

Introduction

Case Study Series



The case study series presents maps for five complete States—North Carolina, Oregon, Pennsylvania, Utah, and Washington—and Southern California. These States were chosen because they represent areas where RTI’s Integrated Delivery System Research Network (IDSRN) partners are located. RTI chose to use IDSRN States because partners could facilitate contact with major health systems and State and local agencies necessary for collecting information for this *Atlas*. The RTI IDSRN partners included in this atlas are Providence Health System (Washington, Oregon, and California), Intermountain Health Care (Utah), University of Pittsburgh Medical Centers (Pennsylvania), and the University of North Carolina (UNC) Health Care (North Carolina). Facilities owned and operated by the IDSRN partners are highlighted on some of the maps in the case study series.

The case studies are geared toward understanding the regionalization of emergency services in each State and how this might pertain to the hospital and nursing home services being provided. For each State, geographic information system (GIS) analyses were used to synthesize

and analyze the distribution of nursing home and hospital facilities relative to the State’s resident population, together with county and State geopolitical boundaries and boundaries for Emergency Management (EM), Emergency Medical Services (EMS), Hazardous Materials (HAZMAT), and Trauma Coordination regions. The maps are in different scales, some depicting an entire State and others focusing on regions or cities within a State. It is worth noting that many States use different names for these regions even though the function is the same, and we have preserved these names when possible. For example, in North Carolina trauma regions are called regional advisory committees (RACs). For a more complete explanation of how these regions were chosen and a brief description of each, refer to the Overview section of this *Atlas*.

The case study series shows how analyses beyond simple mapping of the distribution of available health services can assist local and regional planners in assessing issues of concordance relevant to preparedness and response in disaster situations.

CASE STUDY MAPS

Each State case study consists of a series of maps exploring six themes:

1. The overview map, **Nursing Homes and Hospitals Serving the Resident Population**, depicts the size and location of hospitals and nursing homes relative to the urban population. The percentage of the population living in an urban area is displayed by census tract. Areas in dark blue correspond to a high proportion of urban residents (90 percent or more), and areas in yellow correspond to a low proportion (less than 10 percent). The symbols for hospitals and nursing homes are graduated in size: the largest symbol represents a large number of beds (500 or more for hospitals and 200 or more for nursing homes), and the smallest symbol represents a small number (fewer than 100 for hospitals and fewer than 50 for nursing homes).
2. The **Major Cities** maps provide a closer view of several large metropolitan centers. As in the State-level maps, the percentage of the population living in an urban area is displayed by census tract, along with the size and location of nursing homes and hospitals. These city maps are useful for looking at the distribution of resources in areas with a high density of nursing homes and hospitals.
3. The series of four maps showing **HAZMAT Response, Trauma Coordination, Emergency Medical Services, and Emergency Management** regions explores how different types of emergency services are regionalized in a State. All counties in each region are the same color. If the State has named or numbered the regions for administrative purposes, those designations are included on the map.
4. The map of **Relative Facility Location by County** highlights counties that contain nursing homes strategically located in rural areas with no hospital. The map identifies counties with high levels of hospital care: counties colored light blue have one or more nursing homes and a tertiary care hospital, counties colored dark purple have a nursing home and no hospital, and counties marked with hatching have neither nursing homes or hospitals.
5. The map of **Relative Facility Location and Red Cross Chapters** depicts counties with nursing homes and no hospitals relative to the Red Cross chapters operating in each State. This map arose from in-person focus groups with staff from nursing homes. Administrators consistently mentioned the Red Cross as an invaluable resource in the event of an emergency.
6. The **EMS Region** maps examine, by EMS region, the size and location of nursing homes and hospitals relative to the location of the population aged 65 or older. The EMS regions were chosen for this analysis because they are the entities through which daily emergency services are coordinated, and they therefore have the jurisdiction to direct private resources, such as hospitals and ambulances, during an emergency. While several States refer to these regions as “EMS regions,” some States have different designations. For example, Oregon calls these “Area Trauma Advisory Board (ATAB) regions,” and Pennsylvania refers to some areas as “Emergency Health Services (EHS) regions.” Each map is supported by both a table totaling indicators of facility capacity for counties in the EMS region and a population pyramid showing the sex and age distribution for the region’s population.

Each page in a case study includes the following:

- a depiction of one or more of the following: population distribution; hospital and nursing home location; geopolitical boundaries; Red Cross, Emergency Management, Emergency Medical Services, HAZMAT, or Trauma Coordination regions
- a legend
- interpretive text

Several map pages have additional information, such as a population pyramid or a table listing the facility capacity for a specific region. The titles and legends are consistent across maps so that readers can compare resource availability and configuration in different States.

LIMITATIONS

Several limitations should be noted for the maps included in this case study series. First, these static maps represent the most recent data available at production (January through July 2005; please refer to **Appendix A** for details). There are lags in the data, requiring that the maps be periodically updated.

The American Hospital Association (AHA) data were collected from hospitals responding to the AHA's annual survey; data for nonreporting facilities are not included in the maps and tables. The Centers for Medicare and Medicaid Services (CMS) report data on Skilled Nursing Facilities and Nursing Facilities (SNFs/NFs) with which it has completed reimbursement transactions. These data are considered comprehensive but do not include an area's newly added facilities.

There are also possible errors in geocoding (the process of assigning a latitude-longitude coordinate to an address). Sometimes, geocoding programs cannot find a perfect match for an address, and the latitude-longitude coordinates may be slightly inaccurate. Although these errors are not usually apparent in small-scale maps, such as those depicting an entire State, they are more noticeable in large-scale maps, such as those of major cities or EMS regions. We have made every effort to minimize these geocoding errors.

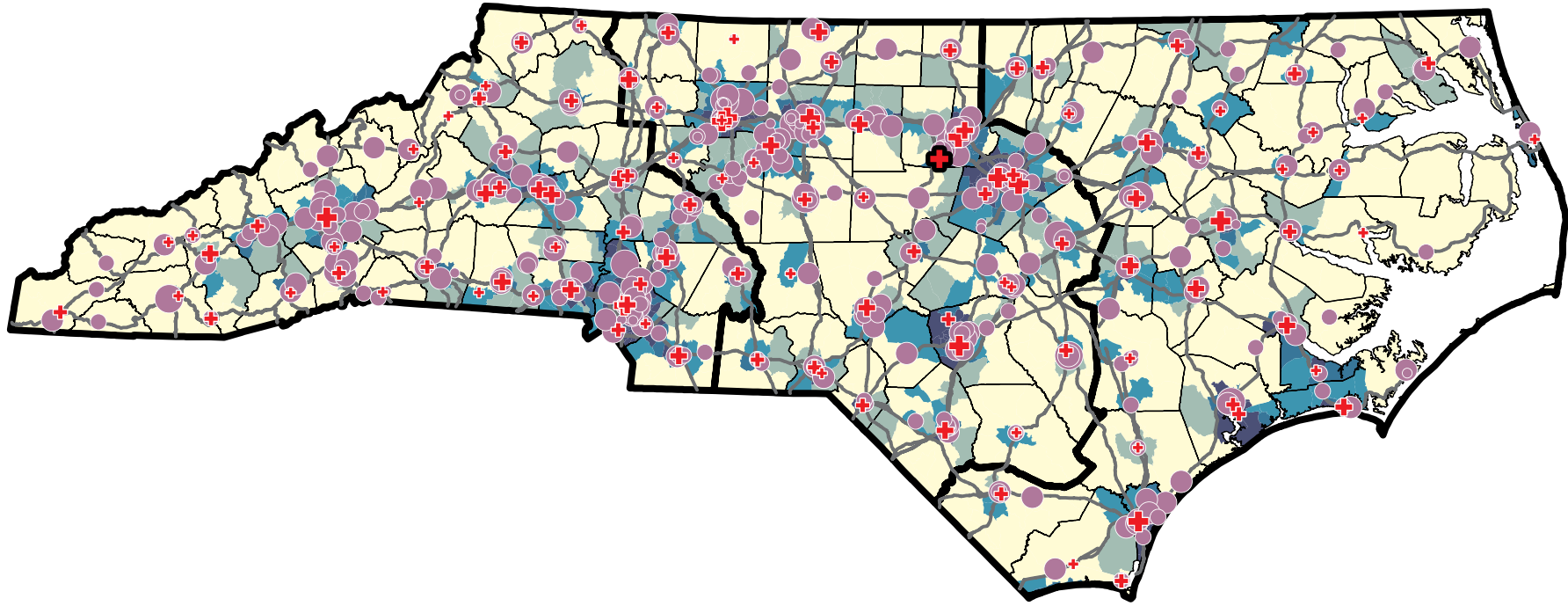
In addition, States are continually revising and reconfiguring service regions in consideration of experiences with care provision and new legislation and programs. These maps represent the most recent information available.

Finally, these maps only depict hospitals and nursing homes. Other residential treatment facilities, such as assisted living facilities and long-term care hospitals, which may provide services during a public health emergency, are not included.

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Nursing Homes and Hospitals Serving the Resident Population



This map depicts the size and location of hospitals and nursing homes relative to the urban population. The analysis in this *Atlas* is based on 116 general medical and surgical hospitals and 418 nursing homes in North Carolina distributed over 98 counties. Camden and Tyrrell Counties are the only two counties in the State with neither a hospital nor a nursing home.

The most populated area in North Carolina is the Central Piedmont, the region between the eastern coastal plain and the mountains. Population density is lower in the mountainous western region and the coastal plain. Although the Central Piedmont has several large cities, a large proportion of North Carolina is rural. The major transportation routes of Interstate 40 and Interstate 85 link the largest urban areas of the State, and it is along these routes that many of the State's hospitals and nursing homes are found.

Both nursing homes and hospitals are found in all major urban areas in the State, with hospitals being close to nursing homes. The western mountains appear to be relatively well served with nursing home beds and several small hospitals. There are fewer nursing homes on the eastern coastal plain, particularly along the Outer Banks and the most easterly counties. This situation indicates that care may be difficult to access for the elderly population in these and other rural areas within the State.

Percentage of Population Living in an Urban Area

- 90.0% or More
- 70.0% to 89.9%
- 40.0% to 69.9%
- 10.0% to 39.9%
- Less than 9.9%

- County Boundary
- HRSA BT Planning Region
- Roads

Number of SNF/NF Beds

- 200 or More
- 100 to 199
- 50 to 99
- Fewer than 50

Number of Hospital Beds

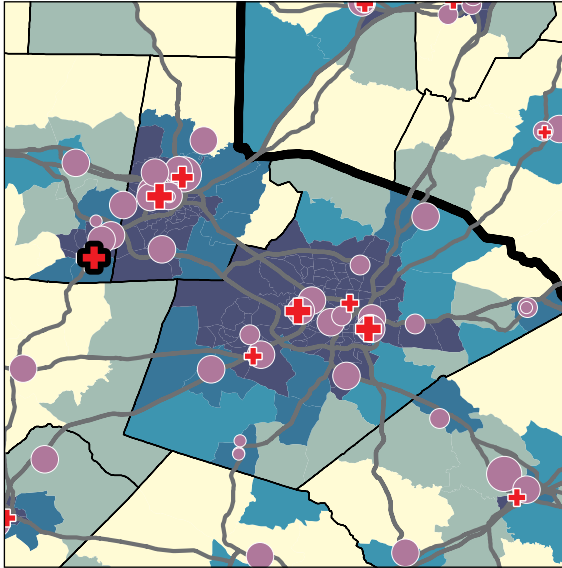
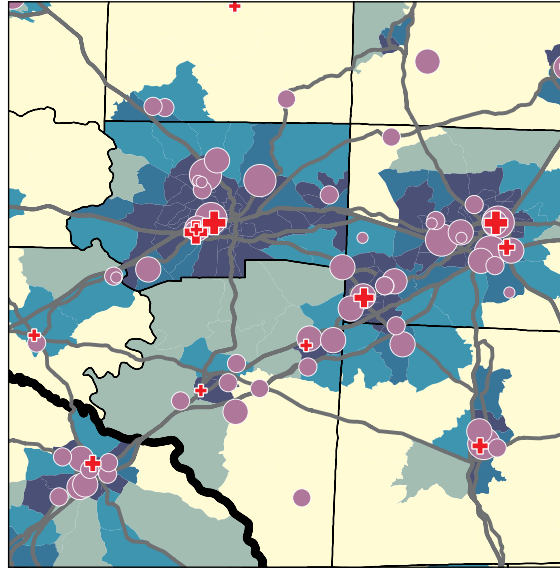
- 500 or More
- 200 to 499
- 100 to 199
- Fewer than 100

Red symbols outlined in black (⊕) indicate UNC Hospital System

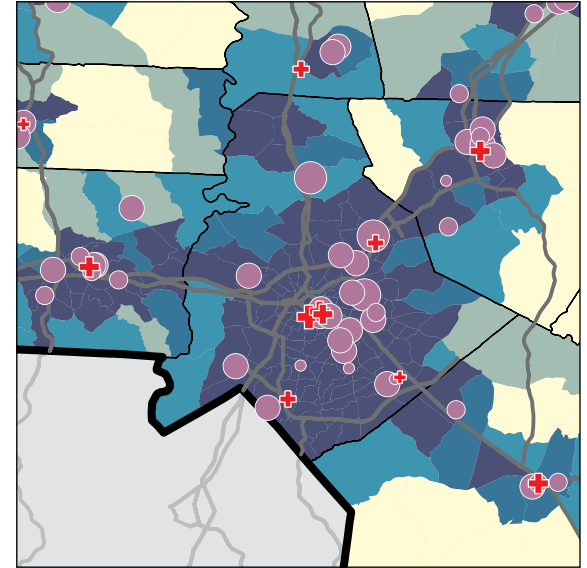
Red symbols (⊕) indicate other hospitals

Major Cities

Raleigh-Durham-Chapel Hill

Winston-Salem-Greensboro-
High Point

Charlotte

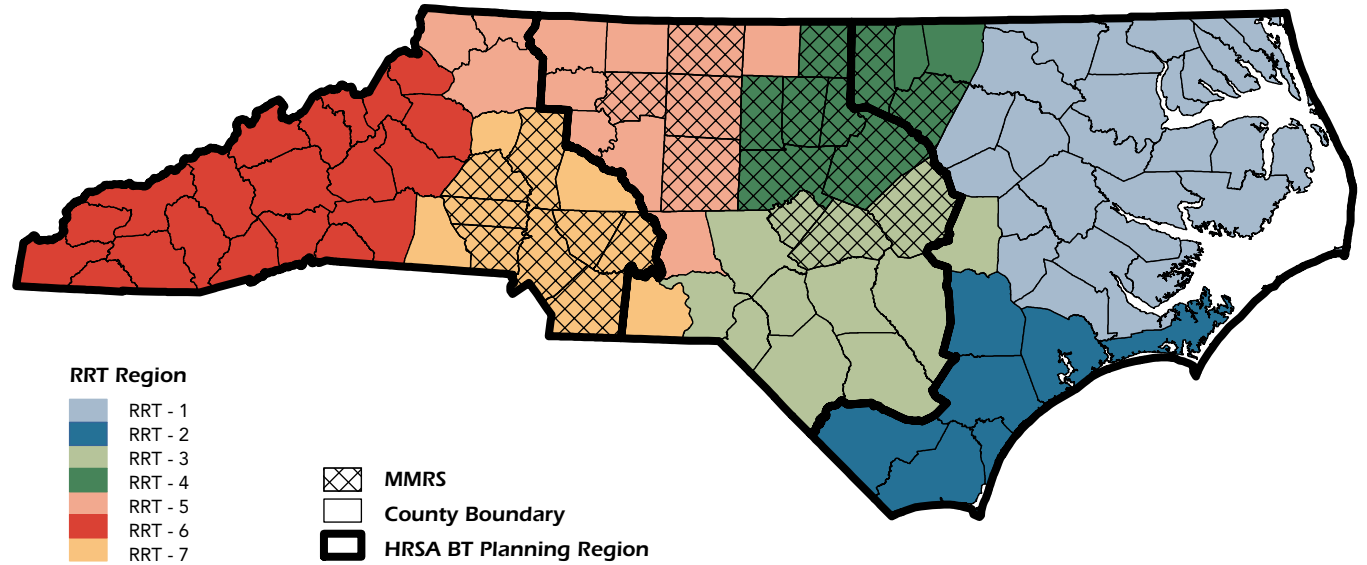


These maps show the three major urban areas in North Carolina's Piedmont in greater detail: the Raleigh-Durham-Chapel Hill area (the Triangle), the Winston-Salem-Greensboro-High Point area (the Triad), and the Charlotte metropolitan area. The Triangle region, in the central portion of the State, is home to Raleigh, the State capital. The Triad area, west of the Triangle, can be reached via Interstates 40 and 85. Charlotte, North Carolina's largest city with over 1.3 million residents in the metro area (2000 U.S. Census), is on the South Carolina border. These smaller city maps are useful for looking at the distribution of resources in areas with a high density of nursing homes and hospitals.

All three regions are heavily bedded and have several large hospitals. It is difficult to compare the three highlighted areas in North Carolina as several cities make up the Triad and Triangle regions, but these three areas are clearly the focal point of health care within the State. The Triangle in particular is home to several large hospitals, including several Level 1 trauma facilities.

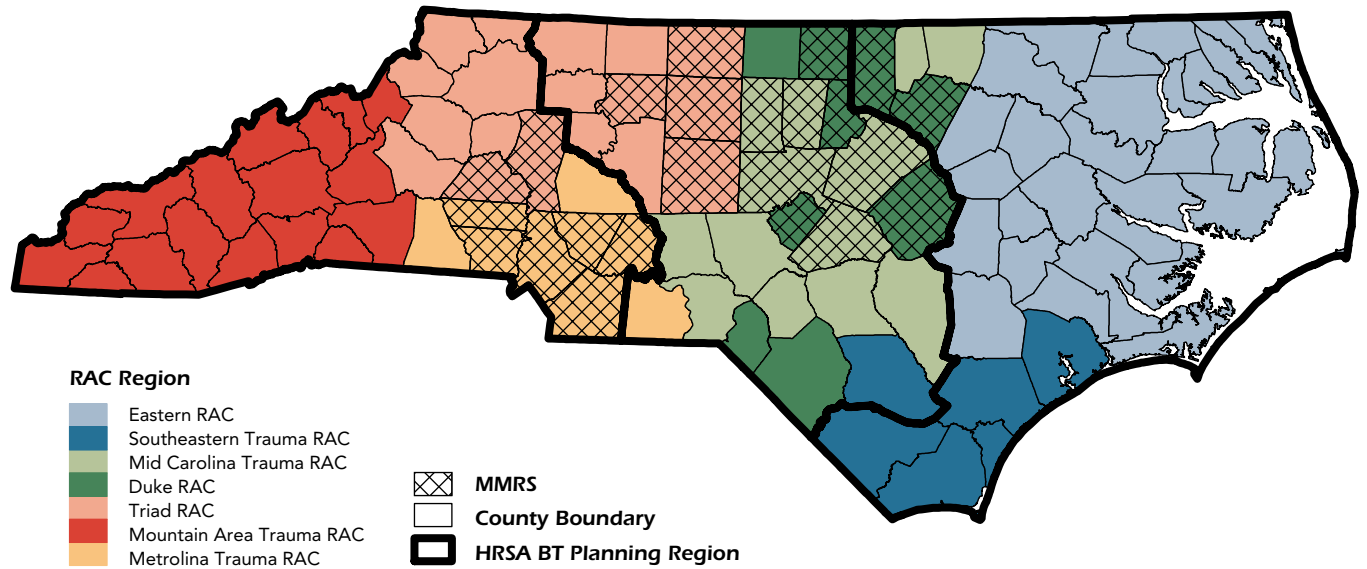
HAZMAT Response

The State of North Carolina is divided into seven HAZMAT Response regions consisting of contiguous counties. North Carolina refers to these regions as Regional Response Team (RRT) regions. The configuration of these HAZMAT regions does not appear to follow any other designated response region pattern. The regions rarely correspond with the Health Resources and Services Administration Bioterrorism (HRSA BT) planning regions or Metropolitan Medical Response System (MMRS) boundaries.

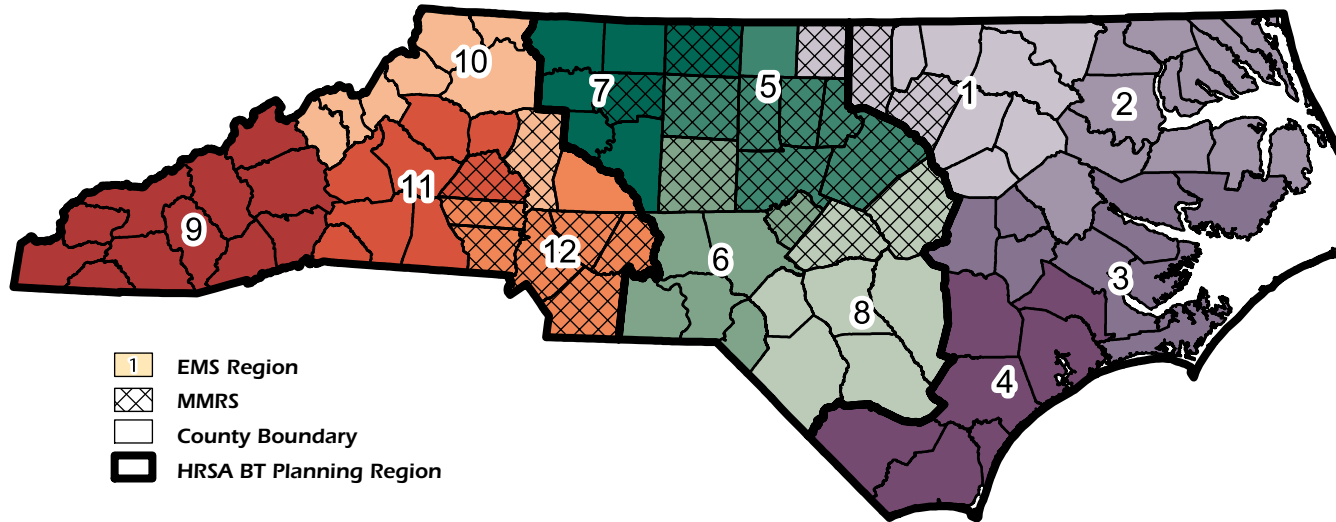


Trauma Coordination

Trauma services are coordinated by regional advisory committee (RAC) regions. RAC regions are made up of multiple counties that tend to be contiguous, with the exceptions, however, of Mid Carolina Trauma RAC and Duke RAC. North Carolina's trauma services regions are similar to its RRT regions, though there are significant differences from EMS and EM regions.

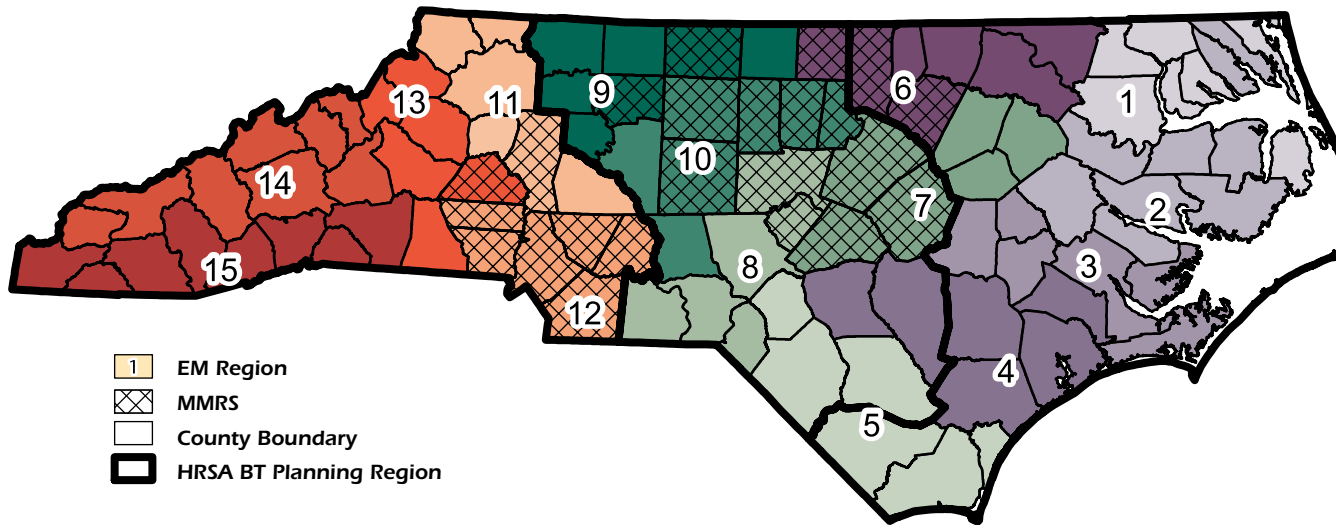


Emergency Medical Services



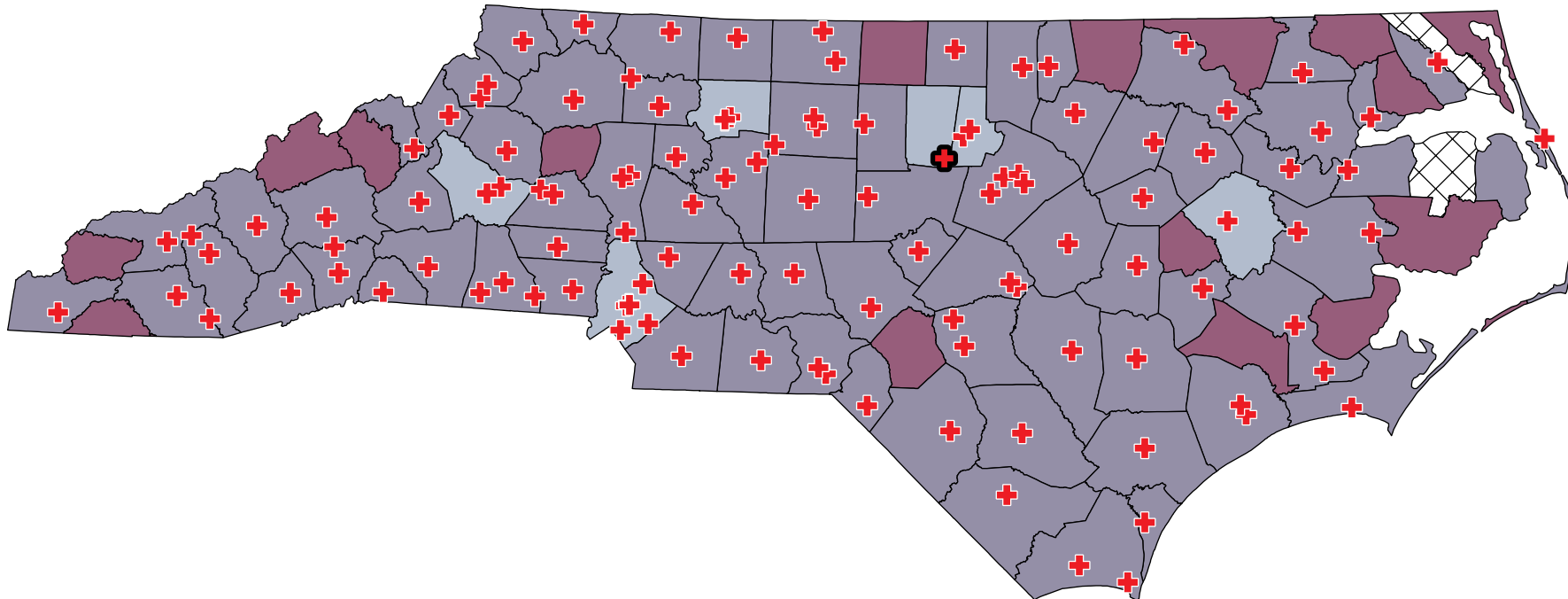
Emergency Medical Services (EMS) in North Carolina are organized around 12 regions, each made up of contiguous counties. The EMS regions follow Health Resources and Services Administration Bioterrorism (HRSA BT) planning region boundaries except for EMS Region 1. However, the boundaries of the EMS and Metropolitan Medical Response System (MMRS) regions are quite different.

Emergency Management



There are 12 Emergency Management (EM) regions. These regions are made up of contiguous counties except for Regions 1 and 2. The EM regions are not the same as the 12 EMS regions or the HRSA BT planning regions.

Relative Facility Location by County

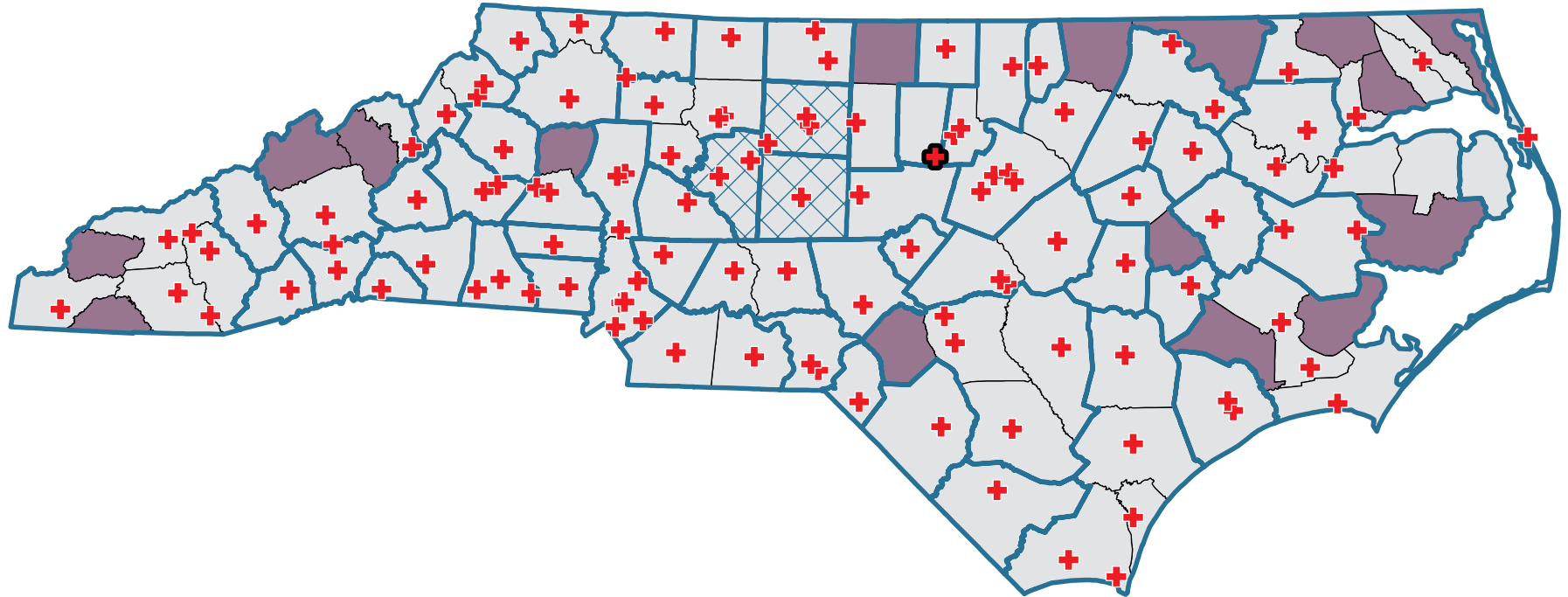


This map highlights counties containing nursing homes that are strategically located in rural areas with no hospital. Two coastal counties (Tyrell and Camden) have neither a hospital nor a nursing home. Sixteen counties in North Carolina have one or more nursing homes and no hospitals. Five of these counties are in the mountainous western portion of the State, and eight counties are in the eastern coastal plain; these areas are the most rural parts of the State. However, all of the counties without hospitals border on counties with hospitals, suggesting that hospitals in those counties could be used for surge capacity. Six counties across the State have tertiary care hospitals. Pitt County Memorial Hospital in Greenville serves the eastern part of the State. Mission Hospitals in Asheville is the regional referral center for the western mountain region, and the other hospitals are located in the major urban centers of the Central Piedmont.

Facility Type by County

- Nursing Home, No Hospital
- Nursing Home, Non-Tertiary Care Hospital
- Nursing Home, Tertiary Care Hospital
- No Nursing Home, Non-Tertiary Care Hospital
- No Nursing Home, No Hospital
- + Hospital
- + **UNC Hospital System**

Relative Facility Location and Red Cross Chapters

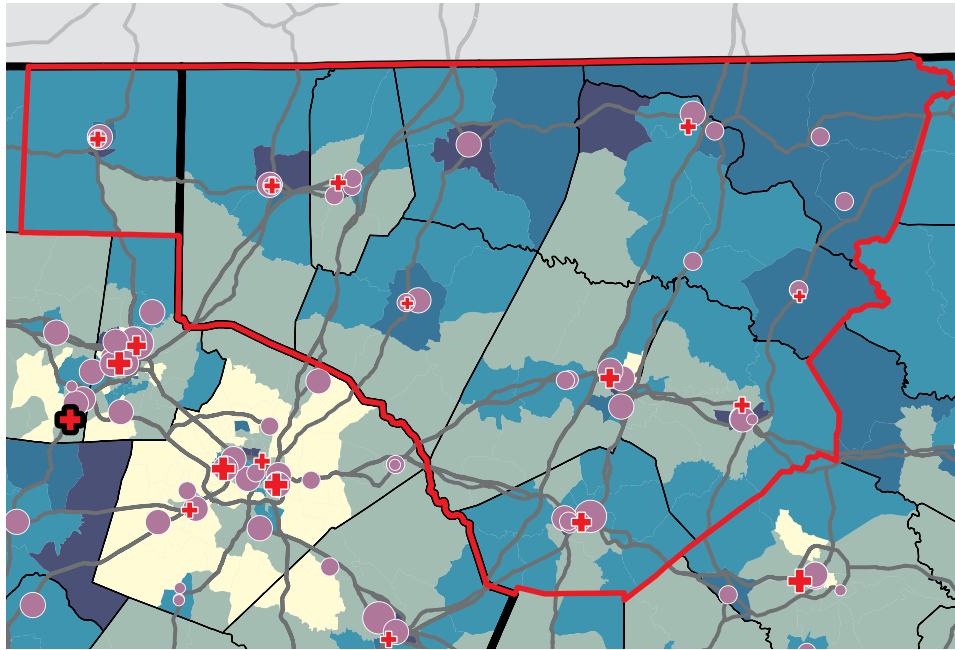


This map looks at counties with nursing homes and no hospitals and Red Cross chapters operating in North Carolina. There are 52 Red Cross chapters in North Carolina with many covering single counties. Three counties (Guilford, Randolph, and Davidson) are jointly served by two Red Cross chapters. These counties contain the Winston-Salem-Greensboro-High Point metropolitan area.

All of the Red Cross chapters containing counties with a nursing home and no hospital are multicounty chapters. This may pose special challenges to response and mitigation activities.

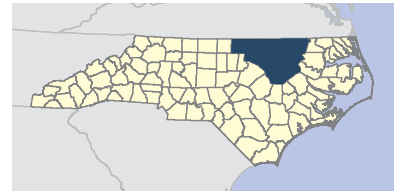
- Nursing Home, No Hospital
- Red Cross Chapter
- County Jointly Served by Two Red Cross Chapters
- County Boundary
- + Hospital
- + UNC Hospital System

EMS Region 1

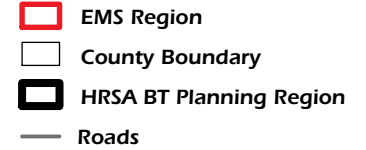
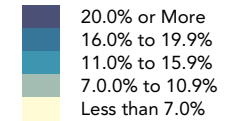


This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 1, a generally rural area with a relatively high proportion of people older than 65. This region has 9 hospitals and 31 nursing homes. Each county in this EMS region has a nursing home, and all but two (Northampton and Warren Counties) have hospitals. Nash County has the most hospital beds and hospital admissions, while Wilson County is home to the most nursing home beds and full-time registered nurses.

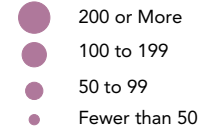
The population pyramid shows a bubble in the population between the ages of 30 and 54, suggesting that the elderly population will grow in the next 10 years. However, the population as a whole is fairly stable in terms of growth.



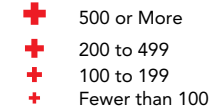
Percentage of Population Aged 65 or Older



Number of SNF/NF Beds



Number of Hospital Beds

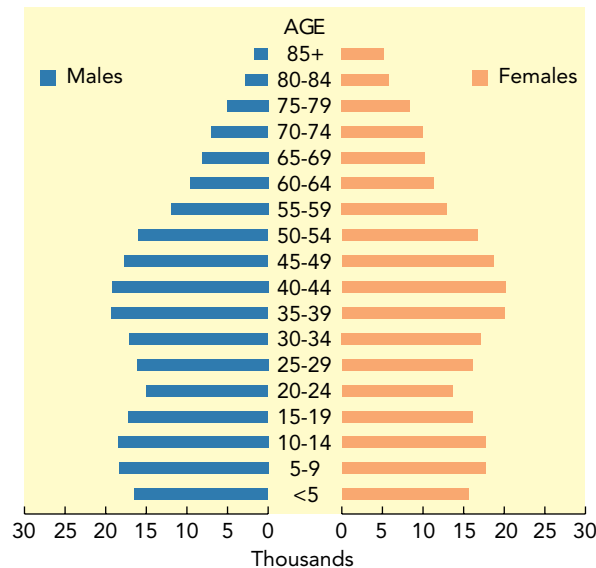


Red symbols outlined in black (⊕) indicate UNC Hospital System

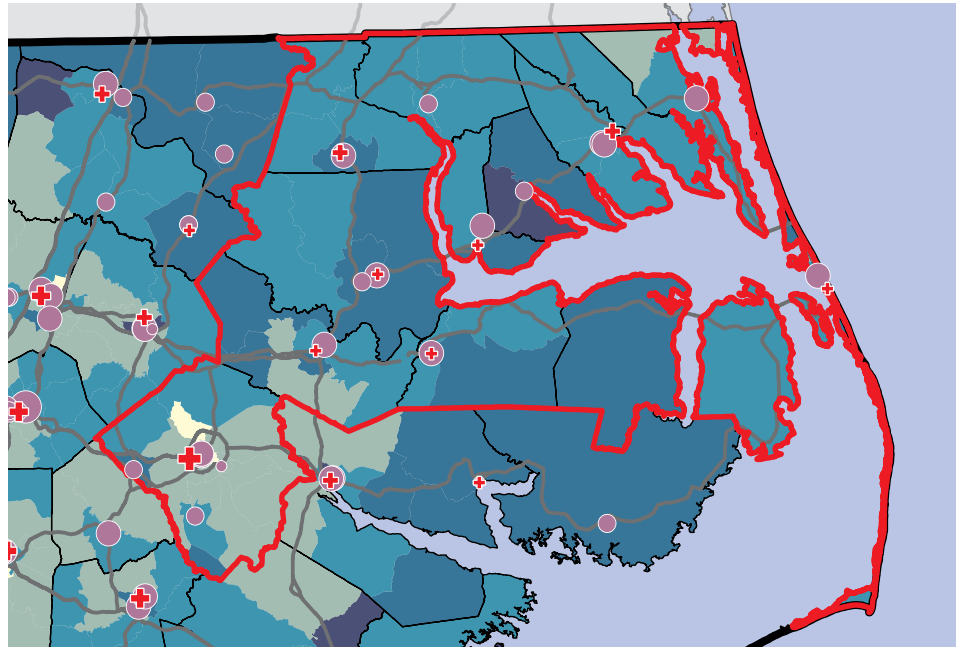
Red symbols (⊕) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Edgecombe	1	127	4,441	13,979	103	4	317	172
Franklin	1	56	2,538	17,939	78	2	258	131
Granville	1	128	2,390	13,175	88	2	240	123
Halifax	2	208	8,300	37,482	166	5	345	181
Nash	1	304	14,697	60,074	418	5	499	302
Northampton	0	0	0	0	0	2	149	97
Person	1	110	2,545	15,957	73	2	200	118
Vance	1	102	5,522	33,924	120	3	232	153
Warren	0	0	0	0	0	1	140	97
Wilson	1	220	7,865	44,712	220	5	623	391

Population by Sex and Age

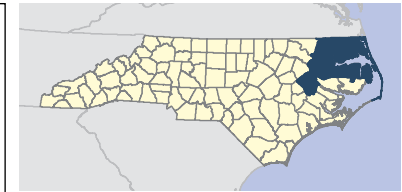


EMS Region 2

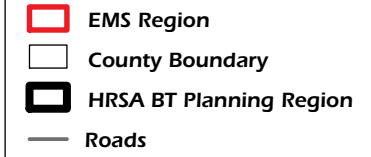
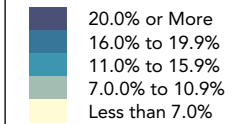


This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 2, which has 8 hospitals and 20 nursing homes. This region contains the State's two counties (Tyrell and Camden) that have neither a nursing home nor a hospital. Pitt County Memorial Hospital (home of East Carolina University's Medical School) is a tertiary care hospital that functions as the regional hospital for the eastern portion of North Carolina. Pitt County has 720 of the region's 1,156 hospital beds (62 percent) and 527 of the region's 1,935 nursing home beds (27 percent). These figures show that nursing homes are spread more evenly across the region than hospitals. The geography of the region, with many miles of coastline and barrier islands, makes transportation and accessibility difficult in an emergency; flooding is also a major problem for this area. EMS Region 2 has a high proportion of elderly individuals living in mostly rural areas.

The population pyramid shows little growth. A small bubble between the ages of 35 and 55 indicates an increase in the number of elderly persons over the next 10 years.



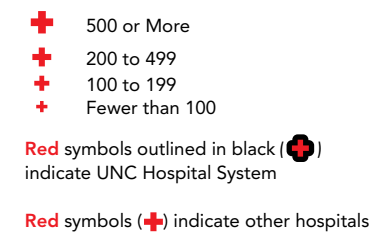
Percentage of Population Aged 65 or Older



Number of SNF/NF Beds

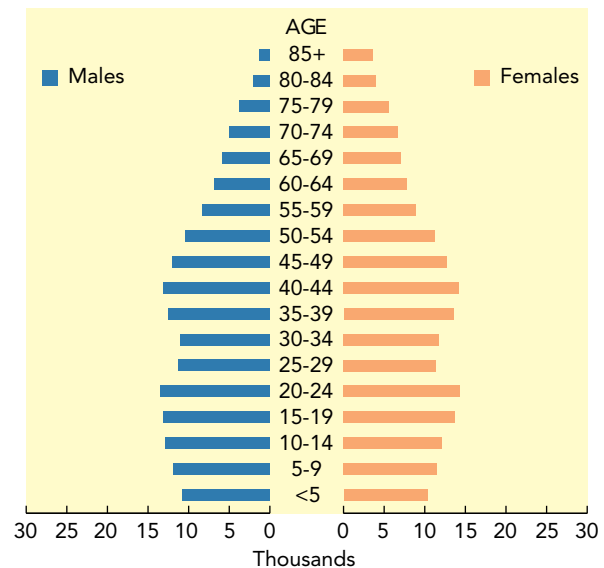


Number of Hospital Beds

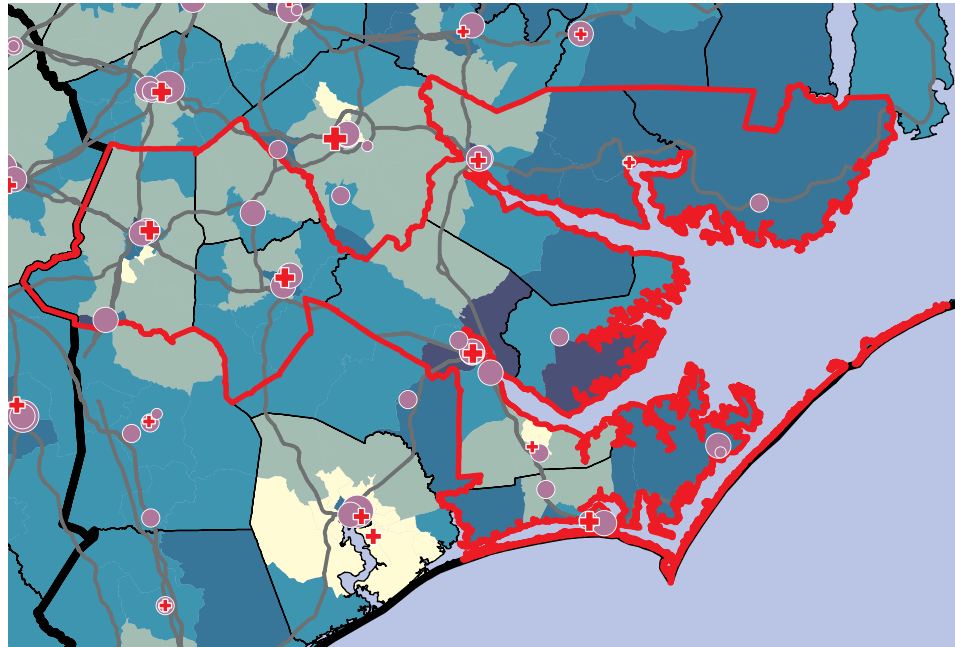


County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Bertie	1	6	334	6,022	24	2	160	77
Camden	0	0	0	0	0	0	0	0
Chowan	1	82	2,254	11,255	84	2	170	98
Currituck	0	0	0	0	0	1	100	57
Dare	1	19	1,237	22,268	65	1	126	21
Gates	0	0	0	0	0	1	70	35
Hertford	1	105	4,882	18,208	158	2	161	88
Martin	1	49	1,946	8,489	49	1	154	73
Pasquotank	1	150	8,282	28,831	230	2	266	178
Perquimans	0	0	0	0	0	1	78	32
Pitt	1	720	33,752	63,384	1,332	6	527	345
Tyrrell	0	0	0	0	0	0	0	0
Washington	1	25	755	4,997	29	1	123	71

Population by Sex and Age

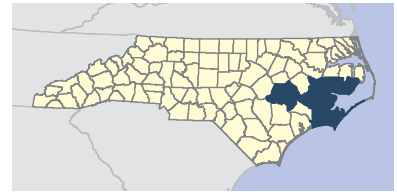


EMS Region 3



This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 3, which has 7 hospitals and 22 nursing homes. The region consists of mostly coastal counties and includes the Outer Banks. The region has a high proportion of elderly residents and is significantly rural. Accessibility is an issue in the region, with flooding a primary concern. There are no hospitals in the most easterly counties of the region, although all these counties have nursing homes.

The population pyramid has a small bubble between the ages of 35 and 55, indicating growth of the elderly population over the next 10 years. The shape of the pyramid indicates slow population growth in general. The size of the population in each age group is relatively consistent until age 55, when it starts to decline due to mortality.



Percentage of Population Aged 65 or Older

- 20.0% or More
- 16.0% to 19.9%
- 11.0% to 15.9%
- 7.0.0% to 10.9%
- Less than 7.0%

- EMS Region
- County Boundary
- HRSA BT Planning Region
- Roads

Number of SNF/NF Beds

- 200 or More
- 100 to 199
- 50 to 99
- Fewer than 50

Number of Hospital Beds

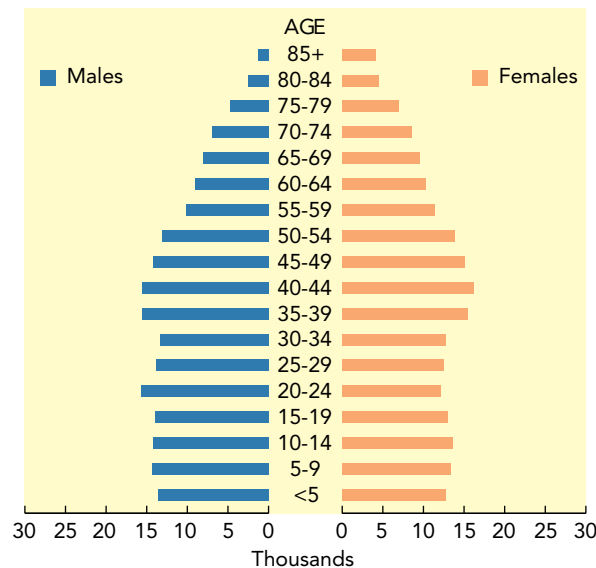
- + 500 or More
- + 200 to 499
- + 100 to 199
- + Fewer than 100

Red symbols outlined in black (+) indicate UNC Hospital System

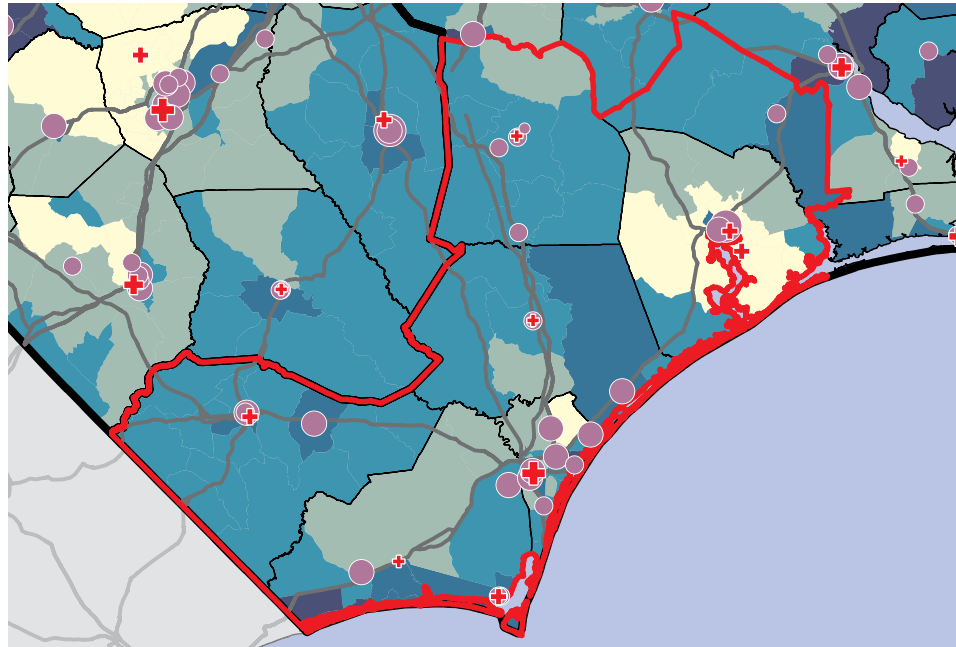
Red symbols (+) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Beaufort	2	137	4,916	26,189	157	3	300	181
Carteret	1	221	7,004	25,316	197	5	394	186
Craven	2	307	16,800	62,057	510	5	478	231
Greene	0	0	0	0	0	1	115	72
Hyde	0	0	0	0	0	1	80	40
Lenoir	1	206	11,285	36,954	158	3	351	166
Pamlico	0	0	0	0	0	1	96	42
Wayne	1	256	12,128	43,258	269	3	456	276

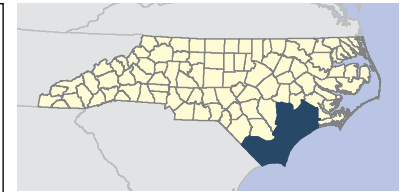
Population by Sex and Age



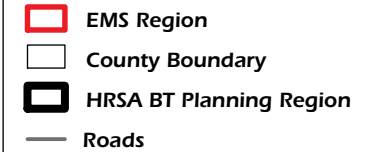
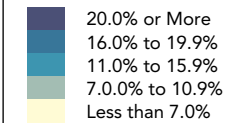
EMS Region 4



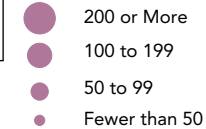
This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 4, which has 8 hospitals and 24 nursing homes. This coastal region includes the port city of Wilmington. A large number of the region's nursing homes are in or around Wilmington, which also has the largest hospital in the area. Onslow County's population has a low relative percentage of elderly persons due to the Camp Lejeune Marine Corps Base. The region's other counties appear to have a relatively high proportion of elderly persons, as is often the case in rural areas. Except for Jones County, each county in the region has a hospital with a nursing home close to the hospital facility. Jones County is bordered by four counties with hospitals and has a nursing home. The population pyramid shows a small bubble aged 35-55, with a consistent number of young people. This indicates a steady population size, although the number of elderly persons is expected to rise in the next 10 years. One noticeable spike in the population pyramid, an unusually large male population aged 20-24, is due to the Marine Corps base and should have little impact on the future aging population as these residents are temporary.



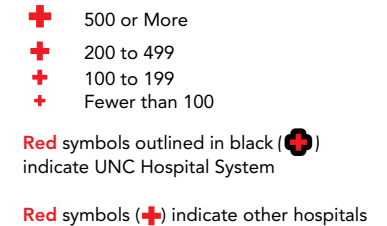
Percentage of Population Aged 65 or Older



Number of SNF/NF Beds

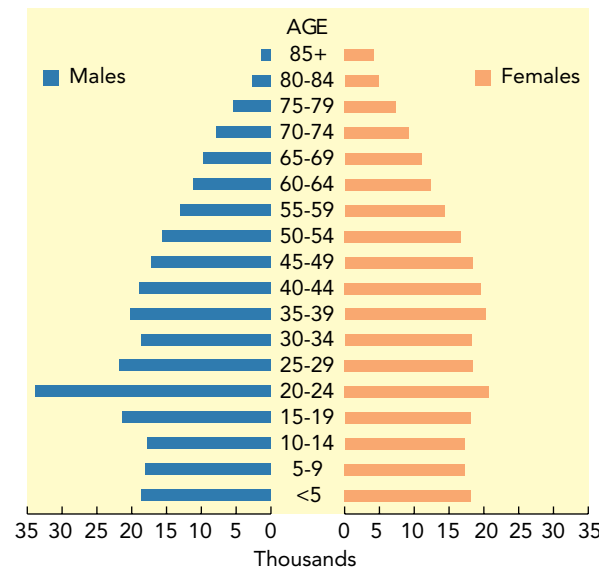


Number of Hospital Beds

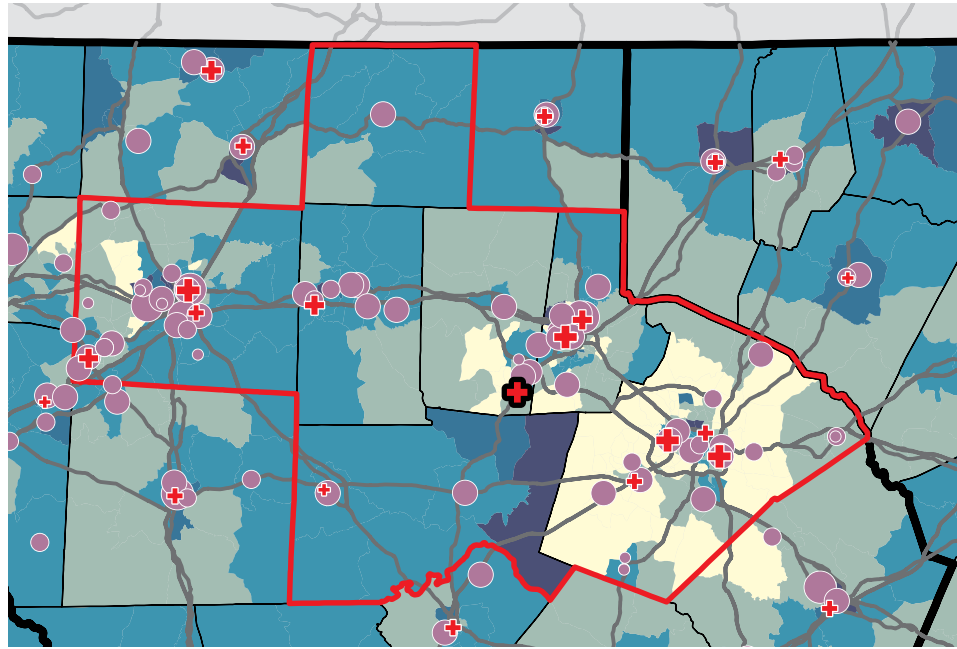


County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Brunswick	2	160	5,043	27,082	143	4	433	233
Columbus	1	117	6,188	26,835	151	3	323	151
Duplin	1	89	3,568	14,602	100	4	252	109
Jones	0	0	0	0	0	1	80	46
New Hanover	1	644	33,217	83,961	1,046	7	799	514
Onslow	2	250	14,130	67,931	500	2	359	141
Pender	1	86	1,126	11,144	50	3	253	191

Population by Sex and Age

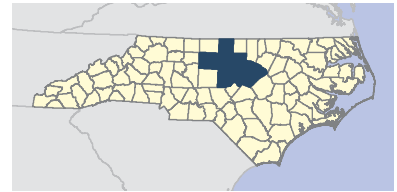


EMS Region 5



This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 5, which has 12 hospitals and 66 nursing homes. This region is home to the UNC Hospital System. There are also clusters of hospitals in the cities of Durham and Raleigh. There are 23 nursing homes in Greensboro (Guilford County), and all hospitals have nursing homes close by. The accessibility of the nursing homes and hospitals is increased by the many major roads in the area.

Region 5's population pyramid is very unbalanced. There is a large bubble between the ages of 20 and 55 due to the three major universities (North Carolina State, the University of North Carolina at Chapel Hill, and Duke University) and the presence of Research Triangle Park, which provides jobs in the pharmaceutical and technology industries. Wake, Durham, and Orange Counties have a low proportion of elderly persons. Although many of the young people living in the region will move when they complete their schooling, the number of people reaching retirement age in the next 10 years will increase the number of elderly persons significantly.



Percentage of Population Aged 65 or Older

- 20.0% or More
- 16.0% to 19.9%
- 11.0% to 15.9%
- 7.0.0% to 10.9%
- Less than 7.0%

- EMS Region
- County Boundary
- HRSA BT Planning Region
- Roads

Number of SNF/NF Beds

- 200 or More
- 100 to 199
- 50 to 99
- Fewer than 50

Number of Hospital Beds

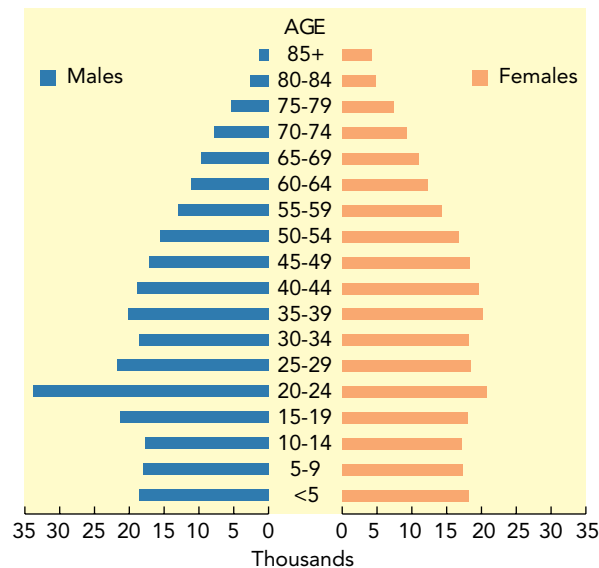
- + 500 or More
- + 200 to 499
- + 100 to 199
- + Fewer than 100

Red symbols outlined in black (+) indicate UNC Hospital System

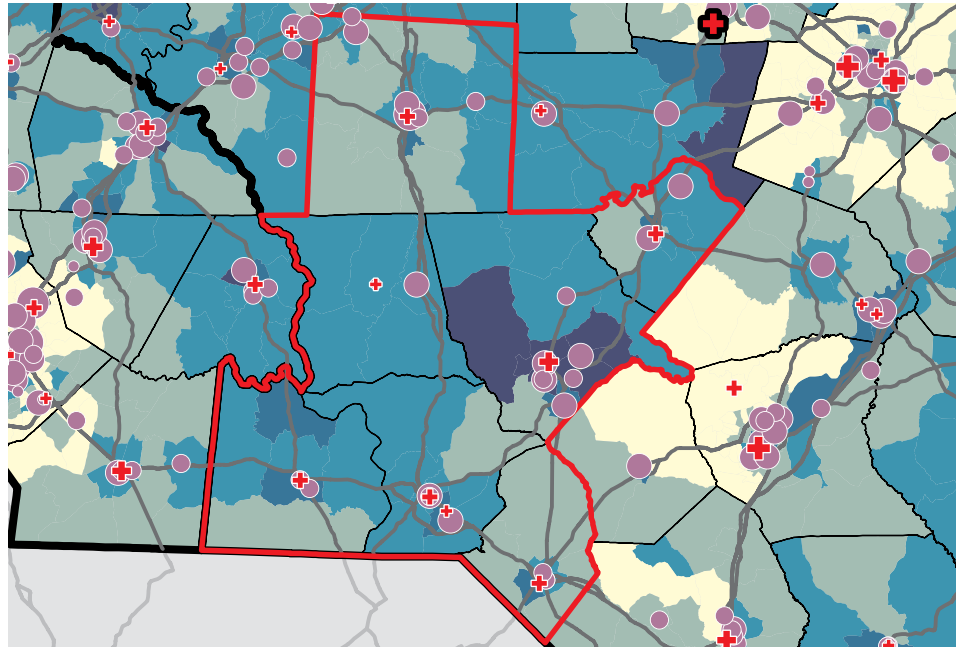
Red symbols (+) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Alamance	1	319	10,445	45,560	304	7	848	496
Caswell	0	0	0	0	0	1	137	63
Chatham	1	25	732	10,367	40	2	290	137
Durham	2	992	51,874	107,495	1,650	10	1,284	673
Guilford	3	1,741	61,039	164,091	2,276	23	2,391	1,590
Orange	1	670	29,129	42,243	1,346	4	383	218
Wake	4	1,523	72,372	226,416	2,782	19	1,806	3,069

Population by Sex and Age

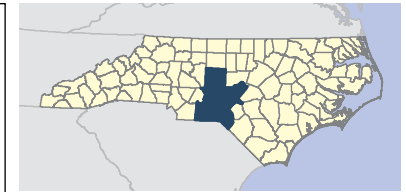


EMS Region 6

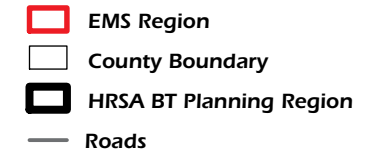
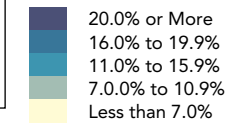


This map examines the size and location of nursing homes and hospitals relative to the location of the population aged 65 or older in EMS Region 6, which has 8 hospitals and 24 nursing homes. All of the hospitals have nursing homes relatively close by for use as overflow during emergencies.

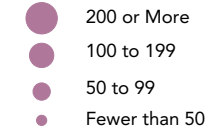
This relatively rural area in the Central Piedmont has a high proportion of elderly residents. The base of the population pyramid suggests that the natural population growth (not including immigration) of the region is slow. However, there is a bubble in the population pyramid between the ages of 30 and 55, indicating an increase in the number of elderly people in EMS Region 6 within the next 10 years.



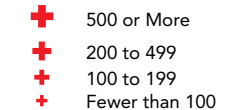
Percentage of Population Aged 65 or Older



Number of SNF/NF Beds



Number of Hospital Beds

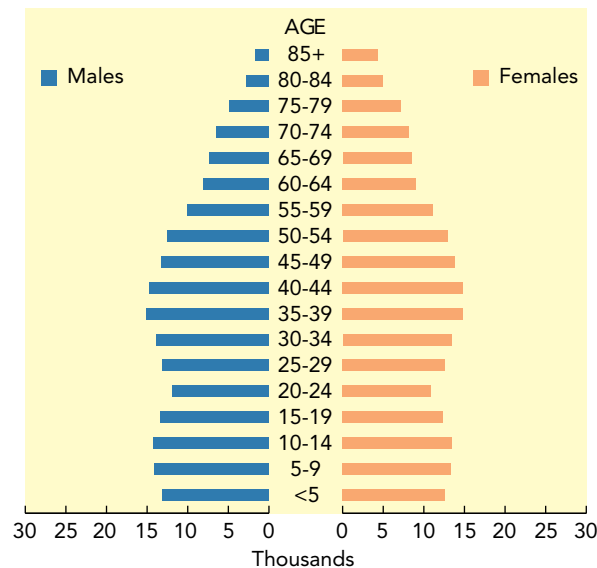


Red symbols outlined in black (⊕) indicate UNC Hospital System

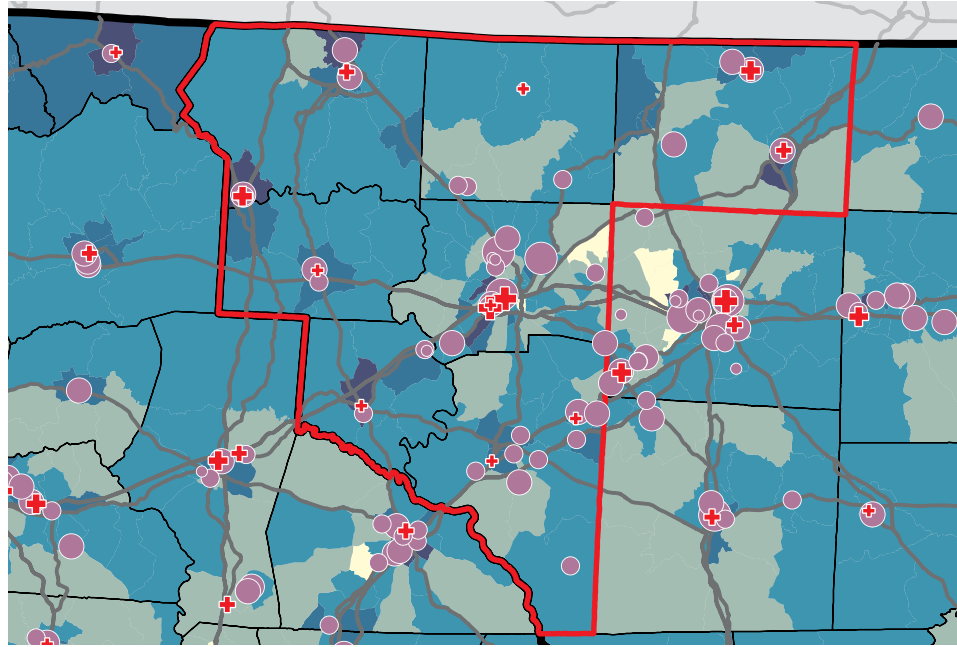
Red symbols (⊕) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Anson	1	125	1,921	13,207	55	2	161	119
Lee	1	137	5,889	31,164	149	2	234	75
Montgomery	1	55	862	4,932	40	2	141	100
Moore	1	362	19,736	52,572	510	7	740	395
Randolph	1	106	6,963	38,793	164	5	672	312
Richmond	2	205	8,224	27,548	169	3	274	176
Scotland	1	159	5,826	23,408	182	3	207	145

Population by Sex and Age

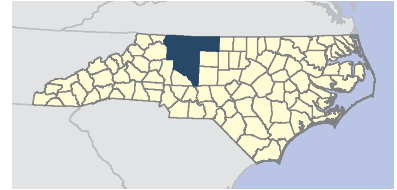


EMS Region 7



This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 7, which has 12 hospitals and 40 nursing homes. All of the hospitals in the region have nursing homes close by except for the hospital in Davie County, which appears to be very isolated and has no major transportation routes close by. Forsyth County (which includes Winston-Salem) appears to be the primary provider of health care in the region with 1,761 hospital and 1,412 nursing home beds.

The population pyramid shows a large bubble between the ages of 25 and 55. This suggests that the number of elderly persons in the region will increase over the next 10 years. The lower end of the population pyramid indicates a slow increase in natural population growth, with more children between the ages of 5 and 9 than those under age 5.



Percentage of Population Aged 65 or Older

- 20.0% or More
- 16.0% to 19.9%
- 11.0% to 15.9%
- 7.0.0% to 10.9%
- Less than 7.0%

- EMS Region
- County Boundary
- HRSA BT Planning Region
- Roads

Number of SNF/NF Beds

- 200 or More
- 100 to 199
- 50 to 99
- Fewer than 50

Number of Hospital Beds

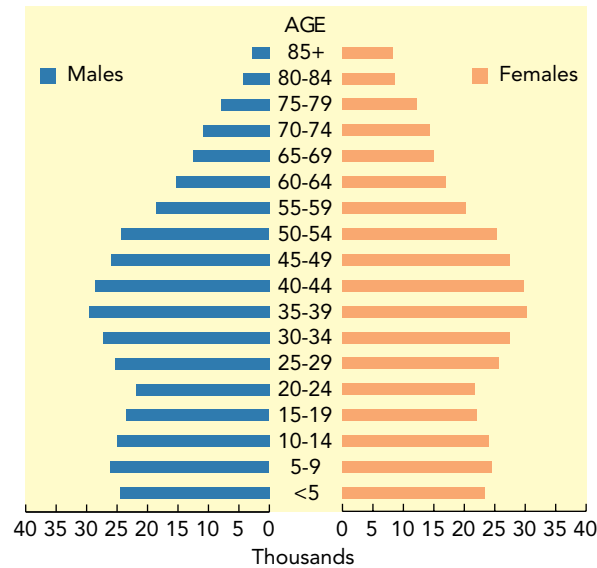
- + 500 or More
- + 200 to 499
- + 100 to 199
- + Fewer than 100

Red symbols outlined in black (+) indicate UNC Hospital System

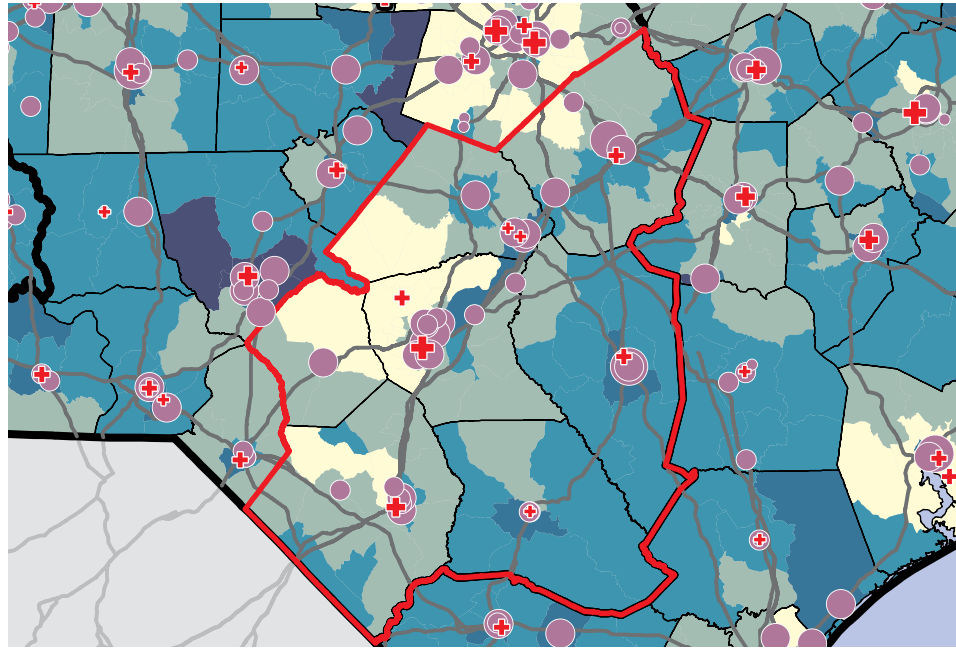
Red symbols (+) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Davidson	2	163	8,214	38,452	235	9	750	480
Davie	1	25	341	12,089	13	3	186	124
Forsyth	3	1,761	73,935	141,692	2,730	12	1,412	912
Rockingham	2	394	10,472	53,450	260	5	555	355
Stokes	1	93	1,195	7,229	54	4	322	176
Surry	2	333	7,809	49,098	248	5	472	320
Yadkin	1	22	256	6,958	14	2	223	121

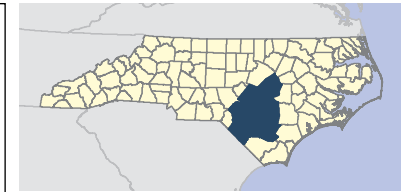
Population by Sex and Age



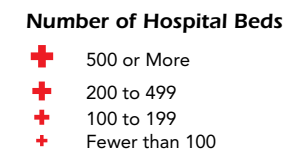
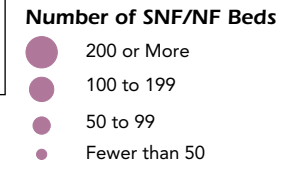
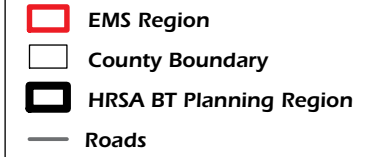
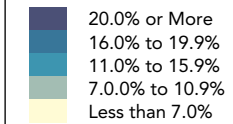
EMS Region 8



This map examines the size and location of nursing homes and hospitals relative to the location of the population aged 65 or older in EMS Region 8, which has 8 hospitals and 31 nursing homes. Only one county, Hoke in the southwest, has no hospital; however, it has a large nursing home facility (132 beds). Cumberland County, with the greatest number of hospital and nursing home beds, is home to Fayetteville and Fort Bragg, a large Army and Special Forces base responsible for the small proportion of elderly persons in the county and its westerly surrounding census tracts. Interstate 95 runs through Region 8, and many nursing homes and hospitals are located very close to this major artery. Along I-95, the proportion of elderly residents appears to be quite high. This density falls off farther from I-95, but picks up again in more rural areas. The population pyramid for the region indicates a growing population; there are more children under 5 than in any other juvenile age range. A significant bubble appears between the ages of 20 and 55. The lower end of this increase can be attributed to Fort Bragg's temporary population (of young males). The upper end of this bubble will lead to increased numbers of elderly persons in the next 10 years.



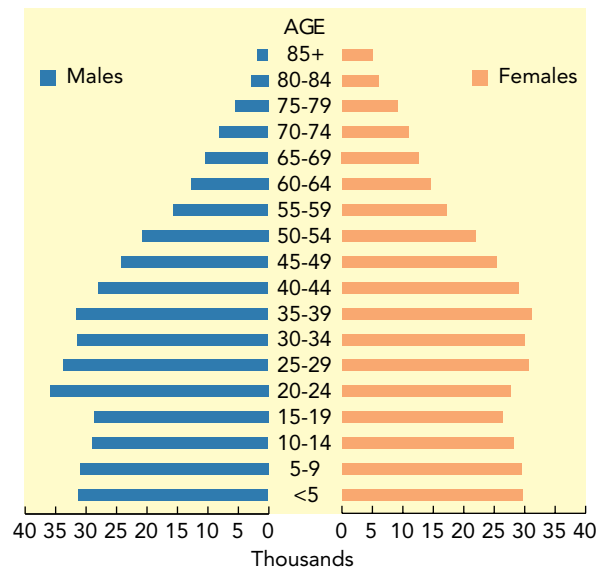
Percentage of Population Aged 65 or Older



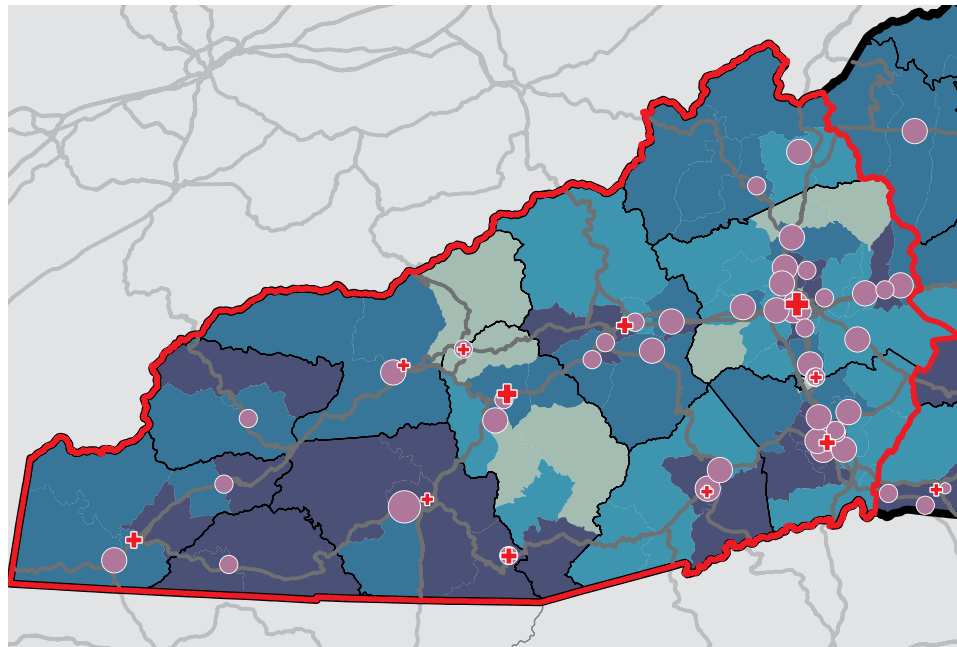
Red symbols outlined in black (+) indicate UNC Hospital System
 Red symbols (+) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Bladen	1	58	1,613	15,549	48	3	194	113
Cumberland	2	724	37,428	155,476	1,118	10	1,119	679
Harnett	2	120	7,085	36,631	166	4	438	185
Hoke	0	0	0	0	0	1	132	93
Johnston	1	160	7,390	43,634	215	4	550	297
Robeson	1	429	14,813	61,376	370	6	528	324
Sampson	1	146	3,923	23,810	131	3	372	200

Population by Sex and Age

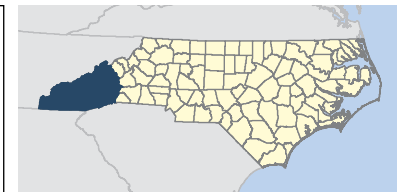


EMS Region 9



This map examines the size and location of nursing homes and hospitals relative to the location of the population aged 65 or older for EMS Region 9, which shows a higher than usual proportion of elderly residents. This very mountainous region, bordering Tennessee and Georgia, has 11 hospitals and 48 nursing homes. The largest hospital (with more than twice as many beds as any other hospital in the region) and 16 of the nursing homes are in Buncombe County, where the city of Asheville is located. The apparent trend is that the areas farthest west in the region have fewer hospitals and nursing homes, but a larger percentage of elderly residents. All hospitals in the region have at least one nursing home close by, but the situation in the western section of the region indicates potential care problems in the event of an emergency.

The population pyramid for this region shows a bubble between the ages of 25 and 55, suggesting that the number of elderly persons will increase over the next decade. The base of the pyramid shows slow natural population growth.



Percentage of Population Aged 65 or Older

- 20.0% or More
- 16.0% to 19.9%
- 11.0% to 15.9%
- 7.0.0% to 10.9%
- Less than 7.0%

- EMS Region
- County Boundary
- HRSA BT Planning Region
- Roads

Number of SNF/NF Beds

- 200 or More
- 100 to 199
- 50 to 99
- Fewer than 50

Number of Hospital Beds

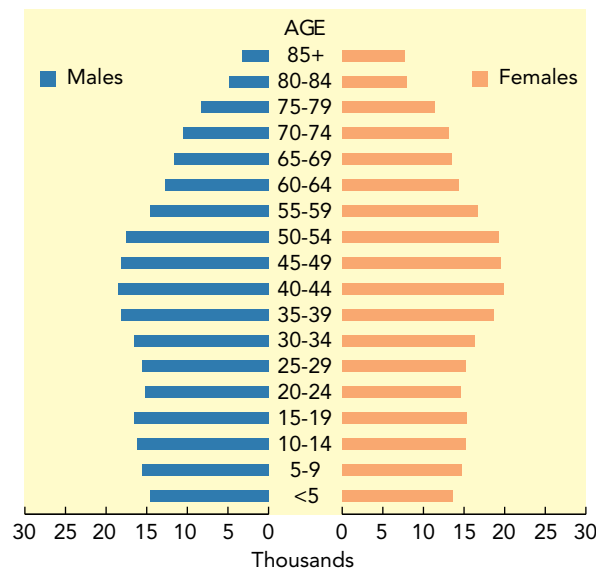
- + 500 or More
- + 200 to 499
- + 100 to 199
- + Fewer than 100

Red symbols outlined in black (+) indicate UNC Hospital System

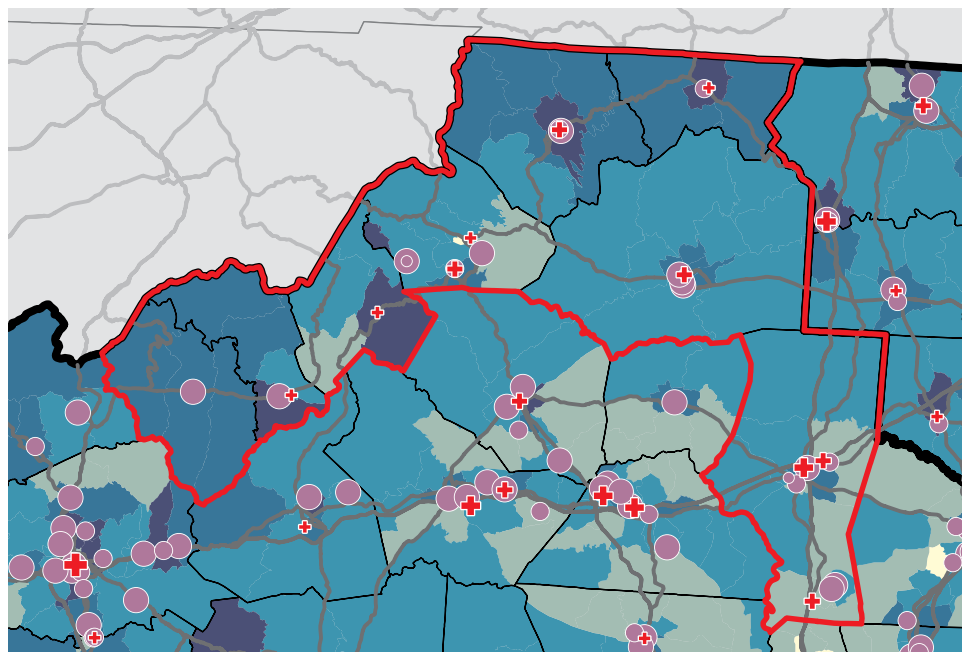
Red symbols (+) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Buncombe	1	721	34,932	86,376	1,288	16	1,565	876
Cherokee	1	184	3,075	11,940	99	2	210	135
Clay	0	0	0	0	0	1	80	44
Graham	0	0	0	0	0	1	80	41
Haywood	1	113	5,824	24,847	168	6	475	268
Henderson	2	279	14,088	44,027	377	10	932	512
Jackson	1	200	5,053	16,611	144	3	208	121
Macon	2	163	2,866	15,483	109	2	280	128
Madison	0	0	0	0	0	2	180	118
Swain	2	53	1,735	19,792	62	2	180	75
Transylvania	1	55	2,089	13,846	93	3	277	134

Population by Sex and Age

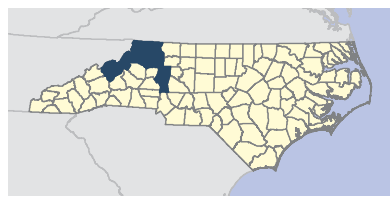


EMS Region 10



This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 10, which has 10 hospitals and 20 nursing homes. This mountainous region borders Tennessee and Virginia. Iredell County, somewhat isolated from the rest of the region, has one third of the region's nursing home beds and 43 percent of its hospital beds. This skews the health care landscape because transportation links to this area from the rest of the region are indirect. The population pyramid shows population density for the region being relatively low. All of the counties except Yancey County have hospitals present, and of these only one does not have a nursing home near by. Coupled with its mountainous terrain, this region's limited transportation links suggest that emergency transportation and care might be difficult.

Overall, the population pyramid for the region suggests an extremely slow natural growth rate, although a slight bubble between the ages of 35 and 55 indicates an increasingly aging population that will impact the region in the next 10 years.



Percentage of Population Aged 65 or Older

- 20.0% or More
- 16.0% to 19.9%
- 11.0% to 15.9%
- 7.0.0% to 10.9%
- Less than 7.0%

- EMS Region
- County Boundary
- HRSA BT Planning Region
- Roads

Number of SNF/NF Beds

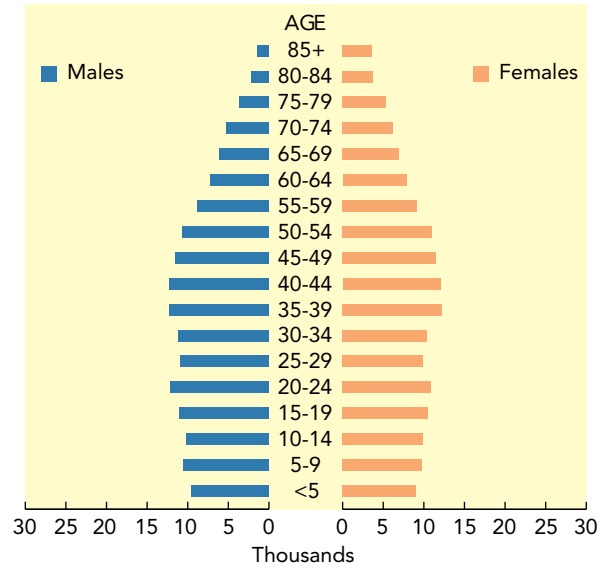
- 200 or More
- 100 to 199
- 50 to 99
- Fewer than 50

Number of Hospital Beds

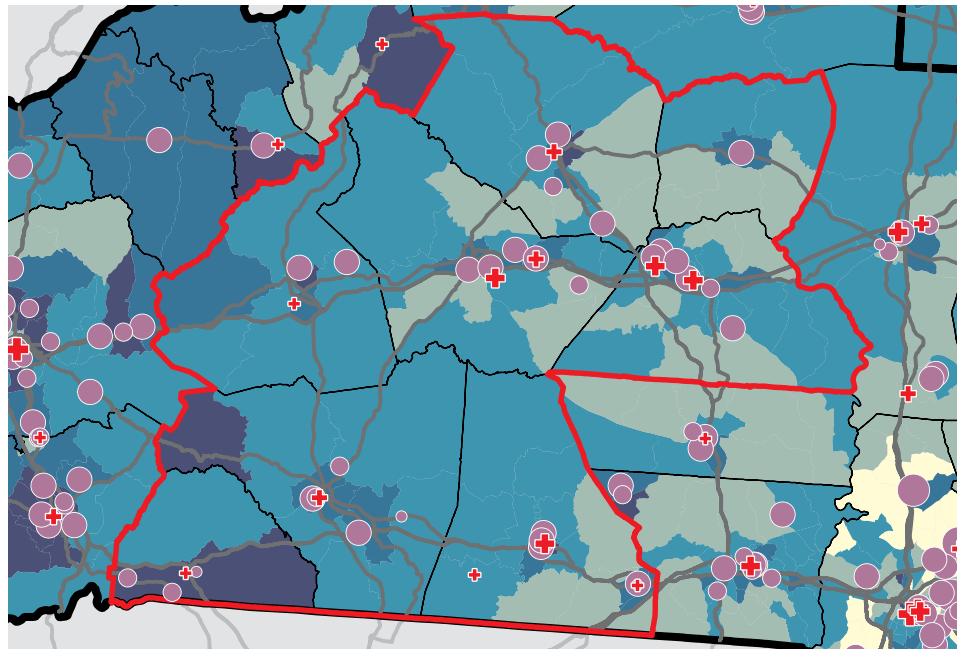
- + 500 or More
 - + 200 to 499
 - + 100 to 199
 - + Fewer than 100
- Red symbols outlined in black (⊕) indicate UNC Hospital System
- Red symbols (⊕) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Alleghany	1	46	1,091	5,442	35	1	90	40
Ashe	1	115	1,646	12,190	47	2	210	110
Avery	1	70	2,525	9,519	62	2	128	64
Iredell	3	443	22,166	90,616	872	7	653	400
Mitchell	1	40	2,161	13,820	62	1	127	64
Watauga	2	195	6,590	30,761	182	2	196	95
Wilkes	1	131	4,664	24,681	154	4	417	246
Yancey	0	0	0	0	0	1	140	74

Population by Sex and Age

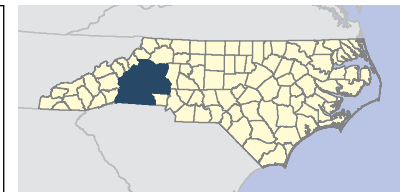


EMS Region 11



This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 11, which has 11 hospitals and 32 nursing homes. The region is in the foothills of the Appalachian Mountains and borders South Carolina. Hospitals are present in all of the region's counties except for Alexander County, which only has a large nursing home (183 beds). All of the hospitals have nursing homes relatively close by (except for a small hospital in Cleveland County), and these are all well linked by major transportation routes. The elderly population is relatively smaller in this region compared with the more mountainous EMS regions, but increases toward the western limits.

A large bubble in the population pyramid between the ages of 25 and 55 indicates that the elderly population in the region will grow in the next 10 years. The base of the population pyramid shows slow overall growth.



Percentage of Population Aged 65 or Older

- 20.0% or More
- 16.0% to 19.9%
- 11.0% to 15.9%
- 7.0.0% to 10.9%
- Less than 7.0%

- EMS Region
- County Boundary
- HRSA BT Planning Region
- Roads

Number of SNF/NF Beds

- 200 or More
- 100 to 199
- 50 to 99
- Fewer than 50

Number of Hospital Beds

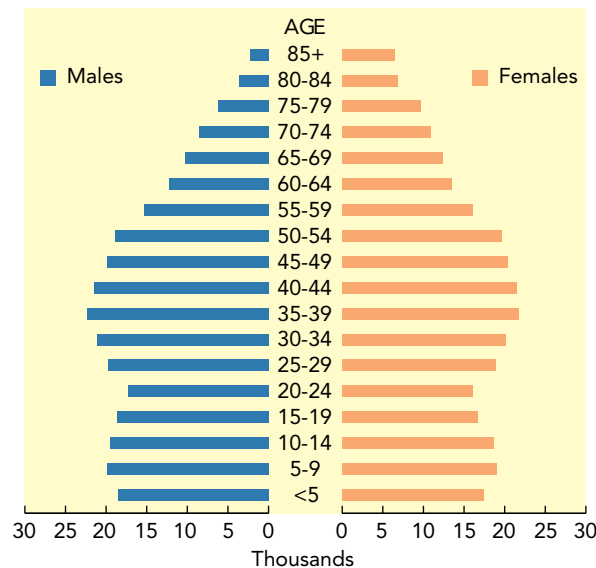
- 500 or More
- 200 to 499
- 100 to 199
- Fewer than 100

Red symbols outlined in black (⊕) indicate UNC Hospital System

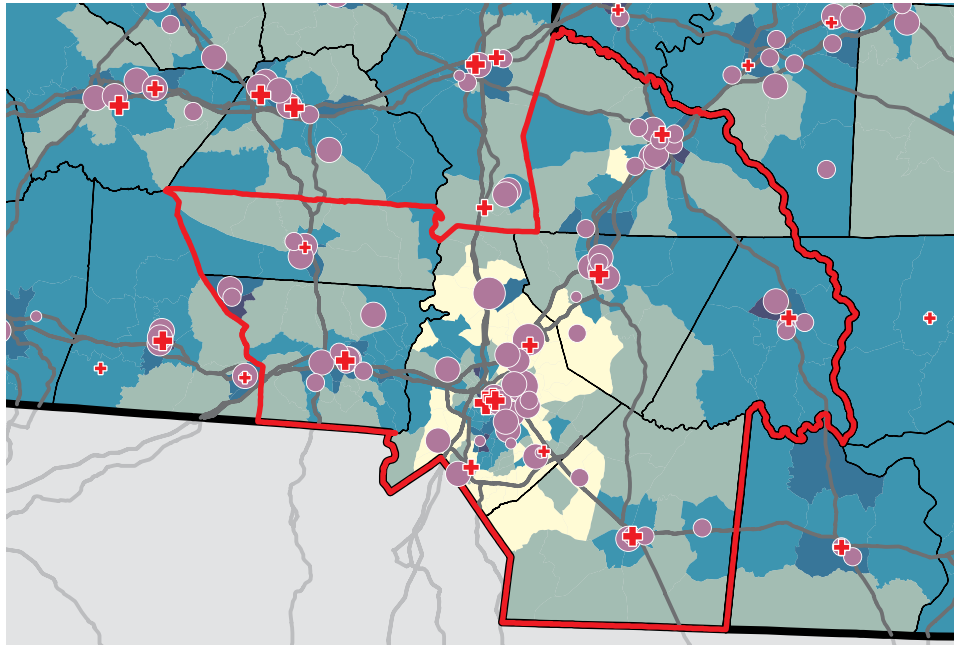
Red symbols (+) indicate other hospitals

County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Alexander	0	0	0	0	0	1	183	101
Burke	2	468	10,868	54,983	291	5	531	359
Caldwell	1	100	4,199	29,449	118	4	400	241
Catawba	2	568	22,928	105,633	716	7	759	481
Cleveland	3	440	13,104	52,690	327	5	544	270
McDowell	1	65	2,542	15,898	105	2	250	109
Polk	1	55	1,969	8,389	71	3	202	135
Rutherford	1	143	5,825	33,051	175	5	420	274

Population by Sex and Age

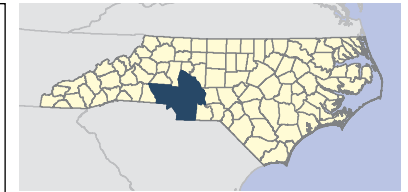


EMS Region 12

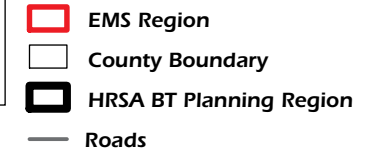
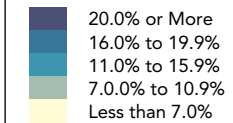


This map examines the size and location of nursing homes and hospitals relative to the distribution of the population aged 65 or older in EMS Region 12, which has 12 hospitals and 60 nursing homes. The region surrounds Charlotte, the most populous city in North Carolina. All of the region's counties have one hospital except for Mecklenburg County, where Charlotte is located, which has six. Mecklenburg County has a significantly lower percentage of elderly persons than other counties in the region, as Charlotte is urban and the rest of the region is more rural.

The population pyramid for the region shows a significant bubble between the ages of 25 and 55, implying growth in the number of elderly persons in the next 10 years. The population pyramid also includes a large percentage of children between the ages of 0 to 15, indicating that the population is experiencing natural population growth.



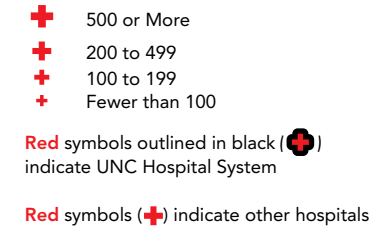
Percentage of Population Aged 65 or Older



Number of SNF/NF Beds



Number of Hospital Beds



County	Hospitals					SNFs/NFs		
	# of Facilities	Total Beds	Annual Admissions	Annual ER Visits	FTE RNs	# of Facilities	Total Beds	FTE RNs
Cabarrus	1	350	18,073	68,783	777	8	741	396
Gaston	1	362	21,234	72,464	526	10	970	589
Lincoln	1	87	3,537	27,131	101	3	320	158
Mecklenburg	6	1,900	96,358	337,794	3,880	22	2,622	1,799
Rowan	1	188	10,271	45,642	302	8	835	498
Stanly	1	119	6,306	29,137	167	4	406	267
Union	1	232	8,655	39,998	325	5	443	274

Population by Sex and Age

