

# **North Carolina's Rural Health Workforce: *Challenges and Strategies***

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Program on Health Workforce Research & Policy, Sheps Center

*NC IOM Rural Health Taskforce Meeting*

*31 July 2013*



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# Main Themes

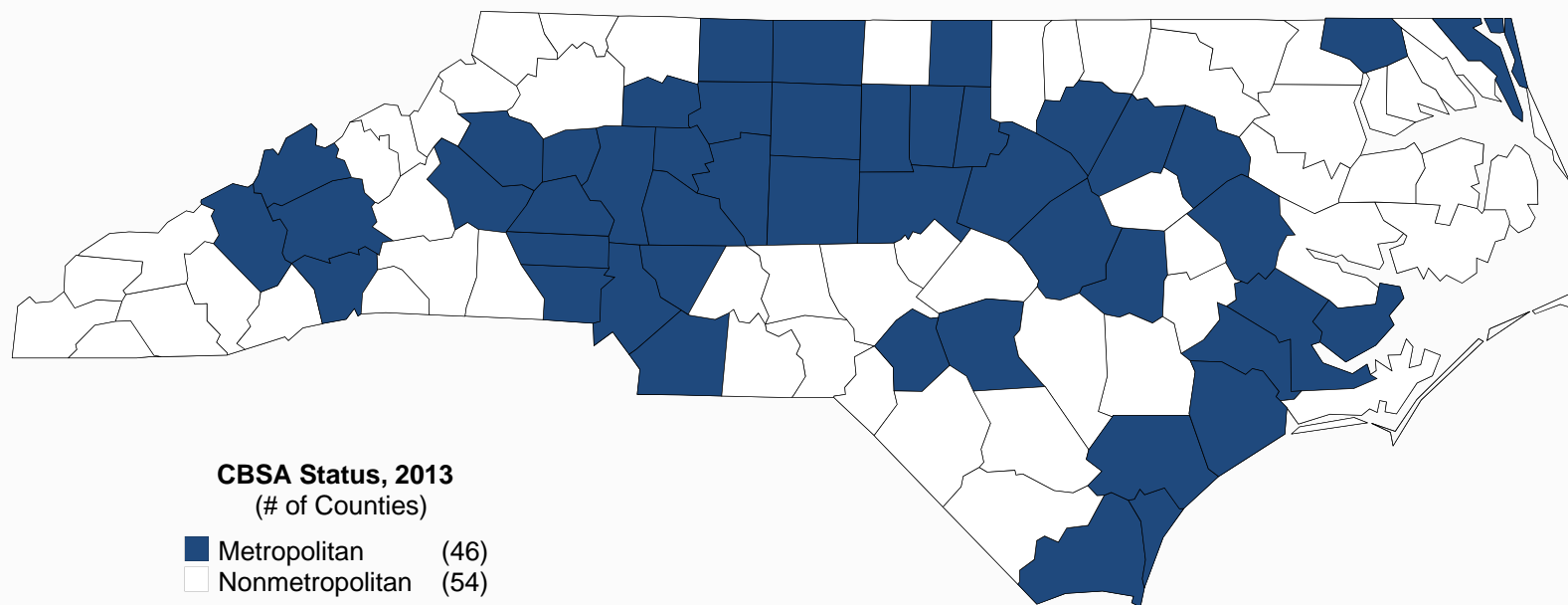
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- Health professional supply in rural areas has remained stagnant
- Gap between well-supplied and not well-supplied continues to grow
- How can we address these challenges?
  - Train workers in rural areas
  - Pay incentives to work in rural areas
  - Recruit workers who grew up rural areas
  - Change practice models in rural areas



# Our rural definition: OMB's Core Based Statistical Areas

## Metropolitan Status\* North Carolina, 2013



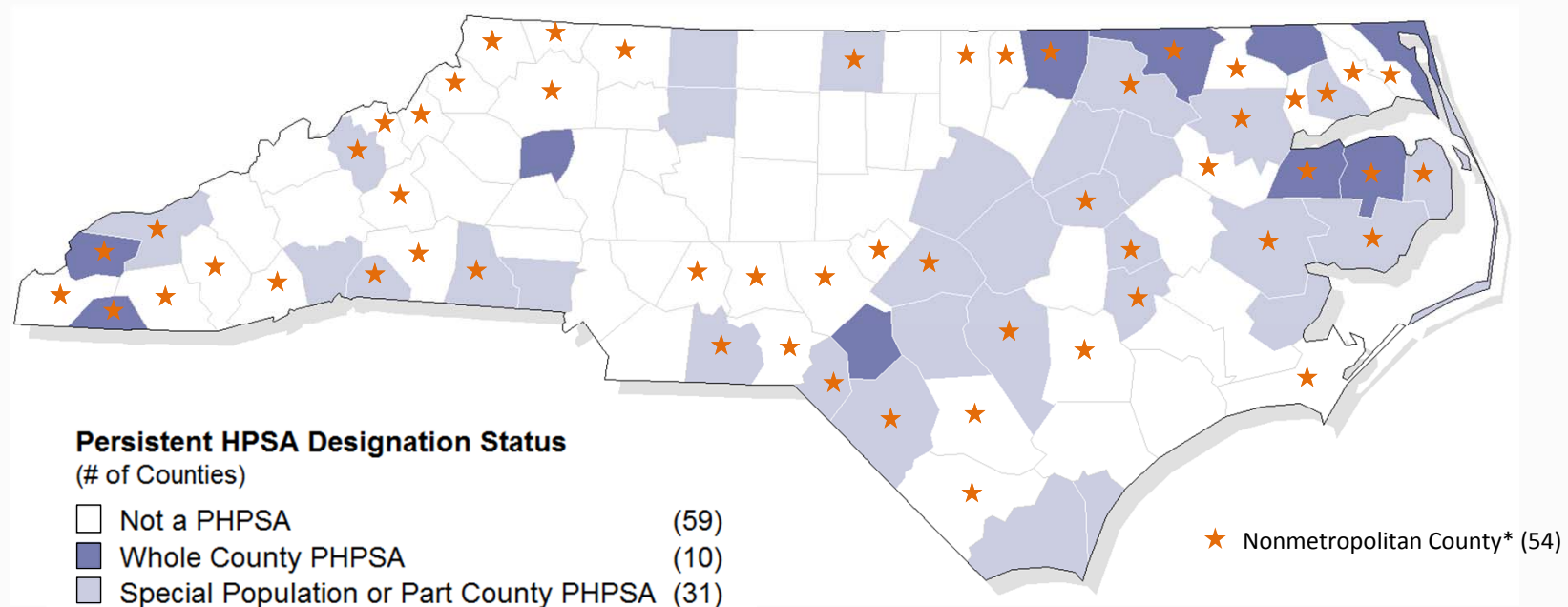
Source: US Census Bureau and Office of Management and Budget, March 2013.

\*Note: "Core Based Statistical Area" (CBSA) is the OMB's collective term for Metropolitan and Micropolitan Statistical areas. Here, nonmetropolitan counties include micropolitan and counties outside of CBSAs.

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

# Persistent Primary Care Health Professional Shortage Areas\* (PHPSAs), North Carolina

## Persistent Primary Care Health Professional Shortage Areas\* (PHPSAs), North Carolina, 2010



Source: Area Resource File, HRSA, DHHS, various years.

Note: Persistent HPSAs are those designated as HPSAs by the Health Resources and Services Administration (HRSA) from 2004-2010, or in in 6 of the last 7 releases of HPSA definition.

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# Focus on specific professions

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**This presentation will focus on the following professions:**

- Primary Care Physicians
- General Surgeons
- Nurse Practitioners
- Physician Assistants
- Nurses
- Dentists
- Mental Health Providers

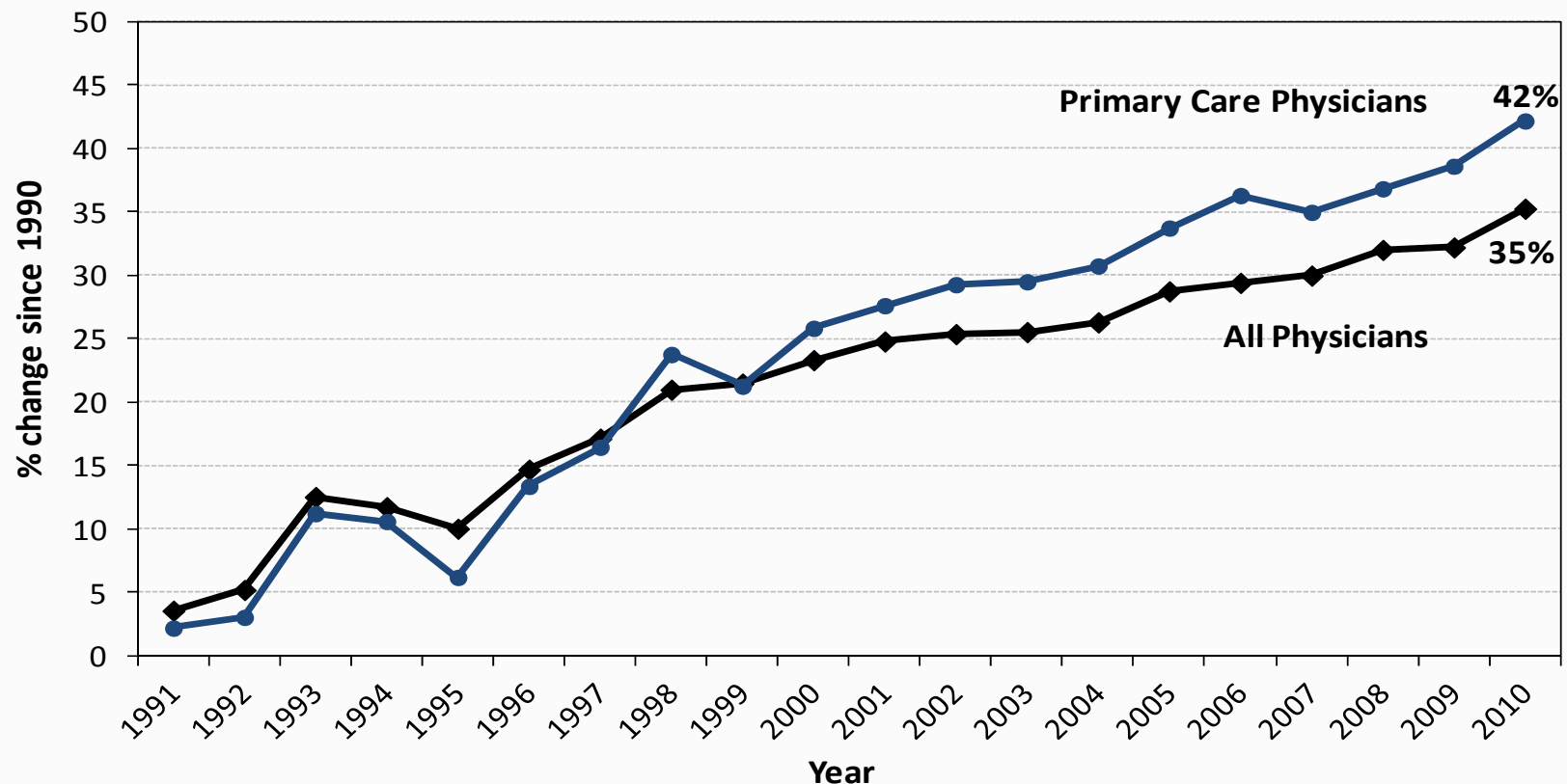


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# NC bucks national trend: more rapid increase in primary care physicians

Percentage Growth Since 1990 of Physicians and Primary Care Physicians per 10,000 Population, North Carolina, 1991-2010



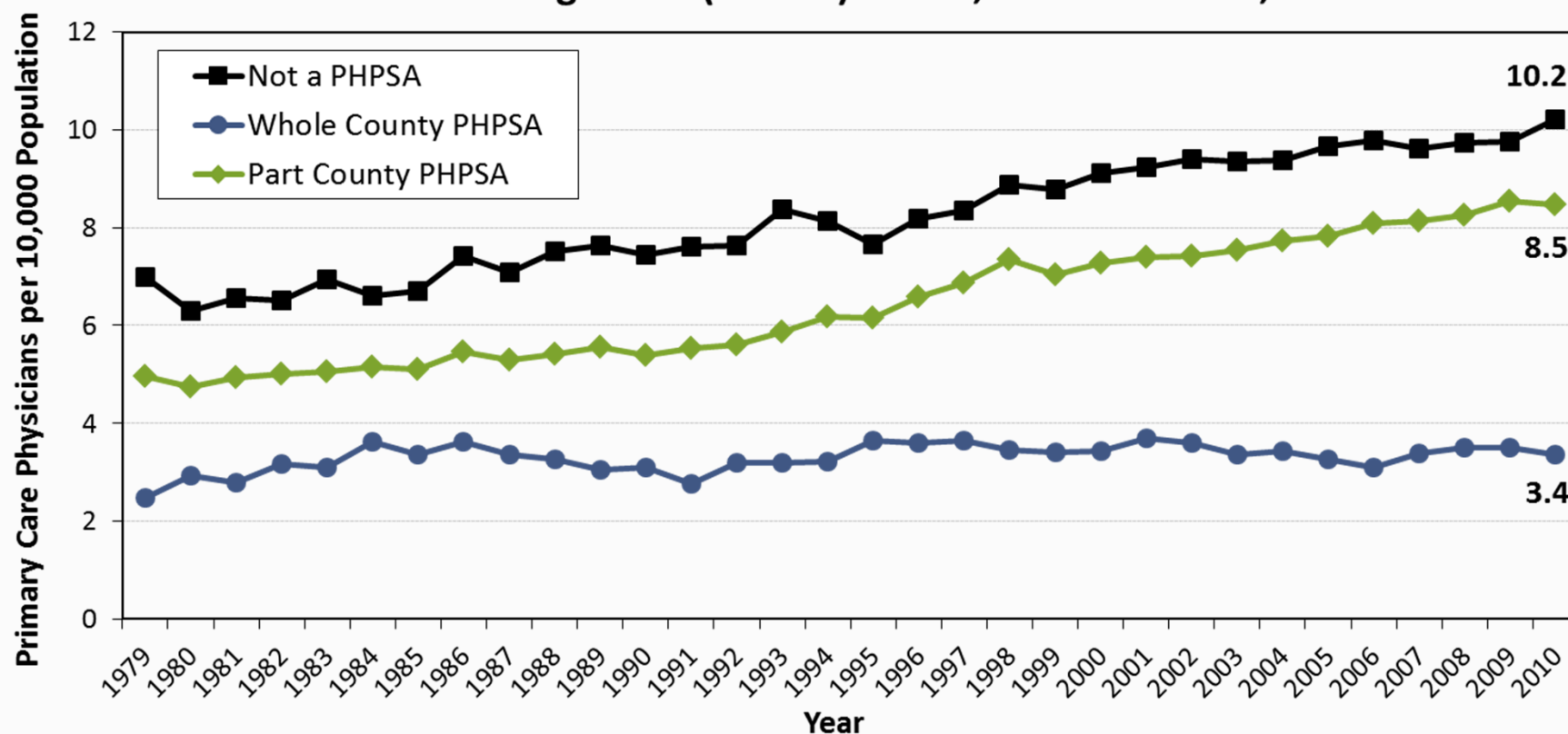
Sources: North Carolina Health Professions Data System with data derived from the North Carolina Medical Board, 1979 to 2010; North Carolina Office of State Planning. Figures include all licensed, active, instate, non-federal, non-resident-in-training physicians.



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# Despite overall growth, NC's most underserved areas face persistent primary care shortfalls

**Primary Care Physicians per 10,000 Population by Persistent Health Professional Shortage Area (PHPSA) Status, North Carolina, 1979 to 2010**

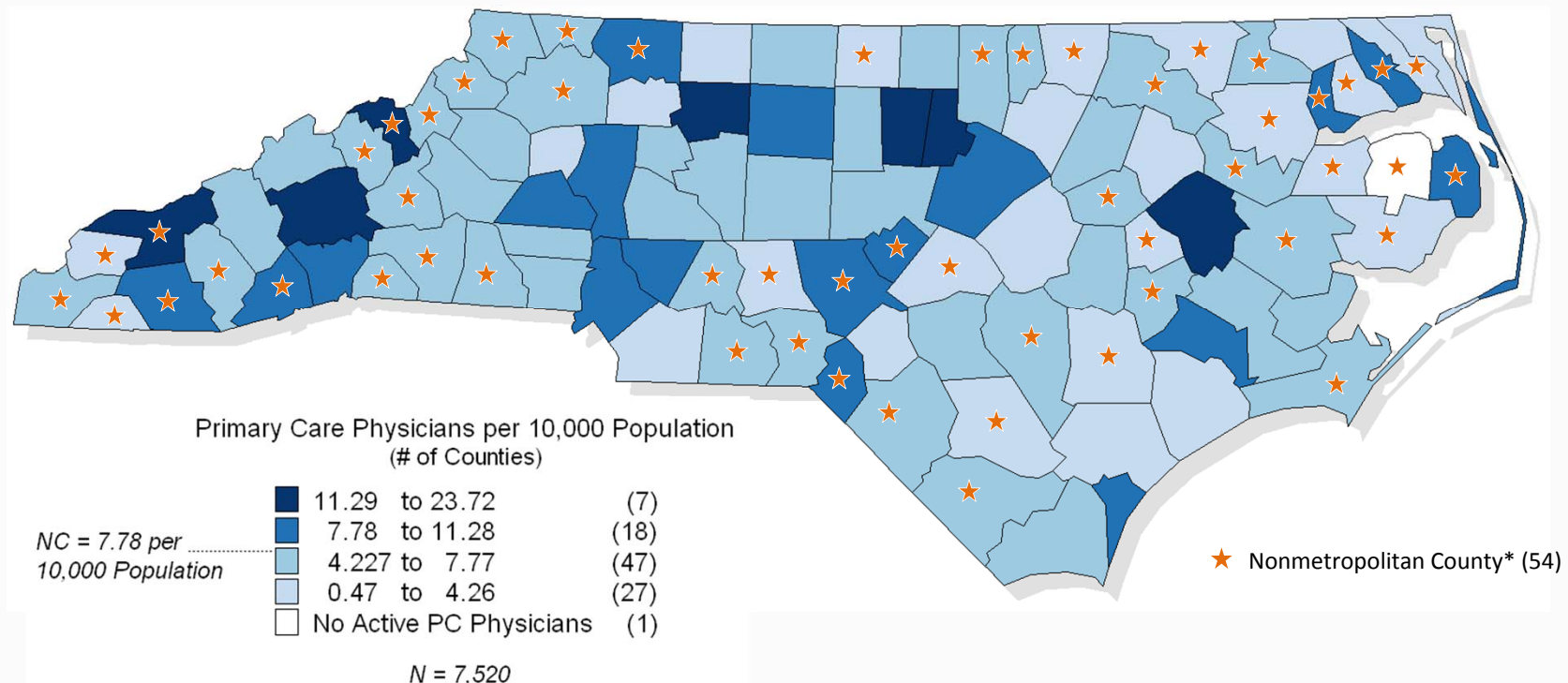


Sources: *Physician data*: North Carolina Health Professions Data System, 1979 to 2010; North Carolina Office of State Planning. Figures include all active, instate, nonfederal, non-resident-in-training physicians licensed as of October 31st of the respective year. Primary care physicians include those indicating a primary area of practice of family practice, general practice, internal medicine, Ob/Gyn or pediatrics. North Carolina population data are smoothed figures based on 1980, 1990, 2000 and 2010 Censuses. As of 2011, PC PHPSA calculations will be updated with data from most recent ARF release. *Health Professional Shortage Areas*: Area Resource File, HRSA, Department of Health and Human Services. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005. PHPSA calculations from 2011 onward completed using most recent 7 HPSA designations.



# Distribution of primary care physicians

## Primary Care Physicians per 10,000 Population North Carolina, 2011



Source: NC Health Professions Data System, with data derived from the North Carolina Medical Board, 2013.

Note: Data include all active, in-state, non-federal, non-resident-in-training physicians licensed in North Carolina as of October 31, 2011, Who report a primary area of practice in family practice, general practice, internal medicine, ob/gyn or pediatrics.

Produced by: Logan Corey, Program on Health Workforce Research and Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

\*Nonmetro source: US Census Bureau and Office of Management and Budget, March 2013. Note: "Core Based Statistical Area" (CBSA) is the OMB's collective term for Metropolitan and Micropolitan Statistical areas. Here, nonmetropolitan counties include micropolitan and counties outside of CBSAs.



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# What about rural general surgery?

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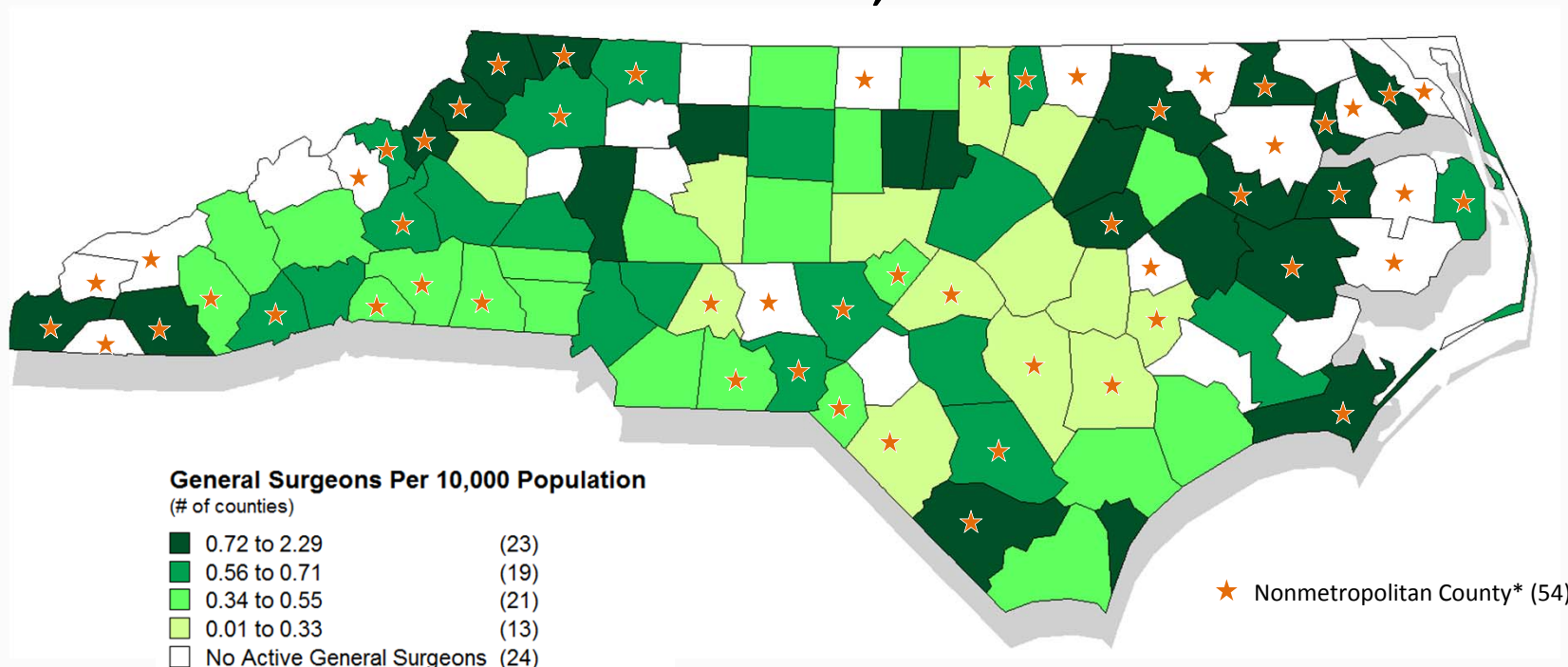


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# Beyond primary care: 24 NC counties have no general surgeon

## General Surgeons per 10,000 Population North Carolina, 2011



Note: Data include all active, in-state, non-federal, non-resident-in-training physicians licensed in North Carolina as of Halloween, 2011, Who report a primary area of practice in "General Surgery."

Source: NC Health Professions Data System, with data derived from the North Carolina Medical Board, 2013.

Produced by: Logan Corey, Program on Health Workforce Research and Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

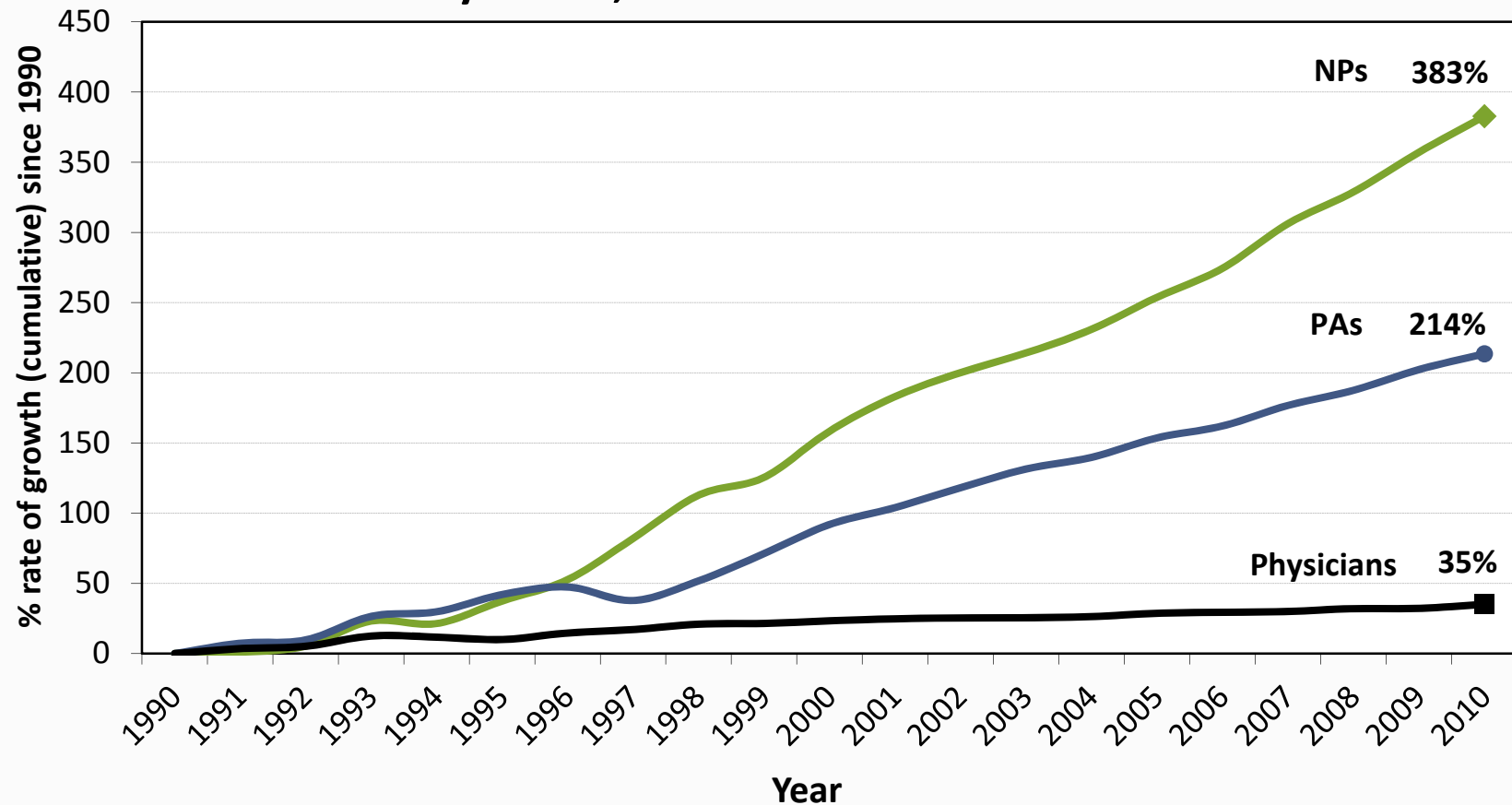
\*Nonmetro source: US Census Bureau and Office of Management and Budget, March 2013. Note: "Core Based Statistical Area" (CBSA) is the OMB's collective term for Metropolitan and Micropolitan Statistical areas. Here, nonmetropolitan counties include micropolitan and counties outside of CBSAs.



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# Thinking beyond physicians: growth in NPs & PAs

**Cumulative rate of growth since 1990:  
Physicians, NPs and PAs in North Carolina**



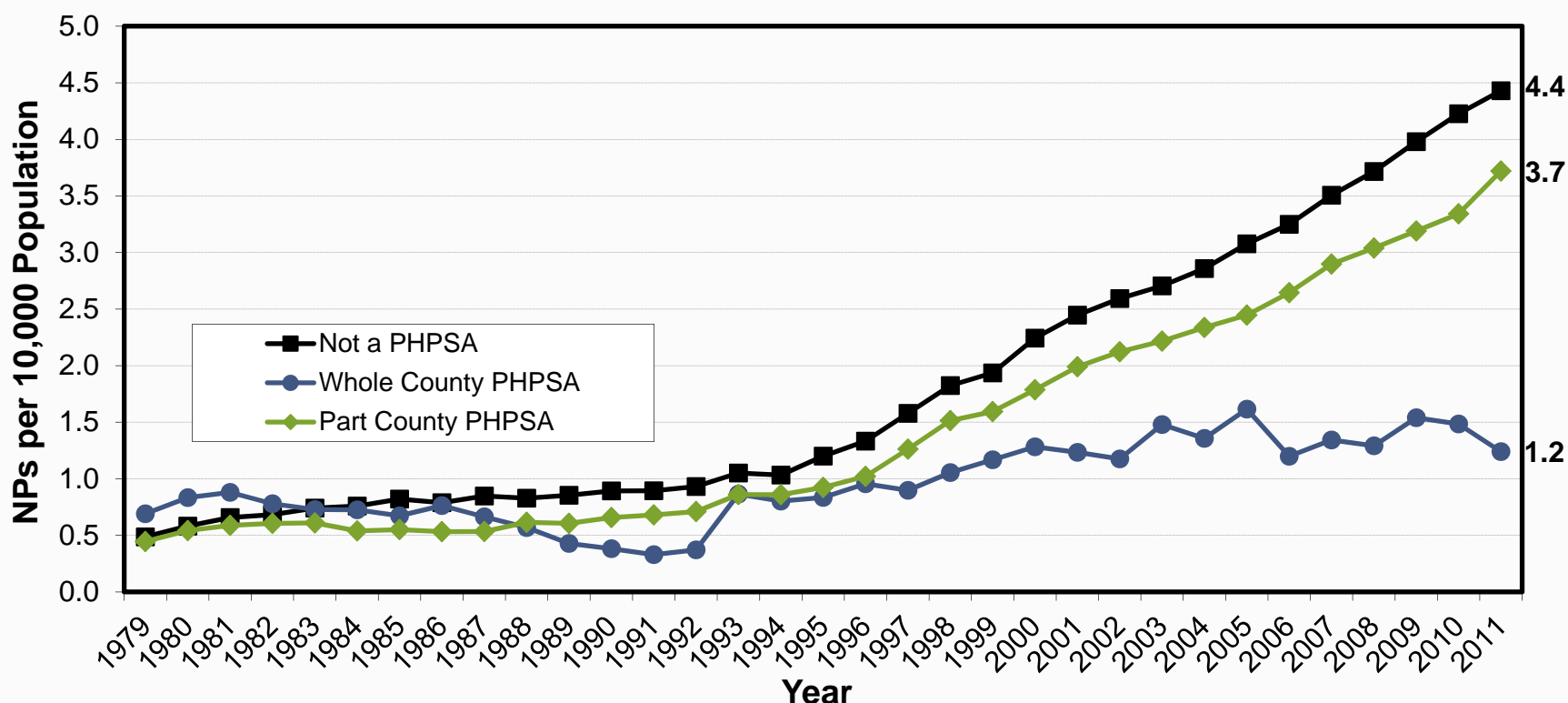
Sources: North Carolina Health Professions Data System with data derived from the North Carolina Medical Board and North Carolina Board of Nursing, 1990 to 2010; Figures include all licensed, active, instate, non-federal, non-resident-in-training physicians, PAs and NPs.



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# NP growth is slow in whole county PHPSAs

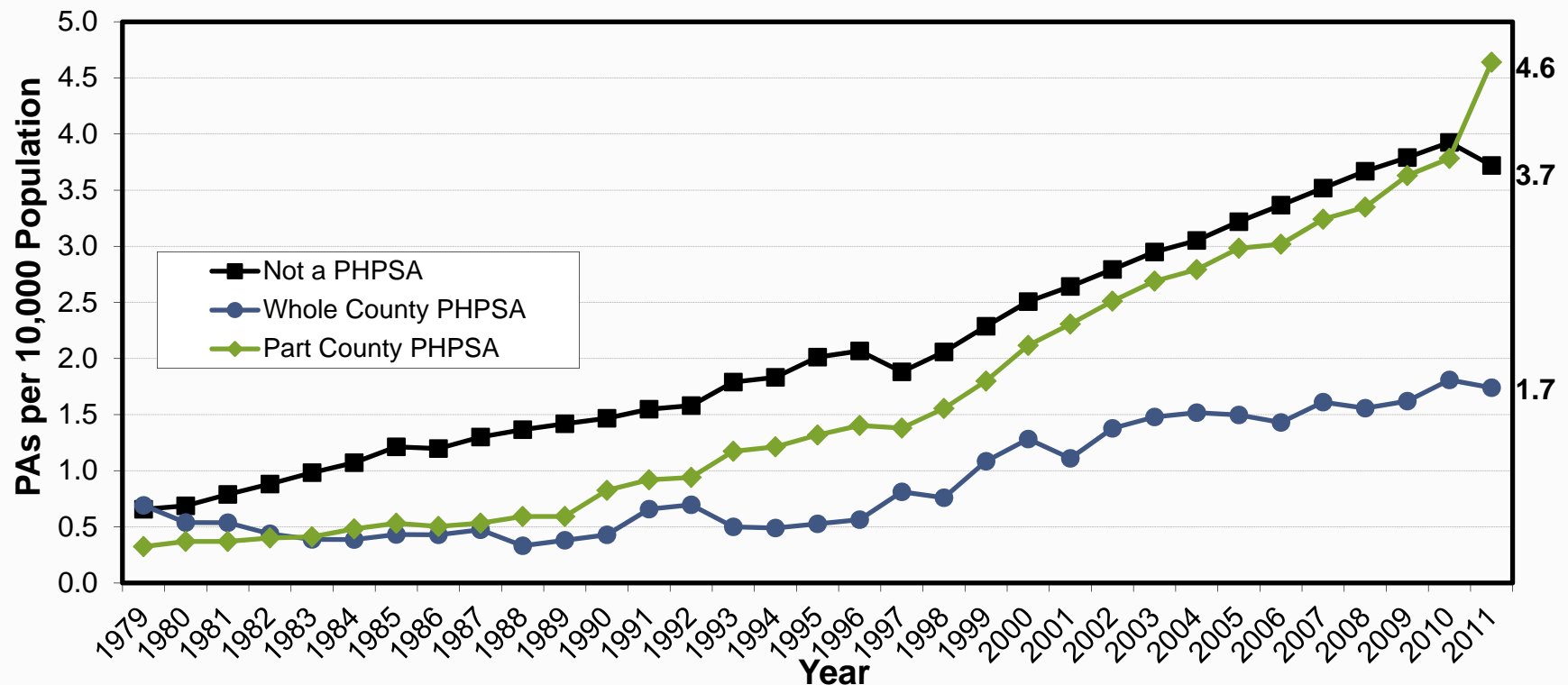
**Nurse Practitioners per 10,000 Population by Persistent Health Professional Shortage Area (PHPSA) Status, North Carolina, 1979 to 2011**



Sources: NP data: North Carolina Health Professions Data System, 1979 to 2010; North Carolina Office of State Planning. Figures include all licensed, active, in-state nurse practitioners. North Carolina population data are smoothed figures based on 1980, 1990, 2000 and 2010 Censuses. As of 2011, PC PHPSA calculations will be updated with data from most recent ARF release. *Health Professional Shortage Areas*: Area Resource File, HRSA, Department of Health and Human Services. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005. PHPSA calculations from 2011 onward completed using most recent 7 HPSA designations.

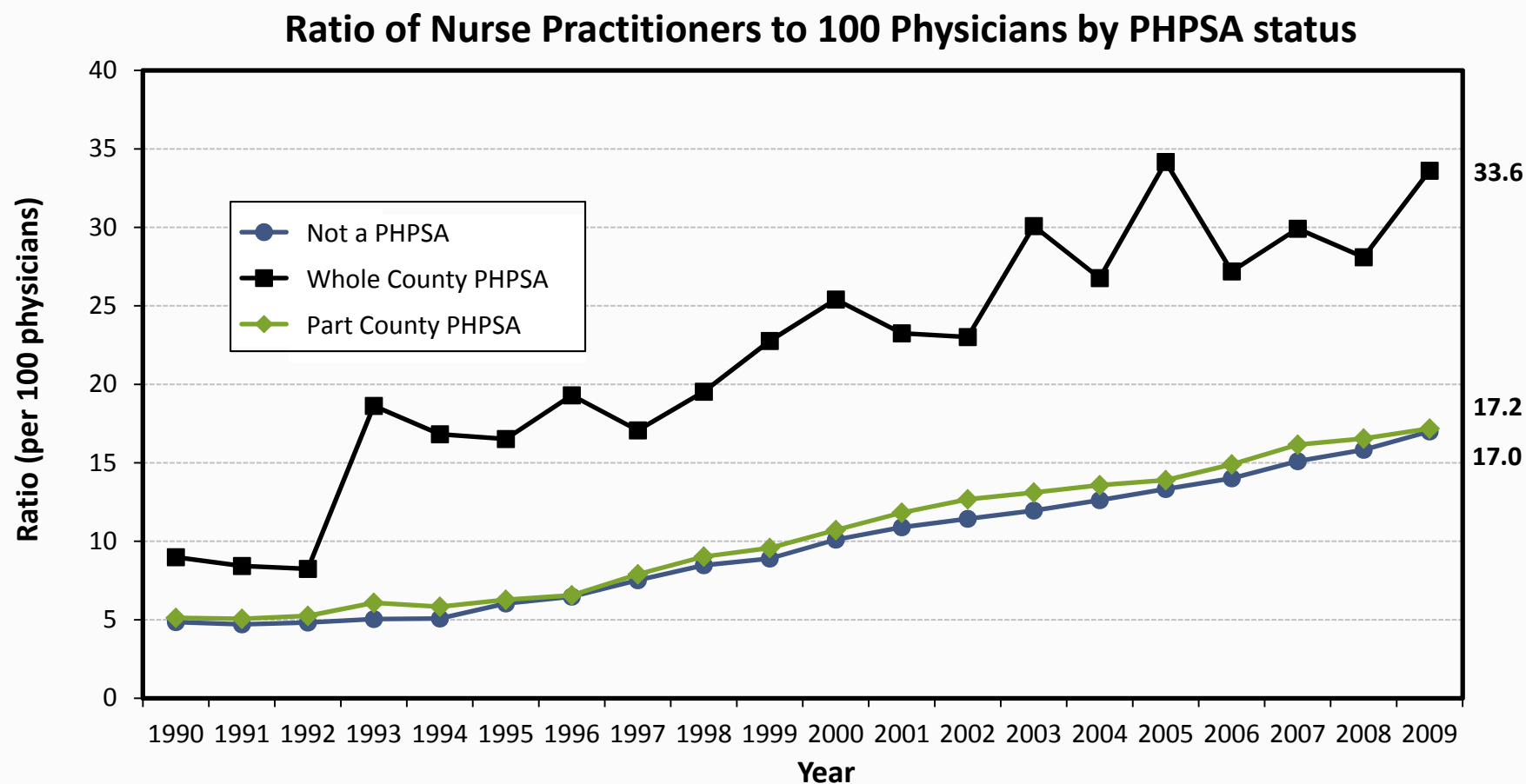
# Similarly, PA growth in whole county PHPSAs is slow

Physician Assistants per 10,000 Population by Persistent Health Professional Shortage Area (PHPSA) Status, North Carolina, 1979 to 2011



Sources: PA data: North Carolina Health Professions Data System, 1979 to 2010; North Carolina Office of State Planning. Figures include all licensed, active, in-state physician assistants. North Carolina population data are smoothed figures based on 1980, 1990, 2000 and 2010 Censuses. As of 2011, PC PHPSA calculations will be updated with data from most recent ARF release. Health Professional Shortage Areas: Area Resource File, HRSA, Department of Health and Human Services. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005. PHPSA calculations from 2011 onward completed using most recent 7 HPSA designations.

# Growth in NPs in whole county HPSAs has been faster than the growth of physicians



Sources: *NP/Physician Data*: North Carolina Health Professions Data System, 1990 to 2009; North Carolina Office of State Planning. Figures include all licensed, active, in-state PAs and all licensed, active, in-state, non-Federally employed physicians.

*Health Professional Shortage Areas*: Area Resource File, HRSA, Department of Health and Human Services, 2006.

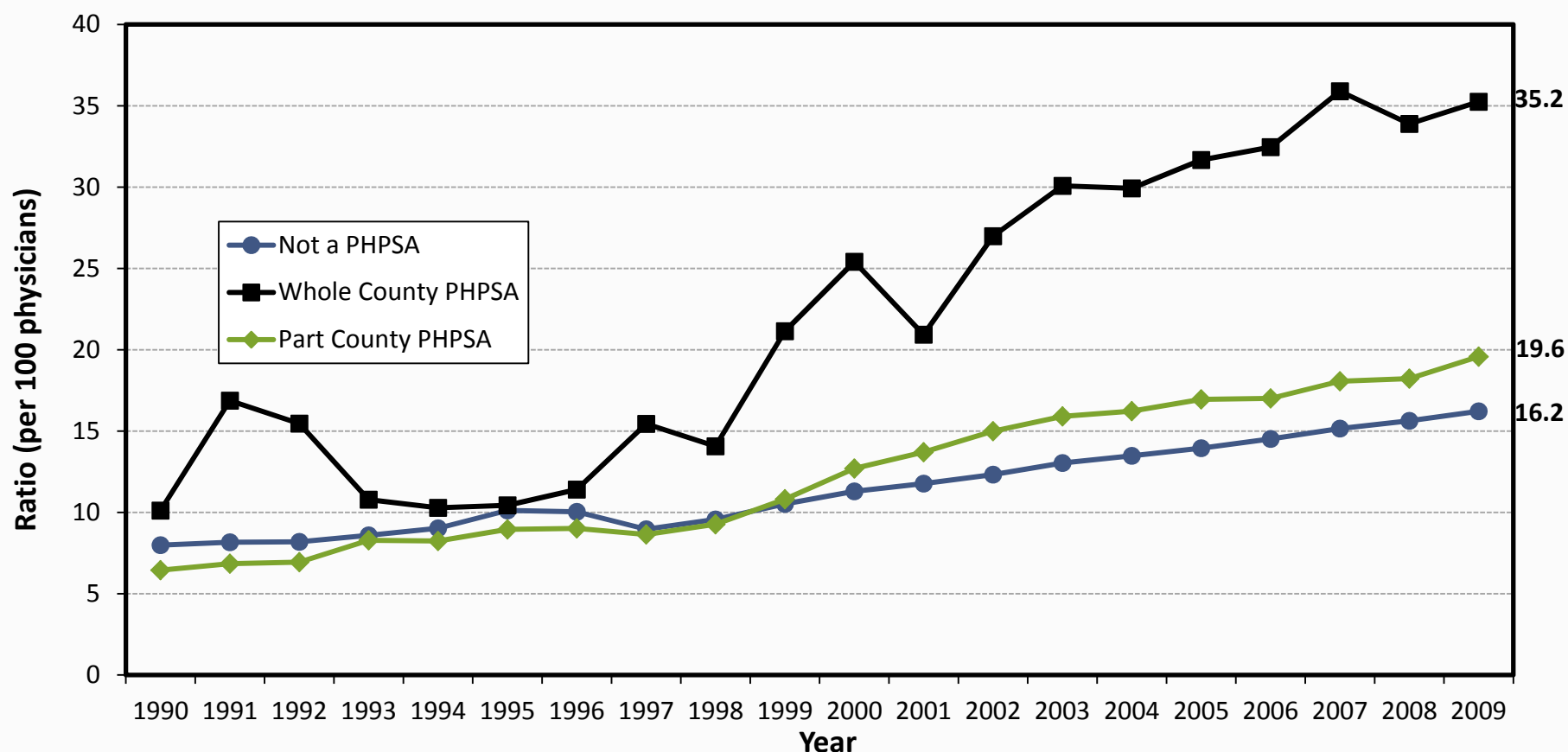
Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005, or in 6 of the last 7 releases of HPSA definitions.



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# Like NPs, the PA-to-physician ratio in whole county PHPSAs is growing faster

Ratio of Physician Assistants to 100 Physicians by PHPSA status



Sources: *PA/Physician Data*: North Carolina Health Professions Data System, 1990 to 2009; North Carolina Office of State Planning. Figures include all licensed, active, in-state PAs and all licensed, active, in-state, non-Federally employed physicians.

*Health Professional Shortage Areas*: Area Resource File, HRSA, Department of Health and Human Services, 2006.

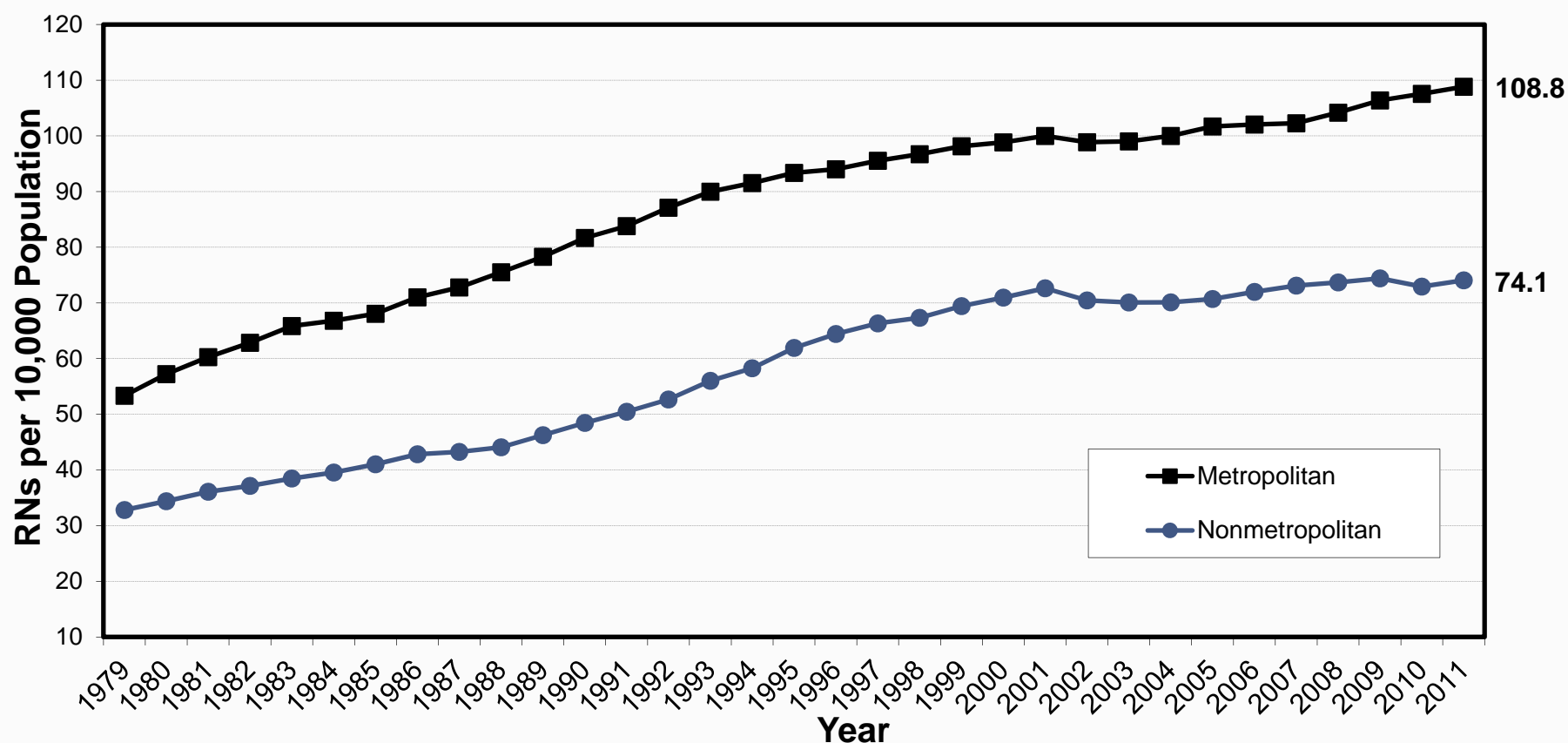
Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005, or in 6 of the last 7 releases of HPSA definitions.



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# The gap in RN supply between urban and rural areas is consistent

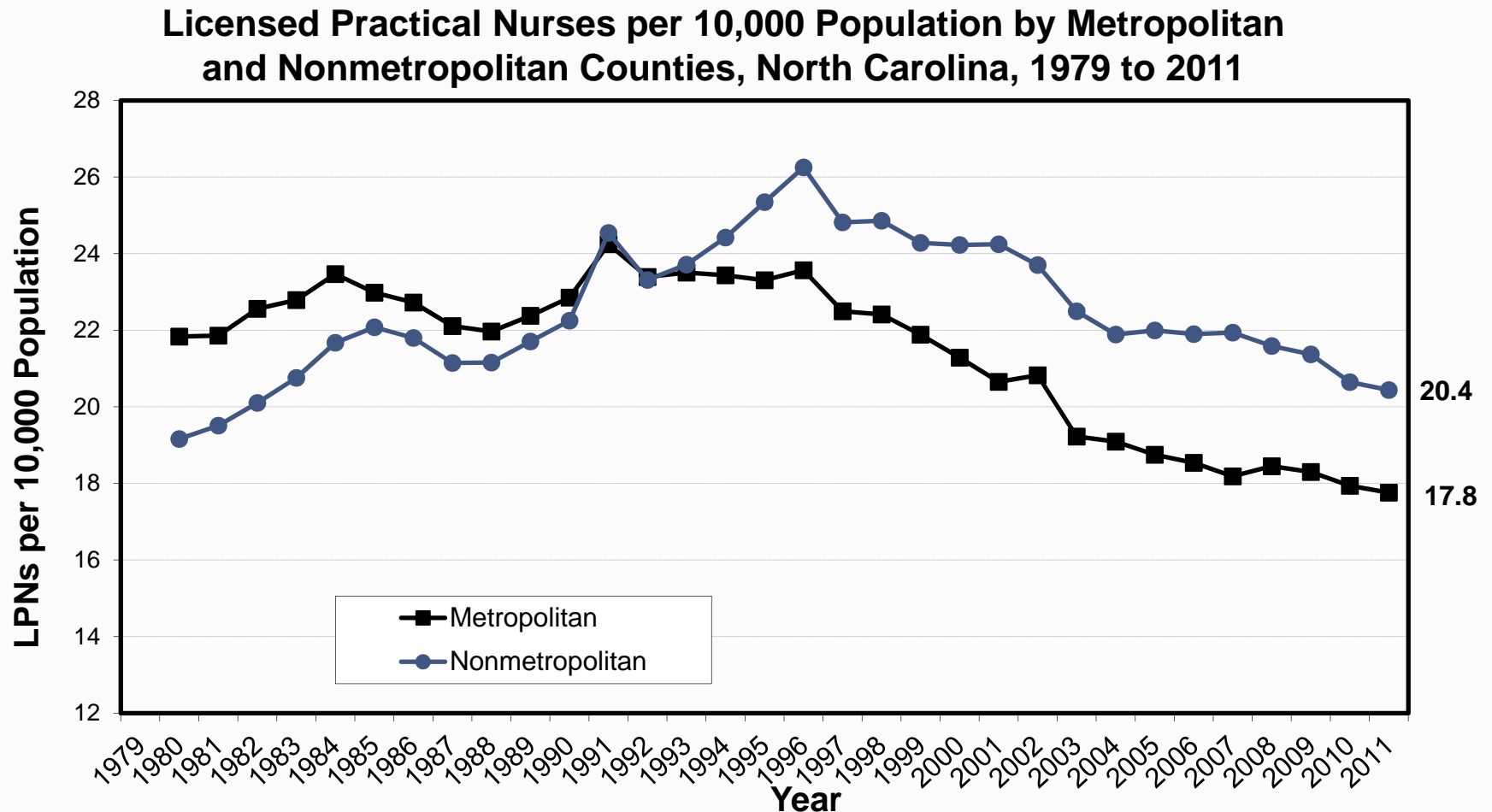
Registered Nurses per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2011



Sources: *RN Data*: North Carolina Health Professions Data System, 1990 to 2009; North Carolina Office of State Planning. Figures include all licensed, active, in-state RNs. *Metropolitan Status*: Office of Management and Budget, 2009.



# The ratio of LPNs-to-population is higher in rural areas, but overall is declining over time



Sources: *LPN Data*: North Carolina Health Professions Data System, 1990 to 2009; North Carolina Office of State Planning. Figures include all licensed, active, in-state LPNs. *Metropolitan Status*: Office of Management and Budget, 2009.

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# What about oral health?

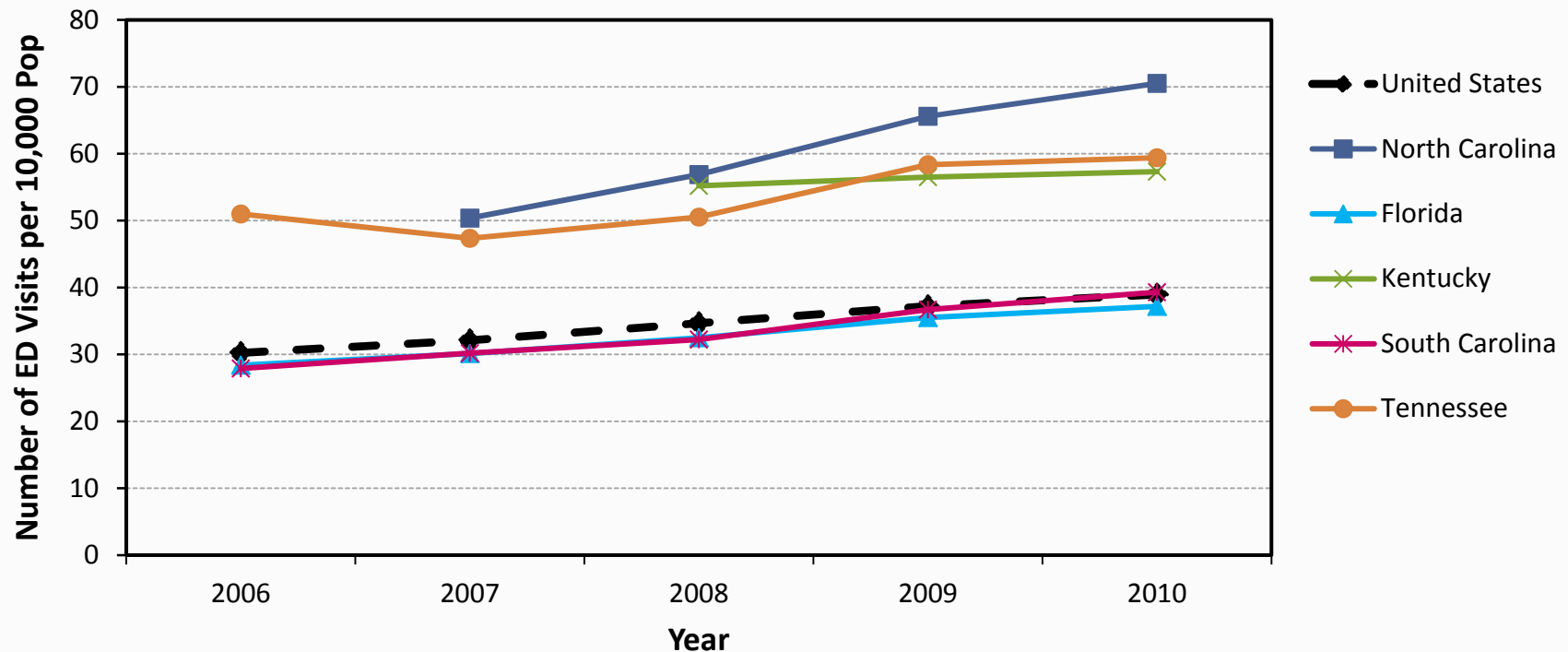
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# NC has high per capita rate and most rapid increase in ED visits for dental disorders

**Emergency Department Visits for ICD-9-CM All-Listed  
Diagnosis Code 525.9, Dental Disorder Not Otherwise Specified,  
per 10,000 Population, US and Select States, 2006-2010**



Source: State statistics from HCUP State Inpatient Databases and State Emergency Department Databases, Agency for Healthcare Research and Quality (AHRQ). \*Weighted national estimates from HCUP Nationwide Emergency Department Sample (NEDS), Agency for Healthcare Research and Quality (AHRQ), based on data collected by individual States and provided to AHRQ by the States.

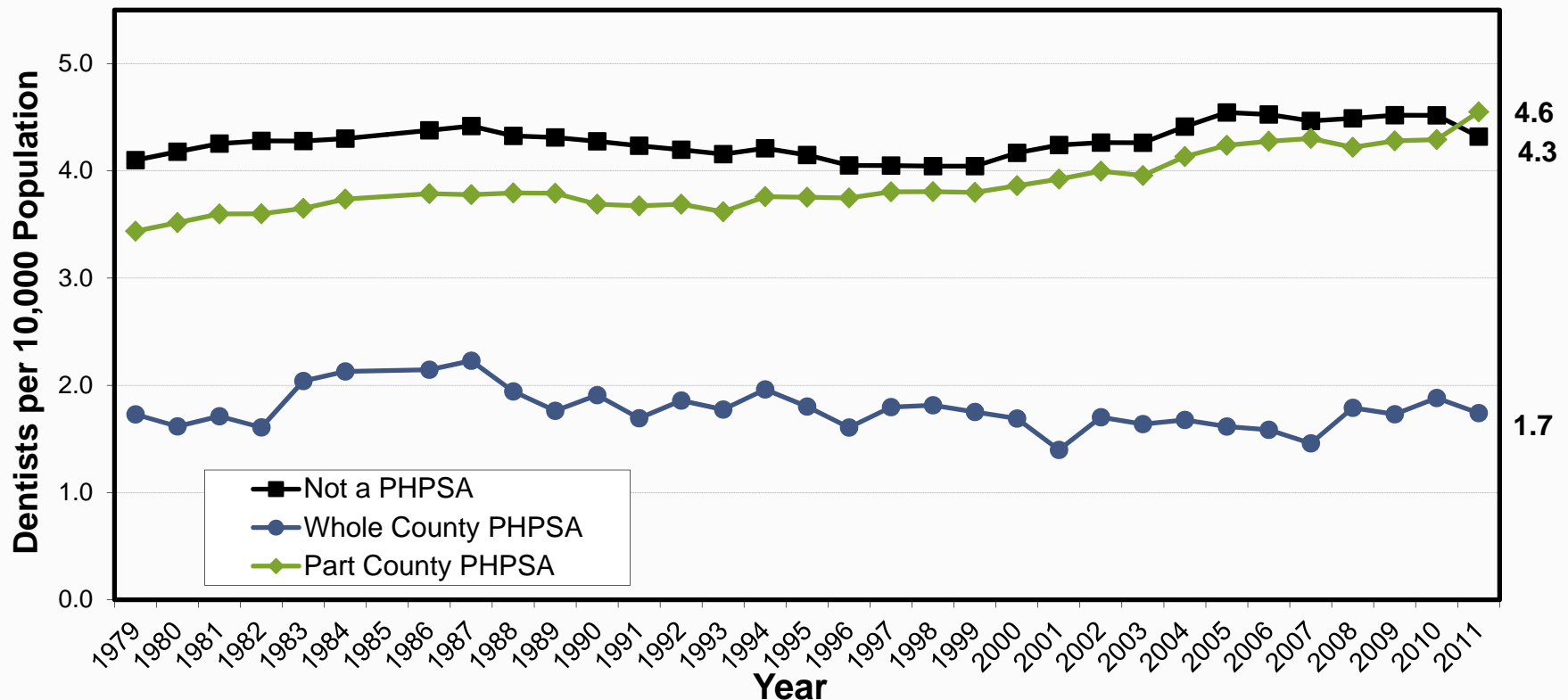
# NC lags behind the national and state averages in dentists per capita...

## Active Dentists per 10,000 Civilian Population

	1996		2000		2003		2007	
	Rank	Ratio	Rank	Ratio	Rank	Ratio	Rank	Ratio
<b>United States</b>		<b>6.1</b>		<b>6.1</b>		<b>6.0</b>		<b>6.0</b>
<b>Top Ranked</b>								
Massachusetts	4	8.1	2	8.1	2	8.2	1	8.2
Hawaii	1	8.9	1	8.2	1	8.2	2	8.1
New Jersey	5	8.1	4	7.9	3	7.9	3	8.1
New York	2	8.2	3	8.0	4	7.9	4	7.9
<b>Bottom Ranked</b>								
<b>North Carolina</b>	<b>47</b>	4.4	47	4.2	47	4.4	47	4.5
Alabama	46	4.4	46	4.3	45	4.4	48	4.4
Arkansas	48	4.1	48	4.0	48	4.1	49	4.1
Mississippi	49	4.0	49	3.9	50	4.0	50	4.1

# ...with almost no growth in dentists per capita in whole county PHPSAs over 30 years

Dentists per 10,000 Population by Persistent Health Professional Shortage Area (PHPSA) Status, North Carolina, 1979 to 2011



Sources: *Dentist data*: North Carolina Health Professions Data System, 1979 to 2010; North Carolina Office of State Planning. Figures include all licensed, active, in-state dentists. North Carolina population data are smoothed figures based on 1980, 1990, 2000 and 2010 Censuses. As of 2011, PC PHPSA calculations will be updated with data from most recent ARF release. *Health Professional Shortage Areas*: Area Resource File, HRSA, Department of Health and Human Services. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2005. PHPSA calculations from 2011 onward completed using most recent 7 HPSA designations.

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# Now, to mental health...

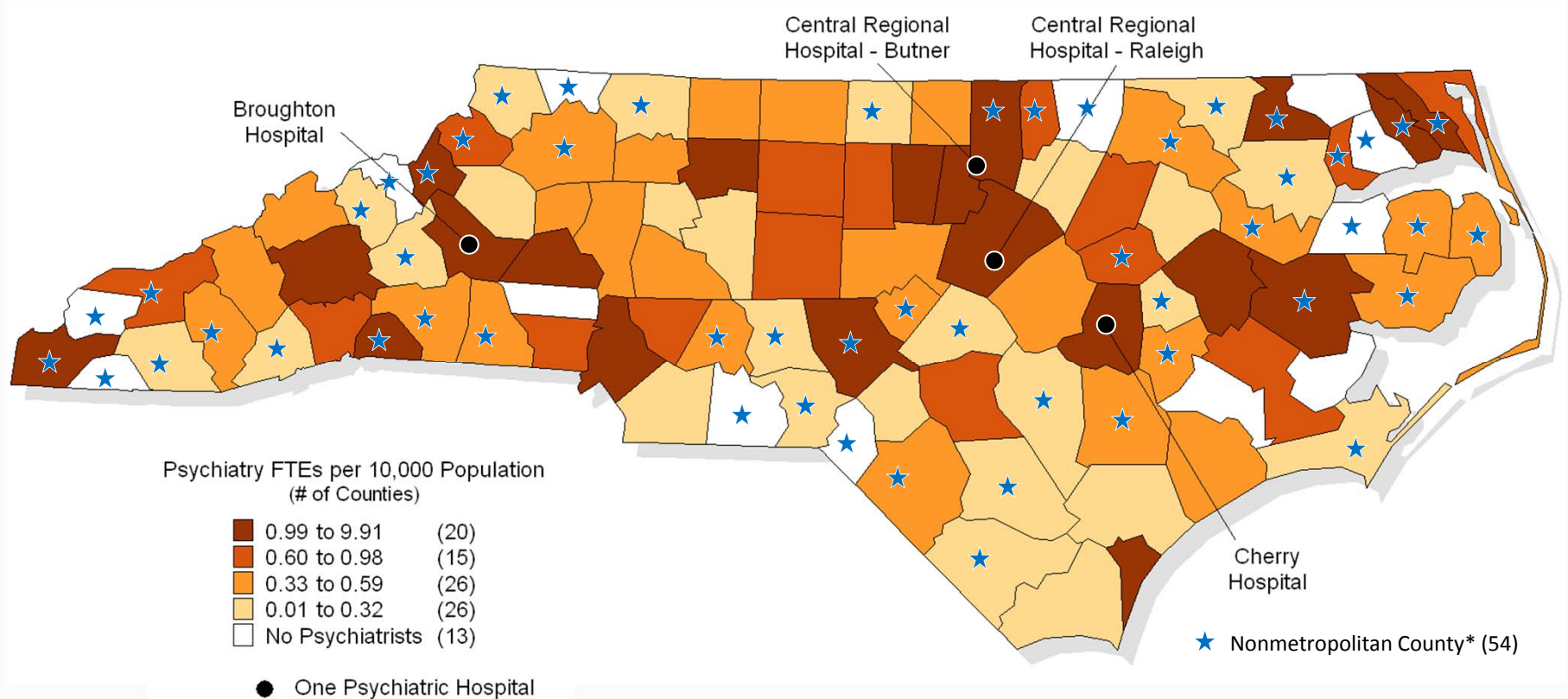
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# Access to psychiatrists is challenging: 13 NC counties have no psych coverage

## Psychiatrist Full-Time Equivalents per 10,000 Population North Carolina, 2008



**Produced by:** North Carolina Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill. **Source:** North Carolina Health Professions Data System, with data derived from the North Carolina Medical Board, 2008; LINC, 2010; NC DHHS, MHDDSAS, 2010. **Note:** Psychiatrists include active, in-state, nonfederal, non-resident-in-training physicians who indicate a primary specialty of psychiatry, child psychiatry, psychoanalysis, psychosomatic medicine, addiction/chemical dependency, forensic psychiatry, or geriatric psychiatry, and secondary specialties in psychiatry, child psychiatry and forensic psychiatry.

\*Nonmetro source: US Census Bureau and Office of Management and Budget, March 2013. Note: "Core Based Statistical Area" (CBSA) is the OMB's collective term for Metropolitan and Micropolitan Statistical areas. Here, nonmetropolitan counties include micropolitan and counties outside of CBSAs.



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# Strategies to address rural health workforce challenges

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- Train in rural areas
- Provide payment incentives
- Recruit workers from rural areas
- Change practice models



# NC rural primary care supply is not coming from NC sources

## NC Medical Students: Retention in Primary Care in NC's Rural Areas

Total Number of 2000 NC medical school  
graduates in training or practice as of 2010:

415

*How will this look when  
Campbell starts graduating  
150 students per year?*

In training/practice in primary care in 2010:

162 (40%)

In primary care in NC in 2010:

86 (21%)

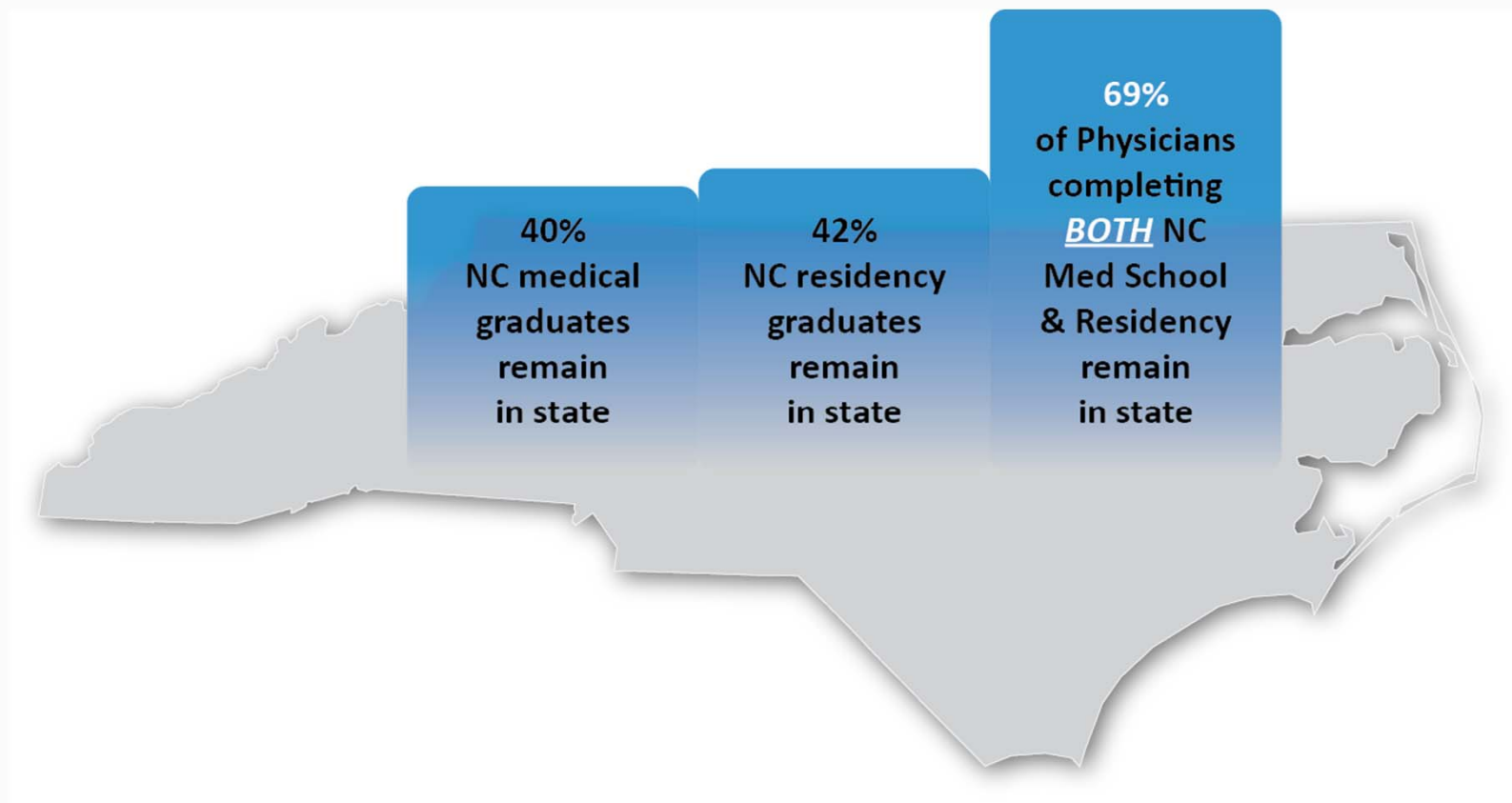
*In Primary Care  
in rural NC:*

**20 (5%)**

Class of 2000  
N=415 graduates  
(13 not in training or  
practice in 2010)

# Need to keep medical students instate for residency to increase physician retention rate

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# Where a physician completed residency is even more important predictor of retention in NC

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AHEC

➤ 46% of physicians who complete an NC AHEC residency stay in North Carolina to practice

*compared to*



Non-AHEC

➤ 31% of physicians who complete a non-AHEC residency stay in North Carolina to practice

# AHEC-trained residents more likely to practice in rural areas

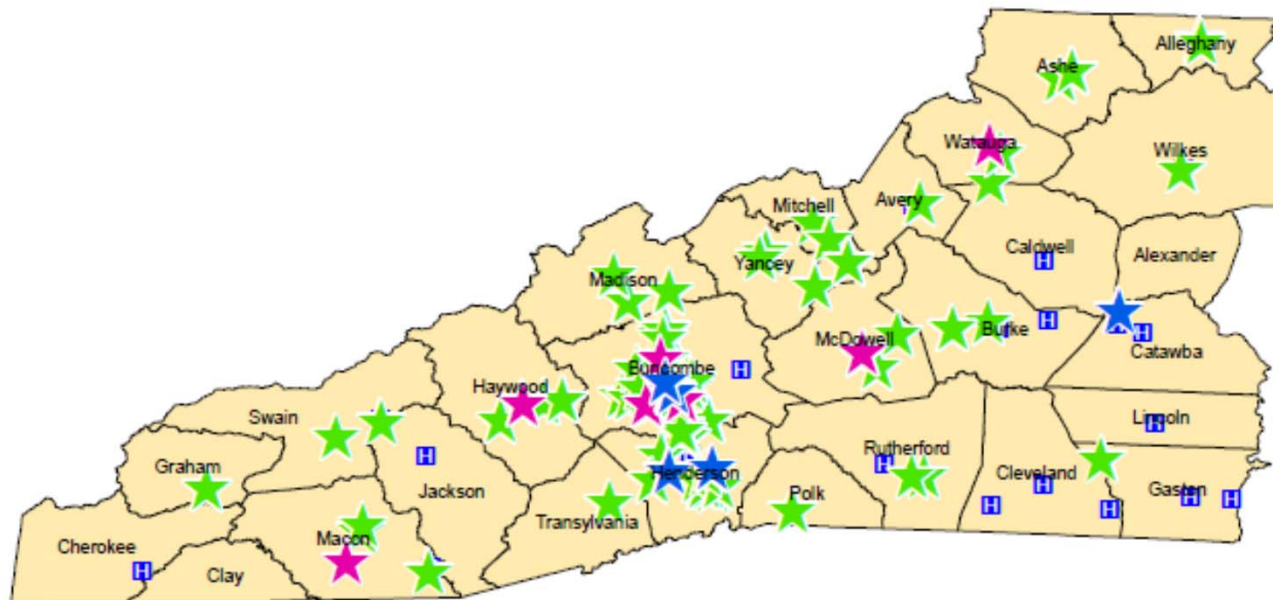
Specialty	Residency Type	Practicing in NC, 2011	
		% in Metro Area	% in Nonmetro Area
<b>ALL</b>	AHEC	85% (n=1267)	15% (n=224)
	Non-AHEC	88% (n=5331)	12% (n=761)
<b>Primary Care</b>	AHEC	85% (n=1060)	15% (n=190)
	Non-AHEC	85% (n=1858)	15% (n=337)
<b>General Surg</b>	AHEC	70% (n=38)	<b>30% (n=16)</b>
	Non-AHEC	81% (n=242)	<b>19% (n=45)</b>

Of the active and practicing physicians who completed a NC AHEC residency, 1,491 (46%) are practicing in NC and 1,739 (54%) are practicing outside of NC.

Of the active and practicing physicians who completed a NC Non-AHEC residency, 6,092 (31%) are practicing in NC and 13,639 (69%) are practicing outside of NC.

Note: Primary Care includes the following specialties: Family Medicine, Internal Medicine, Obstetrics and Gynecology, and Pediatrics.

## Locations In Western North Carolina with MAHEC Graduates



### Legend

#### Locations of Graduates by Discipline

- ★ Dental
- ★ Family Medicine
- ★ OB/Gyn

Note: Many practices include multiple graduates of MAHEC programs.

Created by Joan Colburn, MLIS - MAHEC Library and Knowledge Services 4/18/13



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# ECU Dental School: community-based, service learning, oral health education

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**Plans for ten sustainable community service learning centers across NC staffed by faculty, dentistry residents, 4th-year dental students, dental hygienists, & dental assistants**

- Greenville, Ahoskie, and Elizabeth City already open
- Sylva, Lillington, Spruce Pine, and Davidson County underway in next 2 years



<http://www.ecu.edu/cs/dhs/dentistry/>

# Regionally Increasing Baccalaureate Nurses (RIBN) Project

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- Students dually admitted to community college & university
- Increase access to BSN programs, particularly in rural areas



# Payment Incentives

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- State loan repayment for a 4-year commitment to provide services in underserved & rural communities
- State high needs service bonus (if no loans)
- Primary care physicians, dentists, PAs, NPs, CNMs, and dental hygienists are eligible
  - General Surgeons are not eligible
- National Health Service Corps
  - Consider State Loan Repayment Program?

[www.ncdhhs.gov/orhcc/recruitment/medical.htm](http://www.ncdhhs.gov/orhcc/recruitment/medical.htm)



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# Recruitment

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- ECU Dental School recruits NC students from historically underrepresented groups, disadvantaged backgrounds, & underserved areas
- Campbell SOM considers applicant's interest in rural and underserved in admissions
- UNC SOM Kenan Rural and Underserved Medical Scholars gives preference to students from rural NC that commit to practice in rural NC

# Changing practice models

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- Do we have practice sites to train people in rural communities?
  - MAHEC's Hendersonville Family Medicine Residency
  - UNC Family Medicine Residency at Prospect Hill Community Health Center
  - ECU Dental School Community Service Learning Centers
- Are we building rural interprofessional practices?

# Questions?

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## Thanks!

**Julie Spero**

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<http://www.healthworkforce.unc.edu/>



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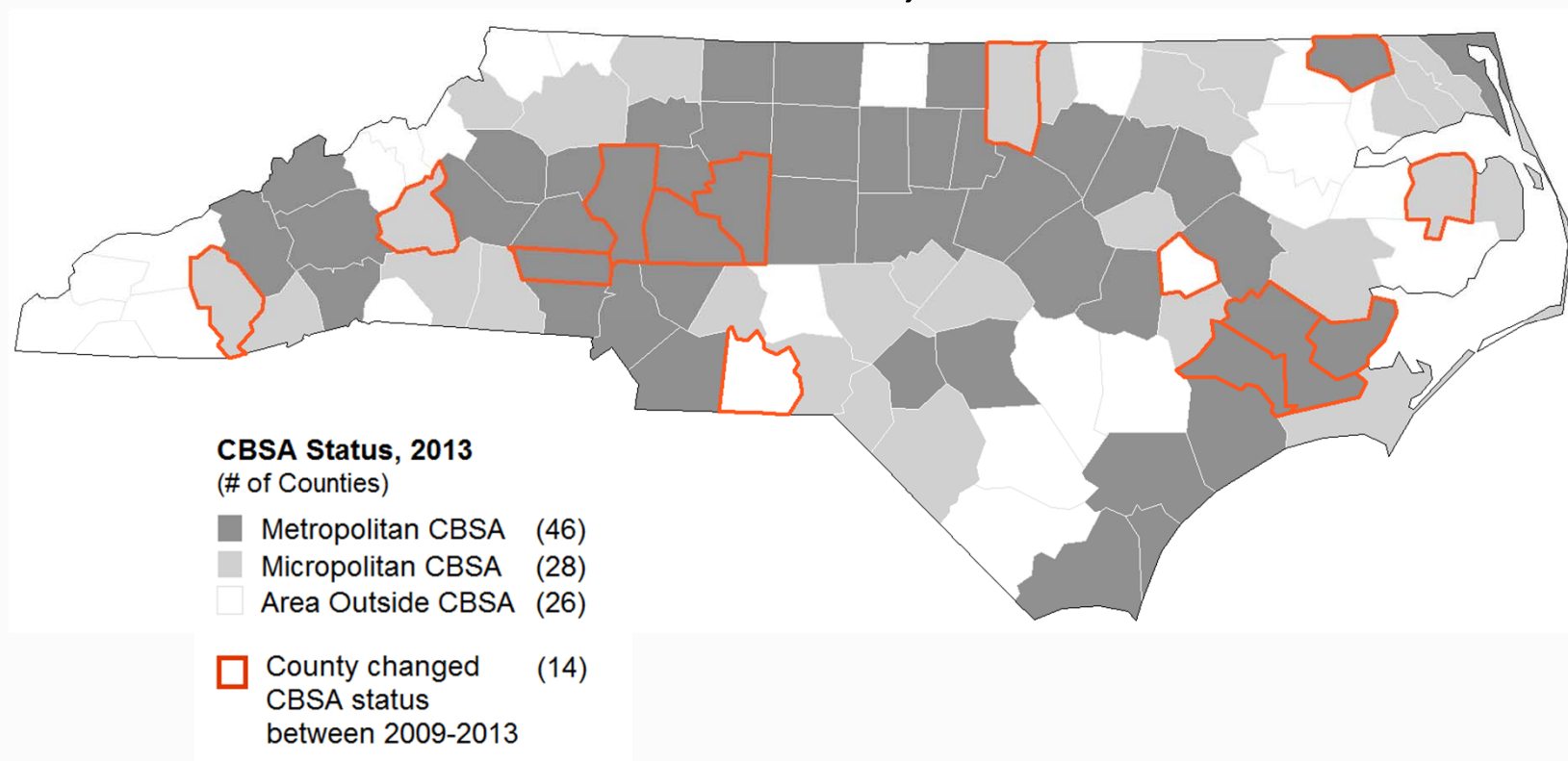
# Extra Slides

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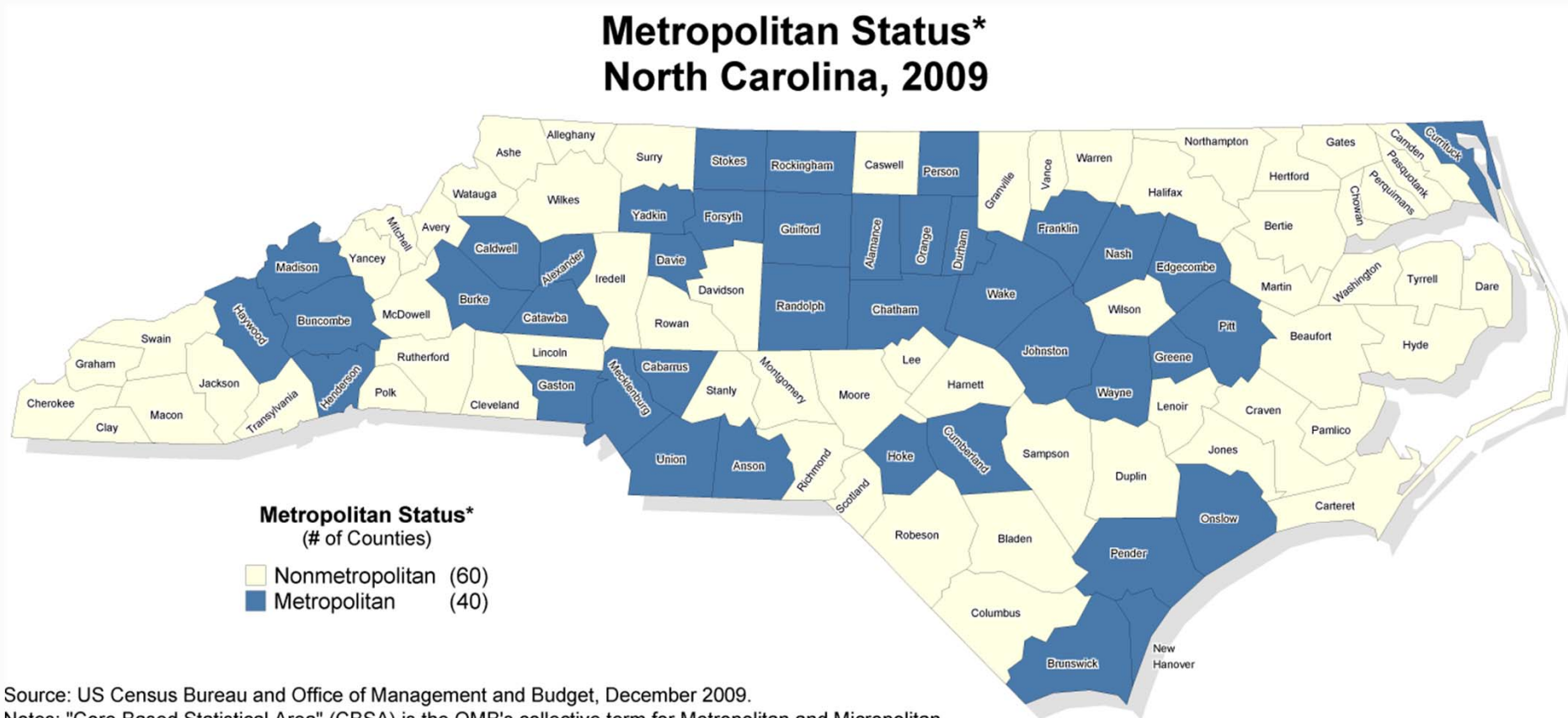


# CBSA status changed for 14 counties between 2009-2013

## Core Based Statistical Areas (CBSAs) North Carolina, 2013



# Our rural definition: OMB's Core Based Statistical Areas



Source: US Census Bureau and Office of Management and Budget, December 2009.

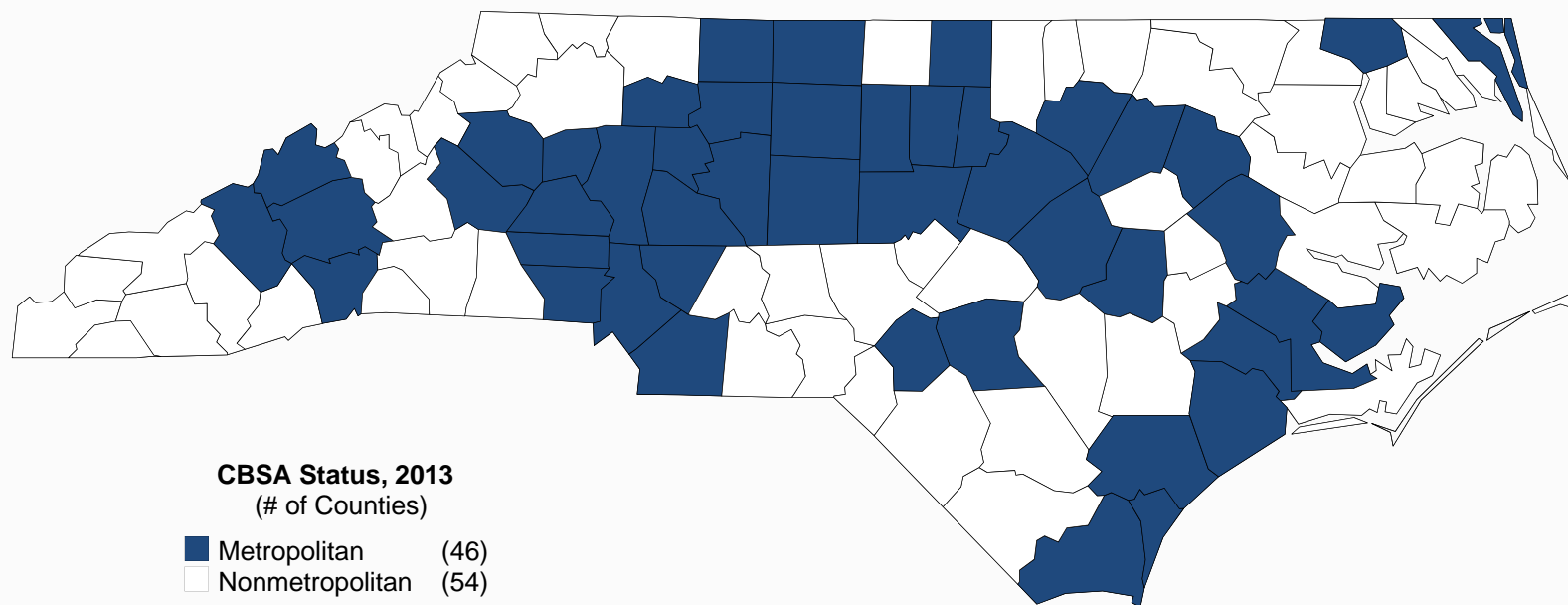
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Produced by the North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill



# Our rural definition: OMB's Core Based Statistical Areas

## Metropolitan Status\* North Carolina, 2013



Source: US Census Bureau and Office of Management and Budget, March 2013.

Note: "Core Based Statistical Area" (CBSA) is the OMB's collective term for Metropolitan and Micropolitan Statistical areas. Here, nonmetropolitan counties include micropolitan and counties outside of CBSAs.

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