level is also examined to provide a broader context for this analysis.

The study area, Northwest Arkansas, is defined as the region that includes Washington County, Benton County, Madison County, and Carroll County. This area comprises the planning jurisdiction of the Northwest Arkansas Nursing Education Consortium.

The perceived need for bilingual nurses is based on two assumptions<sup>1</sup>: 1) bilingual nurses are able to better serve the non-English speaking population and, 2) increased racial/ethnic diversity of the general population implies the need for changes in the composition of the nursing workforce.

However, assessing the demand for and supply of bilingual nurses is less informative and more difficult to achieve than assessing the demand for and supply of the minority nursing workforce. Therefore, rather than examine the bilingual population and bilingual nursing workforce, this study focuses on the need for increasing racial/ethnic diversity in Northwest Arkansas nursing workforce. This rationale is further illustrated by the following:

1. It is difficult to define which segment of the population is bilingual. It is almost certain all first generation immigrants speak their own language, but not necessarily true that they are fluent in the language of their adopted country.
2. Existing bilingual data for general population as well as for nursing population is insufficient to conduct the desired projections.
3. Because Hispanic, Asian/Pacific Islander and American Indian represent the major minority groups who speak languages other than English, estimating their future growth trends should capture the growth trends of bilingual population.
4. The Census Annual Population Race/Ethnicity Estimates make it possible to project the future general population growth by each racial/ethnic group.
5. The existing nursing racial/ethnic diversity data are available, which makes estimating future nursing racial/ethnic diversity trends feasible.

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<sup>1</sup>Assumptions are derived from the conclusions from the 1996 report *The National Agenda for Nursing Workforce Racial/Ethnic Diversity*.

## An Overview of Nursing Workforce Shortage

The nursing workforce shortage is both a current and ongoing problem within the U.S. The impacts resulting from the nursing workforce shortage are twofold:

- First, the overall supply of registered nurses is insufficient to meet the anticipated demand.
- Second, increased diversity in the population without commensurate growth in the percentage of minority nurses implies a shortage of minority nurses, regardless of the broader trend.

### Overall Shortage of Registered Nurses

According to a report released in July 2002 by the National Center for Health Workforce Analysis, a shortage of full time equivalent (FTE) registered nurses, previously projected to begin around 2007, was already evident in the year 2000 (Exhibit 1). In 2000, the estimated national shortage of nurses was 110,707 or 5.5%. If not addressed and if current trends continue, the shortage is projected to grow to 28.8% by 2020.

**Exhibit 1**  
**Projected Supply, Demand, and Shortages of Registered Nurses in U.S.**  
**(2000-2020)**

Year	Supply	Demand	Shortage	% Shortage
2000	1,889,243	1,999,950	-110,707	-5.5%
2005	2,012,444	2,161,831	-149,387	-6.9%
2010	2,069,369	2,344,584	-275,215	-11.7%
2015	2,055,491	2,562,554	-507,063	-19.8%
2020	2,001,998	2,810,414	-808,416	-28.8%

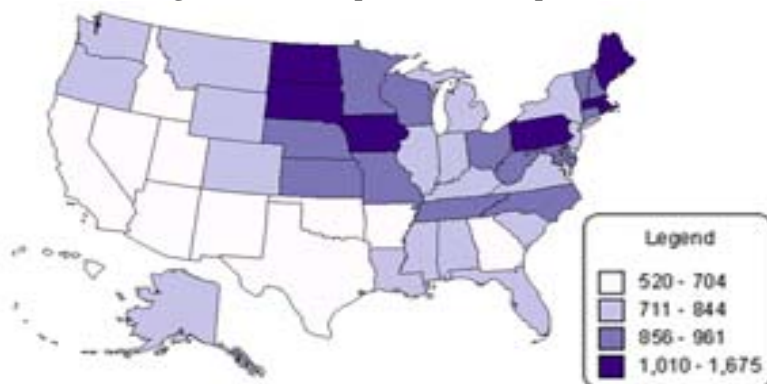
Source: National Center for Health Workforce Analysis

In Arkansas, which already is below the national average for registered nurses per 100,000 people (Exhibit 2), the nursing shortage is more severe<sup>2</sup>. In 2000, the estimated shortage of nurses in Arkansas was 1,427 or 7.7% (Exhibit 3). By 2020, the shortage is projected at 9,036 or 34.2%. These estimated shortages have direct impact on healthcare providers and the healthcare system in Arkansas. Clearly, the significant shortage also implies impacts for those receiving care as well. According to a survey conducted by the Arkansas Hospital Association, there were 752 budgeted, vacant registered nurse positions in Arkansas hospitals in September 2000. In its 2003 report, *Health Workforce Vacancies in Arkansas*, University of Arkansas for Medical Sciences estimated a total number of 2,389 nursing vacancies (Exhibit 4)<sup>3</sup> in the state's 774 healthcare facilities.

<sup>2</sup>In 2000, there were 701 employed registered nurses per 100,000 people in Arkansas, which was one of the lowest concentrations of registered nurses among the 50 States.

<sup>3</sup> The sample of respondents (N = 341, 44% response rate; population size = 774) consisted of directors of the human resources department, administrators, and office managers in healthcare facilities in 73 out of the total 75 Arkansas counties.

**Exhibit 2**  
**Registered Nurses per 100,000 People (2000)**



Source: Health Resources and Services Administration

**Exhibit 3**  
**Projected Supply, Demand, and Shortages**  
**of Registered Nurses in Arkansas: 2000-2020**

Year	Supply	Demand	Shortage	% Shortage
2000	17,147	18,574	-1,427	-7.7%
2005	18,092	20,086	-1,994	-9.9%
2010	18,700	21,803	-3,103	-14.2%
2015	18,285	23,912	-5,627	-23.5%
2020	17,414	26,450	-9,036	-34.2%

Source: National Center for Health Workforce Analysis

**Exhibit 4**  
**Current Vacancies for Nursing in Arkansas 2003**  
**(N = 341) (Population Size = 774)**

Health Professions	Number of Vacancies	
	sample	Population estimate
Non-Baccalaureate Prepared Nurses (Diploma, ADN)	372	578
Baccalaureate Prepared Nurses (BSN)	378	544
Certified Nurse Anesthetist	50	98
Clinical Nurse Specialist	3	6
Doctoral Prepared Nurse	11	15
Licensed Practical Nurse(LPN)	579	1,052
Master's Prepared Nursing Administration	5	7
Master's Prepared Nurse Practitioner	37	82
Nurse Educator	5	7
<b>Total Number of Current Vacancies for Nursing</b>	<b>1,440</b>	<b>2,389</b>

Source: University of Arkansas for Medical Sciences

## The Shortage of Minority Nurses

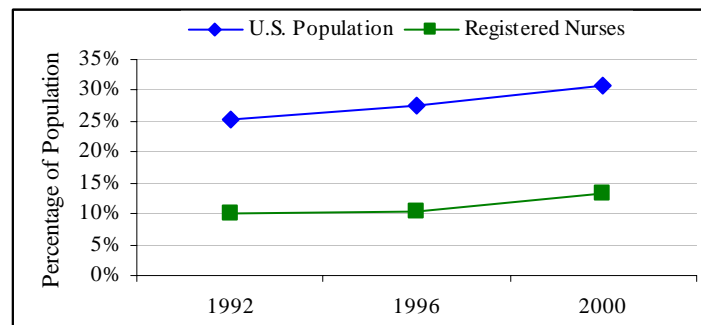
On top of the overall nursing workforce shortage, there was a severe under-representation of ethnic minority nurses in the nation's nursing workforce (Exhibit 5). In 1992, ethnic minority groups accounted for 25.2% of the U.S. population, but only 9.9% of the registered nurses. In 1996, ethnic minority groups accounted for 27.7% of the U.S. population, but only 10.3% of the registered nurses. In 2000, ethnic minority groups accounted for 30.9% of the U.S. population, but only 13.4% of the registered nurses. From 1992 to 2000, although there was an increase (from 9.9% to 13.4%) of ethnic minority in the registered nurses population, the disparity between minority representation in U.S. population and that in registered nurses population became even wider (from 15.3% to 17.5%). Exhibit 6 further illustrates the trends of minority representation.

**Exhibit 5**  
**Representation of Racial/Ethnic Minority**  
**In U.S. Population and the Population of Registered Nurses**

Year	% of U.S. Population	% of Registered Nurses	Disparity
1992	25.2%	9.9%	15.3%
1996	27.7%	10.3%	17.4%
2000	30.9%	13.4%	17.5%

Source: U.S. Census Bureau, National Sample Survey of Registered Nurses

**Exhibit 6**  
**Trends of Minority Representation**  
**In U.S. Population and Registered Nurses Population**



Source: U.S. Census Bureau, National Sample Survey of Registered Nurses, University of Arkansas Center for Business and Economic Research

Among minority groups, the Hispanic population had the largest disparity between its representation in U.S. population and in the population of registered nurses (Exhibit 7). The non-Hispanic Black population had the second largest disparity. American Indian and Alaskan Native had a marginal disparity. Asian and Pacific Islander had the least disparity. Exhibit 8 shows the distribution of registered nurses by racial/ethnic background in 2000.

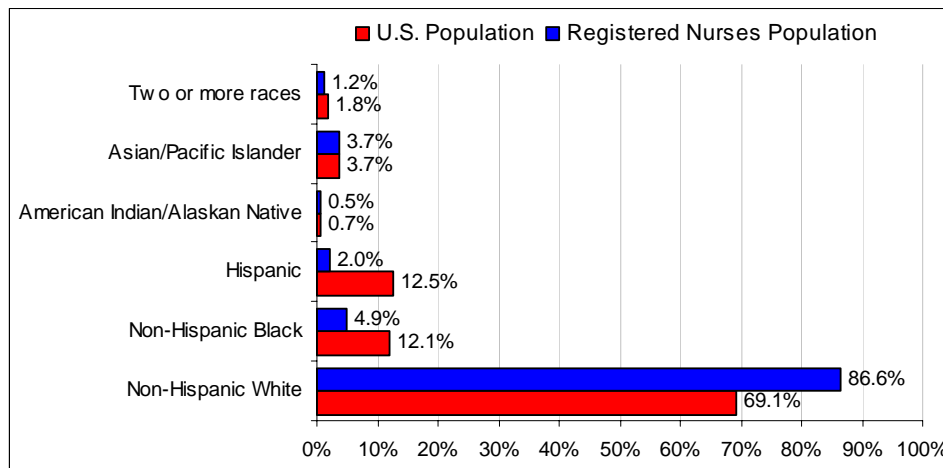
**Exhibit 7**  
**Disparity in Racial/Ethnic Minority Representation**  
**Between U.S. Population and the Population of Registered Nurses**

Percent of U.S. Population				
Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian Alaskan Native
1992	11.9%	9.5%	3.1%	0.7%
1996	12.5%	10.6%	3.7%	0.9%
2000	12.1%	12.5%	3.7%	0.7%
Percent of Registered Nurses Population				
Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian Alaskan Native
1992	4.0%	1.4%	3.4%	0.6%
1996	4.2%	1.6%	3.4%	0.5%
2000	4.9%	2.0%	3.7%	0.5%
Racial/Ethnic Minority Representation Disparity				
Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian Alaskan Native
1992	-7.9%	-8.1%	0.3%	-0.1%
1996	-8.3%	-9.0%	-0.3%	-0.4%
2000	-7.2%	-10.5%	0.0%	-0.2%

Note: (-) sign indicates under-representation in registered nurses population; and (+) sign indicates over-representation in registered nurses population.

Source: U.S. Census Bureau, National Sample Survey of Registered Nurses, University of Arkansas Center for Business and Economic Research

**Exhibit 8**  
**Distribution of Registered Nurses by Racial/Ethnic Background (2000)**



Source: 2000 National Sample Survey of Registered Nurses, University of Arkansas (UA) Center for Business and Economic Research

**Study Area Population Projections**

From 1990 to 2000, population in the Northwest Arkansas Study Area grew by 45.4%, as compared to 13.7% in the state and 13.2% in the nation (Exhibit 9). The rapid population

growth experienced by Northwest Arkansas coupled the aforementioned trends in the national and statewide nursing workforce requires an examination of probable future market conditions.

**Exhibit 9**  
**1990-2000 Population Growth in the Northwest Arkansas Study Area**  
**As Compared to Growth in the State of Arkansas and in the United States**

Geography	1990 Census	2000 Census	Annual Growth Rate	% Change (1990-2000)
4-County Region	241,180	350,721	3.8%	45.4%
State of Arkansas	2350725	2673400	1.3%	13.7%
United States	248,709,873	281,421,906	1.2%	13.2%

Source: U.S. Census Bureau, UA Center for Business and Economic Research

### **2004-2025 Study Area Total Population Projections**

Population projections are calculated based on the 2000-2003 inter-census estimates of U.S. county population. Exhibit 10 shows the 2004-2025 population projections for each individual county and the 4-county region in the Northwest Arkansas Study Area. By 2010, the population in the 4-county region is projected to reach 449,305. By 2020, it is projected to reach 545,732. The 2025 population projection for the 4-county study area is 593,945. The population for the 4-county Northwest Arkansas Study Area is projected to grow by 55.3% from 2003 to 2025.

Among the individual counties, Benton County has the highest growth rate and is projected to reach a population of 297,883 by 2025, an increase of 73.2% from its 2003 population (Exhibit 10). Washington County has the second highest growth and is projected to reach a population of 248,253 by 2025, an increase of 46.3% from its 2003 population. Carroll County is projected to reach a population of 33,169, an increase of 25.8% from its 2003 population. Madison County has the slowest growth and is projected to grow only by 2% from 2003 to 2025 in its population.

**Exhibit 10**  
**2004-2025 Study Area Total Population Projections**

Population	Year	Benton County	Carroll County	Madison County	Washington County	4-County Region
Inter-census Estimates	2000	154,800	25,417	14,292	158,683	353,192
	2001	159,413	25,706	14,370	162,995	362,484
	2002	165,257	25,987	14,315	165,731	371,290
	2003	172,003	26,359	14,354	169,683	382,399
Long Range Projections	2004	177,232	26,645	14,366	173,207	391,449
	2005	182,977	26,955	14,379	176,781	401,091
	2006	188,722	27,266	14,392	180,354	410,734
	2007	194,467	27,577	14,405	183,928	420,377
	2008	200,213	27,887	14,418	187,501	430,019
	2009	205,958	28,198	14,431	191,075	439,662
	2010	211,703	28,509	14,444	194,649	449,305



	2011	217,449	28,819	14,457	198,222	458,947
	2012	223,194	29,130	14,470	201,796	468,590
	2013	228,939	29,441	14,483	205,369	478,233
	2014	234,685	29,752	14,497	208,943	487,876
	2015	<b>240,430</b>	<b>30,062</b>	<b>14,510</b>	<b>212,517</b>	<b>497,518</b>
	2016	246,175	30,373	14,523	216,090	507,161
	2017	251,920	30,684	14,536	219,664	516,804
	2018	257,666	30,994	14,549	223,237	526,446
	2019	263,411	31,305	14,562	226,811	536,089
	2020	<b>269,156</b>	<b>31,616</b>	<b>14,575</b>	<b>230,385</b>	<b>545,732</b>
	2021	274,902	31,926	14,588	233,958	555,374
	2022	280,647	32,237	14,601	237,532	565,017
	2023	286,392	32,548	14,614	241,105	574,660
	2024	292,138	32,859	14,628	244,679	584,303
	2025	<b>297,883</b>	<b>33,169</b>	<b>14,641</b>	<b>248,253</b>	<b>593,945</b>
<b>% Change</b>	<b>(2003-2025)</b>	<b>73.2%</b>	<b>25.8%</b>	<b>2.0%</b>	<b>46.3%</b>	<b>55.3%</b>

Source: U.S. Census Bureau, UA Center for Business and Economic Research

### 2003-2025 Study Area Minority Population Projections

Minority population projections are calculated based on the 2000-2002 inter-census estimates of U.S. county population by race and by Hispanic origin. Exhibit 11 shows the 2003-2025 population projections for the major racial/ethnic minority groups within the 4-county study area. Total minority population in the 4-county study area was estimated at 56,370 in 2002. By 2010, the region’s minority population is projected to reach 84,288. By 2020, it is projected to be at 119,173. By 2025, total minority population is projected to reach 136,615, an increase of 142.4% from its 2002 minority population.

**Exhibit 11**  
**2003-2025 Study Area Racial/Ethnic Minority Groups Population Projections**

Population	Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian/Alaskan Native	Other	Minority Total
Inter-census Estimates	2000	4,108	29,963	5,389	4,667	5,266	49,393
	2001	4,482	32,638	5,750	4,628	5,413	52,911
	2002	4,821	35,185	6,119	4,669	5,576	56,370
Long Range Projections	2003	5,183	37,817	6,483	4,657	5,728	59,868
	2004	5,540	40,428	6,848	4,658	5,883	63,357
	2005	<b>5,896</b>	<b>43,039</b>	<b>7,213</b>	<b>4,659</b>	<b>6,038</b>	<b>66,845</b>
	2006	6,253	45,650	7,578	4,660	6,193	70,334
	2007	6,609	48,261	7,943	4,661	6,348	73,822
	2008	6,966	50,872	8,308	4,662	6,503	77,311
	2009	7,322	53,483	8,673	4,663	6,658	80,799
	2010	<b>7,679</b>	<b>56,094</b>	<b>9,038</b>	<b>4,664</b>	<b>6,813</b>	<b>84,288</b>
	2011	8,035	58,705	9,403	4,665	6,968	87,776

	2012	8,392	61,316	9,768	4,666	7,123	91,265
	2013	8,748	63,927	10,133	4,667	7,278	94,753
	2014	9,105	66,538	10,498	4,668	7,433	98,242
	<b>2015</b>	<b>9,461</b>	<b>69,149</b>	<b>10,863</b>	<b>4,669</b>	<b>7,588</b>	<b>101,730</b>
	2016	9,818	71,760	11,228	4,670	7,743	105,219
	2017	10,174	74,371	11,593	4,671	7,898	108,707
	2018	10,531	76,982	11,958	4,672	8,053	112,196
	2019	10,887	79,593	12,323	4,673	8,208	115,684
	<b>2020</b>	<b>11,244</b>	<b>82,204</b>	<b>12,688</b>	<b>4,674</b>	<b>8,363</b>	<b>119,173</b>
	2021	11,600	84,815	13,053	4,675	8,518	122,661
	2022	11,957	87,426	13,418	4,676	8,673	126,150
	2023	12,313	90,037	13,783	4,677	8,828	129,638
	2024	12,670	92,648	14,148	4,678	8,983	133,127
	<b>2025</b>	<b>13,026</b>	<b>95,259</b>	<b>14,513</b>	<b>4,679</b>	<b>9,138</b>	<b>136,615</b>
<b>% Change</b>	<b>(2002-2025)</b>	<b>170.2%</b>	<b>170.7%</b>	<b>137.2%</b>	<b>0.2%</b>	<b>63.9%</b>	<b>142.4%</b>

Source: U.S. Census Bureau, UA Center for Business and Economic Research

Among the major minority groups, Hispanic population has the highest growth rate and is projected to reach 95,259 by 2025, an increase of 170.7% from its 2002 Hispanic population (Exhibit 11). Black (non-Hispanic) population has the second highest growth and is projected to reach 13,026 by 2025, an increase of 170.2% from its 2002 population. Asian and Pacific Islander are projected to reach a population of 14,513 by 2025, an increase of 137.2% from its 2002 population. American Indian and Alaskan Native population has the lowest growth and is projected to remain essentially constant through from 2002 to 2025.

## Study Area Nursing Workforce Projections

To ensure that future demand for nursing workforce in the Northwest Arkansas Study Area will be met with adequate supply of registered nurses, it is necessary to have nursing workforce projections based on existing growth trends and determine whether additional efforts are needed to boost the supply of nurses. Nursing workforce projections are shown for the total number of registered nurses as well as for the number of racial/ethnic minority nurses in the 4-county study area.

### **2004-2025 Study Area Registered Nurses Population Projections**

Population projections for registered nurses are calculated based on the 1999-2003 estimates of registered nurses in the study area. Exhibit 12 shows the 2004-2025 projections of registered nurses population for the 4-county study area. The number of registered nurses in the 4-county study area was estimated at 2,905 in 2003. By 2010, it is projected to reach 3,323. By 2025, the number of registered nurses in the study area is projected to reach 4,264, an increase of 46.8% from its 2003 level.

Among the individual counties, Benton County is projected to add 822 registered nurses to reach a total of 2,003 registered nurses by 2025, an increase of 69.6% from its 2003

level. Washington County is projected to add 499 registered nurses to its nursing workforce by 2025, an increase of 33.8% from its 2003 level of registered nurses.

**Exhibit 12**  
**2004-2025 Study Area Registered Nurses Population Projections**

Population	Year	Bento County	Carroll County	Madison County	Washington County	4-County Region
Arkansas State Board of Nursing Estimates	1999	1,024	161	73	1,371	2,629
	2000	1,071	167	73	1,407	2,718
	2001	1,079	169	71	1,431	2,750
	2002	1,134	166	69	1,424	2,793
	2003	1,181	168	78	1,478	2,905
Long Range Projections	2004	1,211	170	75	1,492	2,947
	2005	<b>1,249</b>	<b>171</b>	<b>75</b>	<b>1,515</b>	<b>3,010</b>
	2006	1,286	173	76	1,538	3,073
	2007	1,324	174	76	1,561	3,135
	2008	1,362	175	77	1,584	3,198
	2009	1,399	177	78	1,607	3,261
	2010	<b>1,437</b>	<b>178</b>	<b>78</b>	<b>1,630</b>	<b>3,323</b>
	2011	1,475	179	79	1,653	3,386
	2012	1,513	181	79	1,676	3,449
	2013	1,550	182	80	1,699	3,511
	2014	1,588	183	81	1,723	3,574
	2015	<b>1,626</b>	<b>184</b>	<b>81</b>	<b>1,746</b>	<b>3,637</b>
	2016	1,663	186	82	1,769	3,700
	2017	1,701	187	82	1,792	3,762
	2018	1,739	188	83	1,815	3,825
	2019	1,776	190	84	1,838	3,888
	2020	<b>1,814</b>	<b>191</b>	<b>84</b>	<b>1,861</b>	<b>3,950</b>
2021	1,852	192	85	1,884	4,013	
2022	1,890	194	85	1,907	4,076	
2023	1,927	195	86	1,930	4,138	
2024	1,965	196	87	1,954	4,201	
2025	<b>2,003</b>	<b>197</b>	<b>87</b>	<b>1,977</b>	<b>4,264</b>	
<b>% Change</b>	<b>2003-2025</b>	<b>69.6%</b>	<b>17.3%</b>	<b>11.5%</b>	<b>33.8%</b>	<b>46.8%</b>

Source: Arkansas State Board of Nursing, UA Center for Business and Economic Research

### **2004-2025 Study Area Minority Nurses Population Projections**

Population projections for minority nurses are calculated based on the projected total registered nurses in the study area (Exhibit 12) and the projected representation of each racial/ethnic minority group in the registered nurses population at the national level (Exhibit 13). Exhibit 14 presents the projections of the various racial/ethnic minority nurses population in the study area. In 2003, the total number of registered minority nurses in the study area was estimated at 415. By 2010, it is projected to reach 576. By

2025, the number of minority nurses in the 4-county study area is projected to reach 1,019, an increase of 145.5% from its 2003 level.

**Exhibit 13**  
**2004-2025 Projections of Minority Representation in Registered Nurses Population**

Percent of registered nurses	Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian/Alaskan Native	Other races or ethnicity	Minority Total
National Estimates	1992	4.0%	1.4%	3.4%	0.6%	0.5%	9.9%
	1996	4.2%	1.6%	3.4%	0.5%	0.6%	10.3%
	2000	4.9%	2.0%	3.7%	0.5%	2.3%	13.4%
Long Range Projections	2004	5.3%	2.3%	3.8%	0.4%	2.9%	14.7%
	2005	<b>5.4%</b>	<b>2.3%</b>	<b>3.8%</b>	<b>0.4%</b>	<b>3.2%</b>	<b>15.1%</b>
	2006	5.5%	2.4%	3.9%	0.4%	3.4%	15.6%
	2007	5.6%	2.5%	3.9%	0.4%	3.6%	16.0%
	2008	5.7%	2.6%	4.0%	0.4%	3.8%	16.5%
	2009	5.8%	2.6%	4.0%	0.4%	4.1%	16.9%
	2010	<b>5.9%</b>	<b>2.7%</b>	<b>4.0%</b>	<b>0.4%</b>	<b>4.3%</b>	<b>17.3%</b>
	2011	6.1%	2.8%	4.1%	0.3%	4.5%	17.8%
	2012	6.2%	2.9%	4.1%	0.3%	4.7%	18.2%
	2013	6.3%	2.9%	4.1%	0.3%	5.0%	18.6%
	2014	6.4%	3.0%	4.2%	0.3%	5.2%	19.1%
	2015	<b>6.5%</b>	<b>3.1%</b>	<b>4.2%</b>	<b>0.3%</b>	<b>5.4%</b>	<b>19.5%</b>
	2016	6.6%	3.2%	4.3%	0.3%	5.6%	20.0%
	2017	6.7%	3.2%	4.3%	0.3%	5.9%	20.4%
	2018	6.8%	3.3%	4.3%	0.3%	6.1%	20.8%
	2019	7.0%	3.4%	4.4%	0.2%	6.3%	21.3%
	2020	<b>7.1%</b>	<b>3.5%</b>	<b>4.4%</b>	<b>0.2%</b>	<b>6.5%</b>	<b>21.7%</b>
2021	7.2%	3.5%	4.4%	0.2%	6.8%	22.1%	
2022	7.3%	3.6%	4.5%	0.2%	7.0%	22.6%	
2023	7.4%	3.7%	4.5%	0.2%	7.2%	23.0%	
2024	7.5%	3.8%	4.6%	0.2%	7.4%	23.5%	
2025	<b>7.6%</b>	<b>3.8%</b>	<b>4.6%</b>	<b>0.2%</b>	<b>7.7%</b>	<b>23.9%</b>	

Source: National Sample Survey of Registered Nurses, UA Center for Business and Economic Research

Among the individual minority groups, the number of Hispanic nurses is projected to reach 164 by 2025, an increase of 156.3% from its 2003 level. Black (non-Hispanic) nurses are projected to reach 325 by 2025, an increase of 115.2% from its 2003 level. The number of Asian/Pacific Islander nurses is projected to reach 196 by 2025, an increase of 78.2% from its 2003 level. The number of American Indian/Alaskan Native nurses, however, is projected to decrease by 41.7% from 2003 to 2025. The number of nurses falling in the category of other races or ethnicity is projected to reach 326 by 2025, an increase of 317.9% from its 2003 level.

**Exhibit 14**  
**2004-2025 Projections of Racial/Ethnic Minority Nurses in the Study Area**

Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian/Alaskan Native	Other races or ethnicity	Minority Total
<b>2003</b>	<b>151</b>	<b>64</b>	<b>110</b>	<b>12</b>	<b>78</b>	<b>415</b>
2004	155	67	112	13	86	433
<b>2005</b>	<b>162</b>	<b>71</b>	<b>116</b>	<b>13</b>	<b>95</b>	<b>456</b>
2006	169	74	119	12	104	479
2007	176	78	123	12	113	502
2008	183	82	126	12	122	526
2009	190	86	130	12	132	551
<b>2010</b>	<b>198</b>	<b>90</b>	<b>134</b>	<b>12</b>	<b>142</b>	<b>576</b>
2011	205	95	138	12	153	601
2012	213	99	141	11	163	628
2013	221	103	145	11	174	654
2014	229	108	149	11	185	682
<b>2015</b>	<b>237</b>	<b>113</b>	<b>153</b>	<b>11</b>	<b>197</b>	<b>710</b>
2016	245	117	157	10	208	738
2017	253	122	161	10	220	767
2018	262	127	165	10	233	797
2019	270	132	170	9	245	827
<b>2020</b>	<b>279</b>	<b>137</b>	<b>174</b>	<b>9</b>	<b>258</b>	<b>857</b>
2021	288	142	178	9	271	888
2022	297	148	182	8	284	920
2023	307	153	187	8	298	952
2024	316	158	191	8	312	985
<b>2025</b>	<b>325</b>	<b>164</b>	<b>196</b>	<b>7</b>	<b>326</b>	<b>1,019</b>
% Change (2003-2025)	115.2%	156.3%	78.2%	-41.7%	317.9%	145.5%

Source: University of Arkansas Center for Business and Economic Research

### Projected Demand and Shortage of Registered Nurses

It is essential that the future demand for, and shortage of registered nurses is factored into efforts to build workforce training capacity, develop recruitment and retention policies, and finally, form the basis for building public awareness.

**Exhibit 15**  
**Projected Demand, Supply, and Shortage**  
**Of Registered Nurses in the 4-County Study Area**

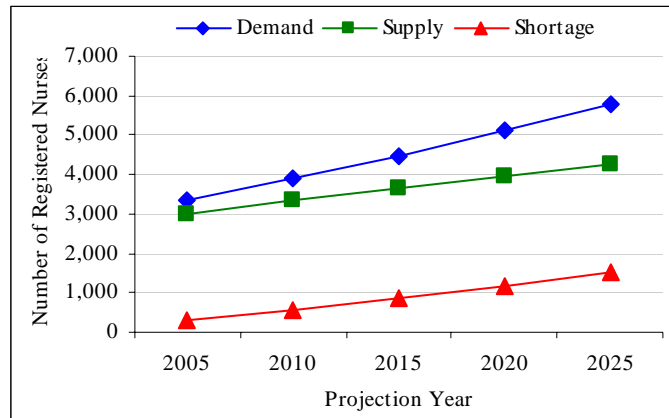
Year	Demand	Supply	Shortage	% Shortage
<b>2005</b>	3,336	3,010	326	9.8%
<b>2010</b>	3,894	3,323	571	14.7%
<b>2015</b>	4,486	3,637	849	18.9%
<b>2020</b>	5,112	3,950	1,161	22.7%
<b>2025</b>	5,771	4,264	1,507	26.1%

Source: UA Center for Business and Economic Research

### **Overall Shortage of Registered Nurses in Northwest Arkansas**

Exhibit 15 shows the projected demand, supply, and shortage of registered nurses in the 4-county Northwest Arkansas Study Area. By 2010, there is a projected shortage of 571 registered nurses in the study area, a 14.7% shortage of the total demand. By 2020, there is a projected shortage of 1,161 registered nurses or 22.7% of the total demand. By 2025, the projected shortage is 26.1% of the total demand or a shortage of 1,507 registered nurses in the 4-county region. This trend is further illustrated in Exhibit 16.

**Exhibit 16**  
**Projected Demand, Supply, and Shortage**  
**Trends of Registered Nurses in the 4-County Study Area**



Source: UA Center for Business and Economic Research

### **The Shortage of Minority Nurses in Northwest Arkansas**

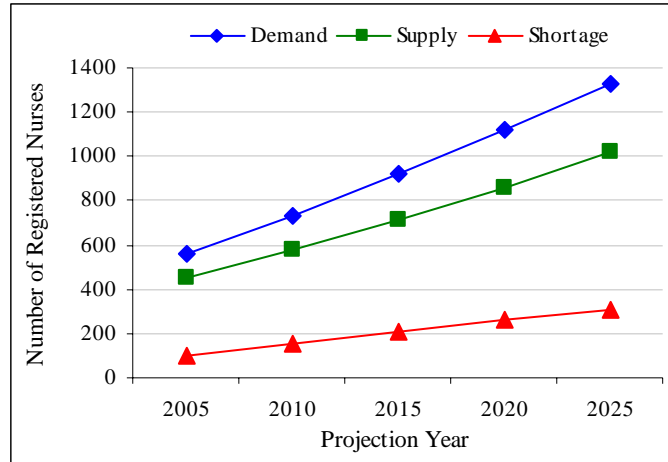
In addition to the projected overall shortage of registered nurses in the Northwest Arkansas Study Area, there is also, not surprisingly, a projected shortage of minority nurses in the region. Exhibit 17 shows the projected demand, supply, and shortage of registered minority nurses in the study area. By 2005, the projected shortage of minority nurses is 18% of the demand or a shortage of 100 registered minority nurses. By 2015, it is projected to have a shortage of 208 registered minority nurses, a 22.6% shortage of the demand. By 2025, there is a projected shortage of 309 registered minority nurses, a 23.3% shortage of the demand. This trend of shortage in minority nurses in the 4-county study area is further illustrated in Exhibit 18.

**Exhibit 17**  
**Projected Demand, Supply, and Shortage**  
**Of Minority Nurses in the 4-County Study Area**

Year	Demand	Supply	Shortage	% Shortage
2005	556	456	100	18.0%
2010	730	576	155	21.2%
2015	917	710	208	22.6%
2020	1,116	857	259	23.2%
2025	1,327	1,019	309	23.3%

Source: UA Center for Business and Economic Research

**Exhibit 18**  
**Projected Demand, Supply, and Shortage**  
**Trends of Minority Nurses in the 4-County Study Area**



Source: UA Center for Business and Economic Research

As the data on minority representation in registered nurses population is derived from the national survey results, the projected supply of minority nurses may have deviated from its true number at the regional level. This may affect the accuracy of the projected shortage. Still, the projected shortages serve well as evidence of a deepening shortage of minority nurses even though less confidence can be placed on the estimated magnitude of the shortage.

***The Shortage of Hispanic Nurses in Northwest Arkansas***

Exhibit 19 shows the projected demand, supply, and shortage/excess of racial/ethnic minority groups nurses in the Northwest Arkansas Study Area. It is projected that there is a shortage of Hispanic and Native American nurses and an excess of non-Hispanic Black nurses and Asian/Pacific Islander nurses.

**Exhibit 19**  
**Projected Demand, Supply, and Shortage/Excess**  
**Of Racial/Ethnic Minority Groups Nurses in the Study Area**

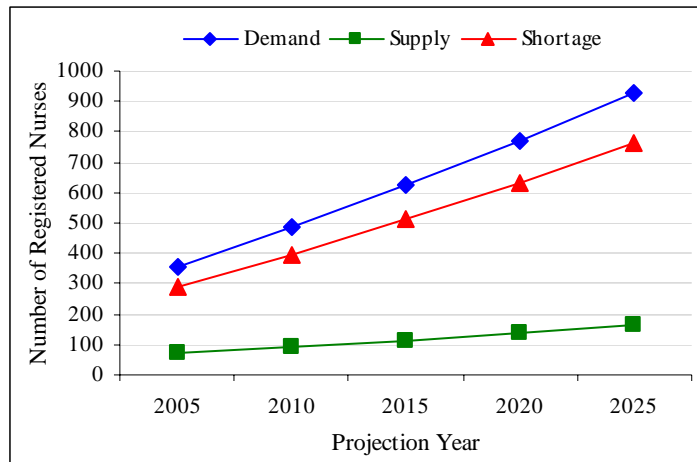
Projected Demand, Supply, and Shortage of Native American Nurses				
Year	Demand	Supply	Shortage	% Shortage
2005	39	13	-26	-67.6%
2010	40	12	-29	-70.8%
2015	42	11	-31	-74.7%
2020	44	9	-35	-79.2%
2025	45	7	-38	-84.3%
Projected Demand, Supply, and Shortage of Hispanic Nurses				
Year	Demand	Supply	Shortage	% Shortage
2005	358	71	-287	-80.3%
2010	486	90	-396	-81.4%
2015	623	113	-511	-81.9%
2020	770	137	-633	-82.2%

2025	926	164	-762	-82.3%
Projected Demand, Supply, and Excess of Asian/Pacific Islander Nurses				
Year	Supply	Demand	Excess	% Excess
2005	116	60	56	92.5%
2010	134	78	55	70.8%
2015	153	98	55	56.4%
2020	174	119	55	46.3%
2025	196	141	55	38.7%
Projected Demand, Supply, and Excess of Non-Hispanic Black Nurses				
Year	Supply	Demand	Excess	% Excess
2005	162	49	113	230.4%
2010	198	67	131	196.9%
2015	237	85	151	177.4%
2020	279	105	174	165.2%
2025	325	127	199	157.1%

Source: UA Center for Business and Economic Research

Among the various racial/ethnic minority groups, the shortage of Hispanic nurses is most severe. By 2005, it is projected to have a shortage of 287 registered Hispanic nurses in the study area, an 80.3% shortage of the projected demand. By 2015, there is a projected shortage of 511 registered Hispanic nurses, an 81.9% of the projected demand. By 2025, the projected shortage of Hispanic nurses is 82.3% of the projected demand, a shortage of 762 registered Hispanic nurses. This trend is further illustrated in Exhibit 20.

**Exhibit 20**  
**Projected Demand, Supply, and Shortage**  
**Trends of Hispanic Nurses in the 4-County Study Area**



Source: UA Center for Business and Economic Research

## Conclusion

Exhibit 21 summarizes the projected minority representation and disparity in Northwest Arkansas. It shows the percentage of racial/ethnic minority groups in the projected general population and the population of registered nurses. In 2002, minority population was estimated at 15.1% of the total population in the Northwest Arkansas Study Area. By



2005, the number of minority population is projected at 16.7% of the total population. By 2015, minority population is projected at 20.4% of the total population. By 2025, the number of minority population is projected to reach 23% of the total population.

**Exhibit 21**  
**Disparity between Racial/Ethnic Minority Representation in the**  
**General Population and the Population of Registered Nurses in Northwest Arkansas**

Percent of Projected General Population						
Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian Alaskan Native	Other Races or Ethnicity	Minority Total
2002	1.3%	9.5%	1.6%	1.3%	1.5%	15.1%
2005	1.5%	10.7%	1.8%	1.2%	1.5%	16.7%
2015	1.9%	13.9%	2.2%	0.9%	1.5%	20.4%
2025	2.2%	16.0%	2.4%	0.8%	1.5%	23.0%
Percent of Projected Number of Registered Nurses						
Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian Alaskan Native	Other Races or Ethnicity	Minority Total
2002	5.0%	2.1%	3.7%	0.5%	2.5%	13.8%
2005	5.4%	2.3%	3.8%	0.4%	3.2%	15.1%
2015	6.5%	3.1%	4.2%	0.3%	5.4%	19.5%
2025	7.6%	3.8%	4.6%	0.2%	7.7%	23.9%
Racial/Ethnic Minority Representation Disparity						
Year	Non-Hispanic Black	Hispanic	Asian/Pacific Islander	American Indian Alaskan Native	Other Races or Ethnicity	Minority Total
2002	3.8%	-7.3%	2.1%	-0.8%	1.0%	-1.3%
2005	3.9%	-8.4%	2.0%	-0.7%	1.6%	-1.5%
2015	4.6%	-10.8%	2.0%	-0.6%	3.9%	-0.9%
2025	5.4%	-12.2%	2.1%	-0.6%	6.1%	0.9%
(-) indicates under-representation and (+) indicates over-representation in registered nurses						

Source: UA Center for Business and Economic Research

Among the individual minority groups, Hispanic population has the largest share of the minority population in Northwest Arkansas and is projected to reach 16% of the area's total population by 2025. Asian and Pacific Islander population is the second largest minority group and is projected to reach 2.4% of the study area's total population by 2025. Black (non-Hispanic) population is projected to reach 2.2% of the total population in Northwest Arkansas by 2025. However, both the Asian/Pacific Islander and African American minority groups are under-represented in the study area's general population.

As there is no local data on minority representation in registered nurses, the projected national average representation of various minority groups in registered nurses population is assumed for the study area's minority representation in registered nurses (Exhibit 21). Using this national average and the minority representation in the study area's general population, the 2002 minority representation disparity was estimated at 1.3% between its representation in the general population and its under-representation in the population of registered nurses (Exhibit 21). By 2005, the disparity is projected to reach 1.5%.

However, by 2015, this disparity is projected to reduce to 0.9%. And by 2025, there is a projected 0.9% over-representation of minority nurses in the study area's population of registered nurses.

Among the individual minority groups, Hispanic population shows the largest disparity between its representation in the study area's general population and that in registered nurses population (Exhibit 21). In 2002, the under-representation of Hispanic people in the study area's population of registered nurses was estimated at 7.3% relative to its representation in the study area's general population. By 2015, it is projected to have a 10.8% disparity between Hispanic representation in the study area's general population and that in the area's registered nurses population. By 2025, the disparity between Hispanic representation in the study area's general population and that in the area's registered nurses population is projected to reach 12.2%. On the other hand, due to their under-representation in the study area's general population, African American and Asian/Pacific Islander are projected to have an over-representation in the population of registered nurses in Northwest Arkansas (Exhibit 21).