

**MAJOR TRENDS FACING
NORTH CAROLINA
IMPLICATIONS FOR OUR STATE
AND
THE UNIVERSITY OF NORTH**

University of North Carolina Tomorrow



Trends in Health Care in North Carolina

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Commission

Trends in Health Care in North Carolina and the UNC System

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Health care in North Carolina is an important industry accounting for as much as \$60 billion or 18% of the total state product (estimates based on CMS and North Carolina Chamber data). The state has a robust health care system with 125 hospitals and over 18,000 physicians, 80,000 registered nurses, 7,500 pharmacists and 3,800 dentists. Yet the state remains in the lower half of the national rankings for its density of overall health care workers to population and near the bottom for the number of dentists. There is no consensus on the ideal mix and number of health care practitioners for a given population, but there is evidence that the State has not yet achieved an optimal supply of medical and health care resources to match its population's health care needs. The State continues to have primary care health professions shortage areas and physician, nurse, dentists and other professions are in need in many communities and institutions.

The state still ranks low in health status among the states and there is a recognition that the relatively lower income and educational attainment of the State's citizen's contributes to our higher death rates, especially our chronic disease and infant mortality rates.

The dominant trend confronting the state's health care industry, the health professions and the University system in North Carolina is the rapid growth of the population and the even higher growth rate among the elderly. North Carolina is now home to more than 8.5 million people growing at a rate of over 1.8% per year compared to a national growth rate of less than one percent. Our residents are young—25% are children 18 and under—as well as old, 12% are over 65. The over 65 population has grown by more than 50,00 people in the past 5 years alone with the oldest old group, those over 85, having doubled in the last 7 years. A growing population requires more health care resources and an aging population exponentially more.

Health Care Practitioners

The state has seen rapid growth in its health care sector due to important policy initiatives undertaken in the 1970s that saw the establishment of the Area Health Education Centers program and the opening of the East Carolina University Medical School. The AHEC system expanded access to continuing medical education and field training for all health professions and the ECU medical school has been near the top of the ranking of medical schools for its production of primary care physicians and for physicians who remain in their home state. As a result, NC, which was in the lowest quartile of states for its doctor-to-population ratio in the 1970s, moved up to 24th after 2000. These programs and institutions remain important to the supply of medical practitioners for the state along with the University of North Carolina at Chapel Hill Medical School and the two private medical schools in the state. However, the broader University System serves as an indirect contributor to practitioner supply, and physicians and other skilled professionals tend to cluster around university and college towns whether or not there is a medical or other health professional school.

The future of the physician supply in the State is cloudy. Recent trends point to a slow down in the rate of growth to where it may drop below population growth rates (NC IOM, 2007). The

North Carolina Institute of Medicine anticipates that by the year 2020, the state would need an additional 2,000 more physicians above what it is expected to gain to maintain its current population-to-physician ratio. The issue is made more pressing due to a national trend toward a physician shortage with the national number of medical school positions and post-graduate residency slots having leveled off over the past ten years and the importation of international medical graduates slowing in the last five years. North Carolina is finding find itself in the position of having to compete harder in a tighter national market over the coming years. This has important implications for the University system as it explores its role in the training of physicians for the state as well as providing the quality of life opportunities for physicians and their families.

The federal government has cut back on support to medical education through its Title VII (Public Health Service Act) program, cutting almost three-quarters of its programs that support primary care training, diversity programs, dental education, faculty development, interdisciplinary training, and family medicine development. North Carolina has lost over \$5 million in program and project support over the past year from cuts to these programs. The programs are located in the medical, dental and nursing schools as well as on other campuses as part of pipeline development programs. The statewide minority health careers support program took a particularly heavy cut and is now operating on a much smaller scale. These cuts in federal program funds will cripple many of the activities that support minority inclusion in the health care workforce.

The North Carolina Institute of Medicine (NC IOM) has recommended expanding medical school classes and for the state to consider either a distributed approach to undergraduate medical education or the opening a new allopathic or osteopathic medical school in the State. By mid-2007, discussions were underway for expansions but no firm plans have been announced.

A similar situation has been seen for the supply of nurses. North Carolina, however, is not identified as currently in a shortage situation by the US Bureau of Health Professions, but a shortage is anticipated starting after 2009 with long term predictions of a shortfall of nurses of 9,000 in 2015. There is sufficient re-entry in the market and nurse education programs have expanded to meet current demands but those short term changes will not cover the anticipated increases in demand. However, that cannot be sustained given that the population of nurses is now much older than in the past – the average age of nurses in the state rose from 38.3 years in 1983 to 43.6 in 2001 and almost 50 years in 2006. To replace the nurses leaving the workforce, we will need more teachers, and nurse training programs across the state report difficulty in hiring and retaining nurses and other faculty with the appropriate training to teach. The state's university system has been deeply involved in the development of policy to improve the overall supply of nurses and to train nurse faculty. However, there are tensions between groups that see a need for more associate degree nurses in bedside positions, those who want to diversify training and move back out of academic settings into hospitals, and those who see the need for more advanced degree nurses both for training and for more complex clinical positions that can ease the demand on physicians.

The North Carolina Institute of Medicine issued a report on the nursing workforce in 2004 that made several recommendations that touched on the University system: strengthening the faculty

fellows program for nursing, increasing funding to AHECs to improve articulation across RN-BSN-MSN program, and expansion of enrollments in their UNS system prelicensure BSN programs. Further, the Comprehensive Articulation Agreement between community colleges and UNC System campuses should be further refined and implemented fully. Nursing education programs and clinical agencies should work together to develop creative partnerships to enhance/expand nursing education programs and help ensure the availability and accessibility of sufficient clinical sites

Employment in the health sector is expected to continue to grow rapidly.

Sector	2002 employment	2012 employment	annual growth rate
Ambulatory health	129,810	182,190	3.45
Hospitals	158,120	198,030	2.28
Nursing and Residential care facilities	85,840	108,180	3.13
total	373,770	489,030	30% total growth over 10 years

This annual growth rate in health care employment of over 3.0% is the highest of any sector other than “Administrative and Support services” and represents an opportunity for workers in contracting industries to retrain for higher or replacement wage positions. (NC ESC, 2007).

The “Allied Health” field is seen as an important area of future employment in the State as well as a required set of skills to maintain an effective healthcare delivery system. Demand for therapists is strong because of the aging population. Monitoring vacancy ads for allied health professions in 10 NC newspapers distributed across the State, a UNC research group found the greatest number of ads were for physical therapists (31%), emergency medical technicians (14%), and occupational therapists (13%) (Thaker et al. 2006). The vacancy rates varied across regions but were highest in the more rural and eastern parts of the State.

One strength in the State is the ability to quickly understand the status of the health professions and their distribution due to the investment by the AHEC system in a Health Professions Data System (HPDS) that annually inventories 16 licensed health professions (www.shepscenter.unc.edu/hp/). In recent discussions concerning the need for a new dental school and for the expansion of medical school classes, the Center has been able to provide accurate and objective data to policy makers to assist in their decisions. The HPDS, which is based at UNC-CH but serves the entire state and the University system, has depended on federal funds for most of its support while the latter has a state appropriation

Hospitals and Health Care Facilities

The hospital sector in North Carolina is vibrant and all but a few hospitals are operating with sufficient margins to meet their missions. Only one small hospital in the state has been forced to close in recent years and the state has added a new hospital on the Outer Banks to serve the rapidly growing population in that region. There are 114 acute care hospitals in North Carolina. There has been little recent growth in the number of hospitals and acute care beds over the past 10 years. The newest hospital in the State, the Outer Banks Hospital, was opened in 2002.

Hospitals are often a key element of local economies. For example, the Cannon Memorial Hospital is the largest employer in rural Avery County, and health care systems in the larger counties account for larger proportions of the overall workforce, such as in Pitt County, where Pitt County Memorial Hospital is the largest single employer in the county.

The North Carolina State Medical Facilities Plan anticipates a need for 45 additional acute care beds in the Charlotte Region and 47 new beds in the Raleigh region by 2012. These beds are in the planning stages and hospitals in those regions are looking to expand even more in the near future.

The University system supports hospital management and operation by training administrators in several graduate and undergraduate programs in health administration. North Carolina functions under a relatively tight Certificate of Need law which controls the growth of capital resources in health care. The effectiveness of this law in controlling costs and ensuring access to care has been controversial, with strong advocates on both sides of this issue. However, the law has kept hospital and technology growth rates in proportion with population growth and the state. With one acute care hospital bed per 325 persons, the state ranks just 27th in the nation.

The State also is home to a number of long-term and behavioral health facilities including: nursing care facilities, adult care homes, home health service agencies, hospice services, end-stage-renal disease dialysis facilities, psychiatric inpatient services, substance abuse inpatient and residential services and intermediate care facilities for the mentally retarded. All of these health care units require skilled staff as well as lesser trained but also skilled direct care workers. The University system trains the more skilled workers as well as managers and administrators and the system depends on a steady stream of trained associate degree workers from the community college system to maintain quality as well as access. These facilities are part of an overall system of caregiving where the workforce is required to have a minimum skill set in human health and science as well as scientific literacy. The University system supports continuing education through the AHEC system as well as providing the basic and advanced training in degree and certificate programs.

Costs and The Economics of Health

The growth of health care costs is viewed by many as a problem of affordability but it also reflects an important sector of economic growth and opportunity. Improvements in health status and longevity come at a cost and, more and more, we are having to pay for healthier and longer lives. It is part of the role of the University to help its citizens understand this tradeoff as well as to support efforts to make the health care system as efficient and accessible as it can be. This will require a fusion of disciplines and points of view to help North Carolinians benefit from the advances of sometimes costly technology while maintaining a fair and equitable system of care.

North Carolina is seen to be a “low-to-moderate” state in its costs profile. (Dartmouth Study). The costs of medical care are a national concern with their effects felt across North Carolina. The NC Chamber indicated that 32% of NC industrial companies identify the price of medical care as the most important issue they face in their business (Tannenbaum, 2007). National efforts to reform health care financing have been, to date, only partly successful and there is

likely to be another round of seriously considered proposals to develop some form of universal coverage or to rein in costs increases. North Carolina has not been in the lead in these initiatives but the state may become more active as administration priorities change or there is substantive national legislation passed. This will require the state's universities to respond to help interpret policy options, generate estimates of program and policy effects on the state, as well as serve as the incubators for ideas and options that the state can lead with.

Costs: Personal Health Expenditures (PHCE) in North Carolina.

Year	Total NC Health Expenditures (\$)	Gross State Product (\$)	Percent of GSP	NC share of US PHCE
1980	4,210 million	59,303 million	7.1%	2.0%
1993	18,515 million	167,200 million	11.07%	2.4%
2004	44,588 million	323,962 million	13.76%	2.9%

2004 annual growth rate of Medicare NC 11.4% US 10.1%
 2004 annual growth rate of Medicaid NC 14.5% US 7.6%
 2004 annual growth rate of GSP NC 5.2% All States 7.0%
 (CMS, 2007).

Health System Performance and Health Status in North Carolina

North Carolina ranked 30th among all states in Health System Performance (Commonwealth Fund, 2007), 32nd in access, 22nd in quality, 22nd in avoidable hospital use and costs, 32nd in equity and 34th in healthy lives. If North Carolina could improve to the level of the “best-performing state” in the Commonwealth ratings, there would be 495,775 fewer uninsured; 309,982 children with a medical home and \$34,954,000 would be saved in reduced Medicare admission. (Commonwealth Fund, 2007)

In the United Health State Rankings, North Carolina ranked 36th, down from 29th in 1998. Improvements since 1990 have been seen in immunization coverage increasing by 4%, a reduction in infectious disease prevalence by 13% and a decrease in smoking of 28%. However, the percent of the population uninsured increased by 27%, health literacy remains low, and there is a persistently high level of infant mortality and smoking relative to the rest of the US. (www.unitedhealthfoundation.org/ahr2006.html). Much of the effort to improve health through prevention and health promotion is done by the state's public health system.

The Division of Public Health in the State's Department of Health and Human Services supports the State's 85 local health departments and does this with the close support of the UNC School of Public Health. East Carolina University has recently opened its Master of Public Health Program to add to the cadre of trained public health workers and healthcare professions with public health training. Still, there remains an emerging crisis in the public health workforce as local systems find it difficult to support the necessary core public health services with existing human resources. (NCIPH, 2006)

North Carolina's state budget for health and human services for FY 2007-8 is \$4.09 billion; \$2.92 billion of that for the Medicaid program and \$59.4 million for Health Choice, the companion program for low income children. These programs and their management are very important to the future fiscal strength of the state as well as its overall health. The universities in

the state contribute to the analysis of data for the state Medicaid agency, the General Assembly and the Governor’s office, but there is little formal linkage between the substantial analysis and research resources in the universities and the agency itself. This is not the case in many other states where there is direct involvement of university campuses; the partnership between Maryland and the University of Maryland-Baltimore is a leading example.

Information Technology

The United States lags behind the world in the adoption of information technology in its health care system. By some accounts the US languishes in 20th place in terms of electronic prescribing and electronic health records. North Carolina is ranked #7 among states for electronic prescribing (www.surescripts.com/Safe-Rx/northcarolina_pr.aspx) and the state is seen as a player but not a leader in the push for the electronic medical record or for the development of integrated data systems for health care transactions. Three health systems in NC are listed among the “100 Most Wired Hospitals and Health Systems” (Carolinas HealthCare System, Charlotte; Duke University Health System, Durham; University Health Systems of Eastern North Carolina, Greenville).

The initial set of Regional Health Information Organizations (RHIOs), which are intended to serve as models for data system development in health care, were established in 2005 and 2006 with the North Carolina Healthcare Information and Communications Alliance being designated as a regional RHIO. Its work has been more as a convener than as the implementer of structural changes and has assisted in the development of an emergency room data base and an immunization registry. The University system can and should do more to become involved in this process of creating standards for communication and accountability in the healthcare delivery system through the adoption of electronic standards and systems.

The state maintains a health data system in its State Center for Health Statistics, but its resources are stretched thin. The several campuses and the AHEC system draw on this system for background data and for research purposes but many data streams are distributed and not easily accessed. The University system can play a role in the coordination of these data streams as well as host a statewide data network for research as well as policy decision support. This might include an ongoing survey of population health status to supplement the work of the State Center.

Research and Development in Health Care

The universities in North Carolina contribute significantly in the health-related research and development. In 2006, the state received over \$933 million in grants, awards and construction funds from the National Institute of Health. Twelve campuses of the UNC system were recipients of over one-third (\$327,319,257) of that amount and many of the private sector recipients were associated with universities in collaborative projects.

2006 NIH Grants	
ECSU	\$216,027
FSU	\$1,087,569
ECU	\$6,419,545
NCCU	\$4,269,725
NCSU	\$14,886,792
UNCCH	\$289,214,216
UNCP	\$440,572
UNCW	\$2,490,686
NCAT	\$1,241,507
UNCC	\$3,456,440
WSSU	\$1,201,251
UNCG	\$2,394,927
Total	\$327,319,257

The university system has also been instrumental in the development of many health related research and development companies in the state. Quintiles, Transnational

developed out of work by a University faculty member, and the pharmaceutical research support sector has other spin-offs and related companies in North Carolina due to the success of Quintiles. Major pharmaceutical companies in the state also collaborate closely with university researchers on several campuses in their R&D work.

In the summer of 2007, the North Carolina General Assembly made significant investments in University-based health research with multiple appropriations. The North Carolina Research Campus at Kannapolis received \$8.5 million in recurring and \$8 million in non-recurring funds and a significant portion of their work focuses on health related investigations, especially in the area of nutrition. The University of North Carolina received \$5.6 million in recurring funds in the 07-08 fiscal year and 15.5 million in 08-09 in general fund support for cancer research with future funds transfers amounting to \$50 million per year in FY 09-10 and annually thereafter. This amounts to the equivalent of a \$1 billion endowment to the University for future cancer research and will place cancer research on the highest level in the state. The Biomanufacturing Research Institute & Technology Enterprise (BRITE) at NCCU received \$1 million in additional recurring operating funds and NC State University received \$1.5 million to expand the Center for Bioenergy Technologies. NC A&T and UNC-G were provided \$1.4 for the creation of a joint graduate school of Nanoscience and Nanoengineering, a field that has important applications in health care. A special “research competitiveness fund” to support strategic investments in emerging areas of important to the economic competitiveness was provided by the General Assembly to encourage innovation across all the UNC campuses. This will likely translate into substantial advances in medicine and health care.

Healthcare and Economic Development

At the local level, health is an economic driver creating jobs, increasing wages for health care personnel, expanding local tax revenues, and increasing demand for goods and services (Effects 2005, 2). Construction of new and expansion of existing health care facilities is a continuing process in the state and contributes to other sectors. The University of North Carolina at Chapel Hill is involved in several current capital projects and the ECU Brody School of Medicine will open its cardiovascular institute and recently completed a health sciences complex to house its school of allied health and other departments. UNC-Charlotte opened its new allied health sciences building this spring. The continuing expansion and growth of the health care sector will stimulate even more capital investment. The University system should recognize its role in planning and coordinating this growth.

The economic benefits of healthcare tend to be concentrated in cities with hospitals and larger institutions, and the health care delivery system must recognize its responsibility to provide for rural and less developed areas of the State.

Health Care Access and the University System

17.2% of the residents of North Carolina (1.3 million) lack health insurance (Holmes and Ricketts, 2005). For people under 65 who do not have access to Medicare, the estimated percentages ranged from 13.4% to 27.5%. The 5 counties with the lowest percentages of uninsured were Wake, Orange, Mecklenburg, Union, and Cabarrus. The 5 counties with the highest percentages of uninsured were Tyrrell, Hyde, Greene, Duplin, and Robeson. Absolute numbers of uninsured correlated with overall populations – the 5 counties with the highest

numbers of uninsured were Mecklenburg, Wake, Guilford, Cumberland, and Forsyth. (Holmes and Ricketts, 2005). New immigrant growth is rapid in North Carolina. Total Medicaid spending on emergency medical care for recent and undocumented immigrants increased by 28% between 2001 and 2004 (\$41.2 million to \$52.9 million). (Dubard and Massing 2007)

Much of the burden of the uninsured is taken on by public hospitals including those in the UNC system which have mandates to serve the poor. Caring for these uninsured residents may disproportionately affect the revenue of the health care centers in the UNC system. The UNC system is seen as a part of the medical safety net and the health professions schools contribute to charity care as part of the training of students in clinics and hospitals. Many of the AHEC associated clinics take care of much higher proportions of the uninsured and Medicaid-covered patients than other clinical settings. The Charlotte, MAHEC and Coastal AHEC clinics had 45% or greater of their payments from Medicaid. (NC IOM, Healthcare Safety Net)

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