May 2017

The Economic Impact of Hospitals and Health Systems in North Carolina

Report

Prepared for—

North Carolina Hospital Association
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Cary, NC 27513

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RTI Project Number 0215601.000.001

NCHA North Carolina Hospital Association

RTI INTERNATIONAL

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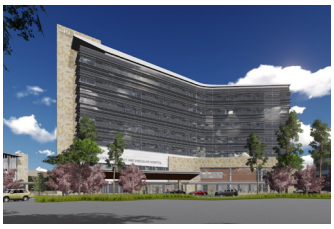
ECONOMIC OPPORTUNITIES

In 2015, NCHA members directly employed 162,000[1] people in North Carolina and spent approximately $24.8 billion on goods, services, and capital investment, which ripples through the state economy creating economic opportunities in other sectors.

Examples of recent capital investments include:

The $82 million investment in the Cherokee Indian Hospital which opened in 2015.



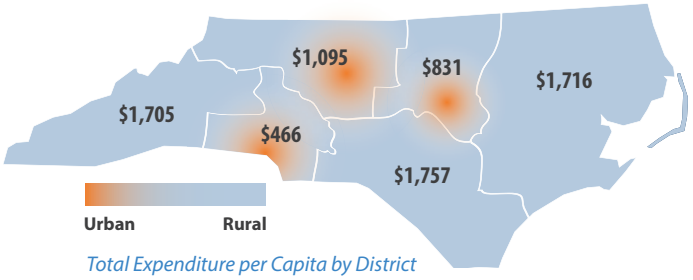
The $235 million investment in the North Carolina Heart & Vascular Hospital at UNC Rex Healthcare in Raleigh which opened in 2017.

KEY EMPLOYER

Healthcare systems are a key employer for most rural areas in North Carolina.

As of Q3 2016, the hospitals and health systems are one of the top 10 employers in at least 72 North Carolina counties, 48 of them rural.[2]

Hospitals and health systems also have a disproportionally large impact in the more rural regions of the state in terms of expenditure per capita.



Total Expenditure per Capita by District

TOTAL ECONOMIC IMPACT

NCHA members generate a total of $37.8 billion in State Gross Domestic Product and $22.4 billion in labor income across North Carolina, which supports nearly 395,000 jobs across both the hospitals themselves and the various industries with which they interact.

RANGE OF OCCUPATIONS

Health care systems employ people in a range of occupations at different wage levels.

For every 1 physician or surgeon directly employed by a hospital, there are:

- **11.2** Nurses
- **4.3** Healthcare Aides and Assistants
- **1.4** Therapists
- **5.3** Office and Admin Staff[3]
- **4.2** Technologists, technicians, and EMT's
- **1.3** Mgmt. Staff
- **0.6** Specialized Care
- **1.1** Bldg. and Ground
- **5.1** Other

WORKFORCE DEVELOPMENT

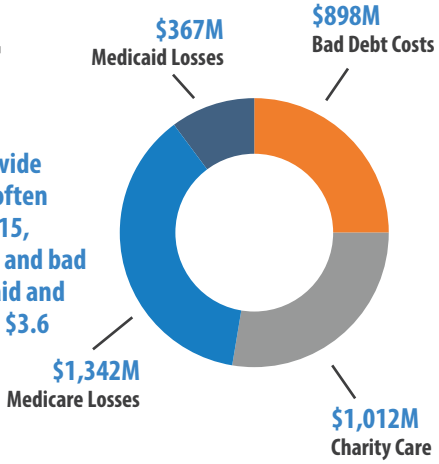
Health care systems are actively involved in innovative workforce development and training efforts.

Vidant Health's Project SEARCH helps youth with disabilities in eastern North Carolina find gainful employment.

Cone Health's partnership in the Union Square Campus helped bring healthcare education assets together in Greensboro.

ESSENTIAL SERVICES

Healthcare systems provide essential services that often go unreimbursed. In 2015, losses from charity care and bad debt along with Medicaid and Medicare losses totaled $3.6 billion.



[1] Full-time equivalents.

[2] RTI Analysis of NC Commerce Labor and Economic Analysis Division. Q3 2016. Quarterly Census of Employment and Wages (QCEW) Largest Employers. Accessed at http://d4.nccommerce.com/QCEWLargestEmployers.aspx.

[3] Office and Administrative Staff includes both clinical and non-clinical staff

Background on healthcare in NC

HEALTH OUTCOMES

According to America's Health Rankings,[4] North Carolina is ranked 32nd in the nation in terms of overall health (see Figure 1). North Carolina ranks 25th overall when specifically looking at health behaviors, like drug deaths, excessive drinking, and smoking. North Carolina's position compared with other Southern states is more favorable than national comparisons—NC is ranked 4th in the Southern census region. (see Figure 2)

North Carolina's strengths include low prevalence of excessive drinking, high Tdap (diphtheria, pertussis, and tetanus) immunization coverage among adolescents, and high immunization coverage among children. Health challenges in North Carolina include a high percentage of children in poverty (a major socioeconomic determinant of health outcomes), a high prevalence of low birthweight babies, and a high infant mortality rate (AHR, 2017).

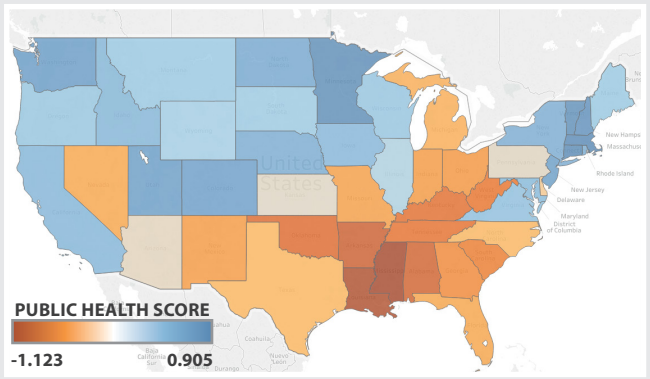
THE HOSPITAL SECTOR IN CONTEXT

The hospital sector makes up a significant portion of both North Carolina's gross domestic product (GDP) and total employment. Based on Bureau of Economic Analysis reports,[5] North Carolina's GDP in 2016 was $517.9 billion. NCHA member hospitals directly contributed $19.2 billion to state GDP, or 3.7% of the total. Jobs supported by NCHA members also made up a large portion of total employment in North Carolina. According to the Bureau of Labor Statistics,[6] total employment in North Carolina averaged 4,341,675 across all months in 2016. NCHA members directly employed about 162,000 FTEs or 3.7% of total employment in 2016.

THE HOSPITAL WORKFORCE

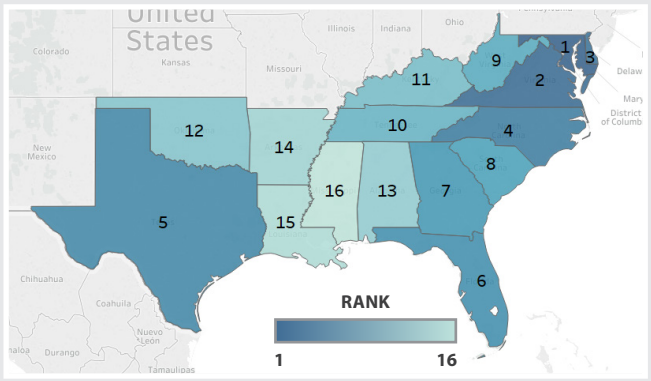
It takes people in a range of occupations and wage levels to keep hospitals operational. For every physician and

Figure 1. Map of Public Health Scores for the US



Source: AHR

Figure 2. Map of Public Health Rankings for the Southern Region



Source: AHR

[4] America's Health Rankings conducts the longest-running annual assessment of the nation's health on a state-by-state basis. For nearly 3 decades, AHR has analyzed a comprehensive set of data to provide a holistic view of the health of the United States. Data can be accessed at http://www.americashealthrankings.org/.

[5] U.S. Department of Commerce. (2017). North Carolina. Bureau of Economic Analysis. Retrieved from https://www.bea.gov/regional/bearfacts/pdf.cfm?fips=37000&areatype=STATE&geotype=3.

[6] U.S. Department of Labor. (2017). State and Area Employment, Hours, Earnings. Bureau of Labor Statistics. Retrieved from https://data.bls.gov/cgi-bin/dsrv?sm

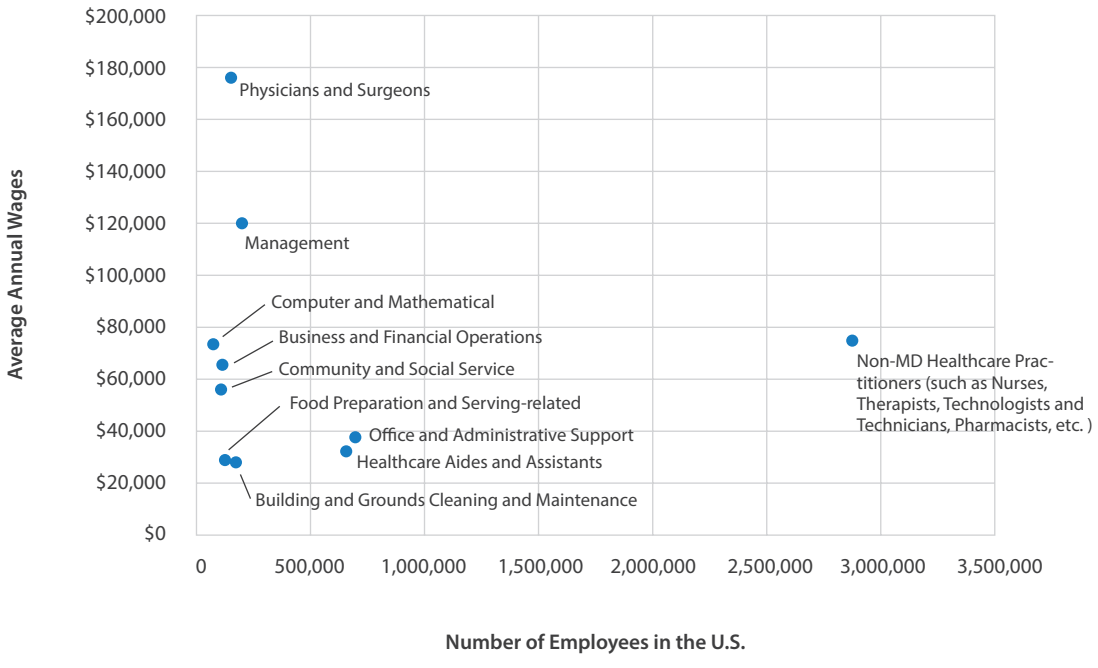
surgeon directly employed by a hospital, a wide variety of other staff play critical roles.

Hospitals have a mix of jobs along the wage scale (see Figure 3). Average salaries for physicians and surgeons are nearly $180,000 a year and those of management occupations average $120,000 a year. Health care practitioners make nearly $80,000 a year on average, and this group makes up more than half of the jobs in the sector. Computer, math, business and financial occupations typically make more than $60,000 a year. The lower-paying occupations in the sector are community and social services, food preparation and serving-related, health care support, office and administrative support, and building and grounds cleaning and maintenance occupations.

IMPACT ON RESEARCH

Health systems play a vital role in North Carolina's research economy. Health systems are helping to build the future of healthcare as testing grounds for innovative new treatments and therapies. North Carolina institutions are leaders in health-related research. Duke University ranked 8th in the nation, with the school of medicine receiving nearly $338 million in NIH research funding in 2016. The University of North Carolina at Chapel Hill ranked 15th in the nation in NIH funding, with the medical school receiving roughly $268 million in funding in 2016. Wake Forest University (Wake Forest Baptist Medical Center) ranked 49th, with $83 million in NIH awards and East Carolina University (Vidant Medical Center) ranked 116th, with nearly $6 million in NIH funding. Overall, these four medical schools affiliated with NCHA member health systems received a total of approximately $695 million in NIH awards.

Figure 3. Total Jobs and Average Wages for the U.S. Hospital Sector by Occupation



Source: Bureau of Labor Statistics, 2016

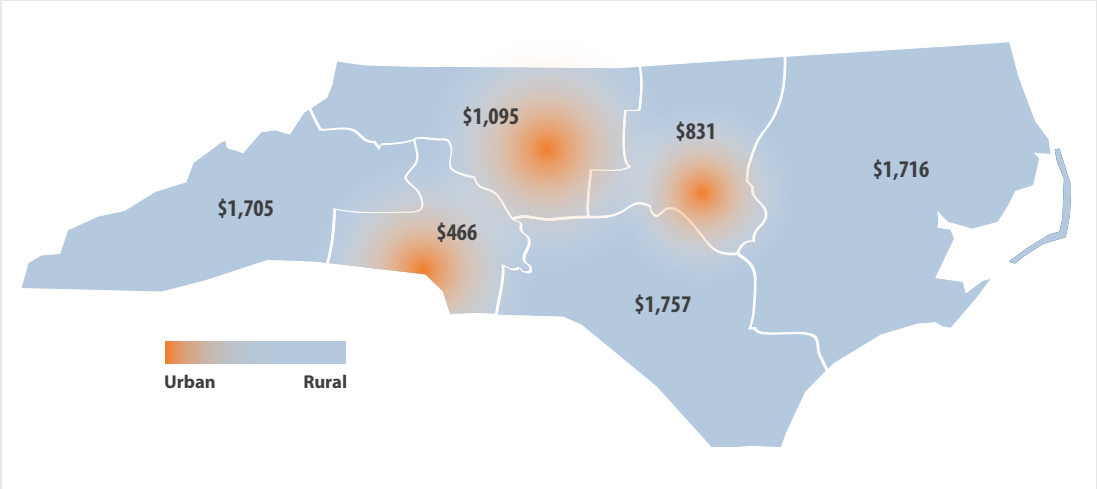
Economic Impact

The economic impact analysis in this report is structured as a benefits assessment of how the total annual expenditures of NCHA members ripple through the North Carolina economy. The analysis captures activity in industries that supply goods and services to NCHA member hospitals and health systems, including those industries' supply chains. The analysis also captures household wages and spending associated with the industry's ripple effects. A well-established approach called input-output (I-O) analysis is commonly used to estimate ripple effects in regional economies. I-O modeling tools, such as IMPLAN, produce results that rely on a certain set of economic assumptions and the input data. I-O models are essentially tabular representations of how industries transact with each other. To produce the best analytic results, RTI carefully characterized I-O model inputs based on data from a variety of sources including NCHA's Advocacy Needs Data Initiative (ANDI), which gathers spending and workforce data directly from its member hospitals. The ANDI database includes data for 123 members at the licensed hospital level.

NCHA members collectively spent a total of $24.8 billion in fiscal year 2015, directly providing 162,000 full-time equivalent jobs.

NCHA members collectively spent a total of $24.8 billion in fiscal year 2015, directly providing 162,000 full-time equivalent jobs. This spending included $11.9 billion in operating expenditures, $11.2 billion in payroll, and $1.7 billion in capital investments. Although absolute levels of annual expenditures tend to be higher in the more urbanized parts of the state, hospitals play a greater economic role in the more rural districts when accounting for population. (see Figure 4)

Figure 4. Total Expenditure per Capita by District

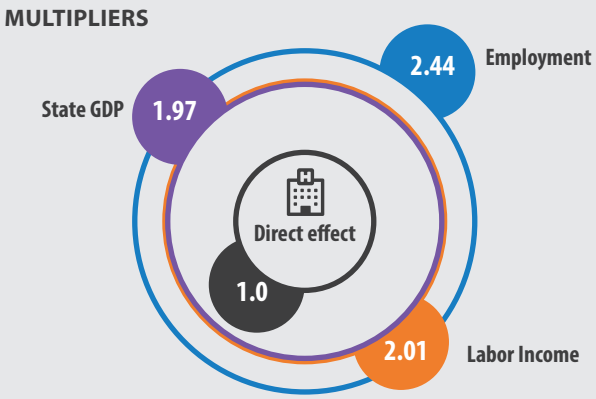


Source: RTI analysis of ANDI data and American Community Survey data.

We estimated three kinds of economic effects using the I-O model:

- Direct effects: These effects indicate the economic activity occurring within NCHA member hospitals and health systems in North Carolina. Examples include operating expenditures, payroll and benefits, and capital expenditures on property, plant, and equipment.
- Indirect effects: Also referred to as supply chain effects, indirect effects are the economic activity among businesses that supply goods and services to hospitals, businesses that supply those suppliers, and so on.
- Induced effects: Also referred to as household spending effects, induced effects result from economic activity among businesses where hospital-sector employees spend their wages, business that supply the goods and services they purchase, and so on.

Figure 5. Total Economic Impacts



Overall, NCHA members directly support $19.1 billion in state GDP, a key indicator of economic value and production in the state. Accounting for the indirect and induced effects, we estimated that total state GDP supported by NCHA members is $37.8 billion. NCHA members have roughly 162,000 direct employees, but in total they support nearly 395,000 jobs across the state in a variety of sectors. Figure 5 summarizes the aggregate results for each economic indicator.

TYPE OF IMPACT	EMPLOYMENT *Number of jobs*	LABOR INCOME *The value of wages, salaries, and benefits earned*	STATE GROSS DOMESTIC PRODUCT *A measure of the overall size of the economy*
Direct effect	162,025	$11,154M	$19,194M
Indirect effect	121,834	$6,485M	$9,940M
Induced effect	110,855	$4,802M	$8,657M
Total effect	**394,714**	**$22,440M**	**$37,792M**
Multipliers	2.44	2.01	1.97

Source: RTI analysis of ANDI data; IMPLAN 2013.

Put differently, for every 1 direct hospital job, there are 2.44 total jobs in the North Carolina economy. These "multipliers" are estimated for each indicator and are shown alongside the aggregate results in Figure 5.

Community Impacts

COMMUNITY BENEFITS

The economic impact of hospitals and health systems is clearly just one of many ways they contribute to North Carolina. Hospitals provide "community benefits" through unreimbursed costs for services provided, through expenditures for unbilled community health improvement activities, and through investments in health professions education and research. Hospitals may also contribute funds to community groups and participate in community building activities as part of their community benefits. All of these activities are part of North Carolina hospitals' collective mission to serve patients regardless of their ability to pay and to promote health in their communities.

There are four distinct categories of unreimbursed costs: bad debt, charity care, Medicaid losses and Medicare losses. In 2015, these four unreimbursed costs totaled $3.6 billion across all North Carolina hospitals. Despite these losses, hospitals and health systems continue to provide essential services like 24/7/365 emergency care and support a wide variety of activities to benefit their communities.

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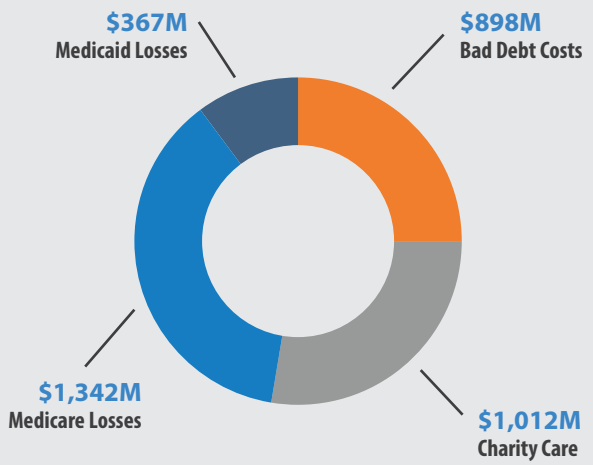
Figure 6. NCHA Member Unreimbursed Costs, 2015



NCHA MEMBER IMPACT PROFILES

Vidant Health helps youth with disabilities find gainful employment

Carolinas Healthcare catches lung cancer early, on the road

Cone Health partners with Greensboro area universities and community college on state-of-the-art nurse training facility

CAROLINAS HEALTHCARE SYSTEM'S MOBILE LUNG CANCER SCREENING UNIT

According to the Centers for Disease Control and Prevention, more people die from lung cancer than any other type of cancer. And for residents in rural communities, barriers to health care may inflate late diagnosis and complications. Less than 10% of physicians practice in rural communities, and the few physicians who do may not provide the full suite of services offered by large, urban facilities. Geographic, climatic, and temporal barriers, like long drive times or poor infrastructure, also make it difficult for people in rural areas to travel to other regions to access healthcare.[7]

Through the mobile lung cancer screening unit, the Levine Cancer Institute hopes to improve health outcomes by diagnosing these vulnerable populations at earlier stages, when lung cancer is more easily and more successfully treated.

Carolinas HealthCare Systems' Levine Cancer Institute is addressing the need for increased preventive health services in rural communities with a first-of-its-kind mobile lung cancer screening unit. The unit, funded by a grant from the Bristol-Myers Squibb Foundation, takes a portable computerized tomographic scanner to uninsured vulnerable populations in rural communities near Charlotte that are the least likely to seek preventive care or regular diagnostic testing. When diagnosed at late stages, lung cancer is nearly impossible to treat successfully and the few available treatments for late-stage cancer are expensive.

Through the mobile lung cancer screening unit, the Levine Cancer Institute hopes to improve health outcomes by diagnosing these vulnerable populations at earlier stages,

when lung cancer is more easily and more successfully treated. Diagnosing these patients at earlier stages is also a cost-saving measure. By the Levine Cancer Institute's estimates, treatment of early-stage lung cancer can cost between $100,000 and $150,000 with a success rate between 50% and 70%. In contrast, treating stage 4 metastatic lung cancer can cost between $500,000 and $750,000 with very little chance of successful treatment.

Carolinas HealthCare System, the Levine Cancer Institute, and the mobile lung cancer screening unit offer more than just diagnostic services. They also focus on connecting patients who are diagnosed with lung cancer, with affordable treatment options. In addition, the mobile lung cancer screening unit attempts to educate vulnerable populations about better health practices, and connects them with resources and materials to help them quit smoking and improve other healthy behaviors.

Carolinas HealthCare System's mobile lung cancer screening unit is part of a wider pattern of North Carolina hospital programs focused on the whole health of patients. Hospitals have recognized that by addressing patient behaviors, improving patient trust in healthcare facilities, and taking their services directly into vulnerable communities, hospitals can dramatically improve health outcomes.

[7] Stanford University. (2010). Healthcare disparities & barriers to healthcare. Retrieved from http://ruralhealth.stanford.edu/health-pros/factsheets/disparities-barriers.html

CONE HEALTH PARTNERSHIP FOR COMMUNITY & CAREER DEVELOPMENT: UNION SQUARE CAMPUS IN GREENSBORO, NC

The Union Square Campus in Greensboro is the culmination of a strategic public-private partnership to better leverage the region's higher education assets and support workforce needs in high-demand, high-paying jobs in nursing and healthcare.

The project partners are:

- Cone Health,
- University of North Carolina at Greensboro (UNCG),
- North Carolina A&T University (NC A&T),
- Guilford Technical Community College,
- The City of Greensboro,
- Guilford County,
- The Redevelopment Commission of Greensboro, and
- The South Elm Development Group.

The partnership came together over several years, beginning when Ed Kitchen, former city manager and CEO of the Bryan Foundation, started to convene leadership from university and community college partners. The group discussed ways to bring together their assets to do something innovative that would support regional economic development. Based on rising demand for nurses, the group ultimately decided on the idea of a single state-of-the-art campus for nursing training across institutions.

Early on, Cone Health administrators saw the opportunity this project would create for the health system to better connect with nursing programs at UNCG and NC A&T and to benefit the larger community. For example, nursing students could be trained on Cone Health's IT and other systems. As the community's largest private, not-for-private employer, Cone Health played a critical role, ultimately committing to move their nursing and simulation labs to the Union Square Campus. This was particularly significant at a time when the state was not investing in these programs.

As the community's largest private, not-for-private employer, Cone Health played a critical role, ultimately committing to move their nursing and simulation labs to the Union Square Campus.

The project was financed through about 15 different sources, including partners and local foundations. The City of Greensboro provided the land as a redevelopment site

because the area needed a boost and contributed funds for a parking area. A state appropriation from the NC General Fund came late in the project.

From a workforce perspective, not only has the project allowed all students to access state-of-the-art equipment, but it also has provided an opportunity for younger students to interact with other health professionals at various stages in their careers.

From an economic development standpoint, the Union Square project is helping to revitalize a neglected part of the downtown area. Streetscaping associated with the project has improved the aesthetics of the area and some additional investment already has been spurred nearby.

The future vision is for the Union Square Campus to grow into a larger footprint with other educational and training assets that bring together partners from across the city. The same group of higher education stakeholders is meeting to discuss potential ideas for a second phase, which could include a cybersecurity training center, a design school, or a center focused on advanced manufacturing.

VIDANT MEDICAL CENTER EMPOWERS YOUTH WITH DISABILITIES WITH PROJECT SEARCH

In 2015, Vidant Medical Center launched a workforce program in partnership with RHA Health Services, Pitt County Schools, and the N.C. Division of Vocational Rehabilitation Services to help young people with disabilities secure health-related jobs.

The program, called Project SEARCH, is a nationally proven model developed by Cincinnati Children's Hospital that helps disabled individuals transition from high school to stable employment opportunities in the health sector. Participants receive training and job coaching and have the opportunity to explore different careers and job types. The national program has a 90% retention rate and a proven track record; 65% of its graduates attain employment. Project SEARCH provides services to students in the cohort program during high school and after they graduate, supporting them through their job search, job placement and even through the job-onboarding process to make sure the transition goes smoothly.

The Vidant program coordinator who started this program was inspired and saw alignment between Project SEARCH and Vidant's mission statement "to improve the health and well-being of eastern North Carolina." The program helps young people with disabilities in a very targeted, intentional way so that they can gain independence.

As a host business for Project SEARCH, Vidant serves as a physical training ground and experiential laboratory where students with disabilities can gain real-world experience.

As a host business for Project SEARCH, Vidant serves as a physical training ground and experiential laboratory where students with disabilities can gain real-world experience. The medical center provides a dedicated classroom on–site for Pitt County schools to provide daily traditional classroom instruction. Students rotate through entry-level positions in various departments at the medical center, performing jobs such as stocking, scanning, grounds-keeping, food service and administrative tasks. More than 15 departments at the medical center have worked with students. The Vidant program coordinator who started this program noted that these students bring their own skill sets and like any of us can thrive given the right environment. As an added benefit, Vidant staff who have limited experience working with this population have received training and a first-hand appreciation for the students' unique skills and abilities.

By all reports, the experience at Vidant Medical Center has been extremely positive; several students from the first cohort have found gainful employment at Vidant and other health-related employers in the region. The program has gone so well that other entities in North Carolina that are interested in starting similar programs have contacted Vidant for information. Vidant continues to serve as a host business to meet the local demand for Project SEARCH.

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