

West Virginia Rural Health Association

# HEALTH CARE IN WEST VIRGINIA



October  
2013

## A Workforce Demand Analysis



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Commissioned by the West Virginia Rural Health Association, this report focuses upon the distribution of healthcare providers in relation to population, chronic diseases, and aging patients and providers, to assess future workforce needs in the state. This report was created in cooperation with the National Center for the Analysis of Healthcare Data.



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# Health Care in West Virginia

## A WORKFORCE DEMAND ANALYSIS

### INTRODUCTION

The West Virginia Rural Health Association (WVRHA) is a non-profit 501(c)(3) organization with a volunteer Board of Directors (BOD) elected from healthcare organizations and individuals from around the state. (A complete listing of board members is located at the end of this document.) The WVRHA advocates for empowering all West Virginians to advance their quality of life, well-being and access to excellence in rural health care.

WVRHA membership includes a variety of individuals and organizations that are interested in the health of rural West Virginia by working together to identify the health care concerns and to find ways to improve services in our communities.

In 2011, the WVRHA identified through their strategic planning process, the need to conduct an environmental assessment of current healthcare workforce supply, which was completed in October 2012 with a report created by the West Virginia Rural Health Research Center. The next phase of the process was to assess the current healthcare demand/needs of all citizens and the impact this was having upon the current workforce and the communities they serve. As major provisions of the Patient Protection and Affordable Care Act (PPACA) are implemented in 2014, this information will help in assessing the potential impact the newly eligible citizens may have upon the current healthcare delivery system.

### NEXT PHASE OF THE PLAN

In June of 2013, WVRHA moved forward with the next phase of the process, to generate a demand report as a partner to the supply report – Health Care Demand Report. The National Center for the Analysis of Healthcare Data (NCAHD) was contacted to discuss generating a report that would provide data and visualizations (maps) describing the state's healthcare workforce. In addition, the results of this project will provide West Virginia's rural health stakeholders, policy and decision-makers and citizens with specific geographical details on how the availability of a strong healthcare workforce can have a positive effect on the health of West Virginians.

For this report, key WVRHA board members, specifically the Co-Chairs of the WVRHA Workforce Committee, worked with Ms. Ann Peton, Director of the National Center for the Analysis of Healthcare Data (NCAHD) to determine how NCAHD's resources

would help in this process, as well as some of the specific outcomes needed to guide the stakeholders toward collaborative solutions. The WVRHA Workforce Committee decided that a series of maps/analysis would be provided in the report along with narrative. Subsequent to this report, the data and outcomes will be integrated into an internet-based web mapping portal called the West Virginia Health Data Portal (WVHDP) that will be launched in January 2014. It is the WVRHA's goal with both of the reports and the WVHDP to provide a basis for collaborative efforts and more informed policy and decision-making for all healthcare issues in West Virginia.

## DATA SOURCES

The primary source for the provider data is their respective state licensure board which NCAHD collects and processes annually (since 2007) to create the Enhanced State Licensure dataset (ESL). (For more information on this process, see **Appendix A-NCAHD's National Data Collection Process**). For this report, NCAHD utilized data collected and processed on March 2013 for the following healthcare providers: Physicians, Nurse Practitioners, Physician Assistants, Pharmacists, Dentists, Dental Hygienists, and Registered Nurses.

- Demographic data came from the 2010 U.S. Census
- Critical Access Hospitals – West Virginia Bureau for Public Health, Office of Community Health Systems and Health Promotion, Division of Rural Health and Recruitment (9/2013)
- Offices of the Insurance Commissioner (CCRC Actuaries) for the number of uninsured to discern potential Medicaid eligibles. (8/2013)
- West Virginia Higher Education Policy Commission provided data regarding training programs (8/2013)
- Pharmacies came from the West Virginia Board of Pharmacy (8/2013)

## LIMITATIONS

The state licensure process for healthcare providers collects numerous elements of information (data) that are not released to the public, including the number of hours they practice, whether they accept Medicare, etc.; therefore, we assume that each licensee is equal to one full-time equivalent (FTE).

Additionally, for those providers that practice in more than one location, we utilize their primary practice site only in the analysis since the additional practice site information is not publicly released.

For the pharmacists, it is known that the licensure board only publicly releases the provider's home address and not their practice address.

The physician specialty information for physician utilizes the physician’s primary specialty reported in state licensure, since the percentage that may work in a sub-specialty is not publicly released information.

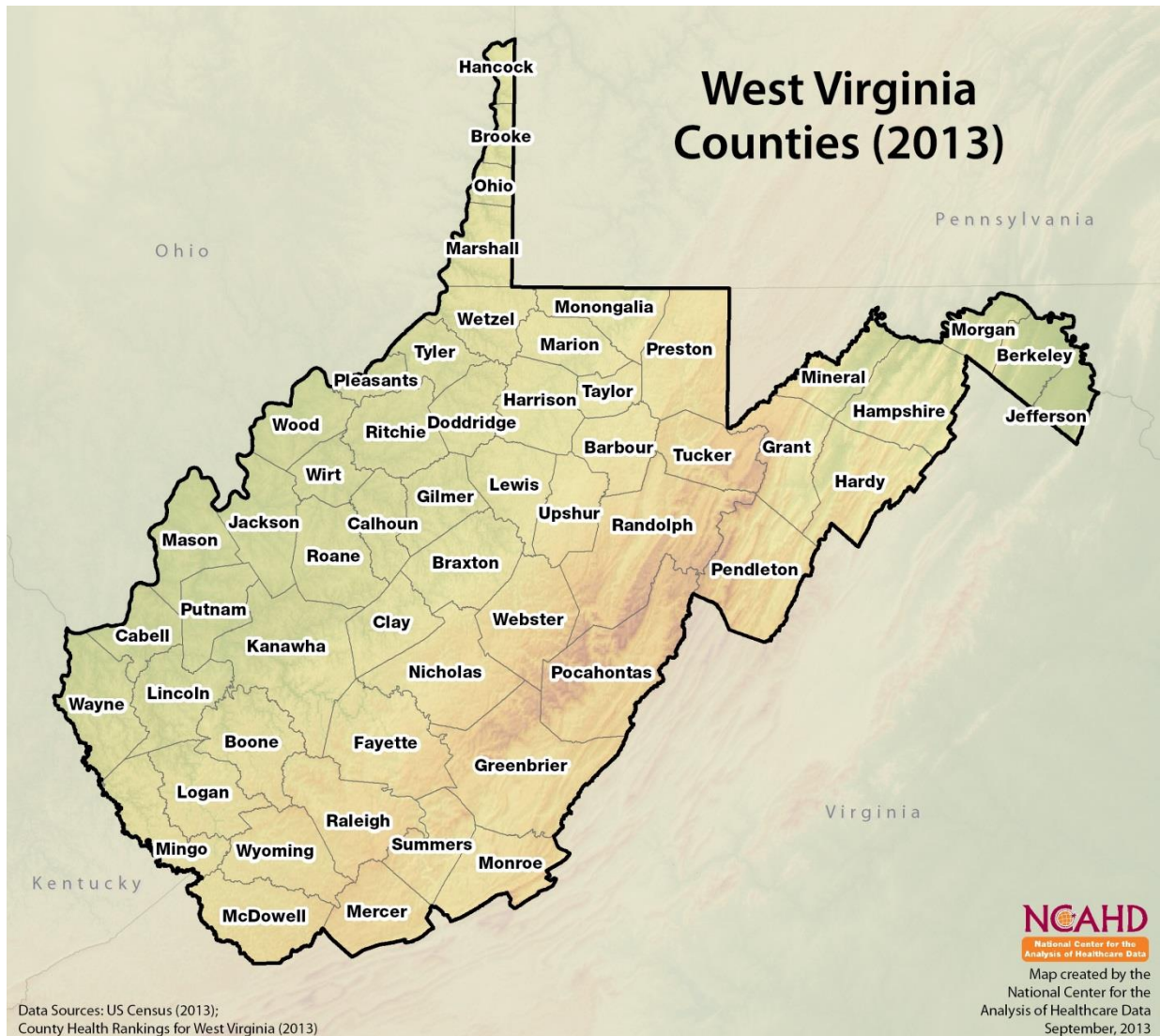
General Disclaimer: The providers represent actively licensed in-state individuals and not necessarily current practice patterns or ability to accept Medicare/Medicaid patients.

## RESULTS

### Baseline

Many factors affect health outcomes, quality of healthcare delivery systems and workforce supply. Much has been published about the burgeoning aging population, but some of the other influencers, such as income, emerging new technologies, changing disease profiles, changing public health priorities and the growing focus upon prevention programs greatly impact all stakeholders attempting to address their “niche” of healthcare issues.<sup>1</sup>

The following series of maps provide baseline data on West Virginia’s population relative to certain demographic, health outcomes and current insurance status for use in comparative analysis.



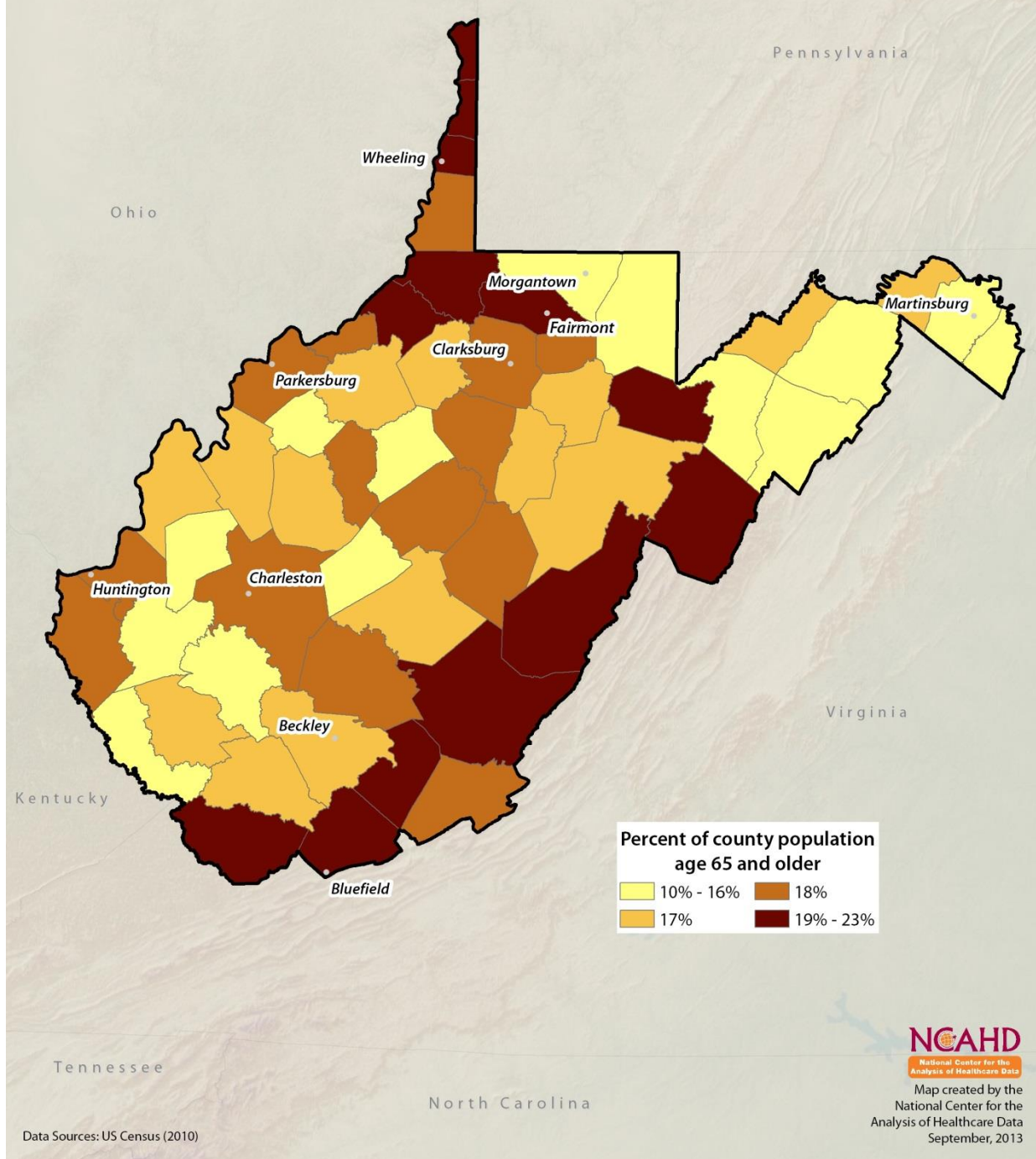
County Name	Median Income	Median Age	Population	Population Density	County Name	Median Income	Median Age	Population	Population Density	County Name	Median Income	Median Age	Population	Population Density
Barbour	33,004	42	15,836	46.2	Kanawha	40,409	42	189,738	208.3	Pocahontas	34,928	47	8,398	8.9
Berkeley	51,029	38	107,387	333.9	Lewis	37,270	43	17,414	44.7	Preston	40,375	42	32,725	50.2
Boone	38,357	41	25,003	49.7	Lincoln	32,517	41	22,557	51.4	Putnam	53,964	41	56,991	162.6
Braxton	32,369	44	14,545	28.2	Logan	34,001	42	35,880	78.8	Raleigh	38,156	41	80,589	132.3
Brooke	41,034	45	23,637	255.8	McDowell	23,751	44	56,379	181.0	Randolph	33,529	43	28,333	27.2
Cabell	36,864	39	94,890	329.5	Marion	39,774	41	33,276	106.6	Ritchie	35,421	44	10,320	22.8
Calhoun	28,581	45	7,388	26.3	Marshall	41,974	44	26,040	58.5	Roane	28,131	44	15,313	31.7
Clay	29,802	42	10,294	29.9	Mason	35,132	42	23,581	44.1	Summers	30,751	46	13,417	36.5
Doddridge	35,261	42	7,331	22.9	Mercer	33,500	43	61,724	146.7	Taylor	39,055	42	16,308	92.8
Fayette	32,316	43	47,102	70.5	Mineral	38,073	42	27,389	83.2	Tucker	35,019	46	6,798	16.1
Gilmer	33,196	38	8,681	25.5	Mingo	31,681	41	27,051	63.9	Tyler	36,952	45	9,012	34.6
Grant	37,953	44	12,338	25.7	Monongalia	43,447	29	89,989	246.0	Upshur	36,719	41	23,728	66.9
Greenbrier	35,924	45	35,024	34.2	Monroe	37,066	45	13,626	28.8	Wayne	35,418	41	41,414	80.8
Hampshire	36,588	43	23,365	36.2	Morgan	40,762	45	17,369	75.6	Webster	28,697	44	9,610	17.3
Hancock	39,110	45	30,359	344.2	Nicholas	36,080	43	26,396	40.3	Wetzel	38,457	45	16,310	45.1
Hardy	38,013	43	13,726	23.5	Ohio	36,836	44	44,027	403.9	Wirt	36,084	44	5,875	25.0
Harrison	39,899	42	68,991	165.6	Pendleton	37,042	47	7,787	11.2	Wood	38,005	42	86,948	230.7
Jackson	41,066	42	28,366	60.1	Pleasants	41,596	42	7,294	54.2	Wyoming	32,851	43	24,272	48.4
Jefferson	59,280	39	53,955	255.1										

**FIGURE 1 – WEST VIRGINIA COUNTIES**

Demographic influences can directly impact access to care and the ability of areas to attract and retain healthcare services and providers, especially in rural areas. In the mountainous areas of eastern West Virginia, population density diminishes making the affordable provision of care more difficult, with these populations relying heavily upon services in adjacent states. Lower total county population density coupled with higher percentages of elderly population, indicates greater demand of healthcare services in these areas (see **Figure 2**).



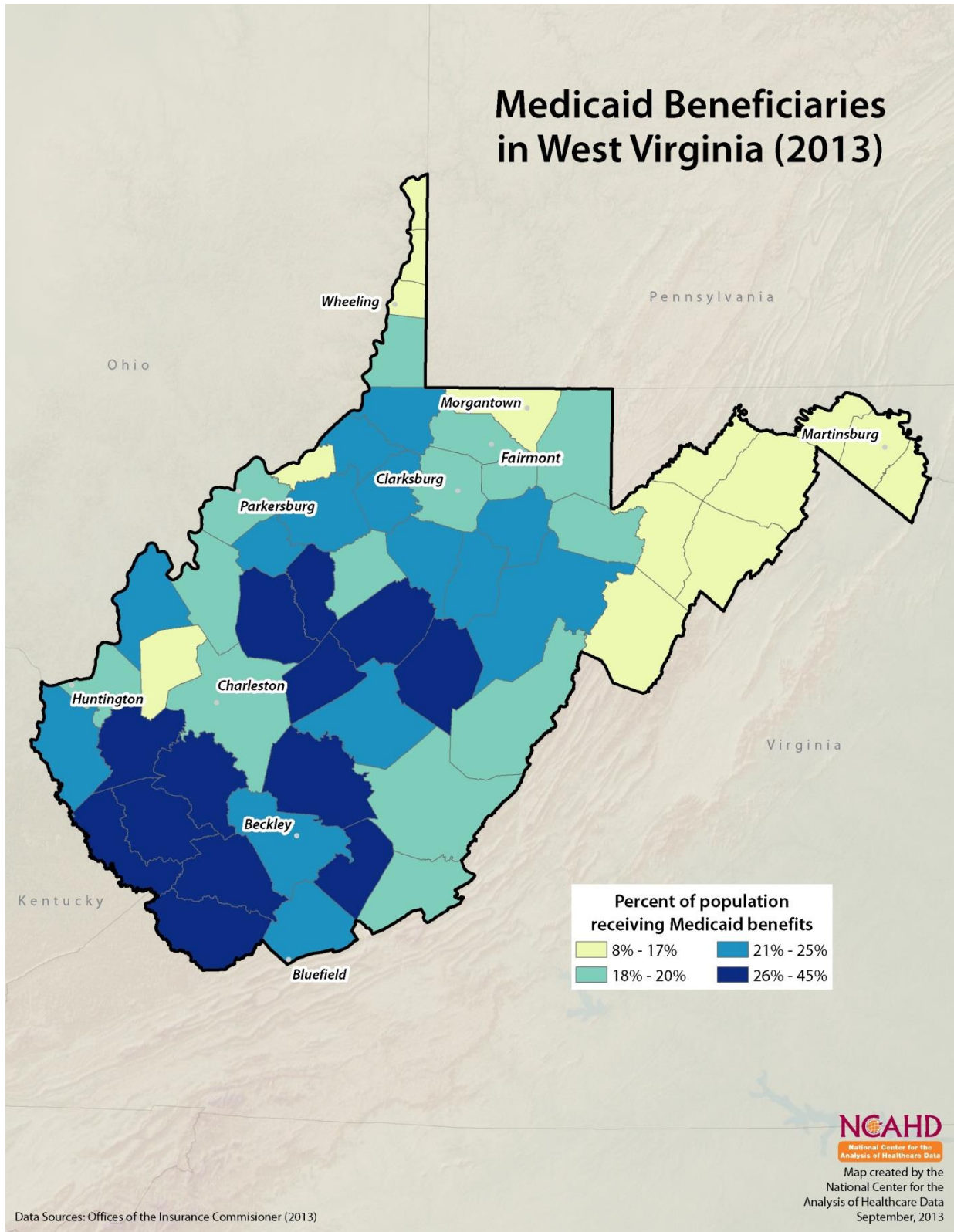
## Elderly Populations in West Virginia (2013)



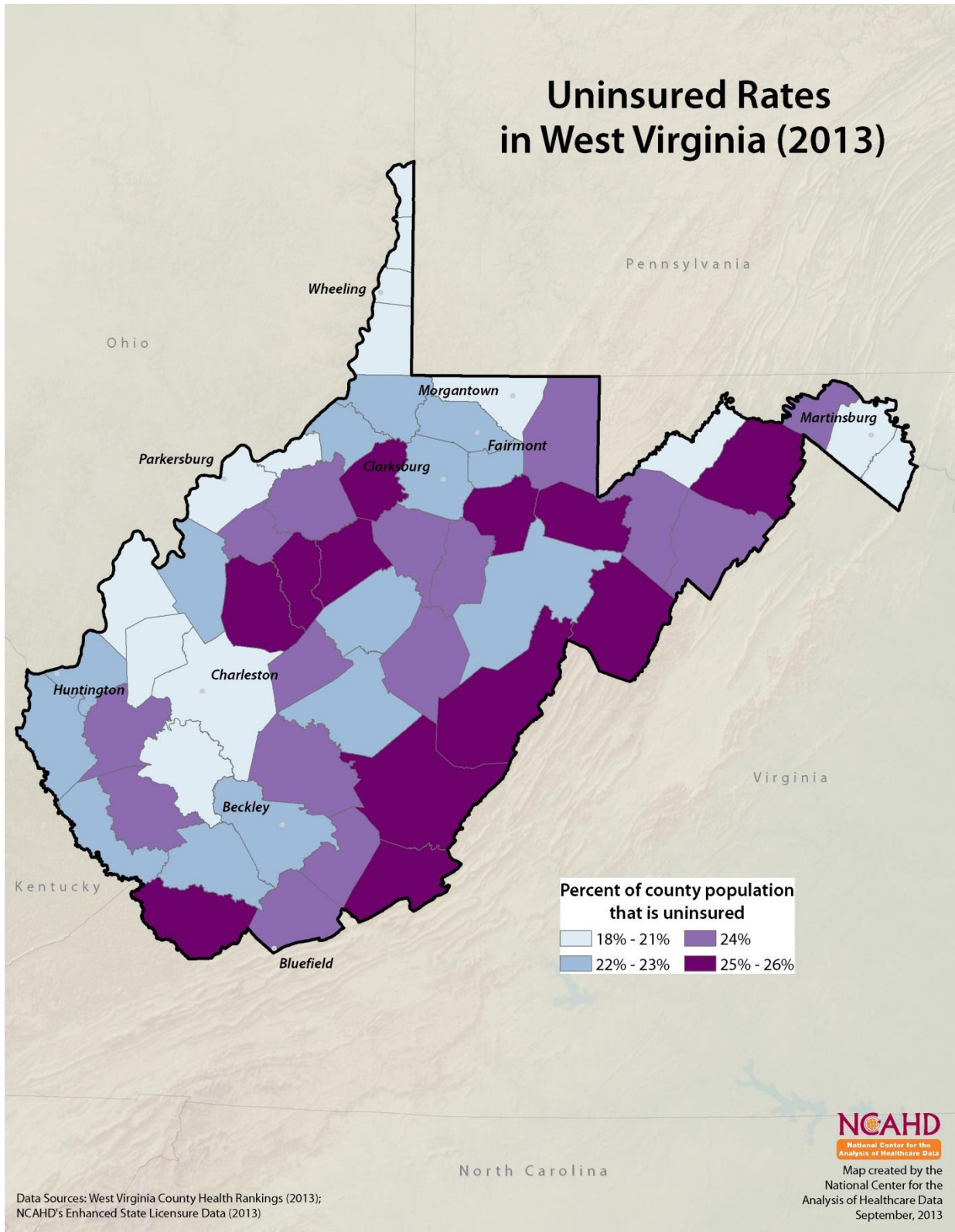
**FIGURE 2 - ELDERLY POPULATIONS BY PERCENTAGE OF TOTAL COUNTY POPULATION**

The national average of population on Medicare is 21%.<sup>2</sup> In **Figure 3** below, there are obvious clusters of higher percentages of Medicaid beneficiaries with 21% of West Virginia's population covered by Medicare. Another important set of data visualized in **Figure 4** to better understand healthcare workforce demand are the rates of uninsured population.



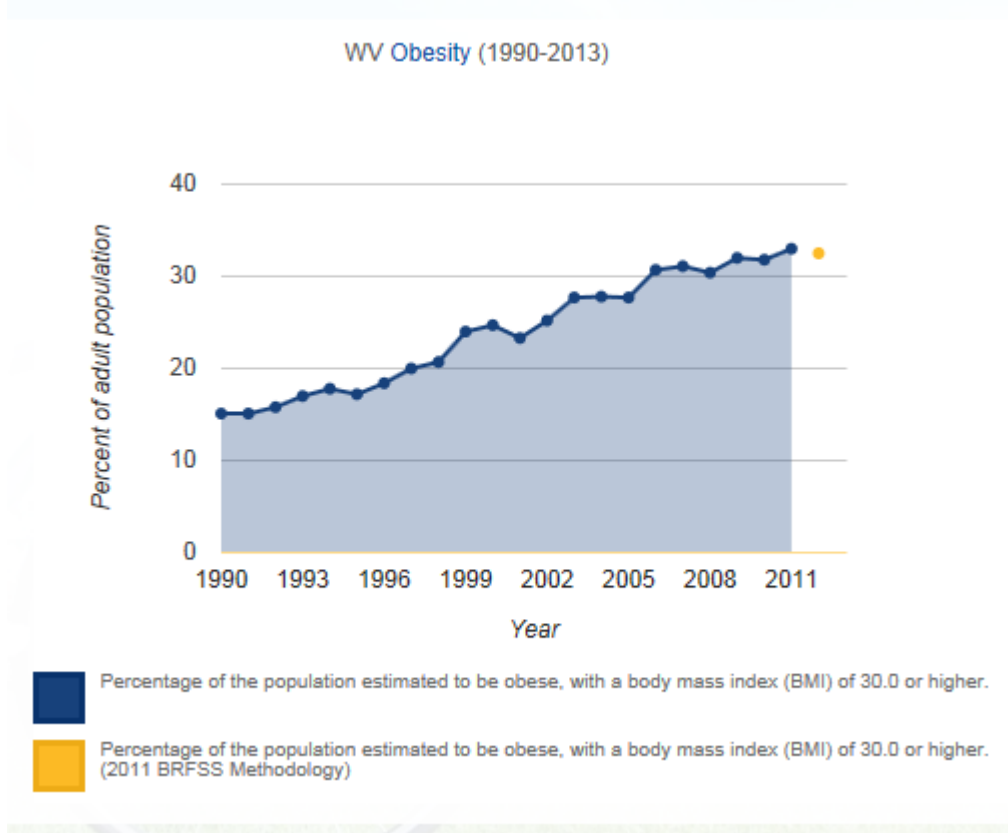


**FIGURE 3 - POPULATION RECEIVING MEDICAID BENEFITS**



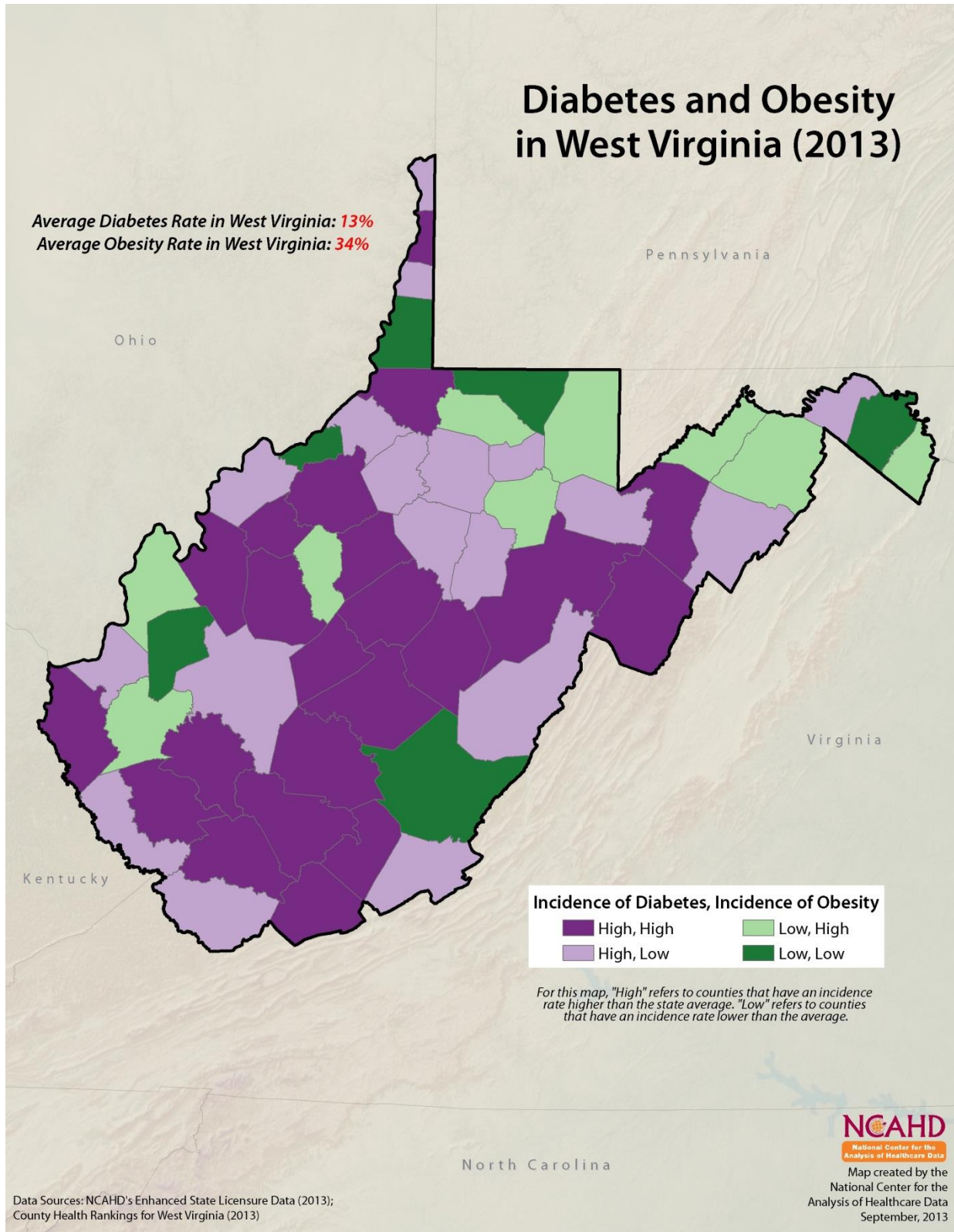
**FIGURE 4 - UNINSURED RATES IN WEST VIRGINIA**

With the current focus on healthcare in the United States being the impact of chronic diseases, such as Obesity, it was important to demonstrate certain related health outcomes to current workforce supply in this needs assessment. Since 1990, West Virginia has seen a steady increase in the percentage of the population estimated to be obese (see **Figure 5**). Additionally, certain health outcomes when correlated can help stakeholders in being more effective in targeting their efforts, so within this report, there will be demonstrations of these assumptions (See **Figure 6 – Diabetes and Obesity**).



**FIGURE 5 - WEST VIRGINIA'S OBESITY TREND**





**FIGURE 6 - DIABETES AND OBESITY INCIDENCES BY COUNTY**

## Primary Care Workforce

The importance of growing and sustaining a primary care workforce and its related infrastructure (e.g. education, facilities, policy, etc.) has been the topic of research and discussion for decades. In the 1990s, public policy and funding efforts were aligned to increase the primary care workforce inasmuch that family medicine training efforts across the country grew 34%.<sup>3</sup> Although this increase occurred, the growth of the subspecialist workforce still exceeded that of primary care physicians. Since 1997, U.S. medical school graduate matches in family medicine and general internal medicine programs have fallen by nearly 50%.

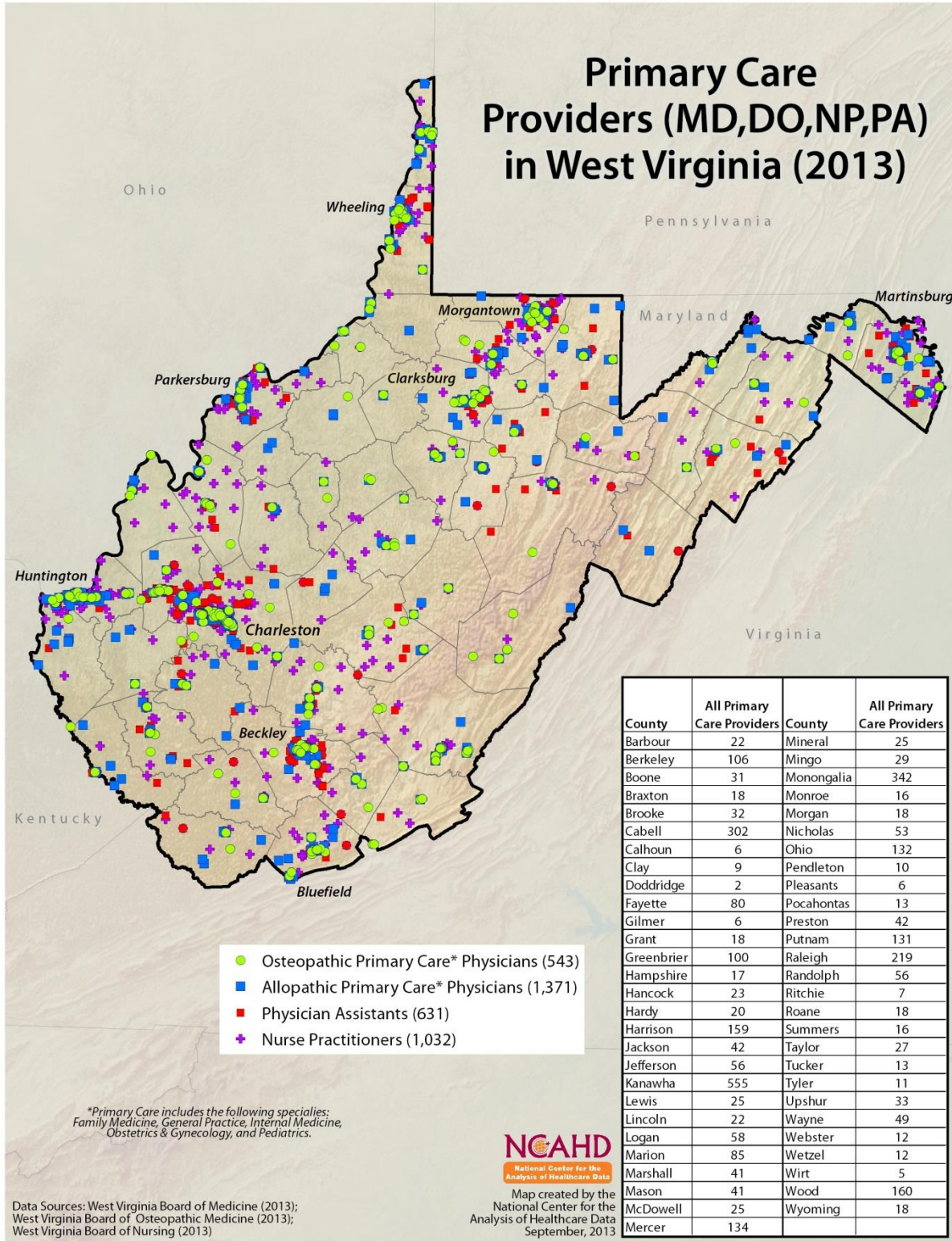
With the passage of the Patient Protection and Affordable Care Act in 2010, it was predicted that a large number of West Virginians would need to have access to medical care. The WVRHA and its partners felt it was necessary to better understand the impact this increase would have upon the entire healthcare delivery system.

In 2011, the WVRHA Board of Directors began to investigate the amount and accessibility of primary care workforce available to its partners and policy makers. Working with the Claude Worthington Benedum Foundation, WVRHA developed a grant to fund this project and the WVRHA Workforce Committee was initiated.

In 2012, the WVRHA received additional funding from the West Virginia Bureau of Public Health and the West Virginia Higher Education Policy Commission for the workforce studies. These three funders allowed the WVRHA to contract with the West Virginia Rural Health Research Center to begin the first phase of data collection on the supply of health care professionals in the state. Data was collected for the following professions: Nurses, Nurse Practitioners, Licensed Practical Nurses, Dentists, Dental Hygienists, Physicians, Physician Assistants and Pharmacists. This report is available on the WVRHA website [www.wvrha.org](http://www.wvrha.org)

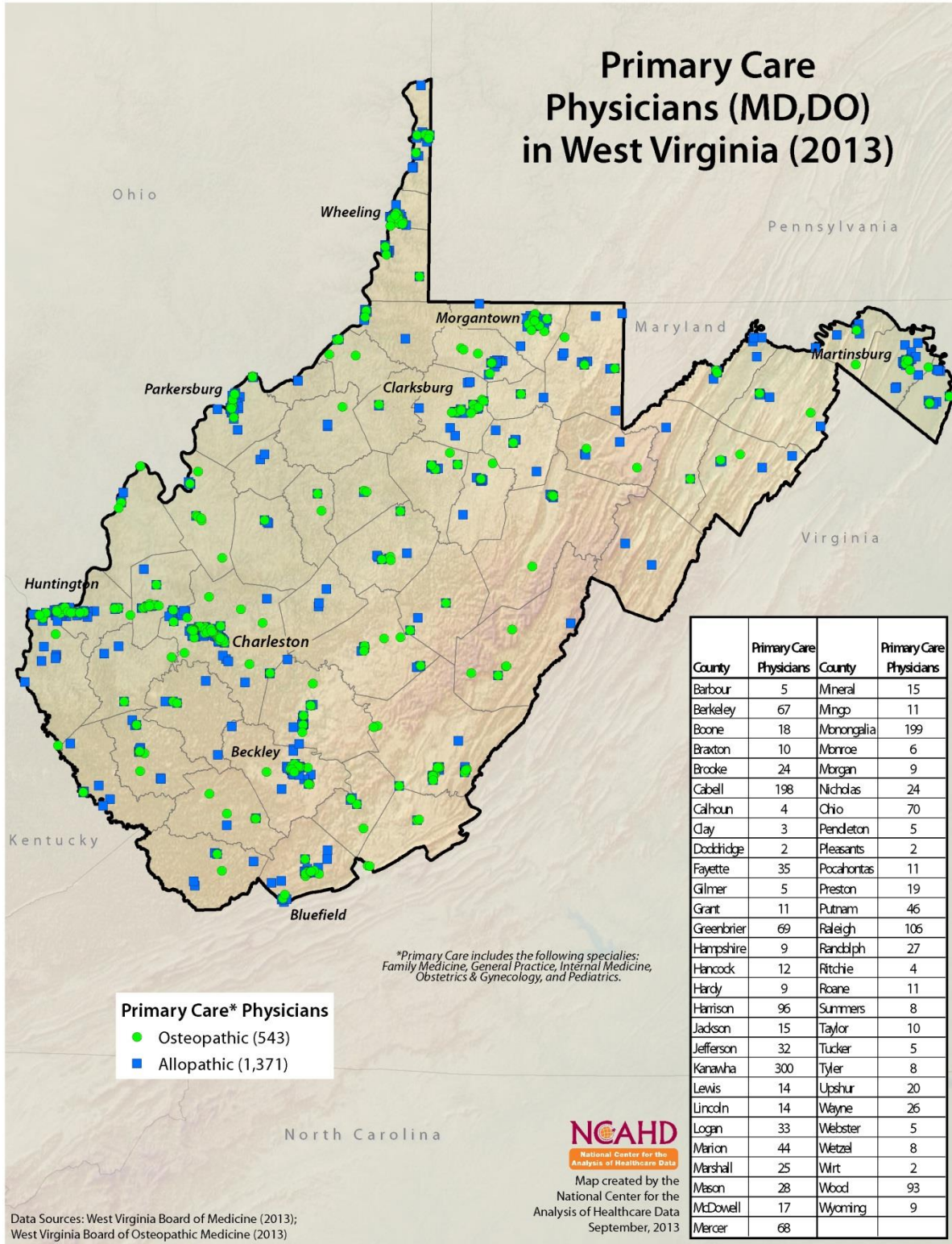
Upon completion of the supply study, the WVRHA sponsored four community forums to share information from the report and get feedback on the findings. The initial forum was held in Daniels, WV (November 14, 2012) at the preliminary release of the report at the WV Rural Health Conference. The final three forums were held in Clarksburg, WV (February 7, 2013), Hamlin, WV (February 22, 2013) and Wheeling, WV (March 14, 2013). Between the three forums of 2013, a total of 60 health care professionals representing a broad spectrum of practitioners, administrators, and educators offered their feedback to further expand and guide the scope of the subsequent second phase of the workforce demand analysis.

The U.S. primary care workforce consists of physicians specializing in family medicine, general practice, general internal medicine, general pediatrics, obstetrics-gynecology and nurse practitioners (also known as advance practice registered nurses) (NP) and physician assistants (PA). In West Virginia, state licensure data on NPs and PAs does not contain their primary practice focus, so we assume a full FTE for each actively licensed individual. Their aggregated practice sites and individual provider distribution patterns can be seen the **Figures 7-10**.



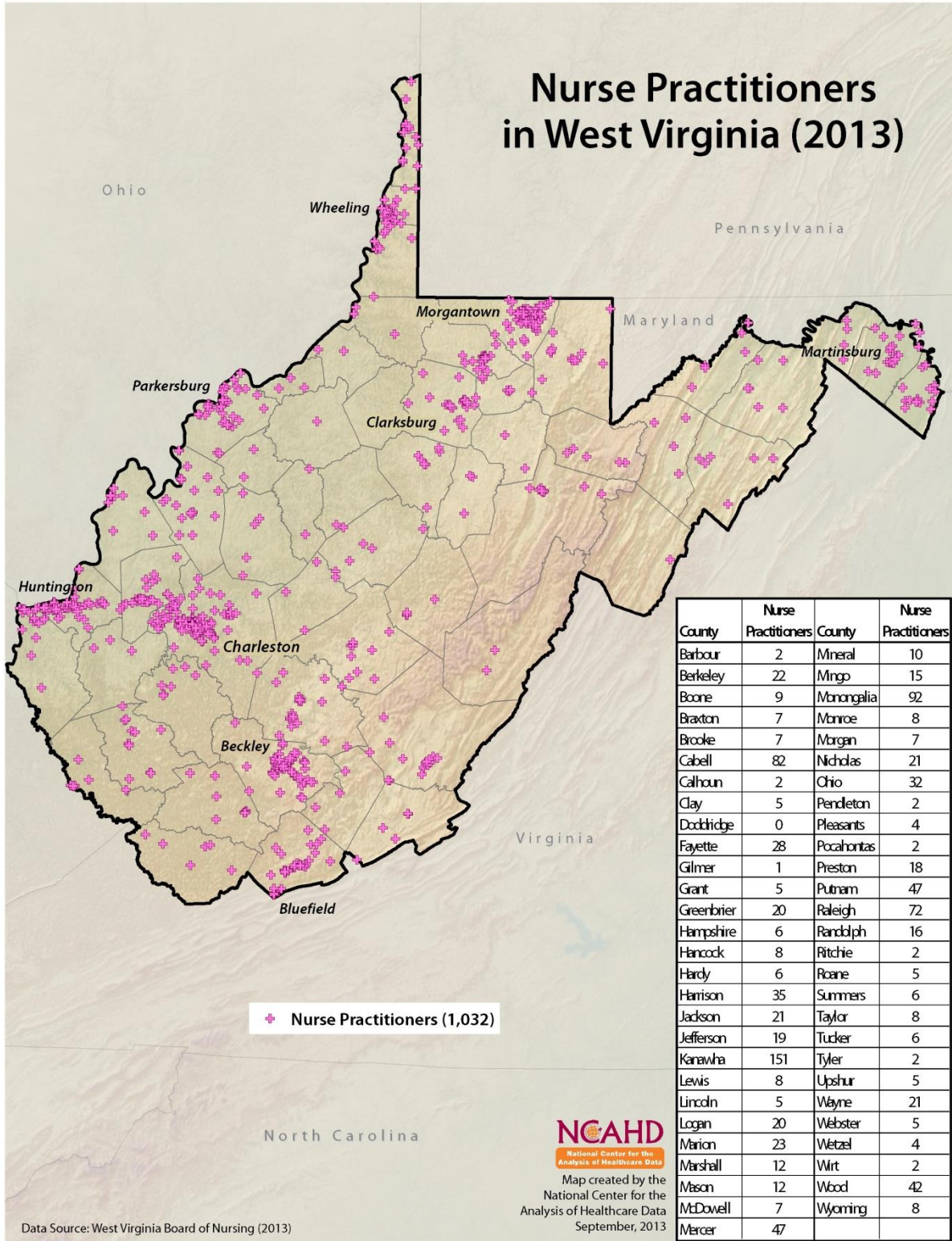
**FIGURE 7- PRIMARY CARE PROVIDERS**



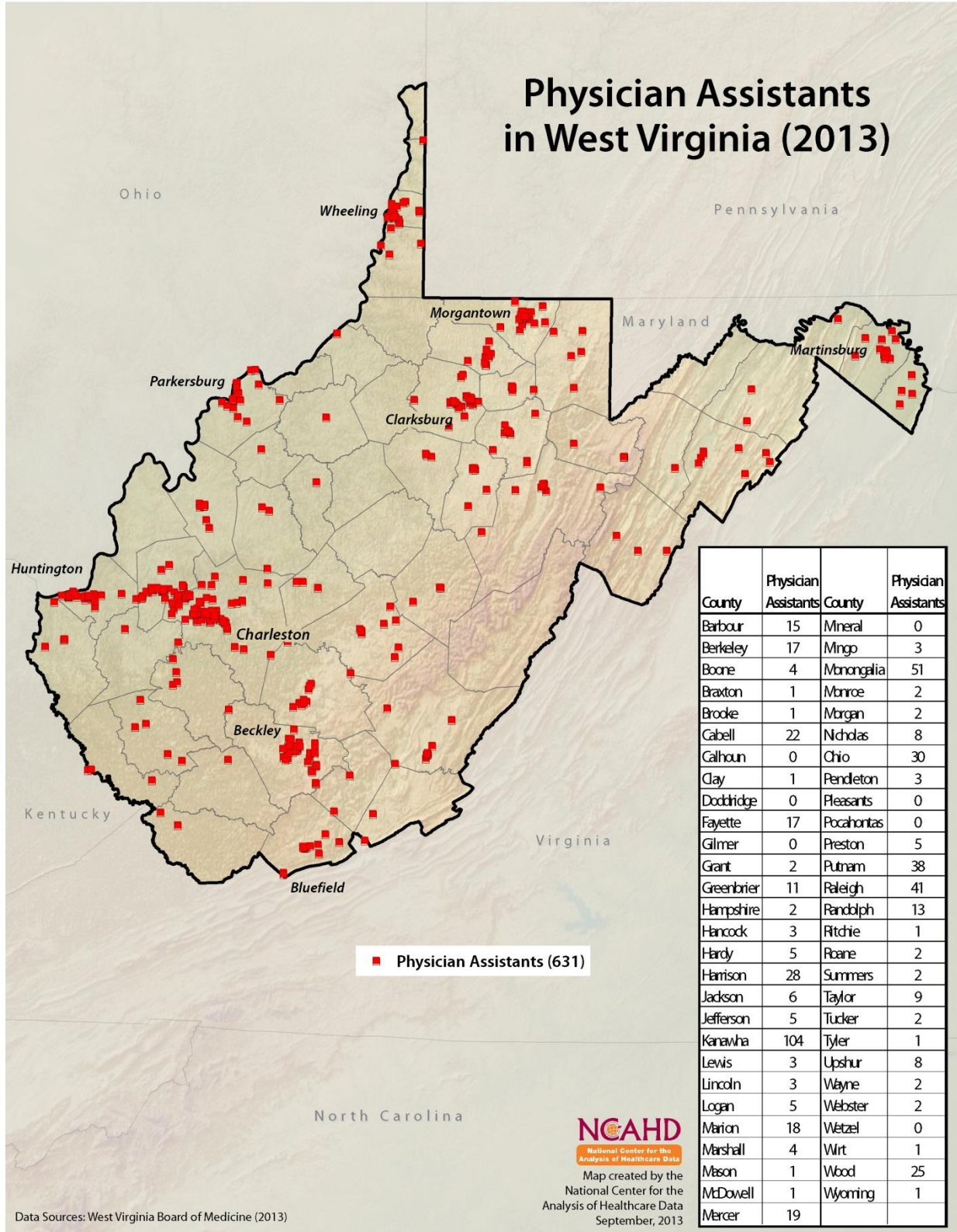


**FIGURE 8 - PRIMARY CARE PHYSICIANS**





**FIGURE 9 - NURSE PRACTITIONERS**

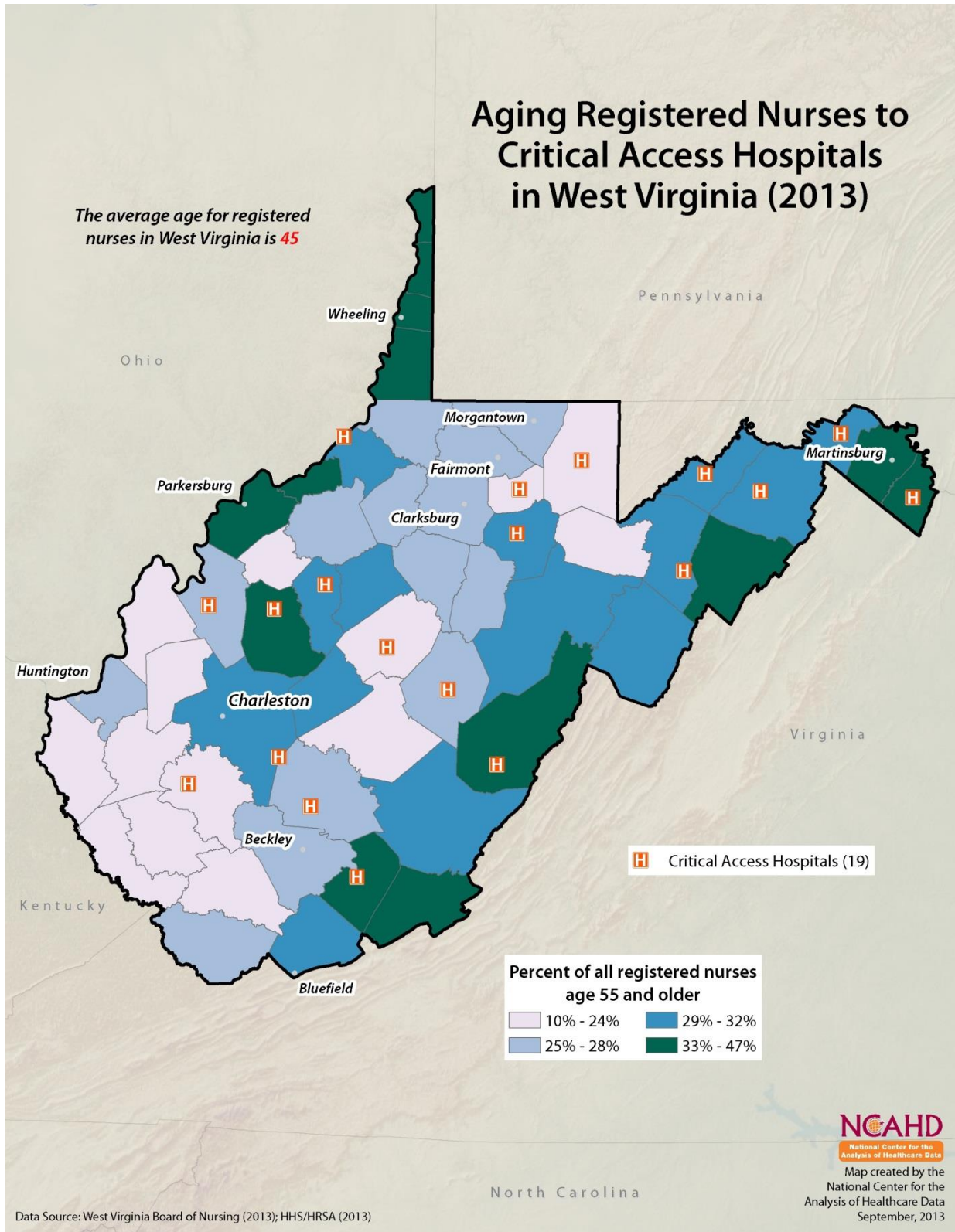


**FIGURE 10 - PHYSICIAN ASSISTANTS**

An integral part of the healthcare workforce not generally considered a part of the “primary care” workforce are the registered nurses (RNs), particularly as it relates to their role in the rural healthcare delivery system. The trend for most younger healthcare professionals to choose a subspecialty is not exclusive to medicine and is a growing concern within the nursing profession primarily due to the unintended consequences to the entire workforce.<sup>4</sup> In 2000, the Journal of the American Medical Association (JAMA) estimated that over the subsequent two decades, the largest percentage of RNs would shift into the 50-69 age classification.<sup>5</sup>

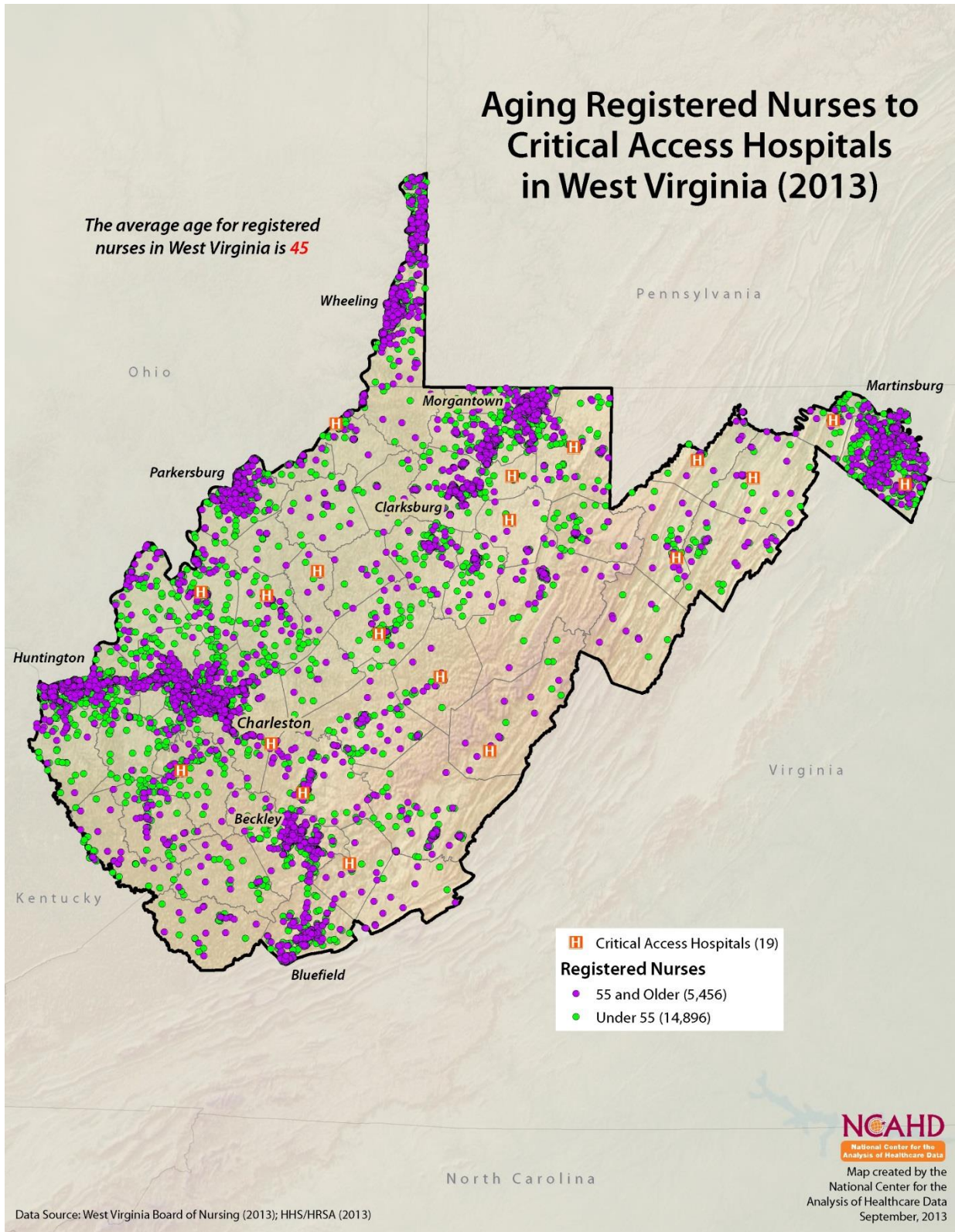
From a workforce demand perspective, the proximity of the nursing workforce to healthcare facilities that are dependent upon them was an important consideration to analyze for this report. In West Virginia, the average age of registered nurses is 45, as compared to the national average of 46<sup>6</sup>, with higher percentages of the total RN workforce for the counties located in rural areas of West Virginia (see **Figure 11**).





**FIGURE 11 - AGING REGISTERED NURSES BY COUNTY AGGREGATE**

Considering the density of the aging RN workforce relative to Critical Access Hospitals is important as various stakeholders discuss the location of training programs and recruitment and retention programs. A key component of this discussion will be the availability of trainers for training programs. Therefore, seeing the distribution of the current workforce relative to CAHs and training programs will help inform this discussion (see **Figure 12 – Distribution of Registered Nurses**).



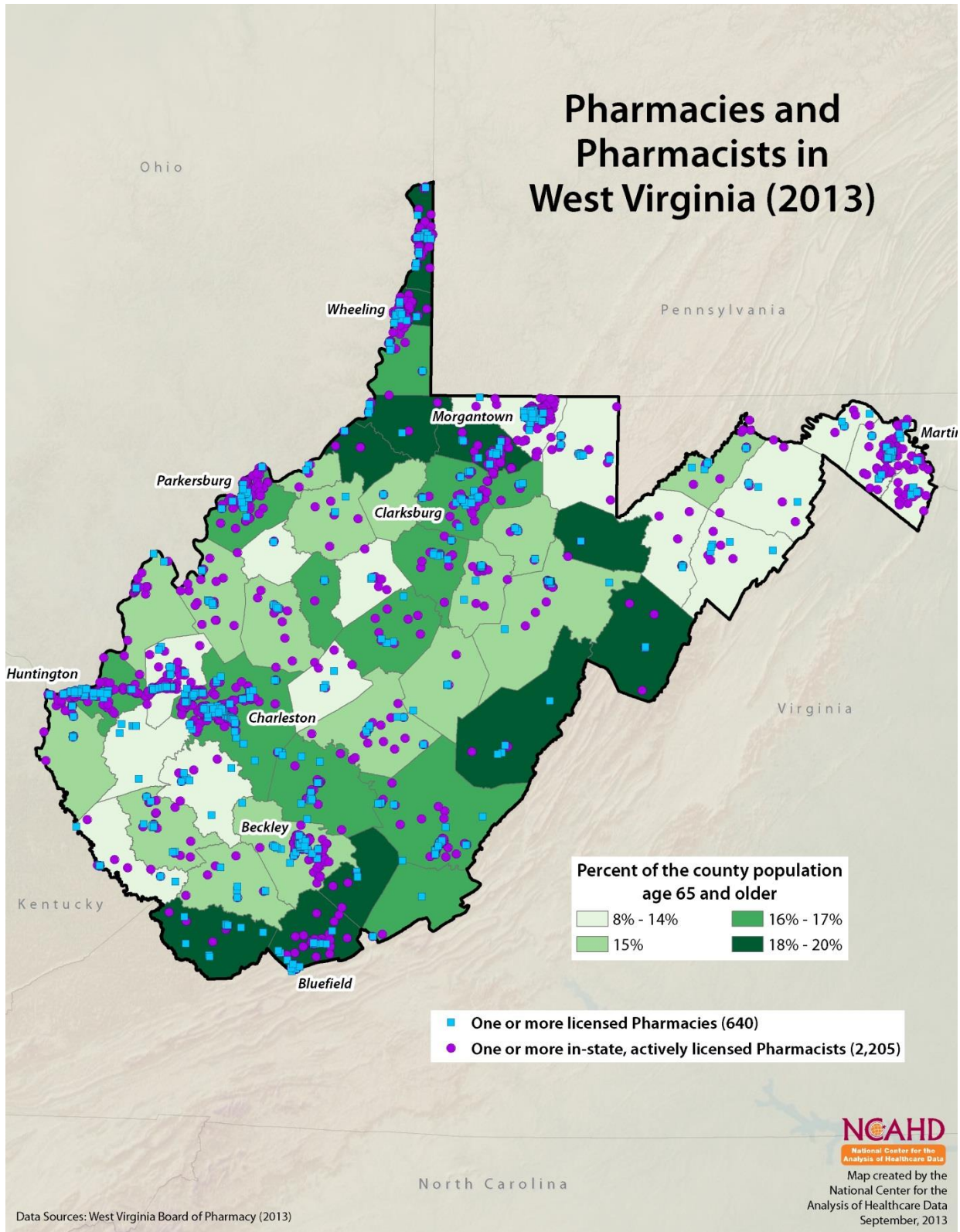
**FIGURE 12 - DISTRIBUTION OF REGISTERED NURSES**

Over the last few decades, as the growth of healthcare utilization has increased, there has also been a reciprocating increase in prescription medication usage. As patients have become reliant upon this level of healthcare professionalism, the elderly, especially, see pharmacists as a vital member of the healthcare team. However, as this profession has expanded, their propensity to practice in rural areas is further hampered by the passage of two major policies related to prescription medication payments: Medicare prescription drug discount cards and the Medicare Part D prescription drug benefit. The unintended consequences of these policies to make medications more accessible and affordable for senior citizens was that independent pharmacies could not “afford” the prescription drug revenue decrease to their already small profit margin, causing more than 500 independent pharmacies nationwide to close.<sup>7</sup>

As the population ages, so does their need for healthcare services and subsequent need for medication. Therefore, in attempting to match the projected demand for both pharmacists and pharmacies, **Figure 13** clearly indicates a disconnect within the healthcare delivery system, especially in eastern West Virginia counties of Pocahontas, Pendleton and Tucker.

*(Disclaimer regarding the pharmacy map: Due to the licensure process, representation of individual pharmacists may not necessarily be their practice site and may represent their home residence.)*





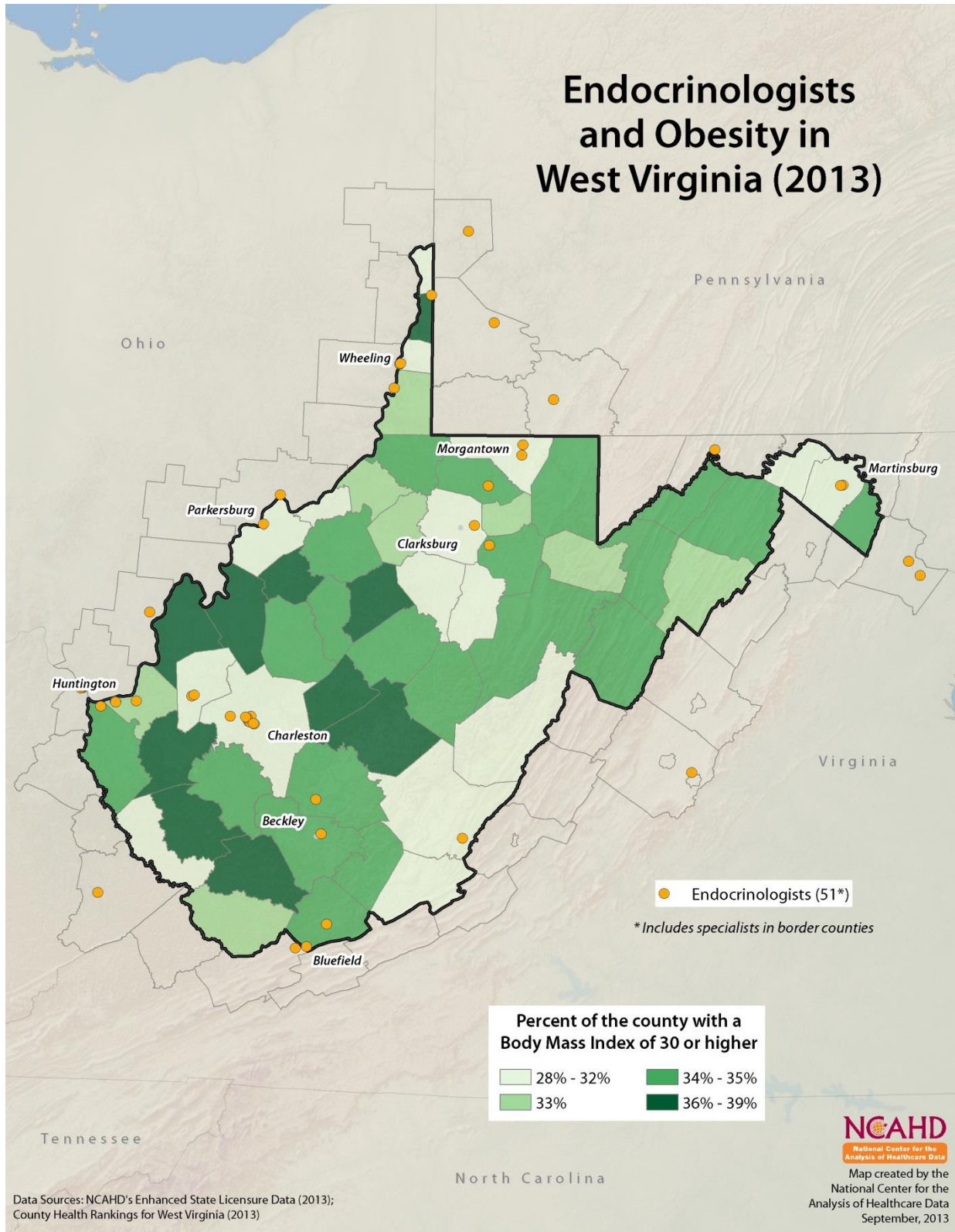
**FIGURE 13 - DISTRIBUTION OF PHARMACISTS AND PHARMACIES**



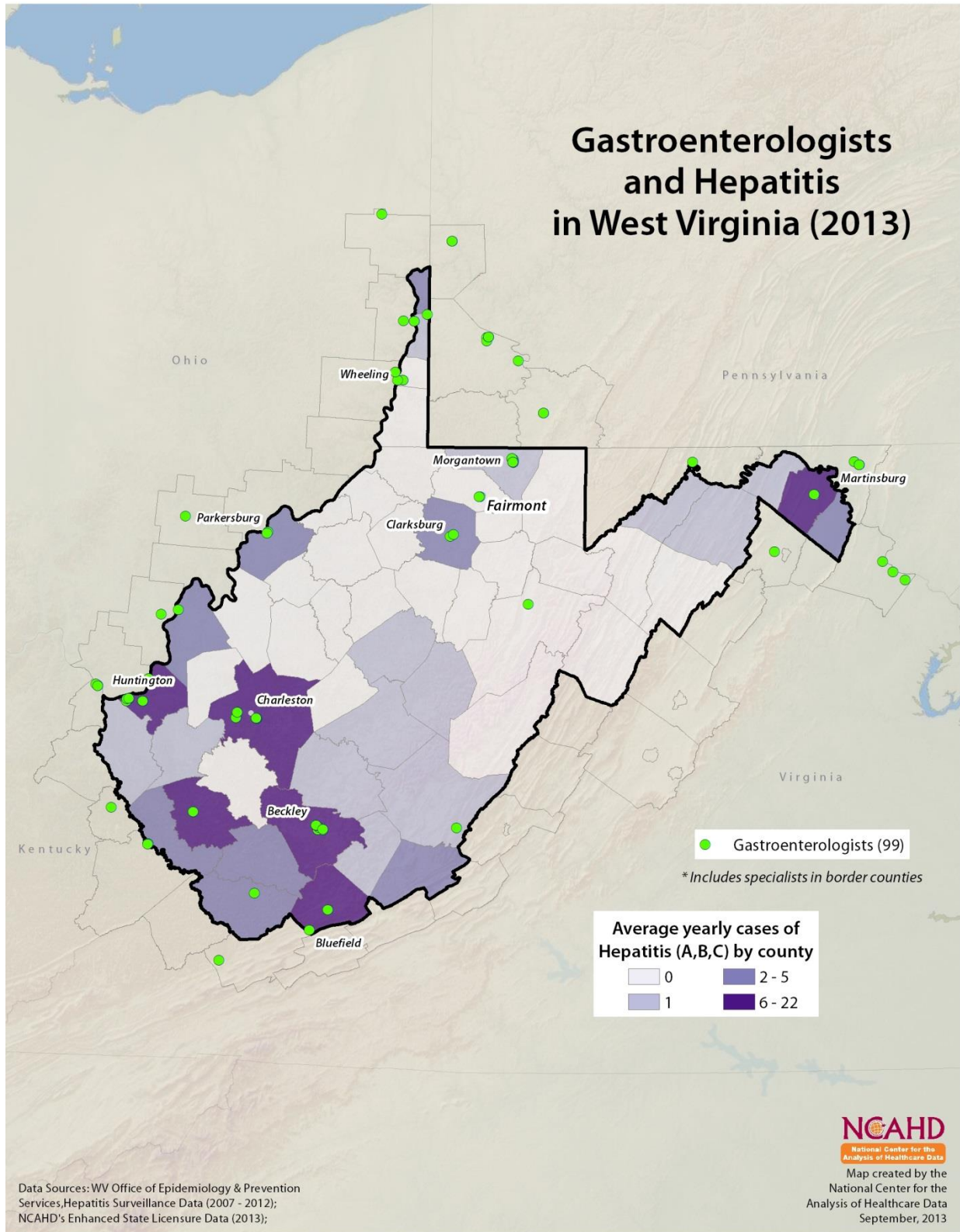
## Specialty Care Workforce

For the purposes of this report, those physicians practicing in a non-primary care specialty are considered a part of the specialty care workforce. Although not normally combined, the other healthcare provider sectors included in this section of the report are dental professionals: dentists and dental hygienists.

Although there has been an increase in the number of medical students choosing a non-primary care specialty, their proximity to areas of need based upon various diseases/medical outcomes was the means chosen for this demand report to demonstrate need. Five physician specialists were identified by the WVRHA Workforce Committee to be of significance in assessing their demand: **Cardiologists, Nephrologists, Gastroenterologists, Orthopaedic Surgeons and Endocrinologists.** West Virginia's healthcare delivery system is not unique in that some patients seek certain specialty care from providers in the adjacent states. This may be due to the closer proximity to the patient. Therefore, the maps reflect specialists that are located in bordering states so that stakeholders are aware there may be other specialists providing certain services to West Virginians. (Note: Whether they actually provide West Virginia citizens their specialty services was not analyzed for this report.) For several of the specialists, a clear correlation with just one health outcome was not apparent, so a second related health outcome is being shown along with the provider distribution.

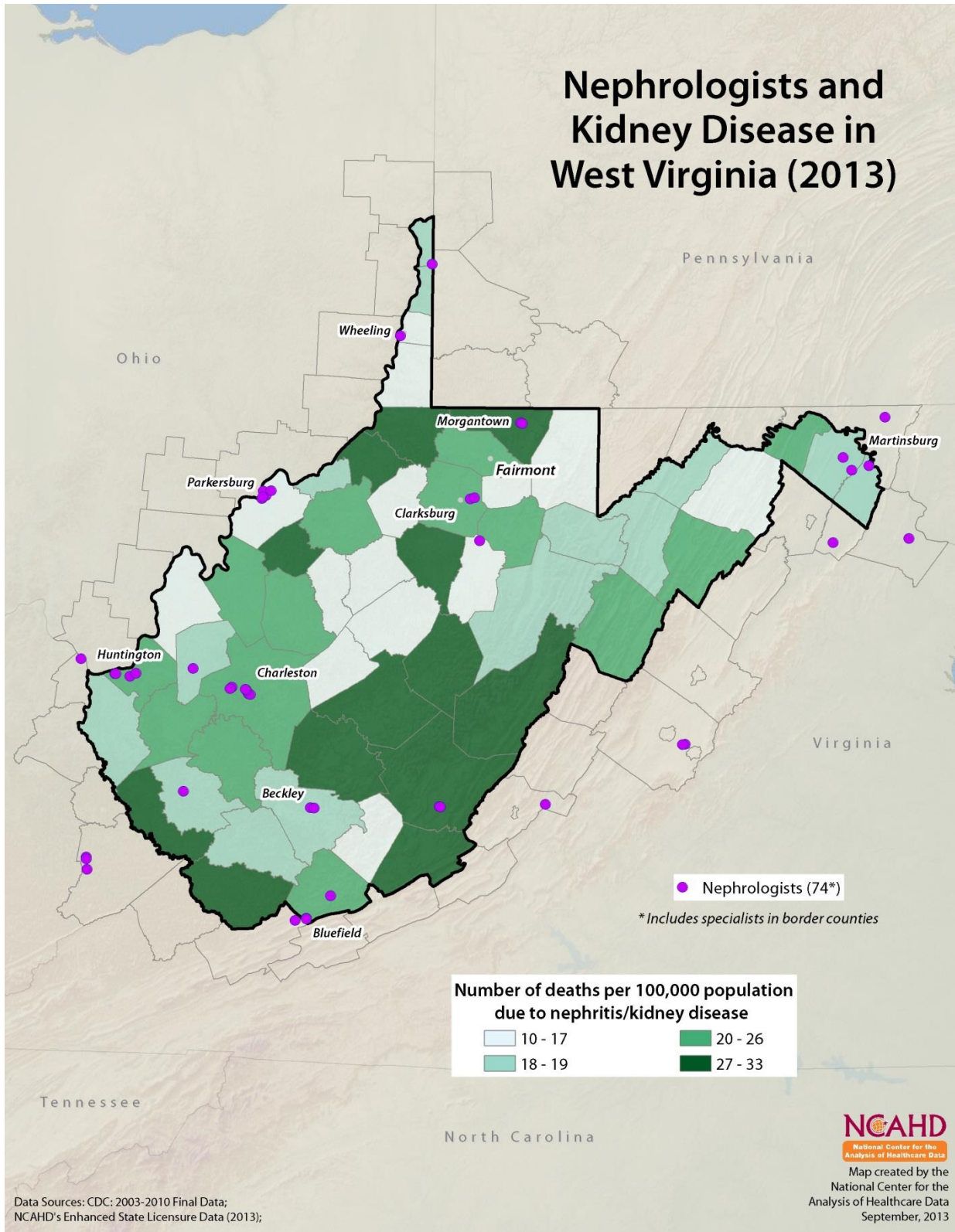


**FIGURE 14 - ENDOCRINOLOGISTS AND OBESITY**

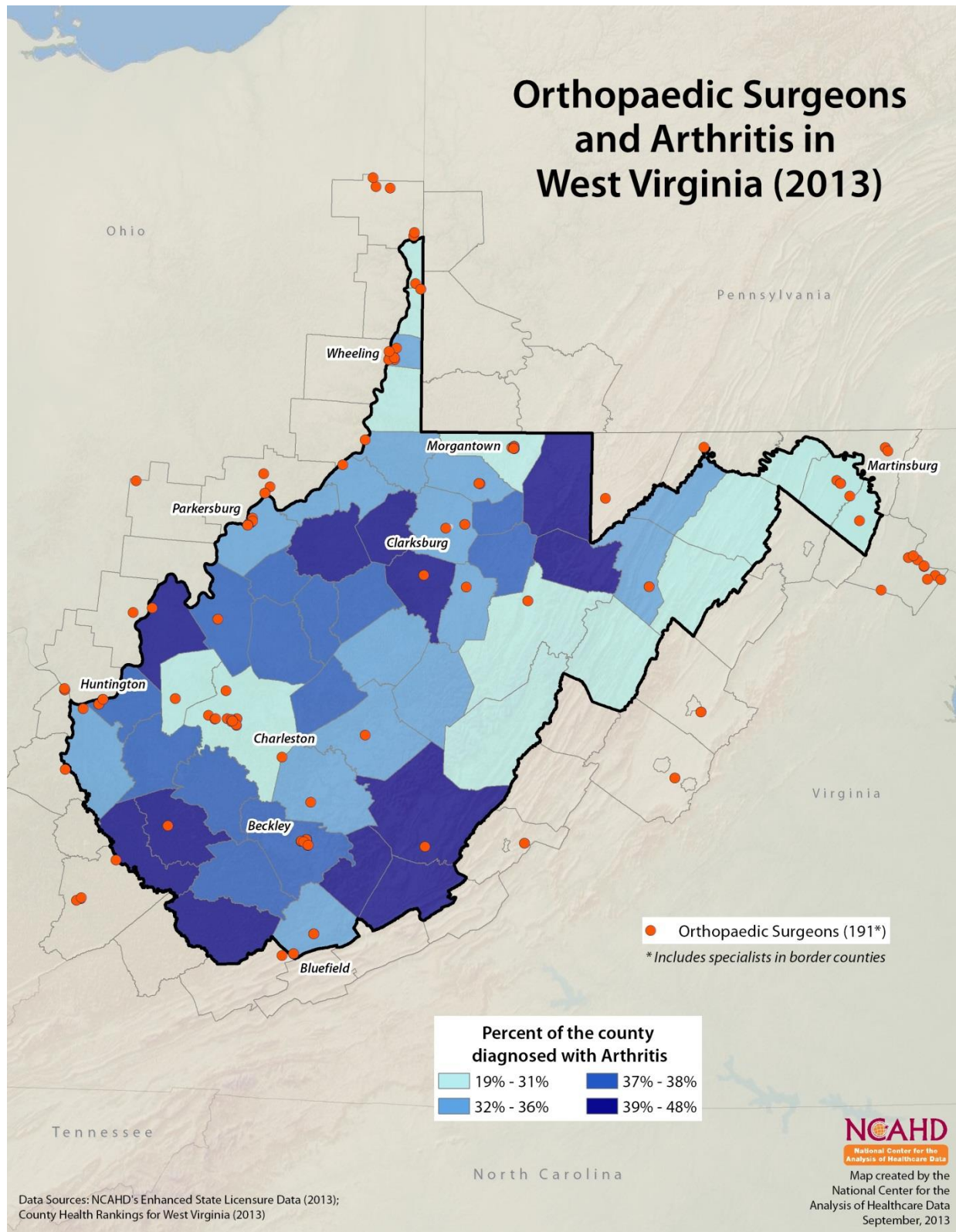


**FIGURE 15 - GASTROENTEROLOGISTS AND HEPATITIS**



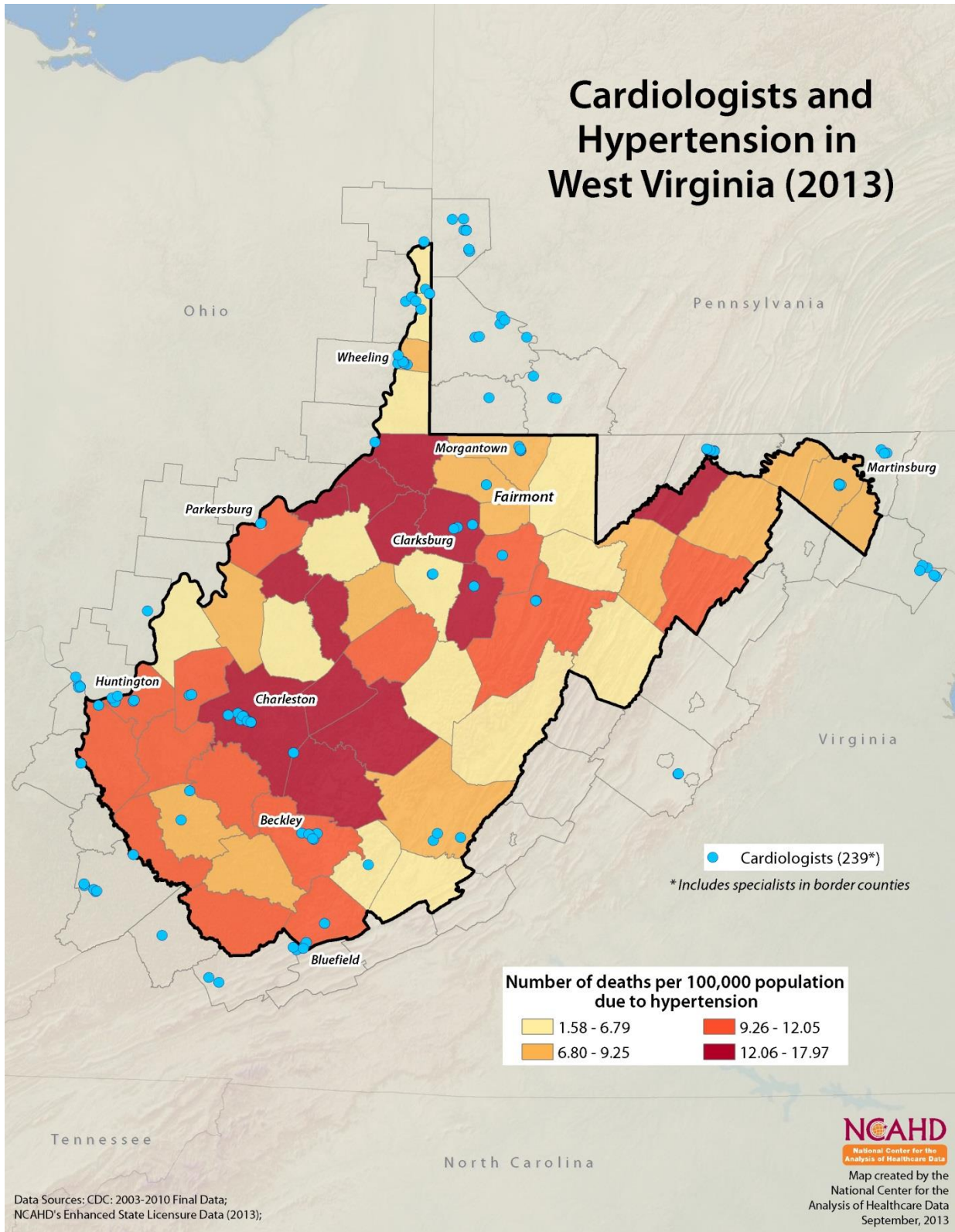


**FIGURE 15 - NEPHROLOGISTS AND KIDNEY DISEASE**

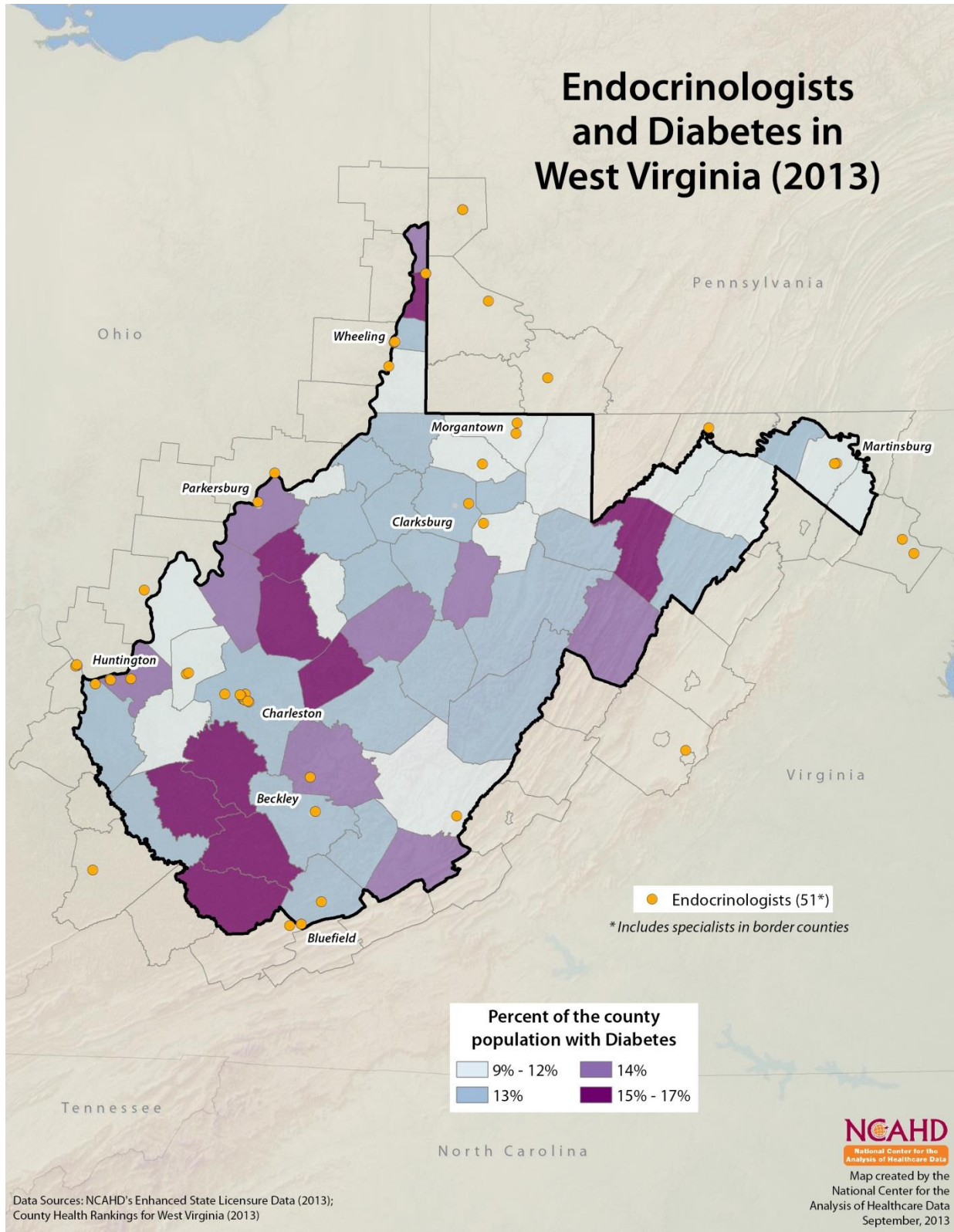


**FIGURE 17 - ORTHOPAEDIC SURGEONS AND ARTHRITIS**



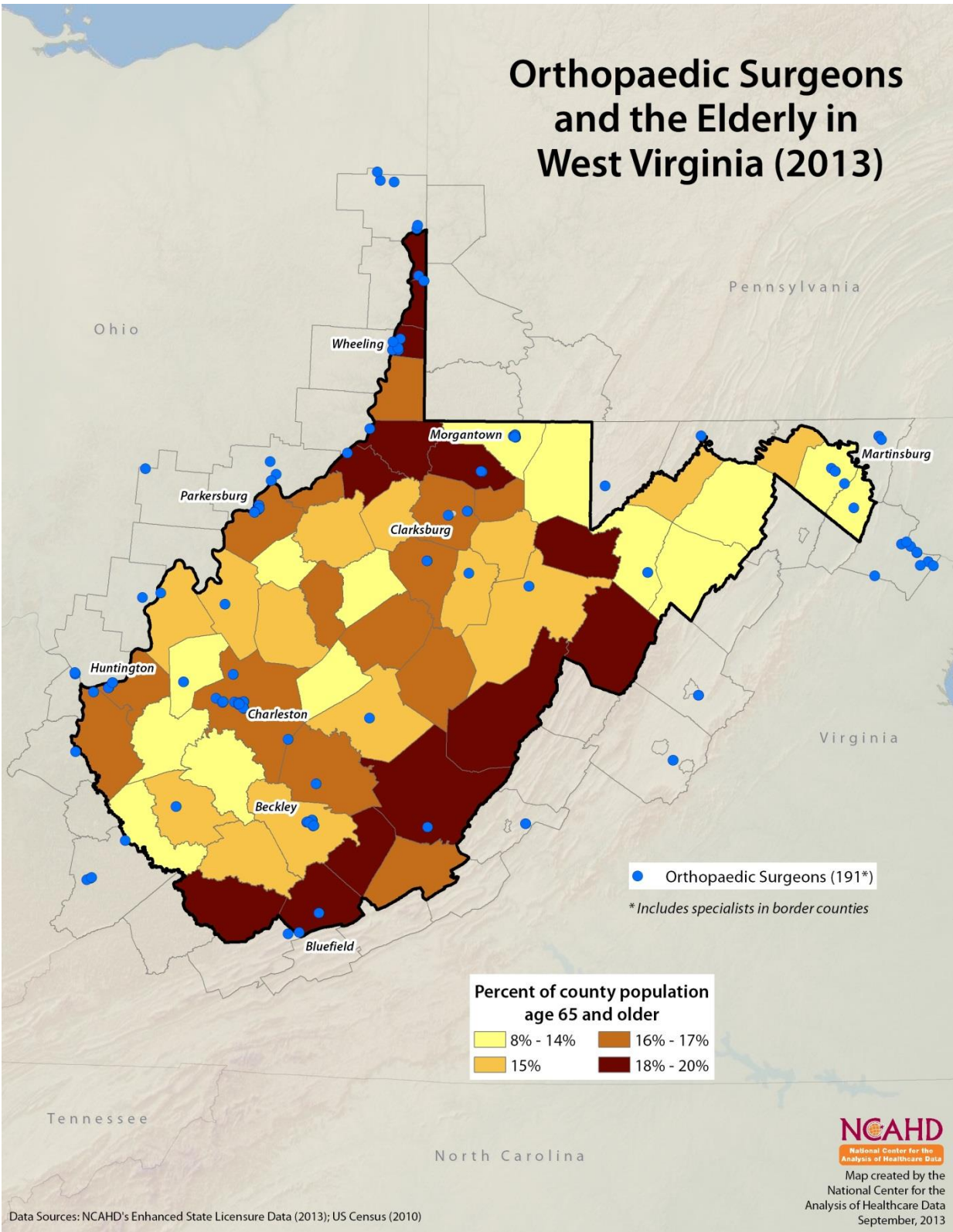


**FIGURE 18 - CARDIOLOGISTS AND HYPERTENSION**



**FIGURE 19 - ENDOCRINOLOGISTS AND DIABETES**

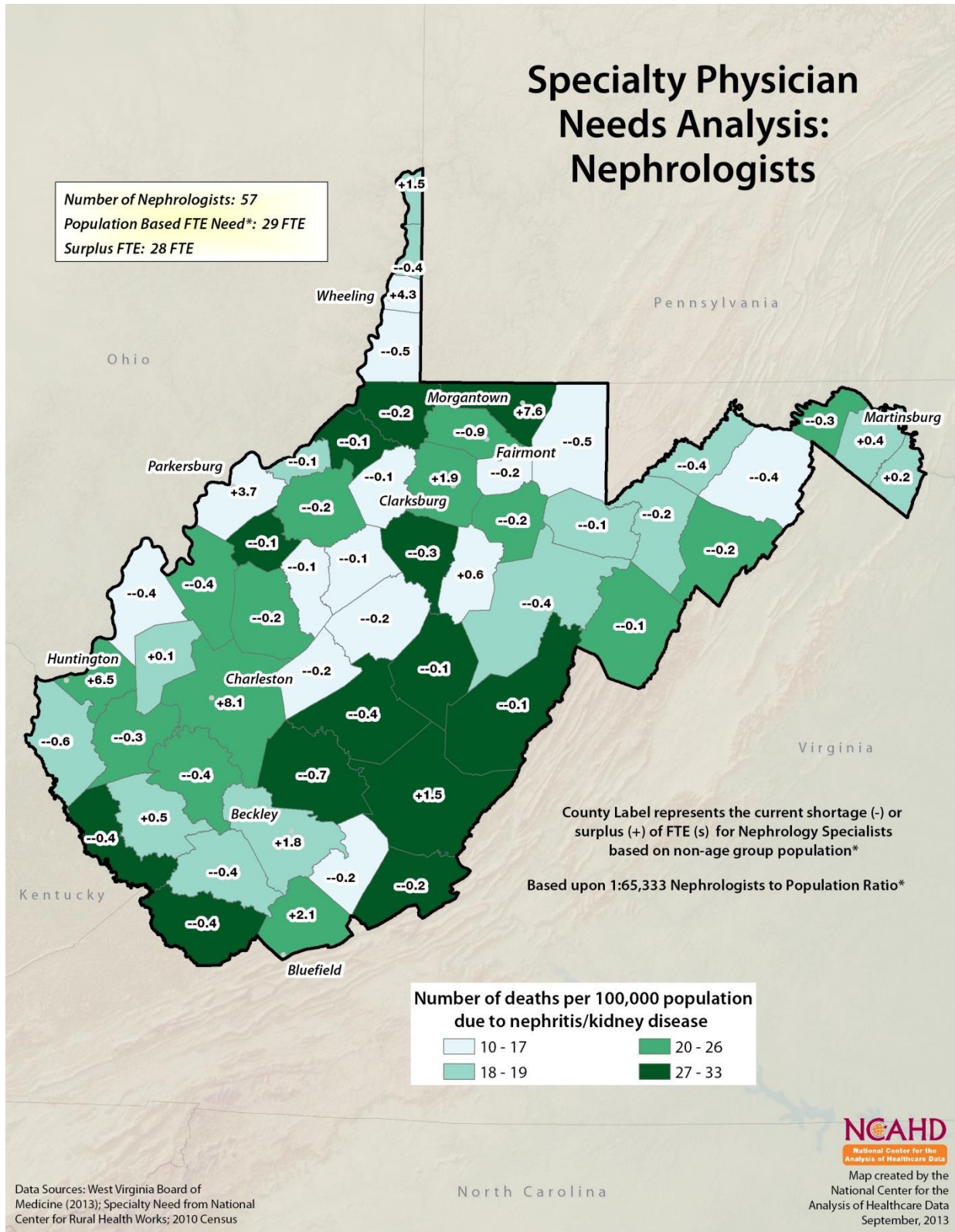




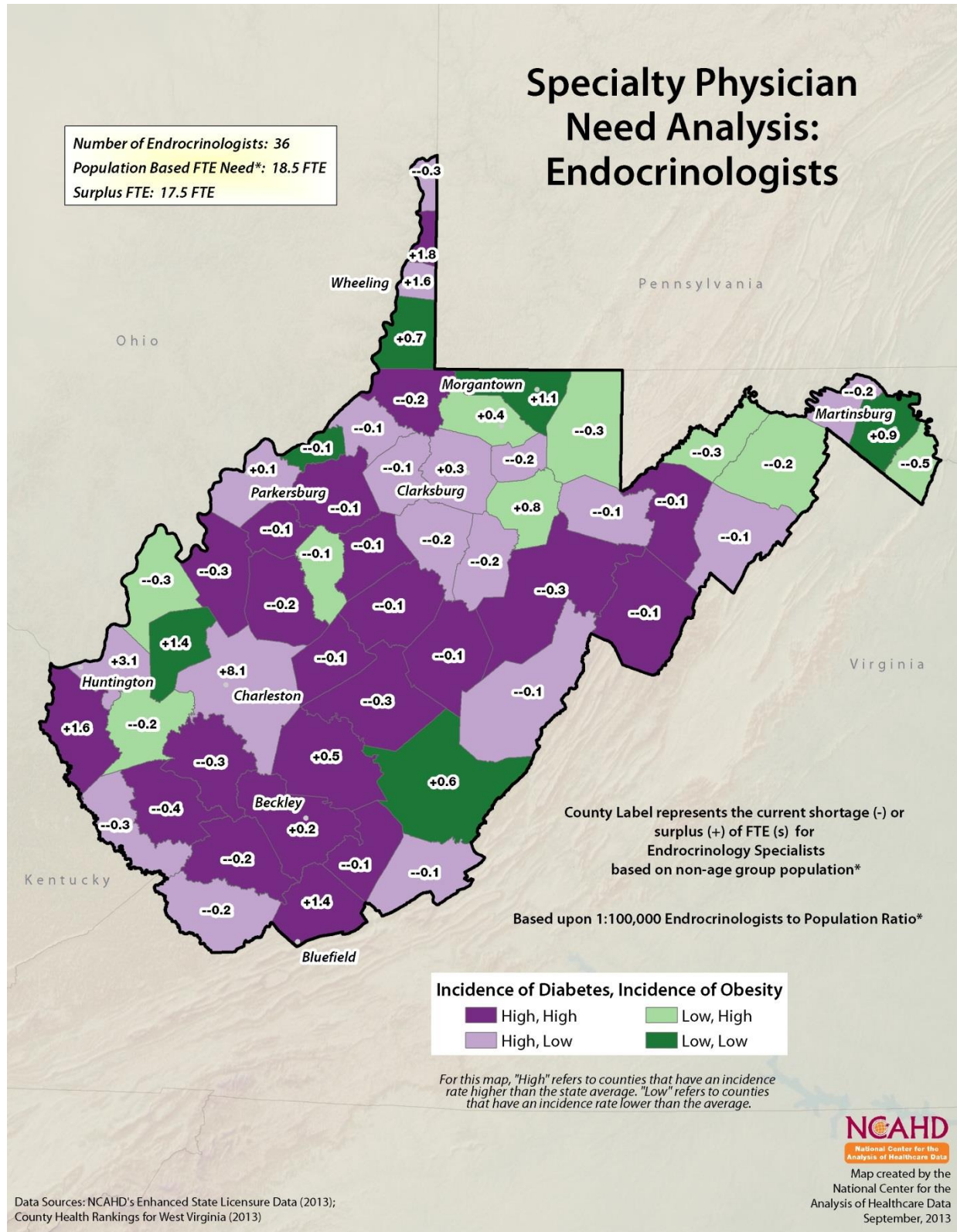
**FIGURE 20 - ORTHOPAEDIC SURGEONS AND THE ELDERLY**



To bring additional relevance to the demand assessment, specialty physician to population ratios created by the National Center for Rural Health Works (NCRHW) for use in their specialty workforce demand assessment reports was used.<sup>8</sup> The methodology utilized by Dr. Gerald A. Doeksen, Director of the NCRHW, in this analysis was to take the average of four previously published specialty physician ratios. These specialty physician ratios are all over ten years old and were based solely upon the American Medical Association masterfile for specialty physician counts. This limitation aside, the ability to generate a FTE need based upon 2010 population may not be the perfect solution to determining demand, but it does point out the relevant health impact of the maldistribution of specialty physicians.

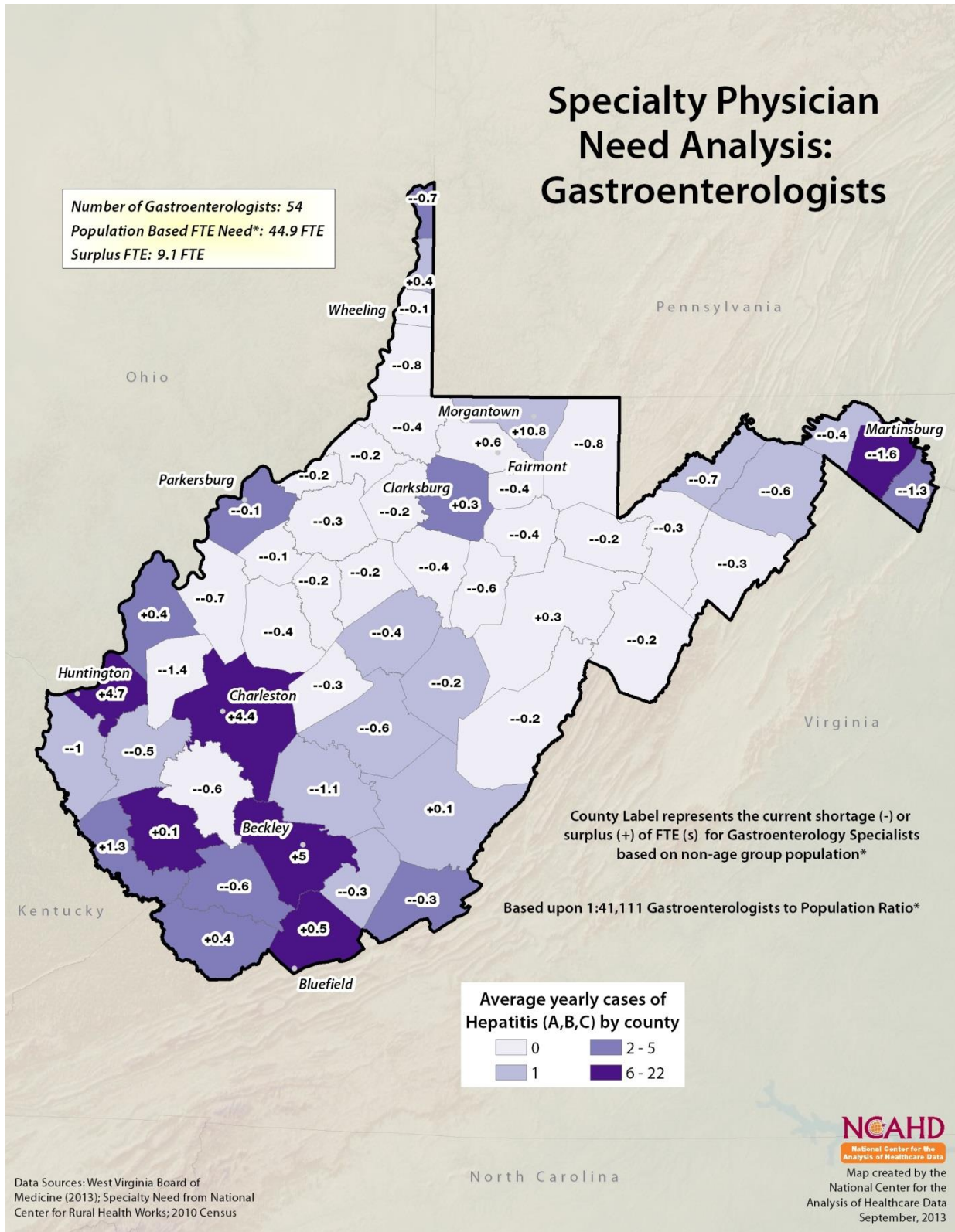


**FIGURE 21-SPECIALTY PHYSICIAN NEEDS ANALYSIS: NEPHROLOGISTS**



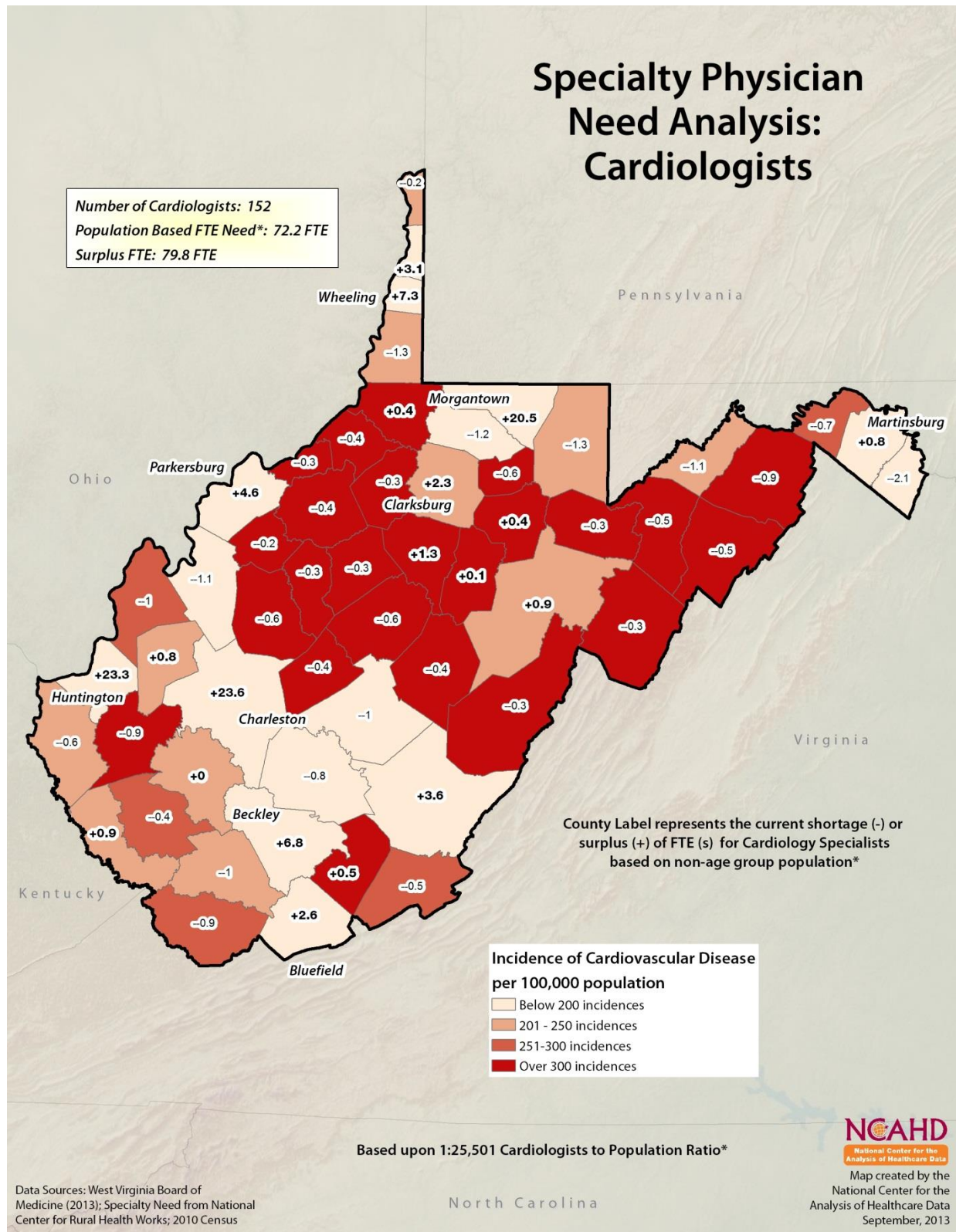
**FIGURE 22 - SPECIALTY PHYSICIAN NEEDS ANALYSIS: ENDOCRINOLOGISTS**



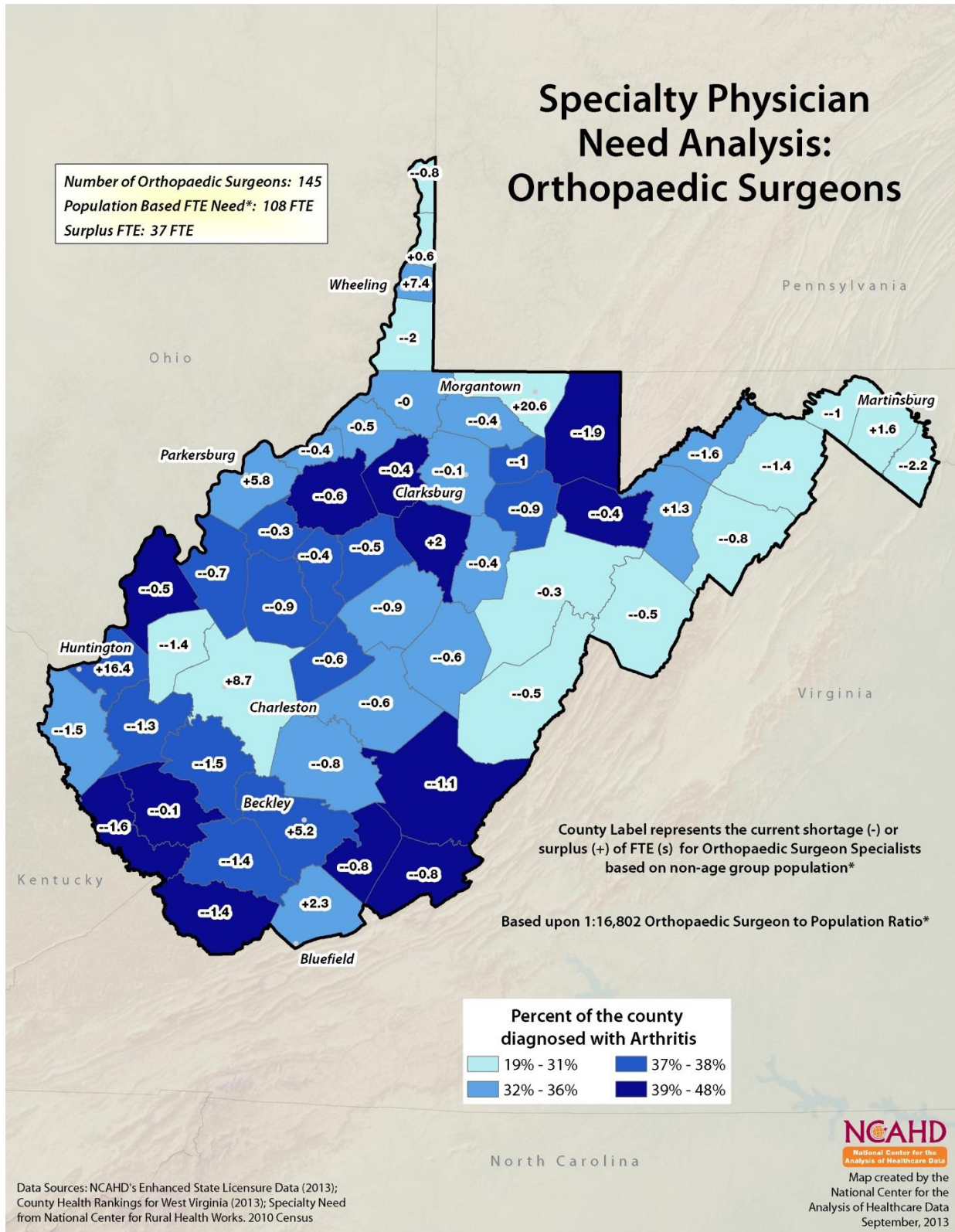


**FIGURE 23 - SPECIALTY PHYSICIAN NEEDS ANALYSIS: GASTROENTEROLOGISTS**





**FIGURE 24 - SPECIALTY PHYSICIAN NEEDS ANALYSIS: CARDIOLOGISTS**



**FIGURE 25 - SPECIALTY PHYSICIAN NEEDS ANALYSIS: ORTHOPAEDIC SURGEONS**

Each of the need analysis demand maps indicate the instate supply of that specialty physician that is actively practicing. Based upon the physician to population ratio stipulated in the map (lower right side), the need was determined, and the current supply was subtracted to determine the statewide surplus and individual county surplus/shortages. Being able to target areas of concern by correlating demand versus health outcome is the intended use of these maps. (Once an updated specialty physician to population ratio is established by NCAHD based upon the Enhanced State Licensure, these maps will be updated in the WV Health Data Portal.)

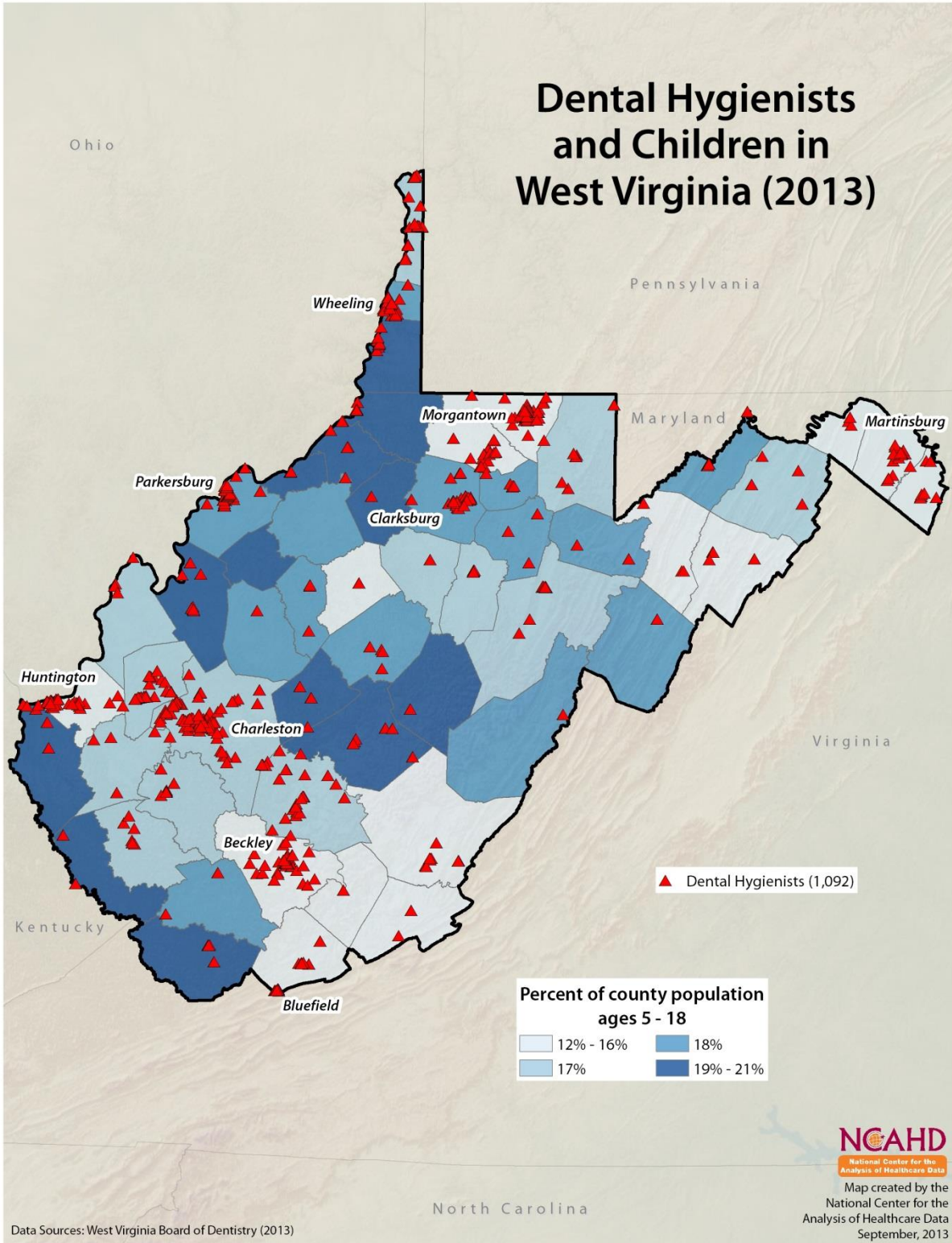
As with medical healthcare, demand for dental services continues to grow across the country. The Bureau of Labor Statistics projects there will be a growth of 21% from 2010 to 2020 in the number of dentists.<sup>9</sup> In addition to the baby-boomers needing more complicated dental work, as more families gain access to insurance through PPACA, it is anticipated that many of these will now seek dental care.

In light of the fact that many previously without dental insurance have not seen a dentist for years, the demand for dental care now is likely to be underestimated. This is especially the case with the elderly. From a demand perspective, it is important for the stakeholders that barriers to accessing dental care in areas with higher density of elderly are not overlooked. Many elderly are at greater risk for oral health conditions and diseases related to age-associated physiologic changes, underlying chronic diseases, and the use of various medications.<sup>10</sup>

In West Virginia, one of the oral healthcare delivery concerns is that of access to care for children. As one of the Healthy People 2020 goals, having access to oral health is central to a person's overall health and well-being.<sup>11</sup> There are many demographic, social, economic and cultural factors that are limitations and/or barriers in accessing oral health care or prevention programs. A recent study by the Centers for Disease Control and Prevention (CDC) indicated that over the last decade there has been a steady increase in tooth decay in preschool children<sup>12</sup>, which may be attributed to a lack of affordable access.<sup>13</sup> In 2010, the West Virginia legislature passed a law called the West Virginia Oral Health Improvement Act, to improve access to oral health care and enhance oral prevention education.

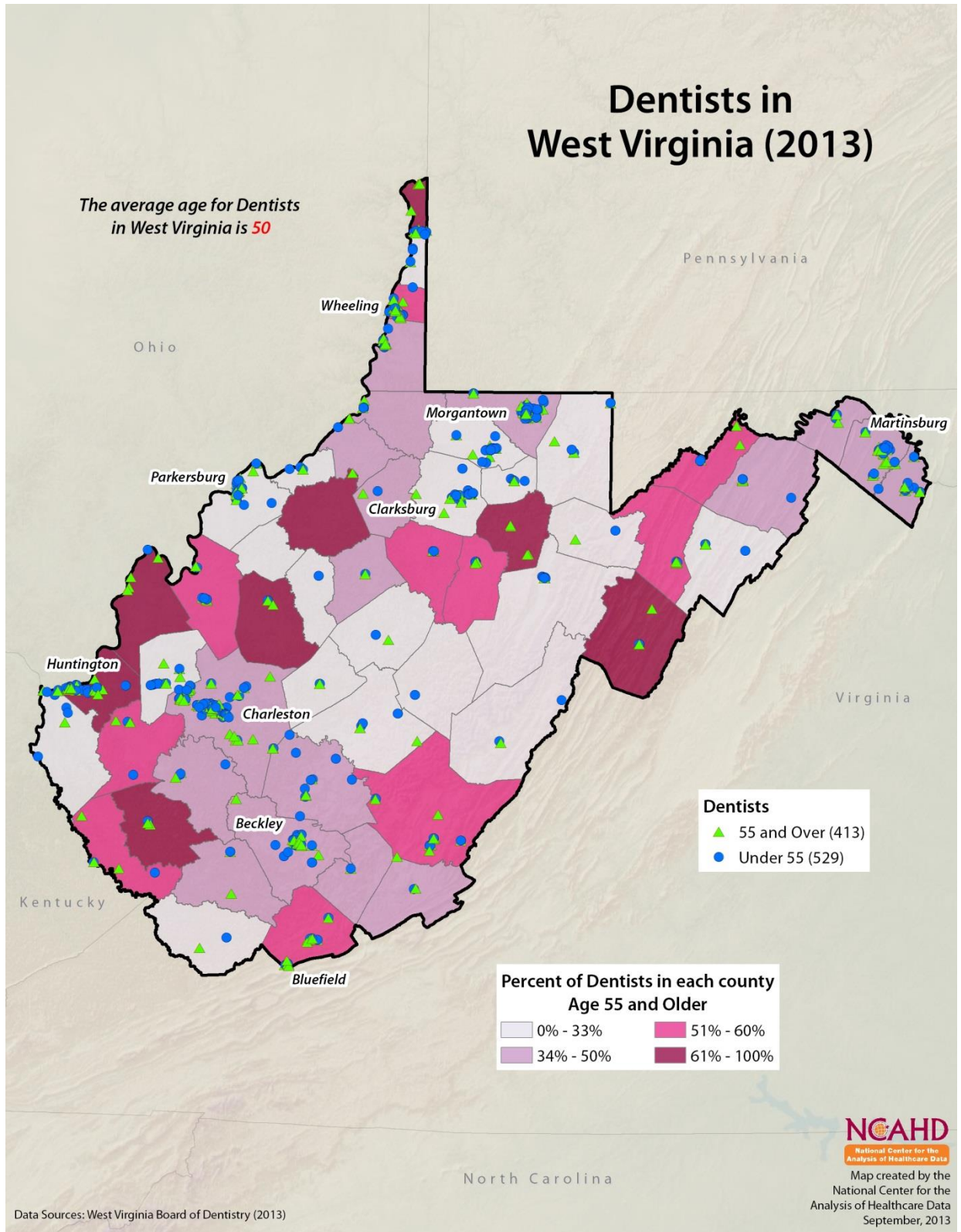
One of the public health directives in this act was to expand oral health and self-help education programs to preschool and school age children (less than 18 years of age). (Note: Data for children 5 and under was not available.) In response, dental health providers (mainly dental hygienists) now routinely visit many of the public schools throughout the year. To meet this demand, the WVRHA Workforce Committee requested the creation of a map that indicates the population density of children (5-18 years) relative to dental hygienists to aid stakeholders in targeting where these programs need to either start or be augmented.



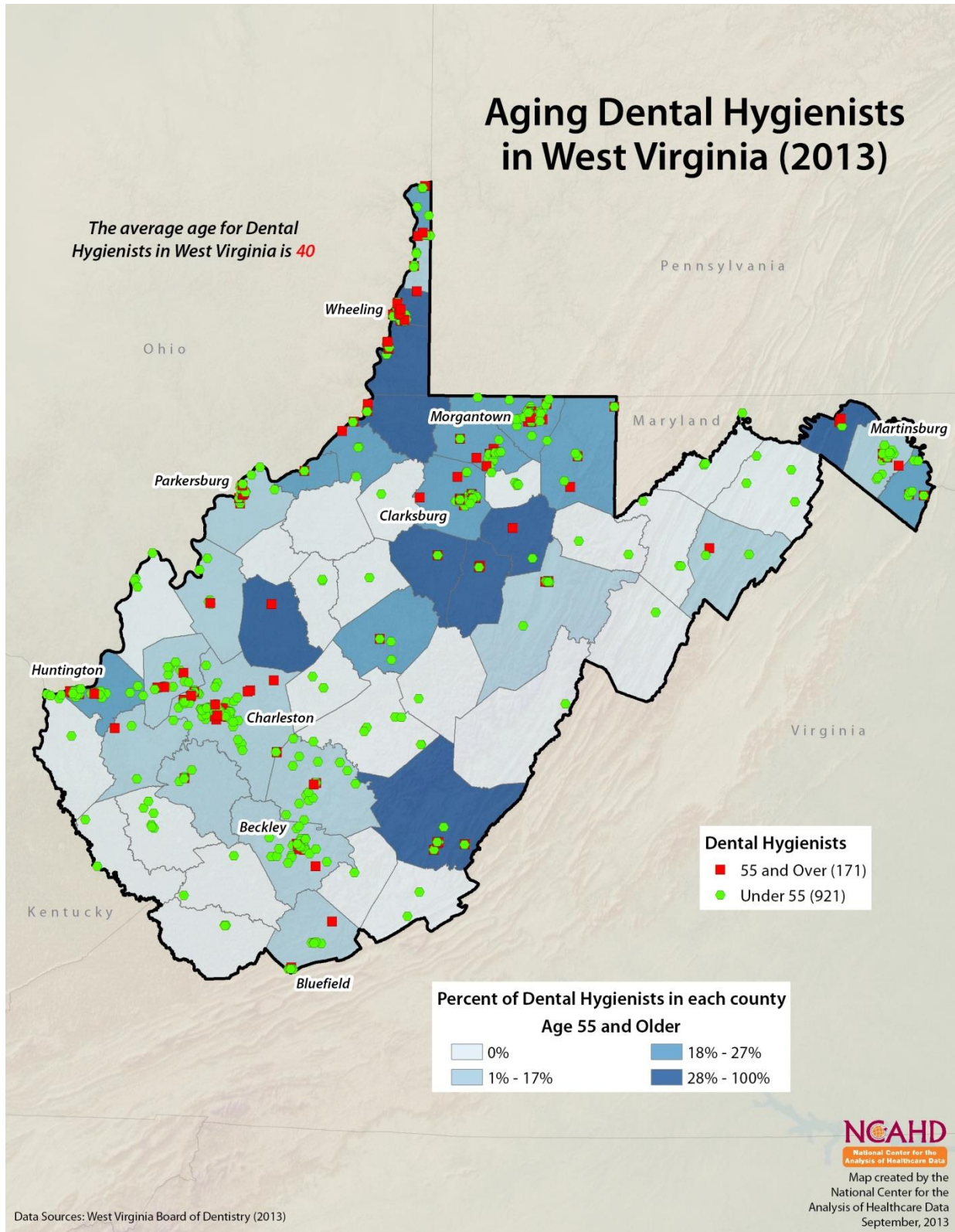


**FIGURE 25 - DENTAL HYGIENISTS AND CHILDREN**





**FIGURE 26 - DISTRIBUTION OF DENTISTS AND AGING DENTISTS**



**FIGURE 27 - DISTRIBUTION OF DENTAL HYGIENISTS AND AGING HYGIENISTS**

## Aging Workforce

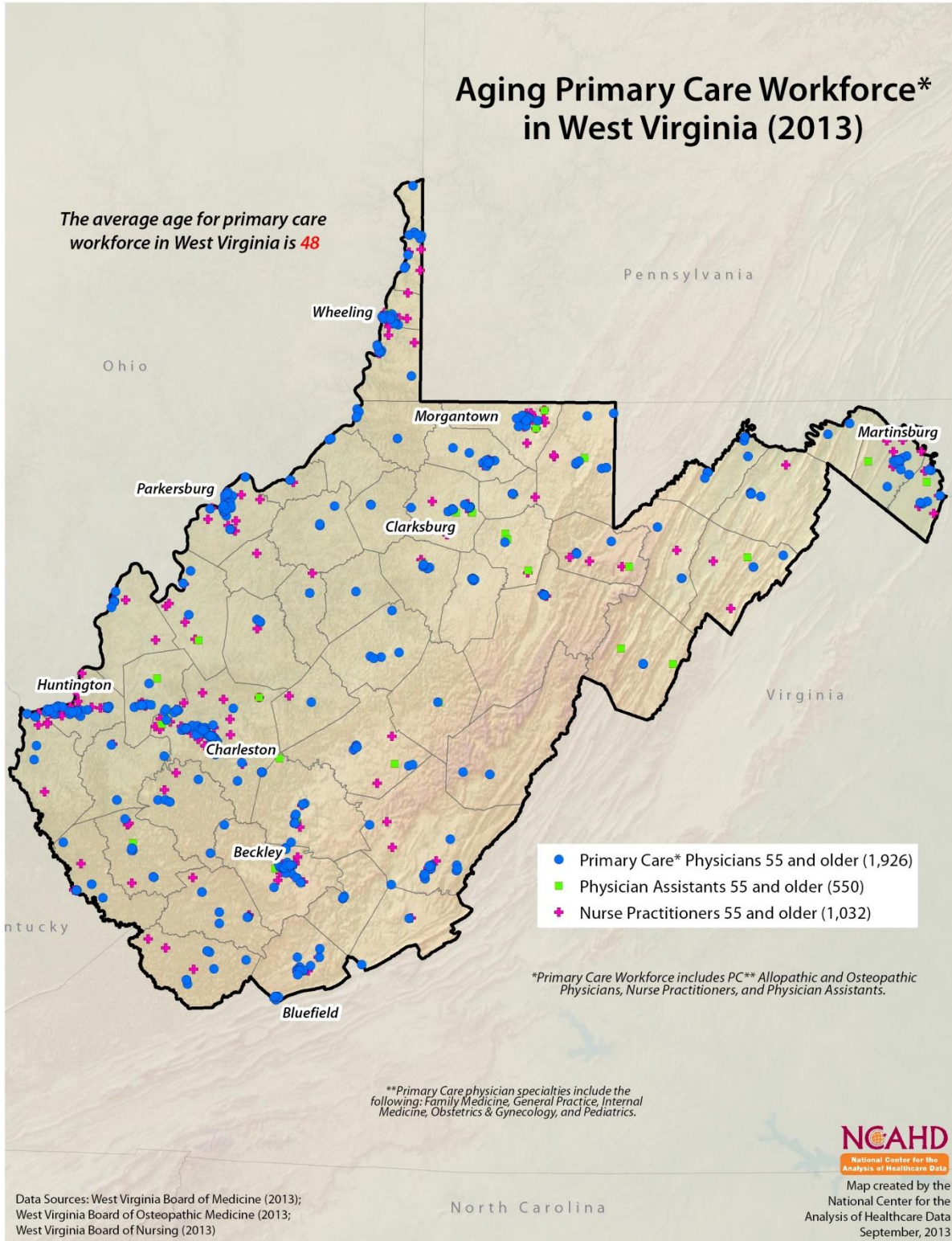
Another key component in assessing the impact of demand upon the primary care workforce is the fact that not only are the patients they treat aging, but the entire healthcare workforce is aging too. A publication by the Bureau of Labor Statistics indicates that 30% of physicians are age 55 or older.<sup>14</sup> As previously mentioned, the overall nursing workforce is aging.

On average in the U.S., the age of active dentists in metropolitan areas is 49.6 years and 50.8 years in rural areas; the average age of private practice dentists in a metropolitan area is 49.5 years and in a rural area is 52.2 years.<sup>15</sup> The national average age of dental hygienists is not published, but for West Virginia, it is 40 years.

In West Virginia, the average age for all of the Primary Care Workforce is 48 years, with primary care physicians' average age at 50, nurse practitioners' average at 46 years; and physician assistants' average at 38 years.

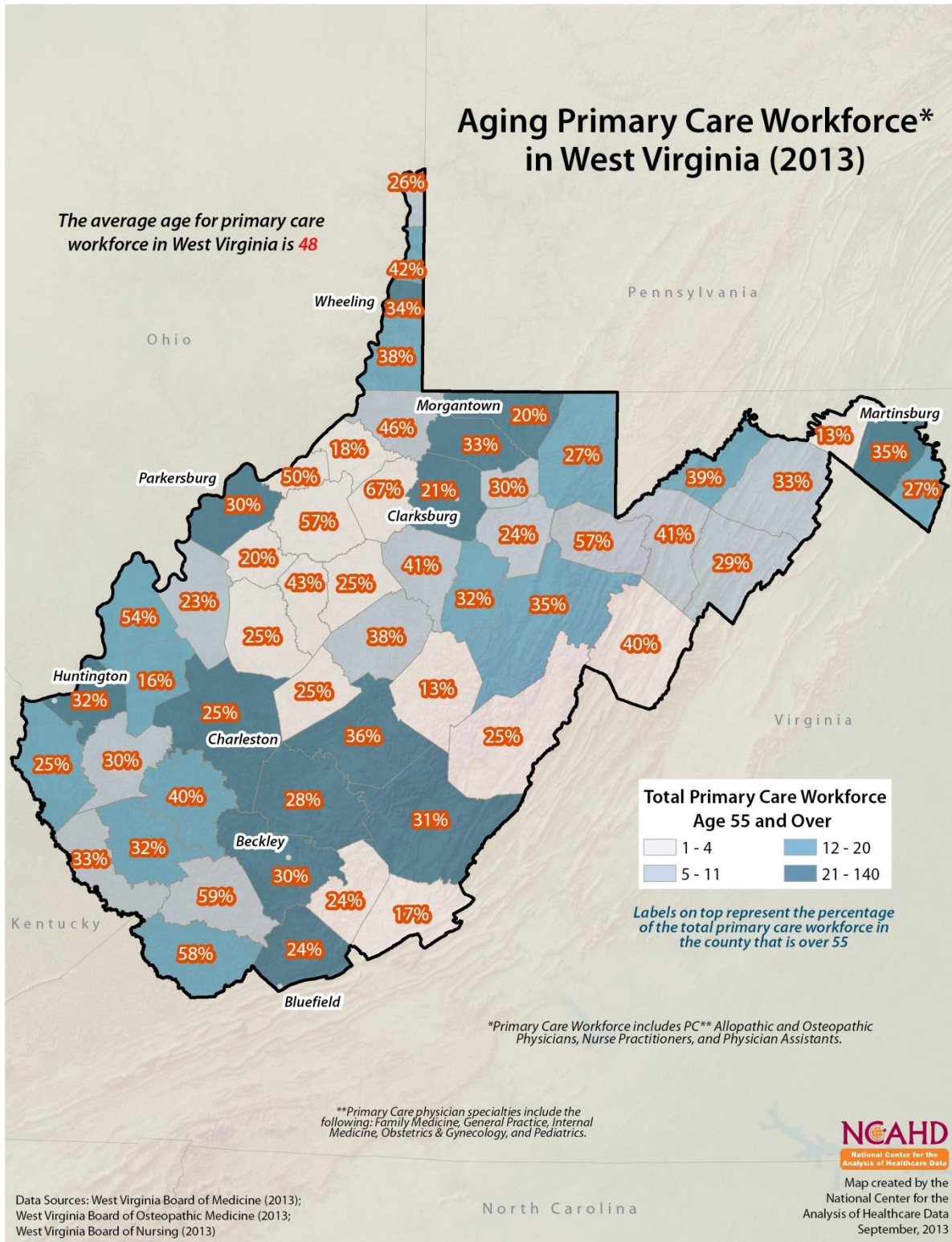
For the demand analysis, the distribution of the combined aging primary care workforce and the individual primary care providers visualized provide the stakeholders multiple perspectives of this important issue.



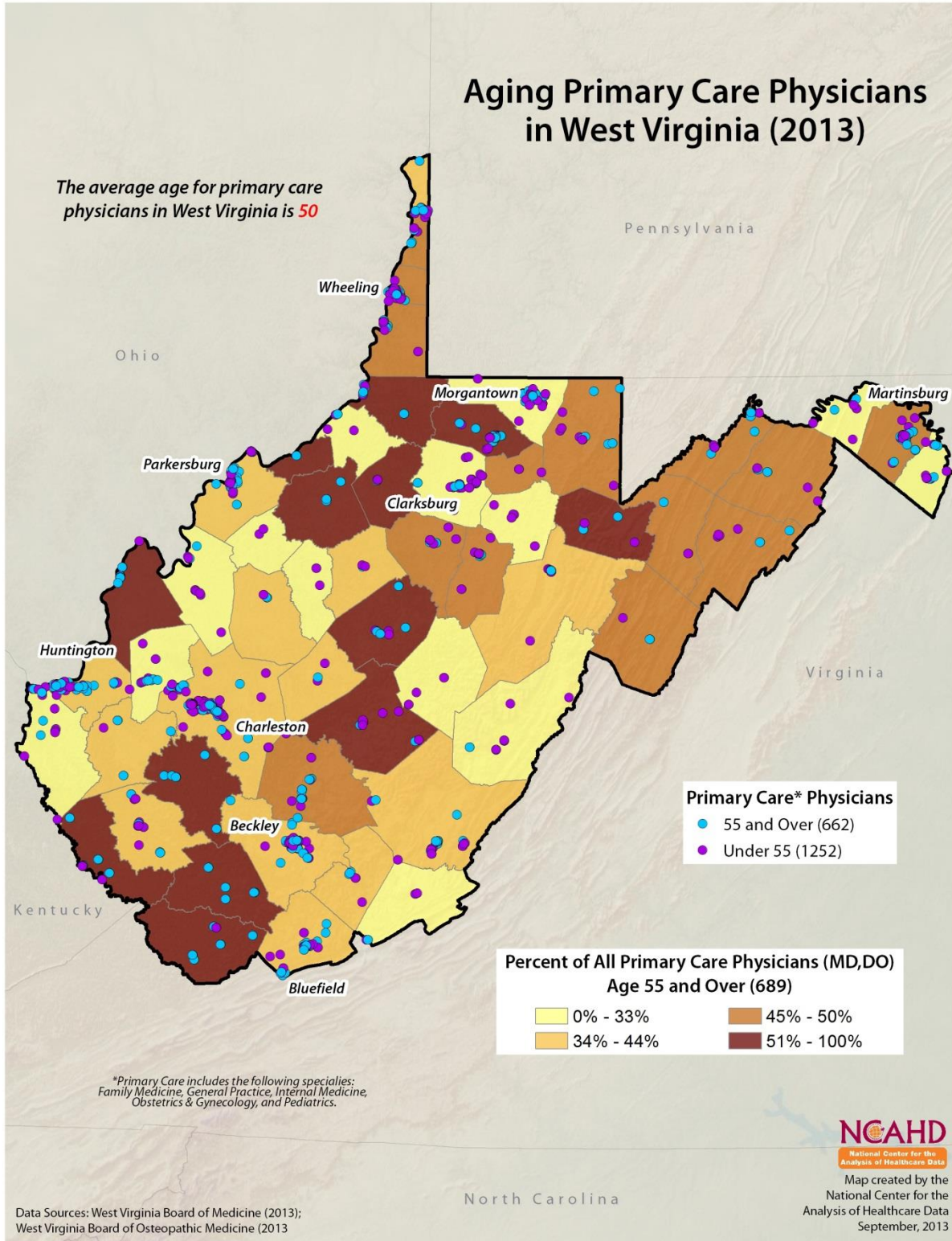


**FIGURE 28 - AGING PRIMARY CARE WORKFORCE**



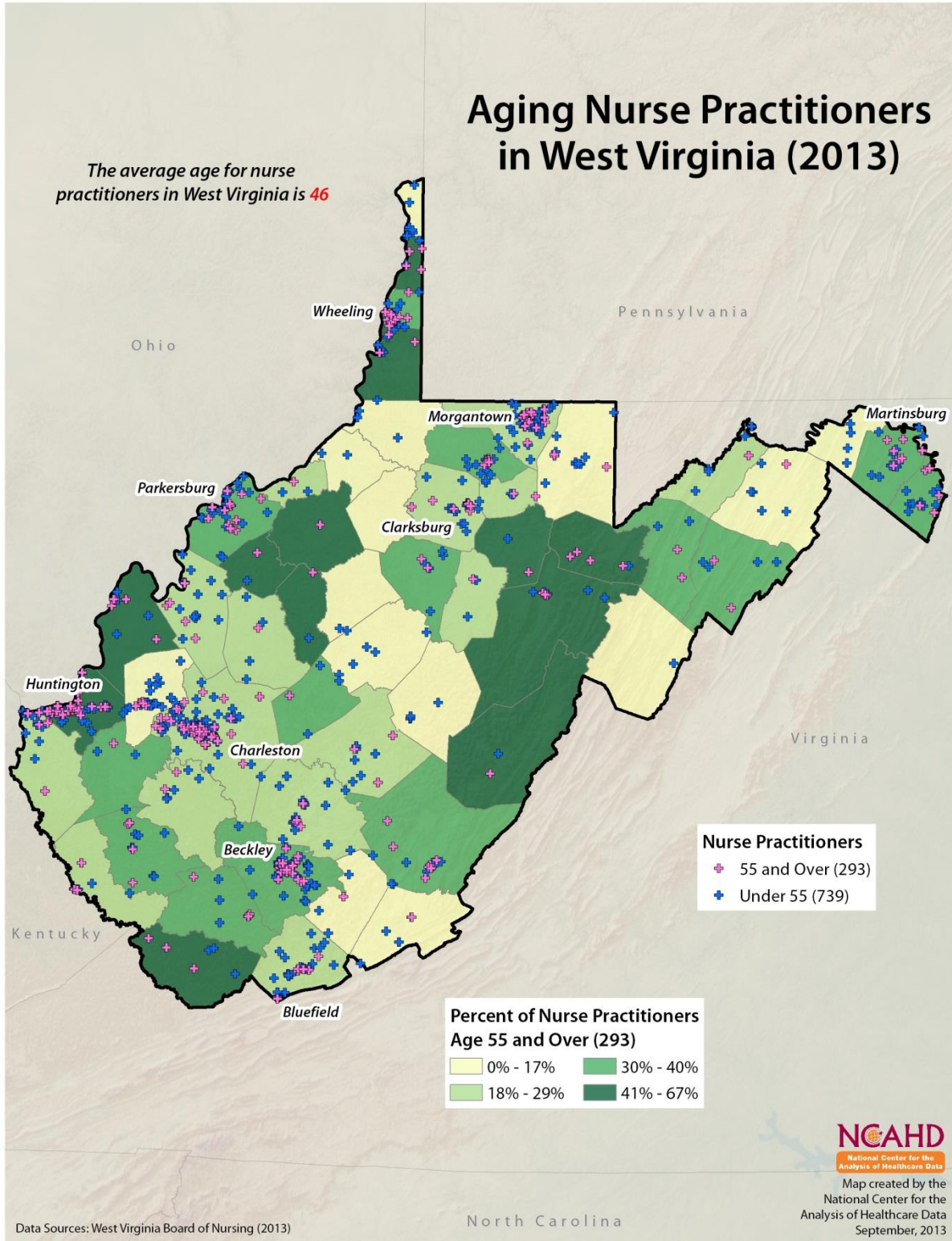


**FIGURE 29 - AGING PRIMARY CARE WORKFORCE AS A PERCENT OF TOTAL WORKFORCE**

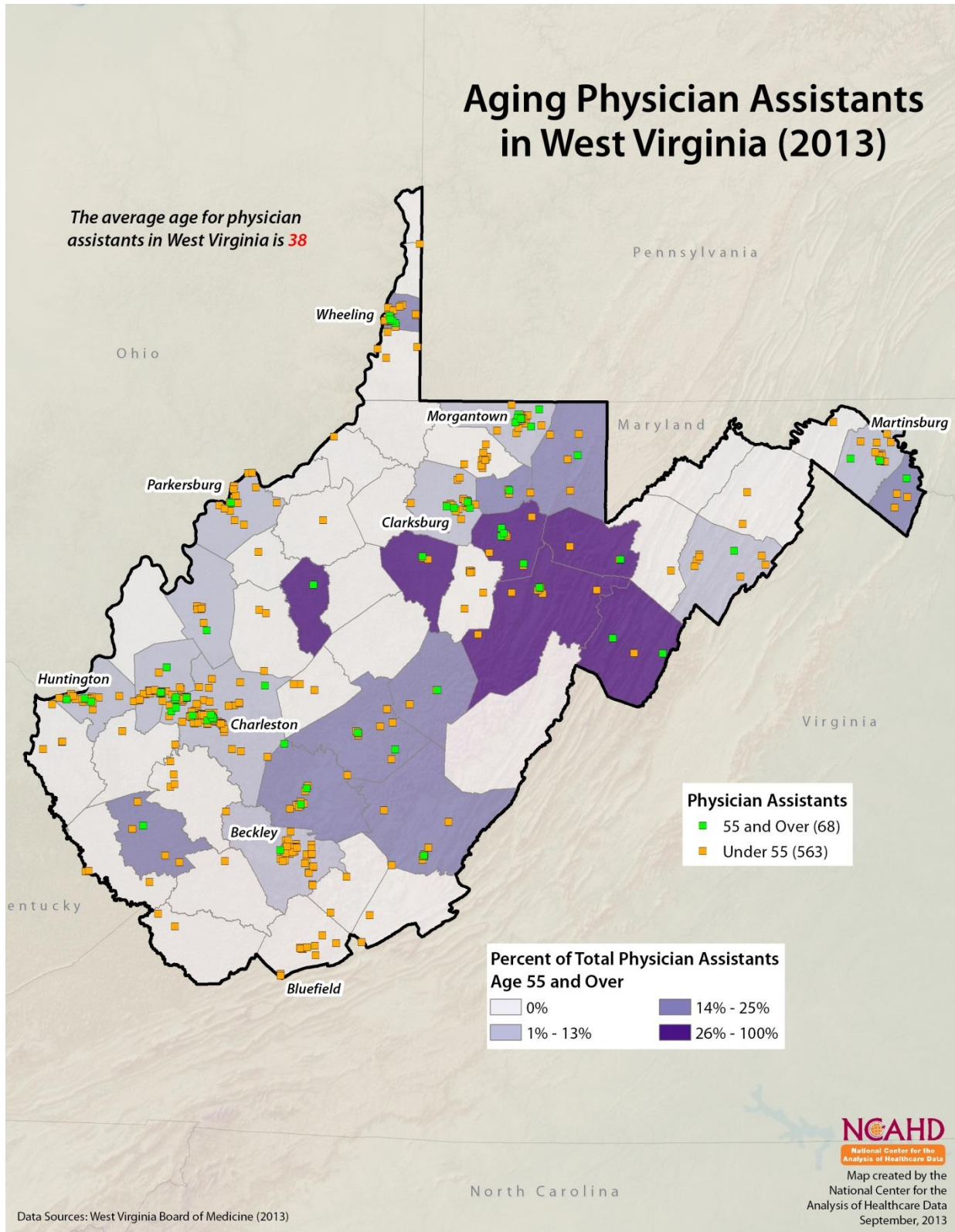


**FIGURE 30 - AGING PRIMARY CARE PHYSICIANS BY PERCENT IN COUNTY**





**FIGURE 31 - AGING NURSE PRACTITIONERS BY PERCENT IN COUNTY**



**FIGURE 32 - AGING PHYSICIAN ASSISTANTS BY PERCENT IN COUNTY**



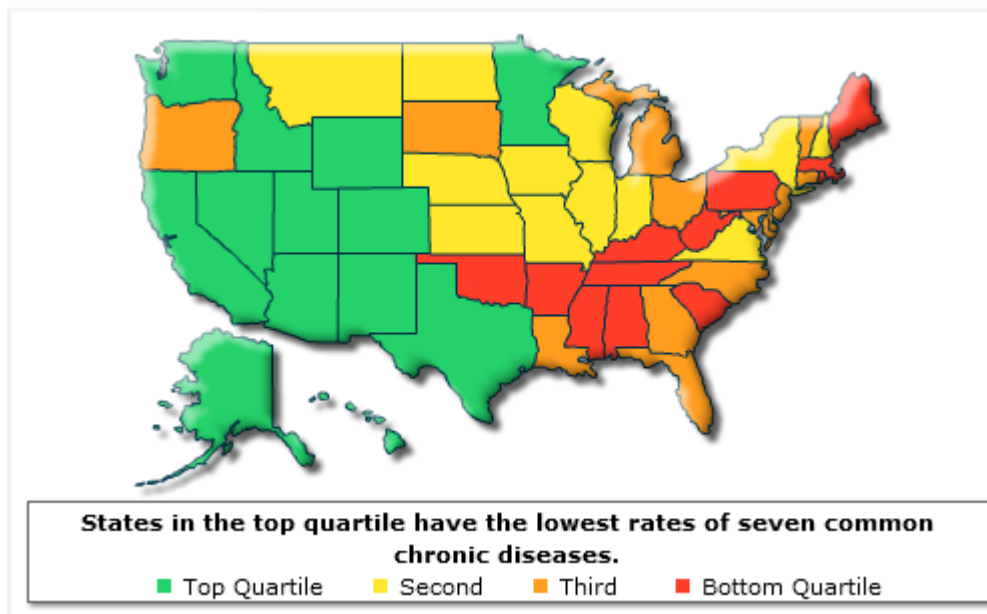
### Economic Impact of Chronic Disease in West Virginia

Aside from the importance placed by all stakeholders in assuring that workforce supply meets the needs of all West Virginians, a very important and evolving dialogue that needs to be considered is the economic impact of chronic diseases. This knowledge might not directly change the provision of health care but provides the stakeholder additional knowledge for dialogue and/or help in focusing or refocusing limited resources.

Recently, the Milken Institute published a report on their groundbreaking study, “An Unhealthy America: The Economic Impact of Chronic Disease”, which details not only the treatment costs, but also captures the lost worker productivity. It also describes the savings that could be generated if serious efforts were made to improve America’s health. Stakeholders can interactively view these statistics and download any of the information at the website based upon this study: [www.chronicdiseaseimpact.com](http://www.chronicdiseaseimpact.com)

Although it is well published that the costs of treatment is ever increasing, the 2003 statistics provided by the Milken Institute are a good large-scale indication of costs (national, regional and state level). In the U.S., the overall total economic impact of the seven chronic diseases studied (cancers, heart disease, diabetes, hypertension, stroke, mental disorders, and pulmonary conditions) was \$1,323.7 billion dollars, of which 79% was from productivity loss. West Virginia ranks 50<sup>th</sup> by having the highest rates of the seven chronic diseases (see **Figure 33**). The overall economic impact of chronic diseases in West Virginia is \$10.5 billion dollars with productivity loss at 77% of this amount.

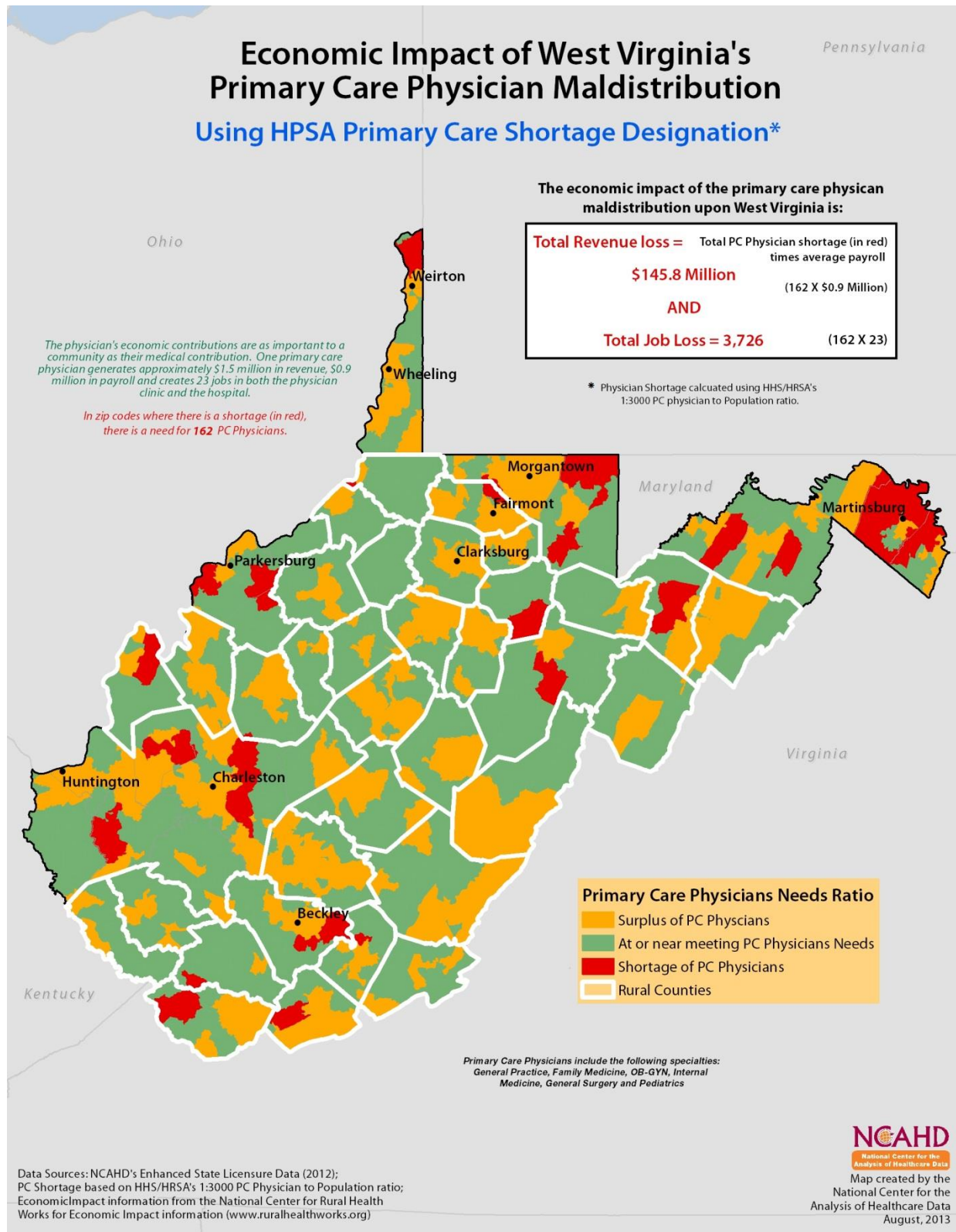
**Milken Institute Chronic Disease Index**



**FIGURE 33 - MILKEN INSTITUTE CHRONIC DISEASE INDEX**

### **Economic Impact of Primary Care Physician Maldistribution**

Most of the stakeholders are familiar with the federal shortage designation programs managed by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Professions. These programs are coordinated with each state's state primary care office. In 2008, the National Center for Rural Health Works created an economic impact model to measure the economic impact of a rural primary care physician (see **Appendix B – The Economic Contributions of a Rural Physician**). Since the Primary Care Health Professional Shortage Area identifies areas where there are shortages, the application of the economic impact model to those shortage areas was performed to discern the costs of these types of shortages (see **Figure 34**).

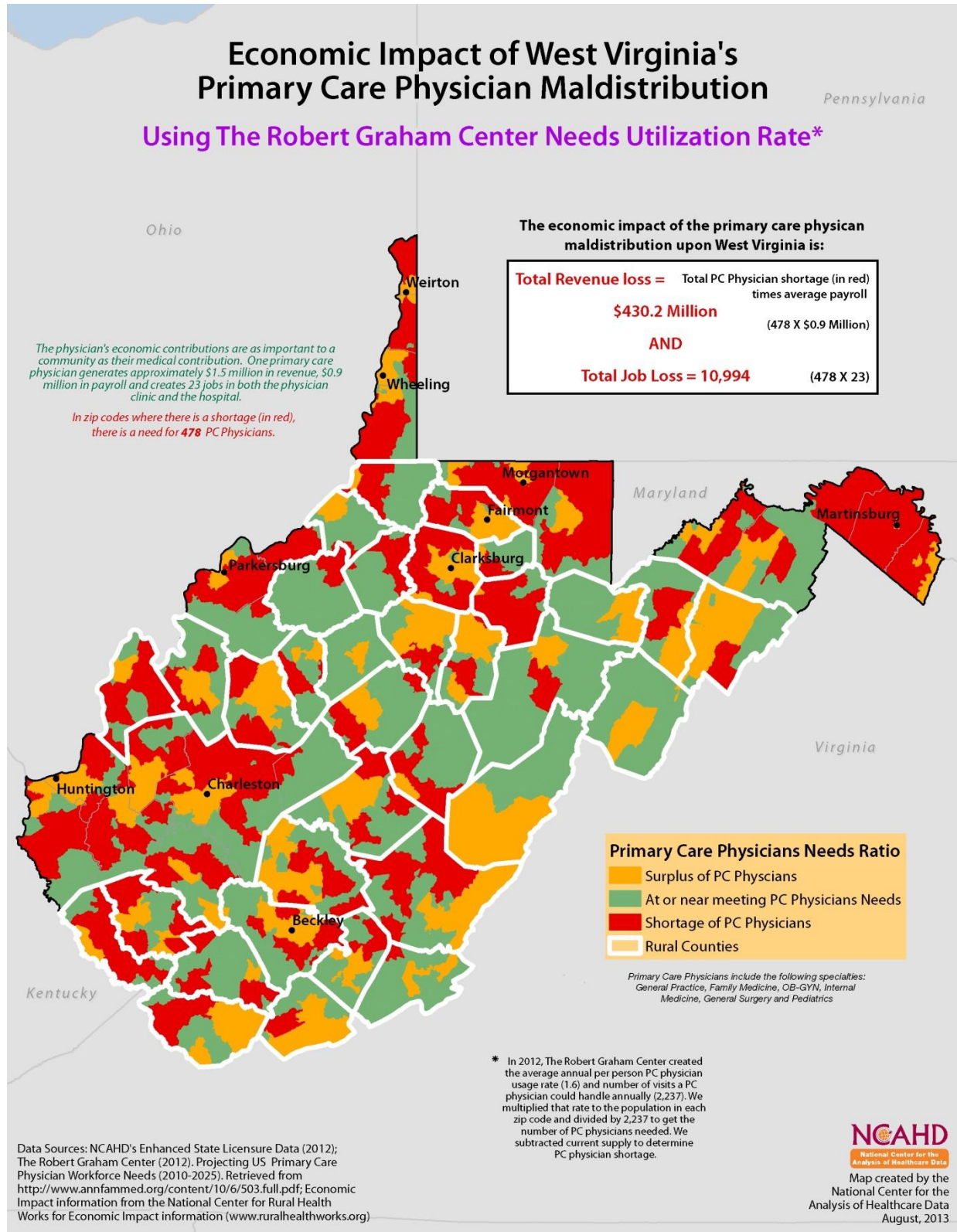


**FIGURE 34 – PRIMARY CARE HPSA SHORTAGE DESIGNATION ECONOMIC IMPACT**

Utilizing this methodology, it was determined that the impact of West Virginia's Primary Care Physician maldistribution to the communities not being served was approximately \$145.8 million dollars annually with approximately 3,725 jobs lost.

In December 2012, the Robert Graham Center (RGC) published a new methodology for measuring primary care physician need by establishing a utilization rate based upon Medical Expenditure Panel Survey (MEPS) data.<sup>16</sup> This new approach toward looking at demand for primary care services is based upon actual need rather than estimating the existence of shortage and is age adjusted. Because this methodology was designed to anticipate the additional patient load as the Affordable Care Act is implemented, it helps bring a more complete reality to current and future workforce demands than the current federal shortage program can produce through its methodology. Therefore, we have applied the RGC primary care utilization rate of 1.6 office visits per year by each West Virginia citizen (see **Figure 35**).





**FIGURE 35 – ROBERT GRAHAM CENTER UTILIZATION RATE ECONOMIC IMPACT**

Utilizing this methodology, it was determined that the impact of West Virginia's Primary Care Physician maldistribution to the communities not being served was approximately \$430.2 million dollars annually with a 10,994 job loss. This is an approximate 66% increase in total economic impact lost when comparing it to the other type of analysis using HRSA's Primary Care HPSA designation.

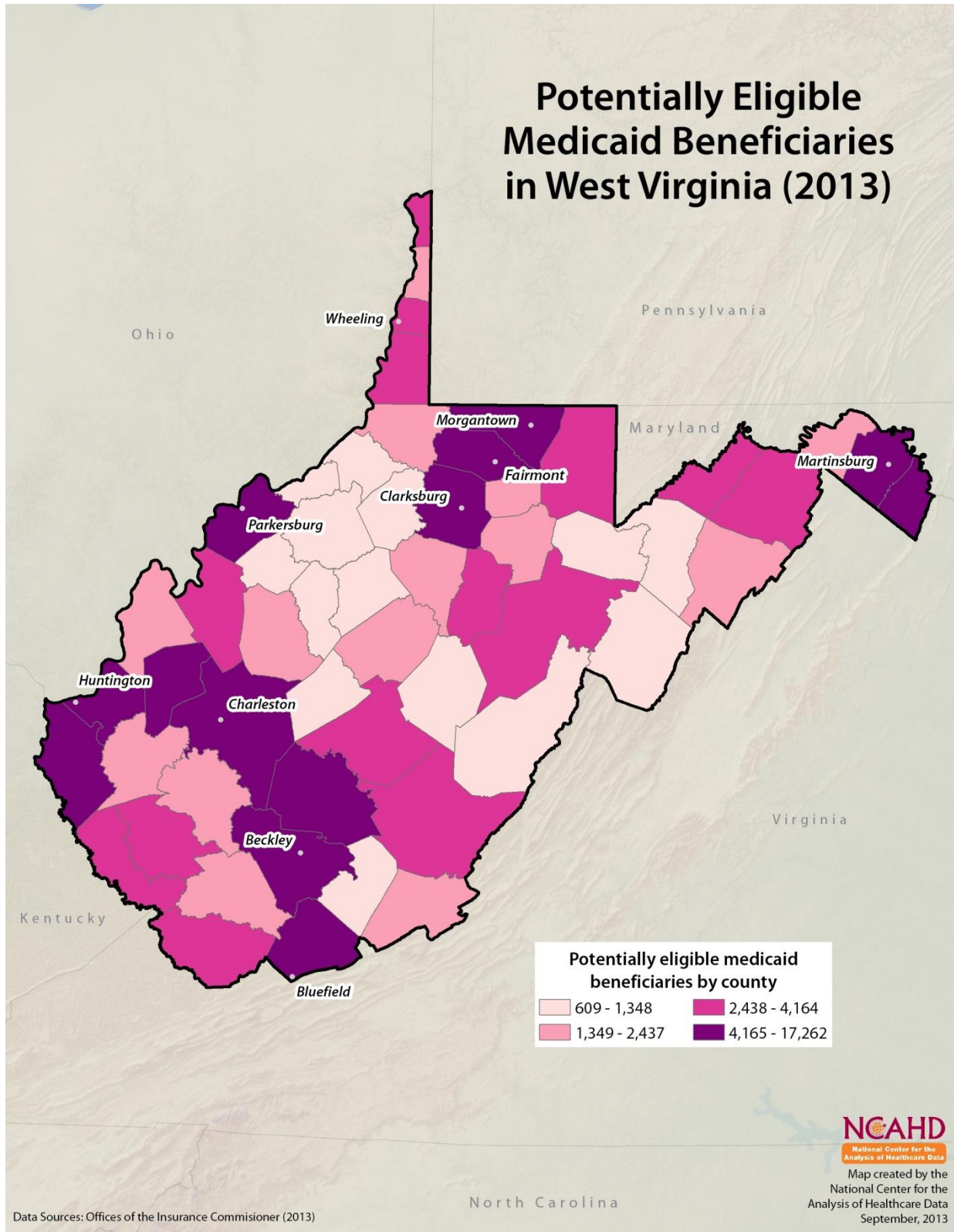
### Federal Influences

As the Affordable Care Act is implemented nationwide, states are trying to estimate the potential impact the currently uninsured or underinsured will have upon the healthcare delivery systems and providers. Utilizing the Offices of the Insurance Commissioners actuarial tables we were able to estimate the number of potentially new Medicaid beneficiaries and those potentially eligible for healthcare exchanges by county was determined (see **Figures 36 & 37**).

In West Virginia, Medicaid is being expanded to 138 percent of the federal poverty level (FPL) on January 1, 2014. This expansion means that everyone who earns less than \$15,800, is a US citizen, less than 65 years of age and living in West Virginia would be eligible for Medicaid effective January 1, 2014. It is estimated that 133,500 low-income West Virginians will qualify under this Medicaid expansion.<sup>17</sup>

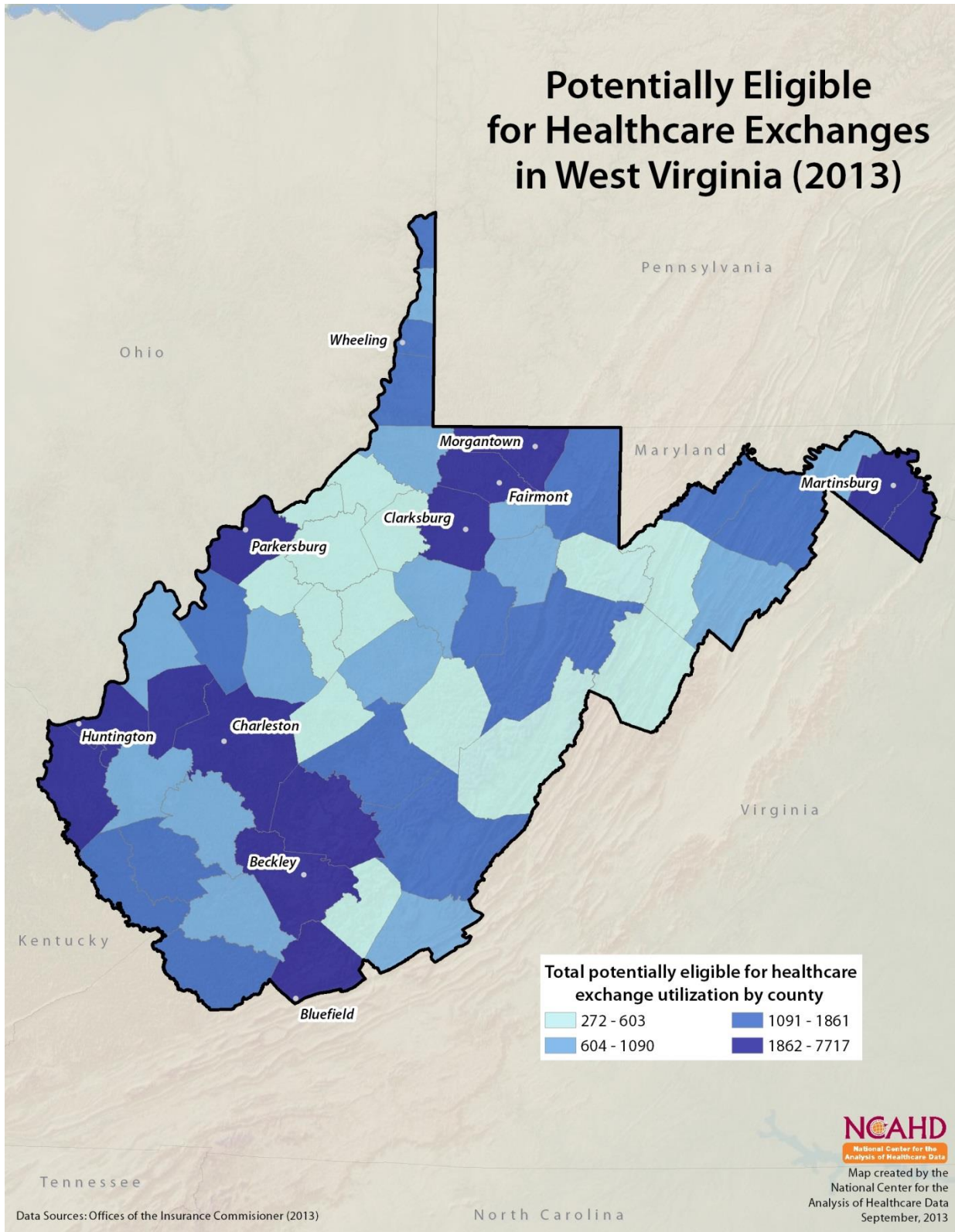
As of January 1, 2014, the Health Insurance Marketplace will be made available to those individuals and families earning between 100 percent (about \$11,500 for an individual and \$19,500 for a family of three) and 400 percent of the FPL (about \$46,000 for an individual and \$78,000 for a family of three). (Note: Enrollment started October 1, 2013 for this program.)

The Offices of the Insurance Commission (OIC) projects that over the next three years the percentage of uninsured West Virginians will be reduced by 70 percent. We estimate the current number of uninsured West Virginians is 245,000. Over the next three years, it is likely that approximately 170,000 will enroll, reducing the number of uninsured West Virginians to 76,000.



**FIGURE 36 - POTENTIALLY ELIGIBLE MEDICAID BENEFICIARIES**



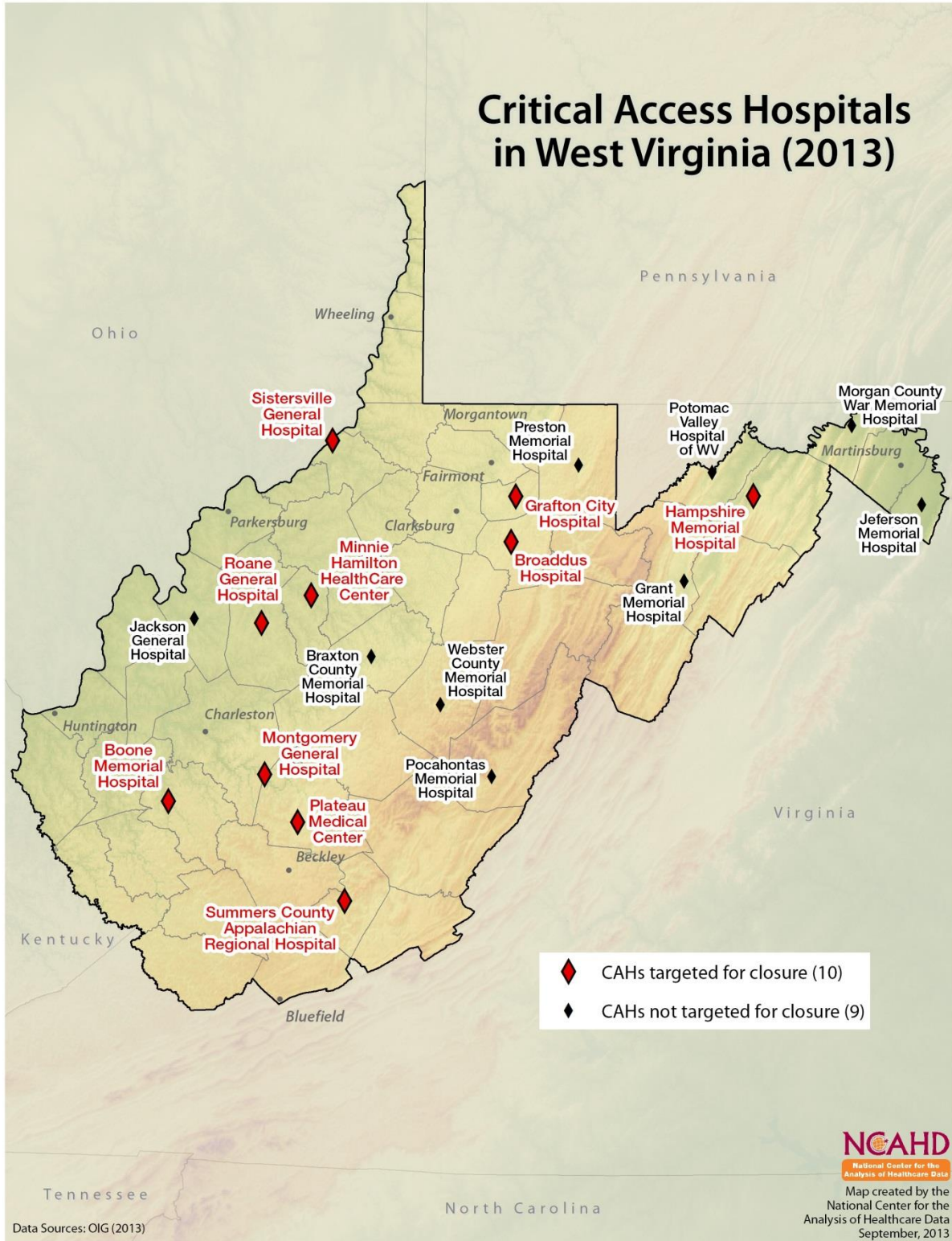


**FIGURE 37 - POTENTIALLY ELIGIBLE FOR HEALTHCARE EXCHANGES**

In August of 2013, the Office of the Inspector General (OIG), Department of Health and Human Services issued a report (OEI-05-12-0080)<sup>18</sup> stipulating that over 800 of the 1,300 Critical Access Hospitals (CAH) would not meet the distance requirements should they have to reapply to Medicare. This was based upon their recommendation that the Necessary Provider (NP) designation should be revoked thus requiring those with this designation (total number = 751) to have to meet the distance requirements.

NCAHD and the National Center for Rural Health Works had conducted research on prior attempts to change the distance requirements for CAHs, so we collaborated again to determine the true economic costs for this recommendation. It was determined, that the recommendation to close 846 CAHs would cost the country \$8.7 billion and that over 209,000 jobs would be lost.

In West Virginia, there are nineteen CAHs with 10 targeted for closure, costing the state (and more importantly the communities they serve), \$59 million dollars and 1,460 jobs (see **Figure 38**).



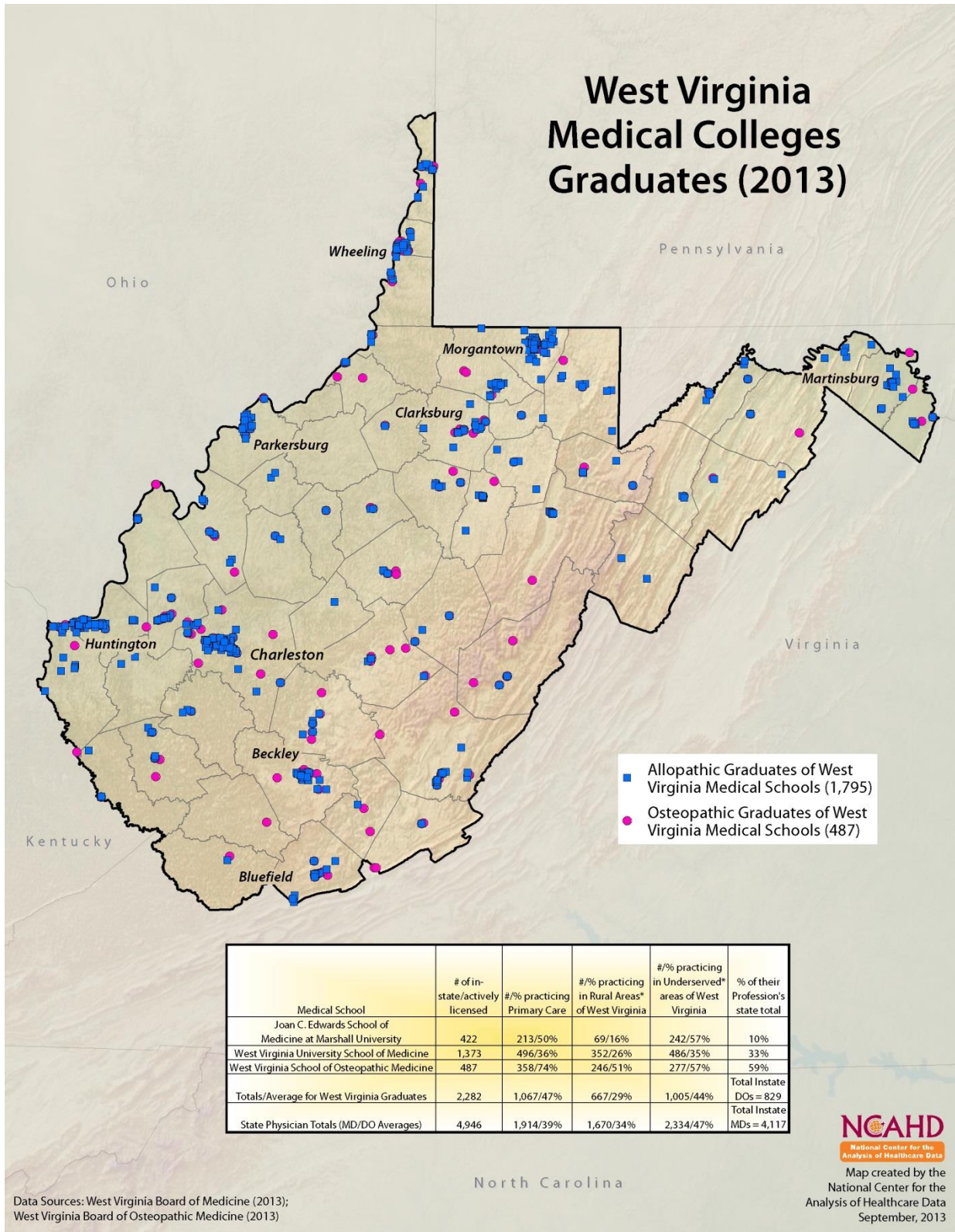
**FIGURE 38 - WEST VIRGINIA CRITICAL ACCESS HOSPITALS TARGETED FOR CLOSURE**



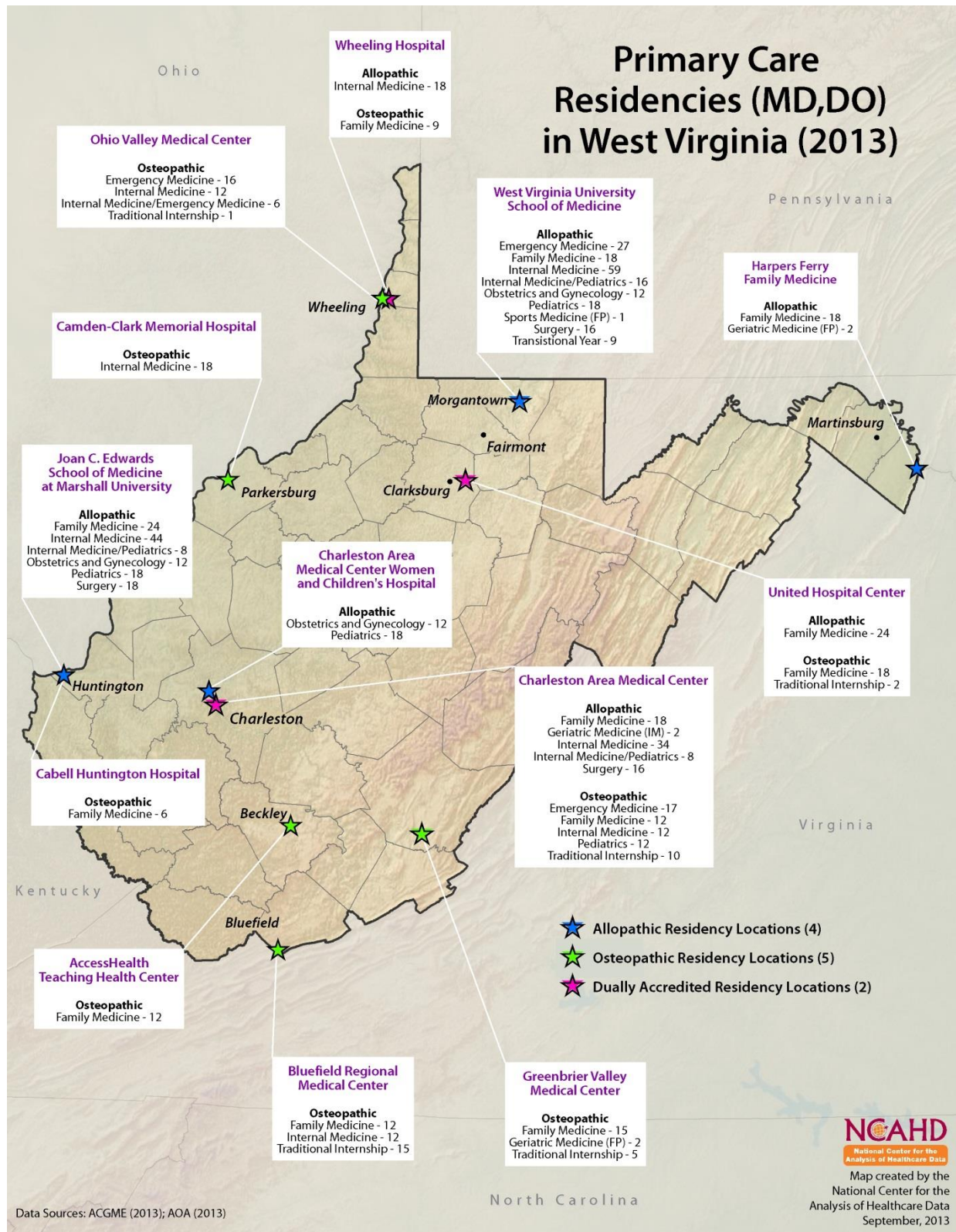
## Healthcare Training

The coordination of activities surrounding the training, recruitment, retention and funding of the healthcare workforce involves multiple stakeholders and their sponsoring institutions. Aside from having multiple funding streams, cultivating the “pipelines” so that the limited resources are most effective in placing graduates into areas of need requires a concerted effort around a common goal of improving the quality of care for all West Virginia citizens. There are no simple, easy solutions for improving the coordination of health professions training, but there are a lot of “lessons learned” that have been published or discussed by stakeholders over the years.

To help augment these ongoing discussions, the WVRHA Workforce Committee proposed creating the following series of maps showing the locations of the providers training sites (see **Figures 39 – 45**).

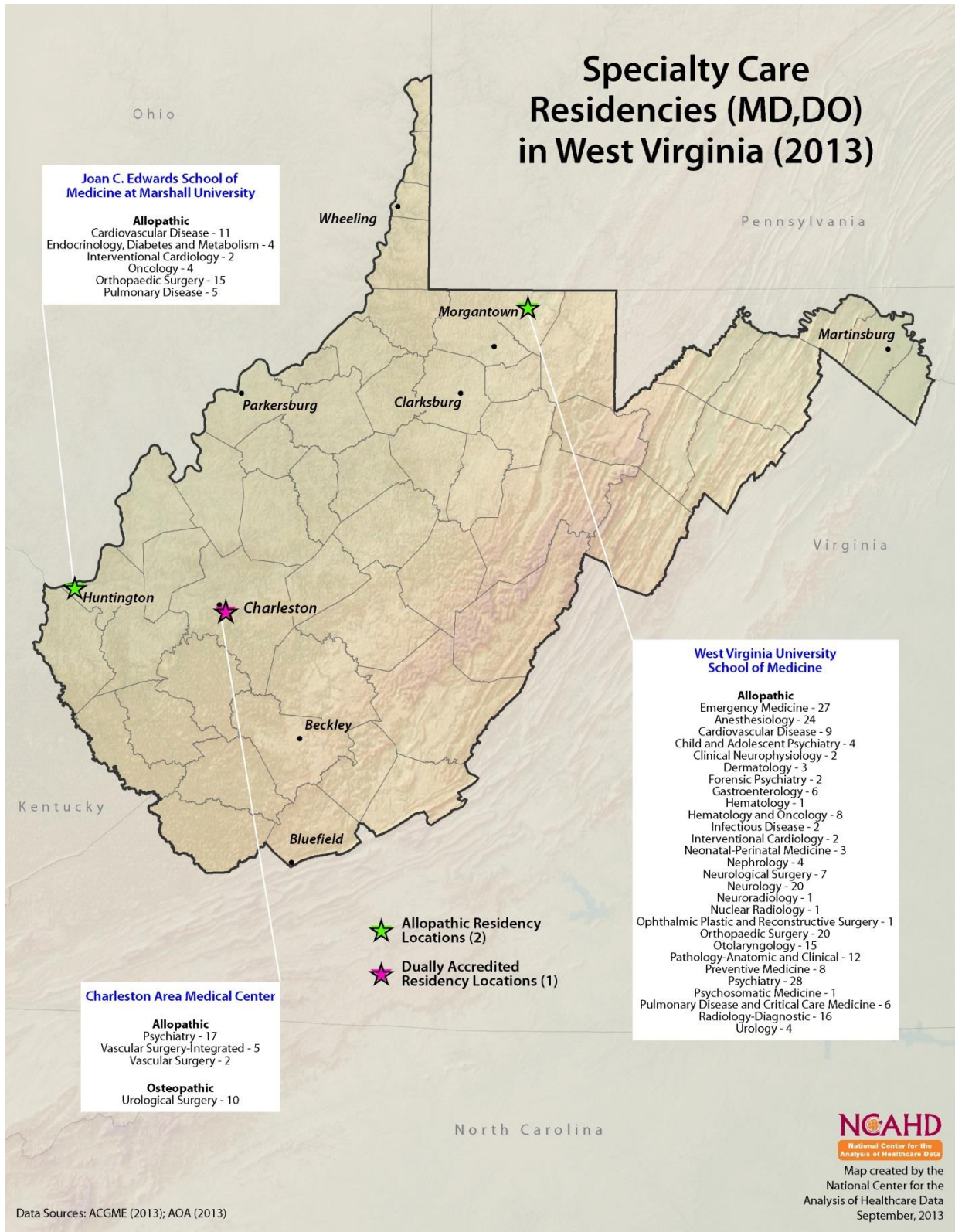


**FIGURE 39 - MEDICAL SCHOOL COMPARITIVE ANALYSIS**

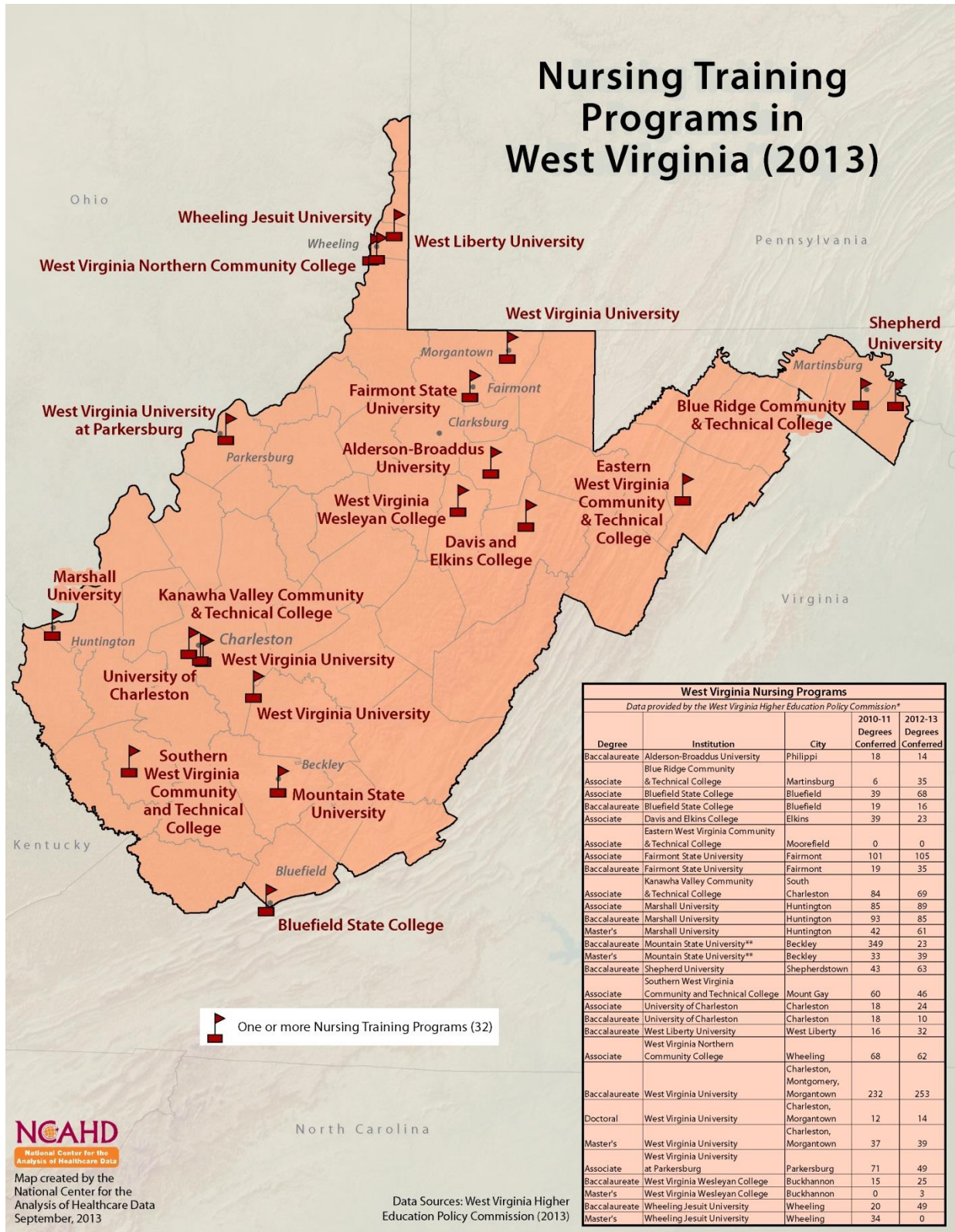


**FIGURE 40 - MEDICAL PRIMARY CARE RESIDENCY PROGRAM SITES**



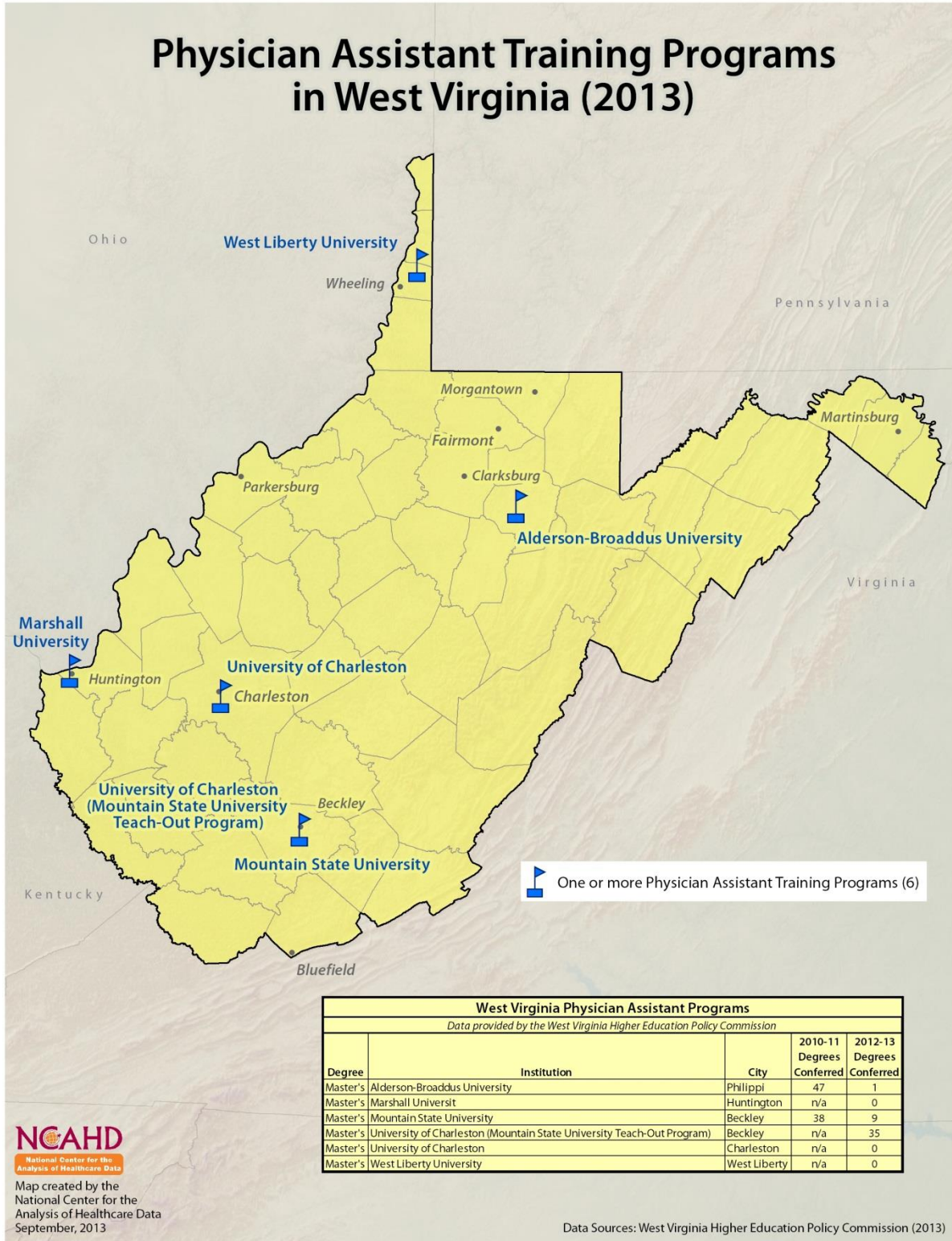


**FIGURE 41 - MEDICAL SPECIALTY CARE RESIDENCY PROGRAM SITES**



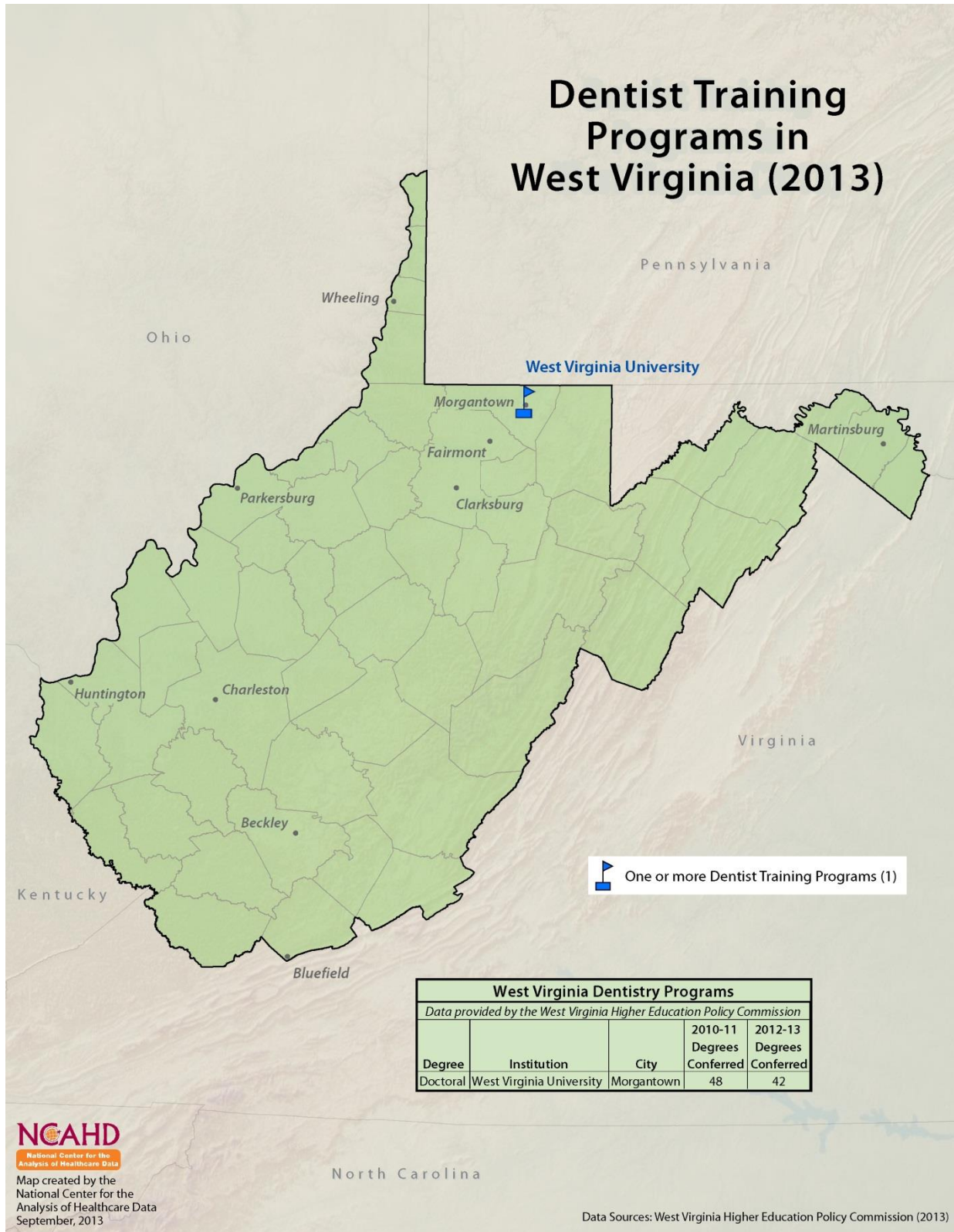
**FIGURE 41 - NURSE TRAINING PROGRAM SITES**



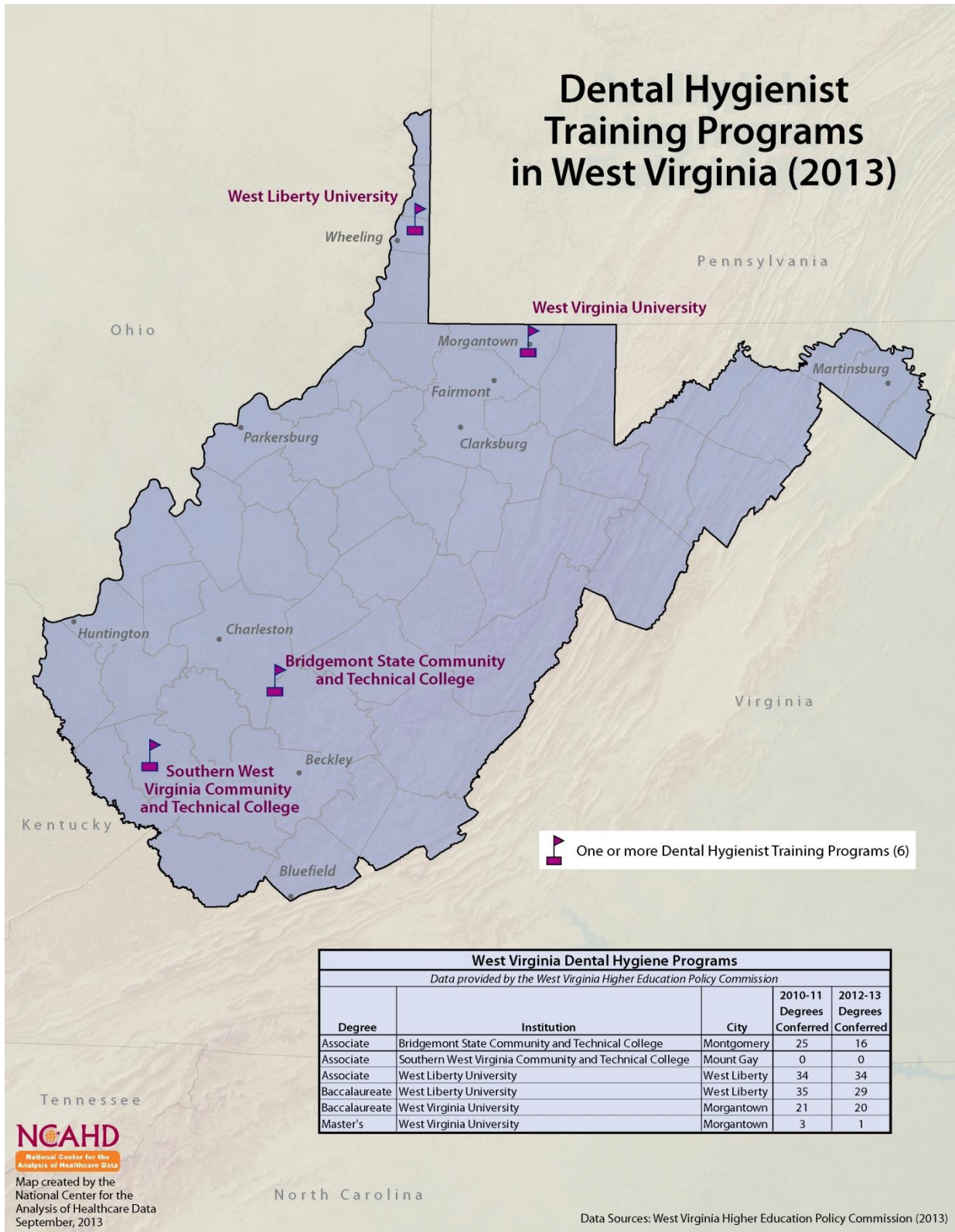


**FIGURE 42 - PHYSICIAN ASSISTANT TRAINING SITES**



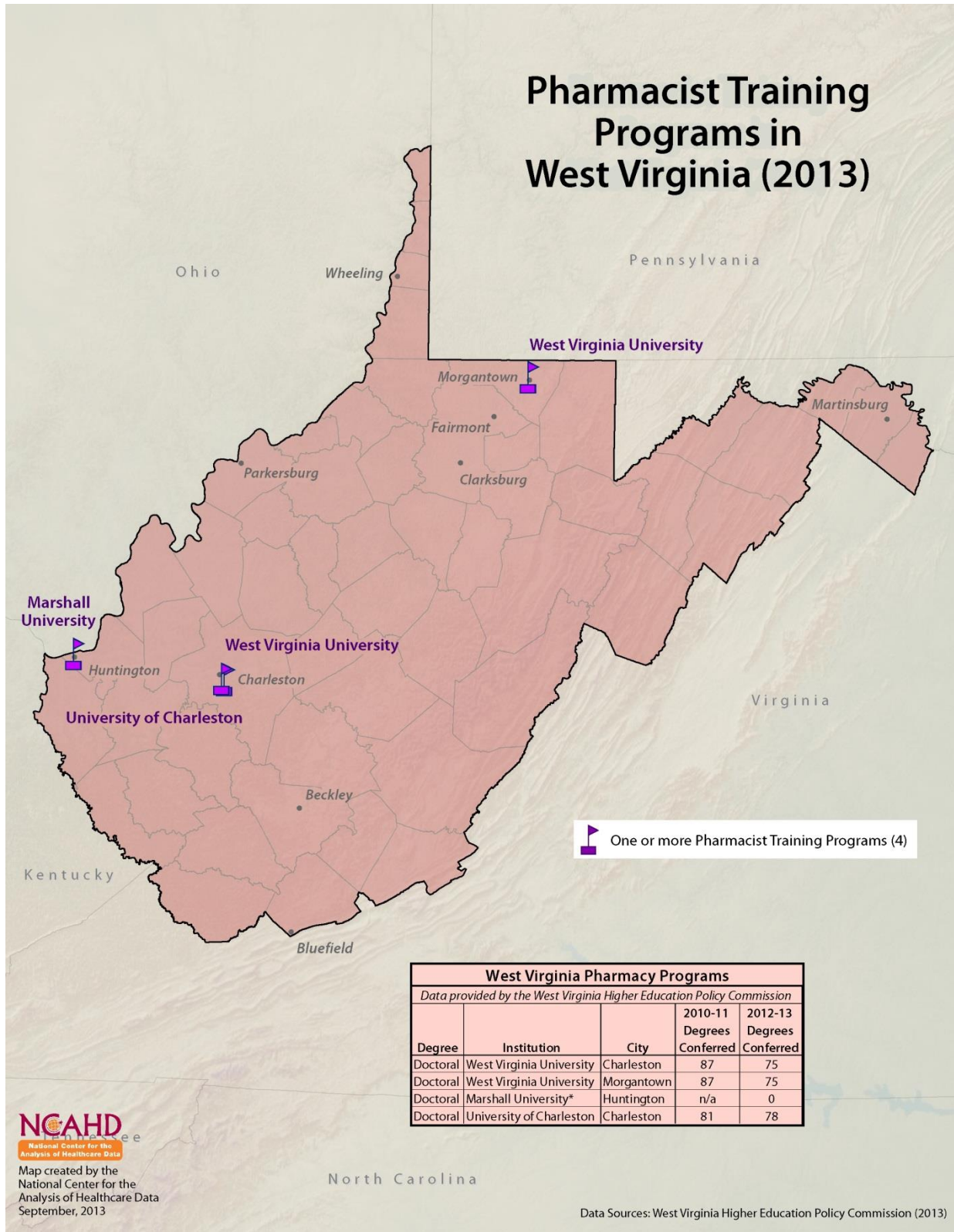


**FIGURE 43 - DENTISTRY TRAINING SITE**



**FIGURE 44 - DENTAL HYGIENIST TRAINING SITES**





**FIGURE 45 - PHARMACIST TRAINING SITES**



## WEST VIRGINIA HEALTH DATA PORTAL TASK FORCE

The WVRHA invited the partners listed in the Claude Worthington Benedum Foundation grant and other policy makers to serve on the West Virginia Health Data Portal Task Force.

### **West Virginia Health Data Portal Task Force Members**

**Michael Adelman, DO, DPM, JD**

*West Virginia School of Osteopathic Medicine*

**Joseph L. Barker, MPH**

*West Virginia Department of Health and Human Resources  
Bureau for Public Health  
Office of Community Health  
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**Christopher C. Colenda, MD, MPH**

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Office of the Chancellor, Health Sciences*

**Jeffrey Coben, MD**

*West Virginia University  
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**Patricia A. Crawford, MS, CHES**

*West Virginia School of Osteopathic Medicine*

**Deborah Curry, JD**

*Marshall University  
Joan C. Edwards School of Medicine*

**Warren S. Eller, PhD**

*West Virginia University  
School of Public Health*

**Jeffery Green, MA**

*Workforce West Virginia*

**Sharon Lansdale, MS, RPh**

*The Center for Rural Health Development, Inc.*

**Joseph M. Letnaunchyn**

*West Virginia Hospital Association*

**Jennifer Plymale, MA**

*Marshall University  
Joan C. Edwards School of Medicine*

**Sandra Y. Pope, MSW**

*West Virginia University, Charleston Division  
West Virginia Area Health Education Centers (AHEC) Program*

**Louise Reese, MS**

*West Virginia Primary Care Association*

**Jeremiah Samples, BS**

*West Virginia Department of Health and Human Resources*

**Gerry D. Stover, MS**

*West Virginia Academy of Family Physicians*

**Kim Tieman, MSW, ACSW**

*Claude Worthington Benedum Foundation*

**Robert Walker, MD**

*West Virginia Higher Education Policy Commission*

**Chris P. Weikle, JD**

*Office of the Governor*

This Task Force will be meeting in November and December 2013 to review WVRHA's Workforce Supply and Demand research, and the information on an internet-based web mapping portal called the West Virginia Health Data Portal. Our goal is to launch the portal on January 16, 2014.

Additionally, the Task Force will make recommendations for establishing precise and complete assessments of West Virginia's healthcare workforce supply and the projection of workforce needs relative to changing demographics.

WVRHA understands that it is imperative that all healthcare partners/providers have the data to support their decisions to target limited resources to the areas of greatest need.

As a part of the contract with the WVRHA, the NCAHD is currently creating the West Virginia Health Data Portal to provide further access to healthcare workforce supply and demand data along with other demographic, socio-economic, health outcomes, political and other administrative data. There will be various levels of secured access for various types of WVRHA memberships. There will be a general public interface that will

contain aggregates of the eighteen healthcare providers that NCAHD collects (visit <http://gis.ncahd.org>) for a listing of these providers and to view the national portal that is being used as a template for the West Virginia Health Data Portal. The WVRHA will be launching the West Virginia Health Data Portal in January 2014 in conjunction with Rural Health Day at Legislature.



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## APPENDIX A – NCAHD NATIONAL DATA COLLECTION PROCESS

Many of the national healthcare provider organizations have created and maintain their own membership-based data inventories for their profession but the aggregation of these datasets for public access or assurance of their data quality has been well publicized. Considering the well published disparities in membership association data, and other private sector data sources, we determined that because the quality and consistency of provider data is controlled through state mandated licensure processes, it would become the basis for our national healthcare workforce data.

Therefore, in 2007, the National Center for the Analysis of Healthcare Data (NCAHD) took on the daunting task of researching and identifying sources for healthcare workforce data to establish a process that could assure a consistent data quality that would meet the needs of the research, healthcare education planning and more effective policy and decision-making. Consequently, NCAHD has collected, processed, normalized and made spatial the 2008, 2009, 2010, 2011, 2012 and 2013 licensure data from each licensure board in all 50 states for Allopathic and Osteopathic physicians and 14 non-physician healthcare providers (Physicians, Audiologists, Certified Registered Nurse Anesthetists (CRNAs), Certified Nurse Midwives (CNMs), Chiropractors, Clinical Nurse Specialists (CNS), Dentists, Dental Hygienists, Naturopaths, Nurse Practitioners (NPs), Optometrists, Oral and Maxillofacial Surgeons, Pharmacists, Physical Therapists (PTs), Physician Assistants (PAs), Podiatrists, Psychologists, and Speech-Language Pathologists (SLPs)).

Since the type of data collected on each provider in each state is mandated differently (with all collecting a basic core set of elements: licensure #, address, status), we created a standardized process for data collection and management that helps to improve the quality of the licensure data.

For each data collection cycle, we utilized our unique national data collection and management system coupled with spatial analysis performed in three separate processes: Procurement, Data Normalization and Spatial Analysis and Aggregation

1. **Procurement:** Our process starts with identifying the source of each of the providers' state licensure information which is either their own provider licensure board or through a state repository. We contact each of these entities each year to determine any regulatory changes that may have transpired regarding either the collection or publication of the state licensure data and record any of those changes. Additionally, we determine the costs associated with the acquisition of the state licensure data and initiate the process to procure the data. After determining the costs and procurement process, we issue the check and wait for the state licensure board to send the data to our center for further processing.



2. **Data Normalization:** Upon receipt of each provider file, basic information is recorded as to date, number of raw records received and the format and if necessary, is converted into Excel spreadsheet format. Next, we conduct a thorough inventory of the data attributes and quality of the data and record this information in an automated data matrix. In the next step, we remove duplicates, retired, deceased, overseas military and inactive licensees based upon the information provided by the state licensure boards on their status, licensure number and provider name. These licensees are put into a separate file for future reference. Our next step is to normalize the headers, names and addresses for each provider for each database in order to standardize the data and so that we manage the data for future research purposes.

3. **Handling of Multiple State Licenses:** Those licensees with multiple state licenses are assigned to the state in which their license is sent assuming that this is their main practice address. If the licensee has the license sent to a practice address within each of the states they are licensed in, it is assumed that they practice in each of those states to some degree throughout the year.

4. **Spatial Analysis and Aggregation:** At this point in the process, we will make the data spatial first through our automated geocoding process built within the GIS software. (We utilize the most current and spatially refined georeference file purchased separate from this grant for by the center.) We strive to geocode to the most refined level of geography provided through the licensure data. The resulting accuracy of the geocoding process is recorded as a part of each record. Providers that are not found through this process are identified through on-line internet searches.

After the data is made spatial, we segregate those providers that are in-state from all out-of-state providers and for the purposes of the HRSA grant, only aggregated the in-state providers to the county level. Our spatial aggregation process utilizes the most current county boundary file within the GIS. At the end of the spatial aggregation, we check the total number per state to the original in-state totals.

As a part of our data quality assurance process, we compare the county totals to the previous year's state licensure county totals. For those numbers that are off by more than 5%, we go back through the entire process again including checking with the data source to inquire as to the large difference from the previous year. If there was a data processing error, it is caught upon re-processing the file. If the large change was due to migration of providers or other potential suggestion by the board, we indicate it within the comments section of the file.

## APPENDIX B – THE ECONOMIC CONTRIBUTIONS OF A RURAL PHYSICIAN



### The Economic Contributions of a Rural Physician

Many people have little idea of the economic importance of the health care system to the local community. Primary care physicians are a major part of the health care system. In most rural communities, they are the principal provider of local health care services.

Economically, primary care physicians hire and pay staff to operate a clinic and also contribute to the local hospital through inpatient admissions and outpatient services. A large portion of the revenues generated by a primary care physician practice will be returned to the local community. Local expenditures support jobs, create additional wages and salaries and provide tax revenues that are vital to the local economy. As these dollars continue to be spent in the community, the multiplier effect generated by the physician becomes clear.

The table presents the direct and total impacts of the physician clinic and the business that the typical primary care physician brings to the local hospital.

Revenue	<u>Direct</u>	<u>Total Impact</u>
Clinic	\$394,275	\$540,157
Hospital	\$751,949	\$992,573
<b>TOTAL</b>	<b>\$1,146,22</b>	<b>\$1,532,730</b>
Income <sup>1</sup>	<u>Direct</u>	<u>Total Impact</u>
Clinic	\$286,925	\$332,833
Hospital	\$434,627	\$556,323
<b>TOTAL</b>	<b>\$721,552</b>	<b>\$889,156</b>
Employment	<u>Direct</u>	<u>Total Impact</u>
Clinic	4.0	5.5
Hospital	12.6	17.4
<b>TOTAL</b>	<b>16.6</b>	<b>22.9</b>

<sup>1</sup>Income includes wages, salaries and benefits

In addition to the physician, new employment opportunities for the physician’s medical staff will be created along with corresponding wages, salaries, and benefits. A typical primary care physician practice employs a nurse, a medical technician and a receptionist. The clinic generates revenues of \$394,275 and income of \$286,925 from the 4.0 clinic employees.

Revenues to the hospital from physician activity will also support employment and generate payroll. An additional 12.6 jobs and \$434,627 in income will be created at the hospital from patient visits. Total hospital revenues are \$751,949.

Average multipliers for six Oklahoma Critical Access Hospital communities were applied to estimate the total impact. This additional impact is the result of the physician office, hospital and the medical staff purchasing goods and services from the local community.

This report clearly documents the importance of a rural physician. One primary care physician generates approximately \$1.5 million in revenue, \$0.9 million in payroll and creates 23 jobs in both the physician clinic and the hospital. This assessment underestimates the total value of a rural primary care physician, as their impact on other sectors such as pharmacy and nursing homes is not included. Thus, the physician’s *economic* contributions are as important to a community as their medical contributions. As our nation faces a growing physician shortage, it is absolutely critical that rural leadership across the United States understands that rural communities are at risk of losing much more than the opportunity to receive local medical care.

For a complete copy of “The Economic Impact of a Rural Primary Care Physician and the Potential Health Dollars Lost to Out-Migrating Health Care Services,” see the National Center for Rural Health Works website ([www.ruralhealthworks.org](http://www.ruralhealthworks.org))

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*It is the mission of the West Virginia Rural Health Association to advocate for empowering all West Virginians to advance their quality of life, well-being and access to excellence in rural health care.*

*“The doctor of the future will give no medicines, but will interest his patients in the care of the human frame, in diet, and in the causes and prevention of disease.”* Thomas Edison

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