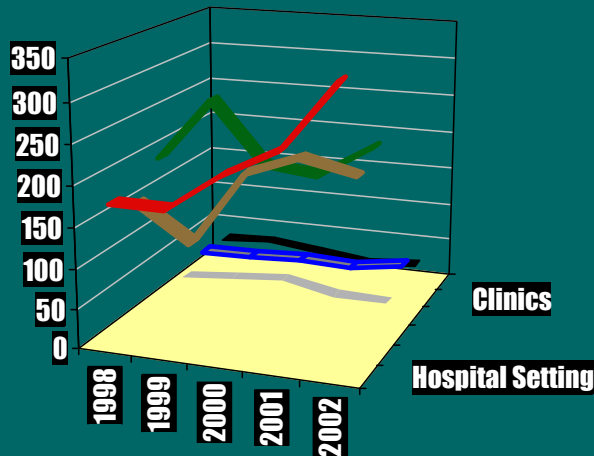


# Trends in Physician Supply in North Carolina



**Thomas C. Ricketts, Ph.D.**  
**Erin Fraher, MPP; Katie Gaul, MA;**  
**Jennifer King, Hazel Hadley**  
**University of North Carolina at Chapel Hill**

December, 2005

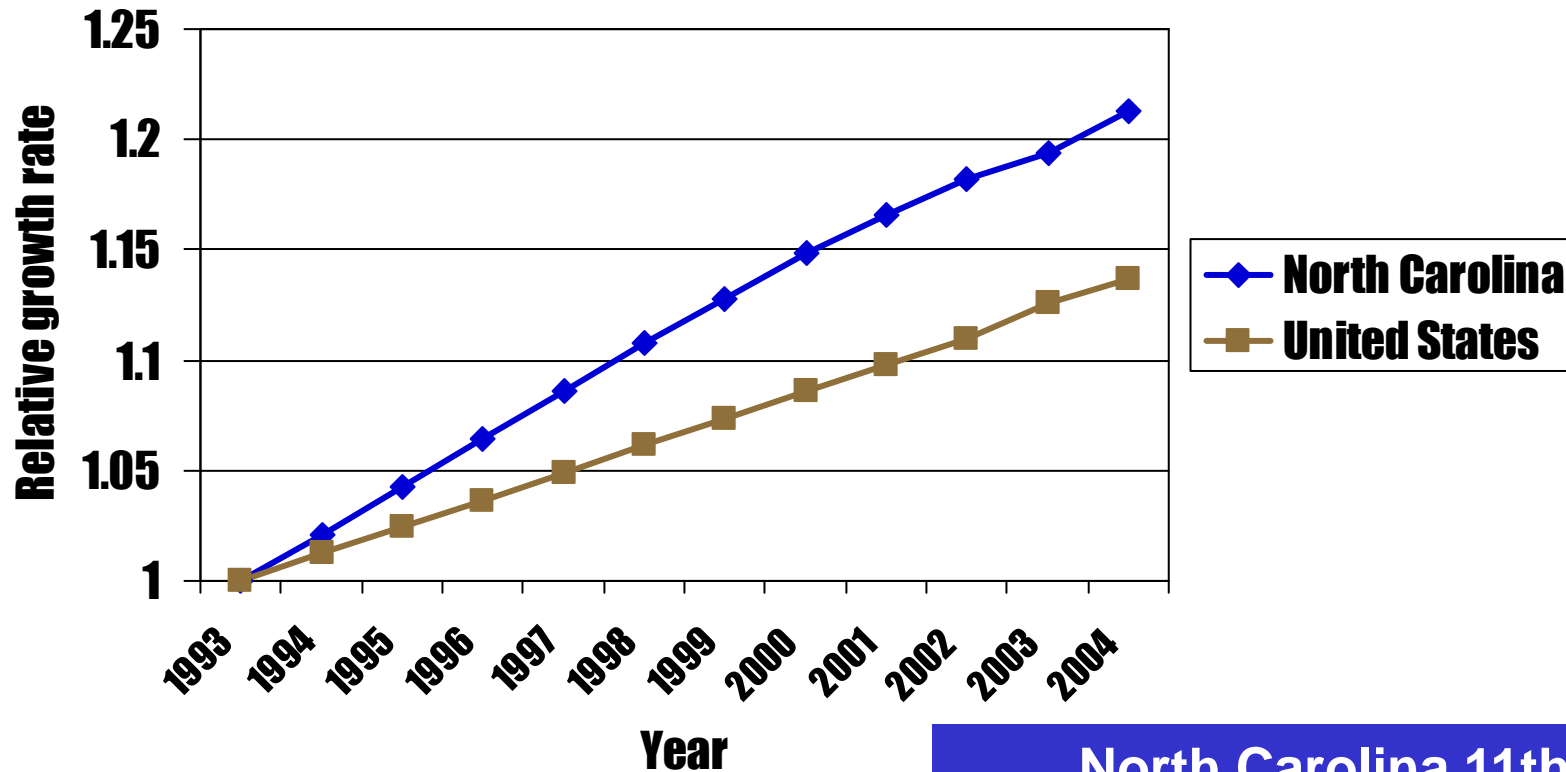
# Goals for the Presentation

- ❖ **Highlight emerging trends in the supply of physicians, nurse practitioners, and physician assistants in the US and NC.**
- ❖ **Closely examine the characteristics of physicians who are new to practice in NC.**
- ❖ **Estimate the future supply of physicians for the NC under optional scenarios.**
- ❖ **Review some medical workforce policy options in other states.**

# Main Message: The Supply of Physicians Is Growing *Slower than Population*

- ❖ Population growth for 2002-2005 exceeds physician supply growth.
- ❖ National estimates project an emerging shortage.
- ❖ NC reflects these trends.
- ❖ This may cause access problems in North Carolina in the near future.

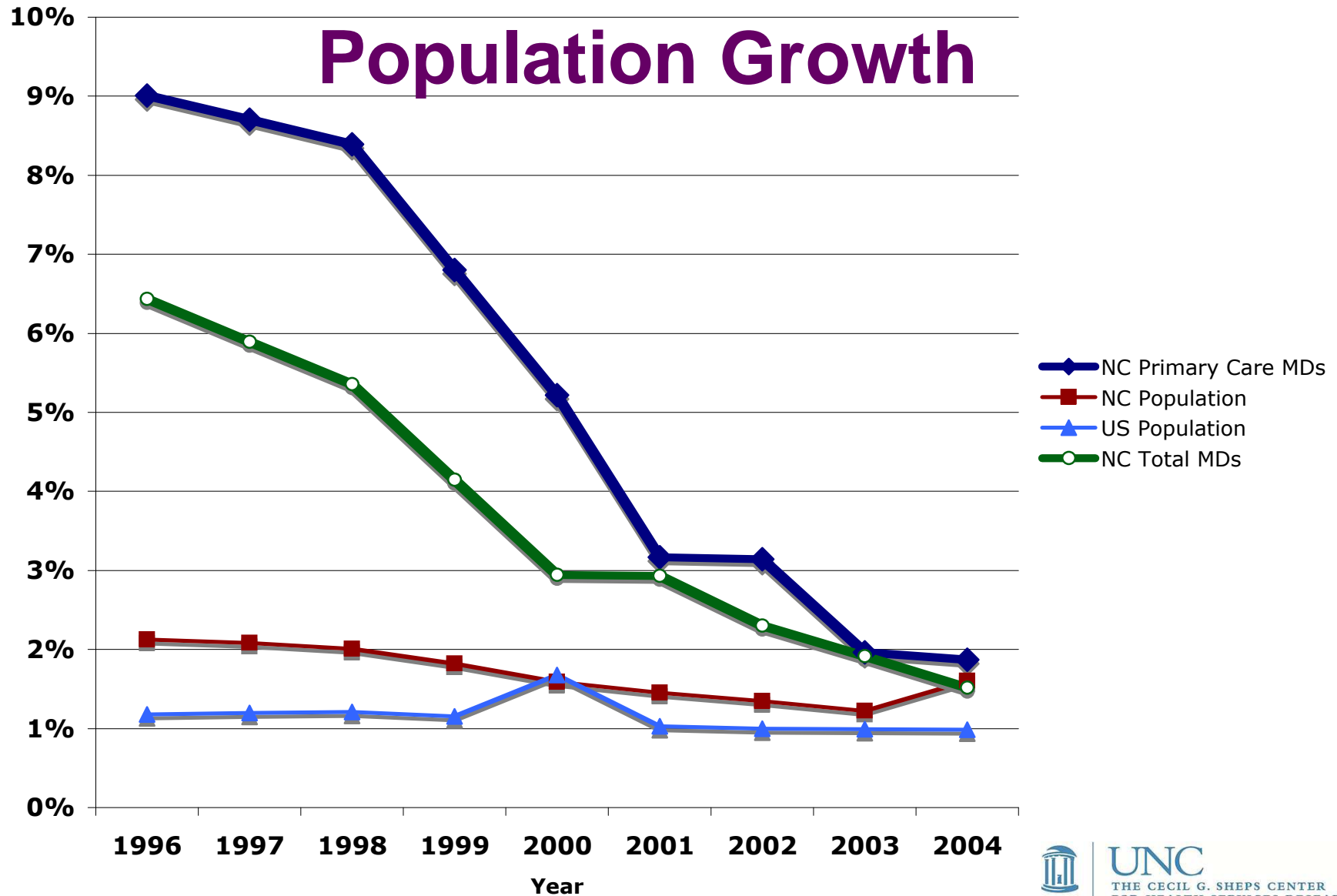
# NC Population Has Grown and slightly faster than the US



**North Carolina 11th in  
Population total,  
9th in growth rate (4 years)**

Source: US Census Bureau, NC State Demographer  
Popworksheet.xls

# MD Growth Has Slowed to below Population Growth



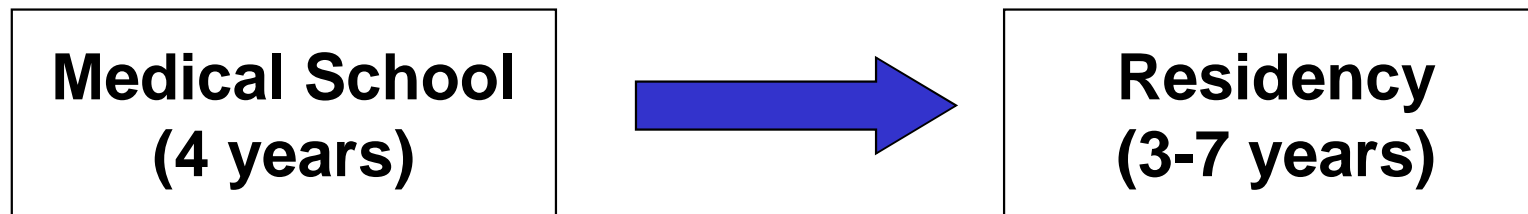
# National Context

- ❖ **Recognition of potential shortage by national groups:**
  - **American Association of Medical Colleges (AAMC) reversed position in 2005 to say there is a shortage**
  - **Council on Graduate Medical Education reversed position in 2004 to say there may be a shortage coming**
  - **Family Physicians (AAFP) debating the issue**

# National Context

- ❖ **Very slow Allopathic medical school growth**
  - Florida State only new allopathic school
  - Others considered in TX, AZ, FL
- ❖ **Growth in small Osteopathic Schools**
  - 2 new schools in Florida 2004-5
    - Lake Erie, 300 students in its 2<sup>nd</sup> year
    - Northern Florida announces plans
  - Nevada branch of Touro (CA) Osteopathic Medical School Philadelphia College of Osteopathic Medicine in Atlanta opened 2005
  - Kentucky (Pikeville School) opens in a consortium
  - Virginia School (Edward Via) associated with Virginia Tech Opens 2005.

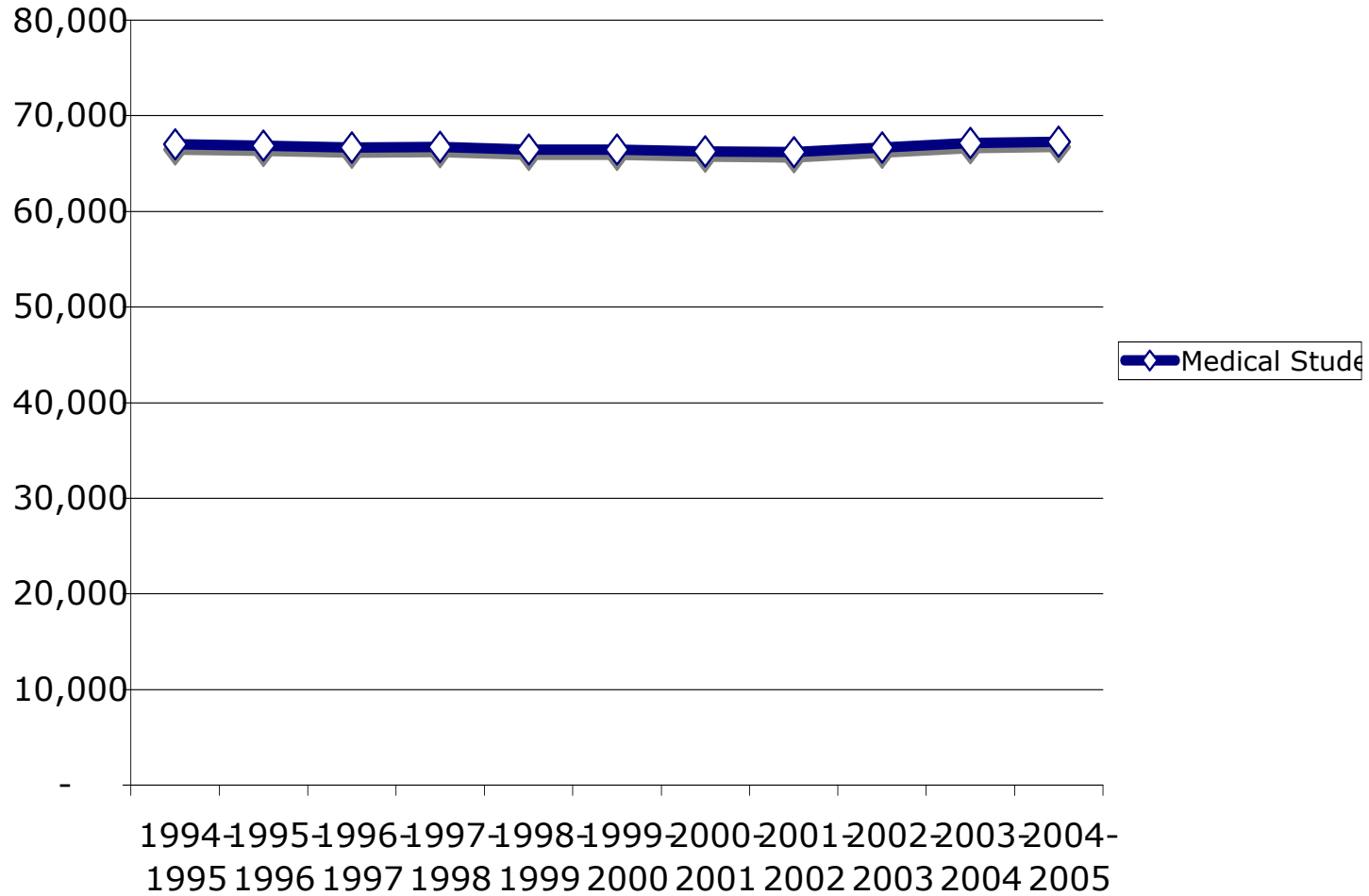
# Doctors are Trained in Two Steps



- ❖ **75% of US Doctor Supply comes from US Medical Schools via US Residency**
- ❖ **25% comes from Foreign Medical Schools, via US Residencies**

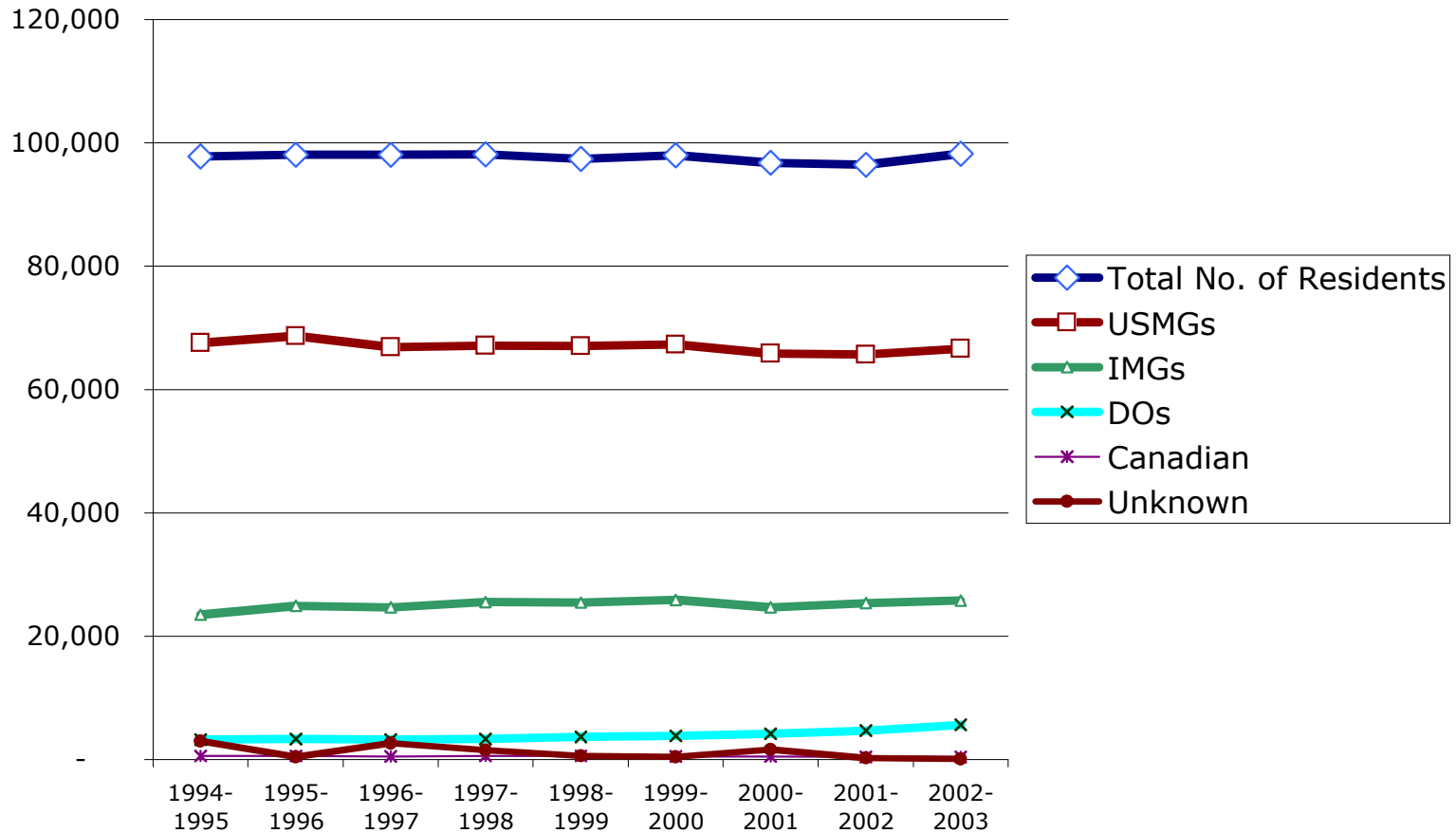


# US Medical Stu Enrollment



Source: Barzansky B, Jonas HS, Etzel SI. JAMA, September 1, 282(9): 840-846;  
JAMA, September 3, 290(9): 1190-1196.; JAMA, September 7, 294(9): 1068-1074.

# US Resident Physicians, 1994-2003



## ***General Picture***

**A Growth trend that is slowing**

**Medical School and Residency  
Numbers “Flat”**

.....

**An emerging shortage?**

# What is happening in North Carolina?

# Pathways into Practice North Carolina

## ❖ From Medical Schools

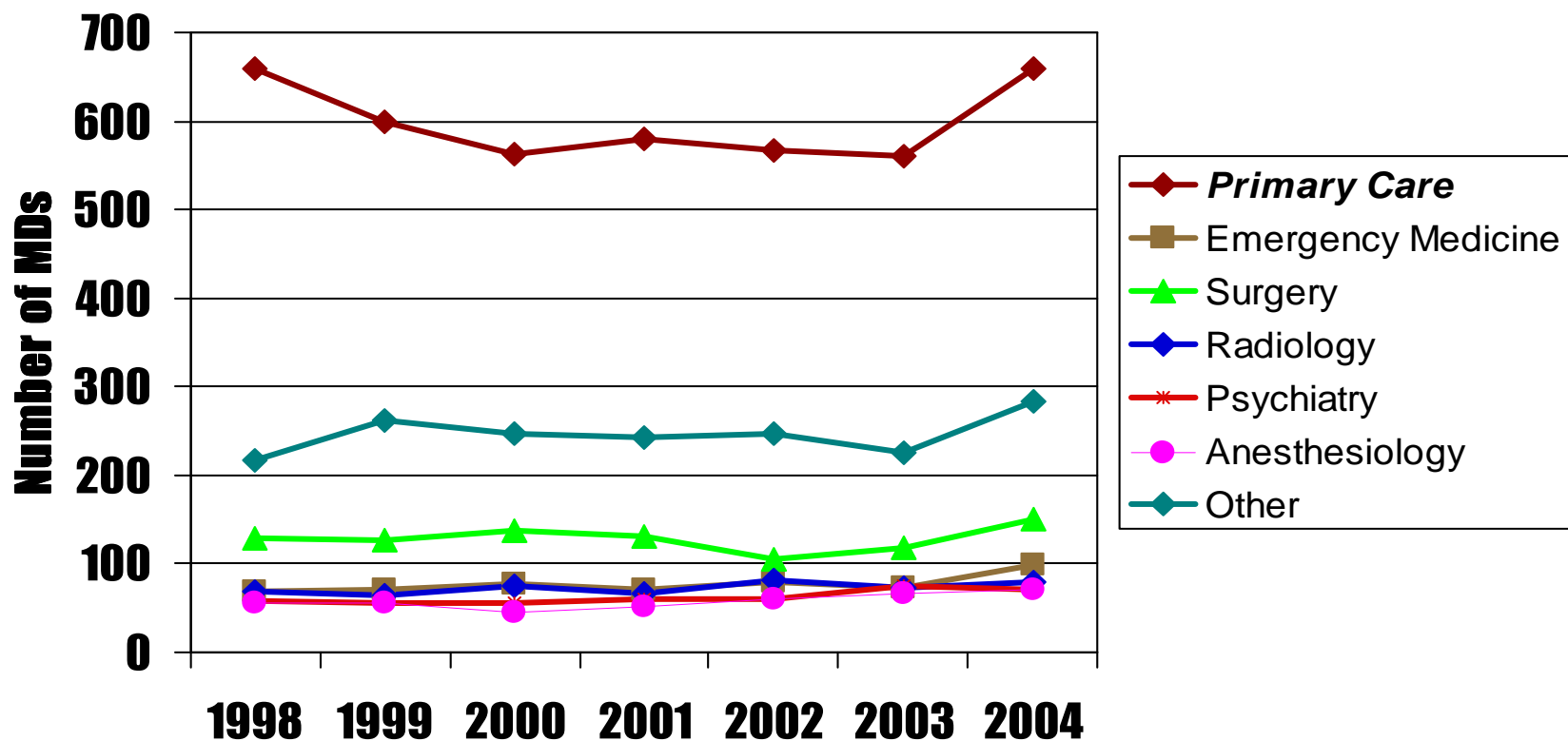
- In North Carolina
- Other US and Canadian Schools
- International Medical Schools

## ❖ From Residency Programs

- In North Carolina
- In other US states and Canada

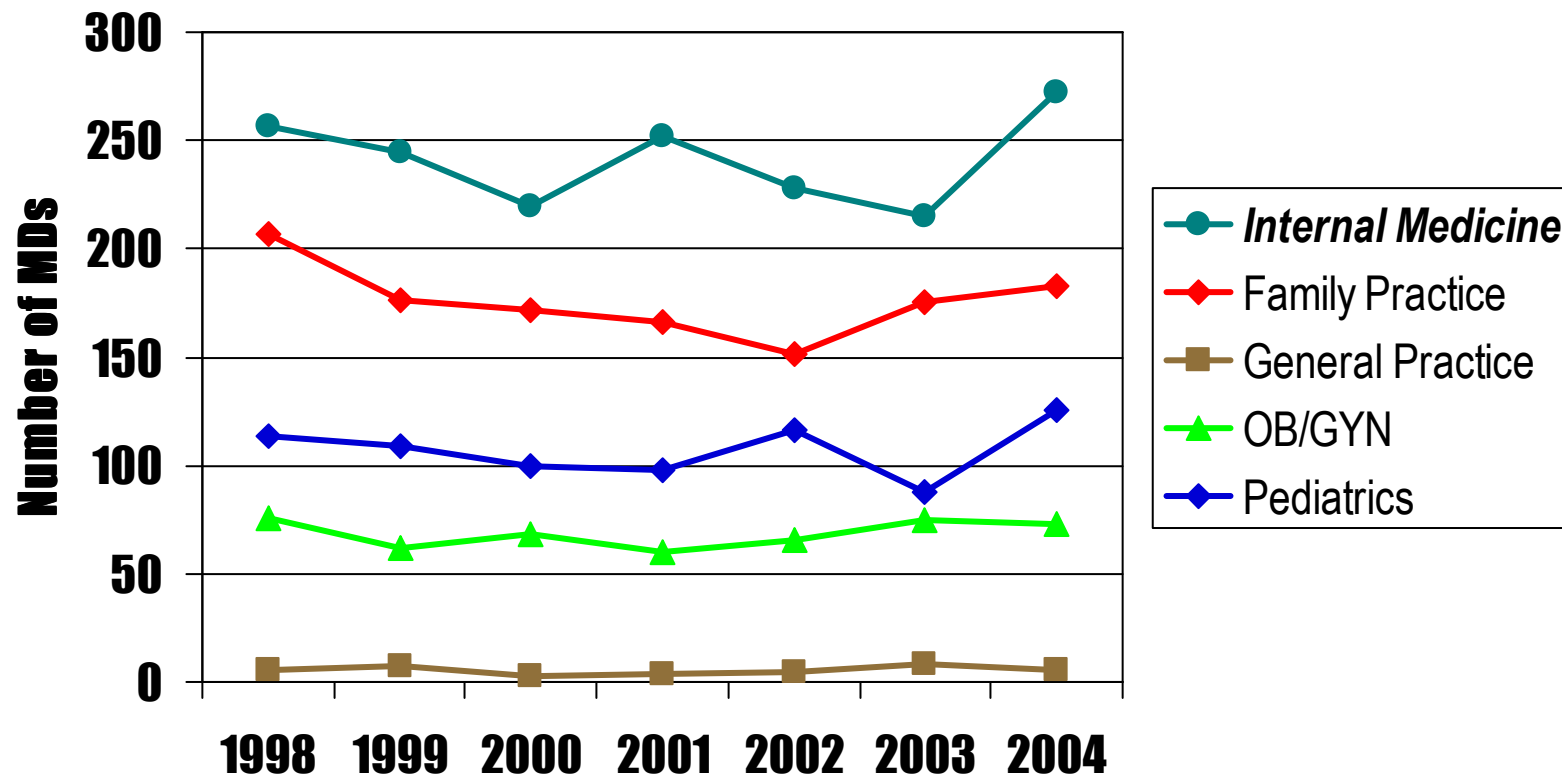
## ❖ In-migration from other States

# Newly Licensed Patient Care Physicians in NC 1998-2004



Source: NC Health Professions Data System, Sheps Center from data  
 Provided by the North Carolina Medical Board

# Newly Licensed Patient Care Primary Care Physicians in North Carolina



Source: NC Health Professions Data System, Sheps Center from data  
Provided by the North Carolina Medical Board

# Newly Licensed Physicians were....

## ❖ More likely to be female

- 34% of new licensees are female vs. 25% of all current, active NC physicians.

## ❖ More likely to be minority

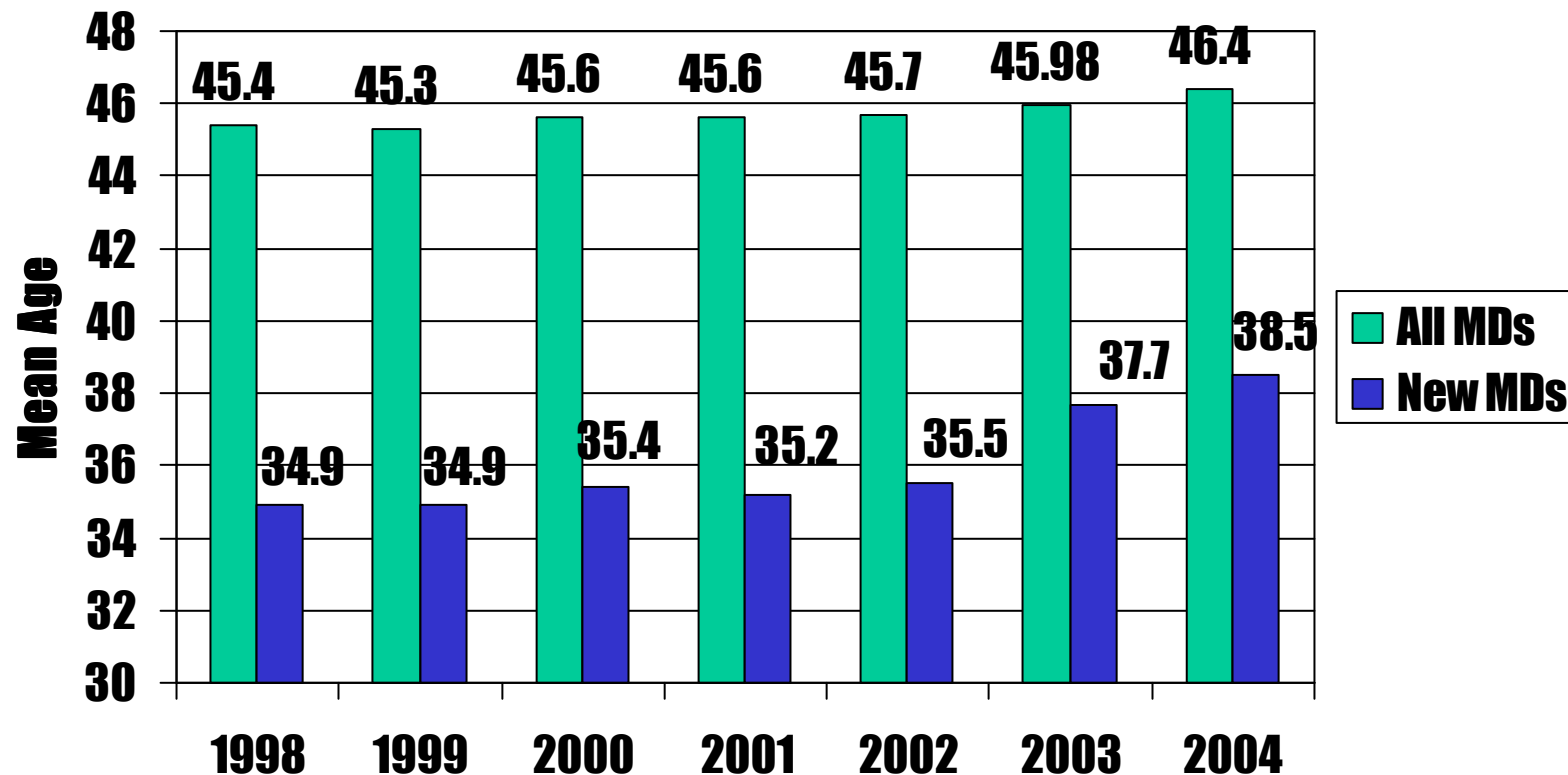
- 26% of new licensees are minority vs. 18% of all physicians.

## ❖ Younger

- Average age of new licensees is 38.5 years vs. 46.4 years for all physicians.

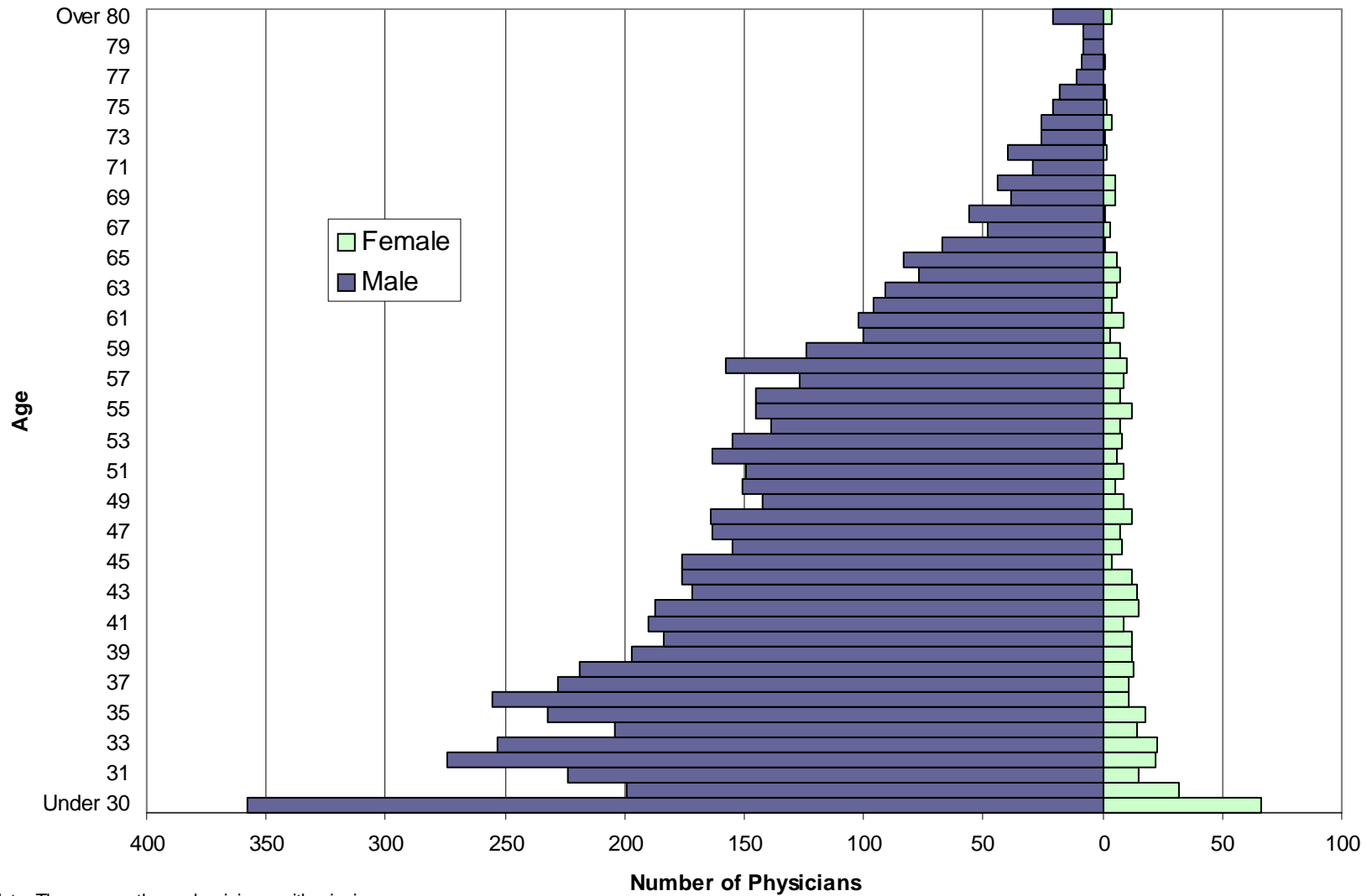


# Average Age of All and New Physicians Increasing Slowly



Source: NC Health Professions Data System, Sheps Center from data  
Provided by the North Carolina Medical Board

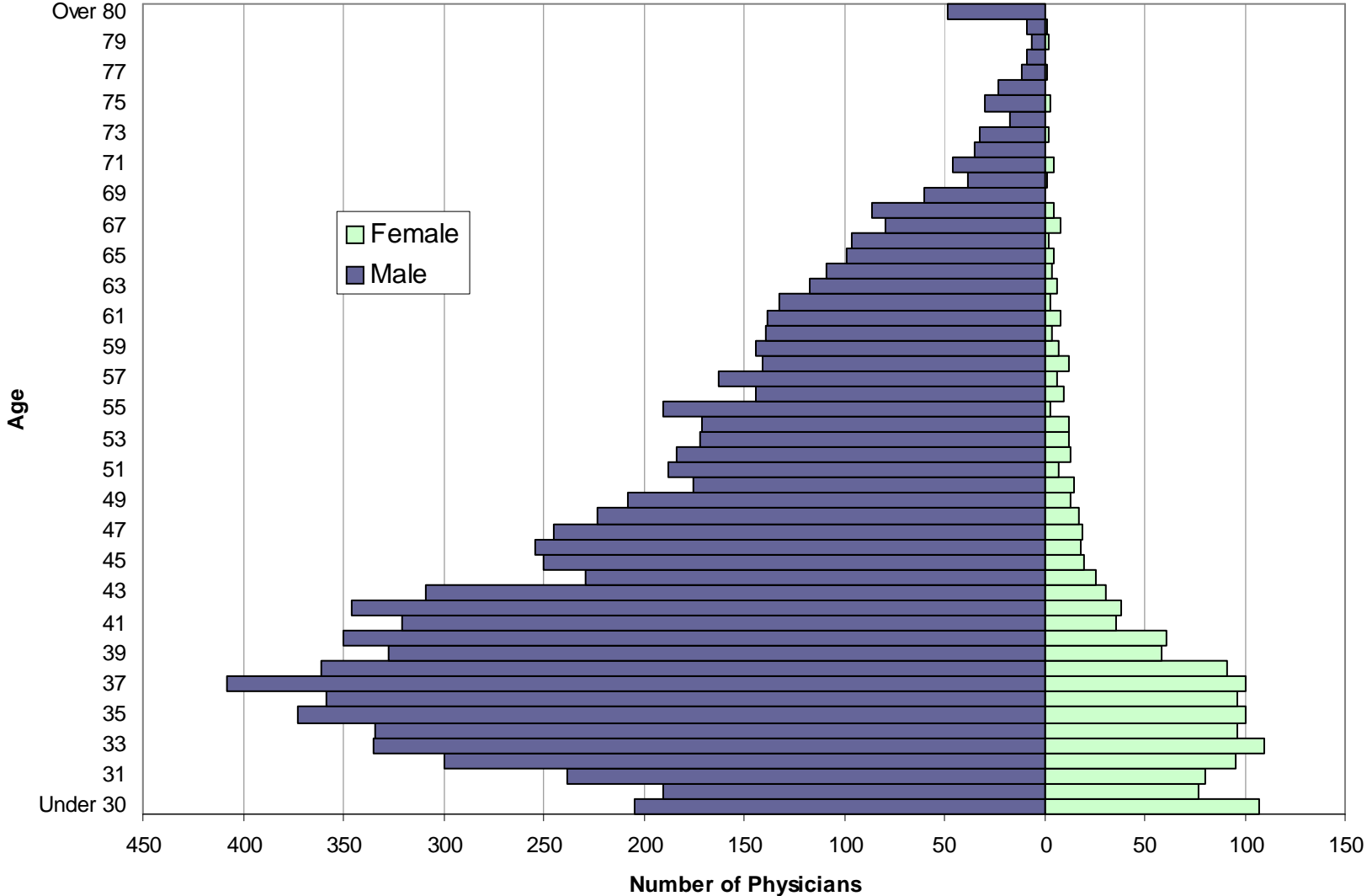
## Age-Gender Pyramid, Physicians North Carolina, 1980



Note: There were three physicians with missing age.

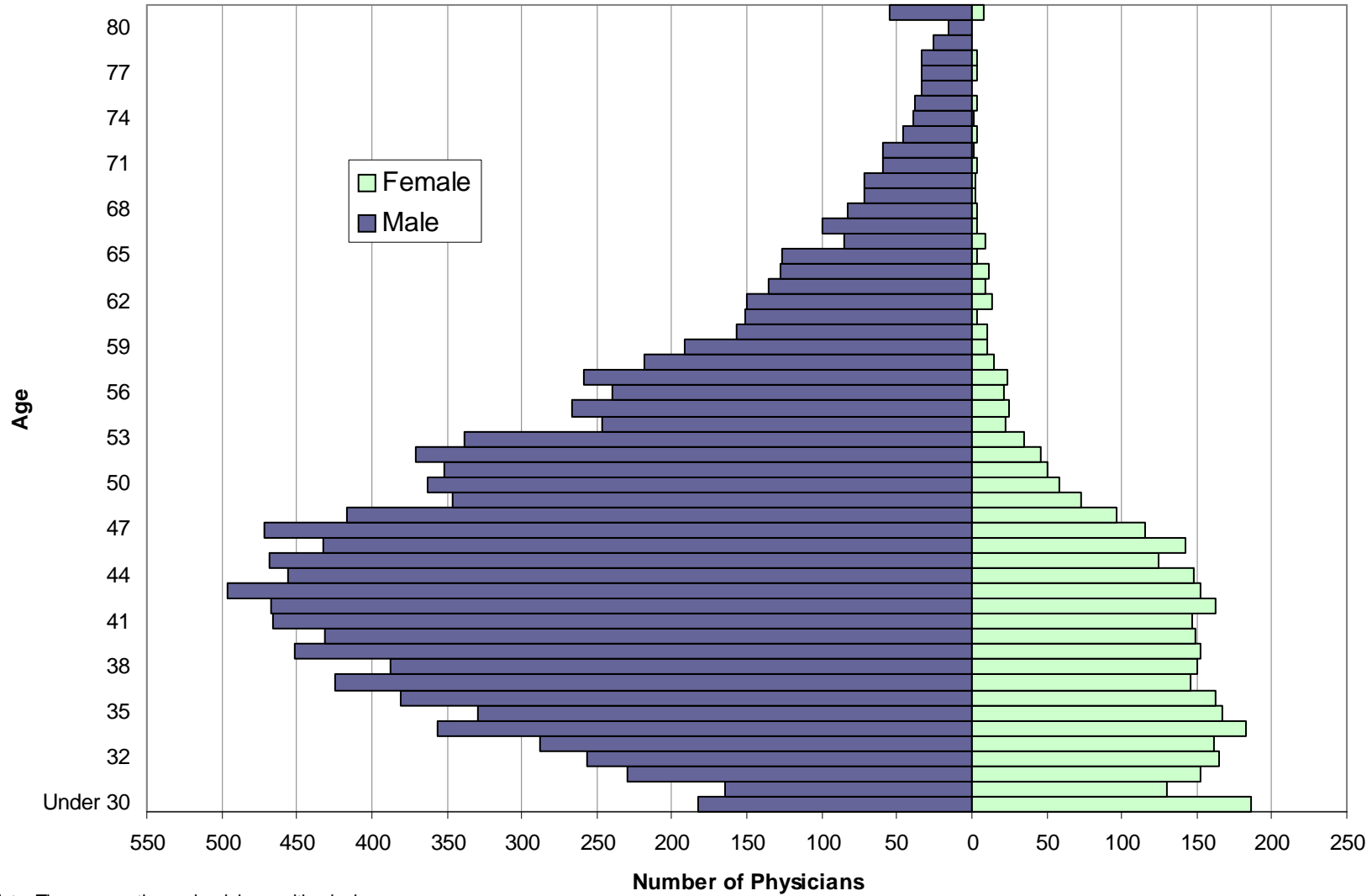
Figures include active, in-state, nonfederal, non-resident-in-training physicians licensed in North Carolina as of October 31, 1980.  
 Source: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the North Carolina Medical Board, 1980.

## Age-Gender Pyramid, Physicians North Carolina, 1990



Figures include active, in-state, nonfederal, non-resident-in-training physicians licensed in North Carolina as of October 31, 1990. Source: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the North Carolina Medical Board, 1990.

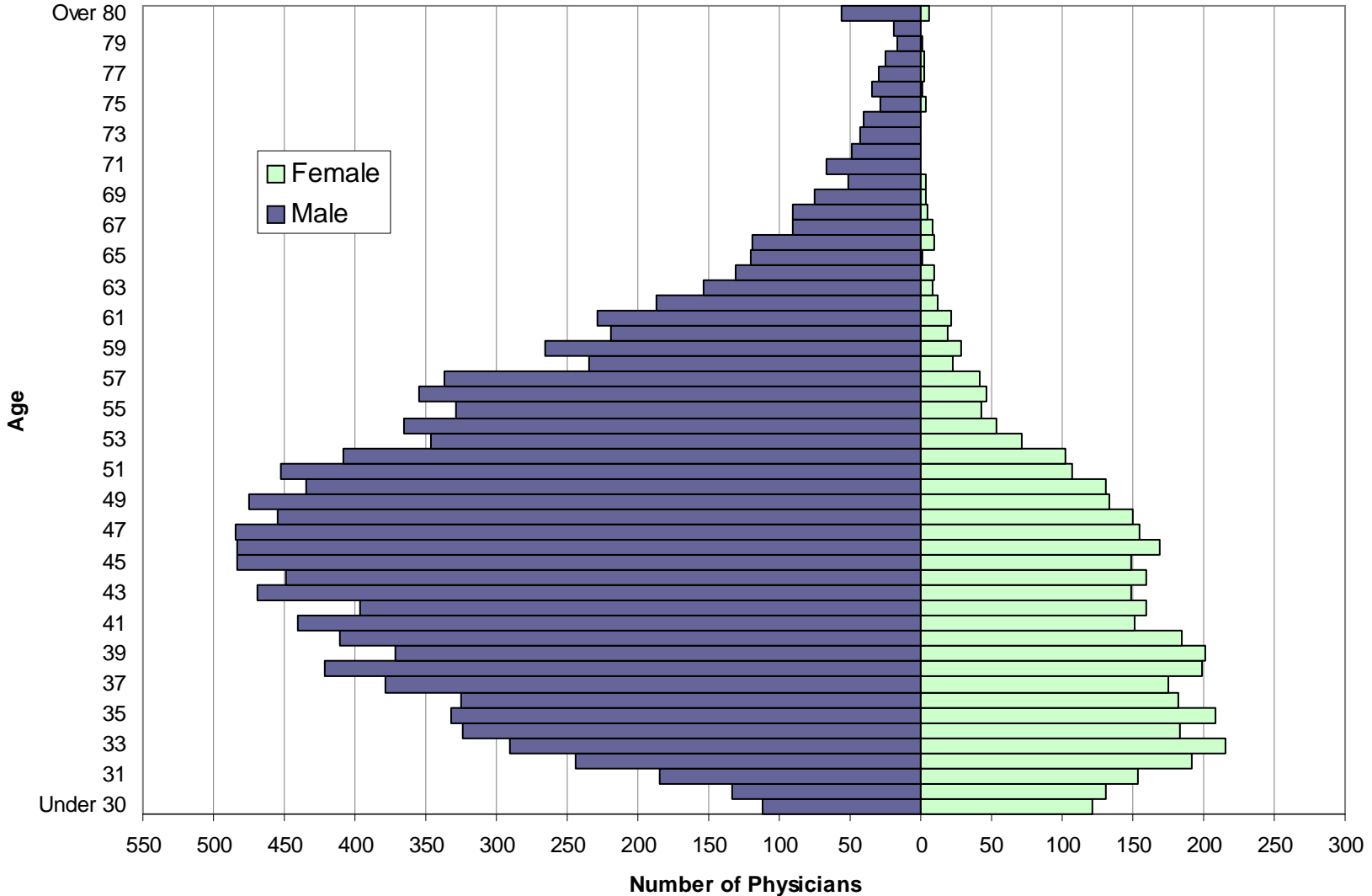
## Age-Gender Pyramid, Physicians North Carolina, 2000



Note: There were three physicians with missing age.

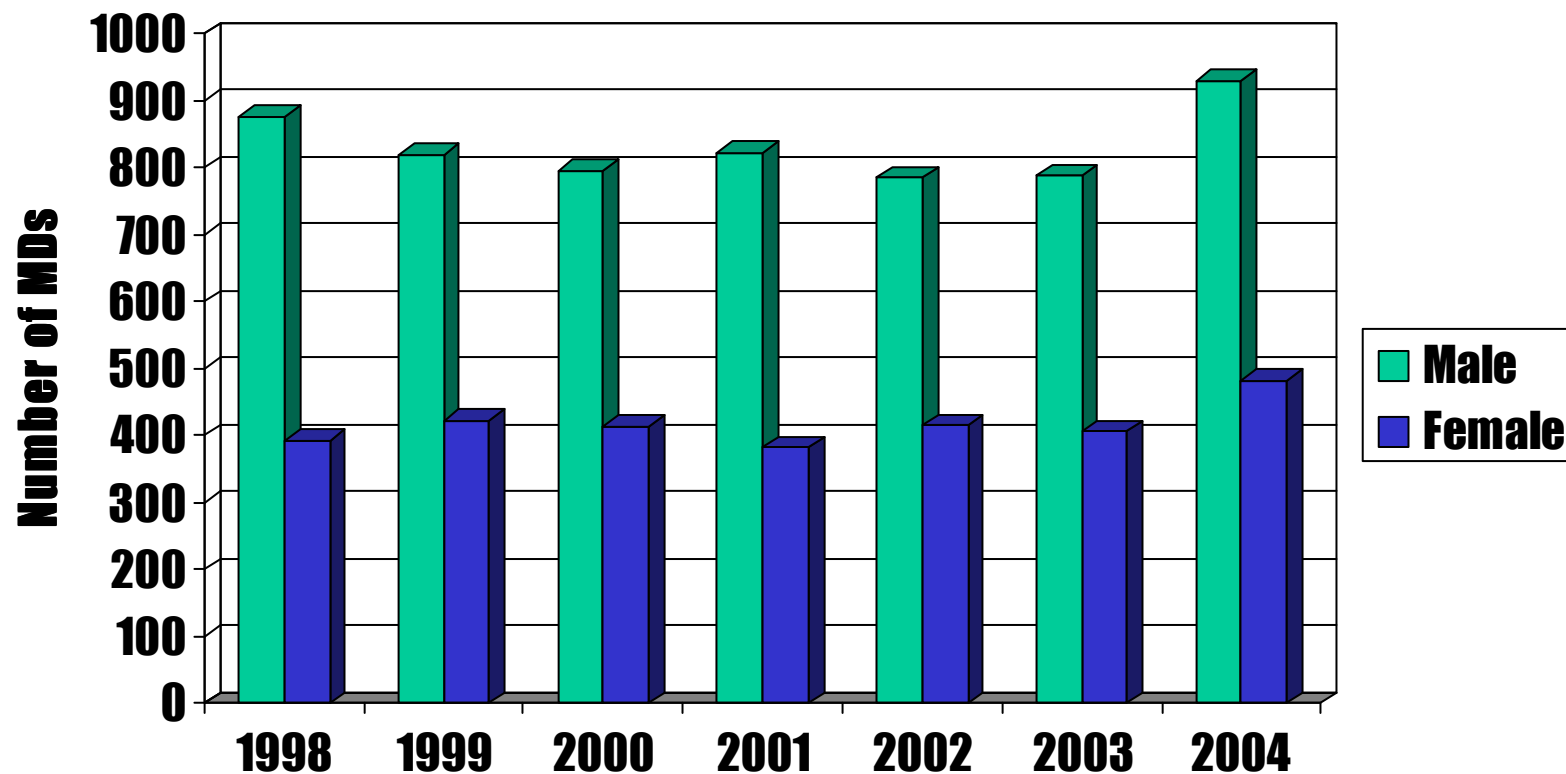
Figures include active, instate, nonfederal, non-resident-in-training physicians licensed in North Carolina as of October 31, 2000.  
 Source: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the North Carolina Medical Board, 2000.

## Age-Gender Pyramid, Physicians North Carolina, 2004



Figures include active, in-state, nonfederal, non-resident-in-training physicians licensed in North Carolina as of October 31, 2004.  
 Source: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the North Carolina Medical Board, 2004.

# Gender Converging Slowly for New MDs

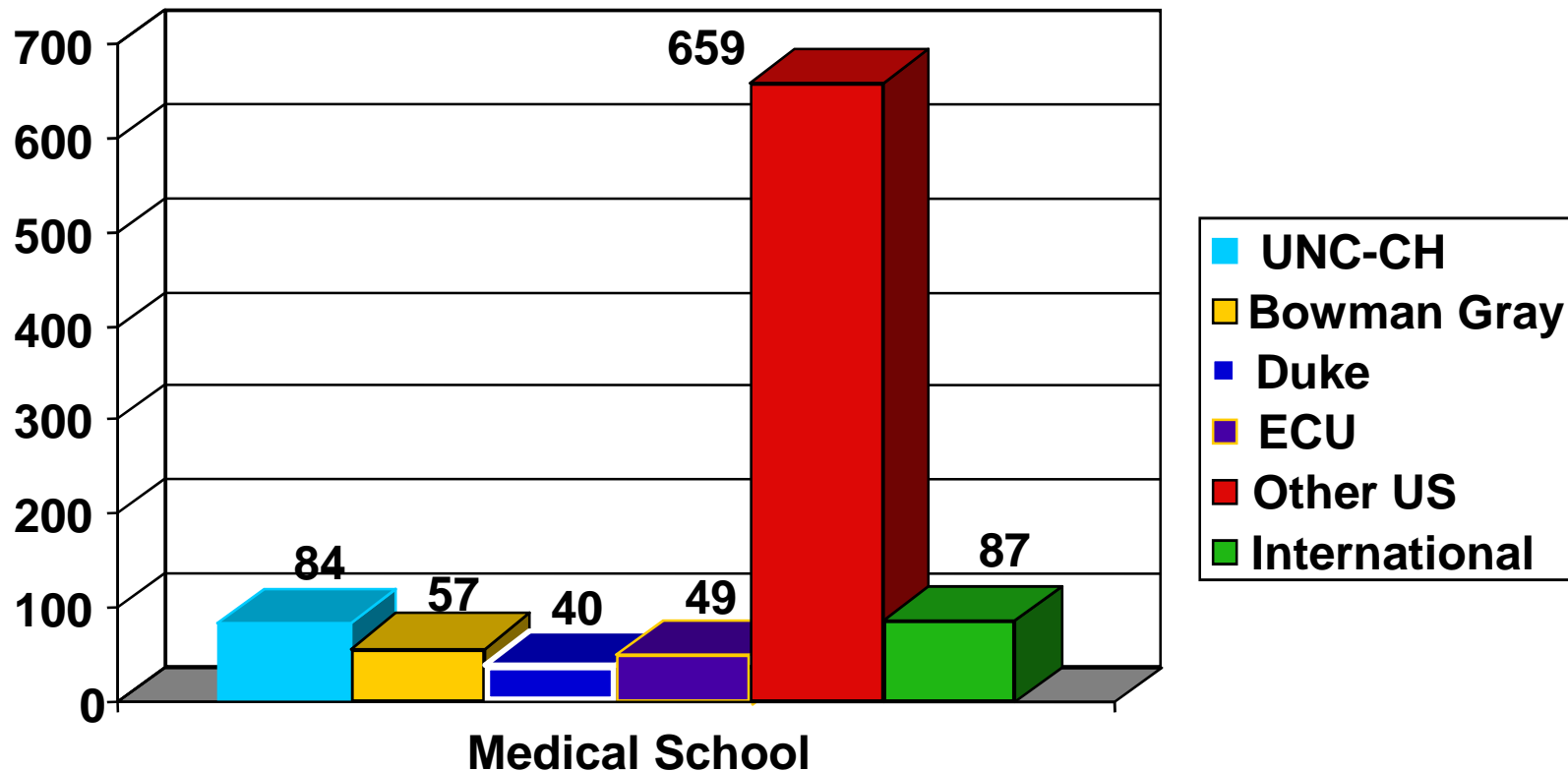


Source: NC Health Professions Data System, Sheps Center from data  
Provided by the North Carolina Medical Board

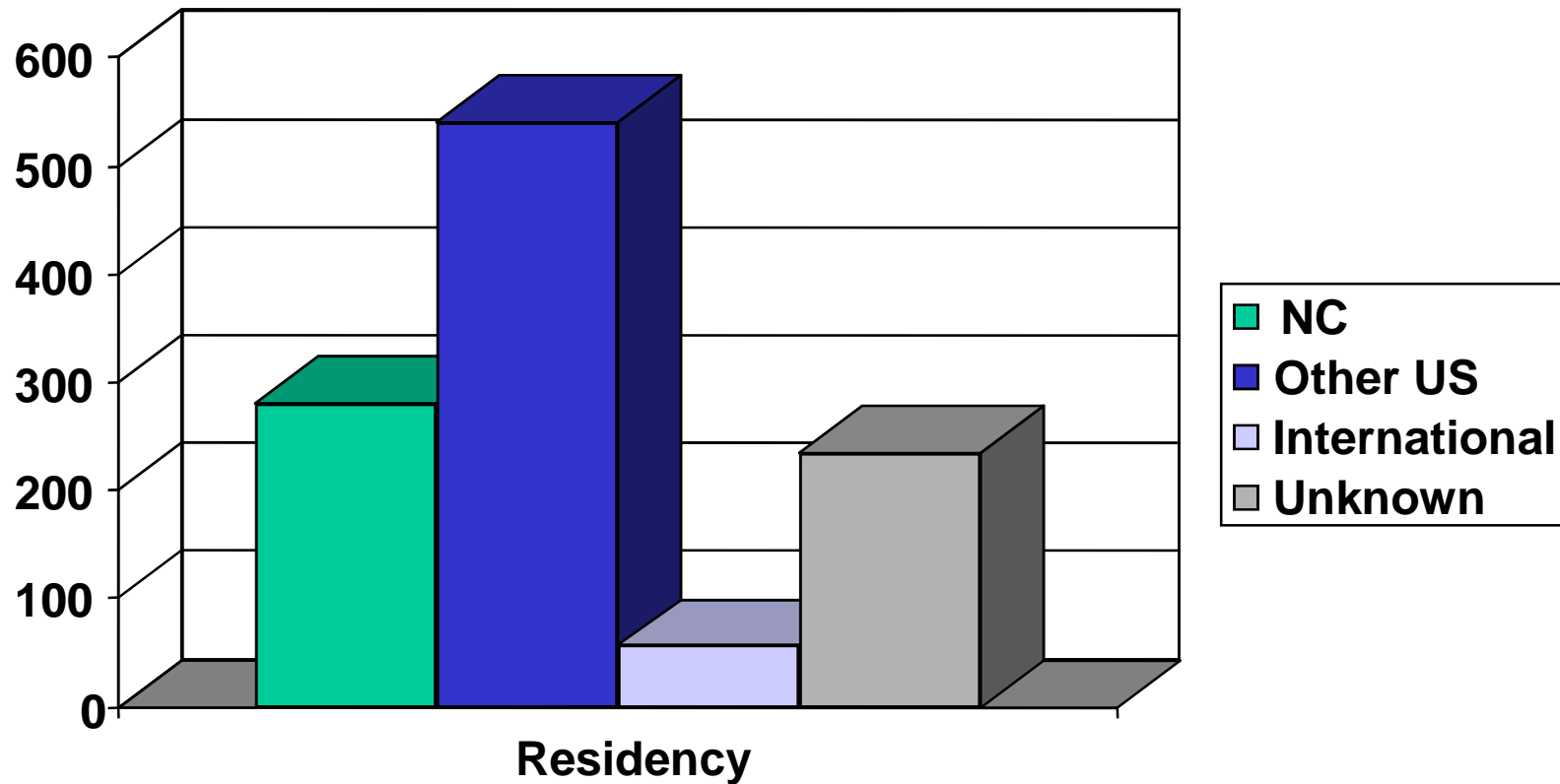


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# Many, but Not Most New Patient Care MDs Go to NC Medical Schools

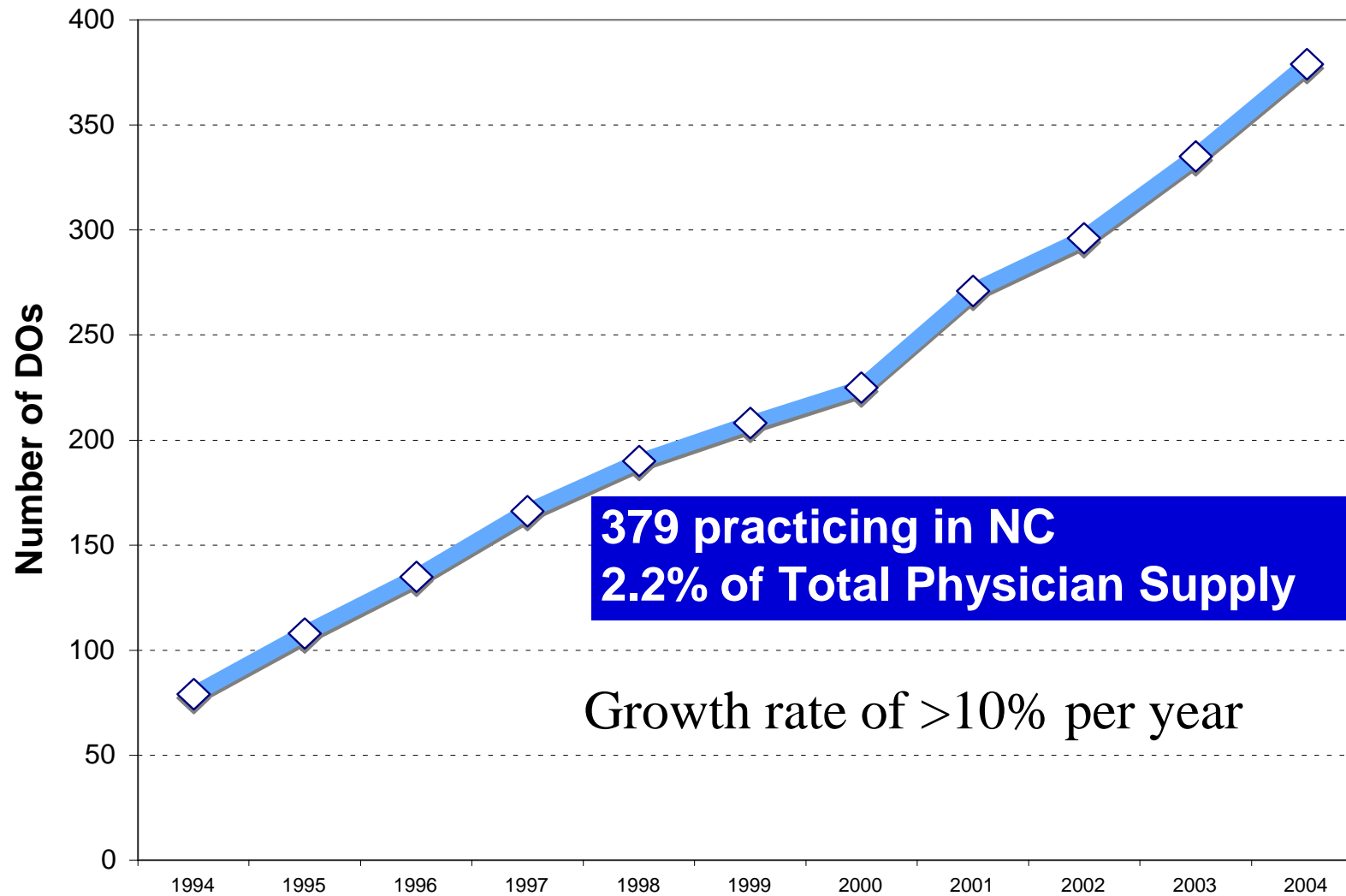


# Majority of New Patient Care MDs Do Residency in NC





# Osteopaths, relatively few, but growing fast in numbers



# Trends in Physicians Delivering Babies

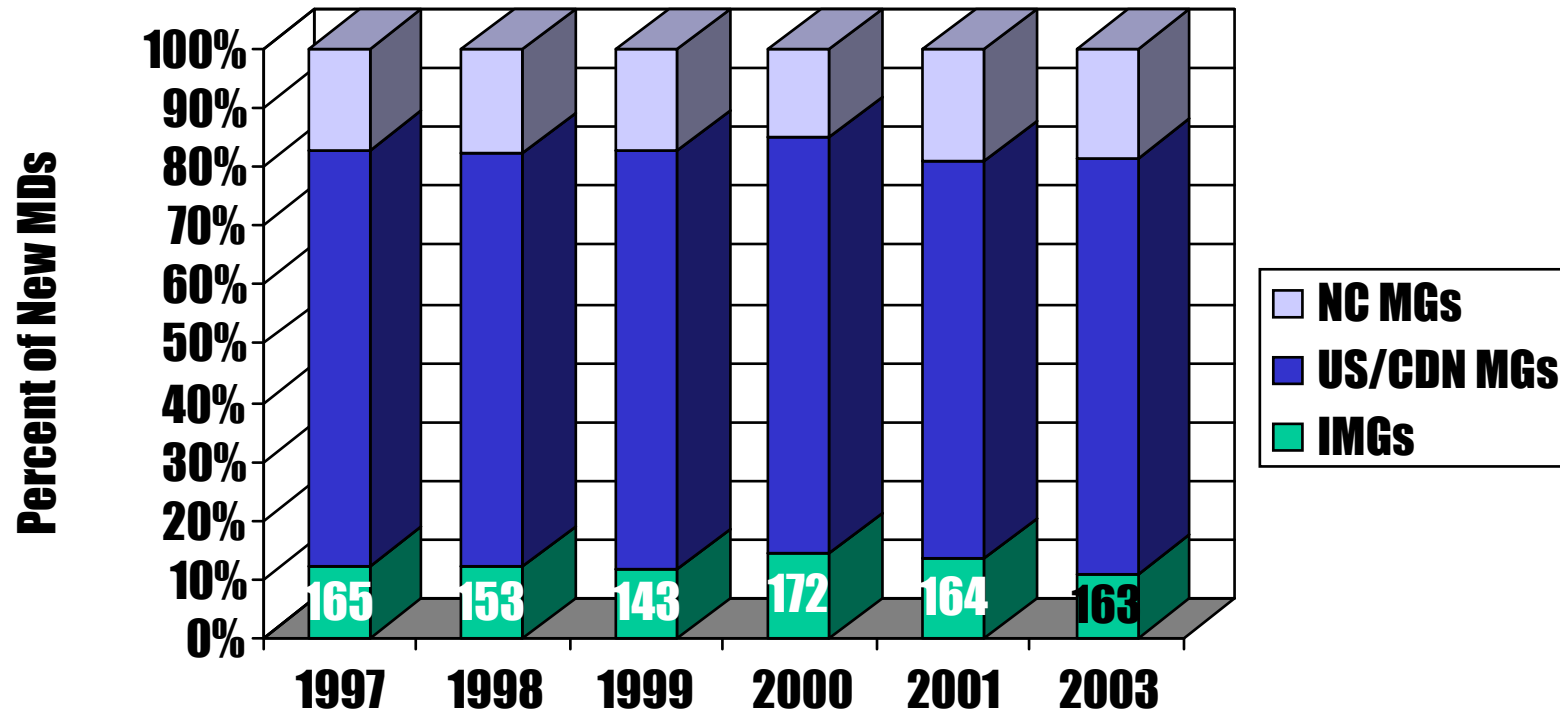
|                        | <b>2000</b>  | <b>2001</b>  | <b>2002</b>  | <b>2003</b>  | <b>2004</b>  |
|------------------------|--------------|--------------|--------------|--------------|--------------|
| <b>OBGs</b>            | <b>919</b>   | <b>937</b>   | <b>954</b>   | <b>960</b>   | <b>981</b>   |
| <b>OBGs Delivering</b> | <b>651</b>   | <b>701</b>   | <b>742</b>   | <b>750</b>   | <b>748</b>   |
| <b>% OBGs</b>          | <b>70.8%</b> | <b>74.8%</b> | <b>77.8%</b> | <b>78.1%</b> | <b>76.2%</b> |
| <b>FPs</b>             | <b>2,173</b> | <b>2,224</b> | <b>2,293</b> | <b>2,327</b> | <b>2,040</b> |
| <b>FPs Delivering</b>  | <b>212</b>   | <b>227</b>   | <b>228</b>   | <b>232</b>   | <b>205</b>   |
| <b>% FPs</b>           | <b>9.8%</b>  | <b>10.2%</b> | <b>9.9%</b>  | <b>9.9%</b>  | <b>10%</b>   |



# Delivery Dynamics

- ❖ **Of the 101 physicians who stopped providing obstetric deliveries between 2003 and 2004, 56 (56%) were Family Docs.**
- ❖ **This is a disproportionate share since family docs are just 13% of total physicians and 10% of physicians delivering babies.**

# IMGs—slight Increase; NC IMGs Stable in Recent Years.



NC TOTAL IMG = 13%  
US Avg = 24%

Source: NC Health Professions Data System, Sheps Center.  
As reported on NC Medical Board license renewal and registration

# Components of Change, 2001-4



Source: NC Health Professions Data System, Sheps Center from data  
 Provided by the North Carolina Medical Board

# What do we know about those who left North Carolina or Practice?

## ❖ **Between 2002 and 2003**

- 143 physicians retired from practice. Average retirement age was 66 years of age.
- 90% of retiring physicians were men. Only 2% did obstetric deliveries.
- 303 physicians moved out of state but maintained an active license
- 138 went inactive
- 658 dropped out of physician file (presumably moved)

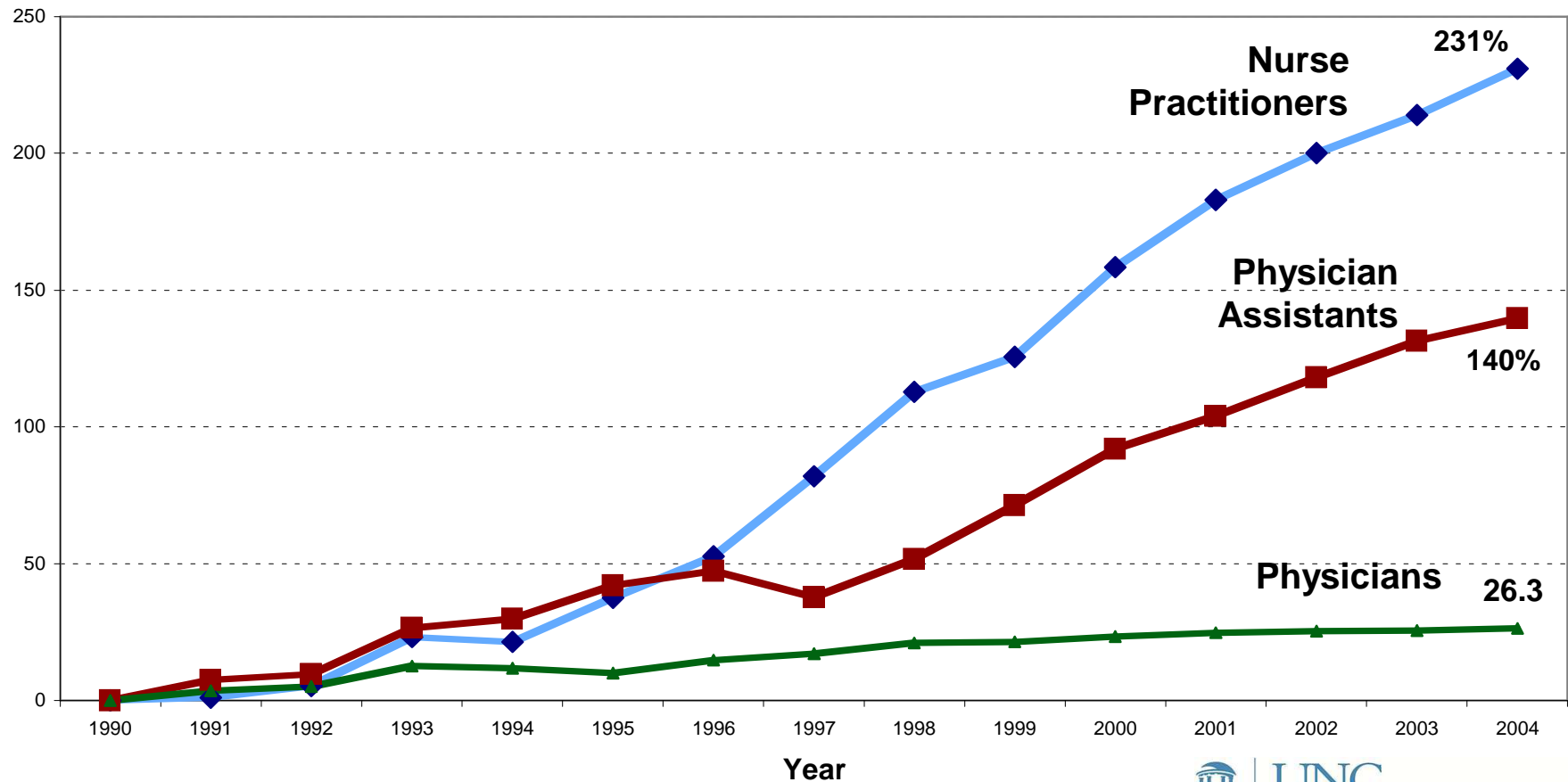
## ❖ **51% of the 138 physicians who went inactive were women. The average age of inactive females was 42 compared to 59 for inactive males.**

# Dynamics and Change

- ❖ The supply is dynamic with up to 20% of all physicians moving either into or out of active practice in NC.
- ❖ Many physicians move into and out of active practice during their careers.
- ❖ The “net” supply is a “snapshot” of change
- ❖ There are other practitioners who can do what doctors do —*Nurse Practitioners and Physician Assistants*

# Cumulative Growth of Nurse Practitioners, Physician Assistants and Physicians, North Carolina, 1990-2004

Cumulative rate of growth since 1990





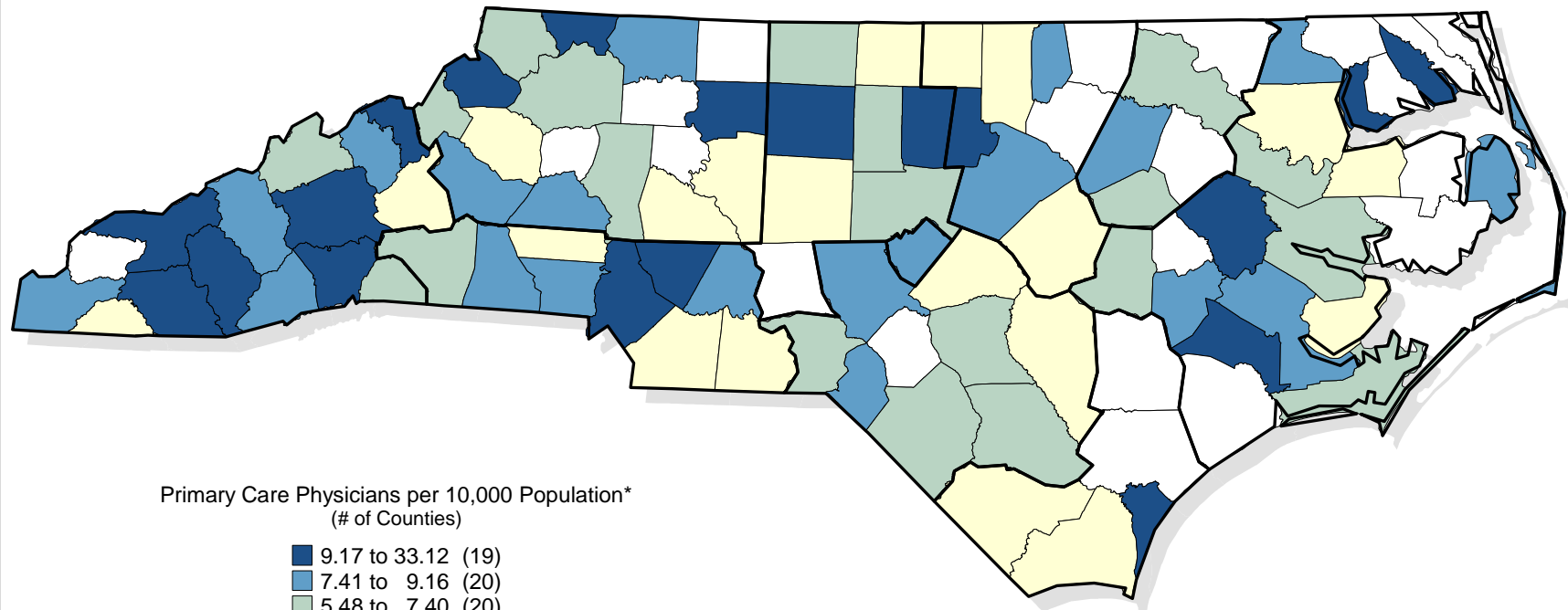
# Questions

- ❖ **Do NPs and PAs fill the gap left by the slowdown in physician growth?**
- ❖ **Do NPs and PAs expand demand for physician services?**
- ❖ **Do NPs and Pas meet different patient care needs than physicians?**

# The Geography of Physician Supply in NC

- ❖ **Very uneven distribution of MDs in North Carolina**
- ❖ **Selected areas have recognized “shortages” designated by the federal government as Primary care Health Professional Shortage Areas (HPSAs)**

## Primary Care Physicians per 10,000 Population North Carolina, 2004



Primary Care Physicians per 10,000 Population\*  
(# of Counties)

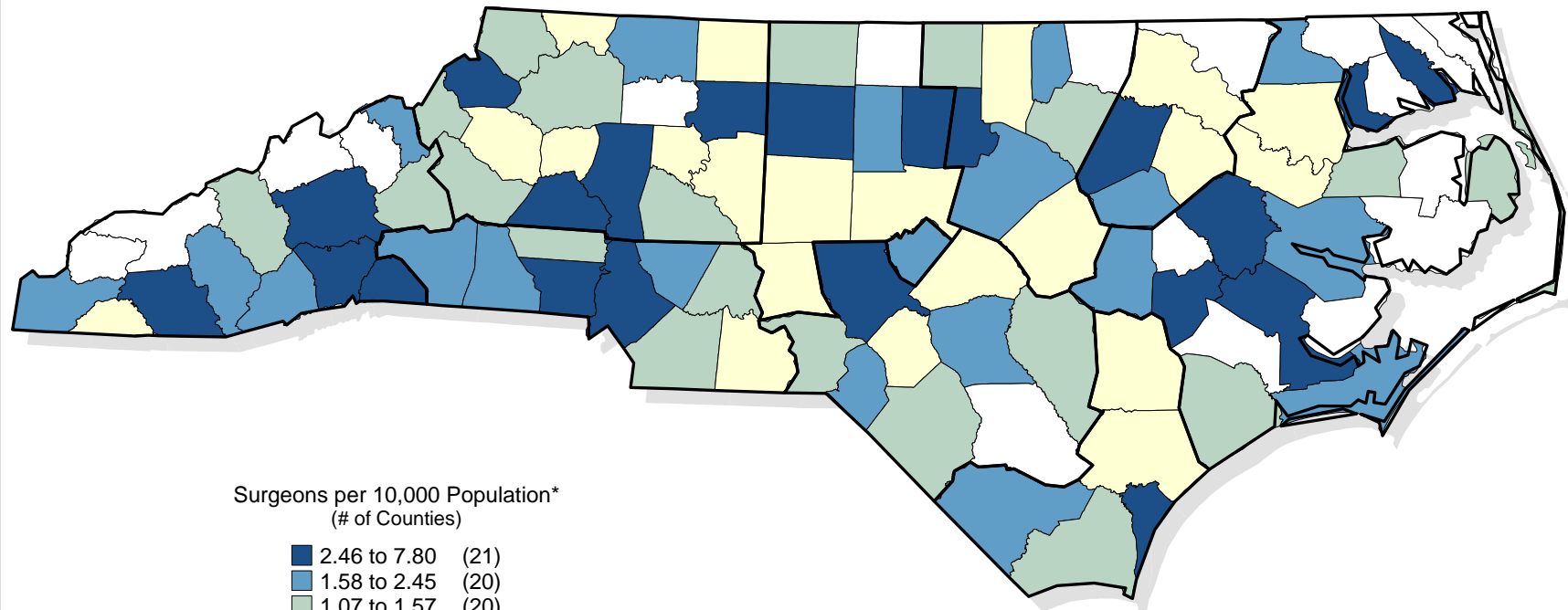
- 9.17 to 33.12 (19)
- 7.41 to 9.16 (20)
- 5.48 to 7.40 (20)
- 4.28 to 5.47 (20)
- 1.69 to 4.27 (21)

AHEC Region Boundary

Source: North Carolina Health Professions Data System,  
with data derived from the North Carolina Medical Board, 2004.  
Produced by: North Carolina Health Professions Data System, and the  
Southeast Regional Center for Health Workforce Studies, Cecil G. Sheps  
Center for Health Services Research, University of North Carolina at Chapel Hill.

\*Primary Care Physicians include active or unknown activity status, instate,  
nonfederal, non-resident-in-training MDs and DOs indicating a primary specialty  
of Family Practice, General Practice, Internal Medicine, Ob/Gyn or Pediatrics.

## Surgeons per 10,000 Population North Carolina, 2004



Surgeons per 10,000 Population\*  
(# of Counties)

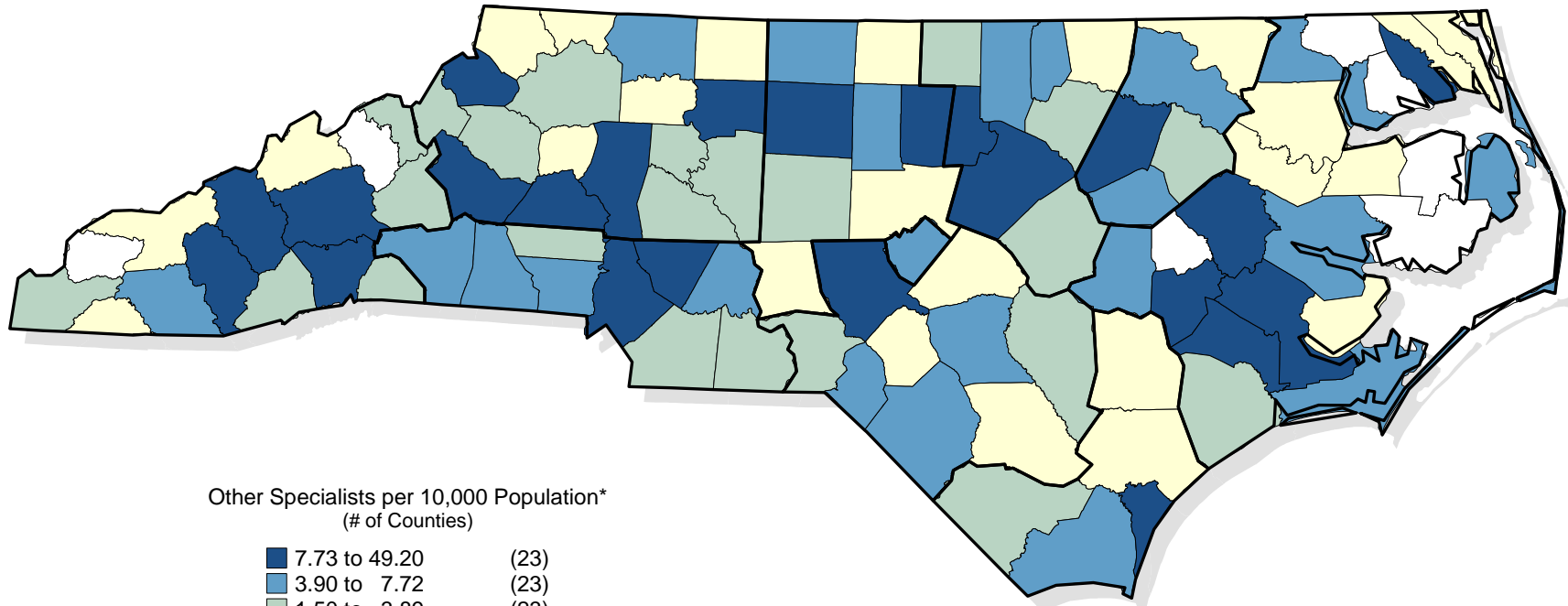
- 2.46 to 7.80 (21)
- 1.58 to 2.45 (20)
- 1.07 to 1.57 (20)
- 0.01 to 1.06 (21)
- No Surgeons (18)

AHEC Region Boundary

Source: North Carolina Health Professions Data System,  
with data derived from the North Carolina Medical Board, 2004.  
Produced by: North Carolina Health Professions Data System, and the  
Southeast Regional Center for Health Workforce Studies, Cecil G. Sheps  
Center for Health Services Research, University of North Carolina at Chapel Hill.

\*Physicians included are active or have unknown activity status,  
instate, nonfederal, non-resident-in-training MDs and DOs. Surgeons  
include physicians who reported a primary specialty in any type of surgery.

## Other Physician Specialists per 10,000 Population North Carolina, 2004



Other Specialists per 10,000 Population\*  
(# of Counties)

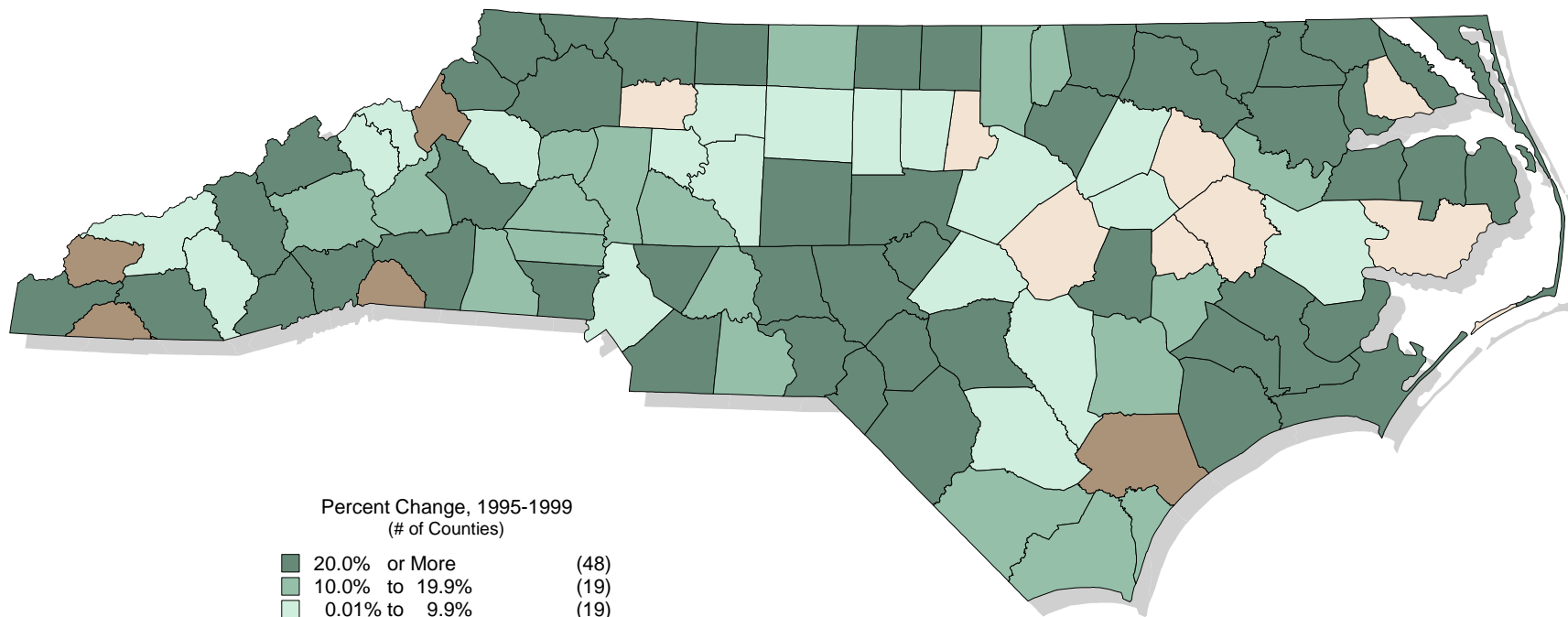
|  |                      |      |
|--|----------------------|------|
|  | 7.73 to 49.20        | (23) |
|  | 3.90 to 7.72         | (23) |
|  | 1.50 to 3.89         | (23) |
|  | 0.01 to 1.49         | (24) |
|  | No Other Specialists | (7)  |

AHEC Region Boundary

Source: North Carolina Health Professions Data System,  
with data derived from the North Carolina Medical Board, 2004.  
Produced by: North Carolina Health Professions Data System, and the  
Southeast Regional Center for Health Workforce Studies, Cecil G. Sheps  
Center for Health Services Research, University of North Carolina at Chapel Hill.

\*Physicians included are active or have unknown activity  
status, instate, nonfederal, non-resident-in-training MDs and DOs.  
Other specialists include physicians who reported something other  
than primary specialties in primary care or any type of surgery.

## Percent Change in Physicians per 10,000 Population North Carolina, 1995-1999



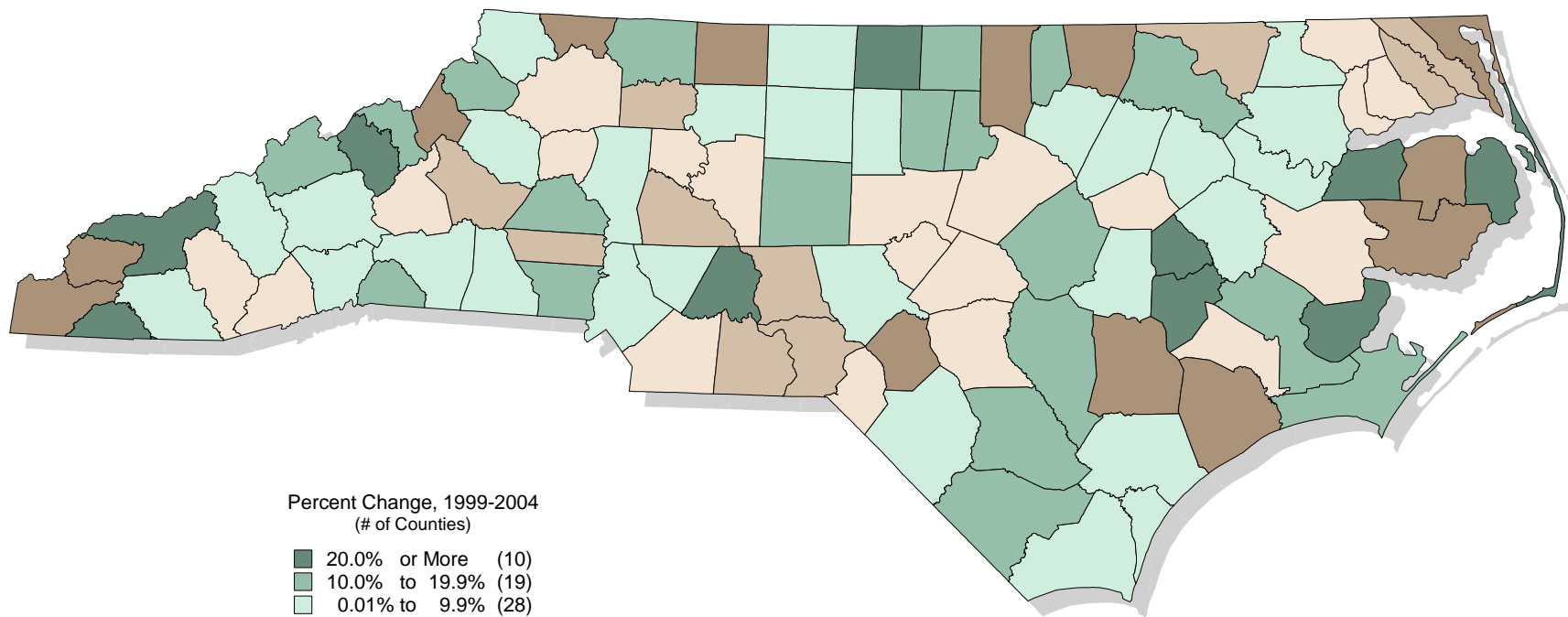
Percent Change, 1995-1999  
(# of Counties)

|  |                              |      |
|--|------------------------------|------|
|  | 20.0% or More                | (48) |
|  | 10.0% to 19.9%               | (19) |
|  | 0.01% to 9.9%                | (19) |
|  | No Active Physicians in 1994 | (1)  |
|  | -0.01% to -9.9%              | (8)  |
|  | -10.0% to -19.9%             | (0)  |
|  | -20.0% or More               | (5)  |

Source: North Carolina Health Professions Data System, Cecil G. Sheps  
Center for Health Services Research, University of North Carolina at Chapel  
Hill, with data derived from the North Carolina Medical Board, 1995-2004.

\*There were no active physicians in 1995; there were 3 active physicians in 1999.  
Counts include active, instate, nonfederal, non-resident-in-training physicians.

## Percent Change in Physicians per 10,000 Population North Carolina, 1999-2004



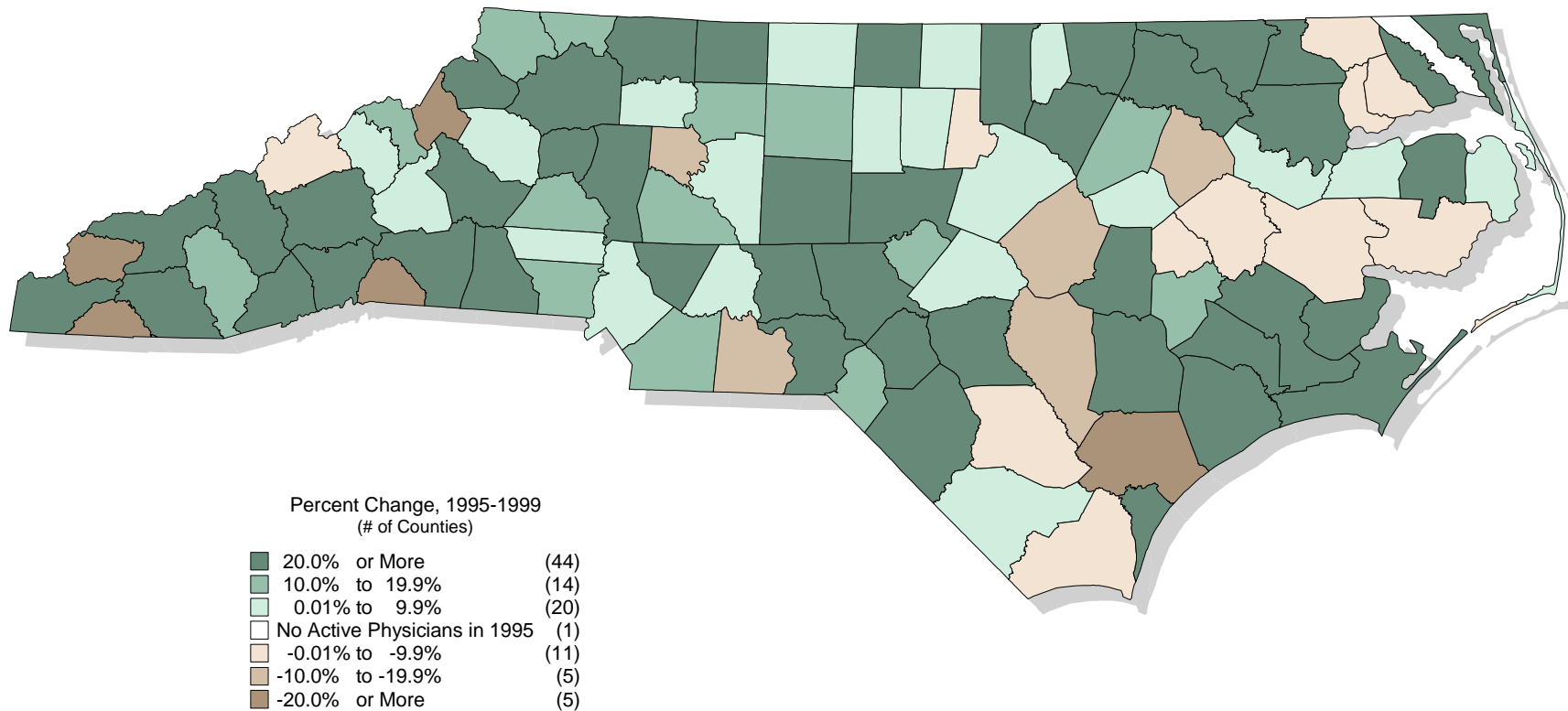
Percent Change, 1999-2004  
(# of Counties)

- 20.0% or More (10)
- 10.0% to 19.9% (19)
- 0.01% to 9.9% (28)
- 0.01% to -9.9% (20)
- 10.0% to -19.9% (10)
- 20% or More (13)

Source: North Carolina Health Professions Data System, Cecil G. Sheps  
Center for Health Services Research, University of North Carolina at Chapel  
Hill, with data derived from the North Carolina Medical Board, 1995-2004.

Counts include active, instate, nonfederal, non-resident-in-training physicians.

## Percent Change in Primary Care Physicians per 10,000 Population North Carolina, 1995-1999

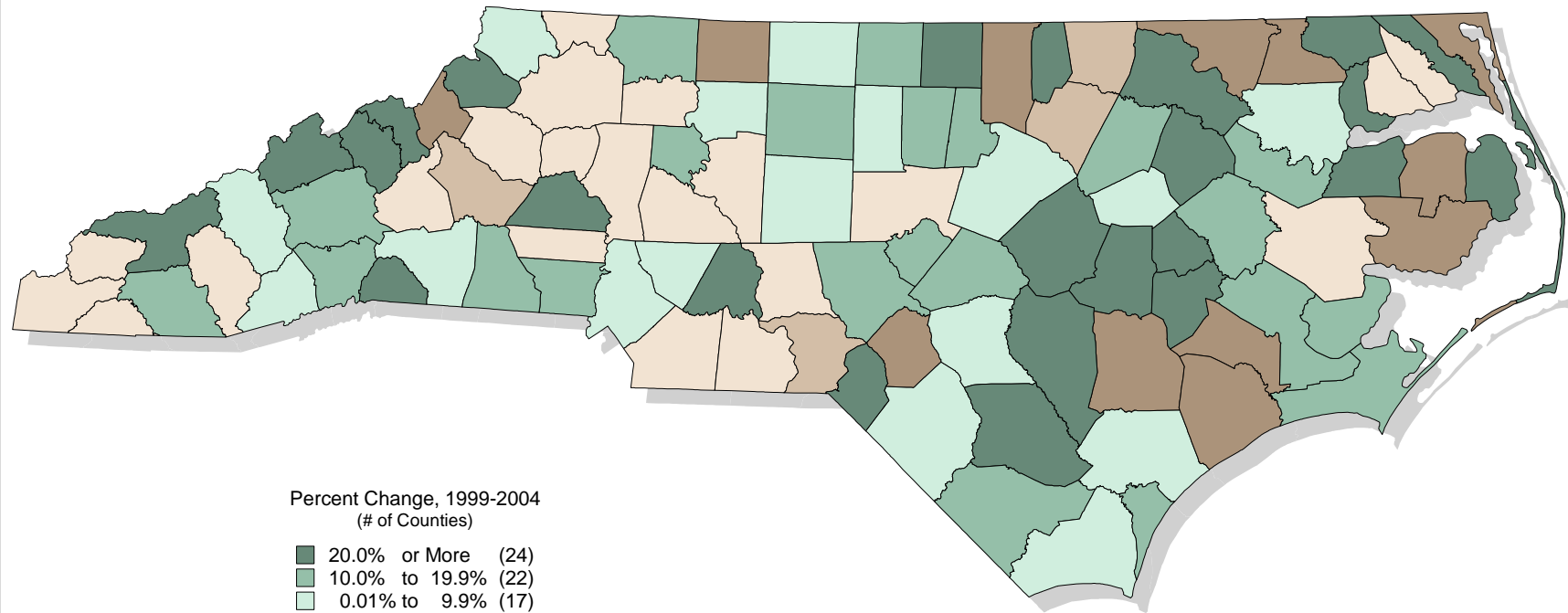


Source: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the North Carolina Medical Board, 1995-2004.

\*There were no active physicians in 1995; there was 1 active physician in 1999. Counts include active, in-state, nonfederal, non-resident-in-training physicians who indicated a primary specialty of family practice, internal medicine, general practice, OB/GYN or pediatrics.



## Percent Change in Primary Care Physicians per 10,000 Population North Carolina, 1999-2004



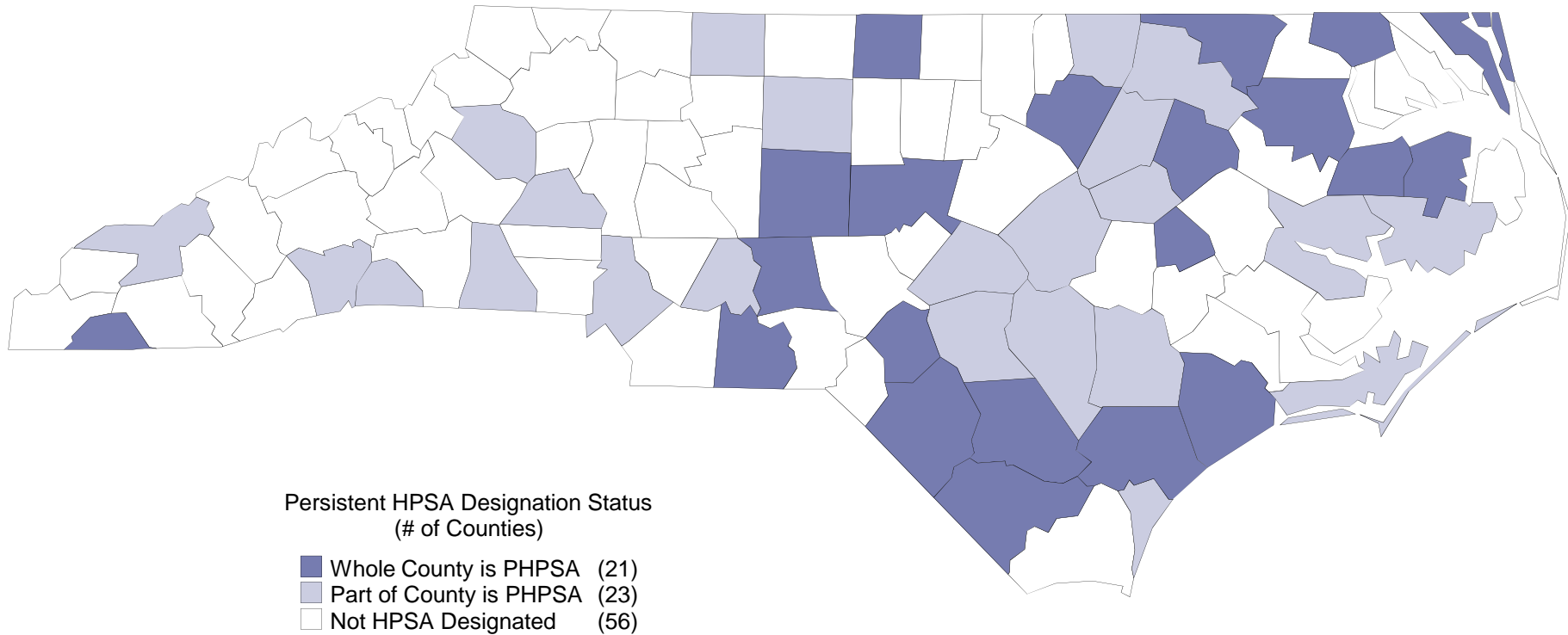
Percent Change, 1999-2004  
(# of Counties)

|                  |      |
|------------------|------|
| 20.0% or More    | (24) |
| 10.0% to 19.9%   | (22) |
| 0.01% to 9.9%    | (17) |
| -0.01% to -9.9%  | (21) |
| -10.0% to -19.9% | (4)  |
| -20.0% or More   | (12) |

Source: North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the North Carolina Medical Board, 1995-2004.

Counts include active, in-state, nonfederal, non-resident-in-training physicians who indicated a primary specialty of family practice, internal medicine, general practice, OB/GYN or pediatrics.

## Persistent Health Professional Shortage Areas\* (PHPSAs) North Carolina Counties



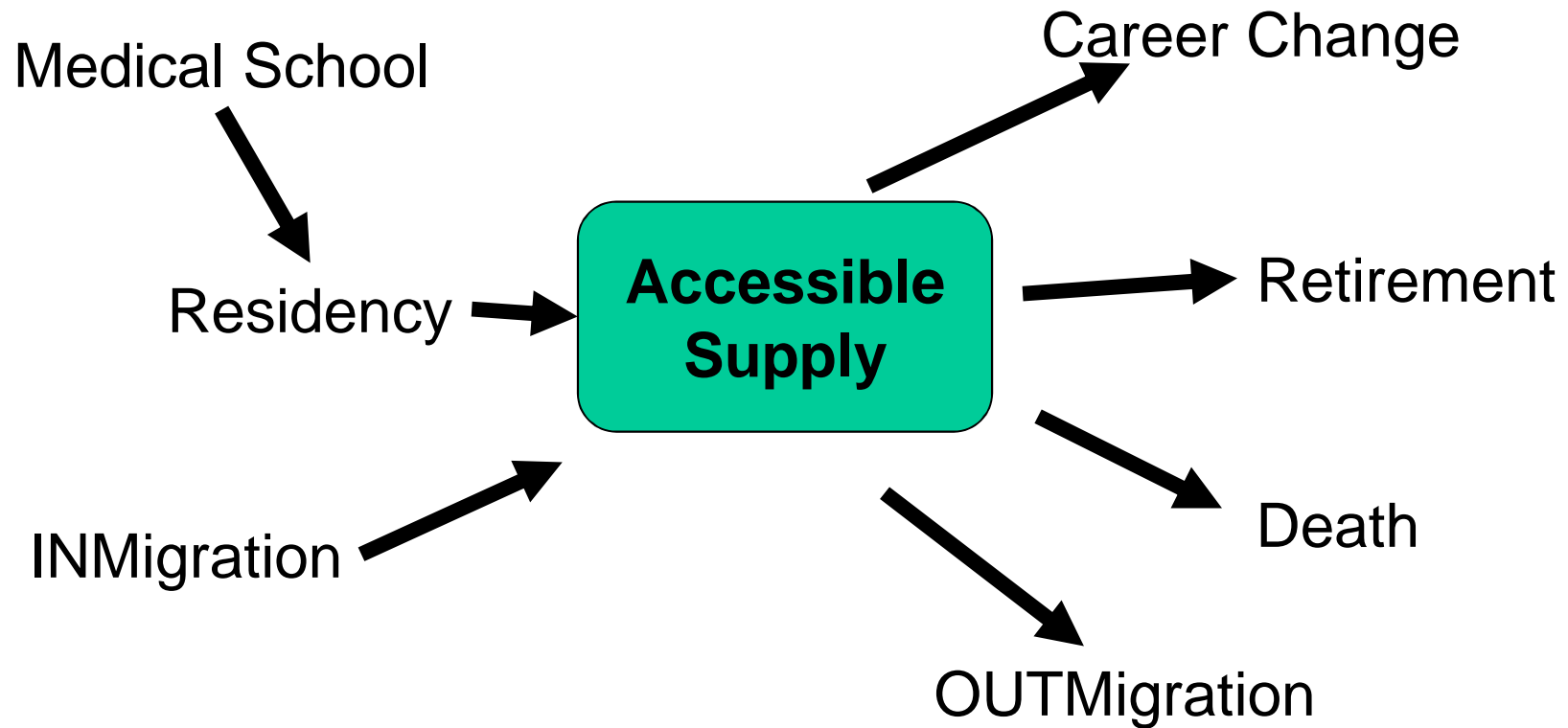
\*Persistent HPSAs are those designated as HPSAs by the Health Resources and Services Administration (HRSA) from 1993 to 1997, or in 6 of the last 7 releases of HPSA definition.

Source: Area Resource File, HRSA, DHHS, 1998.

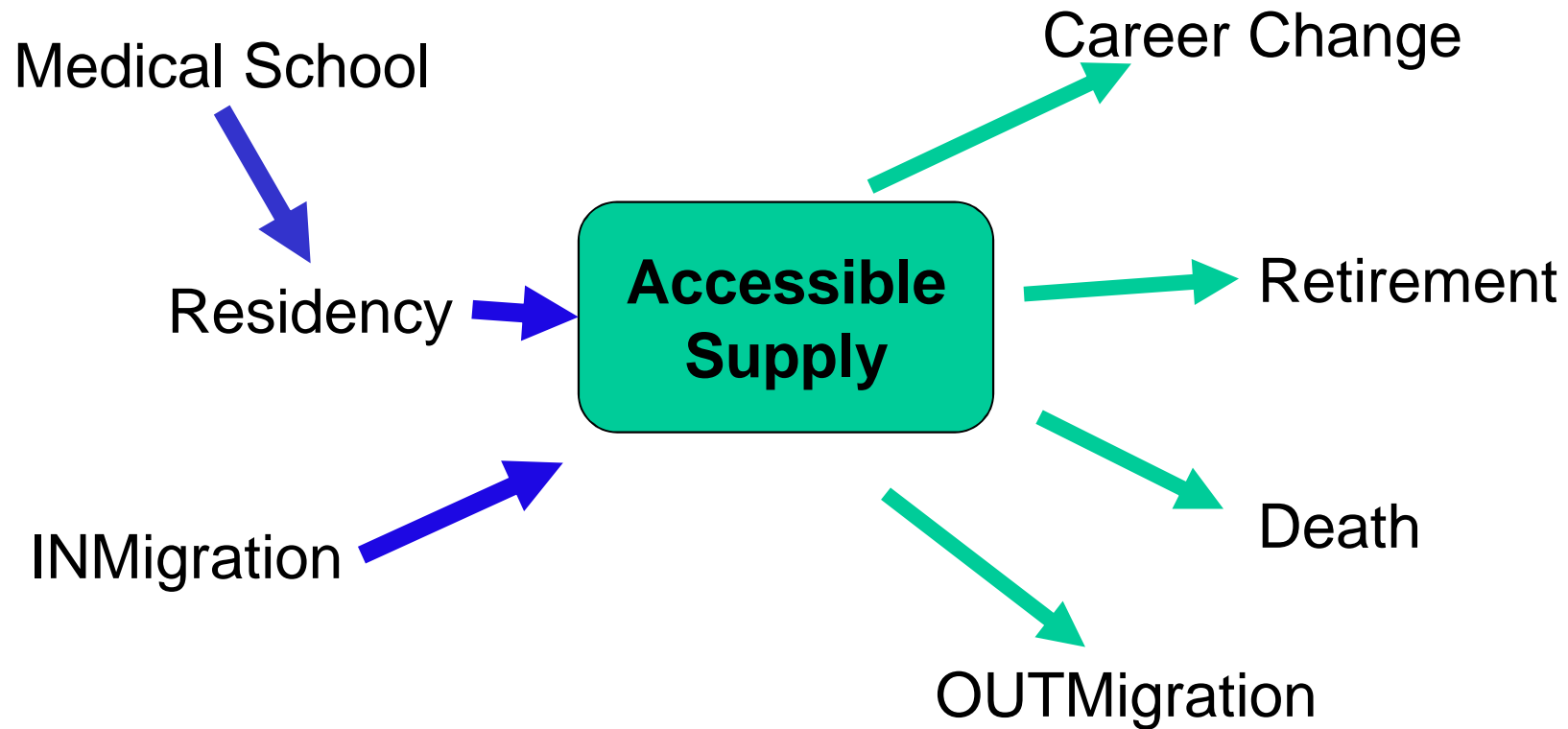
Produced By: North Carolina Rural Health Research and Policy Analysis Center,  
Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

# How to Change the Future Supply of Physicians

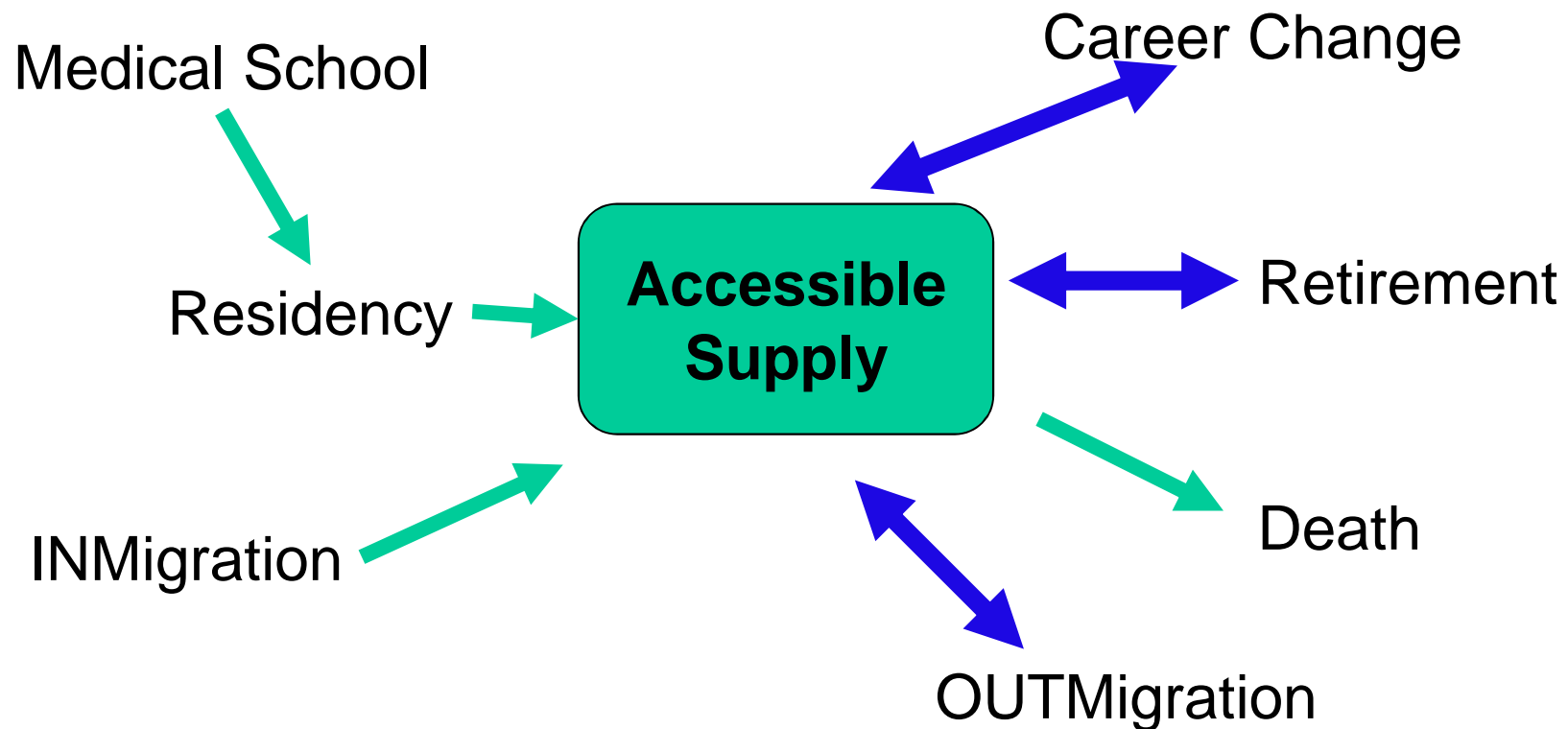
# Factors in the Supply



# Increase Entry the Supply



# Reduce Exit from the Supply



# NC Medical Schools, IN-State Yield (percent of graduates in active practice, in North Carolina)

|                        |       |
|------------------------|-------|
| ❖ Bowman-Gray-WFU..    | 39.4% |
| ❖ Duke.....            | 24.1% |
| ❖ East Carolina.....   | 59.0% |
| ❖ UNC-Chapel Hill..... | 48.7% |

# Yield from NC Suppliers

## ❖ NC Medical Schools 40 year trend:

- 39.3% of graduates practice in NC
- Current annual graduates: 441
- 2X graduates yields net increase of 171, *after 7 years*

## ❖ NC Residencies 40 year trend

- 42% of those trained in NC stay in NC
- Current total Residents 2,640; 633 are in their 1st year
- 2X residencies yields net increase of 316, *after 3.5 yrs*



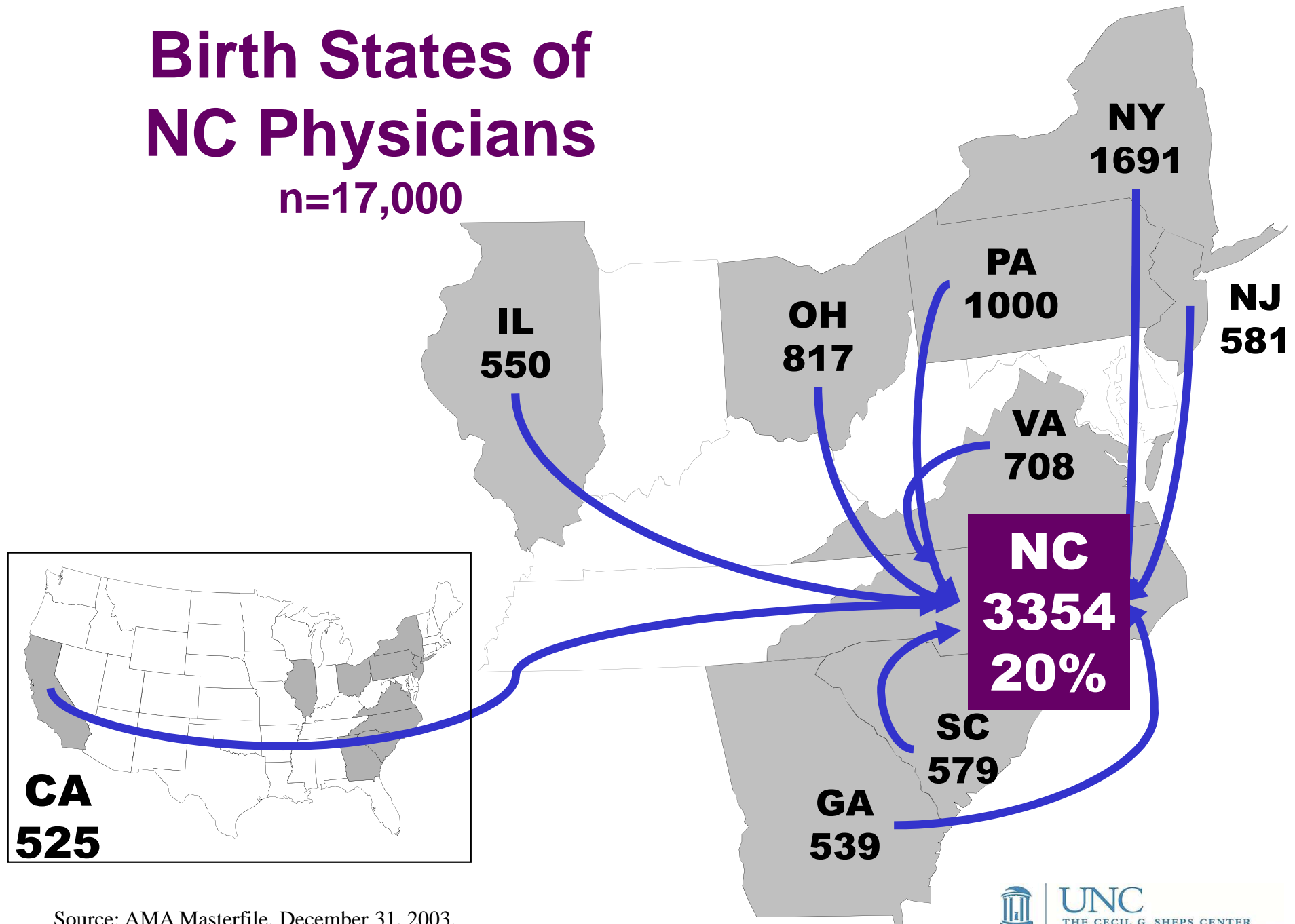
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# Birth States of NC Physicians

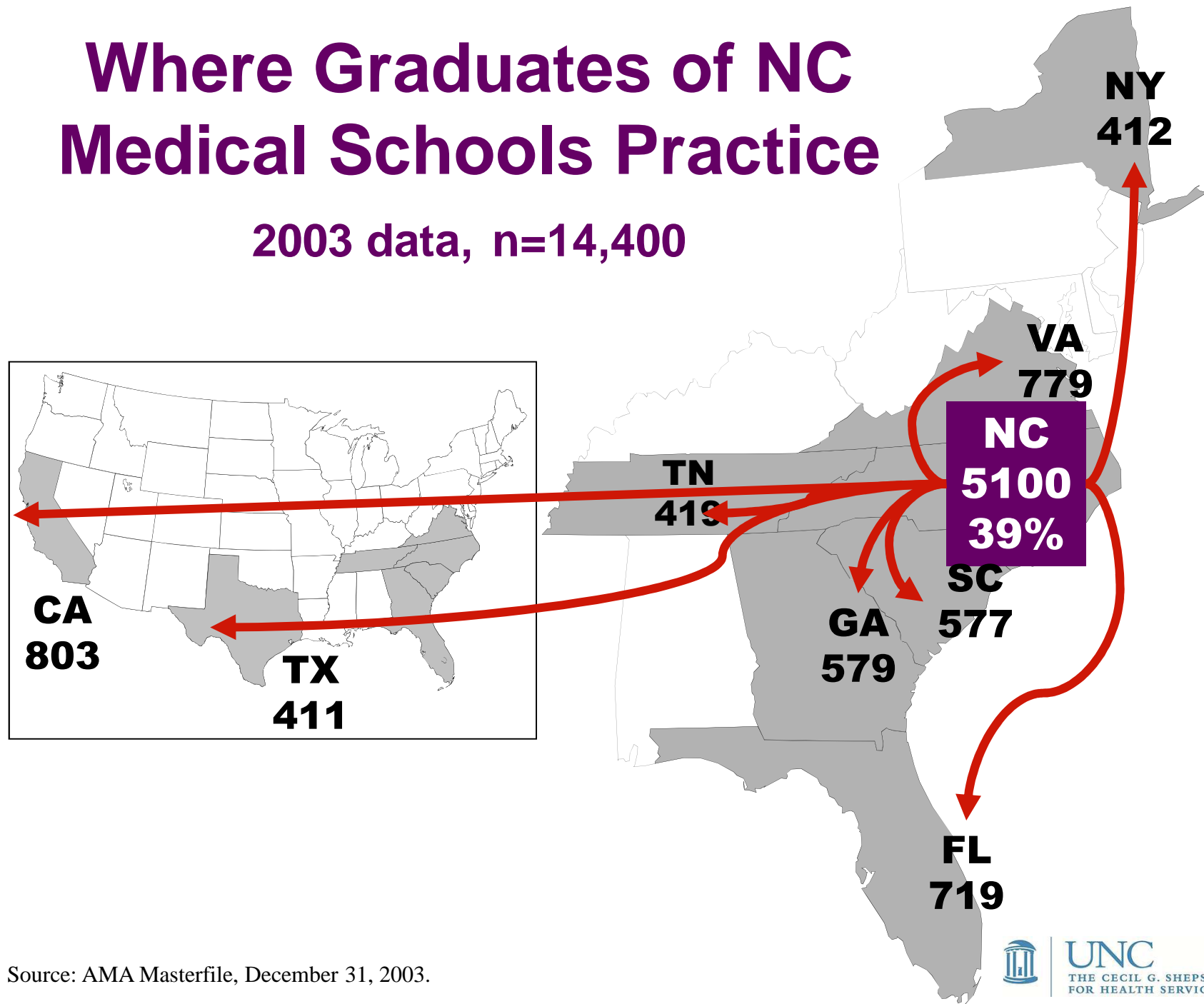
n=17,000



Source: AMA Masterfile, December 31, 2003.

# Where Graduates of NC Medical Schools Practice

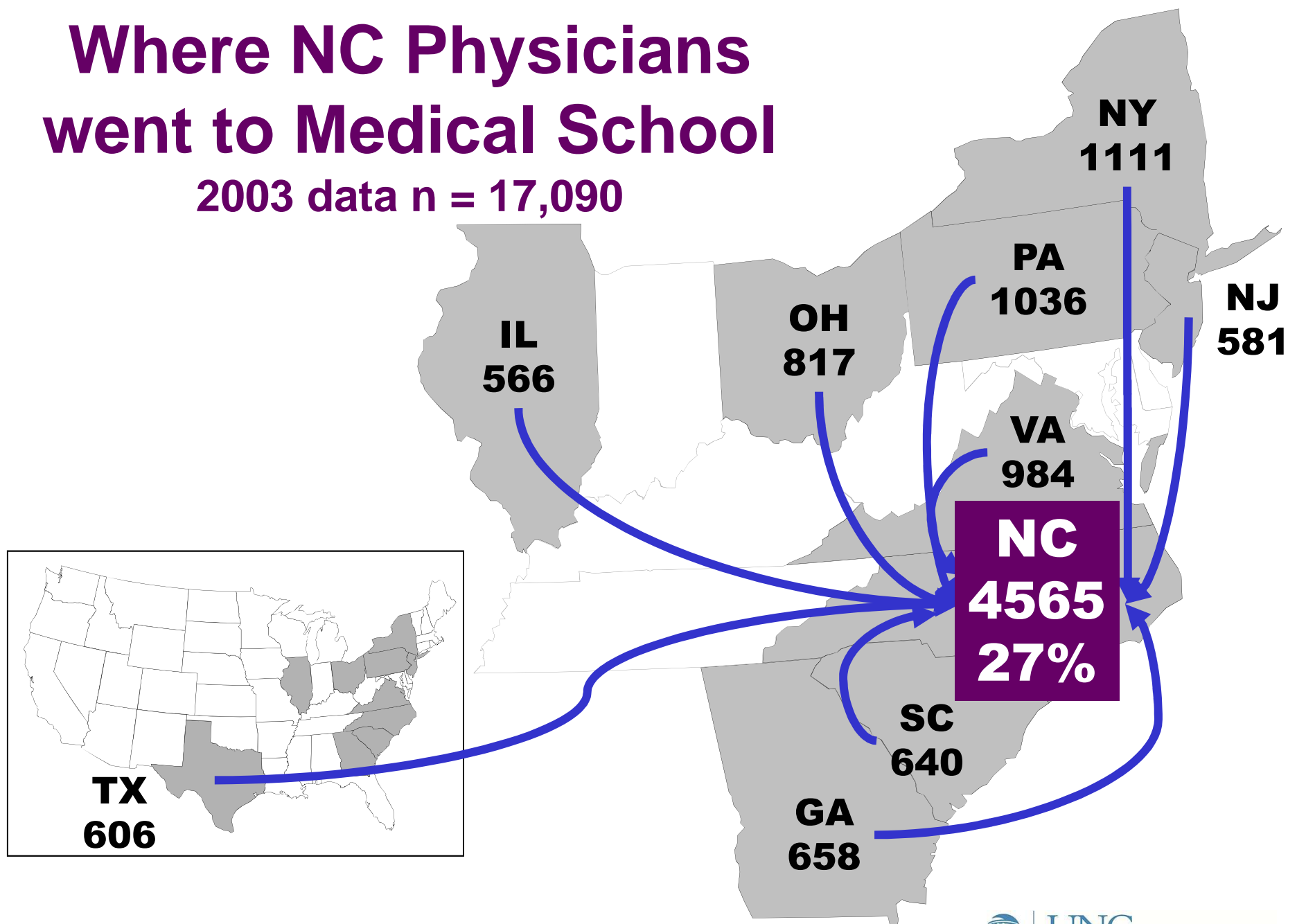
2003 data, n=14,400



Source: AMA Masterfile, December 31, 2003.

# Where NC Physicians went to Medical School

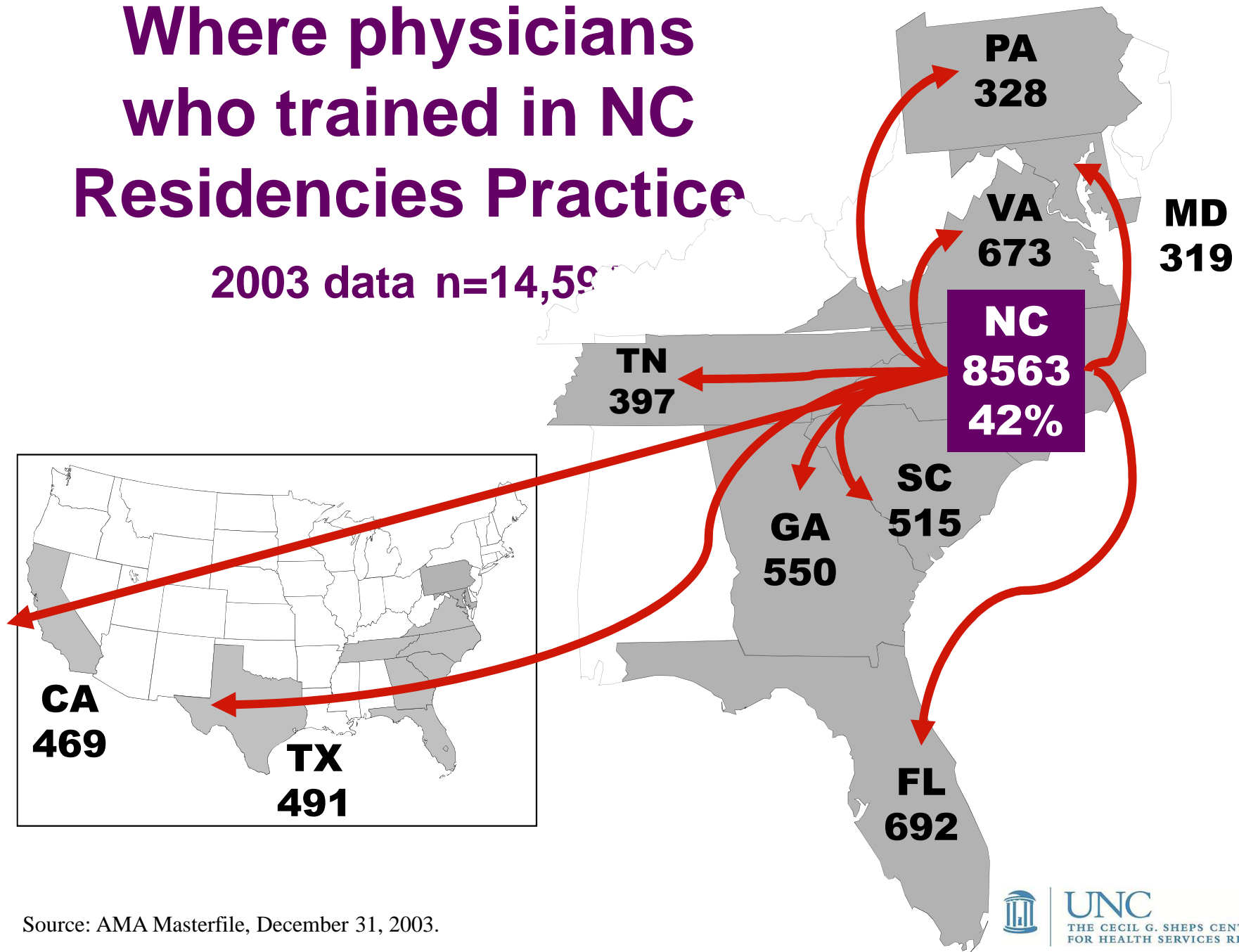
2003 data n = 17,090



Source: AMA Masterfile, December 31, 2003.

# Where physicians who trained in NC Residencies Practice

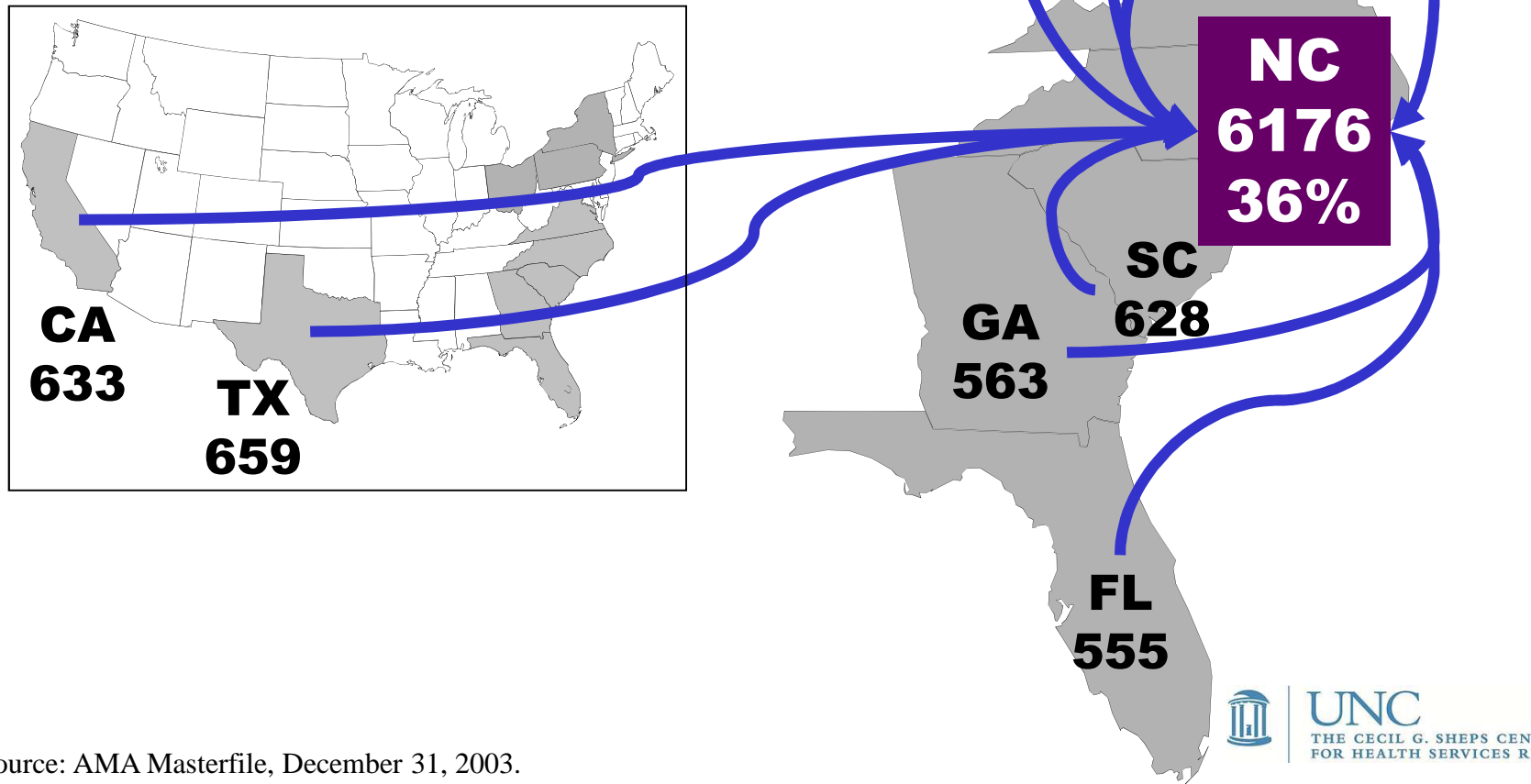
2003 data n=14,597



Source: AMA Masterfile, December 31, 2003.

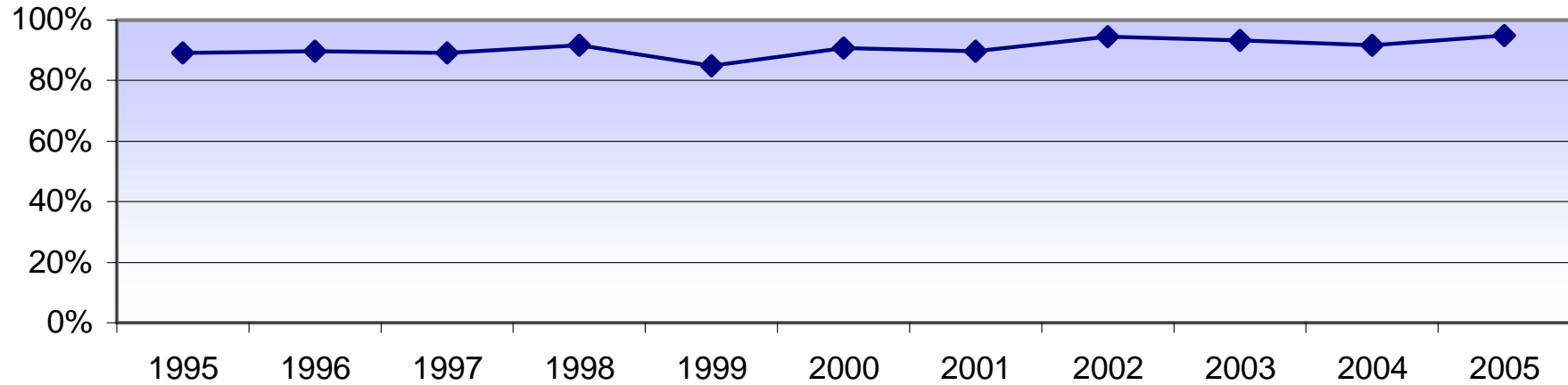
# Where NC Physicians Received Specialty Training

n=17,090

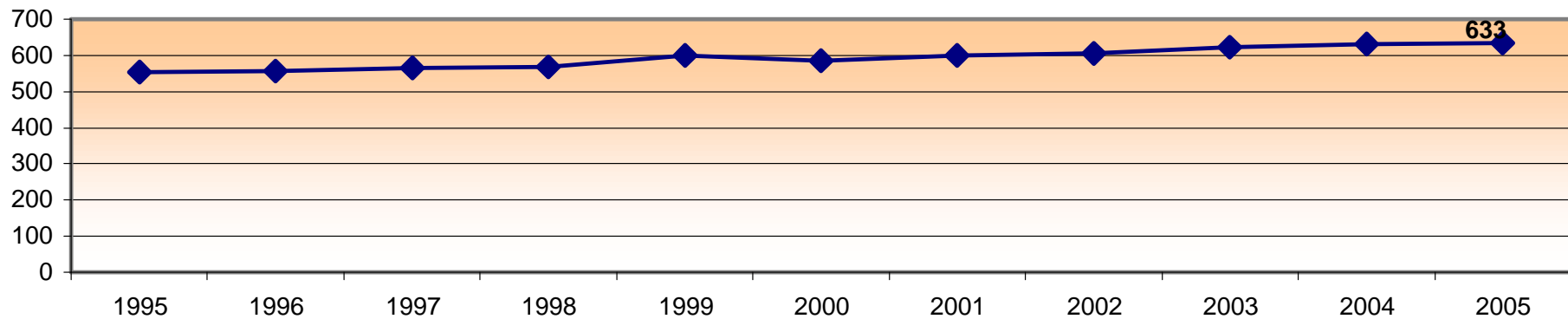


Source: AMA Masterfile, December 31, 2003.

## GY-1 Residency Fill Rate in North Carolina, 1995 - 2005



## Number of GY-1 Residencies in North Carolina, 1995 - 2005



## National - State Policy Context

- ❖ **President cuts Title VII, AHEC from Budget**
- ❖ **Congress not mobilized to support training programs**
- ❖ **States facing need to expand residencies**
  - **Utah: University-Intermountain System Consortium to add state-funded residencies**

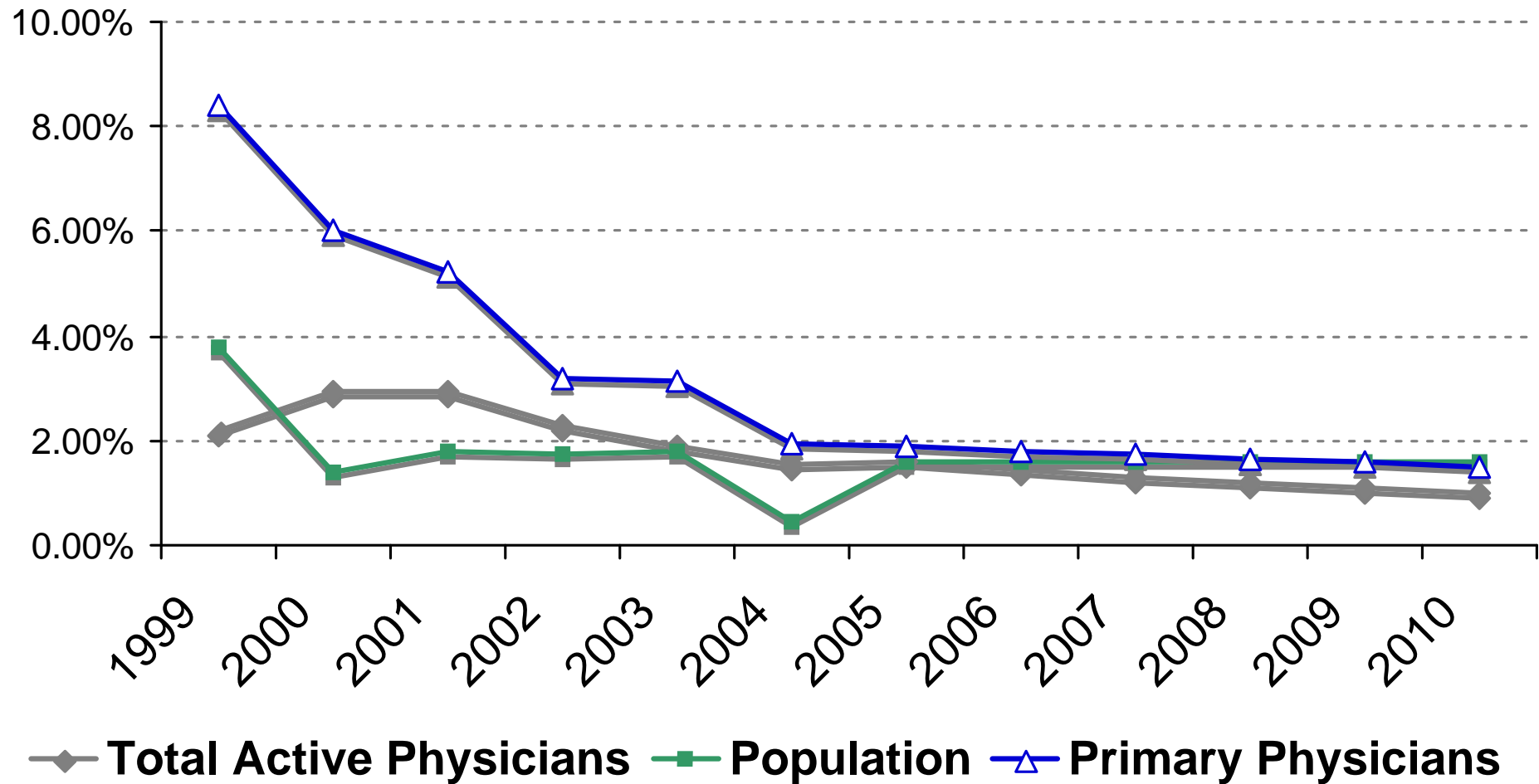
## State/Federal Initiatives

- ❖ **Kentucky-study shows need for 600 primary care physicians**
- ❖ **Texas ,Georgia, Maryland: Study/Analysis Groups, shortages noted**
- ❖ **J-1 Visa program extended, expanded PL 108-441.**
- ❖ **Medical Schools Expanding Classes**

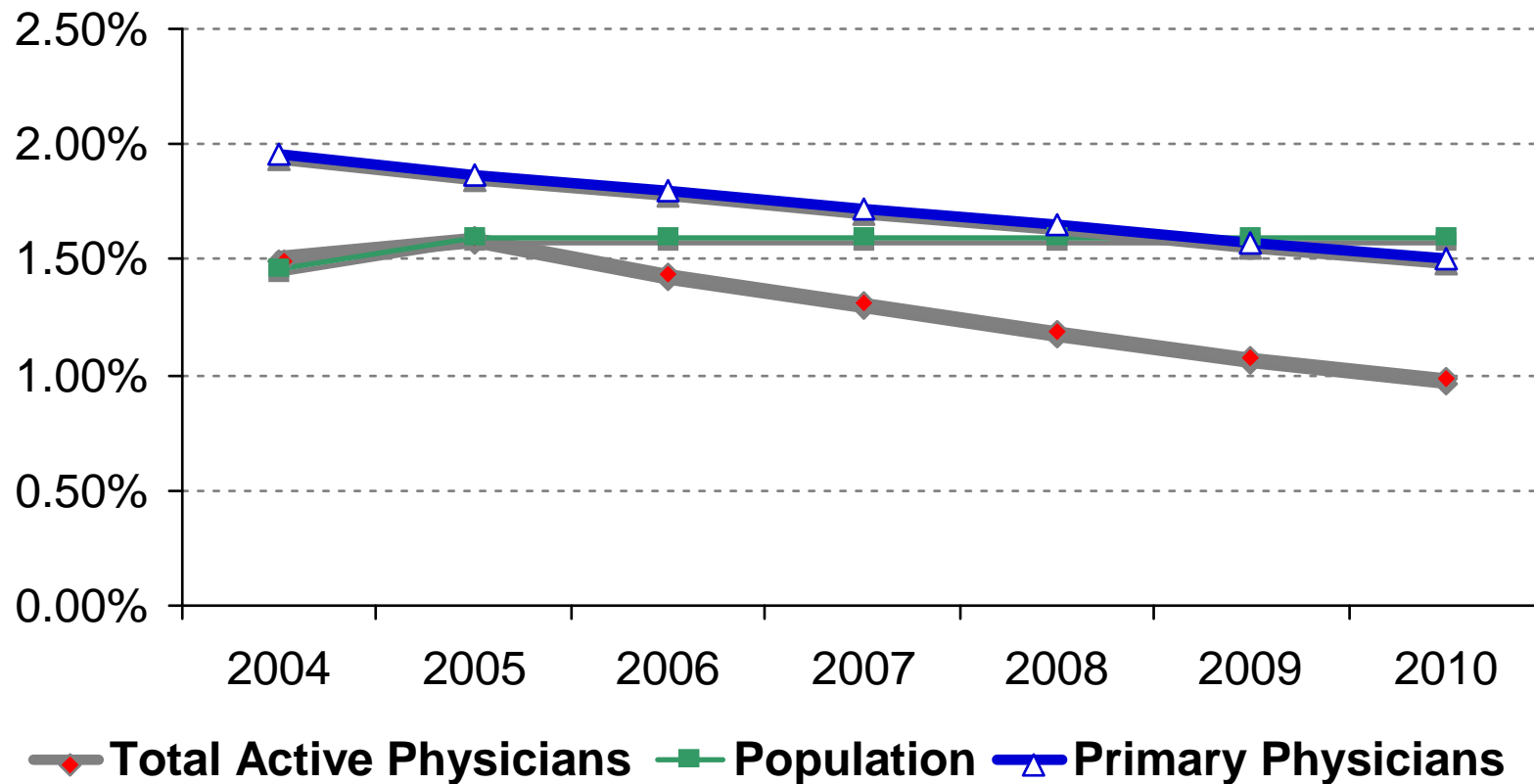


# Projections of Future Supply

# Physician-Population Trends and Projections



# Focus on Short Term Future Population “Crosses” Physician Growth



# Projection with 20% increase in Med. School, Residency, In-migration

## physicians/10 000

