

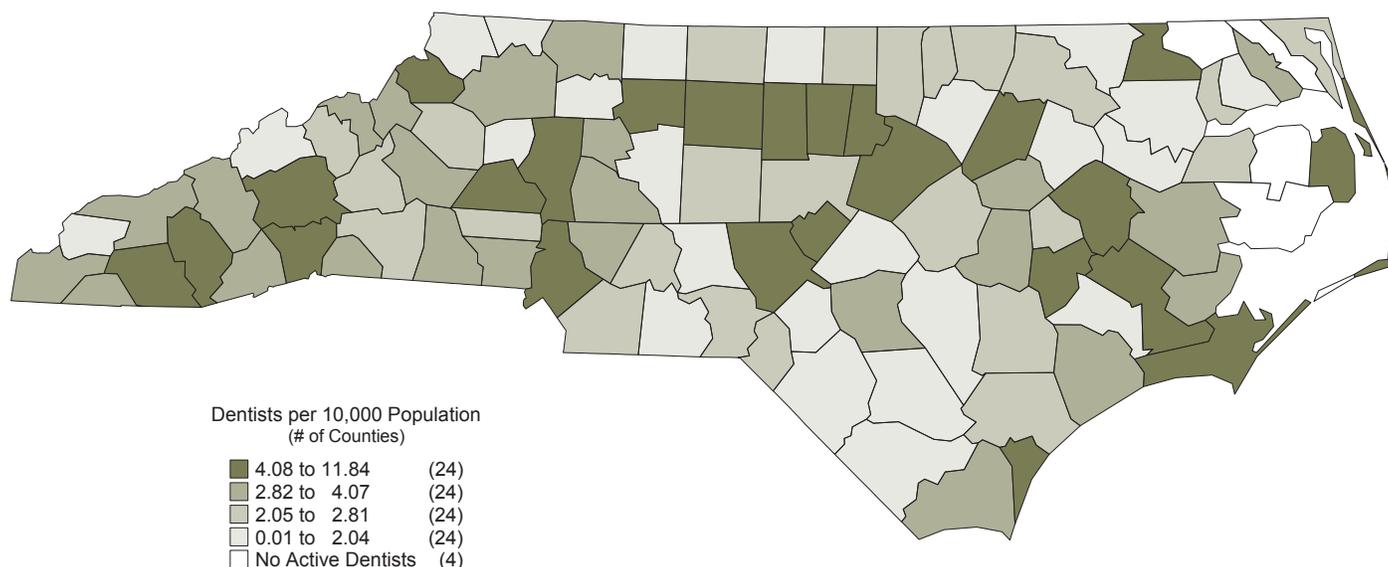
# Trends in the Supply of Dentists in North Carolina, 1996-2005

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## Workforce Supply

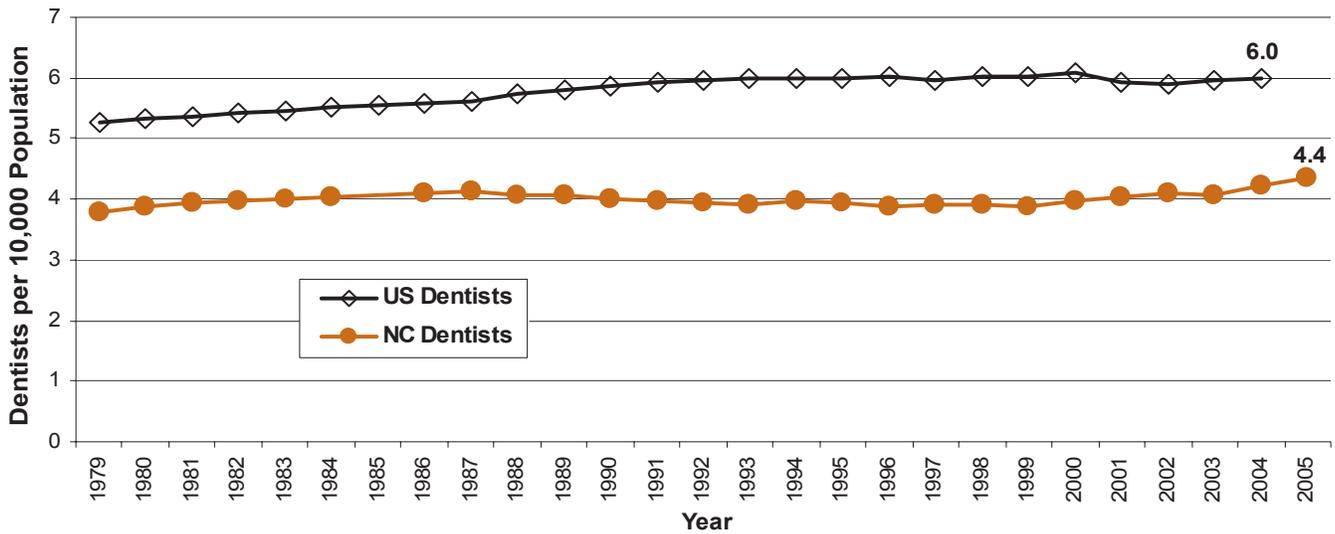
There were 3,772 dentists in active practice in North Carolina as of October 2005. Given North Carolina's rapidly increasing population, a more meaningful indicator of supply is the ratio of dentists to population. In 2005, there were 4.4 dentists per 10,000 population in the state. Relative to population size, Orange County had the most dentists with 11.8 per 10,000 population (**Figure 1**). Gates County lost its sole dentist in 2005 and Camden, Hyde, and Tyrell have had no active dentists since 1989.

**Figure 1: Dentists per 10,000 Population, 2005**



Comparisons to national benchmarks provide another metric by which to measure North Carolina's supply. Due to differences in national and state data sources and methodologies, comparisons between specific yearly United States (US) and North Carolina practitioner-to-population ratios should be interpreted with caution, however, overall trends are worth noting. Historically, North Carolina's supply of dentists has fallen short of the national average (**Figure 2**). National data for 2005 are not yet available, but it appears that in recent years North Carolina's supply of dentists relative to population has grown while the US average has declined slightly. North Carolina's dentist-per-10,000 population ratio increased from 4.0 in 2000 to 4.2 in 2004, while the US ratio decreased from 6.1 in 2000 to 6.0 in 2004. Perhaps the most striking finding is that while North Carolina's annual increase in dentists per 10,000 population averaged less than 0.5% in the ten years preceding 2003, between 2003 and 2004 supply increased by 3.9%, and between 2004 and 2005 it increased by 2.8%. These are large increases given past trends and may be due in part due to a change in legislation in 2003 that enabled out-of-state dentists to become licensed by credential (see **Figure 4**, pg. 3).

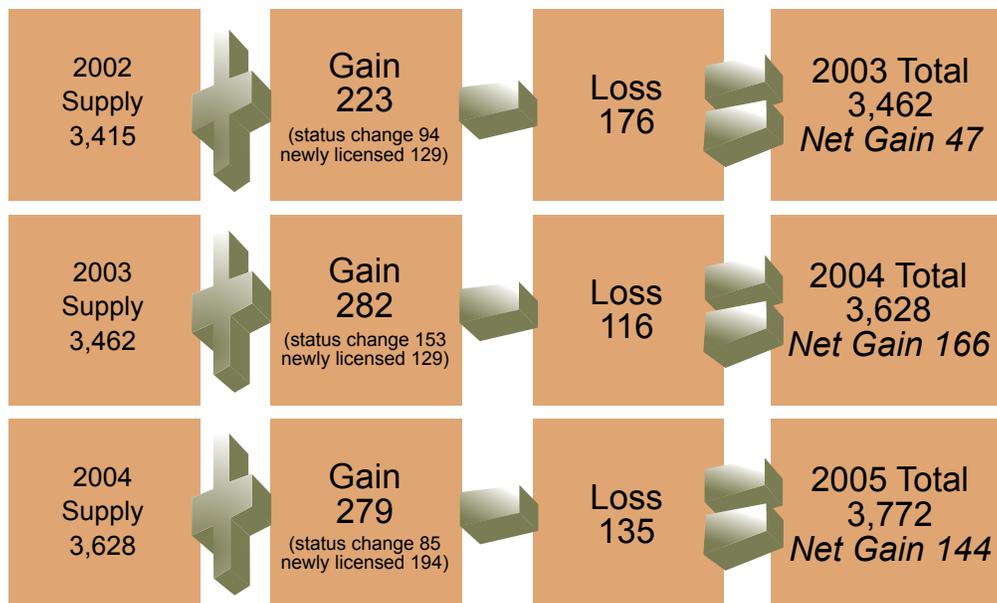
**Figure 2: Dentists per 10,000 Population, US and NC, 1979 to 2005\***



\*Note: US population data for 2001-2002 are slightly different than previous years and may partially account for the slight drop in dentists per 10,000 population at the national level.

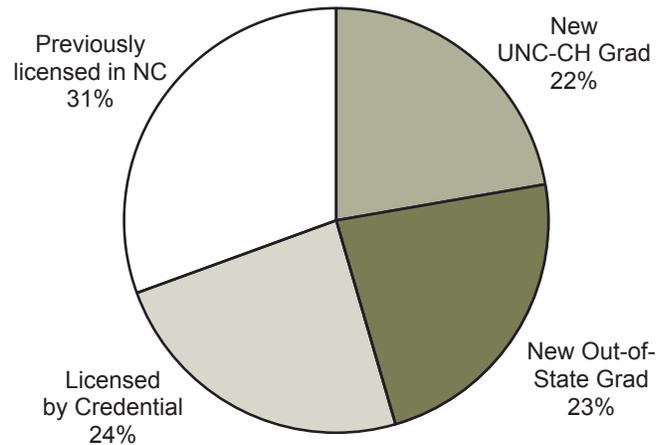
Every year the North Carolina Health Professions Data System (HPDS) receives a file from the North Carolina Board of Dental Examiners containing practice information on dentists licensed to practice in the state in that year. Comparison of these annual licensure files from year-to-year is instructive because it reveals, on an annual basis, the flow of dentists into and out of active practice. **Figure 3** reveals a number of important facts about dental supply in the state. There is a dynamic process of gain and loss every year whereby about 11% of the workforce either enters or exits active practice. Of the dentists added to the workforce between 2004-2005, 194 dentists were newly licensed in North Carolina, and 85 were previously licensed in North Carolina and moved from inactive to active practice or from out-of-state to instate status. The net gain of dentists in 2004 and 2005 was significantly greater than in 2003 and is the result of both a higher number of new dentists entering practice and fewer dentists exiting practice.

**Figure 3: Components of Change, 2002-2005**



**Figure 4: Gain in Dentists, 2005**

Who are the dentists who enter practice in a given year? **Figure 4** shows that of the 279 dentists gained between 2004-2005, 22% were new graduates from the University of North Carolina at Chapel Hill, 23% were new graduates from an educational program in another state, 24% were licensed by credential and the remaining 31% previously held a North Carolina license and were not practicing in the state in 2004.

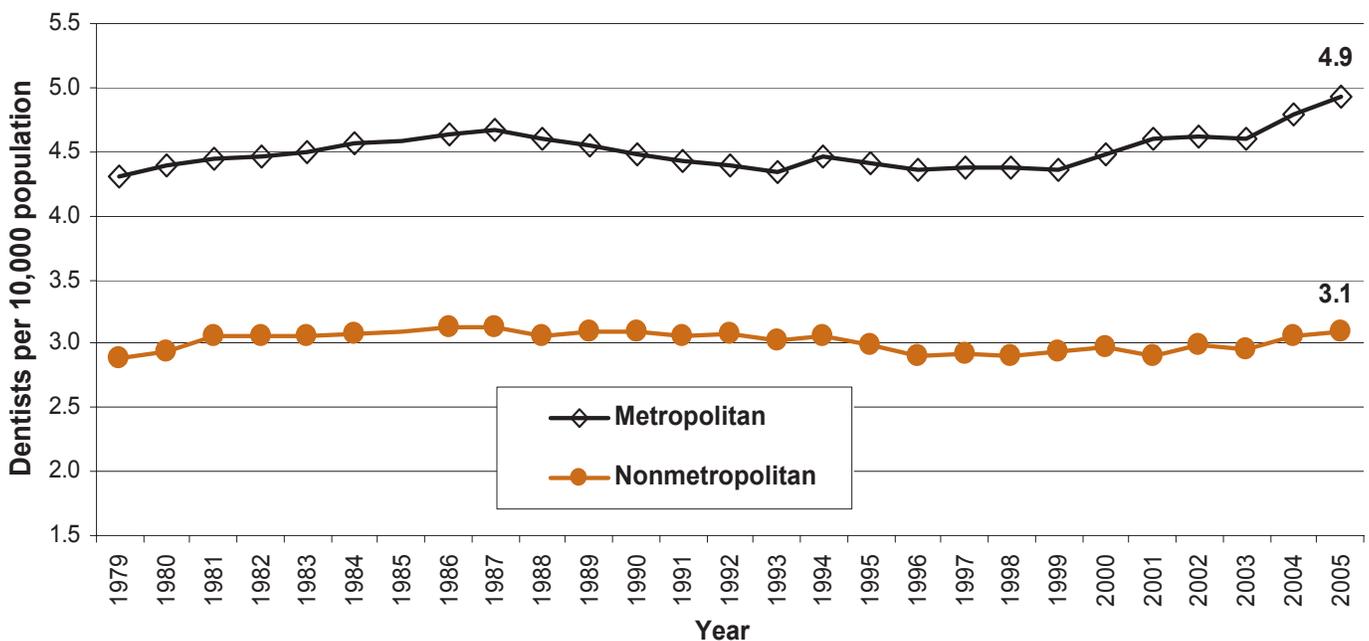


**Gain in Dentists= 279**

### Distribution

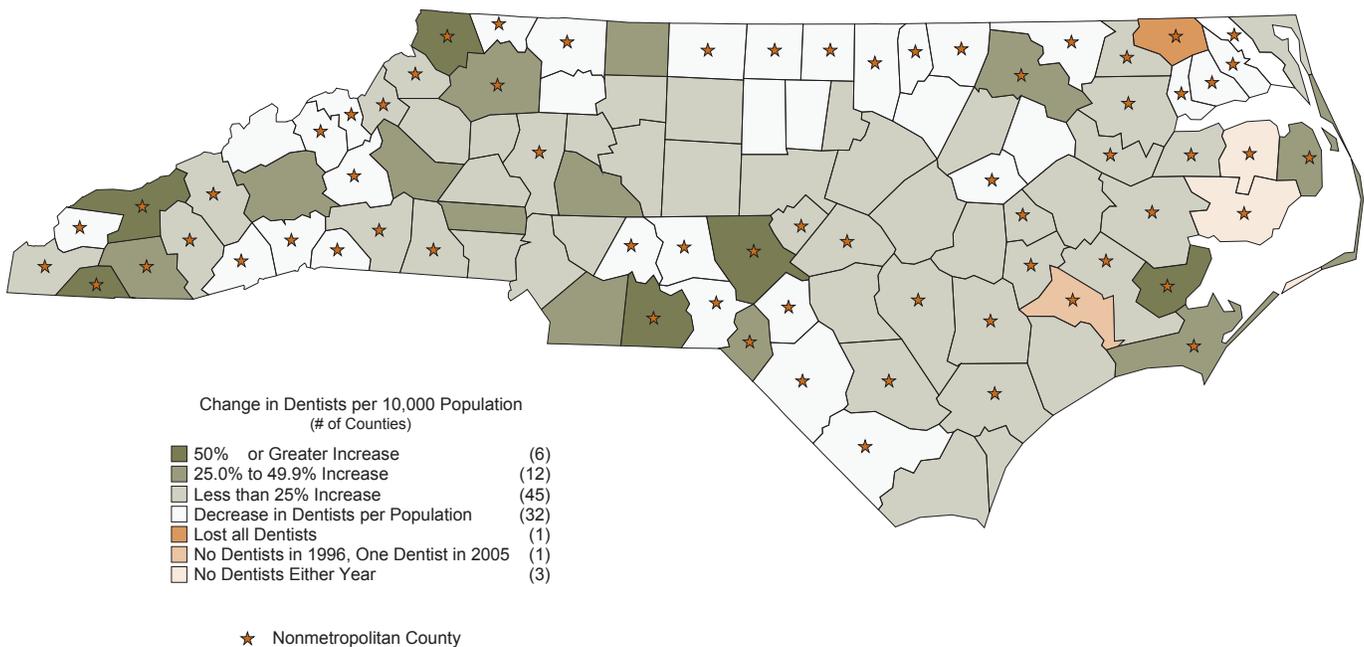
While the recent upswing in the supply of dentists is good news, maldistribution of the workforce remains problematic and appears to be worsening in recent years. In 2005, North Carolina had 4.9 dentists per 10,000 population in metropolitan counties compared to 3.1 in non-metropolitan counties (**Figure 5**). Between 2000 and 2005 the supply of dentists relative to population grew 10.3% in metropolitan areas compared to an increase of 3.9% in non-metropolitan areas. More than a quarter of North Carolina's counties (26%) had fewer than two dentists per 10,000 population. The four counties with no active dentists are all designated as non-metropolitan and located in the eastern part of the state (see **Figure 1**).

**Figure 5: Dentists per 10,000 Population, by Metropolitan and Non-Metropolitan Counties, North Carolina, 1979 to 2005**



**Figure 6** shows the change in supply of dentists per 10,000 population in the decade between 1996 and 2005 and illustrates how well the supply of dentists in individual counties has kept pace with population growth. Thirty-three (33) counties saw a decline in the ratio of dentists per population. Seven of these counties had an increase in the number of dentists and fourteen had no change in the number of dentists, but the growth in population outpaced the gain in dentists. The stars on the map designate non-metropolitan counties and show that of the 33 counties that experienced a decline in dentist supply relative to population, all but seven are non-metropolitan.

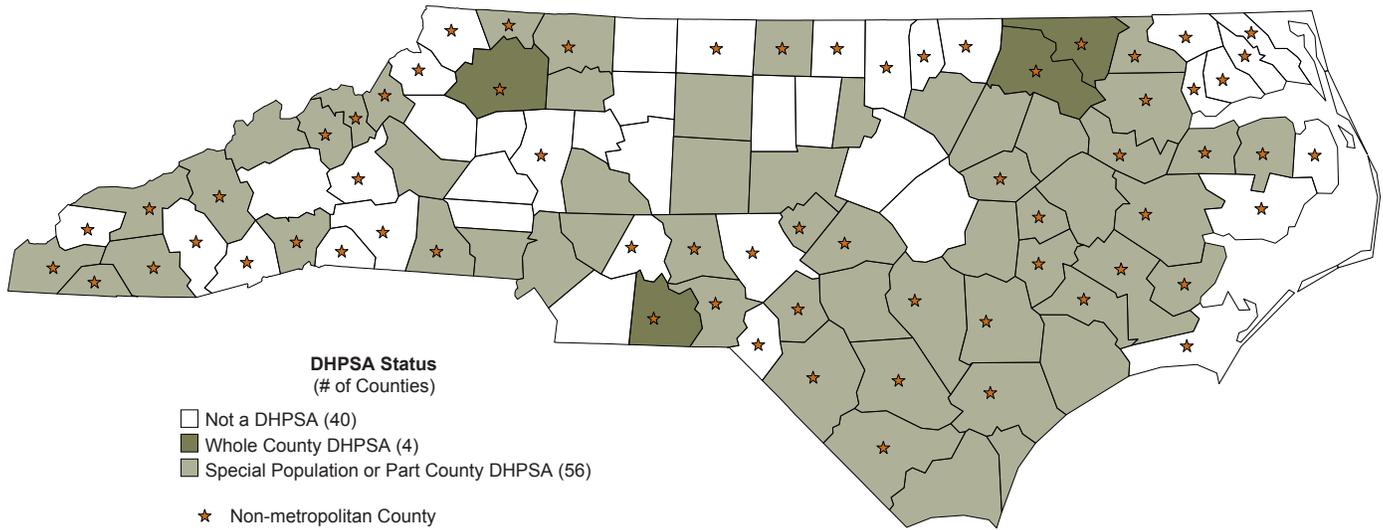
**Figure 6: Change in Dentists per 10,000 Population, North Carolina, 1996 to 2005**



Another way to conceptualize the maldistribution of dentists in the state is to look at counties that qualify as Dental Health Professional Shortage Areas (DHPSAs). DHPSAs are federally designated by the Health Resources and Services Administration (<http://bhpr.hrsa.gov/shortage/>). The designation criteria are complicated and designations are based on an application process. Basic requirements for DHPSA designation include being a rational area for the delivery of dental care, having a ratio of 1 dentist per 5,000 people (1:5000), and having an “over-utilized, excessively distant or inaccessible” supply of dental professionals given the population under consideration.

**Figure 7** (opposite) shows existing DHPSAs and metropolitan status.

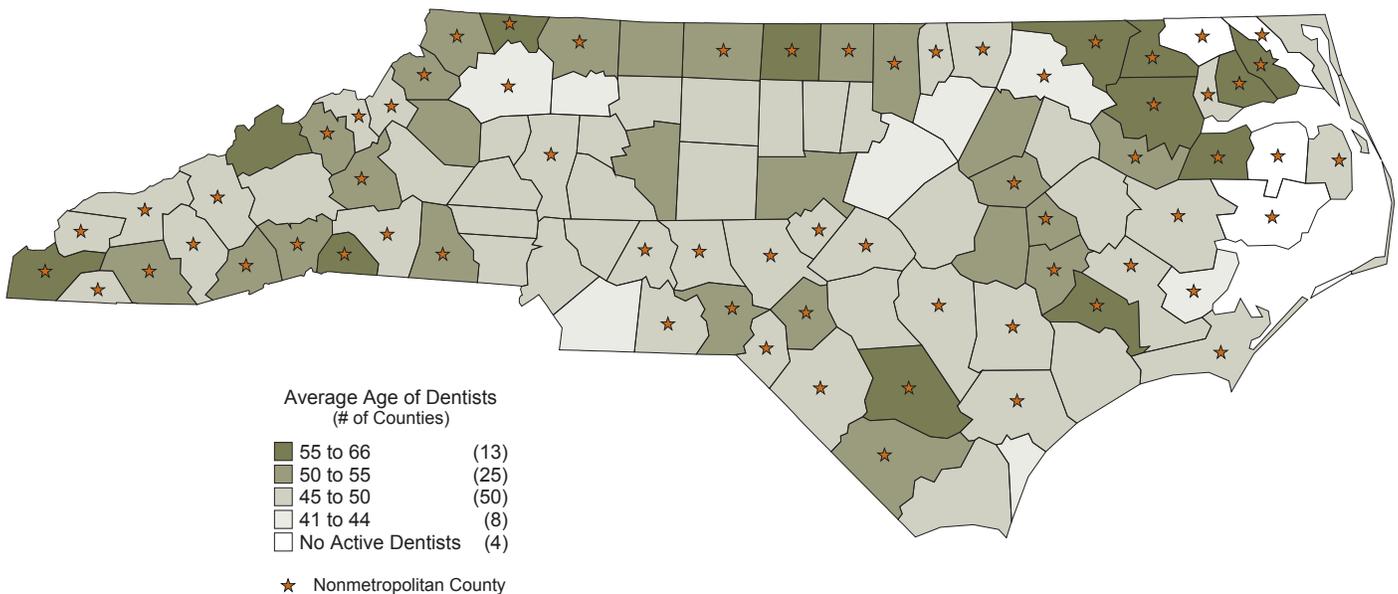
**Figure 7: Dental Health Professional Shortage Areas  
North Carolina, February 2004**



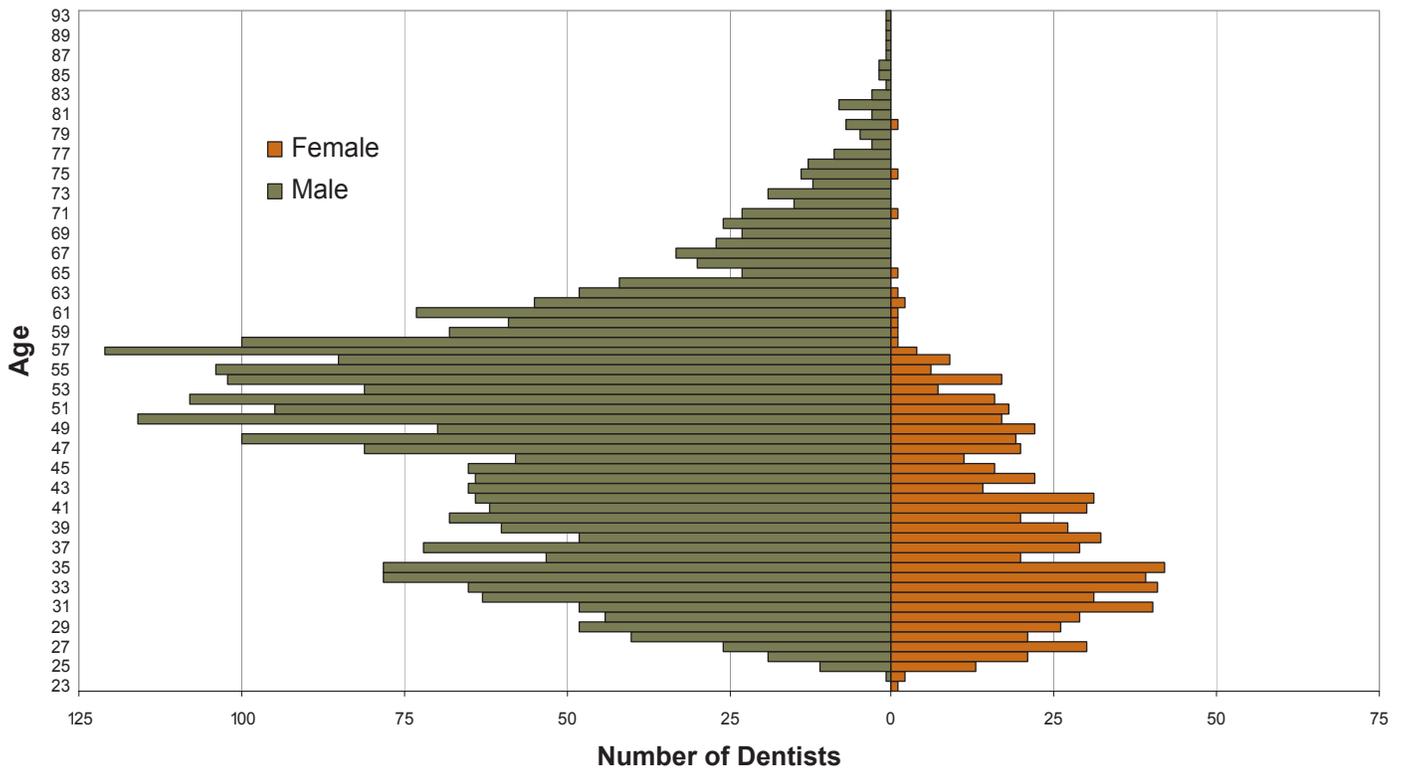
### Workforce Demographic Characteristics

The average age of dentists in North Carolina is 47. Dentists in non-metropolitan counties are about three years older than dentists in metropolitan areas (49 vs. 46 years, respectively). **Figure 8** shows the distribution of dentists by average age by county; non-metropolitan counties are indicated with a star. In 13 counties, the average dentists' age is 55 or older and 12 of these counties are non-metropolitan. The graying of the dentist population, especially in non-metropolitan areas, has raised concern that the workforce will be difficult to replace as dentists retire.

**Figure 8: Average Age of Active Dentists  
North Carolina, 2005**



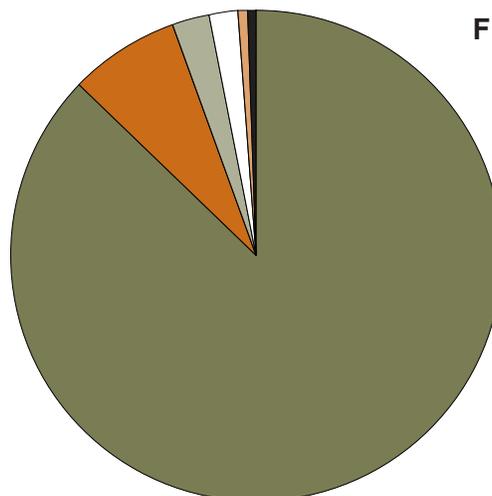
**Figure 9: Age-Gender Pyramid, Dentists North Carolina, 2005**



**Figure 9** shows the gender breakdown of dentists by age and sex in North Carolina in 2005. About one in five dentists (20%) in North Carolina is female and women are, on average, about 10 years younger than their male counterparts (39 vs. 49 years old, respectively). Women represent a growing number of dentists in the workforce. Since 1997, the percent of female dentists in North Carolina has grown from 13% to 20%. Women are less likely to practice in non-metropolitan than metropolitan counties (data not shown) and since they comprise a growing number of dentists in the workforce, this has the potential to exacerbate existing maldistribution problems.

**Figure 9** also shows another important issue: the largest age cohort of dentists (26.6% of the workforce) is between 51 and 60 years of age. As this large cohort reaches retirement age, there will be a period of greater attrition from the workforce than in previous years.

**Figure 10** shows that the dentist workforce in North Carolina is primarily white (87.1%). Only about 13% of North Carolina dentists are nonwhite, compared to 25% of North Carolina’s total population.



**Figure 10: Racial Composition of Active Dentists, North Carolina, 2005**

- White (87.1%)
- Black (7.4%)
- Asian (2.6%)
- American Indian (0.5%)
- Hispanic (0.6%)
- Other/Unknown (1.9%)

## Workforce Practice Characteristics and Training

The majority of North Carolina dentists have a primary specialty of general dentistry (Table 1). Between 2004-2005, there was a 20% increase in the number of dentists in public health. Although the total number of public health dentists remains relatively small, the increase represents an important addition to the oral health safety net.

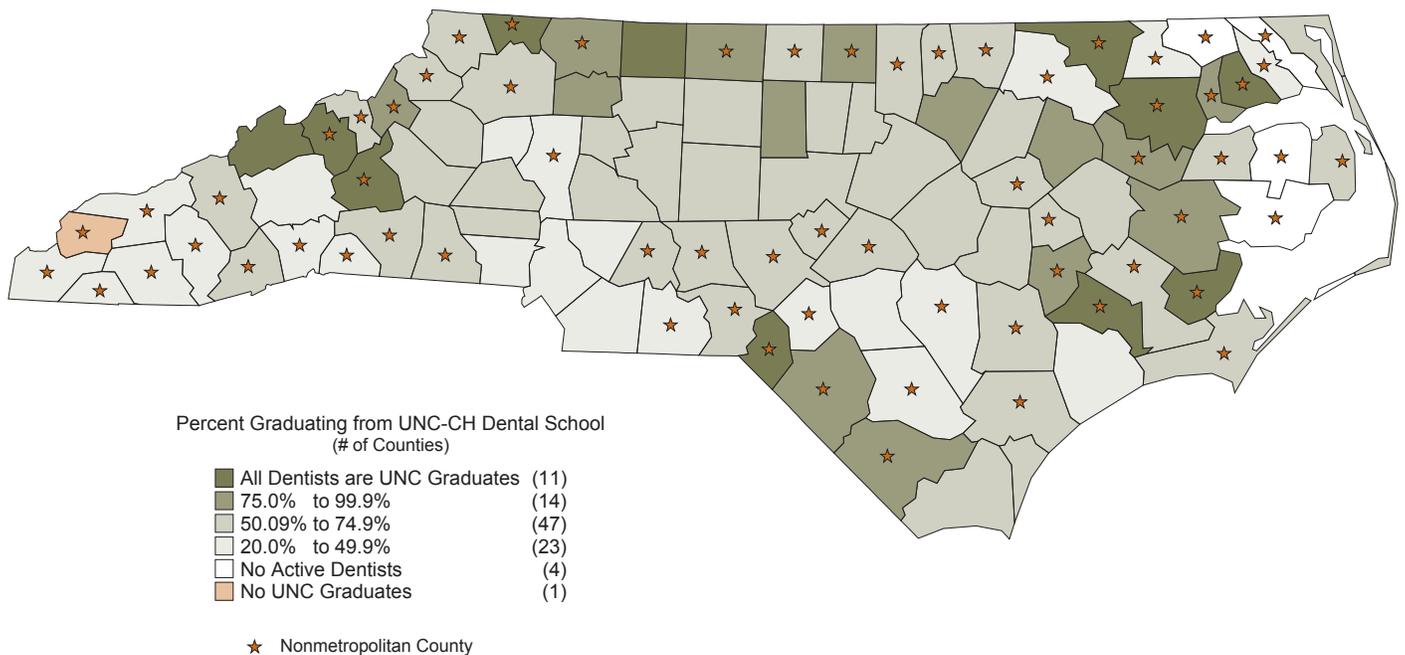
In terms of practice setting, most dentists work in a dental practice office (85.9%), followed by clinics (2.6%), VA/Public Health/Indian Health (1.8%) and school/educational institution (1.7%). No dentists reported working in a school setting in non-metropolitan counties.

Sixty-seven percent of dentists are self-employed. This figure is higher in non-metropolitan counties (74.9%) than metropolitan counties (65.1%). Dentists employed in partnerships or group practices account for 12.9% of the workforce, and those in individual practice account for 9.2%. Dentists working at the local, county, state or federal levels of government comprise 5.3% of the workforce.

North Carolina has one dental school, located at the University of North Carolina at Chapel Hill. Of the 3,772 dentists practicing in North Carolina in 2005, 2,112 (56%) graduated from UNC. Figure 11 shows the distribution of dentists who graduated from UNC-Chapel Hill Dental School.

General Practice	77.8% (2,934)
Orthodontics	6.2% (235)
Oral Surgery	3.7% (140)
Pediatric Dentistry	3.3% (125)
Periodontics	2.6% (99)
Endodontics	2.8% (105)
Public Health	1.8% (66)
Prosthodontics	1.4% (55)
Oral/Maxillofacial Radiology	<1% (12)
Unknown	<1% (2)

**Figure 11: Percent of Dentists who Graduated from UNC-Chapel Hill Dental School North Carolina, 2005**



## Conclusions and Summary Findings

Is there a shortage of dentists in North Carolina? This commonly asked question is difficult to answer. Compared to the national average of 6.0 dentists per 10,000 population, North Carolina's ratio of 4.4 per 10,000 is lagging behind national standards. Four North Carolina counties have no active dentists and three of those counties haven't had an active dentist for more than fifteen years.

Are there geographic imbalances in the dentist workforce? The maps in Figures 1 and 6 show that counties in the eastern and south-central parts of the state have lower provider-to-population ratios. These counties, many of which are non-metropolitan, have had difficulty maintaining an adequate supply of dentists relative to population. Licensure by credential may have contributed to the recent slight increase in the number of dentists in North Carolina, and preliminary data show that dentists licensed by credential are slightly more likely to set up practice in non-metropolitan counties.

The dental workforce is aging, especially in non-metropolitan counties. In thirteen counties, primarily in Eastern and Western North Carolina, the average age of practicing dentists is between 55-66. As dentists approaching retirement age exit the workforce, geographic maldistributions could be exacerbated.

There is little consensus on what the optimal distribution of dentists ought to be. Looking at the ratio of dentists per population is useful, but ignores the fact that there are important differences in the demand for dental services across populations and places. Needs and demands for dental services change with advances in technology, changes in self-care and preventive services, and societal expectations, factors that may vary from place to place.

Given the distribution and diversity issues in the dental workforce, efforts to increase supply, whether through training programs or otherwise, should include both a focus on improving the numbers of dentists practicing in underserved areas and on increasing the number of dentists from underrepresented minority groups in the state. This fact sheet is intended to provide policy makers with data about trends in the number of dentists who practice in North Carolina and where they practice, recognizing that other important factors must be considered in developing public policies aimed at improving the supply, distribution and diversity of the dental workforce.

### Notes

- The data include all dentists licensed and in active practice in North Carolina as of October 31st of the respective year. Dentists indicate their primary practice location and report other information on their initial license application and subsequent renewals.
- The population data in Figure 2 are smoothed figures based on 1980, 1990 and 2000 US Censuses.

### Sources

- *North Carolina dental data*: 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 State Board of Dental Examiners, 1979-2005.
- *North Carolina population data*: North Carolina Office of State Planning.
- *National dental data*: Bureau of Health Professions, Health Resources and Services Administration, US Department of Health and Human Services.
- *National population data*: US Census Bureau.
- *Metropolitan status*: US Census Bureau and Office of Management and Budget.
- *Dental Health Professional Shortage Areas designations*: Shortage Designation Branch, Bureau of Health Professions, Health Resources and Services Administration, US Department of Health and Human Services, February 2004.