



# A HEALTHIER FUTURE: MEDICAL EDUCATION EXPANSION

CHARLOTTE, NORTH CAROLINA

PHASE ONE: FEASIBILITY STUDY  
AND RECOMMENDED APPROACH  
EXECUTIVE REPORT

MAY 27, 2015





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## EXECUTIVE SUMMARY

### INTRODUCTION

In January 2015, the Charlotte Medical Education Expansion Commission (CMEEC), an independent community-based organization, retained Tripp Umbach<sup>1</sup> to analyze the feasibility and recommend the best approach in developing a four-year medical education program in Charlotte, North Carolina. To accomplish this task, Tripp Umbach evaluated multiple medical school models in order to recommend the optimal model that would provide the Charlotte region an adequate number of physicians over the next 25 years as the Charlotte metropolitan area (Charlotte-Concord-Gastonia, NC-SC) is expected to double its population from more than two million to approximately four million residents.<sup>2</sup>

#### The objectives of the study included:

- Evaluate the market need for the development of a four-year medical school in the Charlotte region.
- Evaluate the market need for the expansion of graduate medical education (GME) in the Charlotte region.
- Profile economic benefits associated with the operations of a new four-year medical school in the Charlotte region.
- Recommend the optimal model for developing a new four-year medical school that maximizes the economic impact to the State of North Carolina, specifically the Charlotte region.

*North Carolina's two largest urban centers—Charlotte and Raleigh—will grow faster than any other large cities in the U.S. over the next 15 years, according to projections from a recent United Nations study of world population growth.*

*Charlotte and Raleigh top the list, each projected to grow 71 percent over the time frame.*

Source: Charlotte and Raleigh Lead U.S. in Projected Population Growth. WFAE Charlotte's NPR. August 28, 2014.

1. Tripp Umbach, a private research organization headquartered in Pittsburgh, Pennsylvania, has conducted similar studies and economic impact analyses for new or expanded medical schools in 30 markets throughout the United States. For further information on Tripp Umbach's experience, see Appendix D.

2. U.S. Census. American Fact Finder. 2014.



## KEY FINDINGS

### 1. Charlotte's Current Medical Education Infrastructure Lags Behind Population Growth

With a city population close to 800,000 and a metropolitan population of 2.4 million<sup>3</sup>, Charlotte, North Carolina is the largest U.S. city and metropolitan region without a four-year medical school. Charlotte anchors a multi-state region, defined by Tripp Umbach as persons living within 100 miles and having a population of more than 7.3 million. Specifically, at present, the economic footprint of Charlotte is a 60-mile radius including the adjacent South Carolina counties where Charlotteans live, work, and play.

- In just one year, from 1999 to 2000, the City of Charlotte grew by 40,000 residents.
- From 2000 to 2010, the City of Charlotte has seen steady population growth for a total growth over 10 years of 39% (growing between 9,000 and 20,000 residents each year).
- Growth associated with the Intermodal Facility development at the Charlotte International Airport has the potential to drive even greater population growth over the next 20 years.

With this large of a population and with this much steady population growth, the Charlotte metropolitan area could see more than 100,000 new residents per year over the next 15 years. As an increasingly diverse population grows, specifically the Hispanic population<sup>4</sup>, demand for health care will grow; all of these new residents will need primary care services and the current physician supply will not be enough.

### 2. North Carolina Needs More Doctors

Both the eastern and western sides of North Carolina show higher needs for physicians than central North Carolina; this can be explained by the fact that the medical schools producing doctors are located more centrally and the sides of the state are more rural than urban, making it harder to attract doctors to these regions.

- Over half of the counties in North Carolina are designated as either full or partial health professional shortage areas (HPSAs).
- Over 80% of the eastern half of the state is HPSA qualified.
- 45% of the state's residents live in rural counties, but just 18% of primary care doctors have a primary practice in a rural county.
- 22.6% of North Carolina's physicians are aged 60 and older; retirement is most likely in their near future.
- North Carolina reports a total of 131 designated HPSAs, which means that only 48.92% of the need is being met. It would take an additional 189 professionals practicing in the state to remove all of the HPSA designations.

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3. U.S. Census. American Fact Finder. 2014.

4. [http://www.qcitymetro.com/news/articles/minorities\\_are\\_the\\_new\\_majority\\_in\\_charlotte060036167.cfm](http://www.qcitymetro.com/news/articles/minorities_are_the_new_majority_in_charlotte060036167.cfm)

### 3. It is Essential to Educate Doctors Locally to Retain Physicians in the Charlotte Region

Educating students locally is a critical piece to keeping physicians in the region long-term; North Carolina ranks 25th for retention rate of physicians from undergraduate medical education (UME) and GME combined at 67.0% (Hawaii ranks #1 at 85.8%).<sup>5</sup> Working to provide a student with their UME as well as GME within the State of North Carolina will be critical in keeping the physicians practicing in the state. **Currently, retention is a hurdle for North Carolina due to the limited residency offerings.**

With the anticipated physician shortages looming, the N.C. Institute of Medicine has called on medical schools to increase enrollment by 30%. The UNC School of Medicine received approval to increase from 160 to 230 students. Many of these students are expected to be educated at UNC regional campuses in Asheville and Charlotte; however, this is on hold until there is enough funding.<sup>6</sup> The Brody School of Medicine at East Carolina University increased from 73 students to 80; further expansion to 120 students is also on hold due to funding. Neither Duke nor Wake Forest expanded their medical school enrollment in the recent past.<sup>7</sup>

### 4. There is a Need to Expand GME/Residency Training

While medical school (both allopathic and osteopathic) enrollment continues to climb, the number of available residency slots remains stagnant. For the 2014 graduating class of medical students, the American Association of Medical Colleges (AAMC) reported 1,040 U.S. graduating medical school seniors that did not match with a residency program; this is approximately twice the number of seniors who went unmatched in 2012.<sup>8</sup>

In 2013, medical school enrollment broke the 20,000 mark for the first time ever. Growth in physicians in residency training has been much slower. According to the Accreditation Council for Graduate Medical Education (ACGME), the 2012-13 resident workforce totaled 117,717; a 1.8% increase from the previous year. Current ACGME accredited Primary Care programs in North Carolina are at 10.5 residents per 100,000 population (ranked 25th in the country).

It is clear that the limited medical school class size in Charlotte (currently 20 students in a class), physician shortages, and current and future population demographics are all significantly impacting the physician workforce throughout North Carolina, specifically Charlotte. Therefore, the State of North Carolina and the Charlotte region are unable to support the current health care needs of residents, let alone the projected population growth. Clearly, the supply of medical school graduates, as well as the number of physicians who complete their GME in Charlotte and the State of North Carolina, is far below what will be needed in the future when the metro area's population approaches four million.

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5. AAMC 2013 State Physician Workforce Data Book.

6. Mabe, A. A Plan for Medical Education in North Carolina. Report to the UNC Members, Committee on Educational Planning, Policies, and Programs.

7. NC using new health care models to tackle doctor shortage. WNCN. January 1, 2014.

8. Robeznieks, A. What doctor shortage? Modern Healthcare. November 9, 2013.



## STATEMENT OF NEED

Most medical experts believe that the only way to adequately address the physician shortage in the U.S. is through the combination of creating new medical schools and continuing development of closely aligned GME/residency training programs. Tripp Umbach concludes that there is a need for a four-year allopathic medical school in Charlotte, North Carolina as well as expanded high quality GME programs to meet current and future workforce needs in one of the nation's fastest growing metropolitan areas. As presented in the body of this report, the Charlotte region lags behind other U.S. metropolitan areas in the number of medical school students in training, physician training sites, biomedical research, biomedical start-up companies, and physicians per capita.

The need will only grow in the future, as Charlotte, already the largest U.S. metropolitan area without a four-year allopathic medical school, will continue to grow faster than the U.S. as a whole and exceed four million residents by 2030. Although, not the purpose of the new medical school, the region will benefit significantly from the economic impact of a medical school that includes a clinical and translational research focus, thereby meeting an identified need to diversify and expand the regional economy.

## EVALUATION OF KEY MARKET NEEDS

Tripp Umbach evaluated the need for a four-year medical school, focusing on current and future workforce needs. The U.S. is facing drastic physician shortages, as the nation's population both grows and ages. Demand for physicians continues to grow faster than supply, leading to a projected shortfall of between 46,100 and 90,400 physicians by 2025.<sup>9</sup> According to the AAMC's 2013 State Physician Workforce Data Book, North Carolina ranked 35th in the country in the number of active primary care physicians per 100,000 population. In this report, North Carolina reports 82.9 active primary care physicians per 100,000 population, compared to the U.S. rate of 90.1 per 100,000 population.<sup>10</sup>

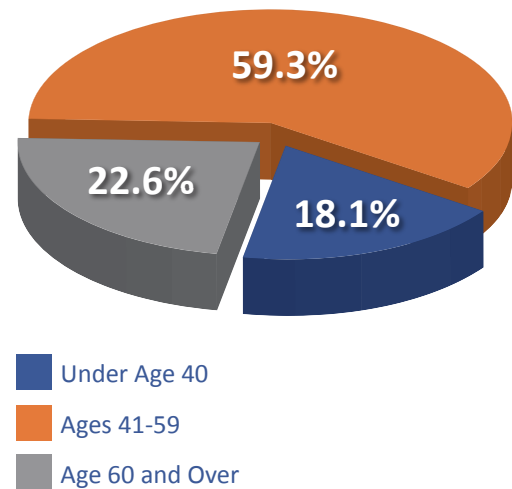
### THE AGE FACTOR

Another issue tied to physician shortages that is often overlooked is the fact that physicians retire. Not only is there currently a national shortage of physicians, but there are also many physicians that leave the field every year. In 2012, there were 816,433 active physicians in the U.S., with the Northeast states having the highest concentration of physicians and many Southern and Mountain states having the lowest.<sup>11</sup> Of these physicians, 17.2% are under the age of 40, 55.2% are aged 40-59, and 27.6% are aged 60 or older.<sup>12</sup> This equates to approximately 208,000 physicians across the country that will be retiring in the next few years.

At the same time that the state population is increasing and baby boomers are aging (with their corresponding increased health care requirements), North Carolina's active physician force is aging. The number of doctors under age 40 (18.1%) is less than the number over 60 years of age (22.6%).<sup>13</sup> It can be reasonably assumed that many physicians age 60 or older will leave their practices in the next few years.

*A quarter of North Carolina's physicians will be retiring within the next five years.*

Figure 1. Ages of Active Physicians in North Carolina



Source: AAMC 2013 State Physician Workforce Data Book.

9. The Complexities of Physician Supply and Demand: Projections from 2013 to 2025. IHS Inc. report for the AAMC, March 2015.

10, 11, 12, 13. AAMC 2013 State Physician Workforce Data Book

## POPULATION GROWTH

The 2014 U.S. Census Bureau estimates that Mecklenburg County has roughly over one million residents and there are 9.9 million residents in North Carolina. By 2030, the population of North Carolina is expected to grow to 12 million, making North Carolina the seventh most populated state in the nation. By 2030, almost one out of every five Americans will be 65 years or older.<sup>14</sup> An increase in population could further stress health care resources in North Carolina.

There are currently approximately 70 million baby boomers born between the years 1946 and 1964 still living in the United States.<sup>15</sup> On the first day of the year 2011, the first baby boomers started turning 65. Starting on January 2011 and going for the next 19 years (2030), 10,000 baby boomers will turn 65 every day.<sup>16</sup> Baby boomers constitute 35% of the U.S. population.<sup>17</sup>

Estimates for 2010 indicated that 13.0% of North Carolinians were aged 65 or older (8.9% in Mecklenburg County for residents 65 or older).<sup>18</sup> By 2030, the percentage of residents aged 65 or older in North Carolina is expected to rise to 19.9% - this equates to more than 2.3 million elderly residents (rising for Mecklenburg County to 15.1%, over 205,000 residents). Lack of access to physicians might inadvertently deny many older individuals of needed medical care.

Figure 2. North Carolina Population 2010

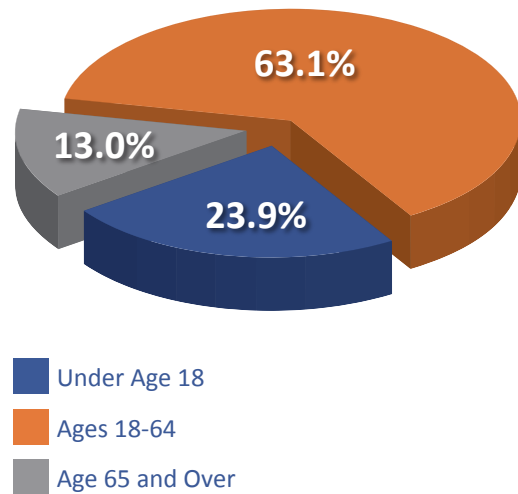
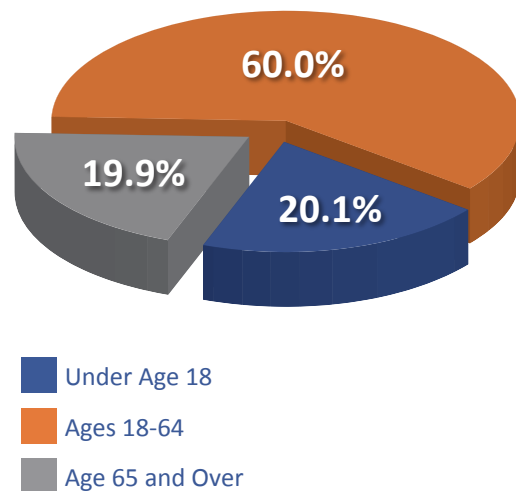


Figure 3. North Carolina Population 2030



14. North Carolina Chamber: <http://ncchamber.net/foundation/north-carolina-vision-2030/>

15. Haaga, J. Just How Many Baby Boomers Are There? Population Reference Bureau.

16. Baby Boomers Retire. Pew Research Center. December 29, 2010.

17. Resources 50+ Fact & Fiction. Immersion Active.

18. North Carolina Office of State Budget and Management. County and State Estimates and Projections.



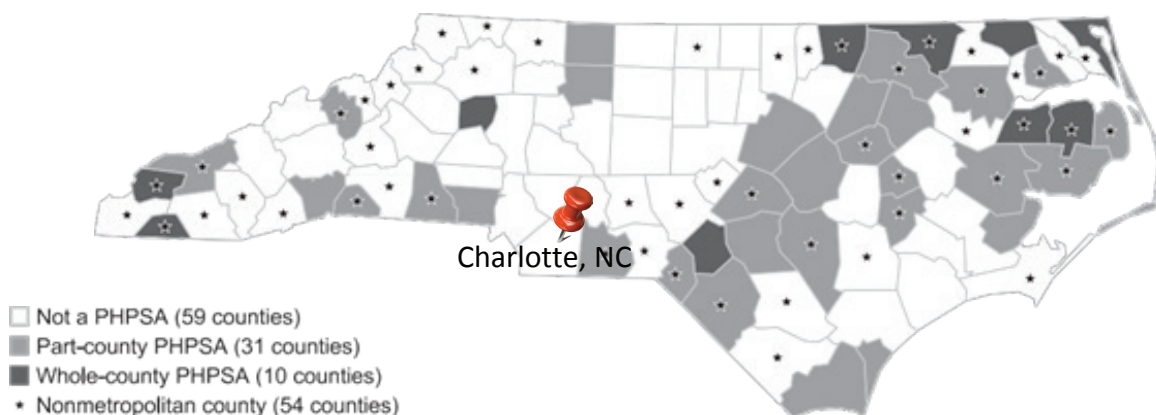
## RURAL HEALTH

To identify underserved areas in North Carolina, there are counties that are designated as persistent primary care health professional shortage areas (PHPSAs). If an area has less than one primary care physician for every 3,500 people, it meets HPSA criteria. In Figure 4 (below) the stars denote nonmetropolitan counties, based on the February 2013 Office of Management and Budget designations for metropolitan and micropolitan.

- Over half of the counties in North Carolina are designated as either full or partial health professional shortage areas (HPSA).<sup>19</sup>
- Over 80% of the eastern half of the state is HPSA qualified.
- 45% of the state's residents live in rural counties, but just 18% of primary care doctors have a primary practice in a rural county.
- North Carolina reports a total of 131 designated HPSAs, 48.92% of the need is being met, and it would take an additional 189 practitioners remaining in the state to remove all of the HPSA designations.<sup>20</sup>

The overall supply of primary care physicians grew steadily from 1991 to 2010; supply has remained stagnant in the state's most underserved areas. The gap between well-supplied and underserved counties is increasing. Between 1979 and 2010, the number of primary care physicians per capita increased in non-PHPSA counties and in those designated as part-county PHPSAs, but it remained stagnant in whole-county PHPSAs.

**Figure 4. Persistent Primary Care Health Professional Shortage Areas (PHPSAs) in North Carolina, 2010**



19. Watkins, R.W. The Physician Shortage in NC and the Patient-Centered Medical Home. North Carolina Academy of Family Physicians. 2010.

20. The Henry J Kaiser Family Foundation. Primary Care Health Professional Shortage Areas (HPSAs). 2014.

## UNC SCHOOL OF MEDICINE-CHARLOTTE CAMPUS

The UNC School of Medicine has a successful partnership with the Carolinas Healthcare System as a satellite, establishing a campus in 2010, formally naming it UNC School of Medicine-Charlotte Campus. The Carolinas Healthcare System provides UNC medical students an environment to learn from a dedicated team of physician-educators in an urban setting with a diverse group of patients. This program is attracting top students from throughout North Carolina and is considered a very strong regional campus, albeit focused only on 20 third and fourth year students.

The current infrastructure requires third year students to spend half of the year rotating in modified- block, in-patient specialty areas and the other half of the year rotating with community preceptors in a longitudinal integrated curriculum. With advice and guidance from both Charlotte mentors and Chapel Hill advisors, students plan a fourth year of medical school that may include some of the 100+ courses offered in Charlotte or the many rotations offered across North Carolina.<sup>21</sup>

The current agreement allows 20 medical students annually to complete their third and fourth year clinical rotations in Charlotte. Due to the nature of medical school education, providing the third and fourth years of UME in Charlotte is very helpful for students in gaining valuable skills and training, seeing the numerous types of patients and disease; however, these students return to the main campus in Chapel Hill (where they began their education) to graduate. Upon graduation from their UME, students apply to GME or residency. GME/residency is a critical piece in the education continuum in retaining physicians to a region (in North Carolina nearly 50% of the students become practicing physicians in the area/town that they completed their residency training). Finding a way to have more students originate and complete their full medical education (UME and GME) in the Charlotte region will secure a much larger physician base coming out of medical school to locate in the area and begin practicing medicine.

A major limitation of the UNC - Charlotte Campus program at the Carolinas Health System is its size. Tripp Umbach estimates from national norms that approximately only half of the 20 fourth-year students match with Charlotte based residency training programs, resulting in the total production of between six and eight physicians annually who remain in the Charlotte area to practice medicine.

## CLINICAL PARTNERSHIPS

An important aspect in determining the feasibility of a new medical school is the number of clinical encounters at nearby hospitals and within the outpatient environment at private practices and community health centers. Tripp Umbach's analysis of hospitals and other clinical settings in the Charlotte region indicates that a significant amount of clinical activity is present to support high quality medical education.

To support the educational training needs of third and fourth year medical students and to ensure a feasible project, a high degree of commitment to education must be present among a consortium of all hospitals within the Charlotte region.

In addition to clerkship training during medical school, before becoming a physician, medical students must complete a residency training program after graduating medical school. There are currently 78 residency positions in the Charlotte region.<sup>22</sup> As previously mentioned, individuals are most likely to stay in the area that they complete their residency training to practice. To meet the statewide need in residency slots, 300 additional residency positions must be created at hospitals and health centers to retain physicians in the area.

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21. UNC School of Medicine Charlotte Campus. Carolinas HealthCare System website.

22. Data Resource Book. Academic Year 2011-2012. Accreditation Council for Graduate Medical Education.

## MEDICAL SCHOOL MODELS EVALUATED

Working from the understanding that the State of North Carolina and specifically rural areas throughout the state will need more physicians in the future, Tripp Umbach evaluated five models through which a four-year allopathic medical school could be established in the Charlotte region:

- 1. Expansion of the current UNC School of Medicine**  
– Under this scenario the UNC School of Medicine-Charlotte Campus would expand from a two-year program at Carolinas Healthcare System to a full four-year program under the continued accreditation of the UNC School of Medicine. **(National Example:** Indiana University School of Medicine - Northwest)
- 2. Public partnership between UNC School of Medicine and University of North Carolina Charlotte (UNCC)**–  
The UNC School of Medicine Charlotte Campus will partner with UNCC to establish a four-year regional medical education program, initially under UNC School of Medicine’s accreditation and eventually, once mutually agreed upon milestones are met, operate under the separate accreditation of UNCC. **(National Example:** Texas Tech El Paso, University of Arizona - Phoenix)
- 3. Newly established public medical school** – UNCC would develop a new four-year medical school while the current UNC School of Medicine – Charlotte Campus would continue to educate students in the third and fourth year. **(National Example:** Washington State University – Spokane)
- 4. Private medical school developed through a consortium of private colleges and universities in the Charlotte region** – Under this scenario one or more private colleges and universities would pool resources to develop a new medical education program with multiple health system partners. **(National Example:** Northeastern Ohio Universities School of Medicine – albeit these are all public institutions)
- 5. Private stand-alone medical school** – Under this scenario, a new founding authority would be established on which a new medical school would be developed. **(National Example:** The Commonwealth Medical College)



## EVALUATION CRITERIA USED TO EVALUATE THE ABOVE MEDICAL SCHOOL MODELS

Tripp Umbach leveraged our experience working with more than 75 established medical schools and newly developed medical schools in approximately 30 markets nationally to evaluate which model would have the greatest opportunity for success in addressing the physician workforce needs and to generate economic development within the Charlotte region. Determining the feasibility of a potential allopathic medical school requires an in-depth study of the health care market, physician workforce needs, regional educational resources, regional clinical capacity for teaching medical students and residents, level of community support, and financial resources available.

Tripp Umbach evaluated each of these five models based on the following criteria:

- Expediency
- Cost effectiveness
- Perceived program quality image for attracting students and faculty
- Opportunity for financial support (public and private)
- Economic impact to the region

Through the facilitation of a comprehensive feasibility study process that included in-depth interviews, work sessions, evaluation of successful medical schools nationally, secondary data analysis, financial and economic impact analysis based on past experiences of new medical schools, level of interest expressed by medical schools, universities, health systems, physicians, and potential funding sources; Tripp Umbach developed the below matrix indicating the relative strengths of each of the five models with the evaluation criteria listed above:

MEDICAL SCHOOL MODEL	EXPEDIENCY	COST EFFECTIVENESS	QUALITY IMAGE	FINANCIAL SUPPORT	ECONOMIC IMPACT
UNC Expansion	●	●	●	●	●
UNC-UNCC Partnership	●	●	●	●	●
New Public Medical School	●	●	●	●	●
New Private Through Consortium	●	●	●	●	●
New Private Unaffiliated	●	●	●	●	●

● High   ● Mid   ● Low

## TRIPP UMBACH CONCLUSIONS AND RECOMMENDATIONS

Tripp Umbach concludes that growing a four-year allopathic medical school in Charlotte, North Carolina through a public partnership between UNC School of Medicine-Charlotte Campus and UNCC is the most feasible and cost effective way to ensure a quality health care workforce and economic development for the region. This model will also secure the highest degree of public and private financial support and participation from multiple education, health care, and industry partners. Provided that the key factors for success outlined below are developed and in place prior to application for accreditation, the Charlotte region should be able to follow the lead of other peer metropolitan areas in planning, developing, and opening a high quality sustainable allopathic medical school that meets the needs of 21st century learners, teachers, health care delivery systems, and most importantly patients. Such a four-year partnership with the medical school will also have the advantage of establishing and growing a clinical research base as the Charlotte region is home to two of the nation's largest health care systems.

### Benefits of the UNC-UNCC Partnership Model Include:

- **Speed and Efficiency:** The speed at which an expanded medical school can be developed to meet market needs and drive economic development is greatly enhanced by a collaborative relationship between an established medical school (UNC School of Medicine) and a newly developed program (UNCC). The speed at which the new collaborative medical school can attract faculty, researchers, high-quality students, and industry partnerships from the very beginning will place the new four-year medical school on a high trajectory for increased economic impact.
- **Fresh Dollars Attracted to the Charlotte Region:** Coordinated academic medicine education programs in the Charlotte region will add significantly more and new streams of private and federal funding to the state.
  - UNC-UNCC partnership model will also have the potential to receive more research from federal and private sources through statewide partnerships with UNC. The two schools will have the opportunity to leverage research capabilities at both schools and access to diverse statewide populations.
- **Maximum Growth Potential:** The UNC-UNCC partnership model will be able to develop a stronger, regionally focused clinical practice, where faculty practice revenue can grow significantly through close day-to-day working relationships with hospitals.
  - For this feasibility study, Tripp Umbach recommends setting a goal for the development of 300 new residency positions in the Charlotte region by 2025 (10-year goal). This goal will need to be addressed by more than only the UNC-UNCC partnership model; it will need to be a concerted effort by state universities, hospitals, health centers, government entities, and businesses. Reaching this goal will result in an additional 80 physicians completing their training and remaining to practice primary care in the Charlotte region every year.
- **Financial Support:** A joint effort by UNC School of Medicine and UNCC has the potential to better engage the state legislature as well as the foundation and philanthropic community to develop greater financial support for both institutions.



**Tripp Umbach believes that the following must be in place to ensure the success of the UNC-UNCC Partnership Model:**

- **Support from the Health Care Community.** Solicit support from all physician groups, private physicians, hospitals, and health systems in the Charlotte region. The future expansion of the proposed medical school will require multiple hospital and physician organization partners – tertiary care facilities, community hospitals, and rural critical access facilities.
- **State and Local Political Support.** Garner political support from the state that will benefit from a new four-year medical school. The state support will be critical in the GME planning process.
- **Business Community Support.** Solicit and maintain support from leading employers and economic development organizations.
- **Technology.** Knowledge of new and emerging digital tools such as simulation labs and other health care technologies will be needed in the future practice of medicine and should be included in medical training.
- **Commitment to “Growing Your Own”.** Establish a sustainable pipeline of new medical students. Ultimate success of the proposed allopathic medical school will require strong support from the Charlotte region. “Pipeline Programs” should be created with local and regional middle schools, high schools, colleges, and universities. This will ensure a continuous stream of students into the education program and encourage those who aspire to become doctors to attend the new medical school and stay in the region after completing their training. Attention is needed at every stage of the pipeline.

## REGIONAL ECONOMIC DEVELOPMENT POTENTIAL

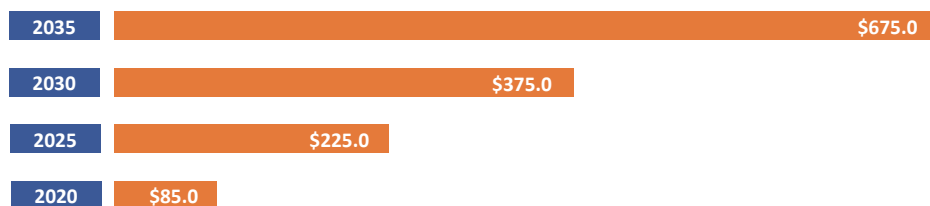
Since 1995, Tripp Umbach has measured the economic impact of every U.S. allopathic medical school on behalf of the AAMC. In 2012 Tripp Umbach’s analysis indicated that allopathic medical schools had a combined economic impact of **\$218 billion** or approximately **\$1.7 billion** per medical school on the U.S. economy.

Tripp Umbach projects from historical growth data of all allopathic medical schools that the economic impact of a public allopathic medical school in Charlotte, North Carolina could total as much as **\$675 million annually** at maturity in 2035 – larger than the East Carolina University program, but significantly smaller than the average established U.S. medical school and many times smaller than the current medical school at UNC. While reduced federal research support for expensive basic science research, smaller faculty practices, and smaller class sizes are the drivers of lower economic impact among new medical schools, the development of a needed physician workforce will add significantly more to the regional economy over the 20-year maturation period. Annual health care cost savings to employers and individuals in the Charlotte region will equal **\$288 million**, due to the 80 new primary care physicians working in the region.

Based on a review of the economic impact of all new U.S. medical schools, the economic impact is expected to grow from **\$85 million annually** in 2020, when all four years of medical education are in place, to **\$225 million by 2025** when the faculty is generating new clinical revenue, to **\$375 million by 2030** when a research program is developed, to **\$675 million at maturity in 2035** when commercial spin-off activities associated with the medical school are in place. **Note:** these estimates are based on the actual economic performance of newer U.S. allopathic medical schools from data supplied by each school to the AAMC and modeled by Tripp Umbach.

The economic impact of physician workforce, estimated at **\$1.3 million** per graduate who remains in the region to practice medicine will be in addition to the economic impact estimates outlined above. Based on a goal to match the national retention rate of 67% of all graduates from a medical school remaining to practice in the region, Tripp Umbach estimates that the additional economic impact of each graduating class completing all of their training after 2025 will equal **\$104 million** (based on a graduating class of 120). **Note:** the total economic impact of all physicians practicing in the region who graduate from the medical school by 2035 will be larger than the annual operations of the medical school.

**Figure 5: Projected Total Economic Impact (in millions) of UNC-UNCC Partnership Model 2020-2035**

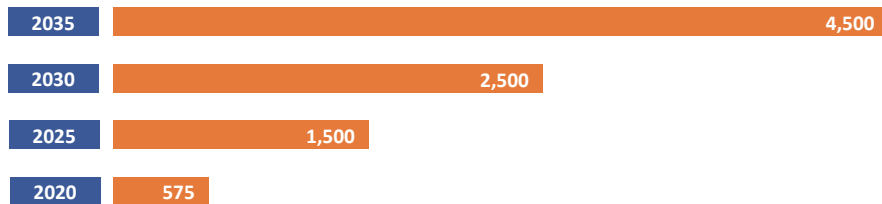


## EMPLOYMENT IMPACT

Based on the experience of established medical schools in similar situations, Tripp Umbach estimates that, at maturity in 2035, the four-year medical school in Charlotte is projected to support significant employment in the region through the operations of its medical education, research, clinical, and commercial spin-off activities. Based on a review of the employment impact of all new U.S. medical schools, the total number of jobs in the region attributable to the four-year medical school is expected to grow from **575 total jobs** in 2020, when all four years of medical education are in place, to **1,500 total jobs by 2025** when the faculty is generating new clinical revenue, to **2,500 total jobs by 2030** when the research program is developed, to **4,500 total jobs in the region at maturity in 2035** when commercial spin-off activities associated with the medical school are also in place.

The employment impact of physician workforce, estimated at 8 full-time jobs supported per graduate that remains in the region to practice medicine after completing all of their training in 2025, will be in addition to the employment impacts above. Based on a goal to retain 67% of all graduates in the region, Tripp Umbach estimates that the additional employment impact of each graduating class will be more than **640 new jobs** generated by each graduating class of 120. Over the 10-year period from 2025-2035 more than **6,000 jobs** in the region will be supported by additional physicians working in the region who are graduates of the four-year medical school.

**Figure 6: Projected Total Employment Impact (in jobs) of UNC-UNCC Partnership Model 2020-2035**





## TAX REVENUE IMPACT

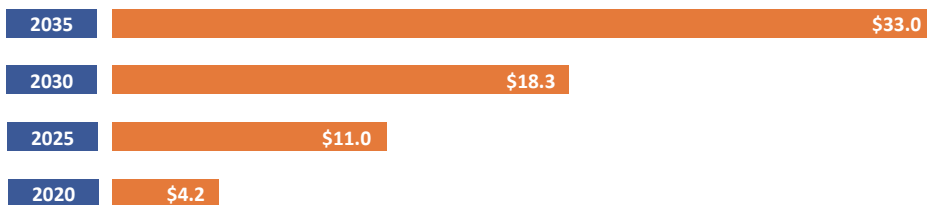
From national secondary data research, Tripp Umbach found supporting evidence that every fresh dollar in economic impact from a medical school generates 4.89% in state and local tax revenue. Therefore, at maturity in 2035, Tripp Umbach estimates that the UNC-UNCC partnership model will generate approximately **\$33 million** in annual tax revenue. The estimate that the medical school will generate \$33 million annually in tax revenue provides medical school and community leaders with a starting point in determining how much public funds should be invested in the four-year medical school during start-up and ongoing operations.

Allopathic medical schools generate significant economic impact and state general fund revenue. According to Tripp Umbach’s research of the academic medicine industry since 1995, approximately one in every 20 dollars generated by medical school operations and spin-off activities flow directly to state and local governmental units. Nationally, allopathic medical schools generated more than \$5.2 billion in state general fund revenue in 2012 and received approximately \$4.5 billion in that same year from their home states and communities – resulting in a positive return of \$1.16 returned to the states for every dollar invested in their medical schools.

Based on a review of the employment impact of all new U.S. medical schools, the annual state and local tax revenue attributable to the four-year medical school is expected to grow from **\$4.2 million in 2020**, when all four years of medical education are in place, to \$11 million by 2025 when the faculty is generating new clinical revenue, to **\$18.3 million by 2030** when the research program is developed, to **\$33 million in annual tax revenue generated at maturity in 2035** when commercial spin-off activities associated with the medical school are also in place.

The government revenue impact of a physician workforce, estimated at \$63,500 for each graduate who remains in the region to practice medicine after completing all of their training in 2025 will be in addition to the employment impacts outlined above. Based on a goal to retain 67% of all graduates in the region, Tripp Umbach estimates that the additional economic impact of each graduating class will equal **\$5.1 million** generated by each graduating class of 120. Over the 10-year period from 2025-2035 more than **\$50 million** in tax revenue will be generated by additional physicians working in the region who are graduates of the four-year medical school.

**Figure 7: Projected Total Government Revenue Impact (in millions) of UNC-UNCC Partnership Model 2020-2035**





## OTHER ECONOMIC AND SOCIAL BENEFITS

Expanding medical education in Charlotte, North Carolina will have a positive impact on both health care and the regional economy. A new four-year medical school in Charlotte will be a major driver of the regional economy, creating jobs, and generating millions in annual net impact to the region. The new medical school will also:

- Expand the health care access for underserved populations. Currently, North Carolina ranks 50th in terms of adult minorities without a usual source of health care.<sup>23</sup> The state also ranks 50th out of 51 (including D.C.) for minorities who do not have health insurance.
- Address workforce needs by expanding numbers of highly qualified graduates in the health professions who have regional connections and interests.
- Accelerate expansion of an innovation economy whereby biomedical companies are launched in and attracted to the region, new jobs are created, and research sparks technology transfer, commercialization, and economic value through improvements in prevention, treatment, and practice.
- Reduce health care spending through community health improvements.

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23. deBruyn J. NC ranks last for minorities with regular access to health care. Charlotte Business Journal. May 2014.

## NEXT STEPS:

Expand the Charlotte Medical Education Expansion Commission (CMEEC) to include active leadership and participation from UNC, UNCC, Carolinas Healthcare, Novant Healthcare, and other private colleges and universities. The Commission will have the responsibility to finalize a formal business plan for medical education expansion by January 2016. The business plan will build upon the findings and recommendations outlined in the Phase One: Feasibility Study and Recommendations and will include more details on governance, curriculum, program growth, facilities, budget, funding, communications, and external relationships required to implement the recommended approach.

### The following factors need to be in place to ensure ultimate success:

- **Collaboration with multiple health systems** – In order to ensure enough doctors to meet future health care needs, both UNC and their partner UNCC must develop and maintain close ties with multiple clinical partners to provide the support for clerkships and residency training for a growing four-year program. Tripp Umbach’s interviews during the feasibility study provided evidence that multiple clinical partners are already involved in the current UNC School of Medicine-Charlotte Campus two-year program and that this model must be expanded in the UNC-UNCC partnership model. The development of a regional residency expansion plan in partnership with multiple health systems and health care organizations (i.e., Area Health Education Centers (AHEC), federally qualified health centers (FQHCs), etc.) is required as part of the medical school planning. Tripp Umbach recommends at least 300 new residency positions within the region be established while the medical school is being developed to ensure the long-term success of the medical school.
- **Collaboration with educational organizations at all levels** – Tripp Umbach recommends that formal agreements be established with multiple colleges and universities in the Charlotte region to ensure that students in the metropolitan area remain in the region for their medical training. Agreements should specify that students who meet certain requirements have automatic placement in the new four-year medical school. It is also important that the comprehensive K-12 educational pipeline in the region be connected with colleges and universities and with the new four-year medical school to maximize the number of students in the Charlotte region who matriculate into the medical school and remain in the region to practice medicine after completing all of their training.

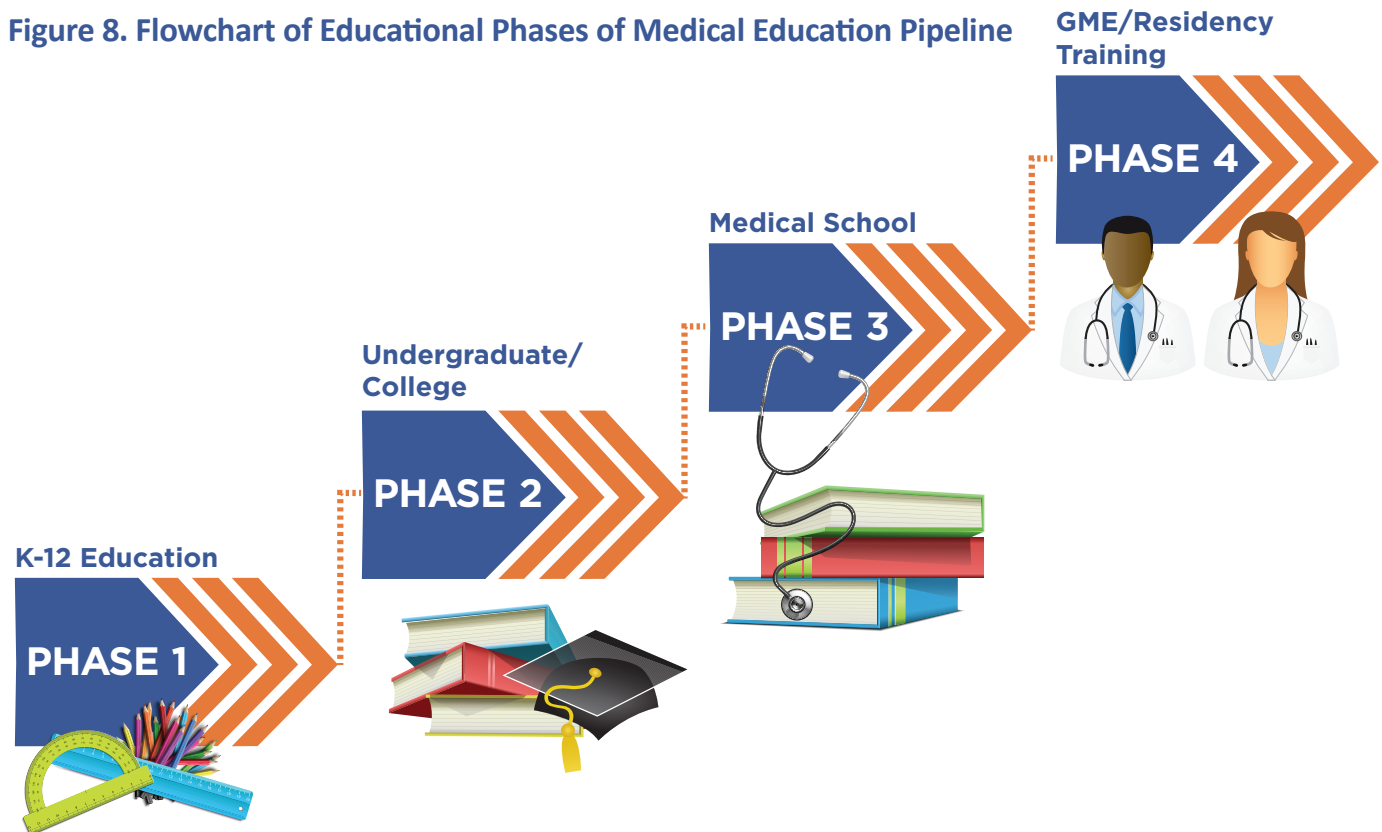
- **Strong Public and Private Support** – Local support for the medical school must be established and maintained. Capital campaigns to raise the start-up and operating costs of a four-year medical school must begin as soon as possible. Tripp Umbach recommends forging new relationships and maintaining current strong relationships with local community organizations, economic development entities, private individuals, and foundations. Private and foundation support will be required for the recommended model to be successful, as Tripp Umbach does not anticipate financial support from the State of North Carolina for capital expansion and ongoing operations to launch and sustain the four-year medical school in Charlotte.
- **Expand the UNC Regional Campus** – Following specific steps outlined in a formal business plan, UNC School of Medicine-Charlotte Campus in partnership with UNCC will begin in 2016 to jointly plan a four-year regional medical education program, initially under UNC School of Medicine’s accreditation. A Memorandum of Understanding (MOU) between UNC and UNCC to be developed by January 2016 would include specific program, facility, and funding milestones to be met over an agreed upon period when the accreditation would shift from UNC to UNCC.
- **Program Growth** – The goal should be to grow the class size in Charlotte as appropriate to meet market needs while still maintaining high quality standard as funding will allow. A strong working partnership with UNC School of Medicine, an established nationally ranked accredited allopathic medical school will allow UNCC and its community partners to establish a successful medical education program.



## APPENDIX A: OVERVIEW OF MEDICAL EDUCATION

### Curriculum:

The traditional path to become a physician is to complete a traditional four-year undergraduate degree, preferably in one of the sciences (i.e., life, social, physical, pre-med, etc.). The student must then apply and be accepted to medical school. The next four years in medical school is deemed a student's undergraduate medical education (UME). The first two years of medical school is traditionally held in a classroom setting. Years three and four of medical school are typically spent conducting clinical clerkships outside of the classroom in settings such as hospitals, clinics, health centers, etc. Finally, the student must complete their graduate medical education (GME), also known as a residency program, for between three and seven years. Residency positions are held by local hospitals, health centers, and/or FQHCs.



The vast majority of medical schools offer dual-degree programs. Dual-degree options range a variety of disciplines including: Doctor of Health Education, Doctor of Dental Medicine, Juris Doctorate, Master of Arts, Master of Business Administration, Master of Health Administration, Master of Science in Medical Education Leadership, Master of Public Health, Master of Science, Master of Science in Biomedical Sciences, Master of Science in Health Sciences, Master of Science in Medical Sciences, and Doctorate.

### Three-Year Medical School Curriculum:

Medical education and training must be reinvented to adapt to the changing health care paradigm. Academic Health Centers (AHCs) are beginning to re-examine traditional beliefs and approaches to medical education, questioning cost and length. Some considerations in adapting medical education to our changing health care needs include: using increased online instruction, simulation, possibly even gaming. It will also be in the interest of AHCs to shorten training time by streamlining the educational continuum. One example of this could be providing a focused three-year medical school curriculum in primary care, plus a two-to-three-year residency.<sup>24</sup>

### Medical School Accreditation:

The LCME is recognized by the U.S. Department of Education as the reliable authority for the accreditation of medical education programs leading to the MD degree.<sup>25</sup> There are currently 141 LCME accredited U.S. allopathic medical schools, 17 Canadian allopathic medical schools, and nine in pre-accreditation status.

Medical education is offered in one of two ways: allopathic, which is the traditional method and osteopathic, which involves a whole-body approach to medicine with osteopathic manipulative medicine. There are currently 142 Allopathic Medical Schools and 30 osteopathic medical schools operating in more than 200 locations across the U.S.

### GME and Residency Training:

Physicians in the U.S. can only be licensed to practice medicine after first completing a residency training program at a teaching hospital. Residency programs range from three to seven years to complete after completion of the either an M.D. or D.O. degree program. Residency training programs have separate accreditation requirements than medical schools as well as separate funding streams (i.e., funding from the federal government, the primary funder of residency training in the U.S. flows through hospitals – not medical schools). Therefore, it is important to ensure that newly established medical schools have accredited residency training programs in close proximity, so that physicians can complete all of their training and begin the practice of medicine in the same region.

It is the ACGME that accredits the GME and residency training programs across the country.

- In 2011, every state in the U.S. had at least one ACGME-accredited GME program. The number of residents and fellows in ACGME-accredited training programs per 100,000 population residents varied widely across the U.S. from a low of 2.0 in Montana to a high of 83.7 in Massachusetts. The national average was 36.6 residents and fellows per 100,000 population residents; the rate for North Carolina was 31.7 residents per 100,000 population.<sup>26</sup>

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24. Victor J. Dzau, M.D., Alex Cho, M.D., M.B.A., William ElLaissi, M.B.A., M.H.A., Ziggy Yoediono, M.D., M.B.A., Devdutta Sangvai, M.D., M.B.A., Bimal Shah, M.D., M.B.A., David Zaas, M.D., M.B.A., and Krishna Udayakumar,

25. LCME website. <http://www.lcme.org/>

26. AAMC 2013 State Physician Workforce Data Book

## APPENDIX B: CHARLOTTE, NORTH CAROLINA: REGIONAL PROFILE

### A) DEMOGRAPHICS

#### Population

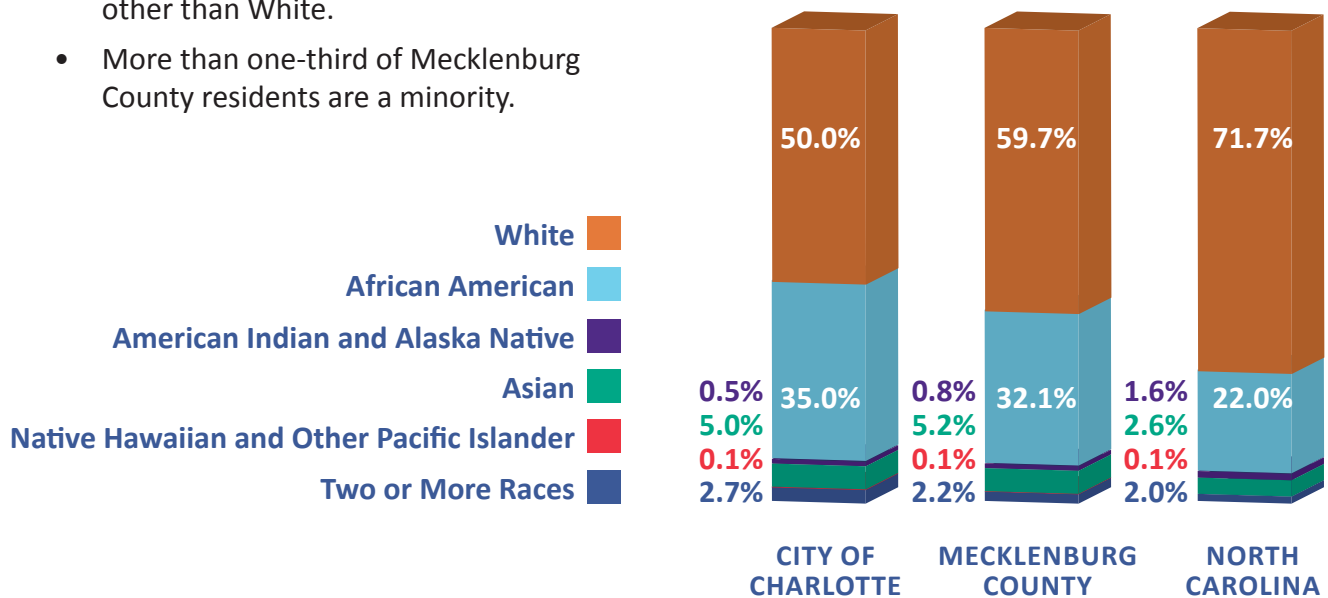
- The city of Charlotte is the 16th largest city in the U.S.
- The 2014 population estimate for the City of Charlotte was more than 800,000.
- The 2014 population estimate for Mecklenburg County (the county in which Charlotte is located) is more than 1 million.
- The population change in the City of Charlotte increased 39% from 2000 to 2010. Just one year prior, 1999 to 2000, the population in Charlotte rose more than 40,000 residents (in just one year!).

U.S. CENSUS QUICK FACTS	CITY OF CHARLOTTE	MECKLENBURG COUNTY	NORTH CAROLINA
Population, 2013 estimate	792,862	990,977	9,848,917
Population, 2010 (Census - estimate base)	735,766	919,568	9,535,691
Population, percent change - 4/1/10 – 7/1/13	7.8%	7.8%	3.3%
Persons under 5 years, percent, 2013	7.6%	7.1%	6.2%
Persons under 18 years, percent, 2013	25.2%	24.8%	23.2%
Persons 65 years and over, percent, 2013	8.5%	9.7%	14.3%

#### Race

- 50% of the population of the City of Charlotte identifies as a race other than White.
- More than one-third of Mecklenburg County residents are a minority.

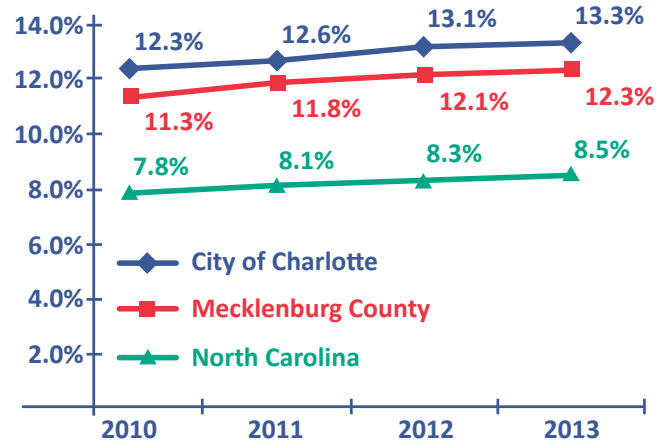
Figure 9. Population Demographics



## Ethnicity

- Charlotte's Hispanic population percentage nearly doubled from 7.4 percent in 2000 to 13 percent in 2013. The number of Hispanics in Charlotte - nearly 96,000 - exceeds the total population of Asheville.
- The City of Charlotte reports higher rates of residents who identify as Hispanic or Latino (13.3% in 2013) as compared to the county (12.3%) or the state (8.5%).<sup>27</sup>
- For Charlotte, Mecklenburg County, and North Carolina, the Hispanic or Latino population has been on a steady rise (15.7% growth from 2010 to 2013 for Charlotte; 86,000 in 2010 to over 100,000 in 2013).

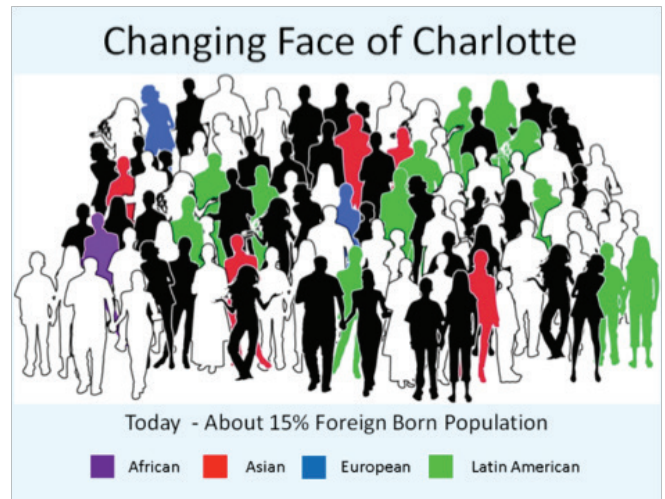
Figure 10. Hispanic or Latino Population



## Foreign-born Population

- From 1980 to today, the foreign-born population has risen from less than 1% to 15% that it is today.
- Today, the City of Charlotte reports much higher rates of foreign-born residents (15.0%) as compared with the county (13.9%) and state (7.6%).
- Charlotte reports close to double the rate of foreign-born residents as the state. 15% of the population in Charlotte was foreign-born in 2013 compared to only 7.6% across the state.

Figure 11. Foreign-born Population



Source: Charlotte's Immigrant Integration Task Force. Charlotte City Council. March 23, 2015.

27. Minorities are now the new majority in Charlotte. The Charlotte City Observer. [http://www.qcitemetro.com/news/articles/minorities\\_are\\_the\\_new\\_majority\\_in\\_charlotte060036167.cfm](http://www.qcitemetro.com/news/articles/minorities_are_the_new_majority_in_charlotte060036167.cfm) Accessed 05/20/15.



## B) EDUCATION

- More than one-third of Charlotte residents have a Bachelor’s degree or higher.
- 137,740 students in grades K-12 attending 178 schools, Charlotte-Mecklenburg Schools (CMS) is one of the largest school systems in the Carolinas.<sup>28</sup>
- More than 175,000 students are enrolled in degree or college-transfer programs at the 34 colleges, universities, community colleges and technical institutes located within the 13 county Charlotte Metro Region.<sup>29</sup>

U.S. CENSUS QUICK FACTS (2009-2013)	CITY OF CHARLOTTE	MECKLENBURG COUNTY	NORTH CAROLINA
High school graduate or higher, age 25+	88.0%	88.8%	84.9%
Bachelor’s degree or higher, age 25+	39.8%	40.7%	27.3%

## C) INCOME

- The median household income in Mecklenburg County for the years 2009-2013 was \$55,444; this is \$9,110 more than the average household income reported across the state.
- The City of Charlotte reports a rate of 17.1% of its residents living below the federal poverty level.

## D) ACCESS TO CARE<sup>30</sup>

### Health Insurance

- According to the American Community Survey in 2011, approximately 17% of Mecklenburg County adult residents reported not having any kind of health insurance including prepaid plans such as HMOs, or government plans such as Medicare.
- Roughly 60% of Mecklenburg County residents have some type of private insurance (employer-based, direct purchase, military) and over 16% have public insurance (Medicaid, Medicare, VA).
- North Carolina ranks dead last in terms of adult minorities without a usual source of health care.<sup>31</sup> The state also ranks 50th out of 51 (including D.C.) for minorities who do not have health insurance.

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28, 29, 30. 2012 State of the County Health Report. Mecklenburg County Health Department..

31. deBruyn J. NC ranks last for minorities with regular access to health care. Charlotte Business Journal. May 2014.

## Poverty Status

- Numerous studies have documented that lower family income is significantly associated with poorer physical and mental health status, less social support, more behavioral risk factors, higher rates of obesity and uncontrolled blood pressure, and poor medical diagnoses.
- In 2011, it is estimated that 17% of all persons in Mecklenburg County lived in poverty compared to 18% across the state. Blacks or African Americans (26%) were more than twice as likely to live in poverty as Whites (11%) and Hispanics were more than three times as likely (33%).

## Community Health Needs Assessments

In 2013, two regional health systems completed community health needs assessments, which resulted in the following findings of community health needs in the area:

### Carolina HealthCare System

1. Preventing Chronic Disease & Disability
2. Mental Health
3. Access to Care
4. Violence Prevention

### Novant Health

1. Diabetes
2. Obesity
3. Access to Care
4. Maternal Child Care & Infant Health

## Leading Causes of Death

- While cancer and heart disease are the top two leading causes of death among all racial groups, people of other races often die at higher rates and younger ages than whites.
- Homicide is a leading killer among adolescents and young adults, ages 15-24 and unintentional injury is the leading killer of adolescents and adults, ages 15-44, in Mecklenburg County.
- Cancer, unintentional injuries, heart disease, homicide, and birth defects are the top five leading causes of death among Hispanic residents in Mecklenburg County in 2010.
- Cancer, heart disease, and Alzheimer's disease are the three leading causes of death in Mecklenburg County accounting for more than 50% of deaths in 2010.
- Mecklenburg County ranks higher for Alzheimer's disease and lower for chronic obstructive pulmonary disease (COPD) as compared to the rest of North Carolina and the United States. The other leading causes of death are comparable with the exception of suicide, which does not rank among the top 10 in North Carolina.
- Cancer, heart disease, and Alzheimer's disease are the leading causes of death for both whites and other races, including African Americans, Asians and Native Americans. However, people of other races die at higher rates and younger ages. This difference may be explained because rates for heart disease, cancer, and stroke increase with age, and the Hispanic population in Mecklenburg County is younger than the population as a whole.
- Unlike other groups, Hispanics in Mecklenburg County die at the highest rates from motor vehicle injury and homicide.

## APPENDIX C: MARKET ASSESSMENT

### THE FUTURE OF THE HEALTH CARE SYSTEM

Over the past decade, an increasingly complex health care system has led to transformations in service delivery. These transformations emphasize:

- generalist and primary care;
- managed care that links inpatient and outpatient services;
- continuity of health care services in partnership with communities;
- cost-effective care and population approaches;
- accountability for outcomes; and
- explosion of information technologies.

Although it is hard to distinguish the difference between public health and personal health care, the near collapse of health care reform and the blurring of lines between individual and population-based health are forcing practitioners to understand and negotiate both worlds. Such trends reinforce the need to improve education and training in interdisciplinary<sup>32</sup> collaboration both for individual care and for health initiatives aimed at communities and population groups.

The terms “population” or “population-based” care increasingly coupled with “health,” “health care,” “medicine,” “medical care,” or “managed care” to indicate a changing reality in the organization and delivery of health care in the United States.

“A population health perspective encompasses the ability to assess the health needs of a specific population; implement and evaluate interventions to improve the health of that population; and provide care for individual patients in the context of the culture, health status, and health needs of the populations of which that patient is a member.” **AAMC**

“Population-based care involves a new way of seeing the masses of individuals seeking health care. It is a way of looking at patients not just as individuals but as members of groups with shared health care needs. This approach does not detract from individuality, but rather adds another dimension, as individuals benefit from the guidelines developed for the populations to which they belong.” **Boland**

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32. An approach characterized by a high degree of collaboration and communication among health professionals. What makes integrated health care unique is the sharing of information among team members related to patient care and the establishment of a comprehensive treatment plan to address the biological, psychological, and social needs of the patient. The interdisciplinary health care team includes a diverse group of members (e.g., physicians, psychologists, social workers, and occupational and physical therapists), depending on the needs of the patient.

## PHYSICIAN SHORTAGES

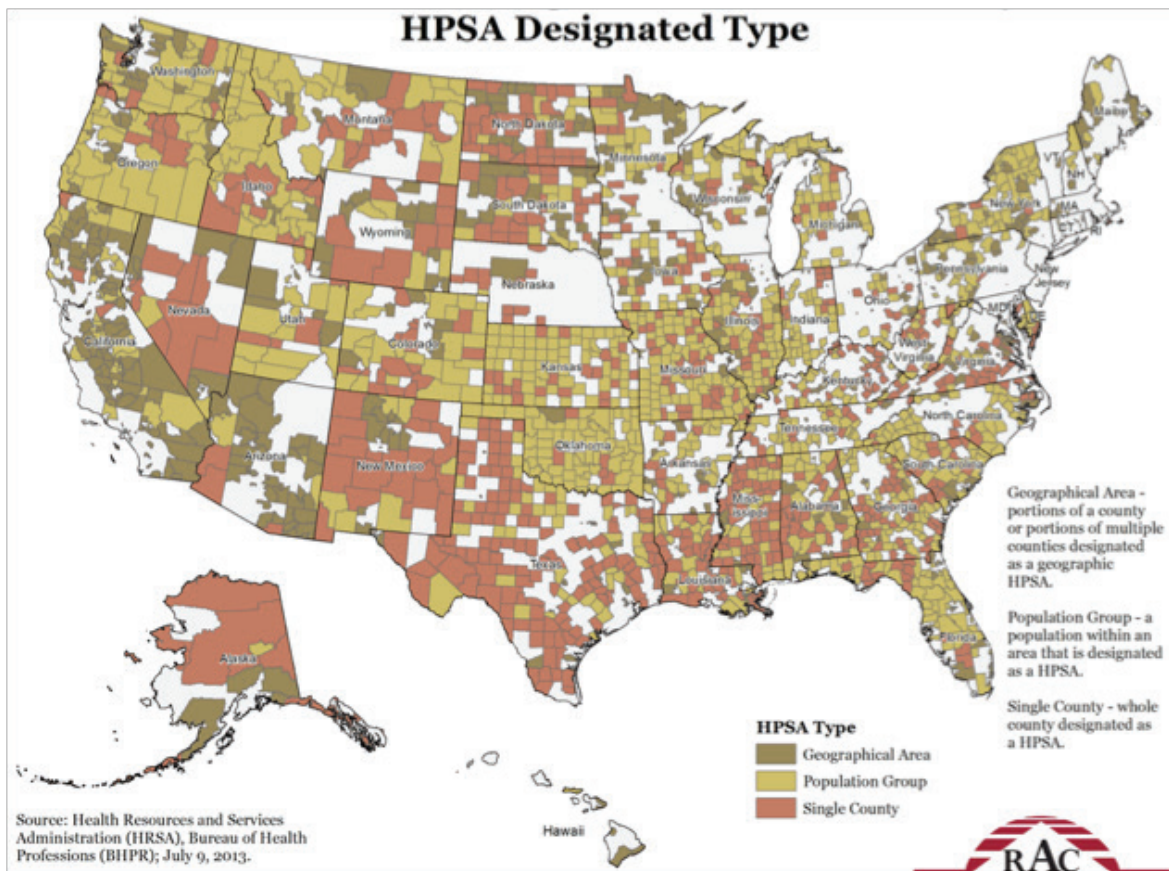
### National Outlook:

The U.S. Department of Health and Human Services Health Resources and Services Administration (HRSA) develops shortage designation criteria and uses them to decide whether or not a geographic area, population group, or facility is a Health Professional Shortage Area (HPSA) or a Medically Underserved Area or Population (MUA/P). HPSAs may be designated as having a shortage of primary medical care, dental, or mental health providers.

As of January 2013, across the country there were:

- 5,900 Primary Care HPSAs. Collectively, it would take approximately 16,000 practitioners to meet their need for primary care providers (a population to practitioner ratio of 2,000:1).
- 4,600 Dental HPSAs. It would take 6,600 practitioners to meet their need for dentists (a population to practitioner ratio of 5,000:1).
- 3,800 Mental Health HPSAs. It would take 2,200 practitioners to meet their need for mental health providers (a population to practitioner ratio of 30,000:1).

**Figure 12. Health Professional Shortage Areas (HPSA) – Primary Health HPSA Designated Type<sup>33</sup>**

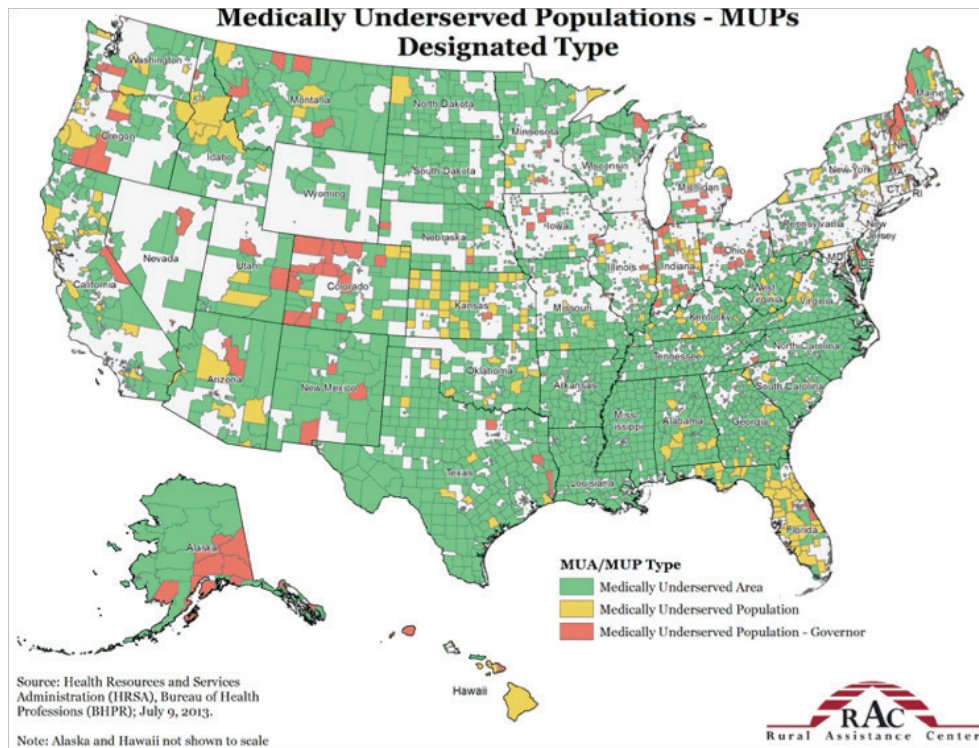


33. Rural Assistance Center. Health Resources and Services Administration (HRSA), Bureau of Health Professions (BHP); July 9, 2013. Note: Alaska and Hawaii not shown to scale.

Medically Underserved Areas (MUA) may be a whole county or a group of contiguous counties, a group of county or civil divisions or a group of urban census tracts in which residents have a shortage of personal health services.

Medically Underserved Populations (MUPs) may include groups of persons who face economic, cultural or linguistic barriers to health care.

**Figure 13. Medically Underserved Areas (MUAs) and Medically Underserved Populations (MUPs) Designated Type.**

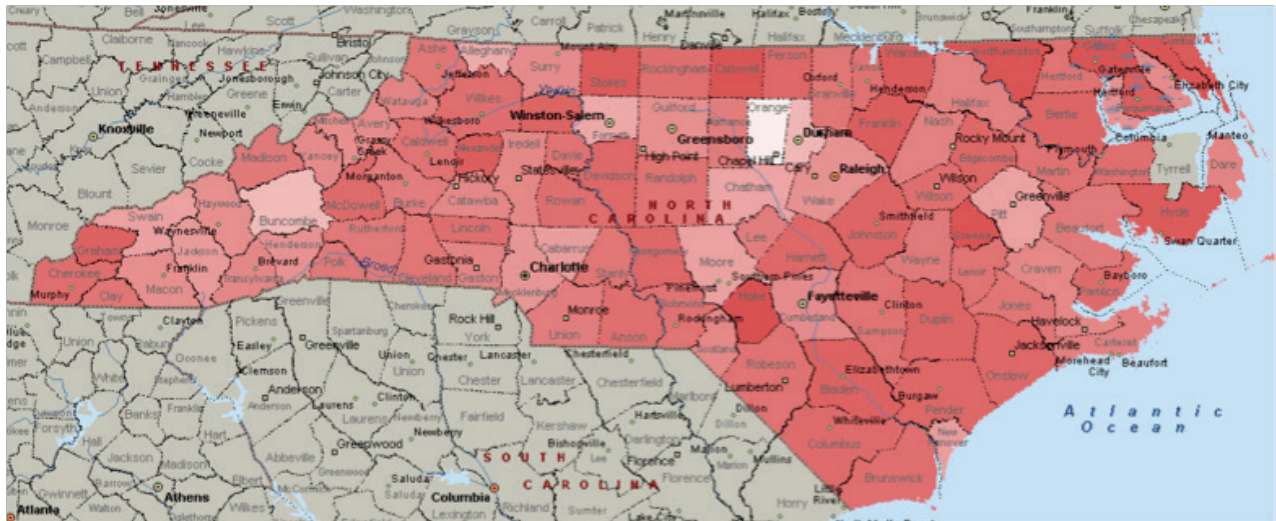


### North Carolina Outlook:<sup>34</sup>

Concerns about a national shortage of primary care physicians have been raised. Between 1991 and 2010, North Carolina’s primary care physician workforce grew at a rate of 42%, compared with a growth rate of only 35% for the state’s physician workforce as a whole. The overall supply of primary care physicians grew steadily from 1991 to 2010; supply has remained stagnant in the state’s most underserved areas. The gap between well-supplied and underserved counties is increasing. Between 1979 and 2010, the number of primary care physicians per capita increased in non-PHPSA counties and in those designated as part-county PHPSAs, but it remained stagnant in whole-county PHPSAs. In 2011, just 18% (n = 1,327) of primary care physicians had a primary practice location in a rural county, even though 2010 census estimates indicated that 45% of North Carolinians lived in a rural county.

34. North Carolina Medical Journal: [www.ncmedicaljournal.com/wp-content/uploads/2014/01/75119.pdf](http://www.ncmedicaljournal.com/wp-content/uploads/2014/01/75119.pdf)

**Figure 14. Primary Care Physician Rate by County, North Carolina, 2015**

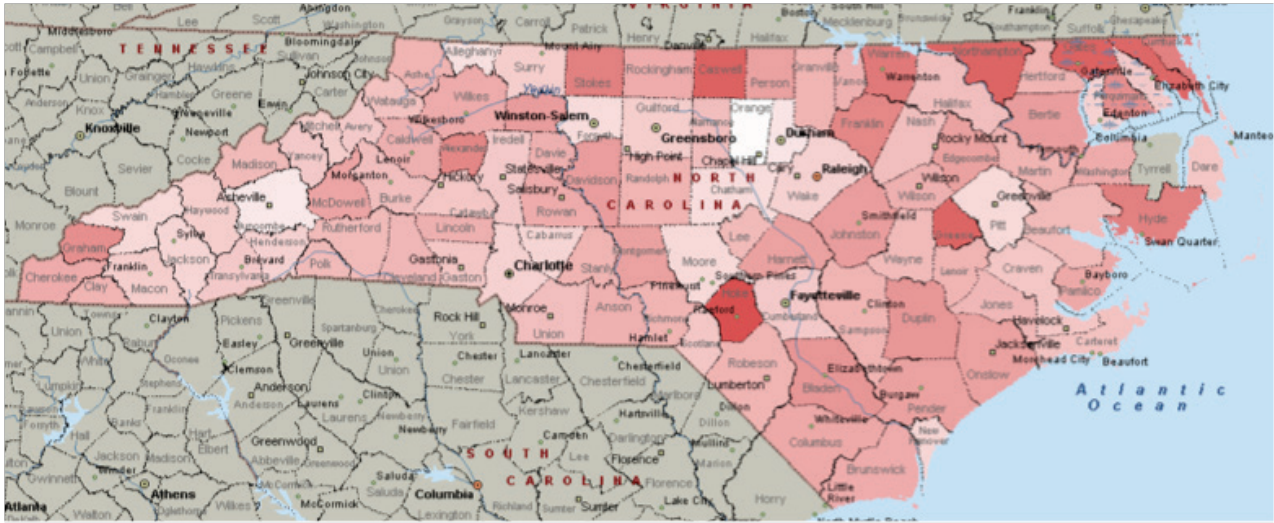


Figures 14 and 15 show the county-by-county PCP Rate (Figure 14) and PCP Ratio (Figure 15) for North Carolina.<sup>35</sup> In both figures, the darker regions show counties having fewer physicians. Both figures show us that western North Carolina looks to have areas with higher patient to physician ratios. Hoke County reports the worst PCP rate and ratio for the State of North Carolina.

COUNTY	PCP RATE	PCP RATIO
Hoke	6	16845:1
Gates	8	11869:1
Caswell	9	11609:1
Greene	9	10715:1
Northampton	9	10714:1
Camden	10	10090:1

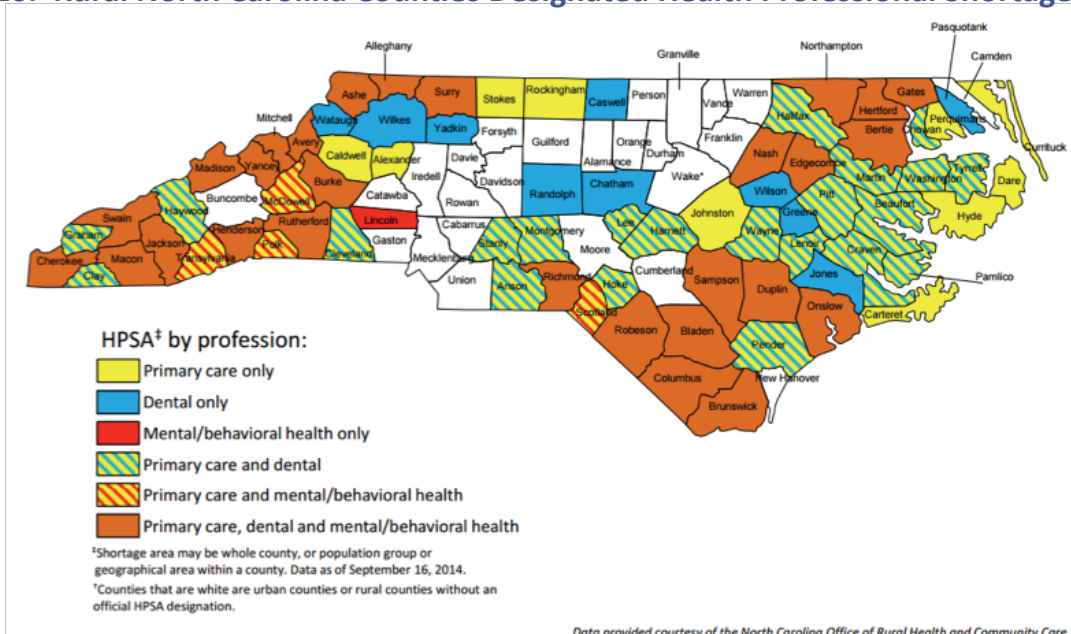
35. County Health Rankings. North Carolina. 2015.

**Figure 15. Primary Care Physician Ratio by County, North Carolina, 2015**



Many North Carolinians who need mental health services have not been able to receive such care. Mental health resources and services are overburdened in rural areas of the state. In 2011, 27 counties maintained services only as psychiatrists' secondary or tertiary practice locations, and 13 counties had no psychiatrist coverage at all. Just 13% (n = 149) of the state's psychiatrist workforce has a primary practice location in a rural county, and only five psychiatrists have a primary practice location in a whole-county HPSA. Rural counties with a shortage of psychiatrists often rely on primary care professionals for provision of mental health services, but these same counties also lag behind in terms of their supply of primary care providers.

**Figure 16. Rural North Carolina Counties Designated Health Professional Shortage Areas.<sup>36</sup>**



The Kaiser Family Foundation reports that there are 131 primary care HPSA designated regions in North Carolina. North Carolina is only meeting 48.92% of the primary care need. It will take an additional 189 practitioners across the state to remove the HPSA designations.<sup>37</sup>

36. North Carolina Office of Rural Health and Community Care.

37. Primary Care Health Professional Shortage Areas. Access to Care. State Health Facts. The Henry J. Kaiser Family Foundation. 2014.

## APPENDIX D: TRIPP UMBACH EXPERIENCE

Tripp Umbach’s consultation has resulted in the planning and establishment of new full-scale allopathic medical schools in Phoenix, Arizona; Miami, Florida; Grand Rapids, Michigan; El Paso, Texas; Athens, Georgia; and Scranton, Pennsylvania as well as new medical school programs in the accreditation process in Spokane, Washington; Las Vegas, Nevada; and Urbana-Champaign, Illinois. Tripp Umbach has completed more than 2,000 consulting assignments over the past 25 years for clients in health care, higher education, and academic medicine, including multiple economic impact studies for University of North Carolina School of Medicine and Carolinas Health System. Tripp Umbach is the leading firm in conducting economic impact studies for health care and higher education institutions, having measured the economic impact of every U.S. medical school and major teaching hospital since 1995.



### Tripp Umbach Health Science Feasibility & Planning Experience

FEASIBILITY STUDIES PROPOSED NEW MEDICAL SCHOOL	LOCATION	PRIMARY ROLE	STATUS
Michigan State University	Grand Rapids, MI	Economic Impact, Financial Review	First class in 2008
University of Arizona/ Arizona State University	Phoenix, AZ	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	First class in 2008
The Commonwealth Medical College	Scranton, PA	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	First class in 2009
Florida International University	Miami, FL	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	First class in 2009
Texas Tech University	El Paso, TX	Strategic Planning	First class in 2009
University of Georgia/ Medical College of Georgia	Athens, GA	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	First class in 2010
King College	Bristol, TN	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Did not move forward



FEASIBILITY STUDIES PROPOSED NEW MEDICAL SCHOOL	LOCATION	PRIMARY ROLE	STATUS
University of California	Merced, CA	Economic Impact, Financial Review	Did not move forward
University of St. Thomas	St. Paul, MN	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Medical School deemed not feasible
George Mason University	Fairfax, VA	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Medical School deemed not feasible. However, partnership program with established medical schools began in 2011.
Buchanan County	Grundy, VA	Strategic Planning, Economic Impact, Assessment, Financial Review	School of Optometry Opened in 2014
Louisiana College	Pineville, LA	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Did not move forward
Rochester Institute of Technology	Rochester, NY	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Medical School deemed not feasible. However, partnership program under development
New York Institute of Technology – College of Osteopathic Medicine	Middletown, NY	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Moved forward with Touro University
Washington State University Expansion in partnership with University of Washington	Spokane, WA	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Expansion to begin in 2012 from 20 students per class to 40 students
Ohio University expansion campus in Columbus, OH	Columbus, OH	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	New campus to begin enrolling students in 2013

FEASIBILITY STUDIES PROPOSED NEW MEDICAL SCHOOL	LOCATION	PRIMARY ROLE	STATUS
Indiana University School of Medicine	Evansville, IN	Strategic Planning, economic impact and business planning for biomedical campus in Evansville, In	Four year program began in 2013
Ohio University expansion campus in Cleveland with Cleveland Clinic	Cleveland, OH	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	New campus to begin enrolling students in 2015
University of Buckingham, England International Expansion	Nassau, Bahamas	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Deemed not Feasible
University of Adelaide	Adelaide, Australia	Feasibility for Partnership campus in United States	Deemed not Feasible
University of Nevada Reno and University of Nevada Las Vegas	Las Vegas	Feasibility Study and Economic Impact Assessment	In the Accreditation Process
Arkansas State University and New York Institute of Technology	Jonesboro, AR	Feasibility Study and Economic Impact Assessment	COCA Pre-Accreditation
Burrell College of Osteopathic Medicine at New Mexico State University	Las Cruces, NM	Feasibility Study and Economic Impact Assessment	COCA Pre-Accreditation
University of Illinois at Urbana-Champaign	Urbana-Champaign, IL	Strategic Planning, Economic Impact, Feasibility Assessment, Financial Review	Under Assessment