

Trends in the Supply and Distribution of the Health Workforce in North Carolina

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Presentation overview

- Where do we get data on NC providers?
- How many health providers are enough?
 - Benchmarking: North Carolina to United States (*US data are shaky*)
 - Monitoring trends: are we worse or better off than in the past? (*NC data are robust*)
- Are health providers located where we need them?
 - Rural versus urban distribution
 - Health professional shortage areas

Where do the data come from?

The North Carolina Health Professions Data System (HPDS)

Mission: to provide timely, objective data and analysis to inform health workforce policy in North Carolina and the United States

Based at Cecil G. Sheps Center for Health Services Research at UNC-CH but mission is statewide

Three main service lines:

1. Provide data and research
2. Conduct policy analyses
3. “Engaged scholarship” that serves state and nation

Culture of “engaged scholarship”: serving the state and nation

HPDS as hub for reliable, trustworthy information.

Dissemination efforts in the most recent five years include:

- 27 fact sheets and reports
- 85 presentations to local, state, national and international audiences
- 830 responses to requests for information—data, maps, information, quick turn-around analyses—from national and state policymakers, researchers, educators, others
- 34 states requesting technical assistance (since 2003) about building better health workforce planning systems

North Carolina's health workforce data is the envy of the other 49 states

- Over 30 years of continuous, complete licensure (*not survey*) data on 19 health professions from 12 boards
- Data are provided *voluntarily* by the boards—there is no legislation that requires this, there is no appropriation
- Data housed at Sheps but remain property of licensing board, permission sought for each “new” use

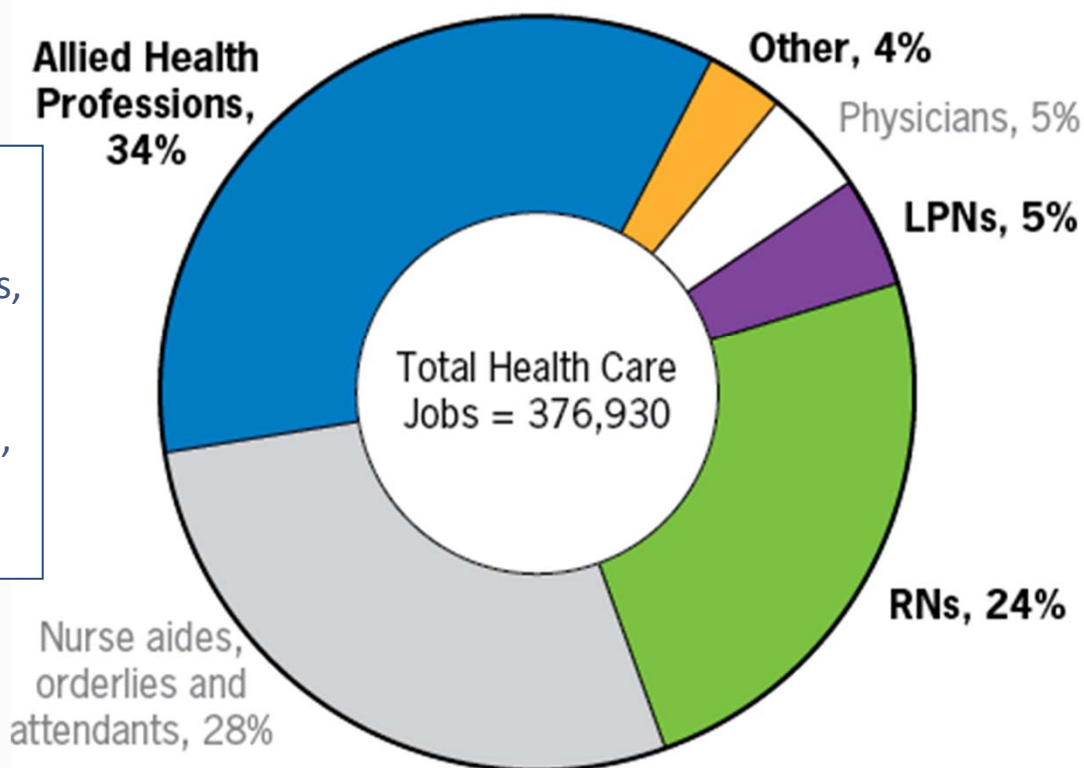
**System would not exist without data
and support of licensure boards**

The North Carolina HPDS is a collaborative effort

- A collaboration between the Sheps Center, NC AHEC and the health professions licensing boards
- System is independent of government and health care professionals
- Independence brings rigor and objectivity
- Funding provided by: NC AHEC Program Office, data request fees, project cross-subsidies, and the UNC-CH Office of the Provost (Health Affairs)

Who is in the “health care workforce”?

Health Care Jobs in North Carolina, 2010



Allied Health:

all health professionals except physicians, nurses, chiropractors, dentists, optometrists, pharmacists, podiatrists, nurse aides, orderlies, and attendants.

Other:

chiropractors, dentists, optometrists, pharmacists, and podiatrists.

Today we will cover most professions in the NC HPDS

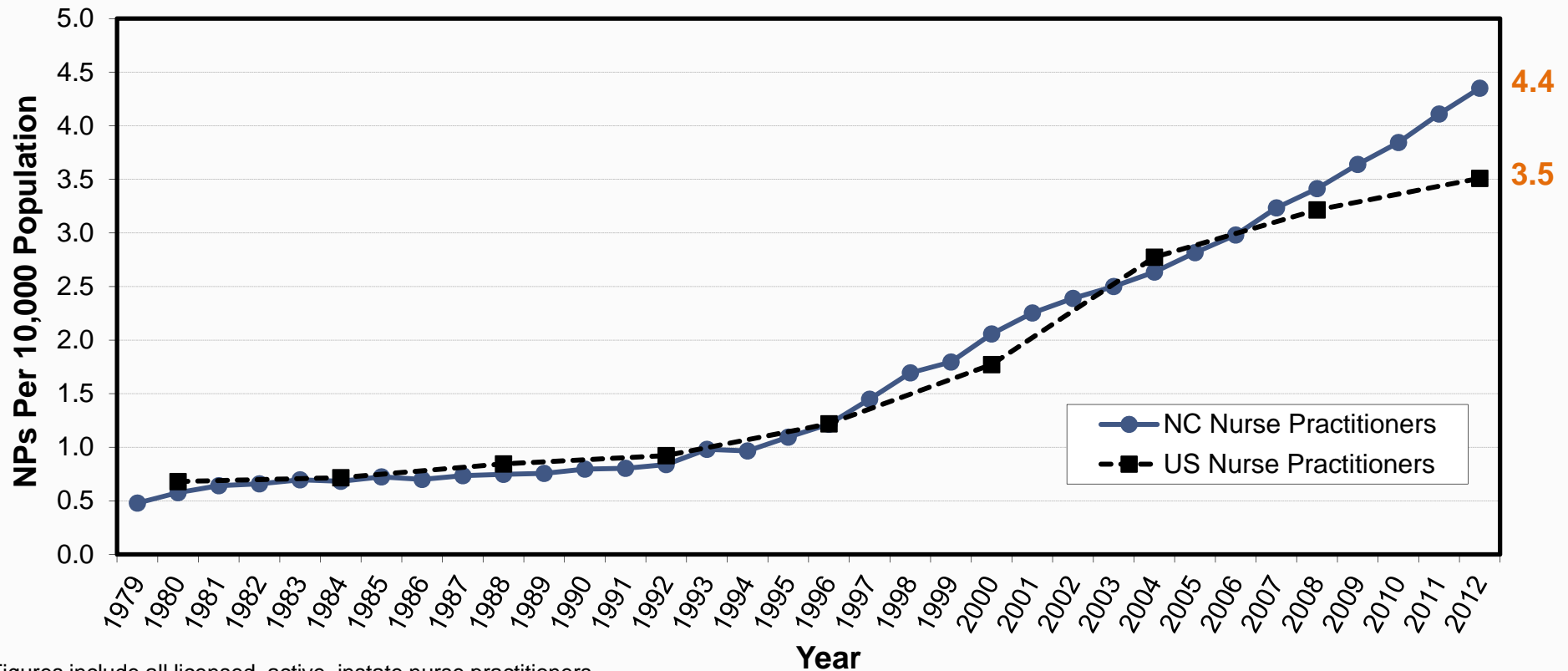
- Physicians (MDs and DOs)
- Physician Assistants
- Dentists
- Dental Hygienists
- Optometrists
- Pharmacists
- Physical Therapists
- Physical Therapist Assistants
- Respiratory Therapists (2004)
- Registered Nurses
- Nurse Practitioners
- Certified Nurse Midwives (1985)
- Licensed Practical Nurses
- Chiropractors
- Podiatrists
- Psychologists
- Psychological Associates
- Occupational Therapists (2006)
- Occupational Therapy Assistants (2006)

Advanced Practice Clinicians: Nurse Practitioners (NPs), Physician Assistants (PAs), Certified Nurse Midwives (CNMs)



Supply of NPs in North Carolina outstripping US supply in recent years

Nurse Practitioners per 10,000 Population,
US and NC, 1979 to 2012

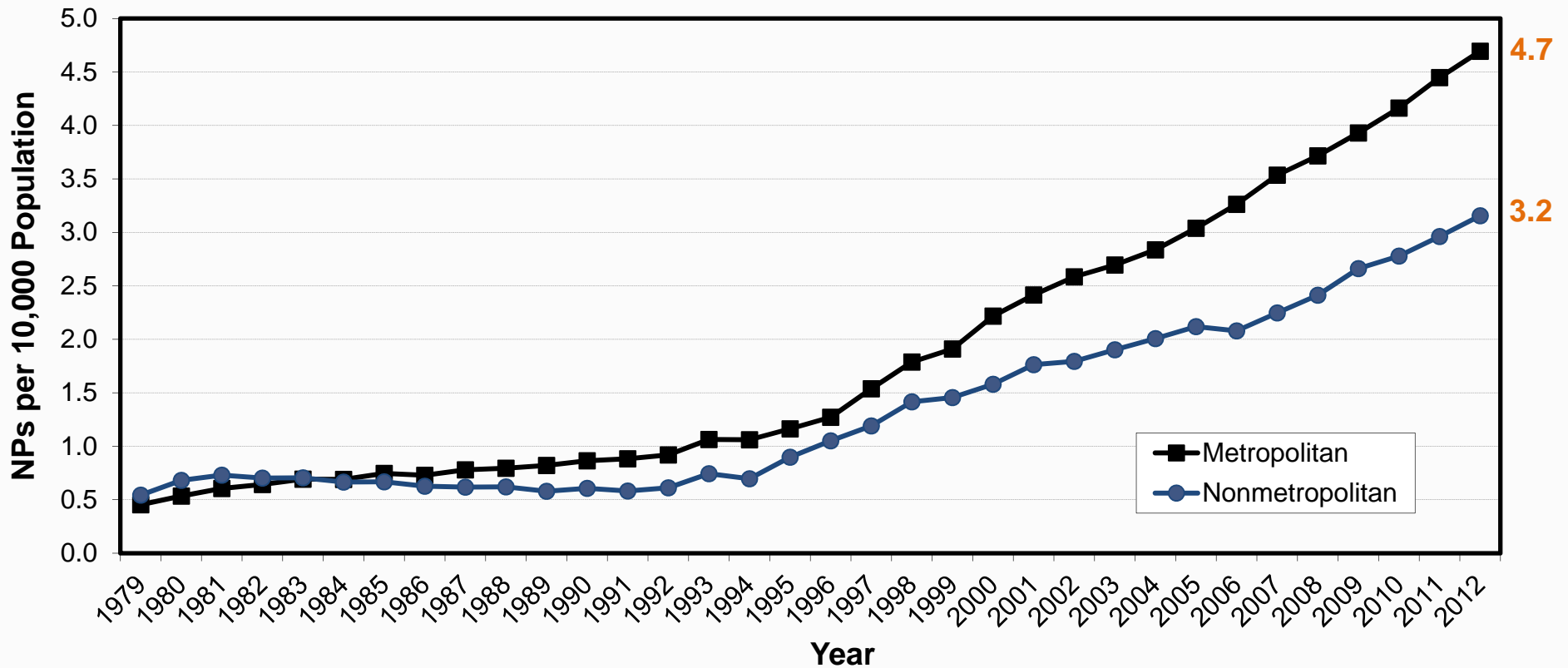


Figures include all licensed, active, instate nurse practitioners.

Sources: North Carolina Health Professions Data System, 1979 to 2012; The Registered Nurse Population- Findings from the National Sample Survey of Registered Nurses, 2008, 2004, 2000, 1996, 1992, 1988, 1984, 1980; North Carolina Office of State Planning; U.S. Bureau of the Census; North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Supply increasing more rapidly in urban counties, but disparity not as large as other providers

Nurse Practitioners per 10,000 by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012

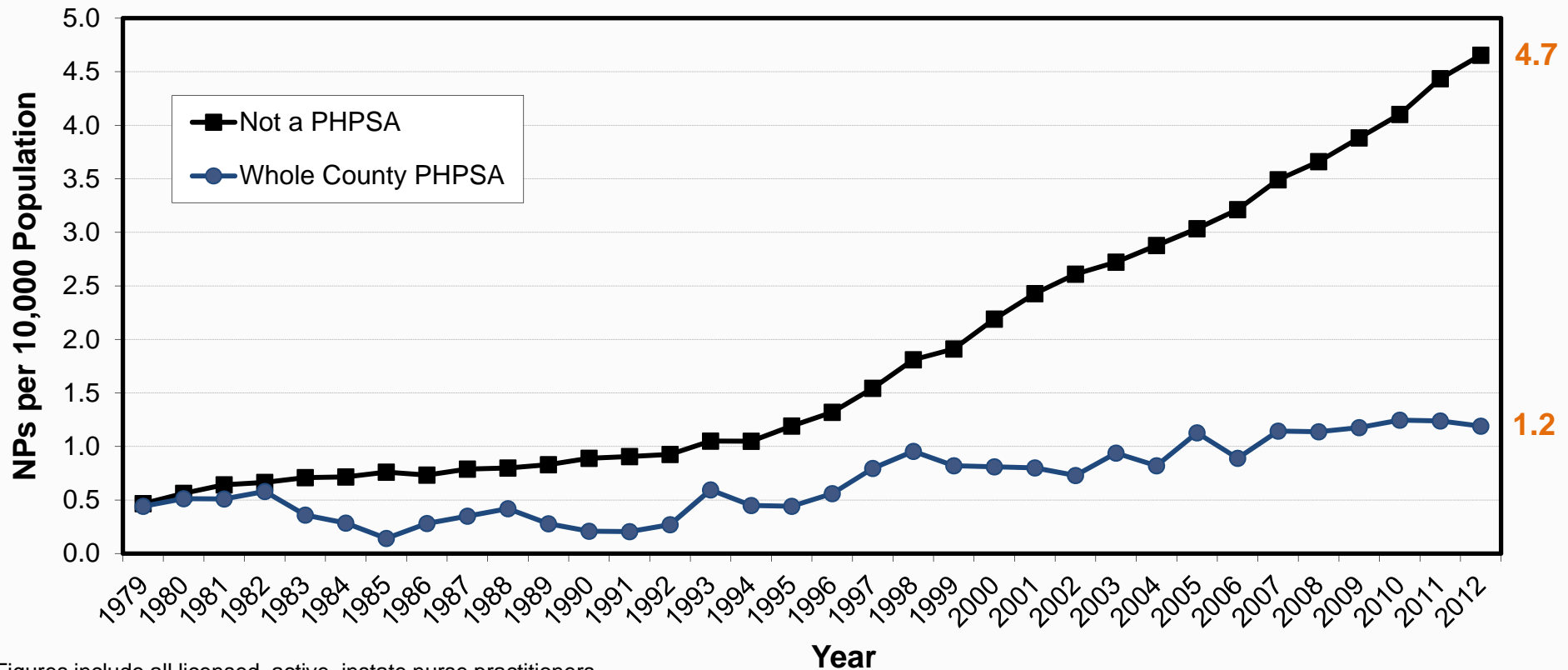


Figures include all licensed, active, instate nurse practitioners.

Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Widening gap between well-supplied and shortage counties

Nurse Practitioners per 10,000 by Persistent Health Professional Shortage Area (PHPSA) Status, North Carolina, 1979 to 2012

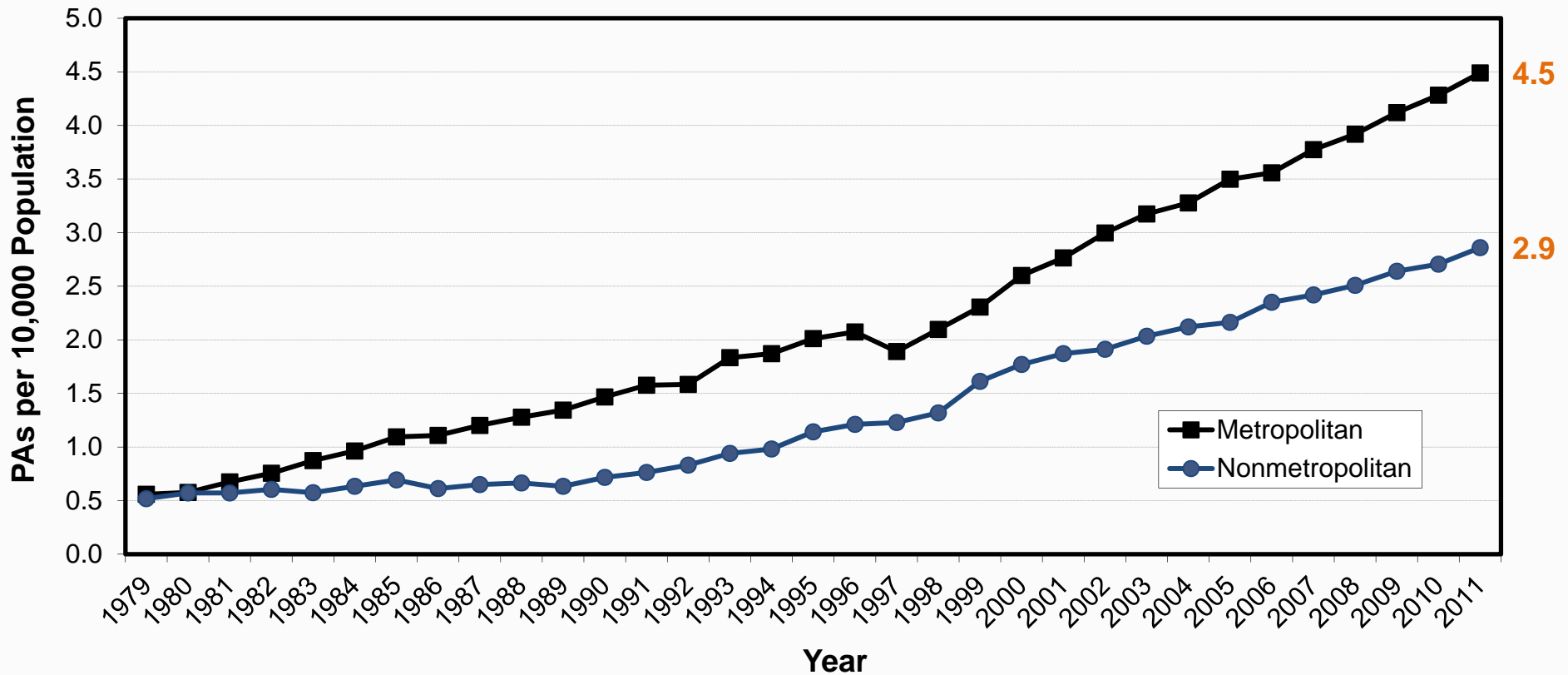


Figures include all licensed, active, instate nurse practitioners.

Sources: North Carolina Health Professions Data System, 1979 to 2012; NC Office of State Planning; Area Resource File, HRSA, Department of Health and Human Services, 2000-2012. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2010. PHPSA calculations from 2011 onward completed using most recent 7 HPSA designations.

Similar trend for PAs, supply growth in rural counties is slow

Physician Assistants per 10,000 by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012

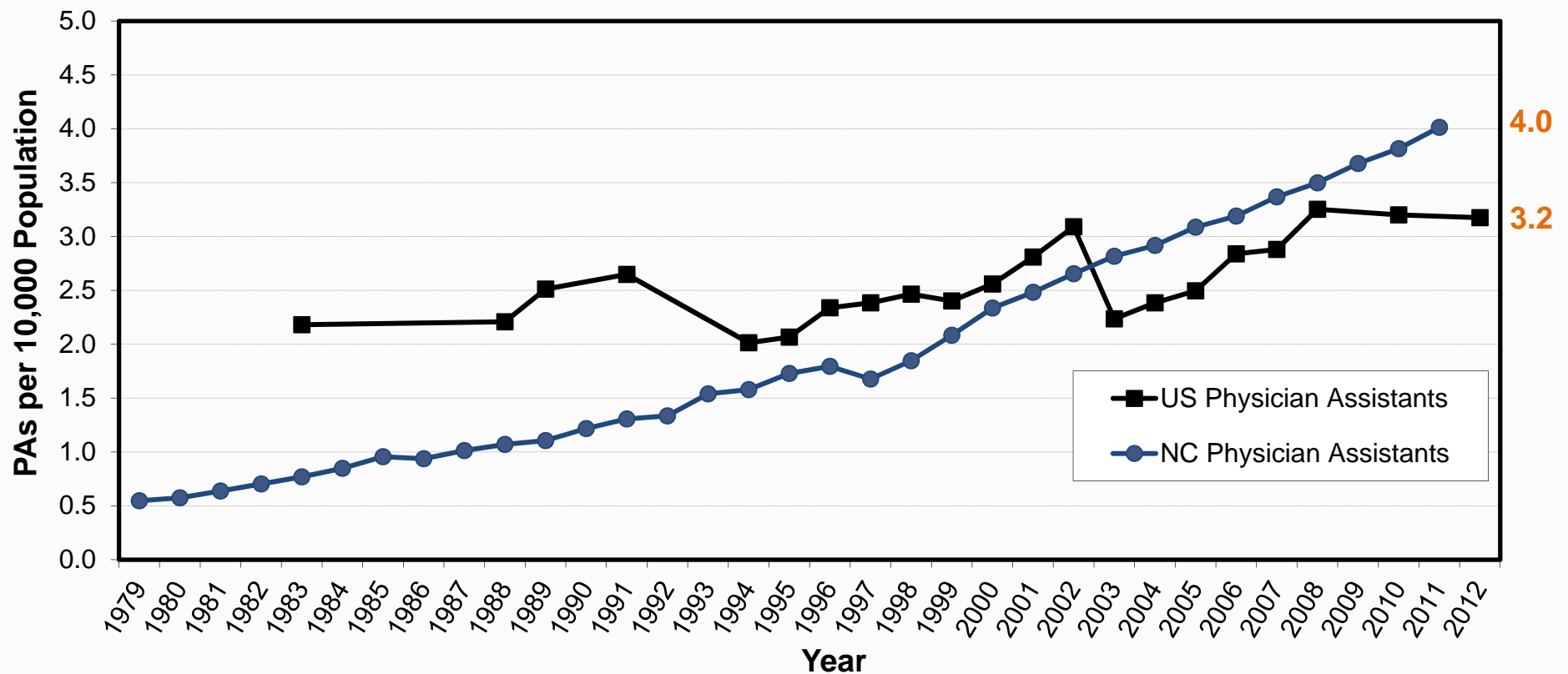


Figures include all licensed, active, in-state physician assistants.

Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Strong and steady growth in PA supply in NC, national picture less clear

Physician Assistants per 10,000 Population, US and NC, 1979 to 2012

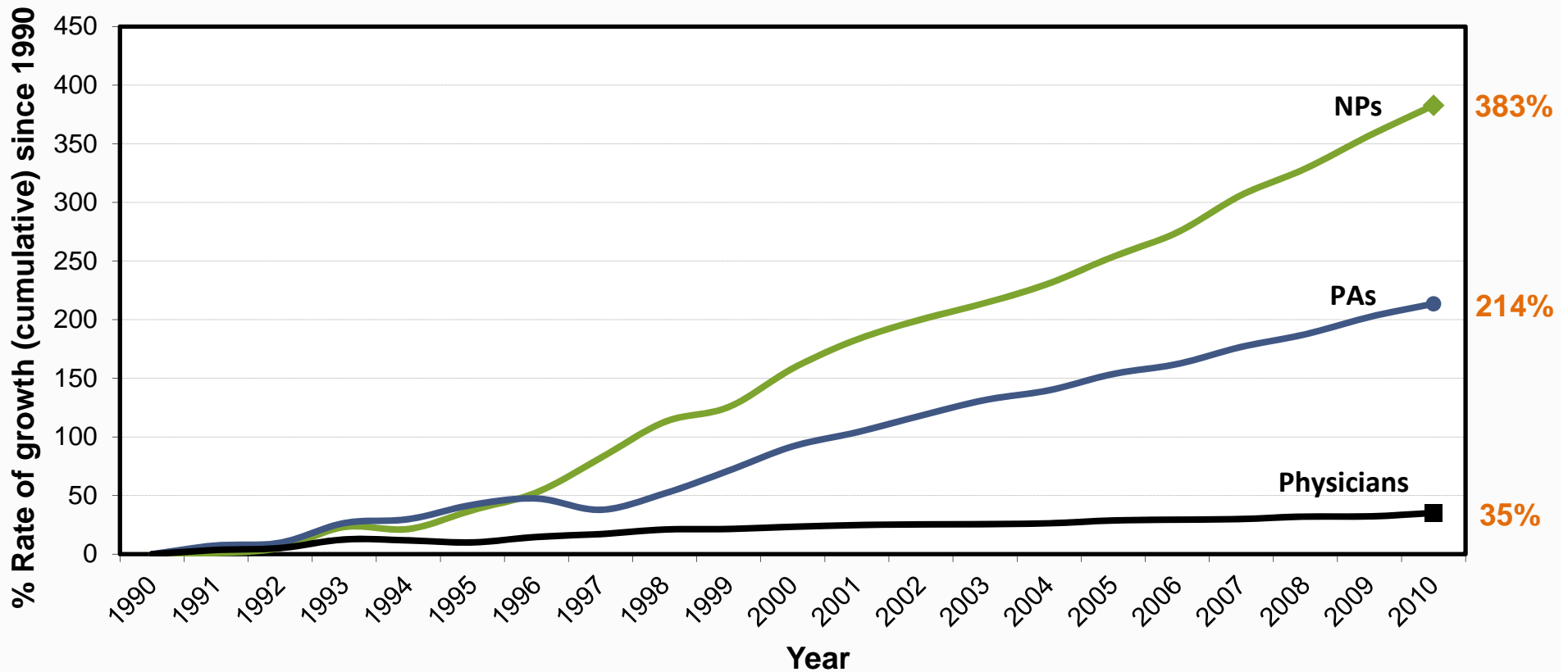


Figures include all licensed, active, in-state physician assistants.

Sources: North Carolina Health Professions Data System, 1979 to 2012; U.S. Census Bureau, Statistical Abstract of the United States, various years; HRSA, Bureau of Health Professions, NCHWA; NC Office of State Planning. NC population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Are NPs and PAs the answer to emerging primary care workforce needs?

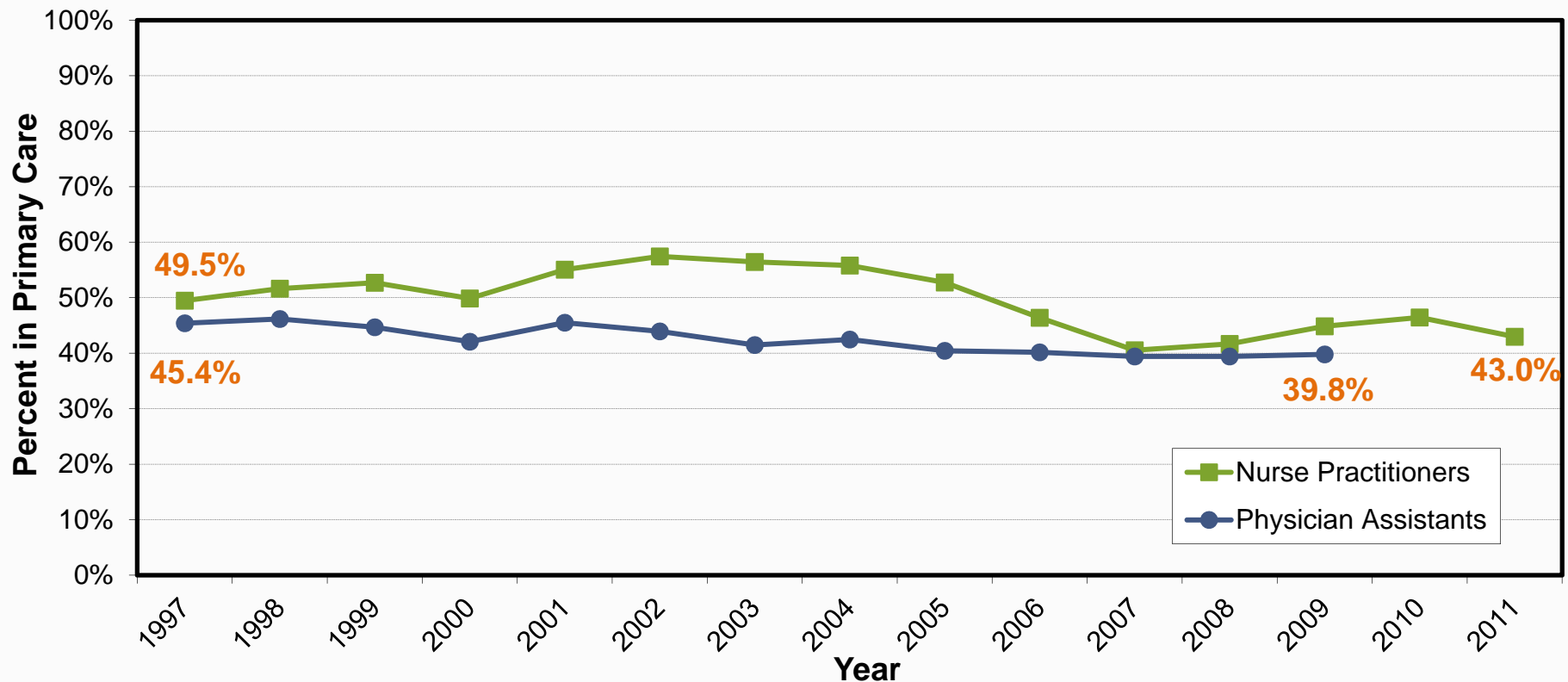
Cumulative rate of growth since 1990:
Physicians, NPs and PAs in North Carolina



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.

Maybe not. Percent reporting they are in primary care is less than half and slowly declining

Percent of Nurse Practitioners and Physician Assistants Reporting a Primary Care Specialty, 1997-2011*, North Carolina

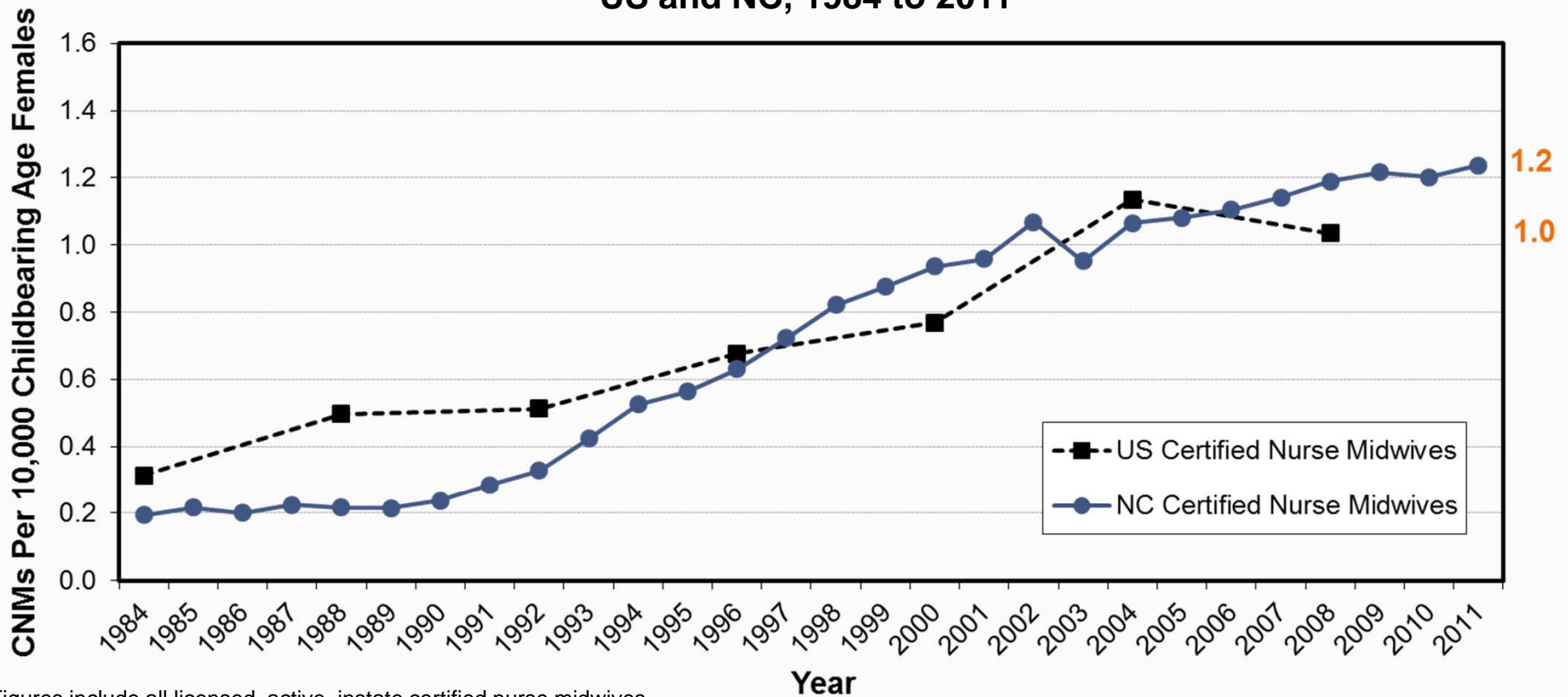


Notes: Data for primary specialty include active, in-state NPs indicating a primary specialty of family practice, general practice, internal medicine, Ob/Gyn, or pediatrics, who were licensed in NC as of October 31 of the respective year. Data for physician extender type include active-instate NPs indicating a physician extender type of family nurse practitioner, adult nurse practitioner, ob/gyn nurse or pediatric nurse practitioner who were licensed as of October 31 of the respective year.

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 NC Medical Board. Chart prepared on 12/07/2012.

NC has about average supply of CNMs relative to other states

Certified Nurse Midwives (CNMs) per 10,000 Childbearing Age* Females, US and NC, 1984 to 2011



Figures include all licensed, active, instate certified nurse midwives.

Childbearing age: 15-44 years. Sources: North Carolina Health Professions Data System, 1979 to 2012; The Registered Nurse Population- Findings from the National Sample Survey of Registered Nurses, 2008, 2004, 2000, 1996, 1992, 1988, 1984, 1980; North Carolina Office of State Planning; U.S. Bureau of the Census; North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

About half of NC's counties have a CNM, distribution widely varies

Certified Nurse Midwives (CNMs) per 10,000 Women Ages 15-44 North Carolina, 2011

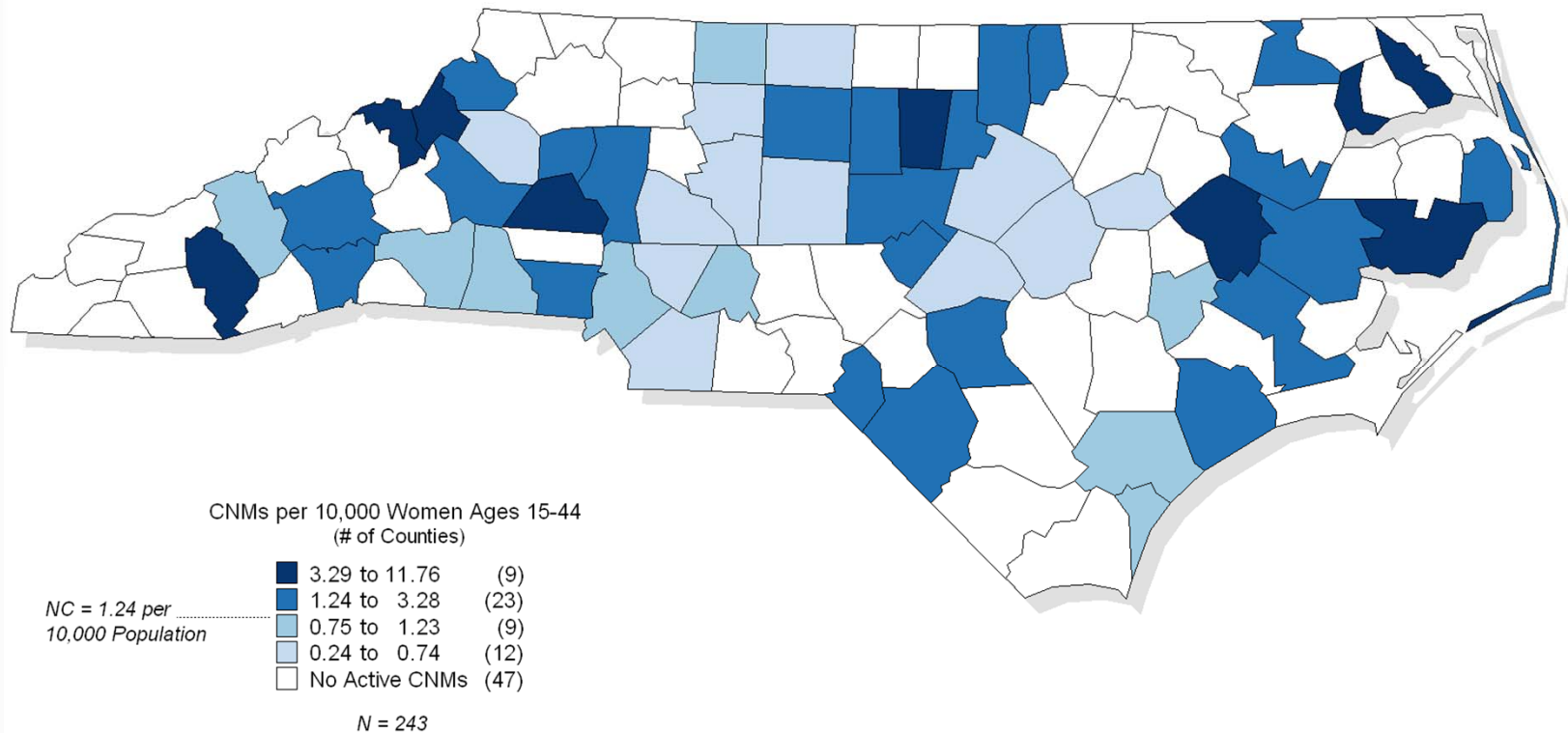


Figure includes all active, in-state certified nurse midwives licensed in NC as of October 31, 2011.

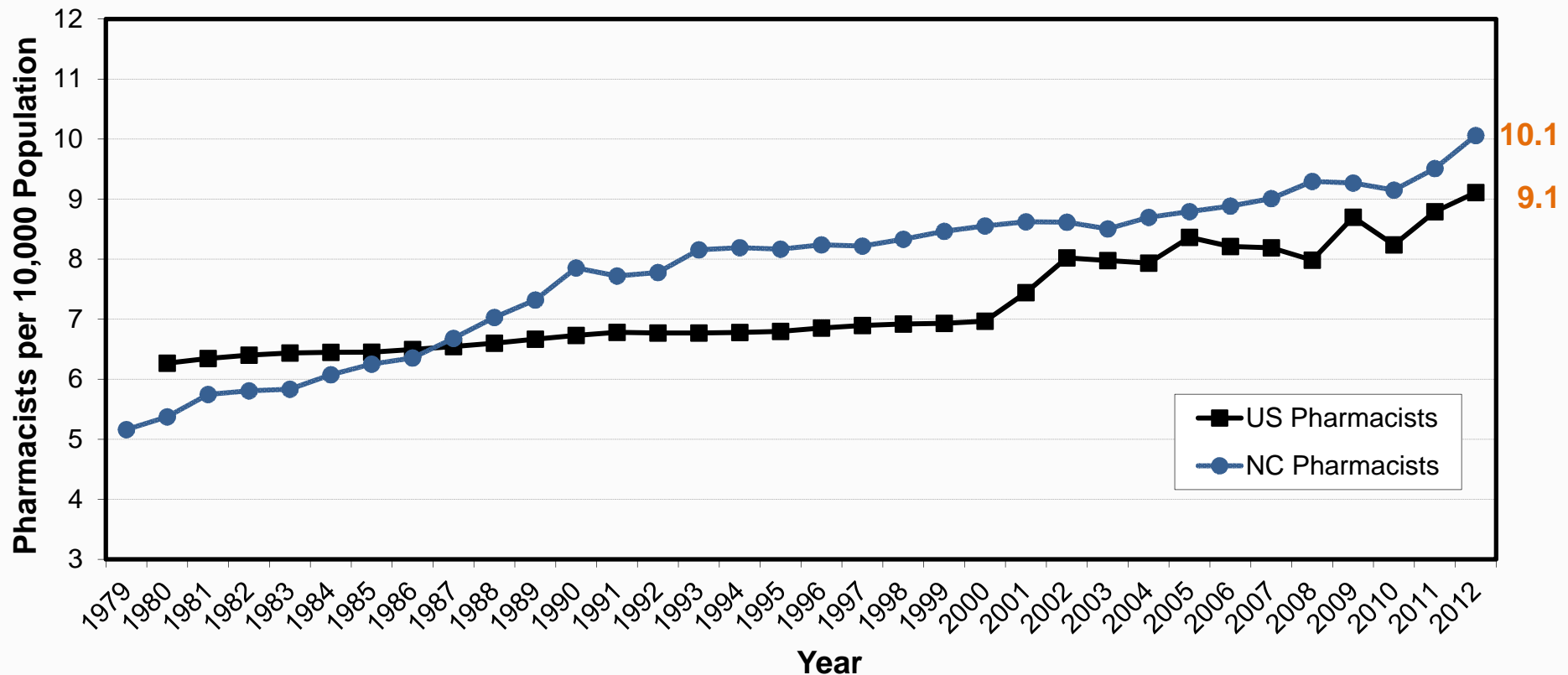
Childbearing age:15-44 years. Source: North Carolina Health Professions Data System, with data derived from the Midwifery Joint Committee, 2011.

Pharmacists



North Carolina has consistently outpaced the US average in supply of pharmacists

Pharmacists per 10,000 Population, US and NC, 1979 to 2012

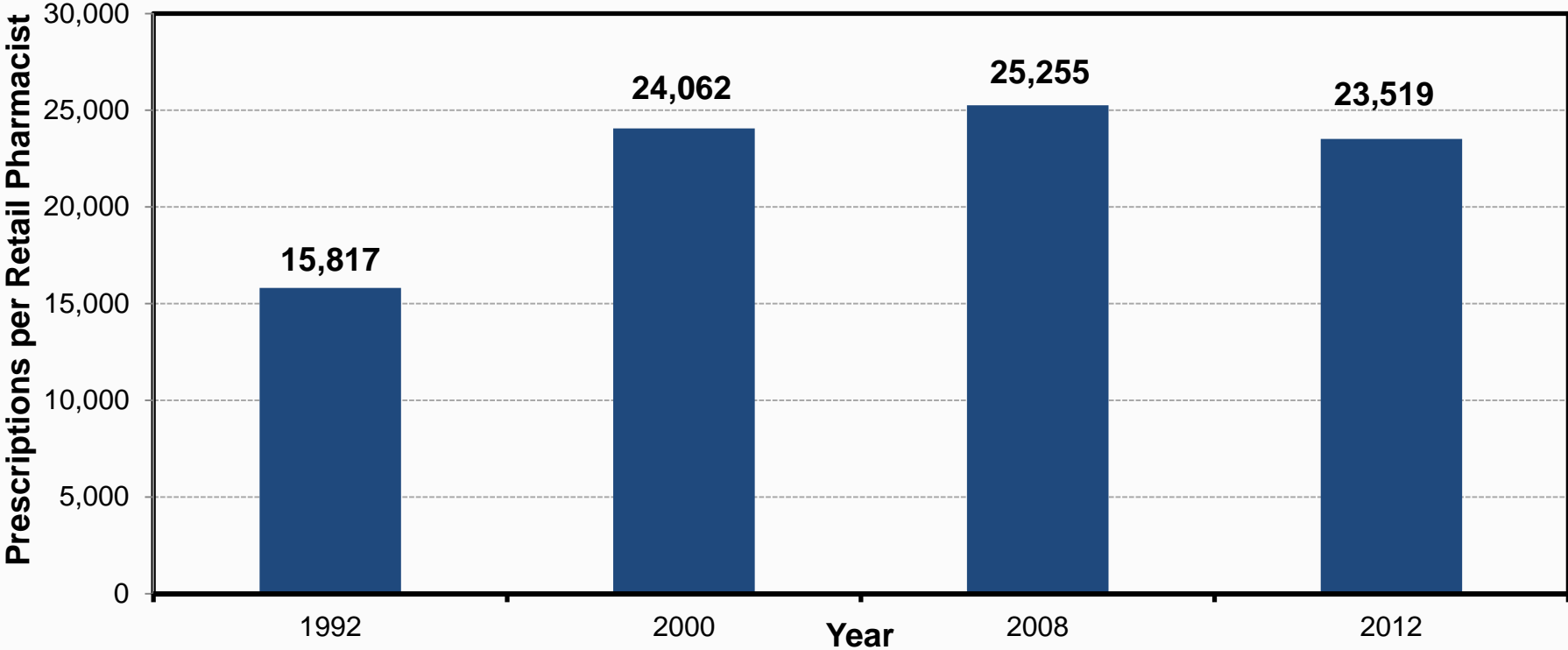


Figures include all licensed, active, in-state pharmacists.

Sources: North Carolina Health Professions Data System, 1979 to 2012; U.S. Census Bureau, Statistical Abstract of the United States, various years; HRSA, Bureau of Health Professions; North Carolina Office of State Planning. NC population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Number of retail prescriptions dispensed per pharmacist dropped slightly in 2012

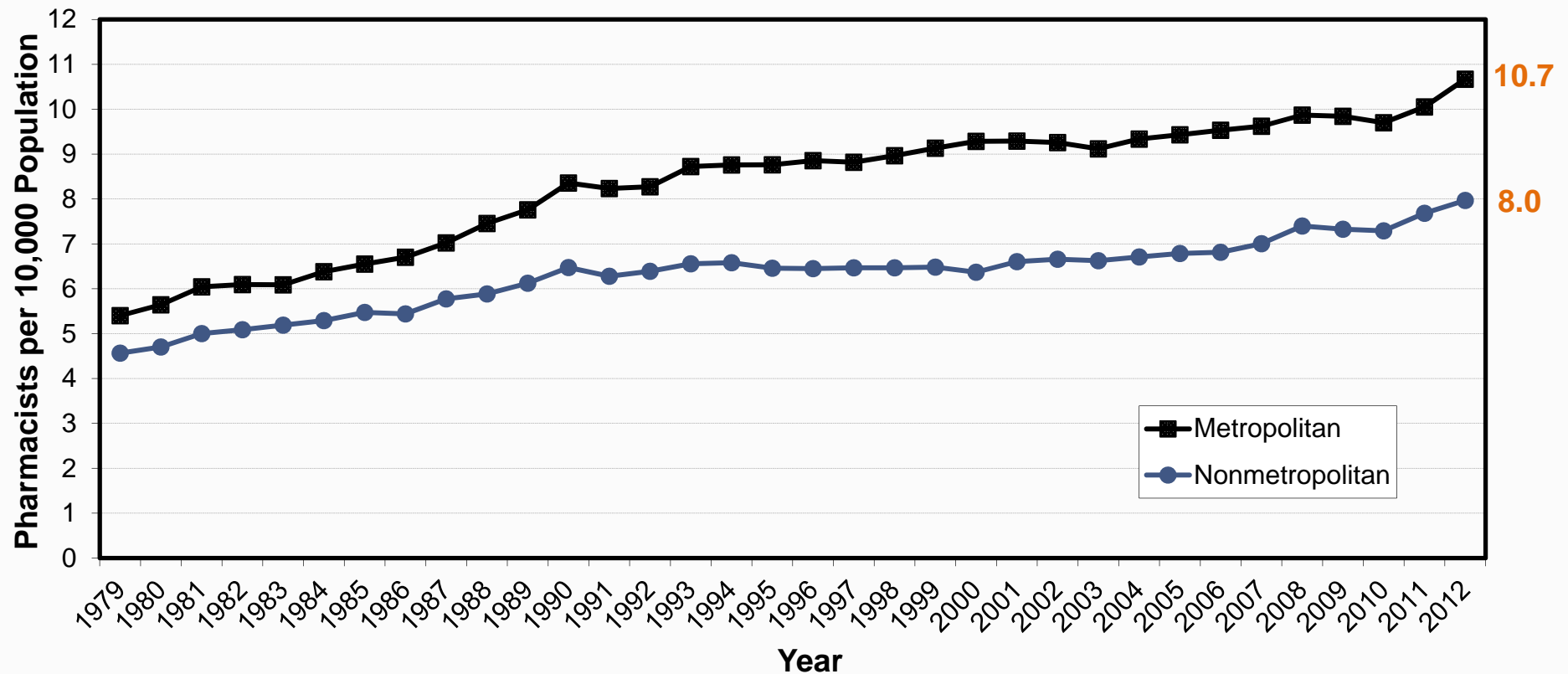
Annual Retail Prescriptions Dispensed per Active, Instate Retail Pharmacist in North Carolina, 1992 to 2012



Source: North Carolina Health Professions Data System, with data derived from the North Carolina Board of Pharmacy, 2012; 2012 prescription data-Xponent™, January 2012-December 2012, IMS Health Incorporated. All Rights Reserved. Pharmacist data include active, in-state pharmacists licensed in North Carolina as of October 31, 2012 reporting an employment setting of chain or independent pharmacy. Data do not include prescriptions dispensed at hospitals, clinics, long-term care facilities or mail order operations. Data include new prescriptions and refills dispensed. 1992-2008 prescription data: March 2010. "Figure 19. Annual Retail Prescriptions Dispensed per Active, Instate Retail Pharmacist in North Carolina, 1992 to 2008" (pg 13). *In Trends in the Supply of Pharmacists in North Carolina*. Cecil G. Sheps Center for Health Services Research.

Pharmacists are fairly evenly distributed between rural and urban counties

Pharmacists per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012



Figures include all licensed, active, in-state pharmacists.

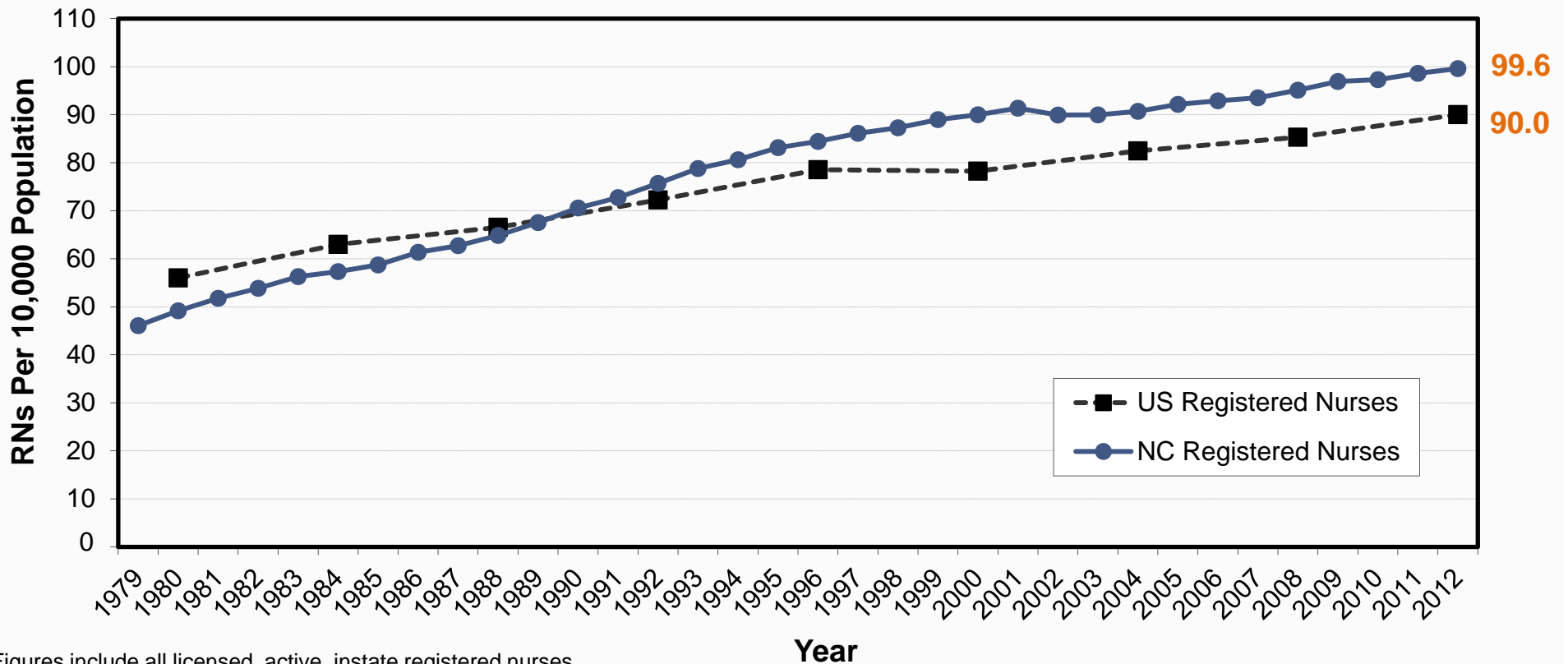
Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Registered Nurses and Licensed Practical Nurses



North Carolina's supply of registered nurses is outpacing US average

Registered Nurses per 10,000 Population, US and NC, 1979 to 2012

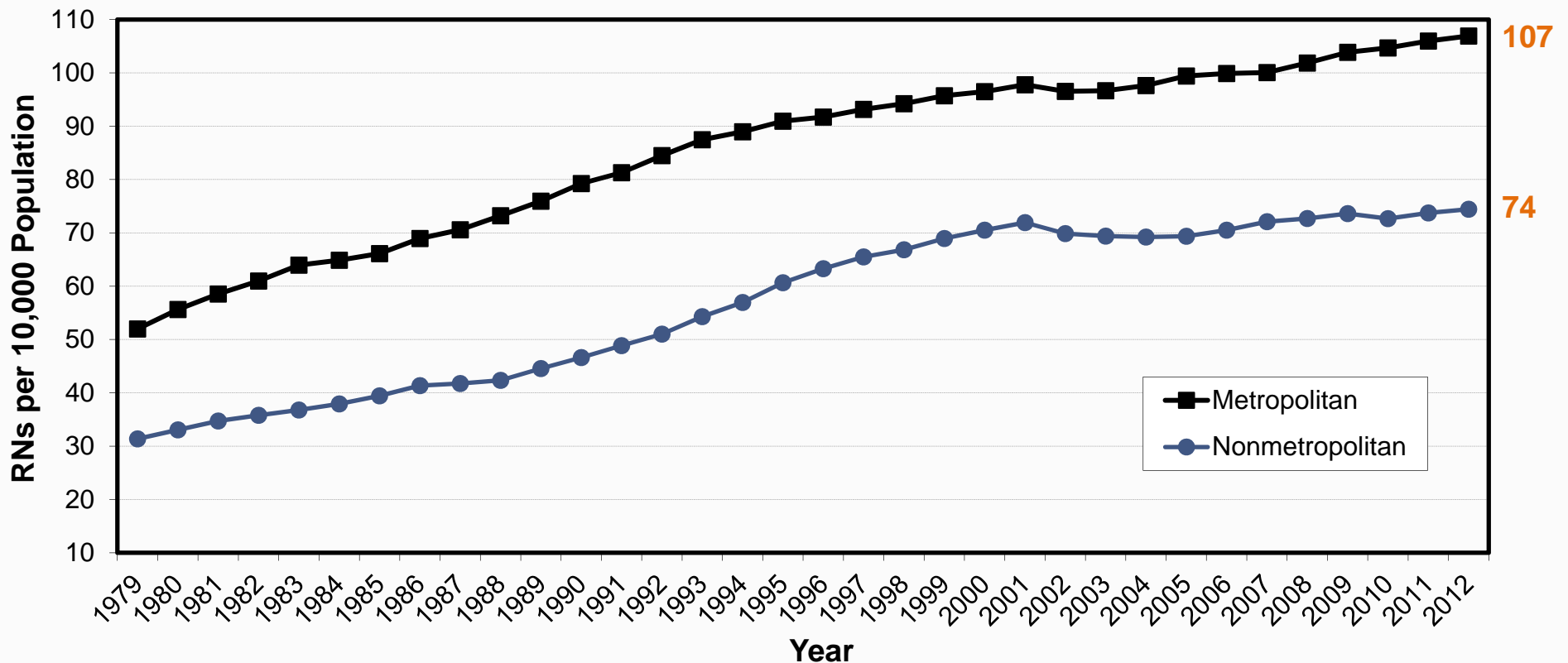


Figures include all licensed, active, in-state registered nurses.

Sources: North Carolina Health Professions Data System, 1979 to 2012; The Registered Nurse Population- Findings from the National Sample Survey of Registered Nurses, 2008, 2004, 2000, 1996, 1992, 1988, 1984, 1980; North Carolina Office of State Planning; U.S. Bureau of the Census; North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

But North Carolina's urban areas have 33 more RNs per 10,000 people than rural areas

Registered Nurses per 10,000 by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012

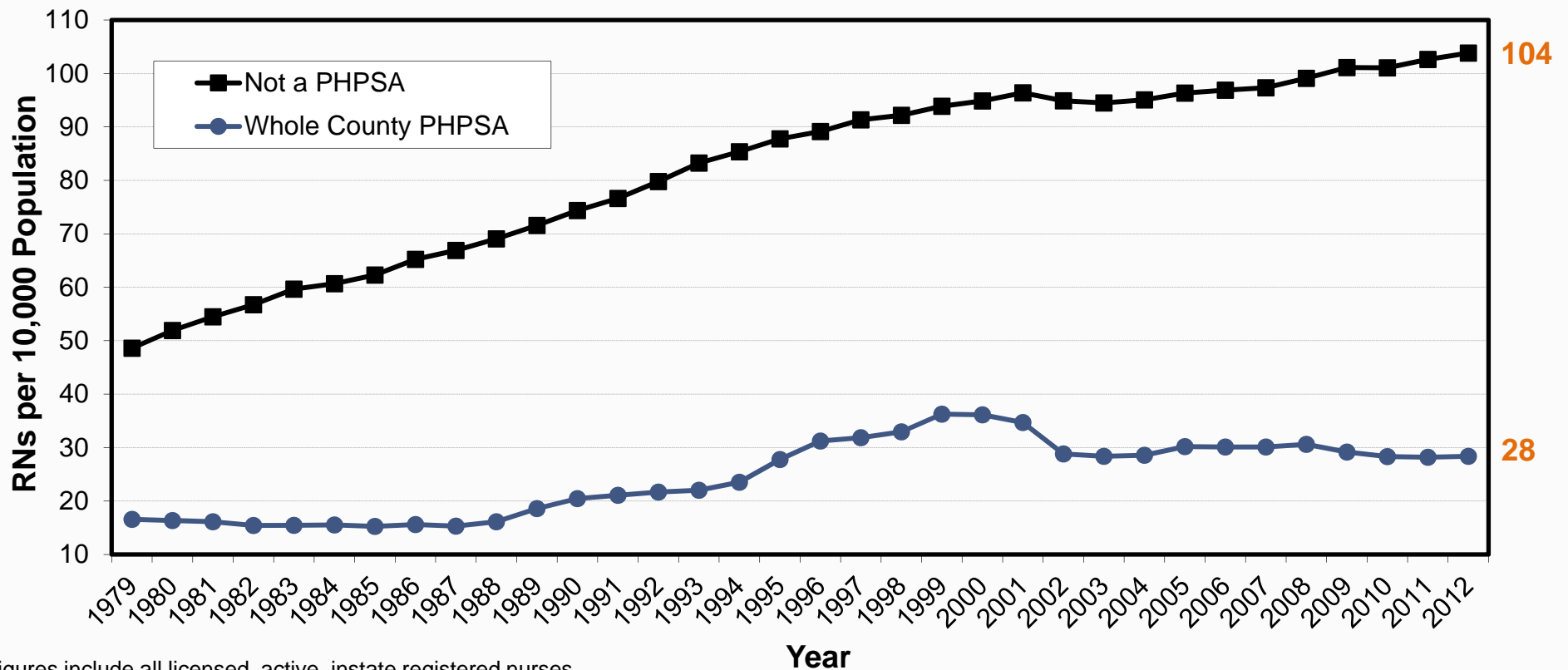


Figures include all licensed, active, instate registered nurses.

Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Even bigger disparities in counties facing persistent health professional shortages

Registered Nurses per 10,000 by Persistent Health Professional Shortage Area (PHPSA) Status, North Carolina, 1979 to 2012



Figures include all licensed, active, instate registered nurses.

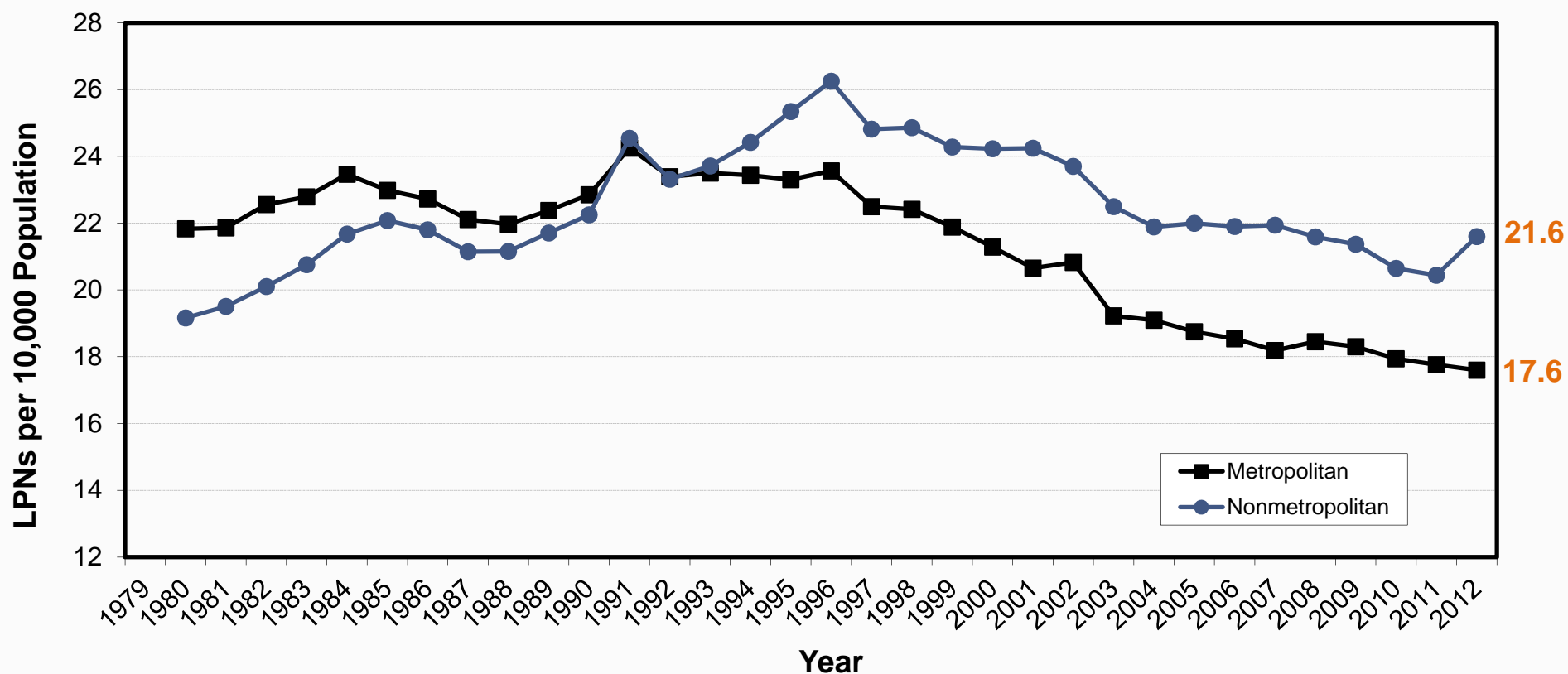
Sources: North Carolina Health Professions Data System, 1979 to 2012; NC Office of State Planning; Area Resource File, HRSA, Department of Health and Human Services, 2000-2012. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses. Persistent HPSAs are those designated as HPSAs by HRSA from 1999 through 2010. PHPSA calculations from 2011 onward completed using most recent 7 HPSA designations.

Where RNs complete education affects practice location

- Of total workforce in 2011, 13% entered with diploma, 55% an Associate degree and 32% with Baccalaureate or higher
- 90% of RNs graduating with ADN from community college system are retained in North Carolina
- NCCCS ADN nurses practice close to where they were educated
- Compared to NC BSN cohort that graduated at same time, NCCCS ADN nurses are
 - Two times more likely to practice in rural areas
 - Three times more likely to practice in NC's most underserved communities

LPNs buck trend in other health professions: supply declining and more LPNs in rural counties

Licensed Practical Nurses per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012



Figures include all active, instate licensed practical nurses.

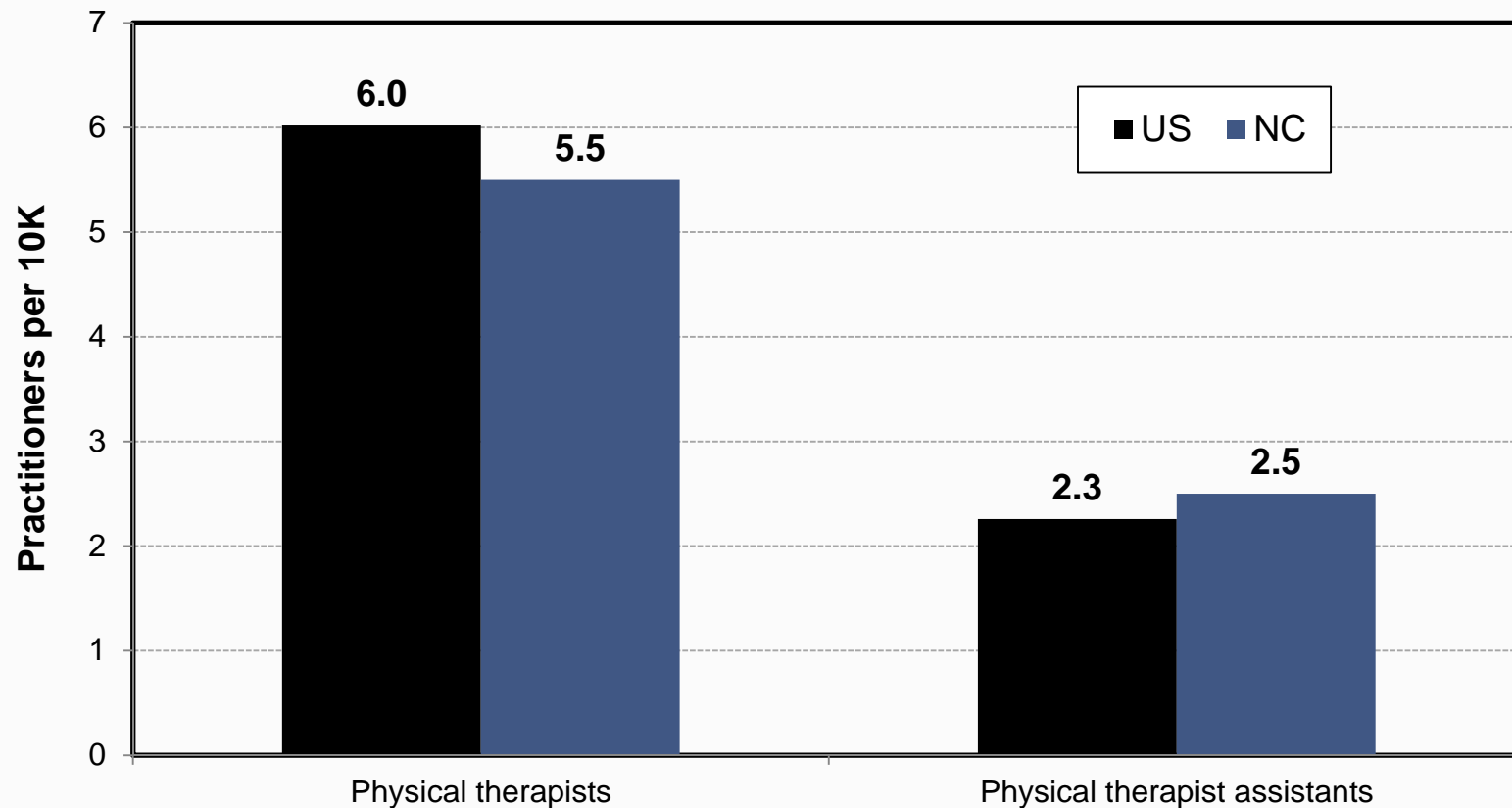
Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Physical, Occupational and Respiratory Therapists, Chiropractors, Podiatrists



North Carolina has fewer PTs but more PTAs per capita than US average

Physical Therapists and Physical Therapist Assistants per 10,000 Population, US and NC, 2012

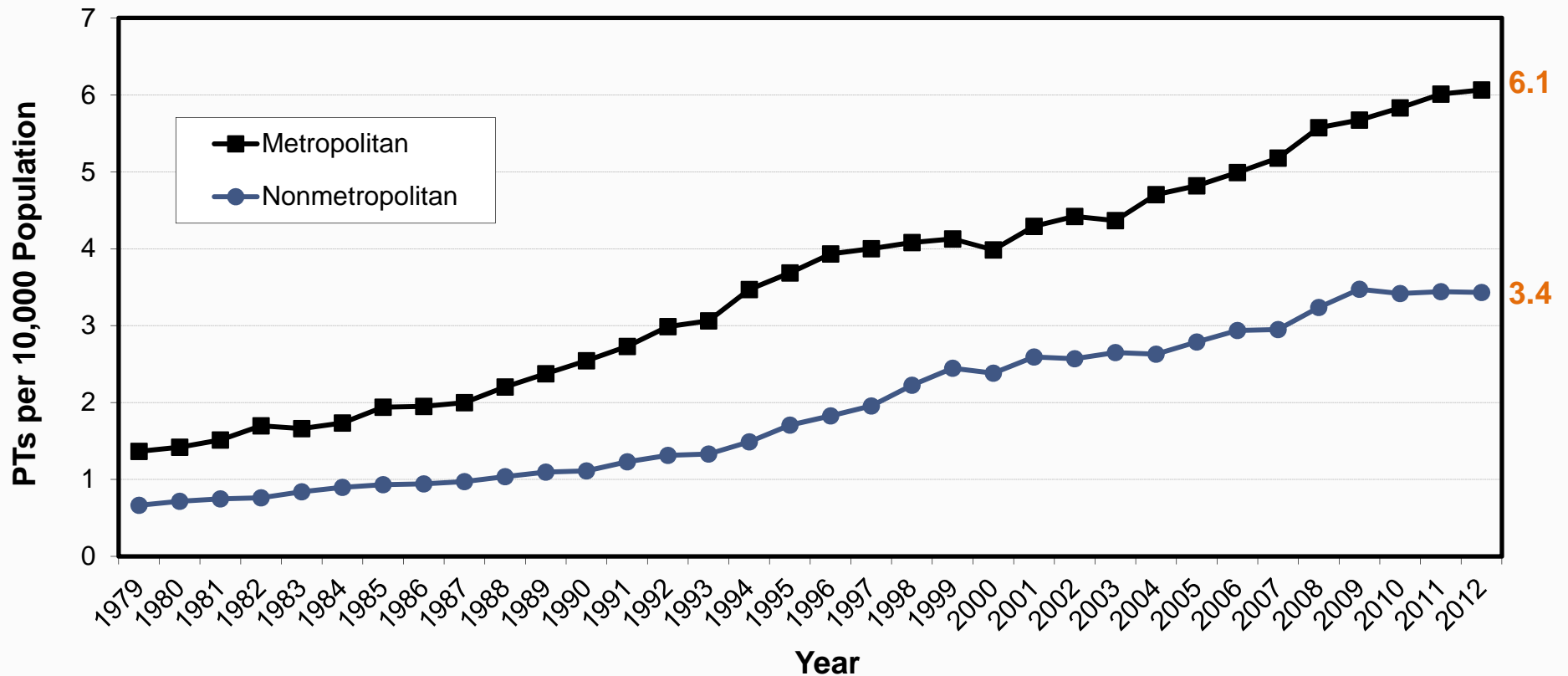


Figures include all licensed, active, instate PTs and PTAs.

Sources: North Carolina Health Professions Data System, 2012; HRSA, Bureau of Health Professions, NCHWA, 2013.

There are nearly twice as many PTs per capita in urban counties compared to rural ones

Physical Therapists per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012

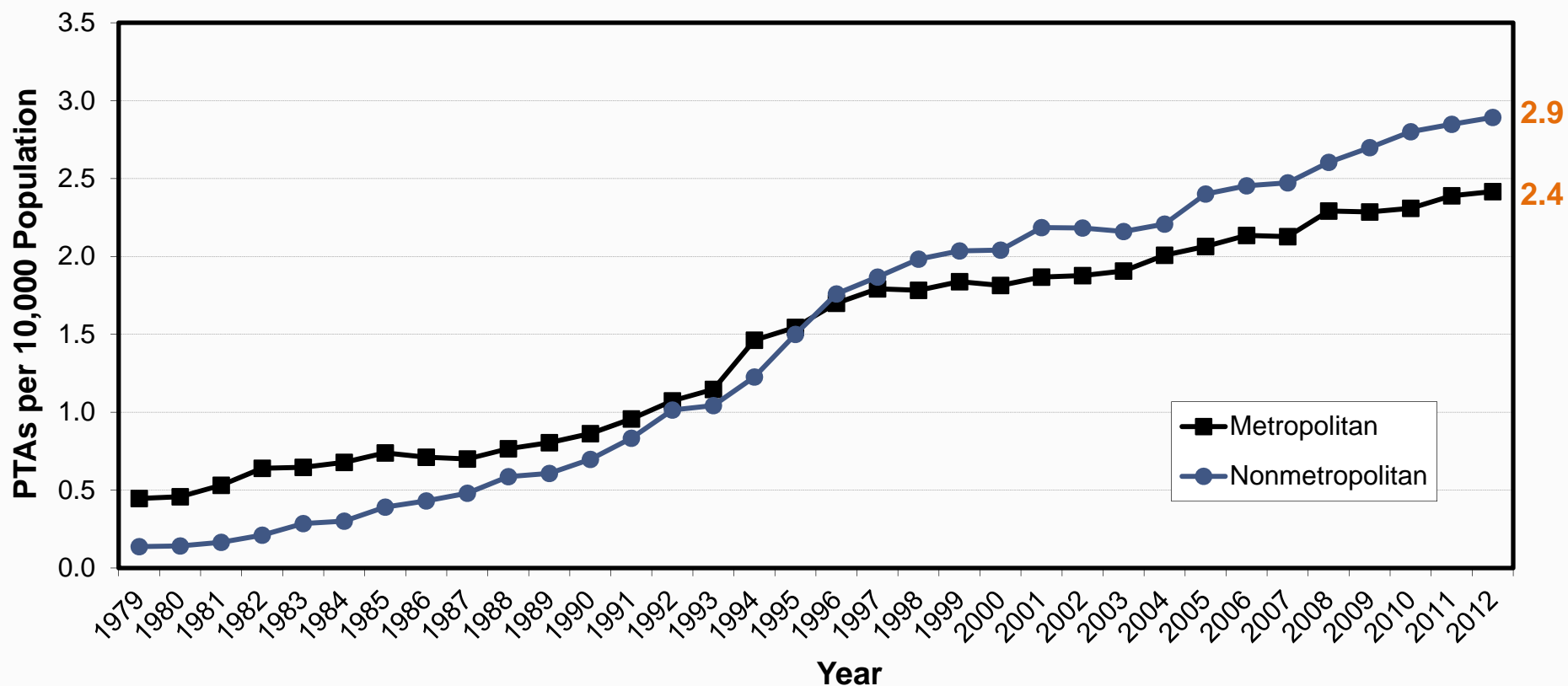


Figures include all licensed, active, instate physical therapists.

Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

But like LPNs, PTAs are more likely to practice in rural counties

Physical Therapist Assistants per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012



Figures include all licensed, active, in-state physical therapist assistants.

Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

High use of PTAs in western and northeastern North Carolina

Physical Therapist Assistants per 10,000 Population North Carolina, 2011

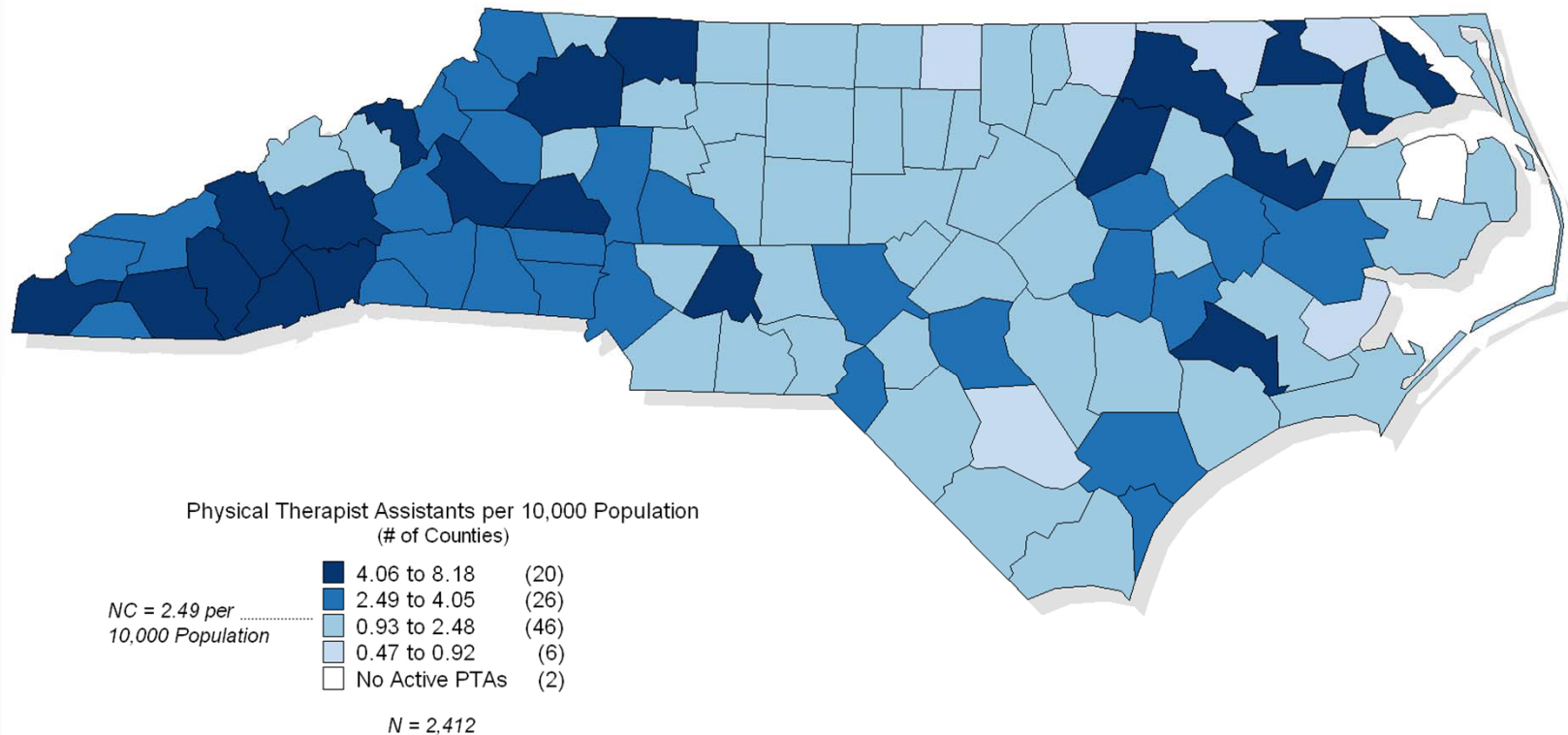
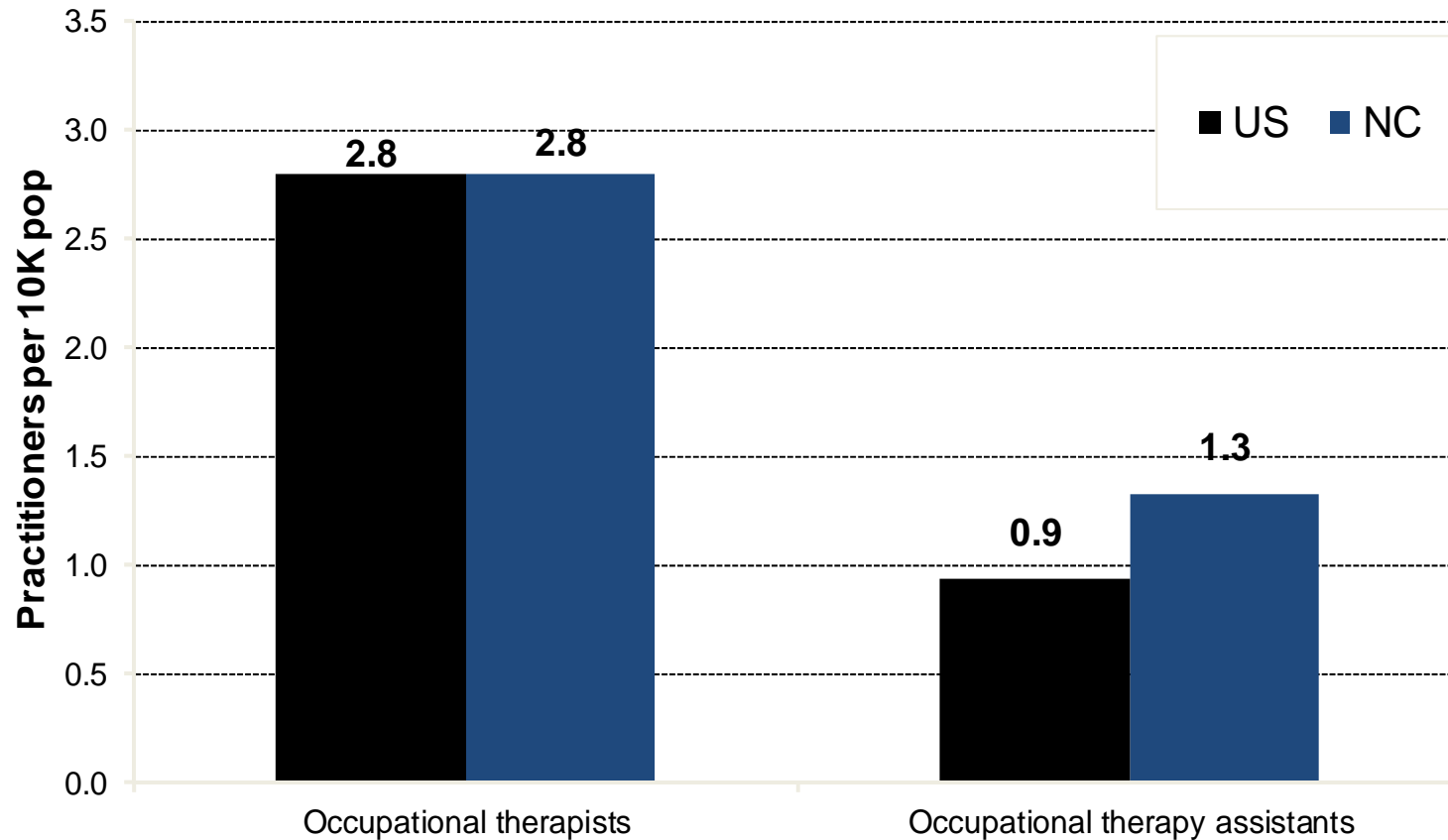


Figure includes all active, instate physical therapist assistants licensed in NC as of October 31, 2011.

Source: North Carolina Health Professions Data System, with data derived from the NC Board of Physical Therapy Examiners, 2011.

North Carolina OT supply mirrors national average, slightly more OTAs

Occupational Therapists and Occupational Therapy Assistants per 10,000 Population, US and NC, 2012

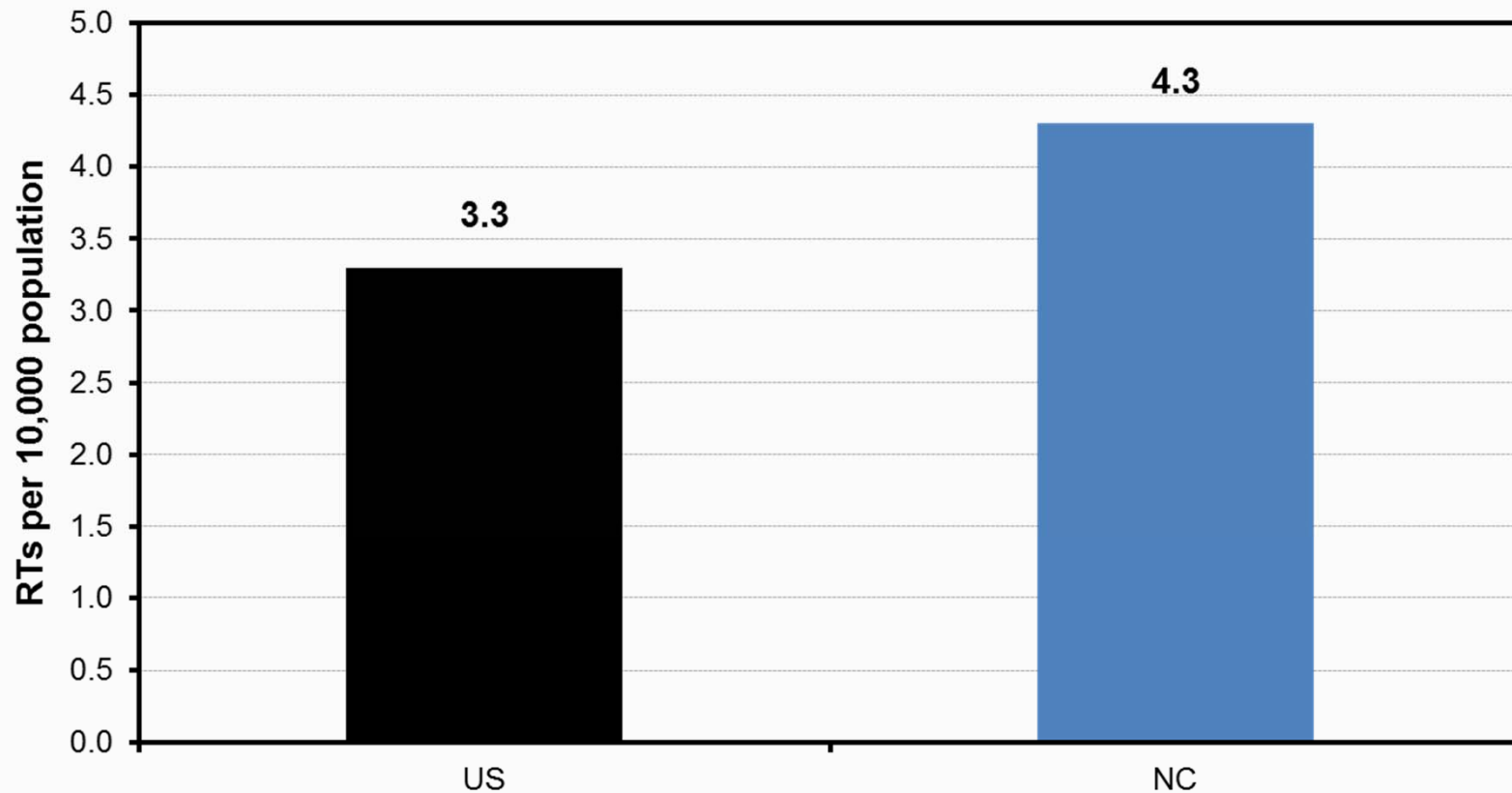


Figures include all licensed, active, instate OTs and OTAs.

Sources: North Carolina Health Professions Data System, 2012; HRSA, Bureau of Health Professions, NCHWA, 2013.

North Carolina has more respiratory therapists than national average

Respiratory Therapists per 10,000 Population,
US and NC, 2012

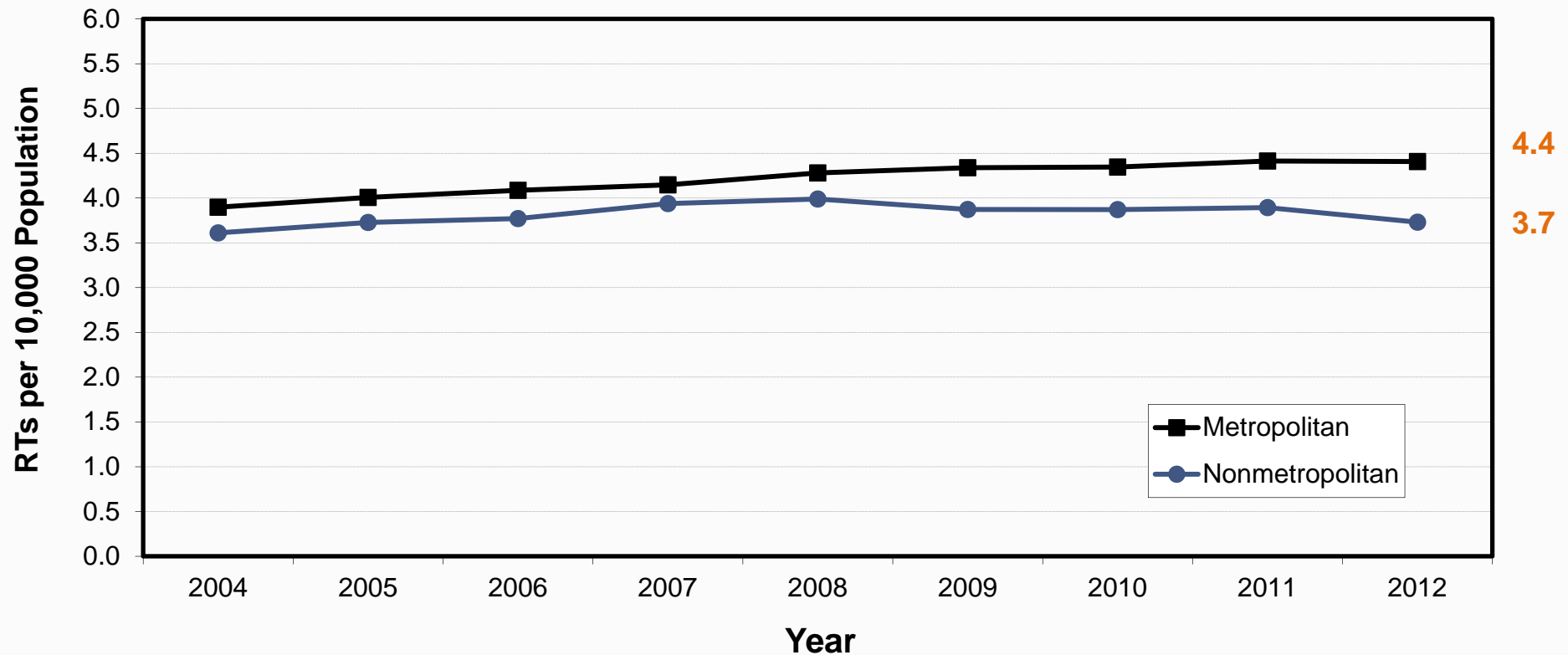


Figures include all licensed, active, instate respiratory therapists.

Sources: North Carolina Health Professions Data System, 2012; HRSA, Bureau of Health Professions, NCHWA, 2013.

Supply of RTs relatively well-distributed but gap between rural and urban increasing

Respiratory Therapists per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 2004 to 2012

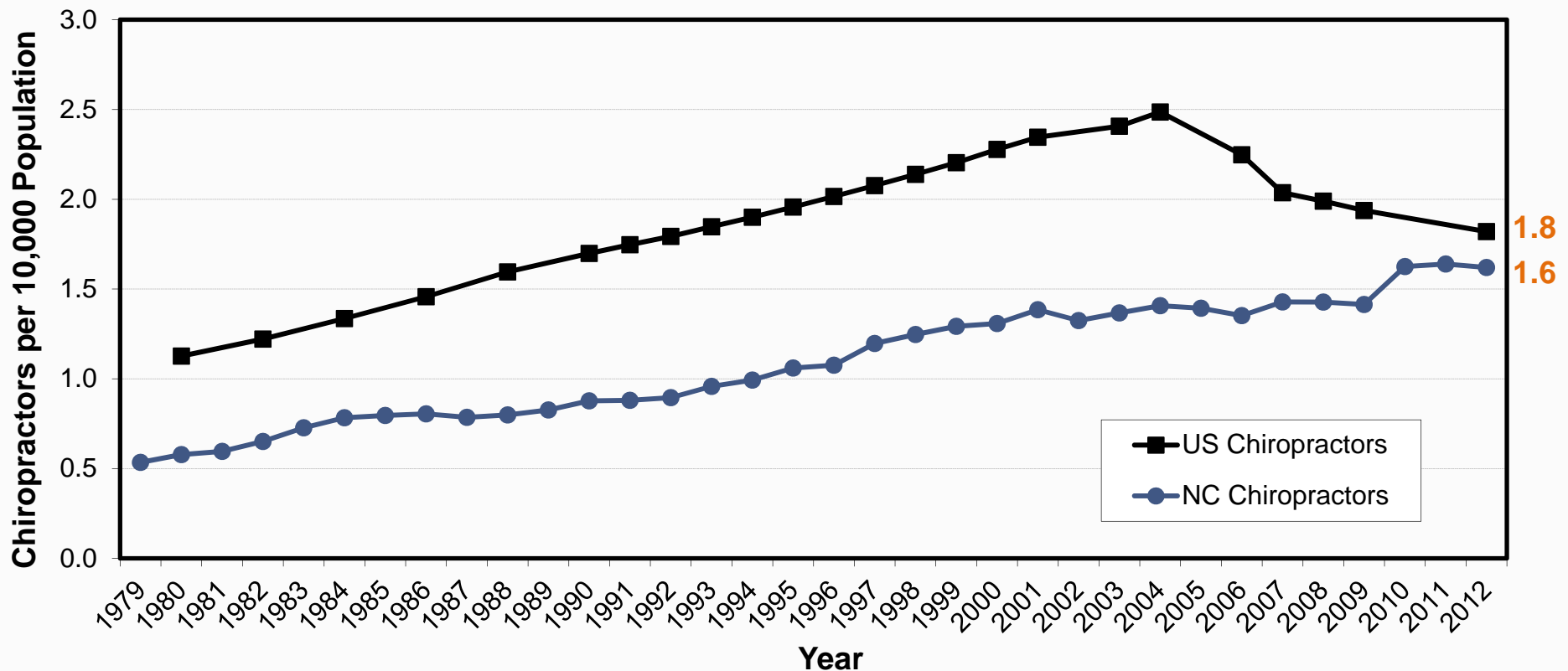


Figures include all licensed, active, instate respiratory therapists.

Sources: North Carolina Health Professions Data System, 2004 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on the 2000 and 2010 Censuses.

NC's supply of chiropractors on slight increase while national supply decreasing

Chiropractors per 10,000 Population
US and NC, 1979 to 2012



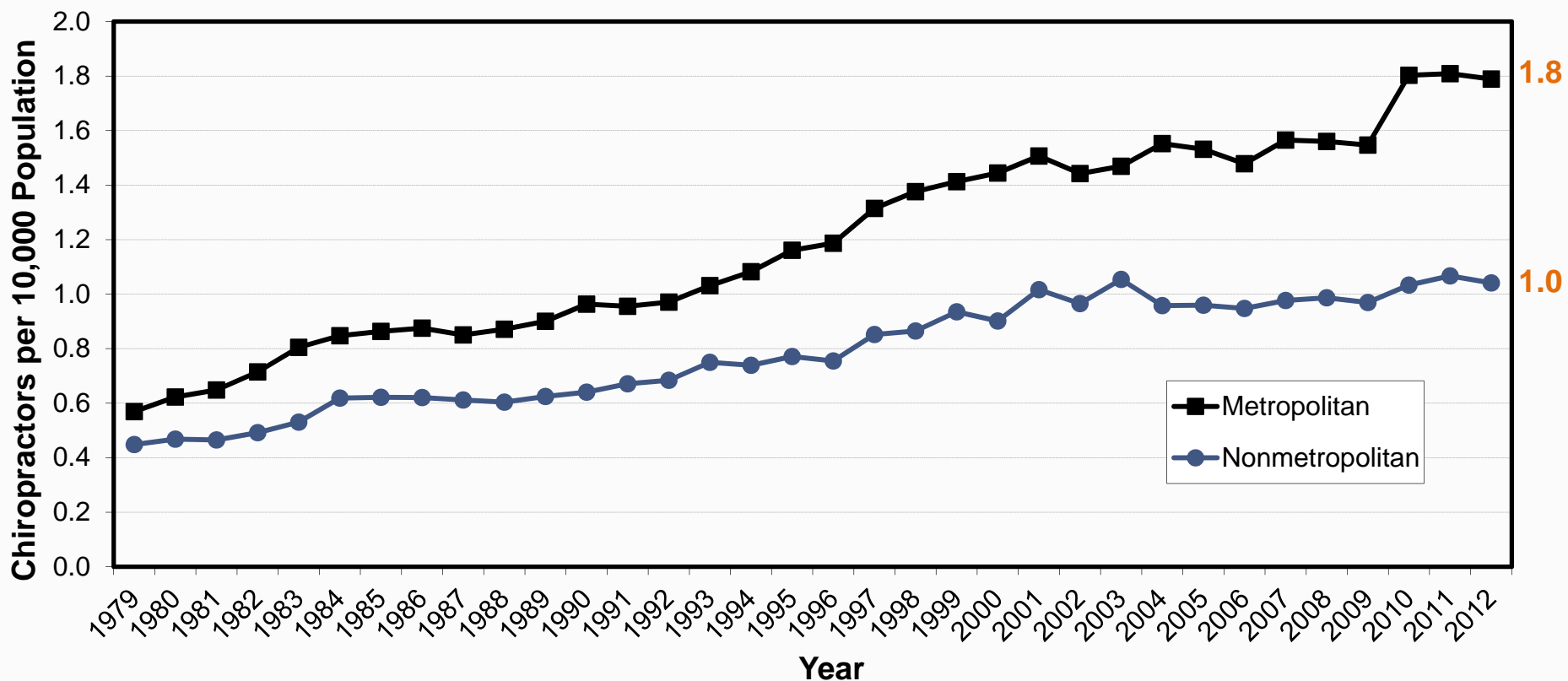
Figures include all licensed, active, in-state chiropractors.

Sources: North Carolina Health Professions Data System, 1979 to 2012; U.S. Bureau of Labor Statistics, various years;

North Carolina Office of State Planning. NC population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

Chiropractor supply in urban areas nearly double that of rural counties

Chiropractors per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012

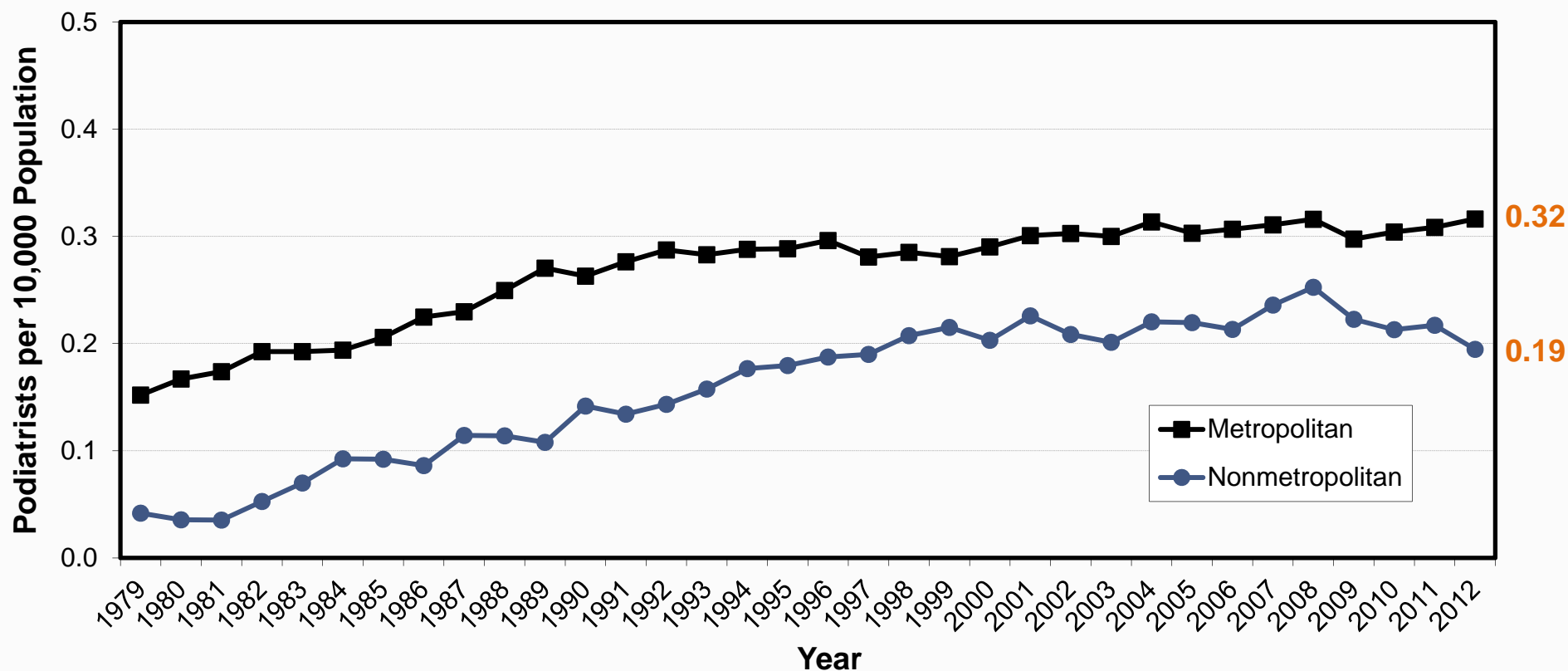


Figures include all licensed, active, in-state chiropractors.

Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000 and 2010 Censuses.

NC's supply of podiatrists mirrors national average, like other professions, more podiatrists in urban areas

Podiatrists per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012



Figures include all licensed, active, in-state podiatrists.

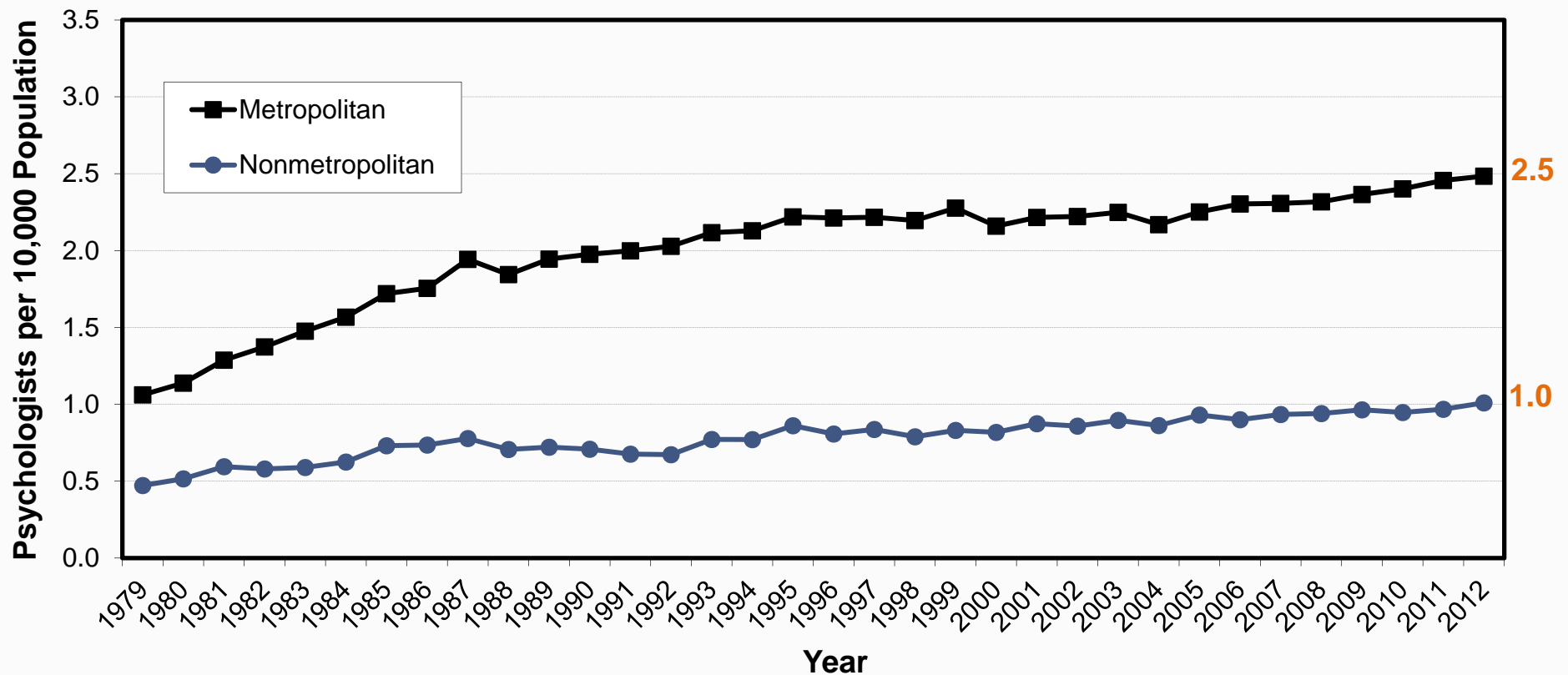
Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000 and 2010 Censuses.

Psychologists and Dental Hygienists



NC's supply of psychologists lags significantly behind national average and is clustered in urban counties

Psychologists per 10,000 Population by Metropolitan and Nonmetropolitan Counties, North Carolina, 1979 to 2012

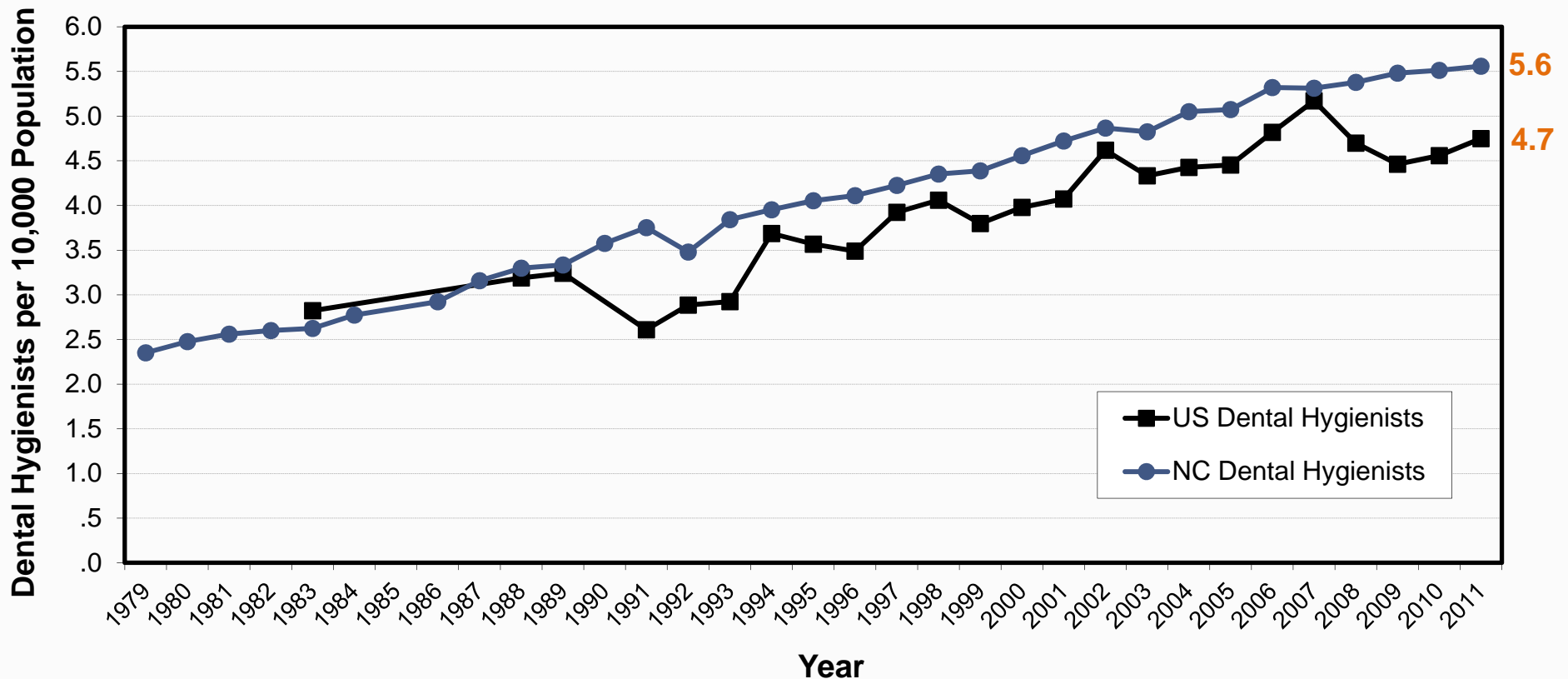


Figures include all licensed, active, instate psychologists.

Sources: North Carolina Health Professions Data System, 1979 to 2012; North Carolina Office of State Planning; US Census Bureau & Office of Management and Budget, 2009 and 2013. North Carolina population data are smoothed figures based on 1980, 1990, 2000 and 2010 Censuses.

NC's supply of dental hygienists slightly above national average

Dental Hygienists per 10,000 Population
US and NC, 1979 to 2012



Figures include all licensed, active, instate dental hygienists.

Sources: North Carolina Health Professions Data System, 1979 to 2011; U.S. Census Bureau, Statistical Abstract of the United States, various years; HRSA, Bureau of Health Professions; North Carolina Office of State Planning. NC population data are smoothed figures based on 1980, 1990, 2000, and 2010 Censuses.

NC's supply of dental hygienists mirrors dentist supply. Four counties with no hygienists.

Dental Hygienists per 10,000 Population
North Carolina, 2011

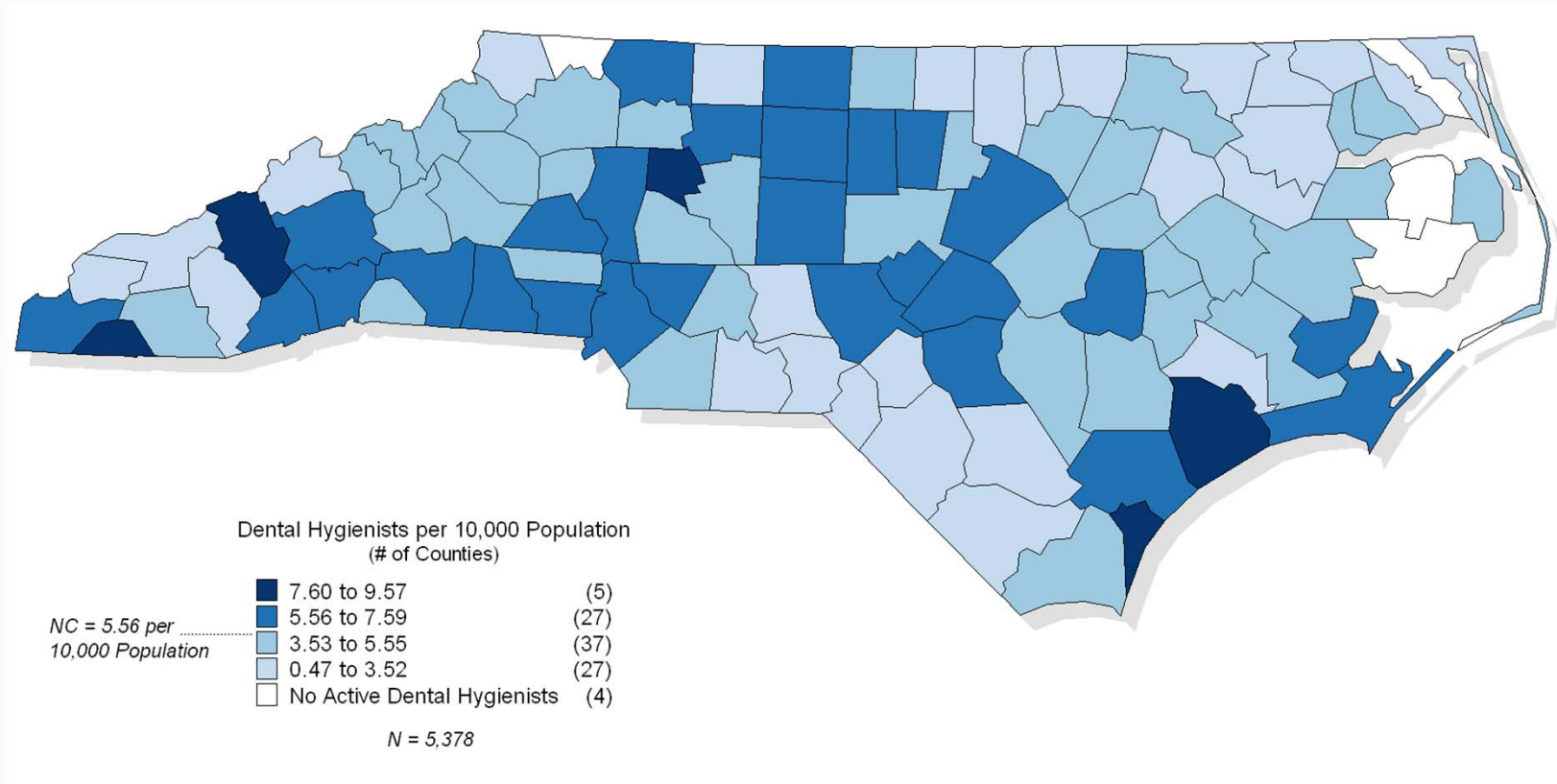


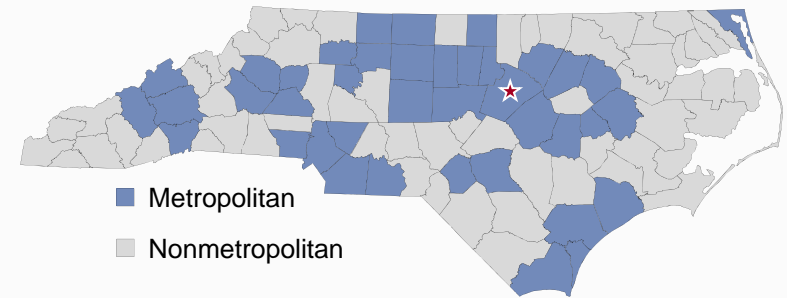
Figure includes all active, instate dental hygienists licensed in NC as of October 31, 2011.

Source: North Carolina Health Professions Data System, with data derived from the NC State Board of Dental Examiners, 2011.

Summary Statistics



Summary Stats North Carolina, 2012



	<u>Ratio per 10K population</u>			<u>%</u>
	North Carolina	Rural Counties (n=60)	Urban Counties (n=40)	Rural/ Urban
Physicians*	22.1	13.7	25.6	54%
Primary Care Physicians*	7.8	6.1	8.5	72%
Physician Assistants*	4.0	2.9	4.5	64%
Registered Nurses	99.6	74.4	106.9	70%
Certified Nurse Midwives	1.2	1.0	1.3	74%
Nurse Practitioners	4.4	3.2	4.7	67%
Licensed Practical Nurses	18.5	21.6	17.6	123%

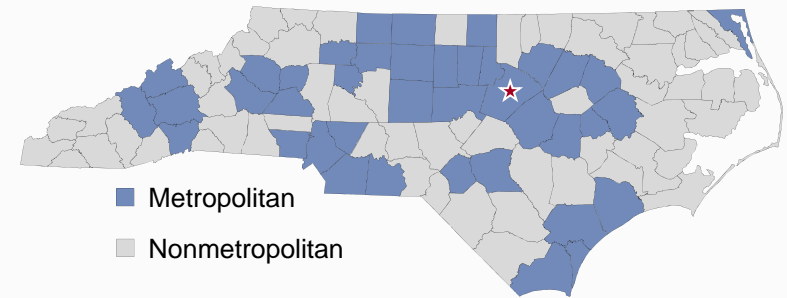
***2011 data**

Data include active, in-state health professionals licensed in North Carolina as of October 31, 2012. Physicians are non-federal, non-resident-in-training. Primary care includes family practice, general practice, internal medicine, pediatrics and OB/GYN.



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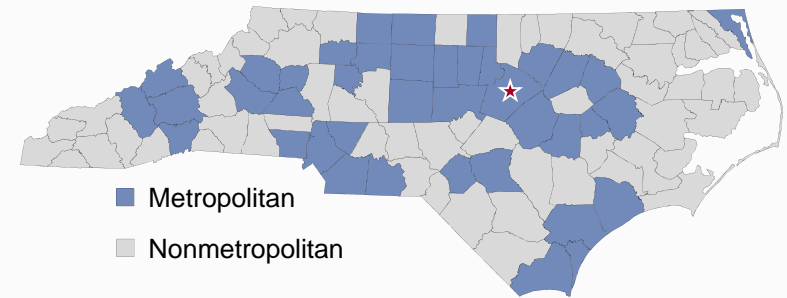
Summary Stats North Carolina, 2012



	<u>Ratio per 10K population</u>			<u>%</u>
	North Carolina	Rural Counties (n=60)	Urban Counties (n=40)	Rural/ Urban
Physical Therapists	5.5	3.4	6.1	57%
Physical Therapist Assistants	2.5	2.9	2.4	119%
Occupational Therapists	2.8	1.6	3.2	49%
Occupational Therapy Assistants	1.3	1.4	1.3	107%
Respiratory Therapists	4.3	3.7	4.4	85%
Chiropractors	1.6	1.0	1.8	58%
Optometrists	1.1	1.0	1.1	84%
Podiatrists	0.3	0.2	0.3	74%

Data include active, in-state health professionals licensed in North Carolina as of October 31, 2012.

Summary Stats North Carolina, 2012



	<u>Ratio per 10K population</u>			<u>%</u>
	North Carolina	Rural Counties (n=60)	Urban Counties (n=40)	Rural/ Urban
Dentists*	4.3	3.0	4.8	62%
Dental Hygienists*	5.6	3.4	4.8	71%
Pharmacists	10.1	8.0	10.7	75%
Psychologists	2.2	1.0	2.5	41%

***2011 data**

Contact info

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