

CANCER

IN NORTH CAROLINA

2008 REPORT

CANCER AND INCOME WITH A SPECIAL REPORT
ON CANCER, INCOME, AND RACIAL DIFFERENCES

PURPOSE During 2007 cancer passed heart disease as the number one cause of death among adults in North Carolina. Also in 2007, a 62-year old retired teacher from Baltimore, Maryland, became the first baby boomer to apply for Social Security.

In terms of cancer, North Carolina is swimming against a demographic tide. As people move to the state for jobs and retirement and as baby boomers age, North Carolina is both growing and growing older. Because cancer is most often a disease ➡

of older persons, even as the rates of cancer deaths and new cases continue to improve, the number of cancer patients is estimated to double over the next several decades.

This report, the second in a series about cancer in North Carolina, examines the possible contributions of income to North Carolina's cancer burden. The report is in five sections: Deaths, New Cases, Early Stage at Diagnosis, Screening, and Prevention. Within each section, the report examines key indicators for four major cancers: breast (female); colon; lung-bronchus; and prostate. These cancers account for a substantial percentage of North Carolina's cancer deaths and new cases. They are also associated with screening and/or preventive behaviors that can reduce deaths and new cases.

DATA AND METHODS Data were obtained from the NC Central Cancer Registry (NC CCR), the NC Behavioral Risk Factor Surveillance System (NC BRFSS), the NC Center for Health Statistics, the 2000 U.S. Census and other sources. NC CCR data are from 2004; NC BRFSS data are from 2004 and 2005.

We compared key indicators related to the four cancer sites across three income levels (Low, Medium, and High). The measure of income level differed by indicator.

For deaths, new cases, and early stage at diagnosis, we used street addresses, TeleAtlas, and other data to associate approximately 90% of cancer deaths and new cases with US Census block groups. We ranked all identified block groups by median annual family income. Persons associated with block groups in the bottom third of the ranking (< \$31,501/yr) were assigned to the “Low Income” level; those in the top third (> \$40,909/yr) were assigned “High Income” level; and, those in between (\$31,501/yr - \$40,909/yr) were assigned to the “Middle Income” level.

For screening and prevention, we used participants’ self-reported annual family income from the NC BRFSS to assign one of three levels: “Low Income” (<\$25,000/yr), “Middle Income” (\$25,000/yr to \$49,999/yr), and “High Income” (> \$50,000/yr).

Color coding compares key indicator performance for the Low Income and High Income groups. Green indicates that the Low Income group's performance is "better" than that of the High Income group. Red means that the Low Income group's performance is "worse." Yellow indicates no significant difference.



The meaning of "better" differs by indicator. For deaths, new cases, and adult tobacco use, "better" means lower rates and proportions. For early stage at diagnosis, screening, and prevention indicators (others than adult smoking), "better" means higher rates and proportions.

FINDINGS Low income was consistently associated with lower use of screening and prevention behaviors that could reduce cancer burden. Tobacco use among low-income adults was almost twice that among high-income adults.

The association between income and rates of cancer death, new cases, and early stage disease is less consistent. Despite having 20% lower rates of new prostate cancers, men living in low-income areas had 33% higher prostate cancer death rates than did men living in high-income areas. Low-income women had 28% lower rates of new breast cancer cases, but they were less often diagnosed with early stage cancer than high-income women and had similar death rates. For colon and lung cancers, deaths, new cases, and diagnosis at an early stage did not differ significantly by income level.

Study methods may under- or overestimate income's contributions. Assigning income level based on residence may misclassify individuals and artificially narrow differences between high- and low-income persons. Because many low-income block groups were located in rural areas, issues such as access to health care could account for effects attributed to income. We were unable to consider treatment and health insurance status.

CONCLUSION Income contributes to North Carolina’s cancer burden, but the extent of that contribution is not yet clear. Efforts to reduce the cancer burden by increasing screening and promoting healthy behaviors should emphasize low income groups.

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Cancer Deaths Per 100,000

	Low	Middle	High
Breast (female)	26.3	26.6	25.8
Colon	18.0	19.7	17.2
Lung-Bronchus	59.5	61.9	55.7
Prostate	36.3	32.0	27.3

New Cancer Cases Per 100,000

	Low	Middle	High
Breast (female)	117.7	131.4	162.5
Colon	51.9	52.8	54.1
Lung-Bronchus	71.3	75.7	71.9
Prostate	135.5	132.2	166.6

Percent New Cases with Early Stage at Diagnosis

	Low	Middle	High
Breast (female)	64.5	69.9	71.4
Colon	32.3	31.4	30.5
Lung-Bronchus	17.2	17.1	19.8
Prostate	79.2	80.7	83.4

Data are from 2004. Rate calculations used the NCHS Population Files. Rates have been age-adjusted to the 2000 US Census. NC Central Cancer Registry, State Center for Health Statistics, April, 2008.

		
LOW INCOME BETTER THAN HIGH INCOME	NO SIGNIFICANT DIFFERENCE	LOW INCOME WORSE THAN HIGH INCOME

Cancer Screening

	Low	Middle	High
BREAST: Percentage of women ≥ 40 years reporting a mammogram in the past two years	69.2	77.9	85.5
COLON: Percentage of adults ≥ 50 years reporting a Home Blood Stool Test in past year or a sigmoidoscopy or colonoscopy in past five years	51.7	59.9	64.9
COLON: Percentage of adults ≥ 50 years reporting a Home Blood Stool Test in the past year	25.4	32.1	30.6
COLON: Percentage of adults ≥ 50 years reporting ever having a sigmoidoscopy or colonoscopy	47.6	57.2	61.5
PROSTATE: Percentage of men ≥ 40 years reporting ever having talked about prostate cancer screening with a health professional	61.0	67.1	70.8
PROSTATE: Percentage of men ≥ 40 years reporting ever having a PSA test	61.4	63.6	67.0

Cancer Prevention

	Low	Middle	High
TOBACCO USE: Percentage of adults ≥ 18 years who are current smokers	29.9	26.6	15.1
DIET: Percentage of adults ≥ 18 years consuming five or more fruits or vegetables each day	18.2	21.5	26.5
PHYSICAL ACTIVITY: Percentage of adults ≥ 18 years engaging in leisure time physical activity during the past month	60.9	76.5	86.1
PHYSICAL ACTIVITY: Percentage of adults ≥ 18 years engaging in moderate or vigorous physical activity during the past month	33.4	44.6	49.1
WEIGHT: Percentage of adults ≥ 18 years who have healthy weight-body mass index < 25.0	35.8	32.9	35.3

Screening data are from 2004; Prevention data are from 2005. Behavioral Risk Factor Surveillance System, State Center for Health Statistics, April, 2008.



CANCER, INCOME, AND RACIAL DIFFERENCES

SPECIAL REPORT

2008 REPORT

PURPOSE This special report presents key cancer indicators by two income levels (low, high) and then within each income level compares rates/proportions for NC African-Americans to those for NC Whites. Color coding indicates the relative standing for African-Americans: Green indicates that African-Americans are doing “better” than Whites; Red indicates that African Americans are doing “worse;” and Yellow indicates no significant difference between the groups. The meaning of “better” differs by indicator. For deaths, new cases, and adult tobacco use, “better” means lower rates and proportions. For early stage at diagnosis, screening, and prevention (other than adult smoking), “better” means higher rates and proportions.



Income levels are defined in the same way and data were obtained from the same sources as in the overall report.

FINDINGS Regardless of income, African-Americans in North Carolina generally shouldered a disproportionate share of the state’s cancer burden as measured by rates of deaths, new cases, and early-stage disease for breast, colon, and prostate cancers. For both African-Americans and Whites, screening and prevention increased with income. Within income groups, African-Americans and Whites were more often similar in screening behavior than they were different. For prevention behaviors, African-Americans and Whites were more often different than similar, with African-Americans having lower rates of preventive behaviors.

CONCLUSION Income and unmeasured factors associated with race contribute to the racial differences in the cancer burden. Efforts to promote prevention and screening behaviors should consider cultural factors as well as income. ■

Cancer Deaths Per 100,000

	Low Income		High Income	
	African-American	White	African-American	White
Breast (female)	33.9	21.4	35.2	24.8
Colon	24.2	14.9	22.7	16.5
Lung-Bronchus	57.6	60.0	63.1	54.9
Prostate	61.5	25.9	65.5	24.3

New Cancer Cases Per 100,000

	Low Income		High Income	
	African-American	White	African-American	White
Breast (female)	117.1	118.3	174.6	160.4
Colon	59.0	48.3	76.7	51.9
Lung-Bronchus	66.2	73.2	64.2	72.5
Prostate	205.0	103.5	306.6	155.1

Percent New Cases Diagnosed at an Early Stage

	Low Income		High Income	
	African-American	White	African-American	White
Breast (female)	59.9	67.7	61.2	72.7
Colon	-	-	-	-
Lung-Bronchus	-	-	-	-
Prostate	78.1	80.2	77.8	84.4

Data are from 2004. Rate calculations used the NCHS Population Files. Rates have been age-adjusted to the 2000 US Census. Blank cells indicate that there were too few cancers to provide stable estimates. NC Central Cancer Registry, State Center for Health Statistics, April, 2008.



Cancer Screening

	Low Income		High Income	
	African-American	White	African-American	White
BREAST: Percentage of women ≥ 40 years reporting a mammogram in the past two years	73.1	68.6	81.4	86.3
CERVICAL: Percentage of women ≥ 18 years reporting a PAP smear in the past three years	49.7	53.8	68.1	65.2
COLON-RECTUM: Percentage of adults ≥ 50 years reporting a Home Blood Stool Test in past year or a sigmoidoscopy or colonoscopy in past five years	25.4	26.2	31.1	30.9
COLON-RECTUM: Percentage of adults ≥ 50 years reporting a Home Blood Stool Test in the past year	42.0	50.8	64.3	61.5
COLON-RECTUM: Percentage of adults ≥ 50 years who report ever having a sigmoidoscopy or colonoscopy	60.1	68.3	72.1	71.4
PROSTATE: Percentage of men ≥ 40 years reporting ever having talked about prostate cancer screening with a health professional	58.5	71.1	64.9	67.6

Cancer Prevention

	Low Income		High Income	
	African-American	White	African-American	White
TOBACCO USE: Percentage of adults ≥ 18 years who are current smokers	27.2	32.6	12.9	16.2
DIET: Percentage of adults ≥ 18 years consuming five or more fruits or vegetables each day	18.2	18.7	18.1	27.3
PHYSICAL ACTIVITY: Percentage of adults ≥ 18 years engaging in leisure time physical activity during the past month	57.4	65.2	76.9	87.4
PHYSICAL ACTIVITY: Percentage of adults ≥ 18 years engaging in moderate or vigorous physical activity during the past month	27.1	40.2	39.9	49.9
WEIGHT: Percentage of adults ≥ 18 years who have healthy weight-body mass index < 25.0	27.0	38.3	19.2	36.8

Screening data are from 2004; Prevention data are from 2005. Behavioral Risk Factor Surveillance System, State Center for Health Statistics, April, 2008.

