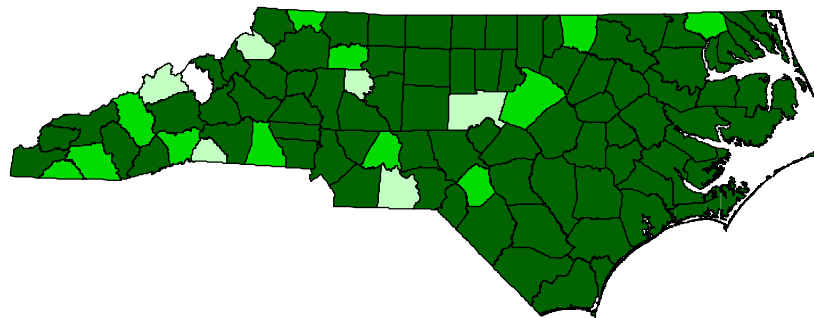
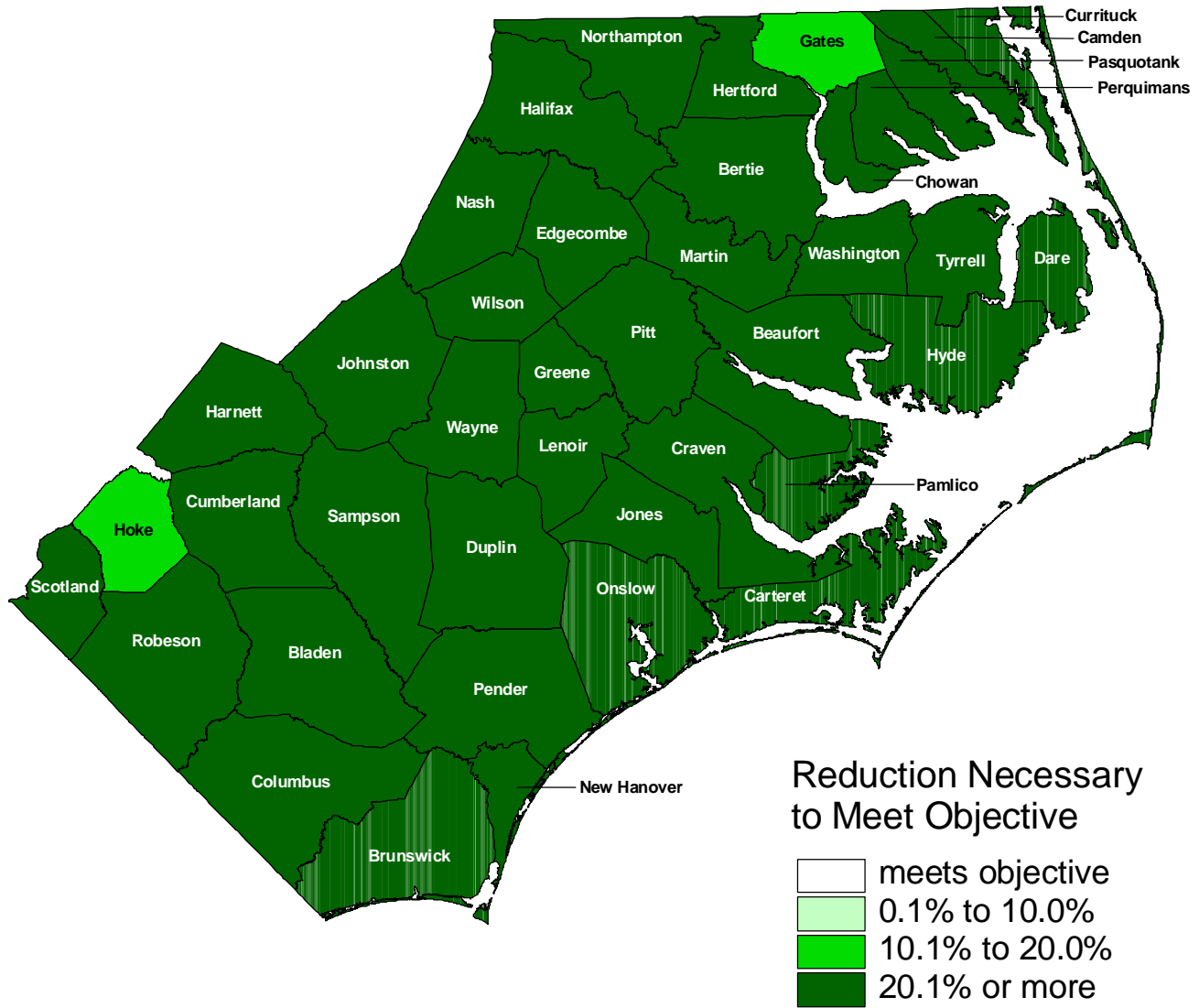


Lung Cancer

Map 4.1 Progress Towards Lung Cancer Mortality Objective



HP 2010 Objective for Lung Cancer Mortality:
Reduce lung cancer deaths to no more than 44.9 per 100,000 population

Lung Cancer ICD-9 Code: 162
Based on Five-Year Average, Age-Adjusted Rates Standardized to US 2000 SM

Data Source: NC State Center for Health Statistics

LUNG CANCER

Lung cancer is the leading cause of cancer mortality for both men and women in the United States (US). However, the age-adjusted lung cancer death rate for men is nearly double that of women. Lung cancer is also the most common cause of cancer mortality for all ethnic groups in the US, except Native Americans. African-American males have the highest age-adjusted lung cancer death rates in the nation, with a rate that is 22% higher than the rate for white males. These patterns of lung cancer mortality reflect smoking trends in the population.

Smoking is the primary cause of lung cancer mortality. As compared to non-smokers, the risk of lung cancer is 22 times higher among male smokers and 12 times higher among female smokers. About 90% of lung cancer deaths in the US are attributable to smoking. In addition, an estimated \$100 billion is lost each year to health care cost and diminished productivity of smokers. Other risk factors, which account for less than 2% of lung cancer deaths, include exposure to air pollution and environmental toxins.

Tobacco control efforts have been successful in reducing lung cancer mortality by decreasing the prevalence of smoking. Following a 40% decline between 1965 and 1990, the annual prevalence of smoking has remained fairly constant at approximately 25%. Much of this decrease in smoking occurred among white men. The prevalence of smoking has actually risen among youth and certain racial minorities. Ongoing public health and legal efforts to reduce smoking will be necessary to counter the multi-billion dollar advertising and promotion campaigns of the tobacco industry.

The incidence of lung cancer among men has declined substantially since the early 1970's. The incidence of the disease is still much higher among African-American males than white males. Conversely, the incidence of lung cancer among women, though still much lower than the incidence in men, has doubled since the 1970's. These variations in the occurrence of lung cancer are due to race and gender differences in smoking patterns.

In order to reach the *Healthy People 2010* objective for lung cancer mortality, 39 of the 41 counties in eastern North Carolina (ENC) will have to reduce their current rates by more than 20%, and the remaining two counties will have to reduce their rates 10% to 20% (see Map 4.1). Further reductions in mortality rates for men and racial minorities will be necessary to reduce mortality disparities. The rising rates of lung cancer among women will also need to be addressed.

HP 2010 OBJECTIVE FOR LUNG CANCER MORTALITY

Objective: Reduce lung cancer deaths to no more than 44.9 per 100,000 population

Baseline: 57.6 lung cancer deaths per 100,000 population in 1998

Currently, none of the counties in the region meet the objective for lung cancer mortality.

Crude Mortality Rates for Lung Cancer, 1994-1998:

The five-year average, crude death rate for lung cancer in ENC (64.3 per 100,000 population) is almost 5% higher than the rate for all other North Carolina counties (ONC) and 12% higher than the rate for the US, indicating a greater overall disease burden in ENC (see Table 4.1). The highest crude mortality rate for lung cancer, 104.0 per 100,000 population, is found in Perquimans County. Other counties with high crude rates include Currituck (99.9), Beaufort (99.8), Washington (97.8), and Camden County (95.3). Map 4.2 shows geographic variation in crude lung cancer mortality rates, with the highest rates being scattered along the coast of ENC.

Age-Adjusted Mortality Rates for Lung Cancer, 1994-1998:

After adjustment for age, the five-year average lung cancer mortality rate for the eastern region exceeds the rates for ONC by 13% and the rate for the US 17%. Of all the counties in ENC, Currituck County has the highest age-adjusted death rate for lung cancer at 96.1 deaths per 100,000, followed by Onslow (85.9), Washington (85.4), Beaufort (84.1), and Hertford County (82.7). Geographic variation in age-adjusted lung cancer mortality (see Map 4.2) follows a pattern similar to the unadjusted mortality rates.

Trends in Lung Cancer Mortality, 1979-1998:

The age-adjusted lung cancer mortality rate in ENC climbed steadily between the early 1980's and mid 1990's, but the rate appears to have leveled off recently. Rates for ONC and the US have followed the same pattern, although these rates have remained lower than the rate for ENC (see Figure 4.1). None of the counties in the east currently meet the *Healthy People 2010* objective for lung cancer mortality, and all but two will have to reduce their rate by more than 20% to reach the objective by the year 2010 (see Map 4.1).

Disparities in Lung Cancer Mortality, 1979-1998:

Figures 4.1 and 4.2 reveal variation in mortality rates by race and gender at the regional and national level. One of the most notable differences is the much higher death rates for men as compared to women. While the mortality gap between men and women has narrowed in recent years, the mortality rate for men in ENC is still nearly twice as high as the rate for women. There is also evidence of racial disparity in lung cancer mortality in ENC, but these racial disparities vary by gender (see Map 4.3). Since the mid-1980's, there has been growing racial disparity in lung cancer mortality among men. Currently, the age-adjusted mortality rate for non-white men in ENC is 12% higher than the rate for white males. In contrast, the mortality rate for non-white females in ENC has historically been lower than the rate for white females. The death rate for white females in ENC is now 64% greater than the non-white female rate. As Figure 4.2 demonstrates, regional racial disparities have grown substantially while national disparities have declined. Racial disparities among men are less marked in ENC than ONC, due to the higher death rates of white males in ENC as compared to those in ONC. Among women, greater disparity exists in ENC than in ONC. The differences in these regional rates are due to the higher rates for white females and lower rates for non-white females in ENC as compared to ONC. Ongoing public health efforts will be needed to slow the increasing mortality rate for women, to further reduce the death rate for males, and to eliminate racial disparities.

Table 4.1 Lung Cancer Mortality in Eastern North Carolina, 1994-1998

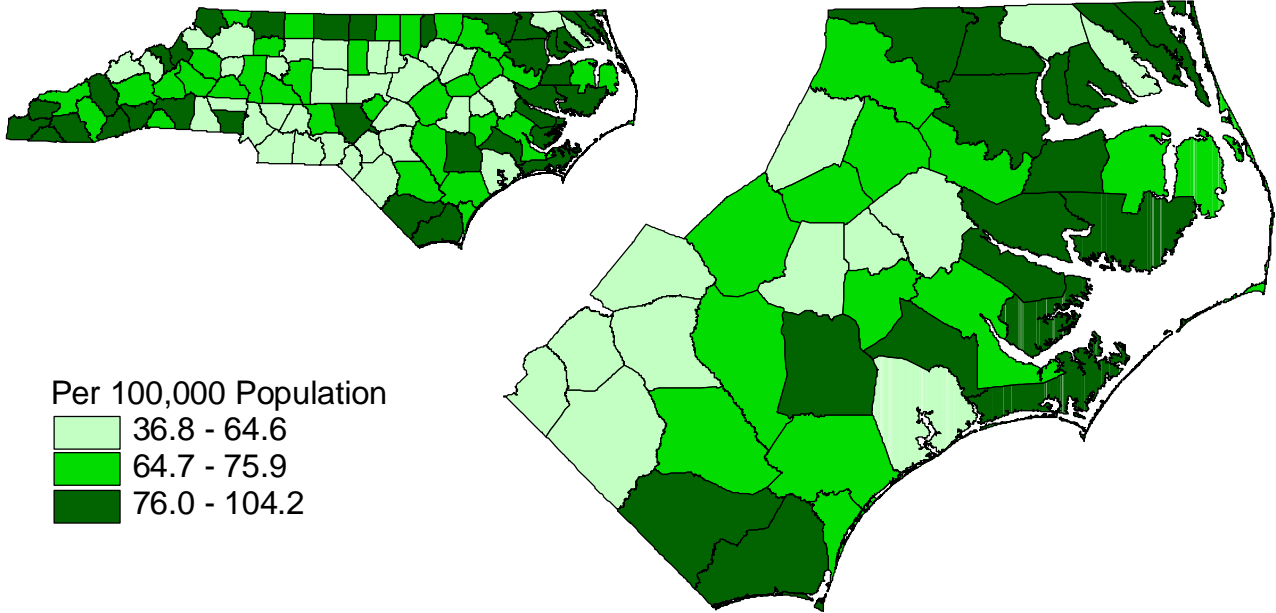
County	Totals			Race-Gender Specific Age-Adjusted Death Rates							
	Deaths	Rates		Non-White Males		Non-White Females		White Males		White Females	
		Crude	Adjusted	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate
Beaufort	216	99.8	84.1	38	159.2	17	41.0	105	133.5	56	51.0
Bertie	85	83.4	75.2	27	113.6	10	29.0	33	144.3	15	48.5
Bladen	99	65.9	57.6	33	136.4	7	20.2	42	93.8	17	27.5
Brunswick	266	84.6	66.1	19	93.0	9	32.8	148	89.2	90	49.2
Camden	30	95.3	82.5	6	156.7	0	0.0	14	109.6	10	63.7
Carteret	252	86.5	72.7	7	129.6	7	57.2	154	106.9	84	46.7
Chowan	66	93.4	70.7	12	118.1	9	52.4	31	107.9	14	37.1
Columbus	199	77.0	68.9	36	116.1	14	29.8	103	128.3	46	37.0
Craven	282	64.8	67.2	38	113.7	18	34.5	131	91.0	95	52.3
Cumberland	721	49.1	76.4	136	119.3	56	32.2	333	126.3	196	52.4
Currituck	81	99.9	96.1	1	64.6	1	30.5	49	139.2	30	73.3
Dare	90	67.8	70.0	5	343.8	1	28.7	44	76.6	40	59.3
Duplin	165	76.0	69.0	35	135.5	14	32.1	86	124.9	30	30.1
Edgecombe	182	65.2	66.2	62	132.0	18	21.0	65	114.8	37	45.7
Gates	26	52.8	50.6	9	121.8	1	10.3	10	70.7	6	30.7
Greene	53	61.6	58.3	16	135.3	3	15.7	26	114.9	8	21.3
Halifax	205	72.7	66.7	57	110.5	22	27.2	71	96.2	55	53.8
Harnett	246	62.1	66.0	31	119.6	8	20.1	146	119.1	61	34.7
Hertford	103	93.1	82.7	41	168.8	15	38.6	32	128.1	15	43.4
Hoke	61	43.4	54.5	10	49.3	6	18.9	23	97.3	22	67.4
Hyde	21	79.8	64.8	3	67.2	0	0.0	11	116.2	7	54.0
Johnston	351	70.7	71.3	38	134.6	12	26.3	215	130.0	86	35.6
Jones	43	93.5	79.6	10	129.3	4	32.1	23	158.5	6	29.3
Lenoir	213	72.2	63.7	43	110.8	16	23.4	100	105.1	54	41.5
Martin	91	70.7	61.8	30	132.9	6	17.6	37	105.8	18	34.9
Nash	258	60.2	60.2	45	110.0	14	23.7	130	96.8	69	36.7
New Hanover	465	65.1	62.6	53	116.6	19	25.6	238	93.1	155	44.1
Northampton	84	80.9	62.0	45	168.0	6	15.5	21	71.7	12	31.8
Onslow	299	40.4	85.9	31	141.4	13	33.6	161	133.2	94	59.3
Pamlico	47	78.8	57.7	10	150.3	4	45.2	19	64.2	14	37.3
Pasquotank	104	61.2	58.2	24	111.6	10	30.2	48	100.1	22	31.4
Pender	119	66.2	57.3	18	95.0	9	31.2	65	91.9	27	32.4
Perquimans	56	104.0	74.7	13	171.1	0	0.0	28	108.9	15	53.9
Pitt	309	51.5	64.8	78	144.2	14	15.8	144	111.3	73	38.0
Robeson	348	62.3	71.1	124	125.5	35	22.3	111	122.1	78	58.2
Sampson	183	70.9	62.3	44	118.0	6	11.5	107	126.0	26	23.0
Scotland	101	57.9	62.9	21	101.6	12	33.7	41	104.4	27	45.0
Tyrrell	14	75.5	59.9	4	119.9	0	0.0	7	96.8	3	43.4
Washington	66	97.8	85.4	17	145.6	5	29.9	23	112.8	21	72.1
Wayne	334	59.7	66.6	62	116.4	33	36.3	160	108.1	79	39.6
Wilson	232	67.9	65.5	50	126.2	17	26.3	103	110.9	62	42.5
ENC 29	4,007	66.5	68.7	819	128.9	278	27.3	1,866	107.8	1,044	44.2
ENC 41	7,166	64.3	68.1	1,382	123.1	471	26.5	3,438	109.5	1,875	43.5
ONC	15,621	61.5	60.5	1,553	113.9	697	33.0	8,578	92.1	4,793	37.5
PNC	11,414	58.3	61.4	1,415	116.4	614	32.4	5,949	93.2	3,436	38.5
WNC	4,207	72.0	58.6	138	93.2	83	37.5	2,629	90.3	1,357	35.4
NC	22,787	62.3	62.7	2,935	118.0	1,168	30.0	12,016	96.3	6,668	39.1
US, 1996	152,015	57.3	58.4	11,811	93.9	6,149	34.4	79,809	81.4	54,246	41.8

Lung Cancer ICD-9 Code: 162
 Age-Adjusted Rates Standardized to US 2000 SM
 Total Number of Deaths and Rates for Five-Year Period, except US

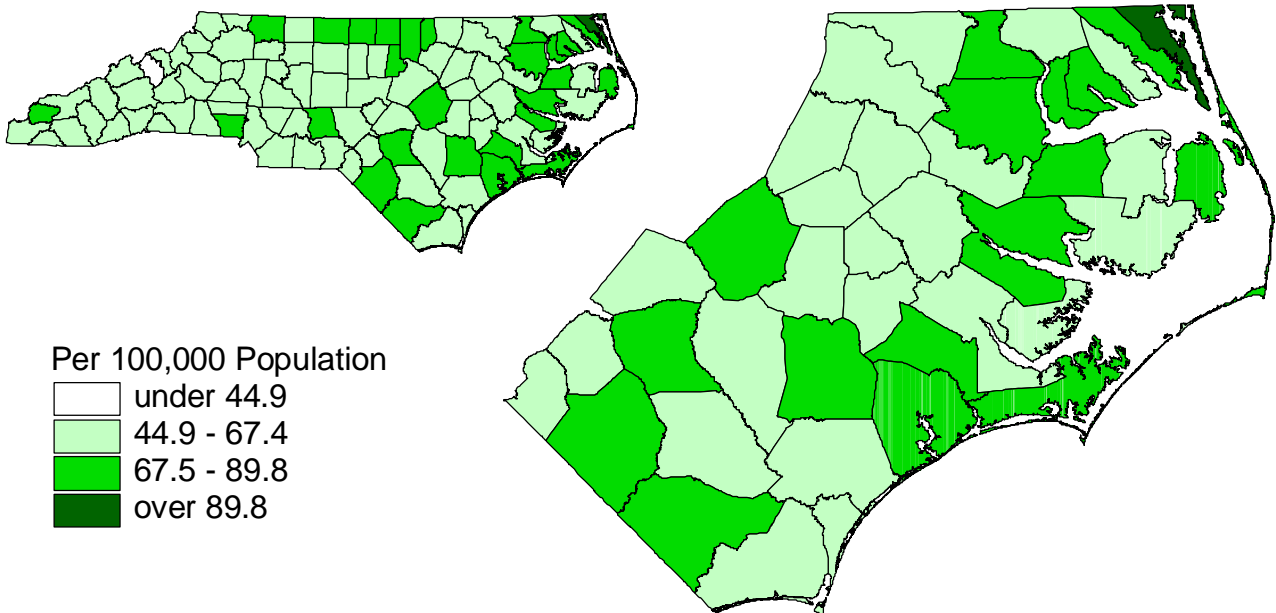
NC Data Source: NC State Center for Health Statistics
 US Data Source: National Center for Health Statistics

Map 4.2 Crude and Age-Adjusted Lung Cancer Mortality Rates: North Carolina and Eastern North Carolina, 1994-1998

Crude Rate



Age-Adjusted Rate

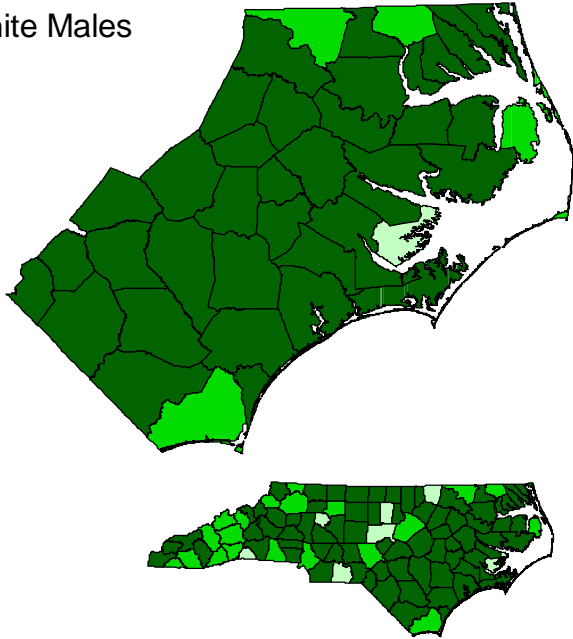


Lung Cancer ICD-9 Code: 162
Five-Year Average, Age-Adjusted Rates Standardized to US 2000 SM

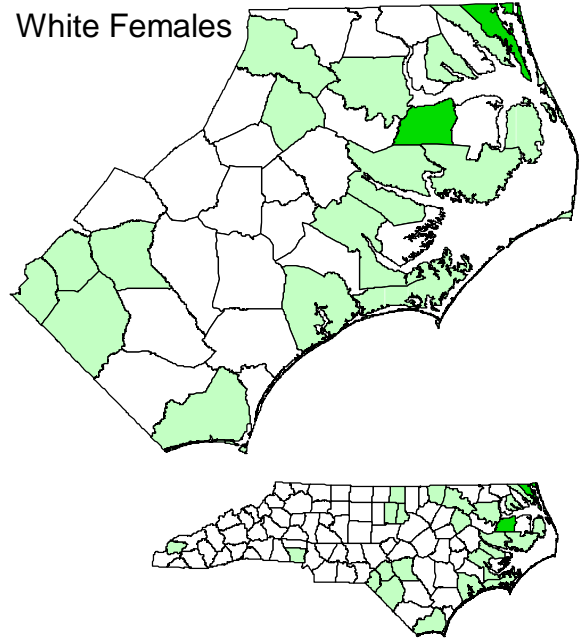
Data Source: NC State Center for Health Statistics

**Map 4.3 Race-Gender Specific, Age-Adjusted Lung Cancer Mortality Rates:
North Carolina and Eastern North Carolina, 1994-1998**

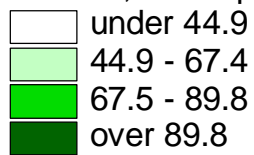
White Males



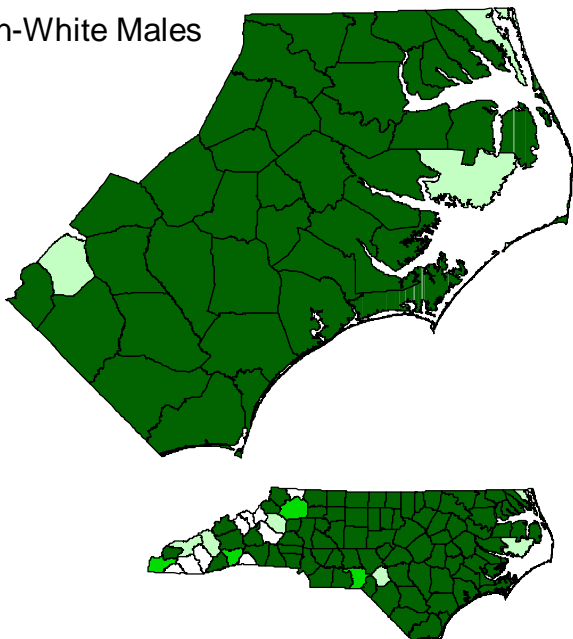
White Females



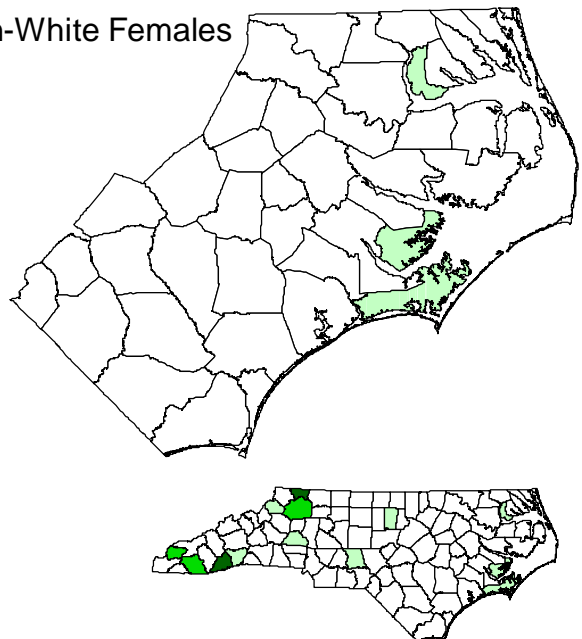
Per 100,000 Population



Non-White Males



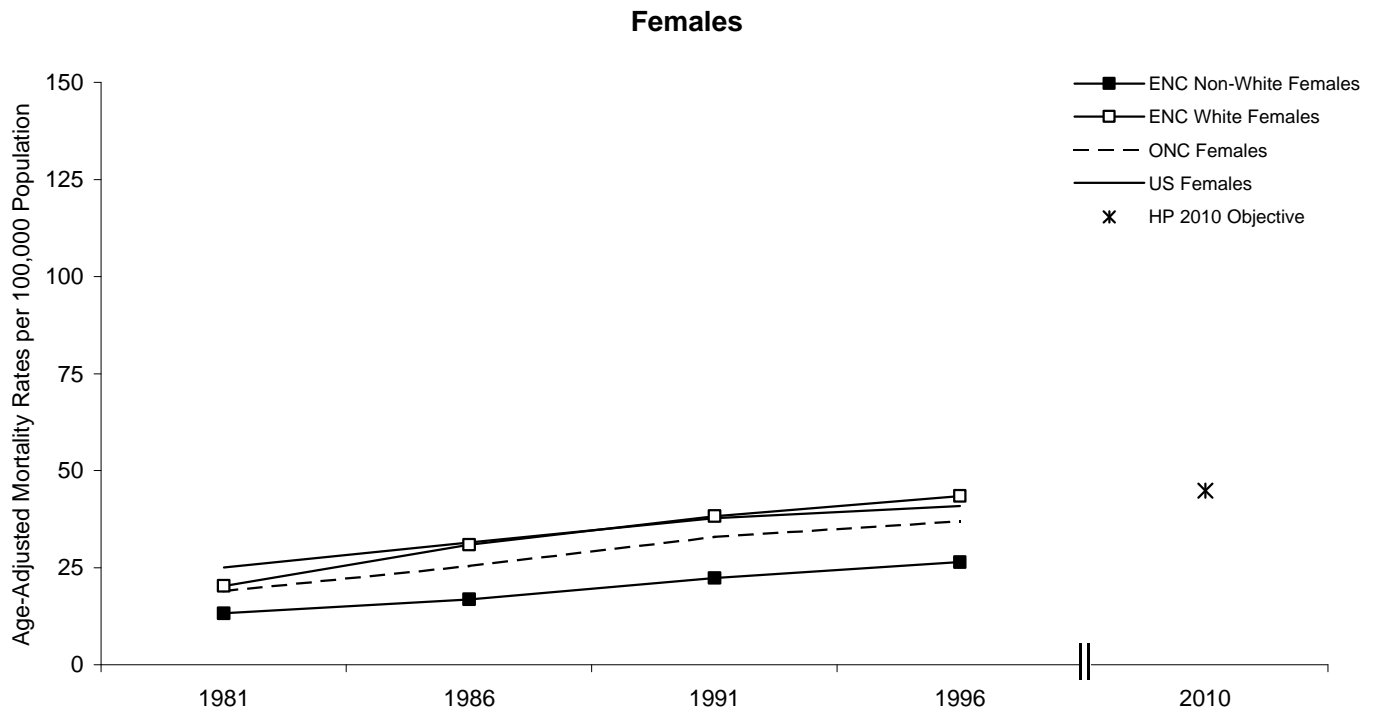
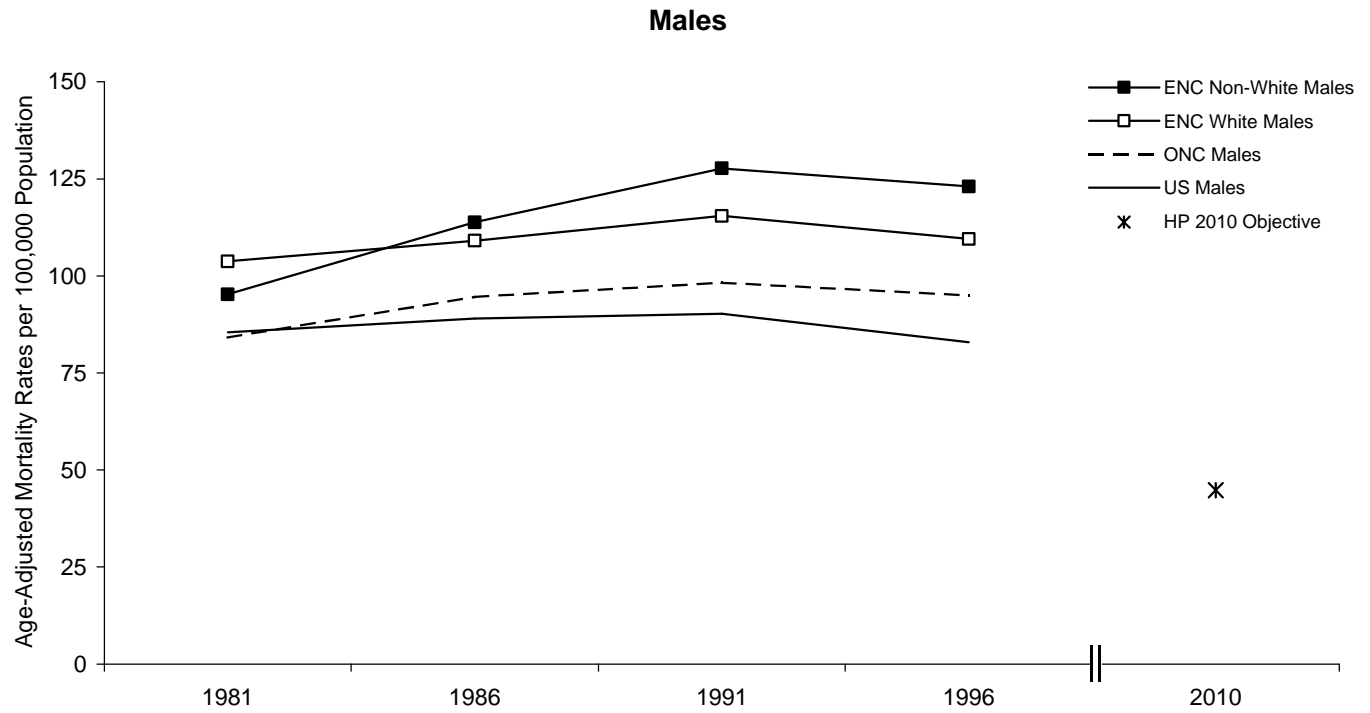
Non-White Females



Lung Cancer ICD-9 Code: 162
Five-Year Average, Age-Adjusted Rates Standardized to US 2000 SM

Data Source: NC State Center for Health Statistics

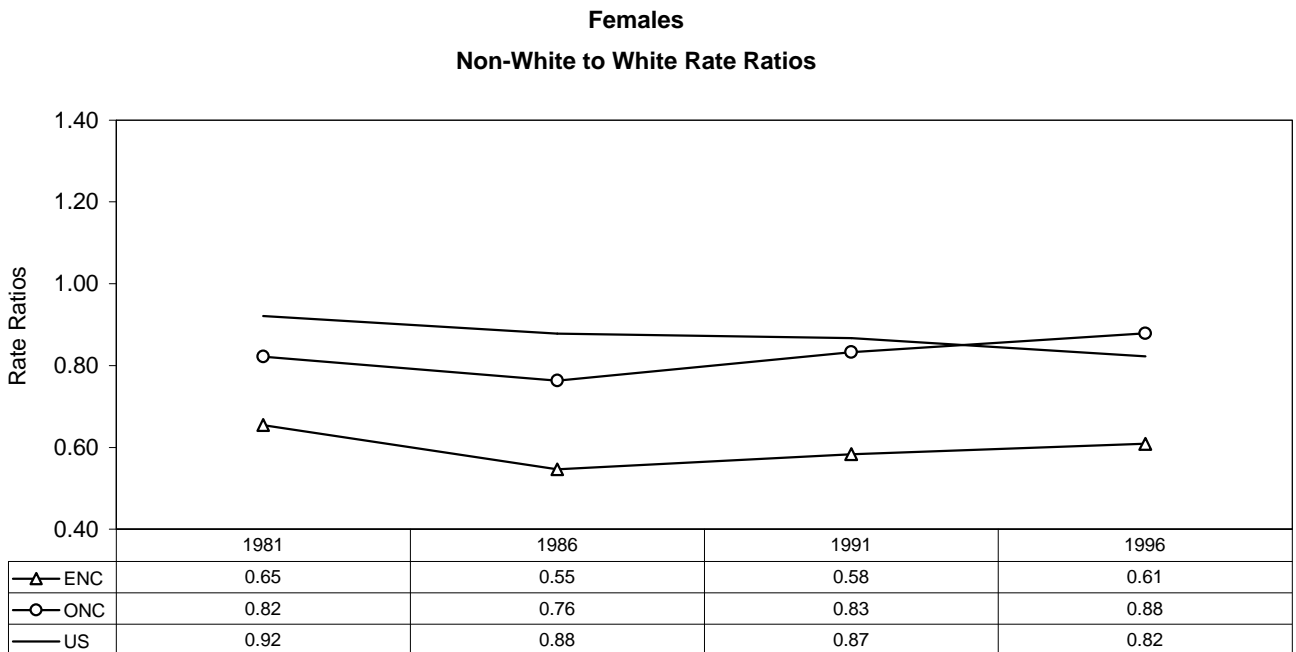
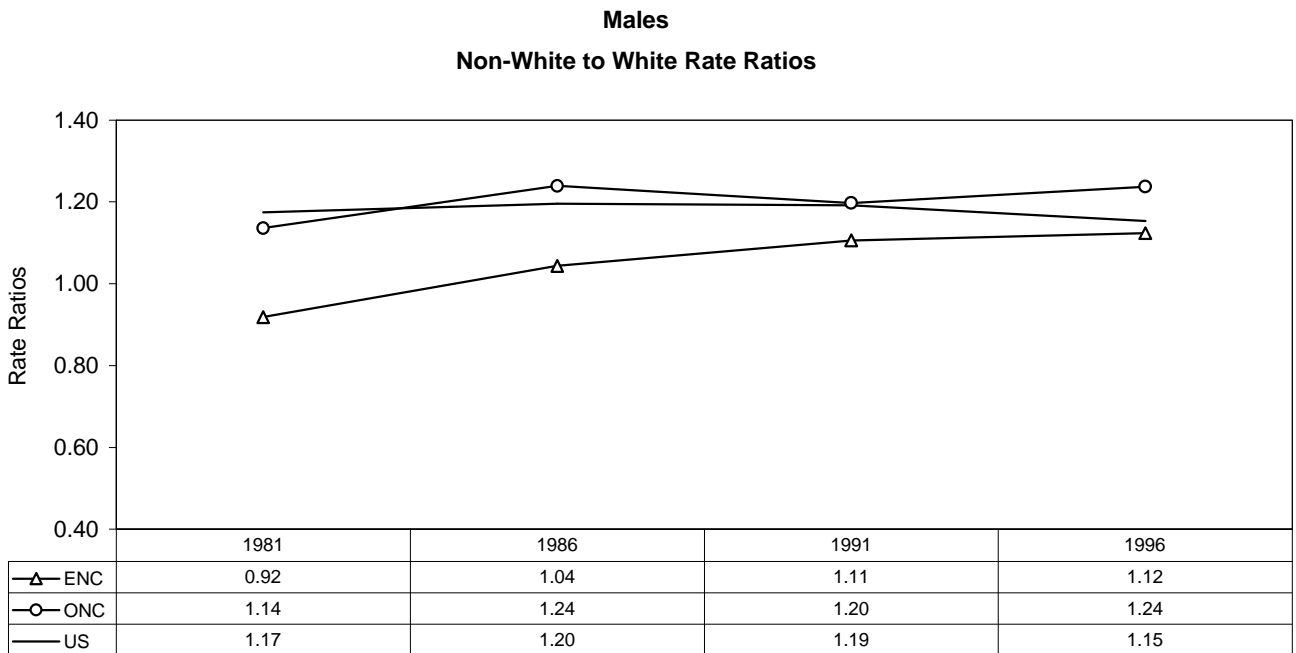
Figure 4.1 Age-Adjusted Lung Cancer Mortality Rates by Gender: Regional and National Trends, 1979-1998



Lung Cancer ICD-9 Code: 162
 Five-Year Average, Age-Adjusted Rates Standardized to US 2000 SM
 US Rates for Middle Year of Five Year Periods

NC Data Source: NC State Center for Health Statistics
 US Data Source: National Center for Health Statistics

Figure 4.2 Racial Disparities in Age-Adjusted Lung Cancer Mortality Rates by Gender: Regional and National Trends, 1979-1998



Lung Cancer ICD-9 Code: 162
Based on Five-Year Average, Age-Adjusted Rates Standardized to US 2000 SM
US Rates for Middle Year of Five Year Periods

NC Data Source: NC State Center for Health Statistics
US Data Source: National Center for Health Statistics

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American Cancer Society
(<http://www.cancer.org>)

American Lung Association
(<http://www.lungusa.org>)

CancerNet
National Cancer Institute
(<http://cancernet.nci.nih.gov>)

Centers for Disease Control and Prevention
(<http://www.cdc.gov>)

Center to Reduce Cancer Health Disparities
National Cancer Institute
(<http://crchd.nci.nih.gov>)

Healthy People 2010
(<http://web.health.gov/healthypeople>)

National Cancer Institute
(<http://www.nci.nih.gov>)

National Center for Health Statistics
(<http://www.cdc.gov/nchs>)

North Carolina Center for Health Statistics
(<http://www.schs.state.nc.us/SCHS>)

Appendix D

ICD-9 Code for Lung Cancer

162: Malignant neoplasm of trachea, bronchus, and lung