

# **Monitoring the Progress of North Carolina Graduates Entering Primary Care Careers in North Carolina**

**October 2013**

Submitted by the University of  
North Carolina Board Of Governors in response to General Statute 143-613 as amended by  
Chapter 507 of the 1995 Session Laws (House Bill 230) of the  
North Carolina General Assembly

# **Monitoring the Progress of Graduates Entering Primary Care**

## **Introduction**

This report, which is submitted by the University Of North Carolina Board Of Governors to the General Assembly, presents information on the ongoing progress of entry into primary care careers by graduates of the four schools of medicine in the state.

## **Background**

During its 1993 session, the North Carolina General Assembly expressed its interest in expanding the pool of generalist physicians for the state. In Senate Bill 27, as amended by House Bill 729, the General Assembly required that each of the state's four schools of medicine develop a plan with the goal for an expanded percentage of medical school graduates choosing residency positions in primary care. Primary care was defined as family practice, internal medicine, pediatrics, and obstetrics-gynecology. It set the goal for the East Carolina University (ECU) and UNC Schools of Medicine at 60 percent of graduates entering primary care. For the Wake Forest University and Duke University Schools of Medicine, it set the goal at 50 percent.

## **The Data**

This report provides information from the Wake Forest University School of Medicine, the Brody School of Medicine at East Carolina University, Duke University School of Medicine and the University of North Carolina at Chapel Hill School of Medicine. Each of the four schools of medicine has committed to developing a common database to track medical students. At the request of the four schools, the AHEC Program has assumed responsibility for developing and managing the common database in association with the Sheps Center for Health Services Research at UNC-CH. The development of a common database to track medical students has required a complex process of merging two national data sets, a state data set, and files in alumni and student affairs offices of the four medical schools. The national data sets include the graduate medical education tracking file of the Association of American Medical Colleges and the physician master file maintained by the American Medical Association. The state data set used is the North Carolina Medical Board's file for physicians licensed in North Carolina. The format for the information on medical students is consistent with and comparable to the baseline information provided in the May 1994 report "Expanding the Pool of Generalist Physicians for North Carolina." The term "primary care" includes family medicine, general pediatric medicine, general internal medicine, internal medicine/pediatrics, and obstetrics/gynecology. In addition, because of their importance in the care of rural and underserved communities, we have included data on general surgery and psychiatry.

## **The Entry of Medical School Graduates into Careers in Primary Care**

The General Assembly established goals for each of the four schools of medicine for entry of their graduates into primary care careers. For the UNC School of Medicine and the Brody School of Medicine at East Carolina University, the General Assembly established a target of 60 percent of the graduates to enter careers in primary care. For the Duke and Wake Forest University Schools of Medicine, the target set was 50 percent of graduates in primary care. Our major emphasis is retention in primary care after completion of residency education.

### **Retention of Graduates in Primary Care: Class of 2007**

Although initial choice of residency is important, a more important indication of practice in primary care is reflected in data on graduates five years after graduation. Table I-1 shows the percentage of 2007 graduates of each of the four schools who made an initial choice of primary care. Table I-2 shows the same graduates and the percentage that remained in primary care five years (in 2012) after graduation.

The total number of medical graduates in 2007 was 416. Of the 411 graduates in 2007 who are still in training or practice as of 2012, 132 (or 32 percent) remained in one of the four primary care specialties.

Figure 1 shows the trend in the percentage of physicians who graduated from NC medical schools practicing in primary care five years after graduation from 1990 - 2007. While the percentage of graduates who remained in primary care gradually increased for all NC medical schools during the 1990's, there has been a slight drop since 2003. Currently, 48 percent of ECU 2007 graduates have remained in primary care, 35 percent for UNC, and 25 percent for both Duke and WFU.

Table I-3 shows comparable data for state-supported graduates from Duke and Wake Forest who were in primary care training or practice five years after graduation.

### **Retention of Graduates in North Carolina**

Beginning last year the report included a new table (I-4) which reflects medical school graduates remaining in North Carolina. The number of 2007 graduates remaining in NC is down from last year, from 172 to 144 (or 42 percent to 35 percent), and the number of 2007 graduates in primary care training or practice in NC in 2012 decreased slightly from 61 to 56 (or from 15 to 14 percent).

ECU's Brody School of Medicine graduates showed the highest rate of retention in North Carolina overall (53 percent) and in primary care in the state (28 percent).

### **NC Medical Students – Retention in Rural Areas**

While “retention in rural areas” is not required in this report, Table I-9 shows the retention of 2007 graduates in rural counties, primary care, and in/out of NC as of 2012. Out of 56 graduates practicing in primary care in NC in 2012, only 7 of these were in rural counties.

Although the four schools continue to offer a variety of curricular and community experiences to interest students in a primary care career, including new tracks emphasizing longitudinal curricula in community settings at both UNC and Duke, there is a strong national trend away from primary care that is also influencing the medical students in North Carolina. Factors that deter choices of primary care careers include the high levels of debt being incurred by many students, particularly in private schools; lower salary levels associated with primary care careers; and lifestyle choices being made by the current generation of medical students. Students are increasingly gravitating to specialties that allow them to control their hours and have less call on nights and weekends. As a result, there has been a clear trend away from choosing primary care, particularly family medicine. These national trends are reflected in the choices being made by students at the schools of medicine in North Carolina as well.

An additional trend that further exacerbates the loss of primary care physicians is the declining percentages of internists and pediatricians remaining in primary care careers. Ten years ago over 50

percent of residents choosing internal medicine and pediatrics practiced as generalists. Today only 10 percent of internists and less than 20 percent of pediatricians remain as generalists, with the remainder going on for fellowship training as sub-specialists. This trend further depletes the pool of generalists physicians needed to serve North Carolina's growing population.

General surgeons and psychiatrists are critical members of the health care community in rural and underserved communities. Yet, as Tables 5 - 8 demonstrate, low numbers of students choose these disciplines for residencies and then go on to practice in these disciplines in North Carolina.

## **Conclusion**

This report responds to the mandate of the 1993 and 1995 sessions of the General Assembly to monitor the progress of graduates of the schools of medicine into primary care. With the exception of East Carolina University medical graduates, the interest in primary care has declined among medical school graduates in the state. This decline matches a national trend, but needs to be monitored since a number of counties, particularly in rural and economically depressed areas of the state, are reporting increasing shortages of primary care physicians over the last several years. Combined with the loss of generalists in internal medicine and pediatrics, these trends do not bode well for meeting future primary care physician needs for the state. Because of the work of the medical and other health science schools, the North Carolina AHEC Program, the State Office of Rural Health, and related programs, North Carolina's rural areas continue to have a higher supply of physicians than comparable rural areas elsewhere in the country. Nevertheless, it will be important to monitor these trends in the coming years to assure that there still remains a steady supply of primary care physicians to meet the needs of North Carolina communities.

## Section 1: Medical Students

Table I-1  
North Carolina Medical Students-Initial Choice of Primary Care\*  
2007 Graduates

School	Total Number of 2007 Graduates	Number of 2007 Graduates not in Training or Practice as of 2012	Number of 2007 Graduates in Training or Practice as of 2012	Number of 2007 Graduates in Training or Practice with an Initial Residency Choice of Primary Care**	Percent of 2007 Graduates in Training or Practice with an Initial Residency Choice of Primary Care
Duke	93	2	91	43	47%
ECU	60	0	60	37	62%
UNC-CH	157	2	155	80	52%
Wake Forest	106	1	105	48	46%
Total	416	5	411	208	51%

\*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, General Preventive Medicine, and Obstetrics/Gynecology.

\*\*Source: AAMC Internal Medicine in this case also includes “medicine – preliminary,” which likely overestimates the initial primary care figures.

### Sources:

Duke Office of Medical Education  
UNC-CH Office of Student Affairs  
ECU Office of Medical Education

Wake Forest University SOM Office of Student Affairs  
Association of American Medical Colleges  
N.C. Medical Board

Compiled by:  
N.C. AHEC Program  
Cecil G. Sheps Center for Health Services Research

## Section 1: Medical Students (continued)

Table I-2  
North Carolina Medical Students-Retention in Primary Care\*  
2007 Graduates

School	Total Number of 2007 Graduates in Training or Practice as of 2012	Number of 2007 Graduates in Training or Practice with an Initial Residency Choice of Primary Care**	Percent of 2007 Graduates in Training or Practice with an Initial Residency Choice of Primary Care	Number of 2007 Graduates in Training or Practice in Primary Care Patient Practice as of 2012	Percent of 2007 Graduates in Training or Practice in Primary Care Patient Practice as of 2012
Duke	91	43	47%	23	25%
ECU	60	37	62%	29	48%
UNC-CH	155	80	52%	54	35%
Wake Forest	105	48	46%	26	25%
<b>Total</b>	<b>411</b>	<b>208</b>	<b>51%</b>	<b>132</b>	<b>32%</b>

\*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, General Preventive Medicine, and Obstetrics/Gynecology.

\*\*Source: AAMC Internal Medicine in this case also includes “medicine – preliminary,” which likely overestimates the initial primary care figures.

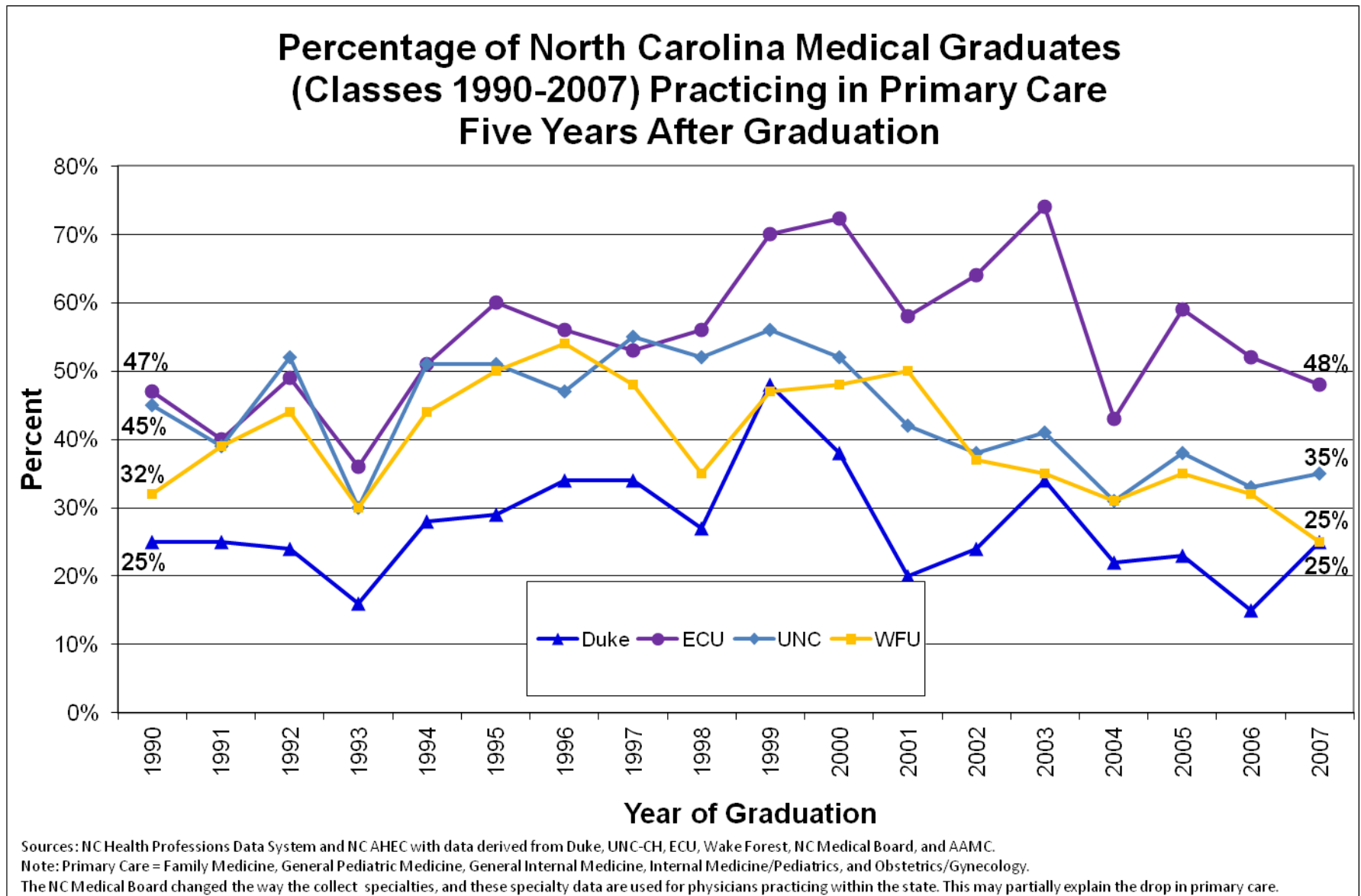
### Sources:

Duke Office of Medical Education  
UNC-CH Office of Student Affairs  
ECU Office of Medical Education

Wake Forest University SOM Office of Student Affairs  
Association of American Medical Colleges  
N.C. Medical Board

Compiled by:  
N.C. AHEC Program  
Cecil G. Sheps Center for Health Services Research

Figure 1



## Section 1: Medical Students (continued)

Table I-3  
State Supported North Carolinians Attending  
the Duke and Wake Forest Schools of Medicine - Choice and Retention in Primary Care Specialties\*  
2007 Graduates

School	Number of 2007 Graduates in Training or Practice as of 2012		Number of 2007 Graduates in Training or Practice in Primary Care* as of 2012		Number of 2007 <i>State-Supported</i> Graduates in Training or Practice as of 2012		Number of 2007 <i>State-Supported</i> Graduates in Training or Practice in Primary Care* as of 2012	
	<i>Total</i>	<i>in NC</i>	<i>Total</i>	<i>in NC</i>	<i>Total</i>	<i>in NC</i>	<i>Total</i>	<i>in NC</i>
Duke	91	22 (24%)	23 (25%)	6 (7%)	13 (14%)	<b>5 (38%)</b>	5 (38%)	<b>3 (23%)</b>
Wake Forest	105	27 (26%)	26 (25%)	8 (8%)	38 (36%)	<b>18 (47%)</b>	8 (21%)	<b>5 (13%)</b>
<b>Total</b>	<b>196</b>	<b>49 (25%)</b>	<b>49 (25%)</b>	<b>14 (7%)</b>	<b>51 (26%)</b>	<b>23 (45%)</b>	<b>13 (25%)</b>	<b>8 (16%)</b>
		(% of total grads)				(% of total state-supported grads)		

\*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, and Obstetrics/Gynecology.

### Sources:

Duke Office of Medical Education  
Wake Forest University SOM Office of Student Affairs  
NC State Education Assistance Authority

N.C. Medical Board  
Association of American Medical Colleges

### Compiled by:

N.C. AHEC Program & Cecil G. Sheps Center for Health Services Research



## Section 1: Medical Students (continued)

Table I-4  
North Carolina Medical Students-Retention in the State\*  
2007 Graduates

School	Total Number of 2007 Graduates in Training or Practice as of 2012	Number of 2007 Graduates in Training or Practice in North Carolina as of 2012	Percent of 2007 Graduates in Training or Practice in North Carolina as of 2012	Number of 2007 Graduates in Training or Practice in Primary Care in North Carolina as of 2012	Percent of 2007 Graduates in Training or Practice in Primary Care in North Carolina as of 2012
Duke	91	22	24%	6	7%
ECU	60	32	53%	17	28%
UNC-CH	155	63	41%	25	16%
Wake Forest	105	27	26%	8	8%
<b>Total</b>	<b>411</b>	<b>144</b>	<b>35%</b>	<b>56</b>	<b>14%</b>

\*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, and Obstetrics/Gynecology.

### Sources:

Duke Office of Medical Education  
Association of American Medical Colleges

Wake Forest University SOM Office of Student Affairs  
NC State Education Assistance Authority

Compiled by:  
NC AHEC Program  
Cecil G. Sheps Center for Health Services Research

## Section I: Medical Students (continued)

Table I-5  
North Carolina Medical Students-Retention in General Surgery\*  
2007 Graduates

School	Number of 2007 Graduates in Training or Practice as of 2012	Number of 2007 Graduates in Training or Practice with an Initial Residency Choice of General Surgery	Percent of 2007 Graduates in Training or Practice with an Initial Residency Choice of General Surgery	Number of 2007 Graduates in Training or Practice in General Surgery Patient Practice as of 2011	Percent of 2007 Graduates in Training or Practice in General Surgery Patient Practice as of 2012
Duke	91	6	7%	3	3%
ECU	60	4	7%	1	2%
UNC-CH	155	12	8%	10	6%
Wake Forest	105	13	12%	5	5%
<b>Total</b>	<b>411</b>	<b>35</b>	<b>9%</b>	<b>19</b>	<b>5%</b>

\*General Surgery = General Surgery, Abdominal Surgery, Critical Care Surgery, Oncology Surgery, and Traumatic Surgery.

### Sources:

Duke Office of Medical Education  
UNC-CH Office of Student Affairs  
ECU Office of Medical Education

Wake Forest University SOM Office of Student Affairs  
Association of American Medical Colleges  
N.C. Medical Board

Compiled by:  
N.C. AHEC Program  
Cecil G. Sheps Center for Health Services Research

## Medical Students (continued)

Table I-6  
North Carolina Medical Students Practicing in General Surgery-Retention in the State\*  
2007 Graduates

School	Total Number of 2007 Graduates in Training or Practice as of 2012	Number of 2007 Graduates in Training or Practice in North Carolina as of 2012	Percent of 2007 Graduates in Training or Practice in North Carolina as of 2012	Number of 2007 Graduates in Training or Practice in General Surgery in North Carolina as of 2012	Percent of 2007 Graduates in Training or Practice in General Surgery in North Carolina as of 2012
Duke	91	22	24%	2	2%
ECU	60	32	53%	6	0%
UNC-CH	155	63	41%	3	2%
Wake Forest	105	27	26%	1	1%
<b>Total</b>	<b>411</b>	<b>144</b>	<b>35%</b>	<b>6</b>	<b>1%</b>

\*General Surgery = General Surgery, Abdominal Surgery, Critical Care Surgery, Oncology Surgery, and Traumatic Surgery.

### Sources:

Duke Office of Medical Education  
UNC-CH Office of Student Affairs  
ECU Office of Medical Education

Wake Forest University SOM Office of Student Affairs  
Association of American Medical Colleges  
N.C. Medical Board

### Compiled by:

N.C. AHEC Program & Cecil G. Sheps Center for Health Services Research

## Section I: Medical Students (continued)

Table I-7  
North Carolina Medical Students-Retention in Psychiatry\*  
2007 Graduates

<i>School</i>	<i>Total Number of 2007 Graduates in Training or Practice as of 2012</i>	<i>Number of 2007 Graduates in Training or Practice with an Initial Residency Choice of Psychiatry</i>	<i>Percent of 2007 Graduates in Training or Practice with an Initial Residency Choice of Psychiatry</i>	<i>Number of 2007 Graduates in Training or Practice in Psychiatry Patient Practice as of 2012</i>	<i>Percent of 2006 Graduates in Training or Practice in Psychiatry Patient Practice as of 2012</i>
<i>Duke</i>	<i>91</i>	<i>3</i>	<i>3%</i>	<i>3</i>	<i>3%</i>
<i>ECU</i>	<i>60</i>	<i>0</i>	<i>0%</i>	<i>0</i>	<i>0%</i>
<i>UNC-CH</i>	<i>155</i>	<i>7</i>	<i>5%</i>	<i>9</i>	<i>6%</i>
<i>Wake Forest</i>	<i>105</i>	<i>4</i>	<i>4%</i>	<i>4</i>	<i>4%</i>
<b><i>Total</i></b>	<b><i>411</i></b>	<b><i>14</i></b>	<b><i>3%</i></b>	<b><i>16</i></b>	<b><i>4%</i></b>

\*Psychiatry = Psychiatry, Child Psychiatry, Psychoanalysis, Psychiatry/Geriatric, Forensic Psychiatry

### Sources:

Duke Office of Medical Education  
UNC-CH Office of Student Affairs  
ECU Office of Medical Education

Wake Forest University SOM Office of Student Affairs  
Association of American Medical Colleges  
N.C. Medical Board

### Compiled by:

N.C. AHEC Program  
Cecil G. Sheps Center for Health Services Research

## Section I: Medical Students (continued)

Table I-8  
North Carolina Medical Students Practicing in Psychiatry-Retention in the State\*  
2007 Graduates

School	Total Number of 2007 Graduates in Training or Practice as of 2012	Number of 2007 Graduates in Training or Practice in North Carolina as of 2012	Percent of 2007 Graduates in Training or Practice in North Carolina as of 2012	Number of 2007 Graduates in Training or Practice in Psychiatry in North Carolina as of 2012	Percent of 2007 Graduates in Training or Practice in Psychiatry in North Carolina as of 2012
Duke	91	22	24%	0	0%
ECU	60	32	53%	0	0%
UNC-CH	155	63	41%	2	1%
Wake Forest	105	27	26%	2	2%
<b>Total</b>	<b>411</b>	<b>144</b>	<b>35%</b>	<b>4</b>	<b>1%</b>

\*Psychiatry = Psychiatry, Child Psychiatry, Psychoanalysis, Psychiatry/Geriatric, Forensic Psychiatry

### Sources:

Duke Office of Medical Education  
UNC-CH Office of Student Affairs  
ECU Office of Medical Education

Wake Forest University SOM Office of Student Affairs  
Association of American Medical Colleges  
N.C. Medical Board

Compiled by:  
N.C. AHEC Program  
Cecil G. Sheps Center for Health Services Research

## Section I: Medical Students (continued)

Table I-9  
North Carolina Medical Students-Retention in Rural Areas\*  
2007 Graduates

School	Number of 2007 Graduates in Training or Practice as of 2012		Number of 2007 Graduates in Training or Practice in Primary Care** as of 2012		Number of 2007 Graduates in Training or Practice in Rural Counties as of 2012		Number of 2007 Graduates in Training or Practice in Primary Care** in Rural Counties as of 2012	
	<i>Total</i>	<i>In NC</i>	<i>Total</i>	<i>In NC</i>	<i>Total</i>	<i>In NC</i>	<i>Total</i>	<i>In NC</i>
Duke	91	22 (24%)	23 (25%)	6 (7%)	3 (3%)	1 (33%)	1 (33%)	1 (33%)
ECU	60	32 (53%)	29 (48%)	17 (28%)	5 (8%)	5 (100%)	4 (80%)	4 (80%)
UNC-CH	155	63 (41%)	54 (35%)	25 (16%)	5 (3%)	3 (60%)	2 (40%)	2 (40%)
Wake Forest	105	27 (26%)	26 (25%)	8 (8%)	4 (4%)	0 (0%)	3 (75%)	0 (0%)
<b>Total</b>	<b>411</b>	<b>144 (35%)</b>	<b>132 (32%)</b>	<b>56 (14%)</b>	<b>17 (4%)</b>	<b>7 (41%)</b>	<b>10 (59%)</b>	<b>7 (41%)</b>

\*"Rural" is based on 2013 Core-Based Statistical Area (CBSA) definitions, and includes counties that are "micropolitan" and "outside of CBSAs." Using this definition, NC has 54 rural counties.

\*\*Primary Care = Family Medicine, General Pediatric Medicine, General Internal Medicine, Internal Medicine/Pediatrics, General Preventive Medicine, and Obstetrics/Gynecology.

### Sources:

Duke Office of Medical Education  
Wake Forest University SOM Office of Student Affairs  
NC State Education Assistance Authority

N.C. Medical Board  
Association of American Medical Colleges  
US Census Bureau, Office of Management & Budget

### Compiled by:

N.C. AHEC Program & Cecil G. Sheps Center for Health Services Research

## Limitations

The information used in this analysis to determine a medical graduate's initial specialty choice for residency and to determine retention in primary care comes from different sources. When calculating retention in primary care five years after graduation (Tables I-1, I-2, I-3), data from the AAMC are used to determine initial choice of residency and current practice or training area. AAMC does not differentiate between internal medicine and medicine-preliminary, so the data may appear to be inflated for initial residency choice of primary care for Tables I-1 through I-3 when compared to the data presented in the Class of 1999 report, submitted in 2005.

Beginning with the class of 2006 all MDs graduating in a year, regardless of month, will be counted in with that year's graduates.

## Notes:

### *Primary Care Tables:*

*There was a drop in initial residency match for primary care residencies, mostly caused by Duke and ECU. AAMC data were verified against graduate match lists for both schools. Both data sources showed a drop in initial primary care residency matches compared to 2011.*

### *General Surgery Tables:*

*For tables calculating retention in general surgery five years after graduation (Tables I-5 and I-6), it is important to note that surgical residencies are currently a minimum of five years, and students who select an initial residency of general surgery often transition to a more specialized surgical training. Again, there was a drop in initial residency match for surgery due to Duke. AAMC data were compared with initial residency matches from Duke and both data sources were in alignment.*