

# **Cancer Incidence and Mortality in Delaware**

**Prepared by Delaware's Division of Public Health**

**June 2009**



***DELAWARE HEALTH  
AND SOCIAL SERVICES***  

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*Division of Public Health*



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## **1. INTRODUCTION**

### **1.1. DELAWARE CANCER REGISTRY**

The Delaware Cancer Registry (DCR) serves as the state's central cancer information center. The DCR is part of the Health Information & Science section of Delaware's Division of Public Health. The DCR ensures accurate, timely and routine surveillance of cancer and certain benign tumors.

The DCR was founded in 1972 and legally established in 1980 under the Delaware Cancer Control Act. The act stipulated that all hospitals, clinical laboratories and cancer treatment centers in the state report all new cancer cases to the DCR. In 1996, the Delaware Cancer Control Act was amended to require any health care practitioner who diagnoses or provides treatment to report cancer cases to the DCR. Further enhancements of the Delaware Cancer Control Act took effect in 2002 with the passage of Senate Bill 372. Senate Bill 372 required physicians to provide additional information to the DCR, including patients' duration of residence in Delaware and their occupational history. Senate Bill 372 also extended the reporting deadline to 180 days from initial diagnosis or treatment. Today, Delaware is one of 45 states whose cancer registry is supported by the National Program of Cancer Registries (NPCR) of the Centers for Disease Control and Prevention.

#### **1.1.1. Reporting Facilities**

A total of 33 facilities submit reports to the DCR; these facilities include all hospitals in Delaware, 10 diagnostic laboratories, 15 free-standing ambulatory surgery centers, and hundreds of physician offices. Additionally, the DCR has established reciprocal data exchange agreements with Alaska, Florida, Maryland, New Jersey, Pennsylvania, South Carolina, Texas, Washington, Wyoming and the District of Columbia. Interstate data exchange agreements assist in the identification of Delawareans whose cancers were diagnosed and/or treated in other states.

#### **1.1.2. Data Confidentiality**

The DCR maintains patient confidentiality using a combination of techniques. Cancer data are submitted from reporting facilities using computerized data encryption techniques. Published reports and data requests are limited to the presentation of aggregate data. DCR datasets are released only after the removal of all personal identifiers. Researchers who use DCR data must comply with the regulations stated in the formal data-use agreement or obtain clearance from Delaware's Human Subjects Review Board.

#### **1.1.3. Data Quality**

Quality control procedures are implemented internally at the DCR to verify the consistency of coded demographic and medical information. Data consistency standards are set by the North American Association of Central Cancer Registries (NAACCR). The DCR performs visual reviews of coded data items; electronic text submissions are also checked for consistency. The DCR conducts record consolidation using a computerized matching program to identify multiple reports on the same individual. This scenario often arises when a patient is diagnosed and treated in separate hospitals, and each hospital submits a cancer case abstract to the DCR.

#### **1.1.4. NAACCR Certification and NPCR Standard Status**

NAACCR certifies DCR data on an annual basis. Gold or silver certifications are awarded after an evaluation of data quality, completeness, and timeliness of reporting. DCR data met NAACCR standards for high quality for diagnosis years 1997, 1998, 1999, 2002, 2003 and 2004.

Additionally, NPCR provides an annual Standard Status Report to state cancer registries supported by the CDC. Delaware's data submission for diagnosis years 1997–2005 met the standard levels for quality, completeness and timeliness.

#### **1.1.5. Data Uses**

The Delaware Division of Public Health uses DCR data to support various programs and initiatives including the Screening for Life Program and the Delaware Cancer Treatment Program. The Division of Public Health also uses DCR data to investigate citizen inquiries and provide up-to-date cancer statistics to federal agencies, research institutions, and academic institutions. The Delaware Cancer Consortium and other advisory committees rely heavily on DCR data to monitor cancer trends across the state.

### **1.2. ORGANIZATION OF THIS REPORT**

This report focuses on all-site cancer, as well as female breast, cervical, colorectal, lung, and prostate cancers. Cancer incidence and mortality statistics for Delaware are broken down by sex, race and county. Race-specific data are limited to Caucasians and African-Americans; cancer rates for other racial groups (e.g., Hispanic) are not presented due to small sample size issues and the need to protect patient confidentiality. Relevant behavioral risk factor data and stage at diagnosis are also presented throughout the report. Appendices A-D contain supplemental methodological information related to the report. Appendix E summarizes behavioral risk factor data specific to Delawareans.

## **2. GUIDELINES FOR THE INTERPRETATION OF INCIDENCE AND MORTALITY RATES**

### **2.1. INCIDENCE AND MORTALITY RATES**

Rates are expressed per 100,000 individuals (i.e., cancer rates for Delaware are expressed per 100,000 Delawareans; cancer rates for the U.S. are expressed per 100,000 U.S. residents). Ninety-five-percent confidence intervals were computed for each cancer rate. Confidence intervals represent the range of values in which the cancer rate could reasonably fall. Confidence intervals were used to determine if the amount by which two cancer rates differ was statistically significant. If the confidence interval for one rate did not overlap with the confidence interval for another rate, the two rates were significantly different. When one rate is significantly different from another rate, the difference between the rates is larger than would be expected by chance alone. If the confidence interval for one rate overlapped with the confidence interval for another rate, the two rates were not significantly different. When rates are not significantly different from one another, it is commonly interpreted as “no meaningful difference” between rates.

### 3. All Cancer Sites

#### Data Highlights

##### **New All-Site Cancer Cases and Deaths** (Tables 3.1 and 3.4)

- A total of 22,023 cases of cancer were diagnosed in Delaware between 2001 and 2005: 11,644 cases (52.9 percent) were diagnosed among males and 10,379 cases (47.1 percent) were diagnosed among females.
- From 2001-05, 8,730 Delawareans died from cancer: 4,585 decedents (52.5 percent) were male and 4,145 decedents (47.5 percent) were female.

##### **Incidence and Mortality Rates** (Tables 3.2 and 3.5)

- Delaware's 2001-05 all-site cancer incidence rate of 504.2 per 100,000 was significantly higher than the U.S. rate of 471.1 per 100,000.
  - The 2001-05 Delaware all-site cancer incidence rate among males (600.7 per 100,000) was significantly higher than the rate among females (435.3 per 100,000); this difference persisted in all race and county groups.
  - Delaware's 2001-05 all-site incidence rate for African-Americans (533.8 per 100,000) was significantly higher than the rate for Caucasians (497.5 per 100,000).
    - Incidence rates were significantly higher for African-American males than for Caucasian males.
    - No significant differences were observed between the incidence rates for African-American and Caucasian females.
- Delaware's 2001-05 overall cancer mortality rate of 200.6 per 100,000 was significantly higher than the U.S. rate of 189.8 per 100,000.
  - In Delaware, the 2001-05 all-site cancer mortality rate for males (252.1 per 100,000) was significantly higher than that for females (170.7 per 100,000). This significant difference was observed among all race and county groups. At the national level, the all-site cancer mortality rate for males was also significantly greater than that of females (234.4 per 100,000 vs. 159.9 per 100,000, respectively).
  - In the U.S., Delaware, and Sussex County, 2001-05 all-site cancer mortality rates for African-Americans of either sex were significantly higher than mortality rates for their Caucasian counterparts.
    - The Kent County mortality rates for African-Americans of either sex were not significantly different from rates for their Caucasians counterparts.
    - The New Castle County mortality rate for African-American males was significantly higher than the rate for Caucasian males; mortality rates for African-American and Caucasian females in New Castle County were not significantly different.

##### **Trends in Cancer Incidence and Mortality Rates** (Figures 3.1–3.2 and 3.4–3.5)

- Delaware's all-site cancer incidence rate decreased 5.3 percent from 1991-95 to 2001-05. During the same time period, the U.S. all-site cancer incidence rate decreased 4.4 percent.
  - In Delaware, the percentage decrease in all-site cancer incidence rates was larger for African-Americans compared to Caucasians (13.8 percent vs. 4.1 percent, respectively) and for males compared to females (10.4 percent vs. 2.6 percent, respectively).

- Delaware's all-site cancer incidence rate for African-American males has seen the greatest ten-year reduction (22.6 percent) between 1991–95 and 2001-05.
- During the same 10-year period, all-site cancer incidence rates also fell among Caucasian males, Caucasian females, and African-American females by 8.4 percent, 1.8 percent and 6.2 percent, respectively.
- Historically, the all-site cancer mortality rate in Delaware has been higher than that of the U.S.
  - In Delaware, between 1991-95 and 2001-05, the all-site cancer mortality rate for males and females decreased 20.5 percent and 14.3 percent, respectively.
  - In the U.S., during the same time period, the all-site cancer mortality rate for males and females decreased 10.8 percent and 8.3 percent, respectively.
  - From 2001-05, African-American males in Delaware had the highest all-site cancer mortality rate. However, they are also the group with the largest percentage decrease in cancer mortality over the last 10 years; the all-site cancer mortality rate for African-American males in Delaware decreased 35.8 percent between 1991-95 and 2001-05.
  - From 1991-95 to 2001-05, Delaware's all-site cancer mortality rates decreased for Caucasian males, Caucasian females and African-American females by 17.6 percent, 12.9 percent and 21.3 percent, respectively.

**Age-Specific Incidence and Mortality** (Tables 3.3 and 3.6, Figures 3.3 and 3.6)

- For all sex and race groups, the risk of developing cancer increased with age, from birth through ages 75–84. Cancer risk then decreased slightly among those ages 85 and older.
- For all sex and race groups, all-site cancer mortality rates increased with age. The highest cancer mortality rate occurred among those ages 85 and older.

## All-Site Cancer Incidence

**Table 3.1. Total Number of Cancer Cases in Delaware and Counties, by Race and Sex: 2001-05**

REGION	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	22,023	11,644	10,379	18,247	9,649	8,628	3,291	1,757	1,534
<b>Kent</b>	3,422	1,842	1,580	2,779	1,473	1,306	542	314	228
<b>New Castle</b>	12,796	6,616	6,180	10,332	5,307	5,025	2,192	1,159	1,033
<b>Sussex</b>	5,805	3,186	2,619	5,136	2,869	2,297	547	284	273

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 3.2. Five-Year Average Age-Adjusted All-Site Cancer Incidence Rates\* in the U.S., Delaware and Counties, by Race and Sex: 2001-05**

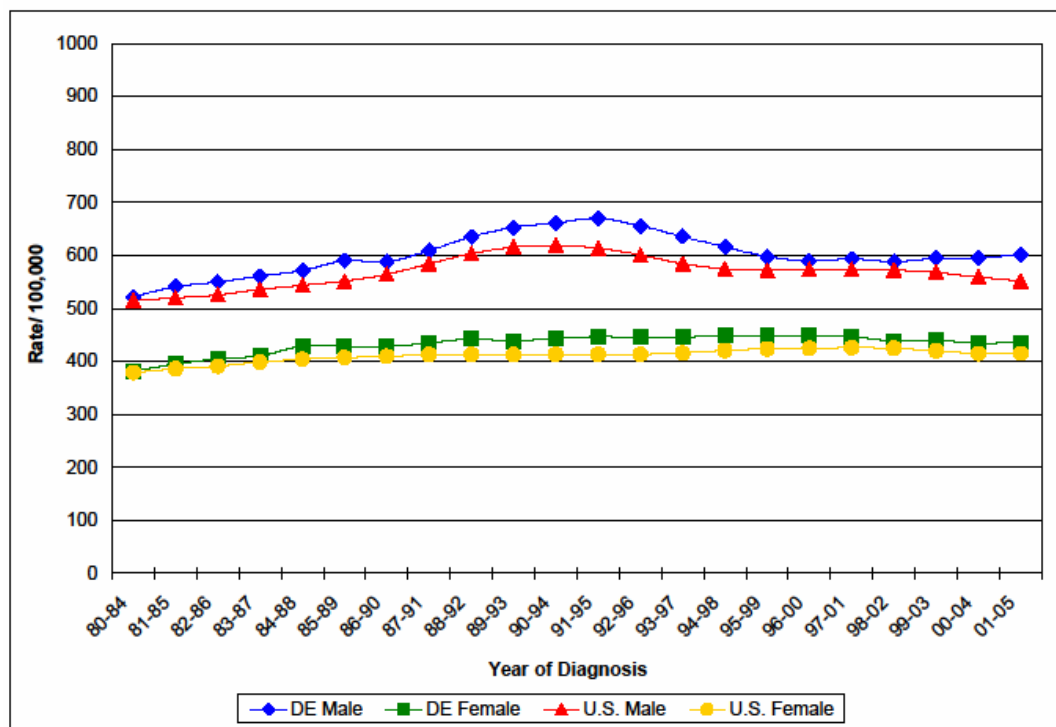
RACE AND REGION	SEX		
	All	Male	Female
<b>ALL RACES</b>			
United States	471.1 (469.9, 472.2)	551.9 (549.9, 553.8)	415.2 (413.7, 416.6)
Delaware	504.2 (497.5, 510.9)	600.7 (589.8, 611.6)	435.3 (426.9, 443.7)
Kent	518.7 (501.3, 536.1)	631.9 (603.0, 660.7)	436.7 (415.1, 458.2)
New Castle	506.3 (497.5, 515.1)	604.6 (590.1, 619.2)	439.6 (428.6, 450.5)
Sussex	493.1 (480.4, 505.8)	578.7 (558.6, 598.8)	426.8 (410.5, 443.2)
<b>CAUCASIAN</b>			
United States	481.1 (479.8, 482.4)	557.2 (555.1, 559.4)	429.1 (427.4, 430.8)
Delaware	497.5 (490.3, 504.7)	586.0 (574.4, 597.7)	436.4 (427.2, 445.7)
Kent	522.2 (502.7, 541.6)	623.5 (591.7, 655.3)	452.0 (427.5, 476.5)
New Castle	500.0 (490.3, 509.6)	586.5 (570.8, 602.3)	442.5 (430.2, 454.7)
Sussex	482.0 (468.8, 495.1)	571.1 (550.2, 592.0)	416.6 (399.6, 433.6)
<b>AFRICAN-AMERICAN</b>			
United States	505.1 (501.0, 509.3)	656.0 (648.4, 663.7)	403.6 (398.8, 408.4)
Delaware	533.8 (515.6, 552.1)	685.4 (653.4, 717.5)	428.5 (407.1, 450.0)
Kent	492.2 (450.8, 533.7)	630.9 (561.1, 700.7)	376.3 (327.5, 425.2)
New Castle	537.6 (515.1, 560.1)	703.0 (662.5, 743.4)	431.0 (404.7, 457.3)
Sussex	549.4 (503.7, 595.0)	676.7 (598.0, 755.4)	463.1 (408.2, 518.0)

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.



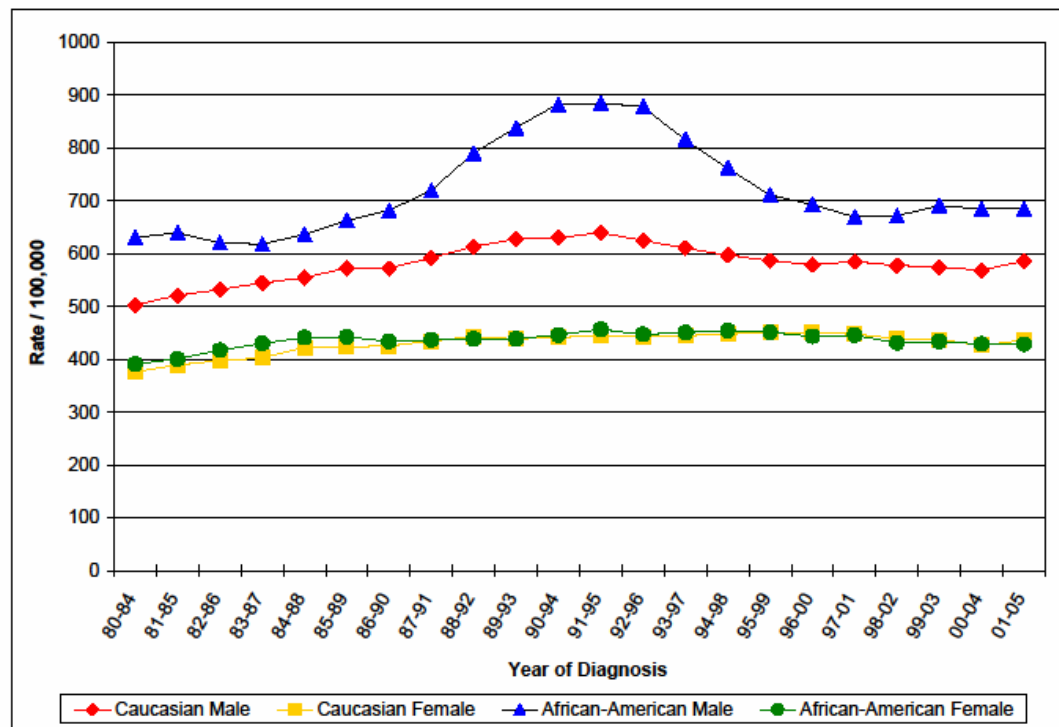
**Figure 3.1. Five-Year Average Age-Adjusted All-Site Cancer Incidence Rates\* in the U.S. and Delaware, by Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 3.2. Five-Year Average Age-Adjusted All-Site Cancer Incidence Rates\* in Delaware, by Race and Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

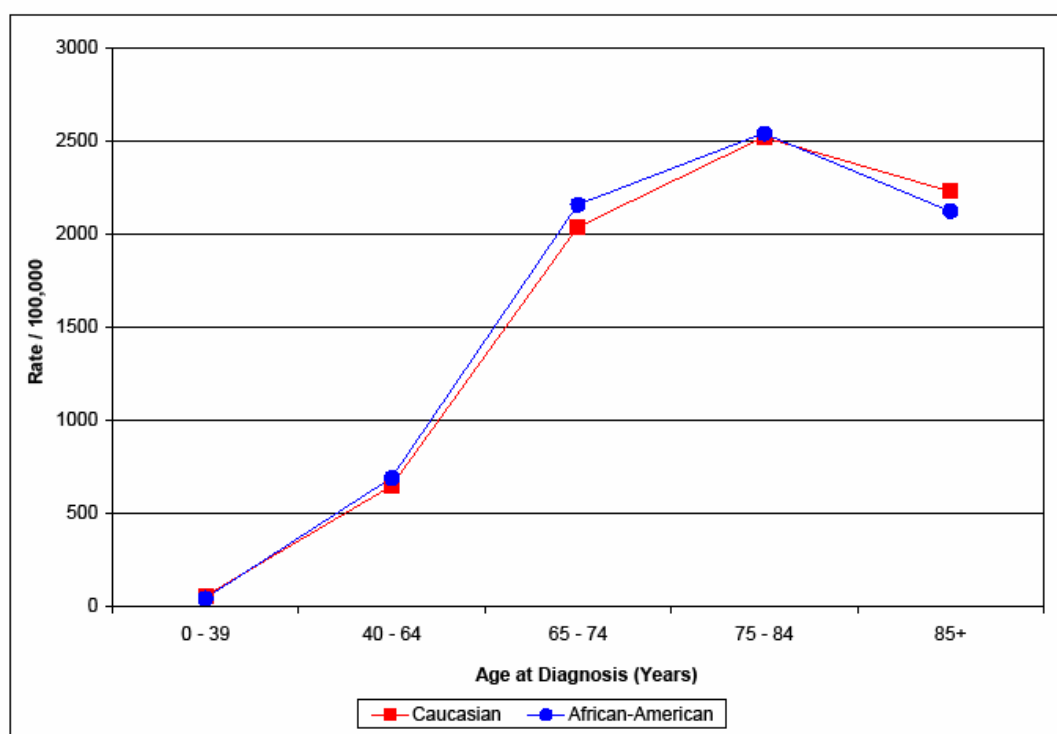
**Table 3.3. Age-Specific All-Site Cancer Incidence Rates\* in Delaware, by Race and Sex: 2001-05**

Age Group	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
0–39	50.2	39.0	61.5	53.3	42.2	64.6	40.6	29.2	51.6
40–64	650.6	684.5	619.1	645.4	663.7	627.8	689.1	802.3	593.9
65–74	2063.7	2682.8	1532.1	2037.0	2606.2	1540.7	2157.2	3054.2	1463.7
75–84	2537.5	3343.5	1983.2	2521.0	3334.2	1983.4	2540.8	3570.0	1921.7
85+	2237.8	3260.6	1814.8	2229.9	3251.1	1803.1	2123.4	3086.8	1777.5

\* = Rates are per 100,000 population.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 3.3. Age-Specific All-Site Cancer Incidence Rates in Delaware, by Race: 2001-05**



SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

### All-Site Cancer Mortality

**Table 3.4. Total Number of Cancer Deaths in Delaware and Counties, by Race and Sex: 2001-05**

REGION	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	8,730	4,585	4,145	7,332	3,855	3,477	1,334	695	639
<b>Kent</b>	1,385	752	633	1,133	614	519	239	131	108
<b>New Castle</b>	5,010	2,556	2,454	4,119	2,105	2,014	854	429	425
<b>Sussex</b>	2,335	1,277	1,058	2,080	1,136	944	241	135	106

SOURCE: Delaware Health Statistics Center, 2007.

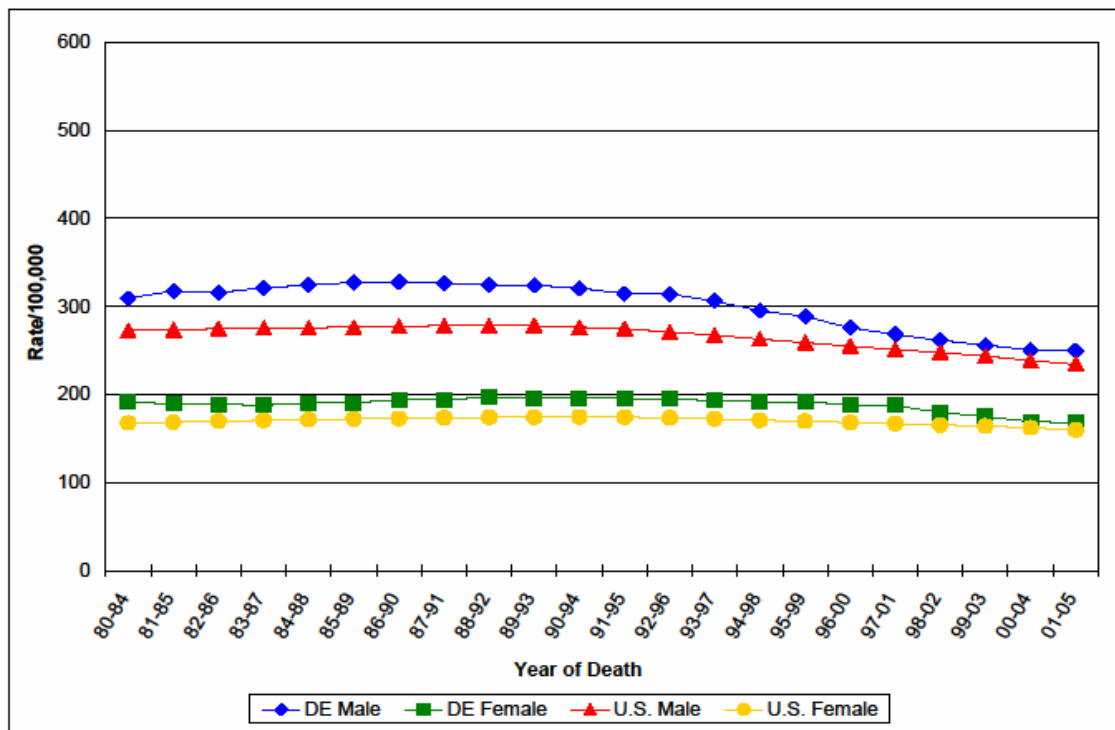
**Table 3.5. Five-Year Average Age-Adjusted All-Site Cancer Mortality Rates\* in the U.S., Delaware and Counties, by Race and Sex: 2001-05**

RACE AND REGION	SEX		
	All	Male	Female
<b>ALL RACES</b>			
United States	189.8 (189.5, 190.0)	234.4 (234.0, 234.7)	159.9 (159.6, 160.2)
Delaware	200.6 (196.4, 204.9)	250.1 (242.8, 257.6)	167.6 (162.6, 172.9)
Kent	214.4 (203.2, 226.0)	276.8 (256.6, 298.0)	173.3 (160.1, 187.4)
New Castle	201.0 (195.5, 206.7)	250.1 (240.3, 260.2)	170.1 (163.4, 177.0)
Sussex	193.7 (185.8, 201.9)	238.6 (225.3, 252.5)	160.1 (150.4, 170.4)
<b>CAUCASIAN</b>			
United States	188.0 (187.7, 188.2)	230.7 (230.3, 231.1)	159.2 (158.9, 159.5)
Delaware	196.8 (192.3, 201.4)	244.0 (236.1, 251.9)	165.3 (169.8, 171.0)
Kent	213.9 (201.6, 226.8)	276.7 (254.5, 300.2)	174.4 (159.6, 190.1)
New Castle	197.1 (191.1, 203.2)	244.0 (233.5, 254.7)	167.1 (159.8, 174.6)
Sussex	189.7 (181.4, 198.2)	232.0 (218.2, 246.4)	158.2 (148.0, 169.0)
<b>AFRICAN-AMERICAN</b>			
United States	234.0 (233.2, 234.8)	313.0 (311.4, 314.6)	186.7 (185.7, 187.6)
Delaware	236.0 (223.1, 249.3)	306.6 (282.5, 332.0)	191.7 (176.9, 207.3)
Kent	235.5 (205.9, 267.9)	287.5 (238.0, 343.6)	194.2 (158.9, 234.6)
New Castle	231.9 (216.0, 248.6)	305.9 (274.4, 339.6)	192.1 (173.9, 211.6)
Sussex	245.4 (215.3, 278.4)	334.6 (279.6, 396.5)	183.3 (150.0, 221.6)

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

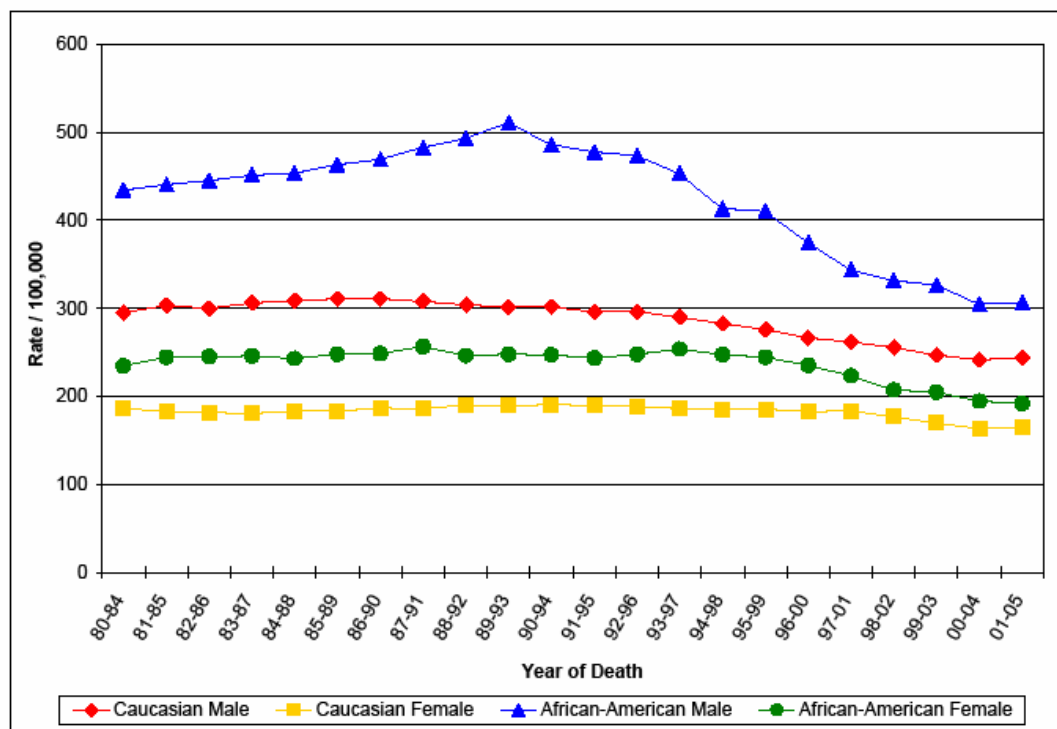
**Figure 3.4. Five-Year Average Age-Adjusted All-Site Cancer Mortality Rates\* in the U.S. and Delaware, by Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

**Figure 3.5. Five-Year Average Age-Adjusted All-Site Cancer Mortality Rates\* in Delaware, by Race and Sex: 1980–2005**



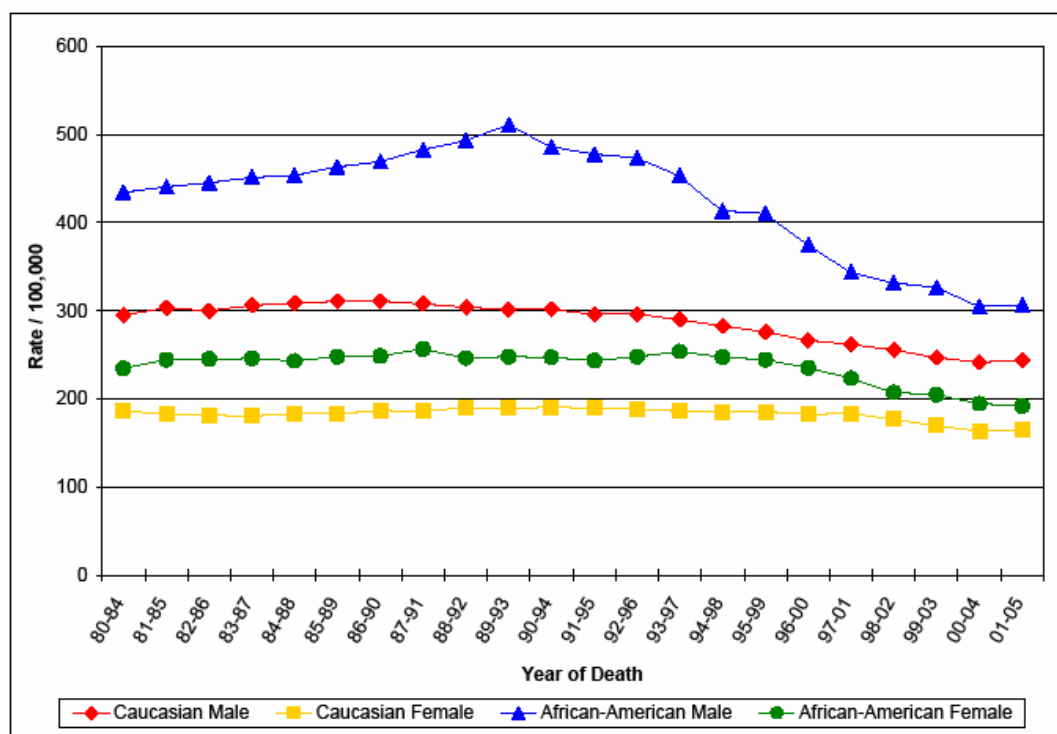
\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
SOURCE: Delaware Health Statistics Center, 2007.

**Table 3.6. Age-Specific All-Site Cancer Mortality Rates\* in Delaware, by Race and Sex: 2001-05**

Age Group	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
0–39	7.3	6.3	8.3	7.5	6.0	8.9	7.6	7.9	7.3
40–64	183.5	198.3	169.7	181.3	193.1	170.0	212.4	247.7	182.7
65–74	797.8	984.6	637.3	778.4	964.2	616.4	974.4	1,191.9	806.3
75–84	1,409.0	1,831.5	1,118.5	1,396.0	1,793.6	1,118.6	1,598.1	2,268.2	1,195.0
85+	1,767.3	2,652.7	1,401.1	1,772.6	2,657.8	1,402.7	1,738.7	2,620.9	1,422.0

\* = Rates are per 100,000 population.  
SOURCE: Delaware Health Statistics Center, 2007.

**Figure 3.6. Age-Specific All-Site Cancer Mortality Rates in Delaware, by Race: 2001-05**



SOURCE: Delaware Health Statistics Center, 2007.

## 4. Female Breast Cancer

### Risk Factors and Early Detection

#### Risk Factors for Female Breast Cancer

- Increasing age
- Mother, daughter and/or sister diagnosed with breast cancer
  - Women with a father or brother diagnosed with breast cancer also have an increased risk
- Inherited mutation in BRCA1 or BRCA2 genes, found most often in Jewish women of Eastern European origin
- Personal history of breast cancer, ovarian cancer, or benign breast disease
- Previous abnormal breast biopsy
- Race
  - Caucasian females are slightly more likely to develop breast cancer than African-American females. However, African-American females are more likely to be younger when diagnosed with breast cancer and to die from the disease.
- High-dose radiation therapy to the chest
- Early age at menarche and/or late age at menopause
- Shorter or longer than average menstrual cycles
- Obesity
- First childbirth after age 35
- Never giving birth
- Current or recent use of estrogen and progesterone hormone replacement therapy
- Alcohol use
  - Level of risk rises with the amount of alcohol consumed
- Breast tissue that appears dense on a mammogram

#### Possible Risk Factors for Female Breast Cancer

- Having taken diethylstilbestrol (DES) during pregnancy, or having a mother who took DES during pregnancy
- Mutations in the ATM, CHEK2, p53 or PTEN genes
- High-fat diets that are low in fruit and vegetables
- Pesticide and other environmental estrogen exposures
- Cigarette smoking or exposure to secondhand smoke
- Night-shift work

#### Protective Factors

- Engaging in physical activity for 4 or more hours per week
- Multiple pregnancies
- Becoming pregnant at an early age



- Breastfeeding for at least several years

### Early Detection of Female Breast Cancer

Females at increased risk for breast cancer should talk with their doctors about the benefits and limitations of beginning mammograms when they are younger, having additional tests, or having more frequent exams.

Regular clinical breast exams and mammography can detect female breast cancer at an earlier stage, resulting in improved chances for survival. The American Cancer Society recommendations for appropriate breast cancer screening are age-specific, as follows:

Type of Exam	Recommended Frequency	
	<i>Ages 20–39</i>	<i>Ages 40 and Older</i>
Clinical breast exam	Every three years	Annual
Mammogram	Baseline by age 40	Annual

Recent data (2007) from the Behavioral Risk Factor Surveillance System (BRFSS) provides information on the pattern of breast cancer screening among Delawarean women:

- In 2007, 83.1 percent of Delaware women aged 40 and older reported having a mammogram within the previous two years. A comparison statistic is not available at the national level for 2007.
- In Delaware, the percentage of Caucasian and African-American women age 40 and older who reported having a mammogram in the past two years were not significantly different (82.6 percent vs. 87.4 percent, respectively).
- Delaware women earning over \$50,000 per year were significantly more likely to report having had a mammogram in the past two years compared to those earning less than \$50,000 per year (87.5 percent vs. 78.8 percent, respectively).
- Delaware females attending some college or with a college degree were significantly more likely to report having had a mammogram within the past two years compared to females with a high school diploma or less (86.3 percent vs. 78.5 percent, respectively).
- The percentage of women ages 40-64 who report having had a mammogram in the past two years was not significantly different from the percentage of women ages 65 and older who report doing the same (81.8 percent vs. 86.2 percent, respectively).

## Data Highlights

### New Breast Cancer Cases and Deaths (Tables 4.1 and 4.6)

- Breast cancer is the most frequently diagnosed cancer among females in Delaware and the U.S. From 2001-05, 2,955 new cases of breast cancer were diagnosed in Delaware, accounting for 28.5 percent of all new cancer cases diagnosed among females.
- From 2001-05, breast cancer was the second leading cause of cancer death among females. During this time, breast cancer accounted for 14.5 percent of cancer deaths among Delaware females.

### Incidence and Mortality Rates (Tables 4.2 and 4.7)

- Overall, the 2001-05 female breast cancer incidence rate for Delaware (125.6 per 100,000) was not significantly different from the U.S. rate (129.1 per 100,000).

- Delaware's breast cancer incidence rate for Caucasian females (125.0 per 100,000) was significantly lower than the U.S. rate (134.2 per 100,000).
- The breast cancer incidence rate for African-American women in Delaware (126.8 per 100,000) was not significantly different from the U.S. rate (117.7 per 100,000).
- At the national level, the 2001-05 breast cancer incidence rate for African-American women was significantly lower than the rate for Caucasian women. However, in Delaware, no significant differences were observed at the state- and county-levels when breast cancer incidence rates were examined by race.
- Delaware's 2001-05 breast cancer mortality rate was not significantly different from the U.S. breast cancer mortality rate.

#### **Trends in Cancer Incidence and Mortality Rates** (Figures 4.1–4.2 and 4.6–4.7)

- Delaware's female breast cancer incidence rate decreased 8.1 percent from 1991-95 to 2001-05. During this same time period, the U.S. breast cancer incidence rate decreased 1.8 percent.
  - From 1991-95 to 2001-05, Delaware's female breast cancer incidence rate decreased 9.8 percent among Caucasians but increased 3.6 percent among African-Americans.
- Historically, breast cancer mortality rates have been higher in Delaware than the U.S. However, based on data from 2001-05, the gap between state- and national-level rates has narrowed. From 1991-95 to 2001-05, Delaware's breast cancer mortality rate decreased 27.6 percent, while the U.S. rate fell 20.4 percent.
  - From 1991-95 to 2001-05, Delaware's breast cancer mortality rate decreased 29.6 percent among Caucasian women and 18.3 percent among African-American women.

#### **Age-Specific Incidence and Mortality Rates** (Tables 4.3 and 4.8, Figure 4.3)

- In Delaware and the U.S., the incidence of female breast cancer increases with age, from birth through ages 75–84. Breast cancer incidence rates then decline among women ages 85 and older.
- In Delaware and the U.S., female breast cancer mortality rates increase with age, with the oldest age group (women ages 85 years and older) having the highest mortality rate.

#### **Stage at Diagnosis of Female Breast Cancer** (Tables 4.4–4.5, Figures 4.4–4.5)

- From 2001-05, 63.8 percent, 29.6 percent and 3.8 percent of female breast cancer cases were diagnosed at the local, regional and distant stages, respectively. In the U.S., comparable percentages were 62.0 percent, 31.0 percent and 5.0 percent, respectively.
- From 2001-05, 986 cases of female breast cancer (33.4 percent of all breast cancers diagnosed during this time period) were late-stage diagnoses (i.e., either regional or distant cancer at the time of diagnosis). The percentage of late-stage breast cancer diagnoses was higher among African-American females (38.3 percent) compared to Caucasian females (32.5 percent).
- In Delaware, since 1980–84, the proportion of breast cancers diagnosed at the local stage has increased from 42.3 percent to 63.8 percent. Accordingly, during the same time period, the proportion of regional stage breast cancers decreased from 43.3 percent to 29.6 percent, and the proportion of distant stage breast cancers decreased from 6.1 percent to 3.8 percent.

## Female Breast Cancer Incidence

**Table 4.1. Number of Female Breast Cancer Cases in Delaware and Counties, by Race: 2001-05**

	<b>All Female</b>	<b>Caucasian Female</b>	<b>African-American Female</b>
<b>Delaware</b>	2,955	2,423	480
<b>Kent</b>	436	360	67
<b>New Castle</b>	1,795	1,427	339
<b>Sussex</b>	724	636	74

SOURCE: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

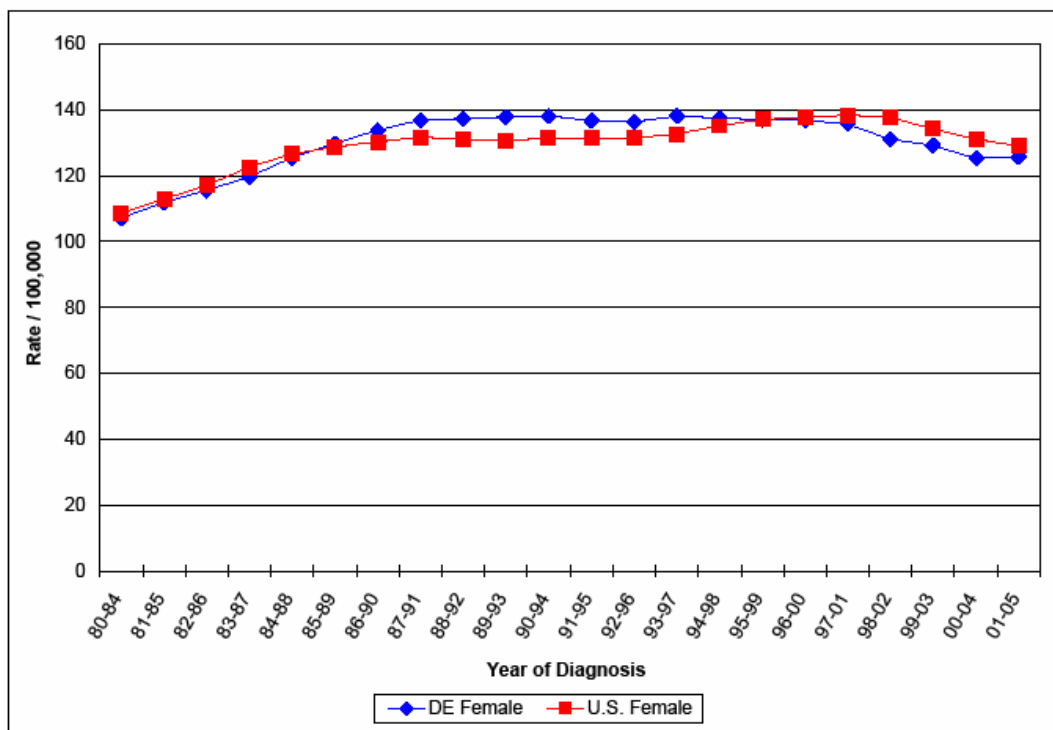
**Table 4.2. Five-Year Average Age-Adjusted Female Breast Cancer Incidence Rates\* in the U.S., Delaware and Counties, by Race: 2001-05**

	<b>All Female</b>	<b>Caucasian Female</b>	<b>African-American Female</b>
<b>United States</b>	129.1 (128.3, 130.0)	134.2 (133.3, 135.2)	117.7 (115.1, 120.2)
<b>Delaware</b>	125.6 (121.1, 130.1)	125.0 (120.0, 130.0)	126.8 (115.5, 138.2)
<b>Kent</b>	121.0 (109.7, 132.4)	125.7 (112.7, 138.7)	107.2 (83.1, 136.1)
<b>New Castle</b>	128.1 (122.2, 134.1)	127.6 (120.9, 134.2)	132.9 (118.7, 147.0)
<b>Sussex</b>	121.1 (112.2, 129.9)	117.0 (107.9, 126.1)	122.8 (96.5, 154.2)

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

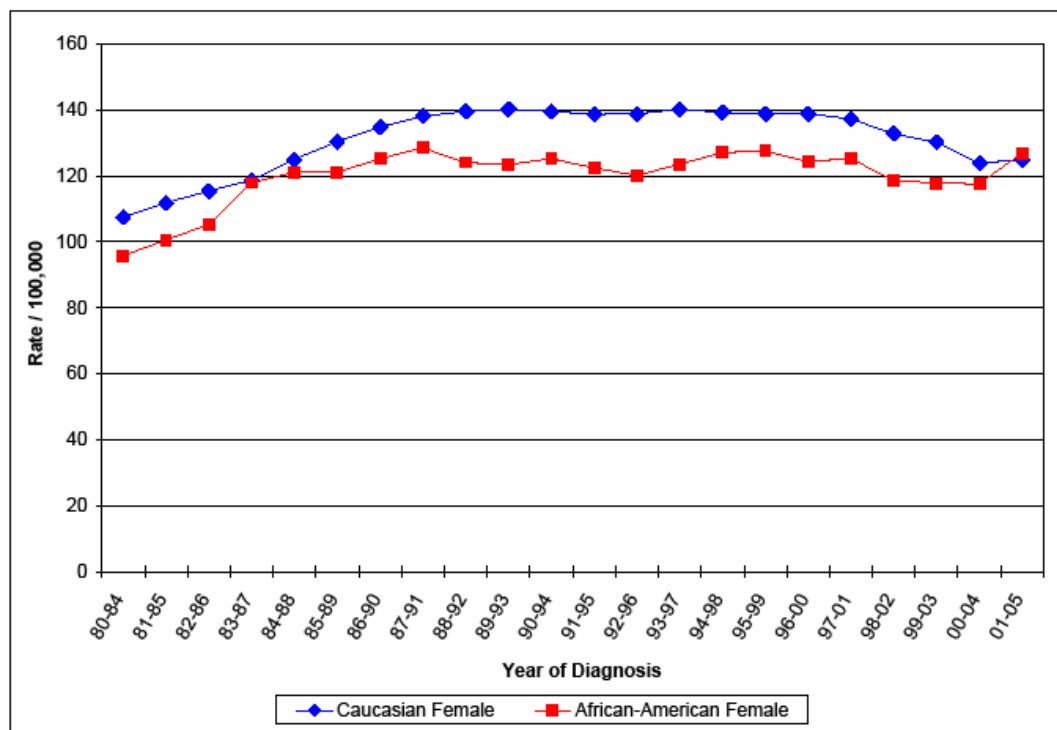
**Figure 4.1. Five-Year Average Age-Adjusted Female Breast Cancer Incidence Rates\* in the U.S. and Delaware: 1980–2005**



\* = Rates are per 100,000 and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 4.2. Five-Year Average Age-Adjusted Female Breast Cancer Incidence Rates\* in Delaware, by Race: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 4.3. Age-Specific Female Breast Cancer Incidence Rates\* in Delaware, by Race: 2001-05**

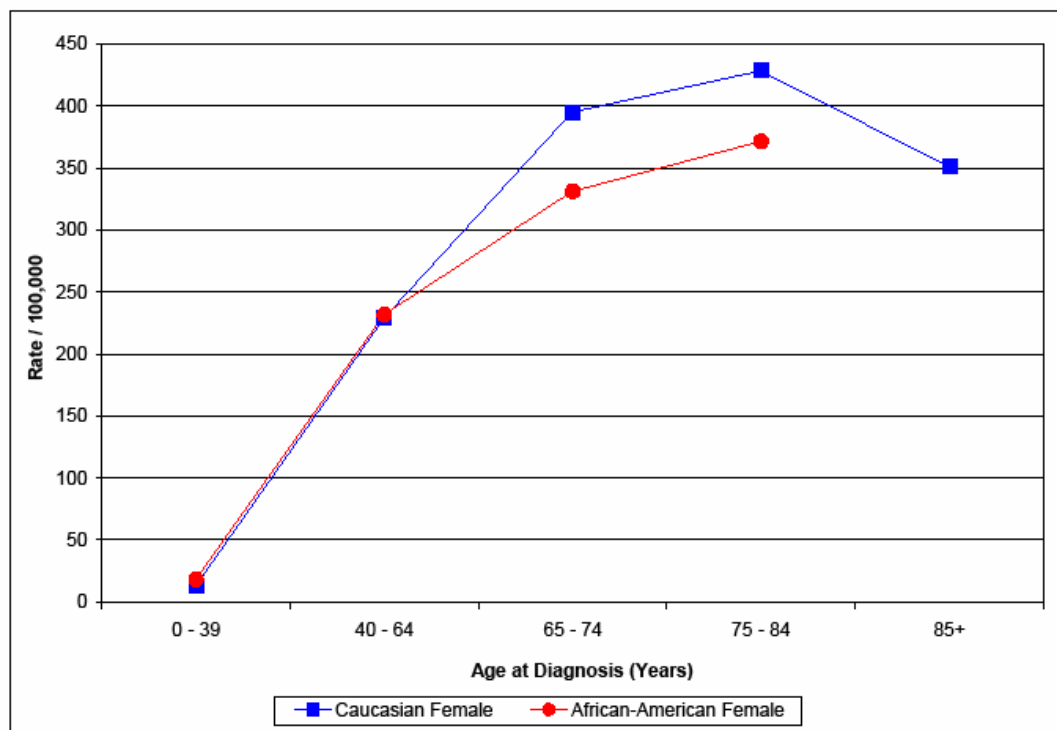
Age Group	All Female	Caucasian Female	African-American Female
0–39	14.1	12.9	18.2
40–64	227.9	228.9	231.7
65–74	384.3	395.0	331.1
75–84	423.6	428.4	371.4
85+	354.3	351.3	---

\* = Rates are per 100,000 population.

--- = Rate based on fewer than 25 cases.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 4.3. Age-Specific Female Breast Cancer Incidence Rates in Delaware, by Race: 2001-05**



NOTE: Rate for African-American females ages 85+ is not displayed because of patient confidentiality rules.  
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

### Female Breast Cancer by Stage at Diagnosis

**Table 4.4. Number of Female Breast Cancer Cases in Delaware, by Stage at Diagnosis and Race: 2001-05**

Stage at Diagnosis	All Female	Caucasian Female	African-American Female
Local	1,886	1,573	281
Regional	875	695	166
Distant	111	93	18
Unknown	83	62	15
<b>Total</b>	<b>2,955</b>	<b>2,423</b>	<b>480</b>

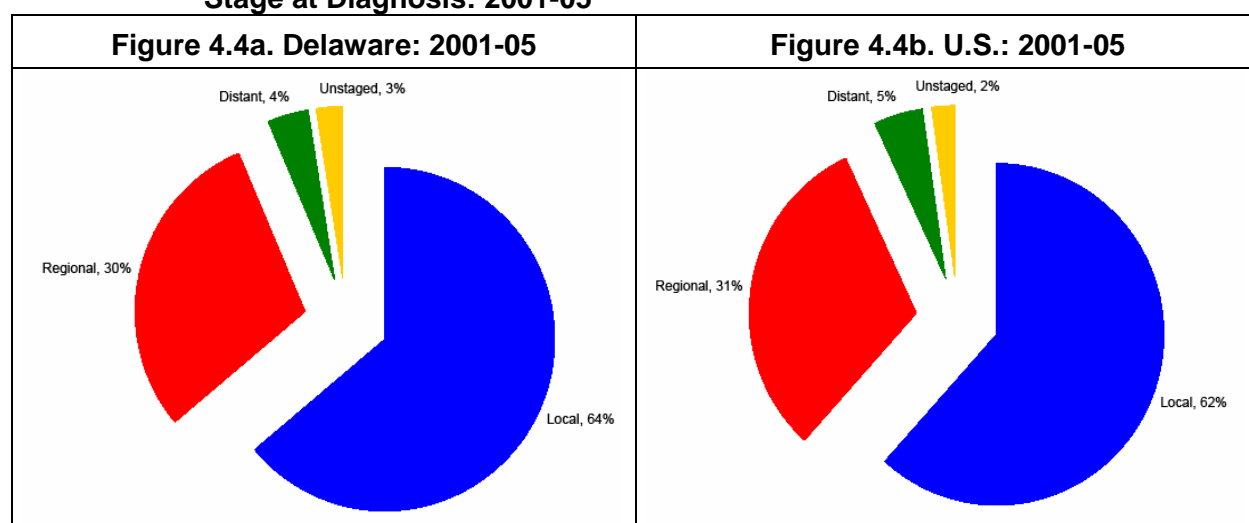
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008

**Table 4.5. Percentage of Female Breast Cancer Cases in Delaware, by Stage at Diagnosis and Race: 2001-05**

Stage at Diagnosis	All Female	Caucasian Female	African-American Female
Local	63.8	64.9	58.5
Regional	29.6	28.7	34.6
Distant	3.8	3.8	3.8
Unknown	2.8	2.6	3.1
Total	100.0	100.0	100.0

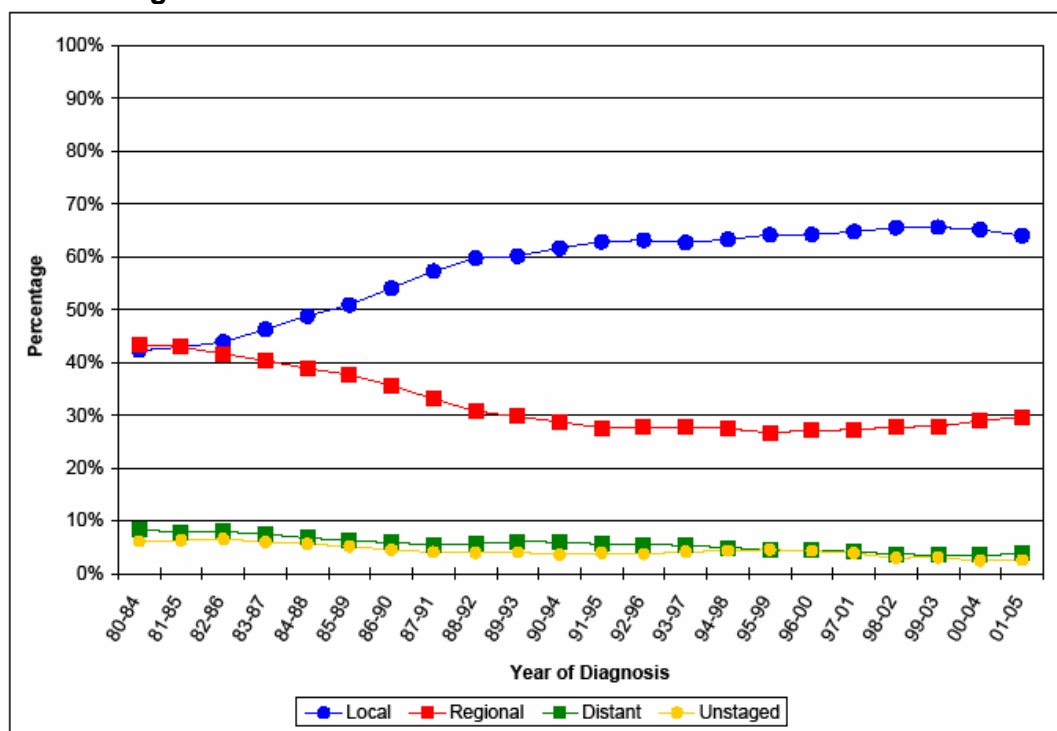
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 4.4. Percentage of Female Breast Cancer Cases in Delaware and the U.S., by Stage at Diagnosis: 2001-05**



SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 4.5. Percentage of Female Breast Cancer Cases in Delaware, by Stage at Diagnosis: 1980–2005**



SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

## Female Breast Cancer Mortality

**Table 4.6. Number of Female Breast Cancer Deaths in Delaware and Counties, by Race: 2001-05**

Region	All Female	Caucasian Female	African-American Female
Delaware	600	492	104
Kent	86	74	12
New Castle	368	286	80
Sussex	146	132	12

SOURCE: Delaware Health Statistics Center, 2007.



**Table 4.7. Five-Year Average Age-Adjusted Female Breast Cancer Mortality Rates\* in the U.S., Delaware and Counties, by Race: 2001-05**

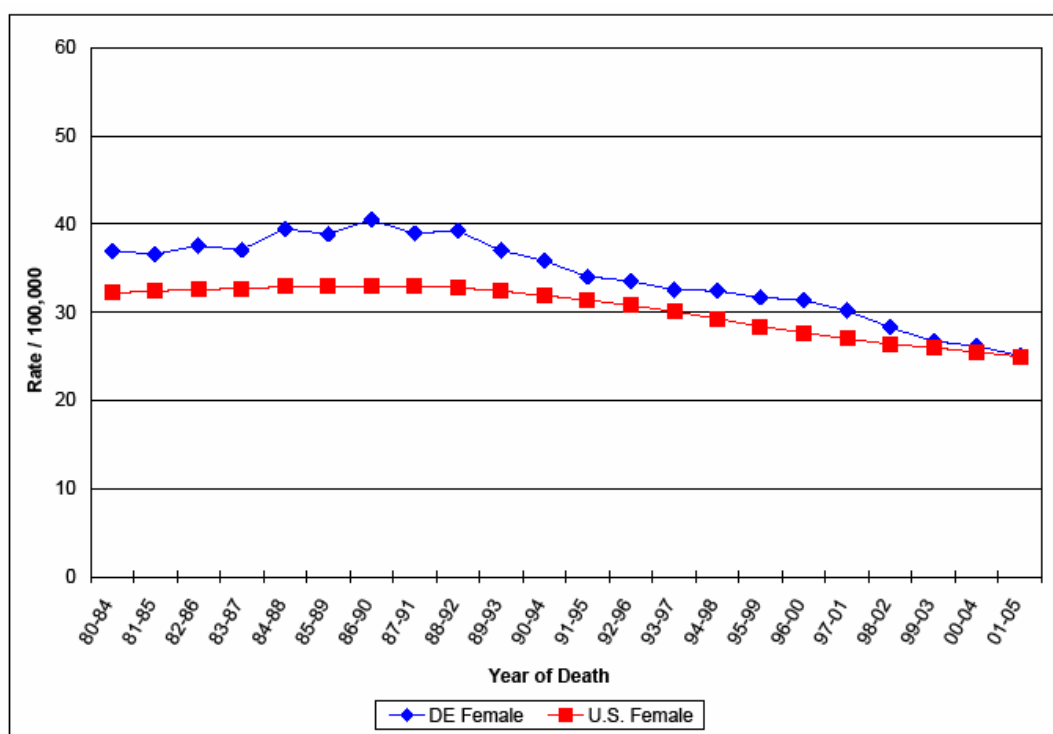
Region	All Female	Caucasian Female	African-American Female
United States	25.0 (24.9, 25.1)	24.4 (24.3, 24.5)	33.5 (33.1, 33.9)
Delaware	24.7 (22.7, 26.7)	24.0 (21.9, 26.3)	28.6 (23.3, 34.8)
Kent	23.8 (19.0, 29.4)	25.5 (20.0, 32.1)	---
New Castle	25.6 (23.0, 28.3)	24.0 (21.3, 27.1)	32.7 (25.8, 40.8)
Sussex	23.2 (19.4, 27.4)	23.1 (19.2, 27.7)	---

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

--- = Rate based on fewer than 25 deaths.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

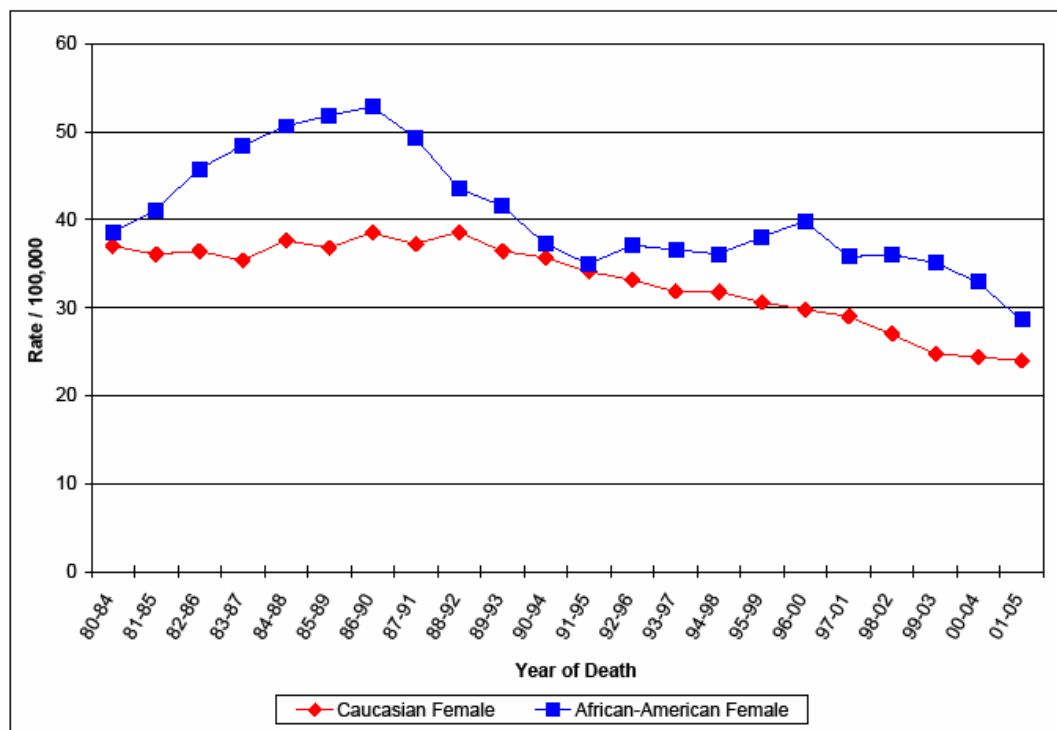
**Figure 4.6. Five-Year Average Age-Adjusted Female Breast Cancer Mortality Rates\* in the U.S. and Delaware: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

**Figure 4.7. Five-Year Average Age-Adjusted Female Breast Cancer Mortality Rates\* in Delaware, by Race: 1980–2005**



\* = Rates are age-adjusted to the 2000 U.S. standard population.

SOURCE: Delaware Health Statistics Center, 2007.

**Table 4.8. Age-Specific Female Breast Cancer Mortality Rates\* in Delaware, by Race: 2001-05**

Age Group	All Female	Caucasian Female	African-American Female
0–39	---	---	---
40–64	34.0	32.2	45.1
65–74	76.7	73.8	---
75–84	128.7	133.9	---
85+	182.8	183.4	---

\* = Rates are per 100,000 population.

--- = Rate based on fewer than 25 deaths.

SOURCE: Delaware Health Statistics Center, 2007.

**Figure 4.8. Age-Specific Female Breast Cancer Mortality Rates in Delaware, by Race: 2001-05**

NOTE: Figure is not displayed because of patient confidentiality rules; the small number of cases precludes the display of data.

## 5. Cervical Cancer

### Risk Factors and Early Detection

#### Risk Factors for Cervical Cancer

- Human papillomavirus (HPV) infection
- Sexual intercourse at a young age
- Multiple sexual partners
- Having a partner who has had many sexual partners
- Sexual intercourse with uncircumcised males
- Long-term use of oral contraceptives
- Mother who took diethylstilbestrol (DES) during pregnancy
- Cigarette smoking
- Low socioeconomic status
- Many full-term pregnancies
- Family history of cervical cancer
- Being overweight
- Not having regular Pap tests
- Having a weakened immune system (e.g., through HIV, AIDS, or receiving drugs to suppress the immune system)

#### Possible Risk Factors for Cervical Cancer

- History of sexually transmitted disease(s), such as Chlamydia
- Diets low in fruits and vegetables
- Exposure to secondhand smoke

#### Protective Factors

- Gardasil® vaccine to protect against HPV: The Federal Advisory Committee on Immunization Practices (ACIP) recommends that the vaccine be routinely given to females ages 11–12. Girls as young as nine may be vaccinated at the doctor's discretion. ACIP also recommends that females ages 13–26 who have not been vaccinated receive catch-up vaccinations.
- Condoms provide some protection against HPV infection, a known cervical cancer risk factor

#### Early Detection of Cervical Cancer

Routine Pap tests can detect cervical cancer at an earlier stage, generally the *in situ* stage, resulting in greatly improved chances for survival

Current recommendations for cervical cancer screening are as follows:

- All females should begin having the Pap test about three years after they start having sex, but no later than age 21

- Beginning at age 30, females who have had three normal test results in a row may get the Pap test every two to three years. Alternatively, females over age 30 may be tested every three years with the Pap test, plus the HPV DNA test.
- Females ages 70 and older who have had three normal test results in a row and no abnormal results in the last 10 years may choose to stop cervical cancer testing unless they have a history of cervical cancer, DES exposure before birth, HIV infection, or a weakened immune system. Females who have had a total hysterectomy may also choose to stop cervical cancer testing unless the surgery was a treatment for cervical cancer or precancerous cells.

Recent (2007) data from the Behavioral Risk Factor Surveillance System (BRFSS) provide information on the pattern of cervical cancer screening among Delawarean women:

- In 2007, 83.7 percent of Delaware females ages 18 and older reported that they had had a Pap test within the previous three years; no comparison data are available at the national level for 2007.
- In Delaware, compared to African-American females, a larger percentage of Caucasian females reported having had a Pap test within the last three years (78.6 percent vs. 84.0 percent, respectively); however, this difference was not statistically significant.
- In 2007, significantly more Delaware females ages 18-24 years and 65+ years reported *not* having had a Pap test in the last three years compared to women ages 25-64 (28.5 percent, 28.3 percent, and 10.6 percent, respectively).
- Delaware females who attended some college or who earned a college degree were significantly more likely to report having had a Pap test in the past three years compared to Delaware females with a high school diploma or less (89.0 percent vs. 75.0 percent, respectively).

## Data Highlights

### **New Cervical Cancer Cases and Deaths** (Tables 5.1 and 5.6)

- From 2001-05, 180 women in Delaware were diagnosed with cervical cancer. Cervical cancer accounted for 1.7 percent of all cancer diagnosed among women during this time.
- From 2001-05, 67 Delaware females died from cervical cancer. Cervical cancer accounted for 1.6 percent of all cancer deaths among Delaware women during this time.

### **Incidence and Mortality Rates** (Tables 5.2 and 5.7)

- Delaware's 2001-05 cervical cancer incidence rate (8.2 per 100,000) was not significantly different from the U.S. rate (7.2 per 100,000).
  - Delaware's 2001-05 cervical cancer incidence rates did not differ significantly between African-American and Caucasian women (10.0 per 100,000 vs. 8.0 per 100,000, respectively). However, at the U.S. level, the cervical cancer incidence rate for African-American women was significantly higher than the rate for Caucasian women (10.1 per 100,000 vs. 6.9 per 100,000).
- Delaware's 2001-05 cervical cancer mortality rate (2.9 per 100,000) was not significantly different from the U.S. rate (2.5 per 100,000). The data were too sparse to examine differences by race or county of residence.

### **Trends in Cancer Incidence and Mortality (Figures 5.1–5.2 and 5.6–5.7)**

- Historically, cervical cancer incidence rates have been higher in Delaware than in the U.S. However, from 1991-95 to 2001-05, Delaware's cervical cancer incidence rate decreased 34.4 percent (from 12.5 per 100,000 to 8.2 per 100,000) while the U.S. rate decreased 25.0 percent (from 9.6 per 100,000 to 7.2 per 100,000).
  - There has been a substantial decrease in Delaware's cervical cancer incidence rate for African-American females (a 52 percent decline from 1991-95 to 2001-05). In contrast, Delaware's rate for Caucasian females fell 28 percent during the same time.
- From 1991-95 to 2001-05, Delaware's cervical cancer mortality rate decreased 31.0 percent (from 4.2 per 100,000 to 2.9 per 100,000) while the U.S. rate decreased 26.5 percent (from 3.4 per 100,000 to 2.5 per 100,000).

### **Age-Specific Incidence and Mortality Rates (Tables 5.3 and 5.8)**

- The 2001-05 age-specific incidence rate for cervical cancer was highest among females ages 40–64; mortality data were too sparse to examine rates by age group.

### **Stage at Diagnosis of Cervical Cancer (Tables 5.4–5.5, Figures 5.4–5.5)**

- In Delaware, from 2001-05, 54.4 percent, 29.4 percent and 10.0 percent of cervical cancers were diagnosed at the local, regional and distant stages, respectively. At the national level, comparison percentages were 51.0 percent, 35.0 percent and 10.0 percent, respectively.
- In Delaware, from 2001-05, 71 cervical cancer cases (39.4 percent) were diagnosed in the late stages (i.e., regional or distant stage).
- Among those diagnosed with cervical cancer, African-American females were more likely than Caucasian females to have their cervical cancer diagnosed at the local stage (63.4 percent vs. 52.2 percent, respectively).
- In Delaware, the percentage of cervical cancer cases diagnosed at the local stage increased from 32.4 percent in 1980-84 to 54.4 percent in 2001-05. Accordingly, there was a decline in the percentage of regional stage cases during the same time period (from 48.9 percent in 1980-84 to 29.4 percent in 2001-05). There was minimal change in the percentage of distant stage cases diagnosed during the same time.

## Cervical Cancer Incidence

**Table 5.1. Number of Cervical Cancer Cases in Delaware and Counties, by Race: 2001-05**

	<b>All Female</b>	<b>Caucasian Female</b>	<b>African-American Female</b>
<b>Delaware</b>	180	134	41
<b>Kent</b>	41	34	6
<b>New Castle</b>	99	68	29
<b>Sussex</b>	40	32	6

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 5.2. Five-Year Average Age-Adjusted Cervical Cancer Incidence Rates\* in the U.S., Delaware and Counties, by Race: 2001-05**

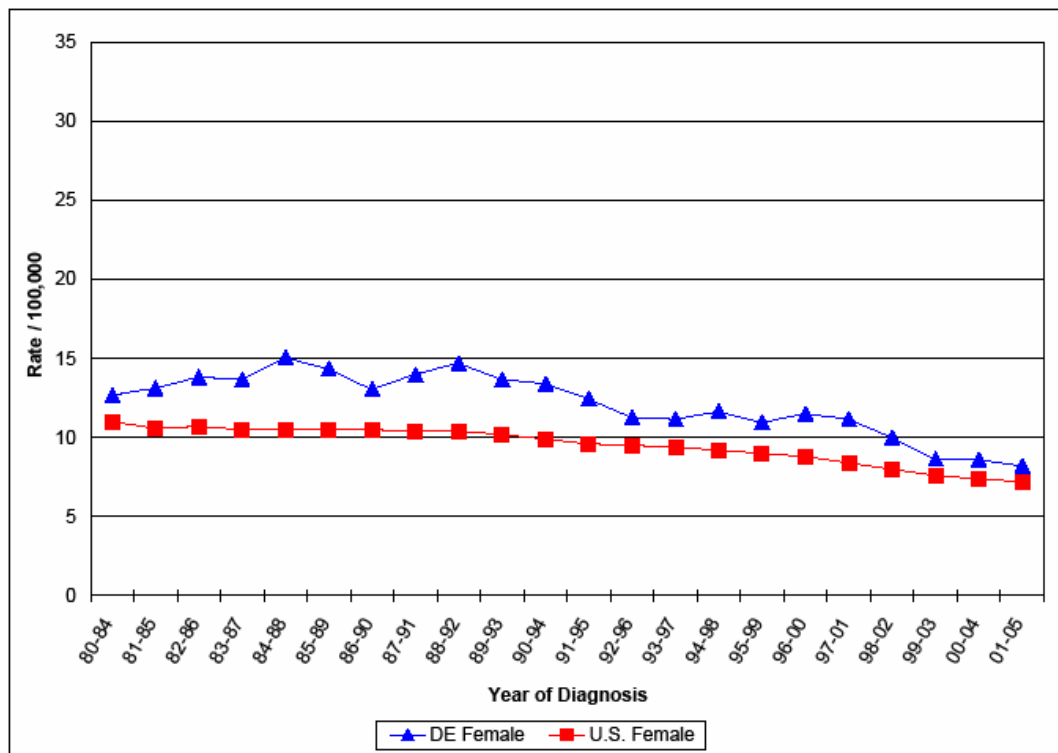
	<b>All Female</b>	<b>Caucasian Female</b>	<b>African-American Female</b>
<b>United States</b>	7.2 (7.0, 7.4)	6.9 (6.6, 7.1)	10.1 (9.4, 10.9)
<b>Delaware</b>	8.2 (7.0, 9.4)	8.0 (6.6, 9.3)	10.0 (7.2, 13.5)
<b>Kent</b>	11.6 (8.3, 15.7)	12.6 (8.8, 17.7)	---
<b>New Castle</b>	7.2 (5.9, 8.8)	6.7 (5.2, 8.4)	10.2 (6.8, 14.7)
<b>Sussex</b>	8.8 (6.3, 12.0)	8.5 (5.8, 12.0)	---

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

--- = Rate based on fewer than 25 cases.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

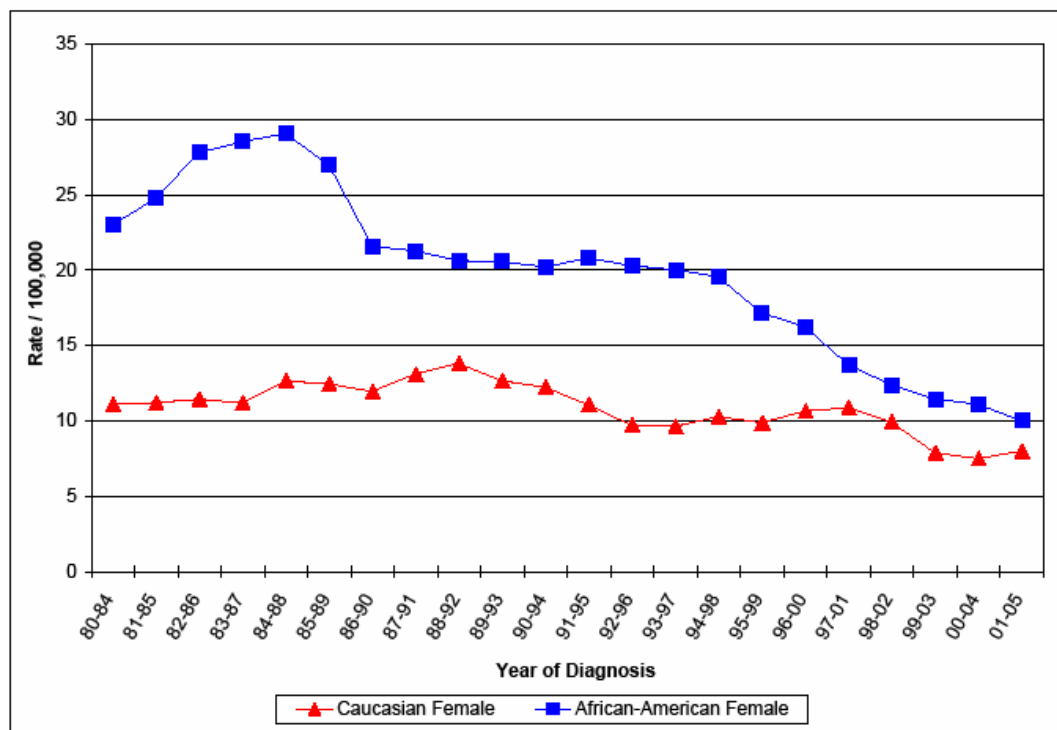
**Figure 5.1. Five-Year Average Age-Adjusted Cervical Cancer Incidence Rates\* in the U.S. and Delaware: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 5.2. Five-Year Average Age-Adjusted Cervical Cancer Incidence Rates\* in Delaware, by Race: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 5.3. Age-Specific Cervical Cancer Incidence Rates\* in Delaware, by Race: 2001-05**

Age Group	All Female	Caucasian Female	African-American Female
0–39	4.2	4.5	---
40–64	15.4	14.6	19.4
65+	8.9	---	---

\* = Rates are per 100,000 population.

--- = Rate based on fewer than 25 cases.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 5.3. Age-Specific Cervical Cancer Incidence Rates in Delaware, by Race: 2001-05**

NOTE: Figure is not displayed because of patient confidentiality rules; the small number of cases precludes the display of data.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.



## Cervical Cancer by Stage at Diagnosis

**Table 5.4. Number of Cervical Cancer Cases in Delaware, by Stage at Diagnosis and Race: 2001-05**

Stage at Diagnosis	All Female	Caucasian Female	African-American Female
Local	98	70	26
Regional	53	45	8
Distant	18	12	---
Unknown	11	7	---
Total	180	134	41

--- = Cell counts of less than six are suppressed for patient confidentiality.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

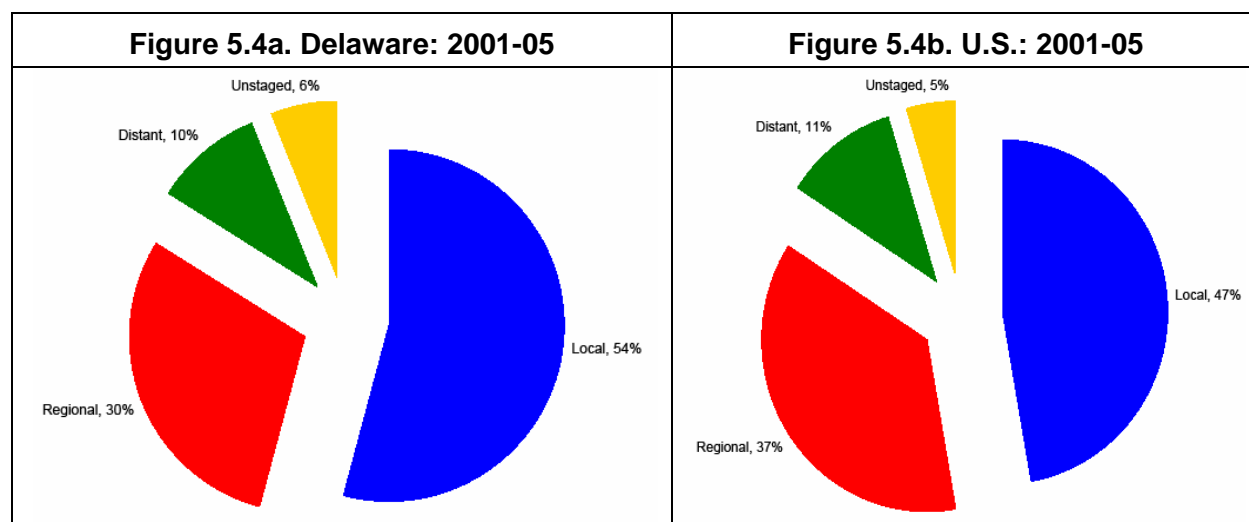
**Table 5.5. Percentage of Cervical Cancer Cases in Delaware, by Stage at Diagnosis and Race: 2001-05**

Stage at Diagnosis	All Female	Caucasian Female	African-American Female
Local	54.4	52.2	63.4
Regional	29.4	33.6	19.5
Distant	10.0	9.0	---
Unknown	6.1	5.2	---
Total	100.0	100.0	100.0

--- = Percentage based on fewer than six cases.

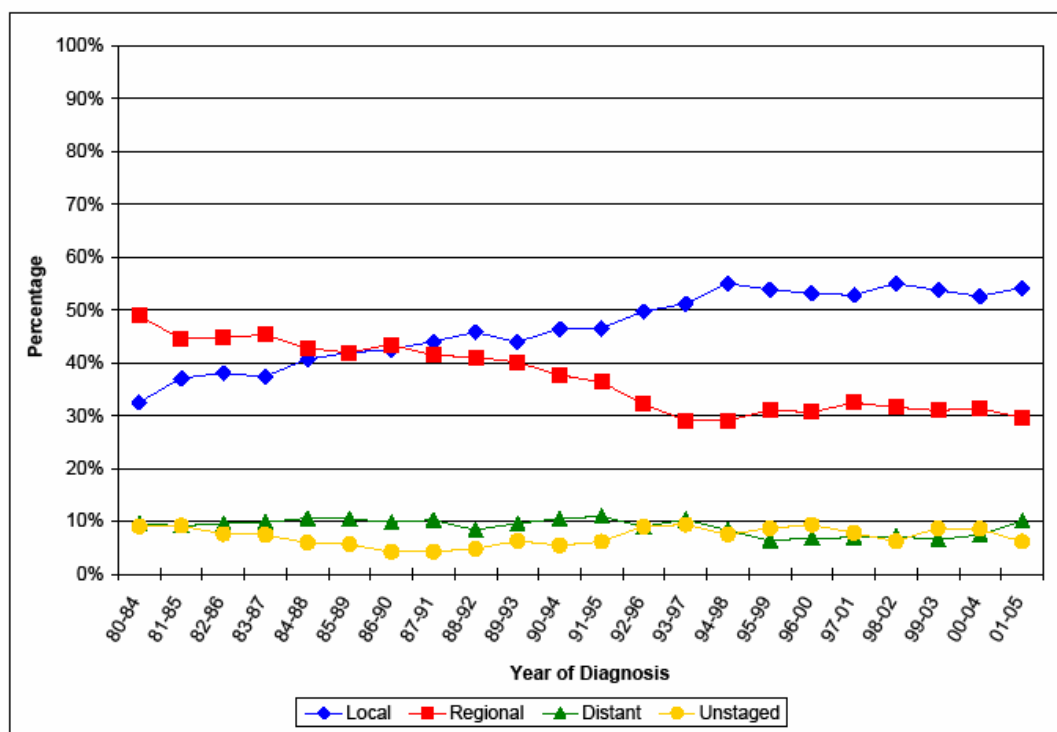
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 5.4. Percentage of Cervical Cancer Cases in Delaware and the U.S., by Stage at Diagnosis: 2001-05**



SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 5.5. Percentage of Cervical Cancer Cases in Delaware, by Stage at Diagnosis: 1980–2005**



SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

## Cervical Cancer Mortality

**Table 5.6. Number of Cervical Cancer Deaths in Delaware and Counties, by Race: 2001-05**

	All Female	Caucasian Female	African-American Female
<b>Delaware</b>	67	49	18
<b>Kent</b>	14	11	---
<b>New Castle</b>	32	21	11
<b>Sussex</b>	21	17	---

--- = Cell counts of less than six are suppressed for patient confidentiality.

SOURCE: Delaware Health Statistics Center, 2007.

**Table 5.7. Five-Year Average Age-Adjusted Cervical Cancer Mortality Rates\* in the U.S., Delaware and Counties, by Race: 2001-05**

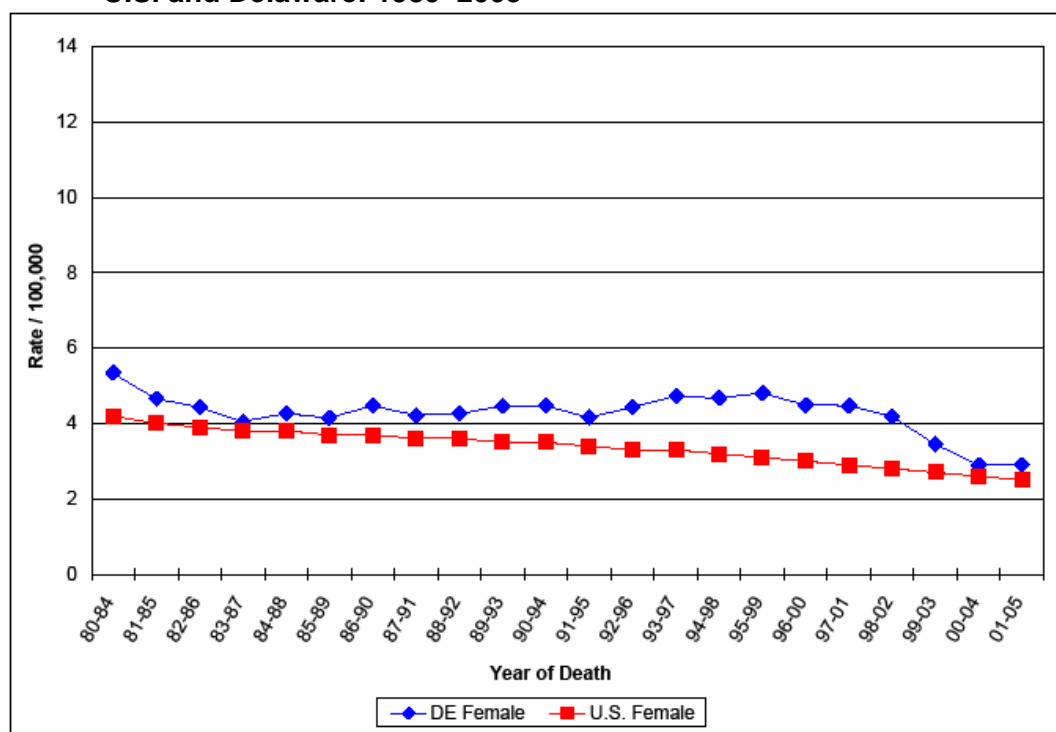
	All Female	Caucasian Female	African-American Female
United States	2.5 (2.5, 2.5)	2.3 (2.2, 2.3)	4.7 (4.5, 4.8)
Delaware	2.9 (2.2, 3.7)	2.7 (2.0, 3.5)	---
Kent	---	---	---
New Castle	2.3 (1.6, 3.2)	---	---
Sussex	---	---	---

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

--- = Rate based on fewer than 25 deaths.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

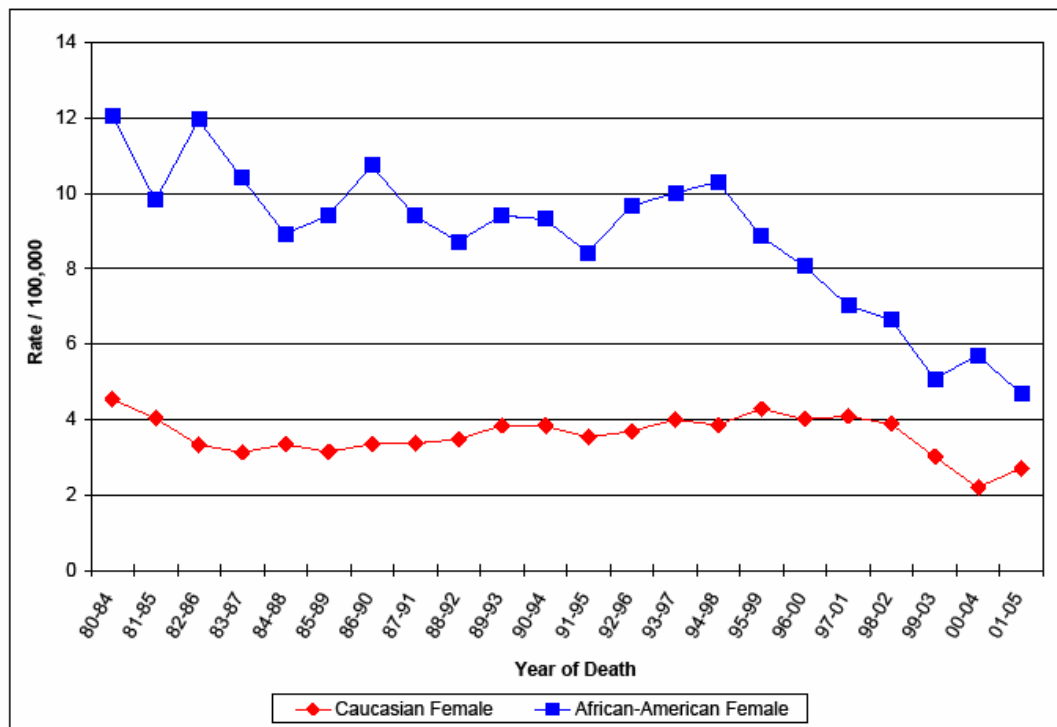
**Figure 5.6. Five-Year Average Age-Adjusted Cervical Cancer Mortality Rates\* in the U.S. and Delaware: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

**Figure 5.7. Five-Year Average Age-Adjusted Cervical Cancer Mortality Rates\* in Delaware, by Race: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
SOURCE: Delaware Health Statistics Center, 2007.

**Table 5.8. Age-Specific Cervical Cancer Mortality Rates\* in Delaware, by Race: 2001-05**

Age Group	All Female	Caucasian Female	African-American Female
0–39	---	---	---
40–64	5.4	4.7	---
65–74	---	---	---
75–84	---	---	---
85+	---	---	---

\* = Rates are per 100,000 population.  
--- = Rate based on fewer than 25 deaths.  
SOURCE: Delaware Health Statistics Center, 2007.

**Figure 5.8. Age-Specific Cervical Cancer Mortality Rates in Delaware, by Race: 2001-05**

NOTE: Figure is not displayed because of patient confidentiality rules; the small number of cases precludes the display of data.

## 6. Colorectal Cancer

### Risk Factors and Early Detection

#### Risk Factors for Colorectal Cancer

- Increasing age: the chance of developing colorectal cancer increases markedly after age 50
- Personal history of colorectal adenomatous polyps or colorectal cancer
- Family history of colorectal cancer or polyps, including hereditary nonpolyposis colorectal cancer and familial adenomatous polyposis
- Personal history of inflammatory bowel disease, such as ulcerative colitis or Crohn's disease
- Personal history of ovarian, breast, or uterine cancer
- Personal history of diabetes
- Race: African-Americans have the highest incidence and mortality rates of all racial groups in the U.S.
- Ethnicity: Jews of Eastern European descent have the highest colorectal cancer risk of any ethnic group
- Physical inactivity
- Obesity
- Heavy alcohol use
- Cigarette smoking

#### Possible Risk Factors for Colorectal Cancer

- Diets high in red meat, processed meats and/or other high-fat foods
- Diets low in fruits, vegetables, fiber and folic acid
- Men who have had testicular cancer may be at greater risk for colorectal cancer
- Men who have received radiation therapy for prostate cancer may be at greater risk for colorectal cancer
- Night-shift work

#### Protective Factors

- Combined hormone replacement therapy, which includes both estrogen and progesterone
- Removal of colorectal polyps

#### Early Detection of Colorectal Cancer

The American Cancer Society colorectal cancer screening guidelines are as follows:

- Beginning at age 50, both males and females should follow one of the five screening options below:
  1. Yearly fecal occult blood test (FOBT) or immunochemical FOBT. The take-home multiple sample method should be used, and all positive tests should be followed up with colonoscopy;
  2. Flexible sigmoidoscopy every five years;
  3. Colonoscopy every 10 years;

4. Double contrast barium enema every five years; or
5. Yearly FOBT or immunochemical FOBT, plus flexible sigmoidoscopy every five years\*.

Recent data from the Behavioral Risk Factor Surveillance System (BRFSS) provide information on the pattern of colorectal cancer screening among Delawareans:

- In 2007, 42.1 percent of Delawareans ages 50 and older reported ever having used an at-home blood stool test. Significantly fewer African-Americans than Caucasians reported ever having used an at-home blood stool test (31.9 percent vs. 44.2 percent, respectively).
- Among Delawareans ages 50 and older, 75.1 percent reported that they had ever had a sigmoidoscopy or a colonoscopy.
  - The percentage of Delawareans who had had a colonoscopy or sigmoidoscopy increased with age. Significantly more Delawareans ages 65 and older reported ever having had a colonoscopy or sigmoidoscopy compared to those ages 50-64 (83.2 percent vs. 69.0 percent, respectively).
  - In 2007, African-Americans ages 50 and older in Delaware were just as likely to have ever had a colonoscopy or sigmoidoscopy as Caucasians.
  - Education level and income category did not significantly affect the percentage of Delawareans ever having had a colonoscopy or sigmoidoscopy.

## Data Highlights

### **New Colorectal Cancer Cases and Deaths** (Tables 6.1 and 6.6)

- Colorectal cancer was the third most frequently diagnosed cancer among males and females for 2001-05. A total of 2,300 cases of colorectal cancer were diagnosed in Delaware during this time.
  - Colorectal cancer accounted for 10.5 percent of all cancer cases diagnosed during 2001-05 in Delaware.
  - Newly diagnosed cases were fairly evenly split by sex: 1,176 cases (51.1 percent) were diagnosed among males and the remaining 1,124 cases (48.9 percent) were diagnosed among females.
- Colorectal cancer was the third most common cause of cancer deaths among both males and females for 2001-05.
  - Deaths from colorectal cancer accounted for 9.7 percent of all cancer deaths in Delaware during 2001-05.
  - Of the 843 Delaware residents who died from colorectal cancer, 50.9 percent were male and 49.1 percent were female.

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\* "The ACS recommends more intensive surveillance for individuals at higher risk for colorectal cancer, including those with a history of adenomatous polyps; those with a personal history of curative-intent resection of colorectal cancer; those with a family history of either colorectal cancer or colorectal adenomas diagnosed in a first-degree relative before age 60; those with a history of inflammatory bowel disease of significant duration; or those with a family history or genetic testing indicating the presence of 1 of 2 hereditary syndromes, such as hereditary nonpolyposis colorectal cancer and familial adenomatous polyposis."

### **Incidence and Mortality Rates** (Tables 6.2 and 6.7)

- Delaware's 2001-05 colorectal cancer incidence rate was comparable to the U.S. rate.
- For 2001-05, at all geographic levels and for all races combined, the colorectal cancer incidence rate for males was significantly higher than rate for females.
  - In the U.S., 2001-05 colorectal cancer incidence rates for African-Americans were significantly higher than for Caucasians. However, for the same time period, incidence rates did not differ significantly between African-Americans and Caucasians at the state and county levels.
- Delaware's 2001-05 colorectal cancer mortality rate was not significantly different from that of the U.S.
  - For 2001-05, at all geographic levels (with the exception of Kent County) and for all races combined, the colorectal cancer mortality rate for males was significantly higher for males than for females.
  - No differences in colorectal cancer mortality rates were observed by county of residence.

### **Trends in Incidence and Mortality Rates** (Figures 6.1–6.2 and 6.6–6.7)

- From 1991-95 to 2001-05, Delaware's colorectal cancer incidence rate decreased 17.7 percent (from 64.2 per 100,000 to 52.8 per 100,000) while the U.S. rate dropped 11.4 percent (from 56.8 per 100,000 to 50.3 per 100,000).
  - Delaware's colorectal cancer incidence rates decreased 19.0 percent for Caucasians and 15.8 percent for African-Americans between 1991-95 and 2001-05.
  - Delaware's colorectal incidence rate decreased 21.4 percent for males and 15.1 percent for females between 1991-95 and 2001-05.
- Historically, Delaware's colorectal cancer mortality rate has been higher than the U.S. rate. However, Delaware's 2001-05 colorectal cancer mortality rate was not significantly different from the U.S. rate.
  - Between 1991-95 and 2001-05, Delaware's colorectal cancer mortality rate dropped 23.8 percent (from 25.6 per 100,000 to 19.5 per 100,000) while the U.S. rate dropped 19.3 percent (from 23.3 per 100,000 to 18.8 per 100,000).

### **Age-Specific Incidence and Mortality Rates** (Tables 6.3 and 6.8, Figures 6.3 and 6.8)

- The 2001-05 colorectal cancer incidence rate increased with age. Delawareans ages 85 and older had the highest age-specific incidence rate.
- For all age groups, the colorectal cancer incidence rate was higher for males than for females.

### **Stage at Diagnosis of Colorectal Cancer** (Tables 6.4–6.5, Figures 6.4–6.5)

- For 2001-05, 34.4 percent, 42.3 percent and 16.1 percent of colorectal cancers diagnosed in Delaware were detected at the local, regional and distant stages, respectively. Comparable percentages for the U.S. were 40.0 percent, 36.0 percent and 19.0 percent, respectively.

## Colorectal Cancer Incidence

**Table 6.1. Number of Colorectal Cancer Cases in Delaware and Counties, by Race and Sex: 2001-05**

	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	2,305	1,179	1,126	1,916	985	931	328	162	166
<b>Kent</b>	383	201	182	307	156	151	64	37	27
<b>New Castle</b>	1,298	647	651	1,054	532	522	209	96	113
<b>Sussex</b>	624	331	293	555	297	258	55	29	26

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 6.2. Five-Year Average Age-Adjusted Colorectal Cancer Incidence Rates\* in the U.S., Delaware and Counties, by Race and Sex: 2001-05**

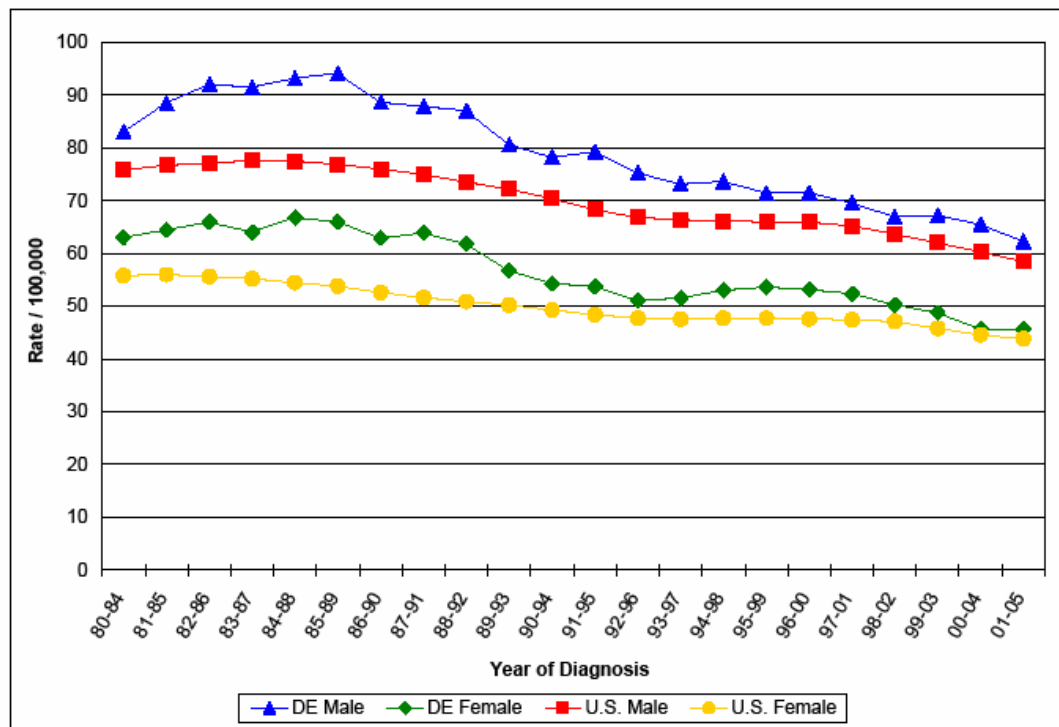
RACE AND REGION	SEX		
	All	Male	Female
<b>ALL RACES</b>			
United States	50.3 (49.9, 50.7)	58.5 (57.9, 59.2)	43.8 (43.3, 44.2)
Delaware	52.8 (50.7, 55.0)	62.3 (58.7, 65.8)	45.6 (43.0, 48.3)
Kent	59.1 (53.2, 65.0)	72.0 (62.0, 81.9)	50.0 (42.7, 57.3)
New Castle	51.8 (49.0, 54.6)	60.2 (55.6, 64.9)	45.3 (41.8, 48.8)
Sussex	52.4 (48.3, 56.5)	62.0 (55.3, 68.6)	44.6 (39.5, 49.8)
<b>CAUCASIAN</b>			
United States	49.7 (49.3, 50.1)	58.0 (57.3, 58.7)	43.1 (42.6, 43.6)
Delaware	51.6 (49.3, 53.9)	60.8 (57.0, 64.6)	44.2 (41.4, 47.1)
Kent	58.2 (51.7, 64.8)	69.0 (58.1, 79.8)	50.8 (42.7, 58.9)
New Castle	50.5 (47.5, 53.6)	59.1 (54.1, 64.1)	43.4 (39.7, 47.1)
Sussex	51.1 (46.9, 55.4)	61.1 (54.1, 68.0)	43.0 (37.8, 48.3)
<b>AFRICAN-AMERICAN</b>			
United States	60.3 (58.8, 61.8)	70.2 (67.6, 72.8)	54.0 (52.2, 55.8)
Delaware	56.7 (50.5, 62.8)	69.5 (58.8, 80.2)	49.3 (41.8, 56.8)
Kent	61.4 (47.3, 78.4)	79.2 (55.8, 109.1)	47.5 (31.3, 69.0)
New Castle	55.6 (48.1, 63.2)	66.9 (54.2, 81.7)	50.9 (41.6, 60.3)
Sussex	55.2 (41.6, 71.8)	69.2 (46.3, 99.4)	44.5 (29.0, 65.2)

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.



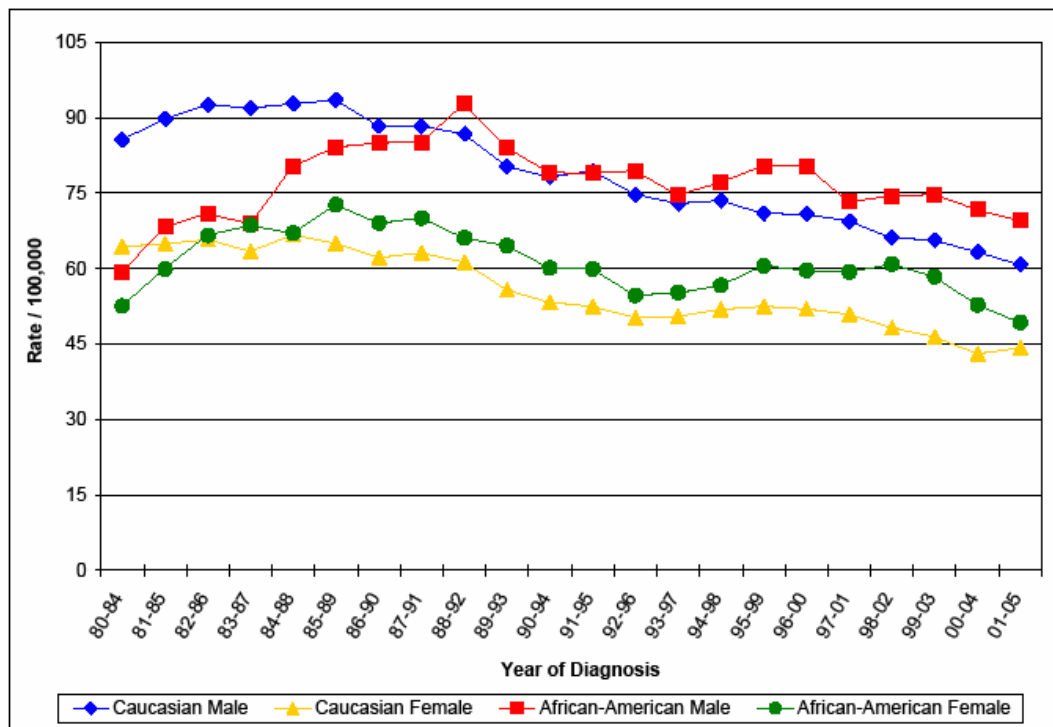
**Figure 6.1. Five-Year Average Age-Adjusted Colorectal Cancer Incidence Rates\* in the U.S. and Delaware, by Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute 2007.

**Figure 6.2. Five-Year Average Age-Adjusted Colorectal Cancer Incidence Rates\* in Delaware, by Race and Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 6.3. Age-Specific Colorectal Cancer Incidence Rates\* in Delaware, by Race and Sex: 2001-05**

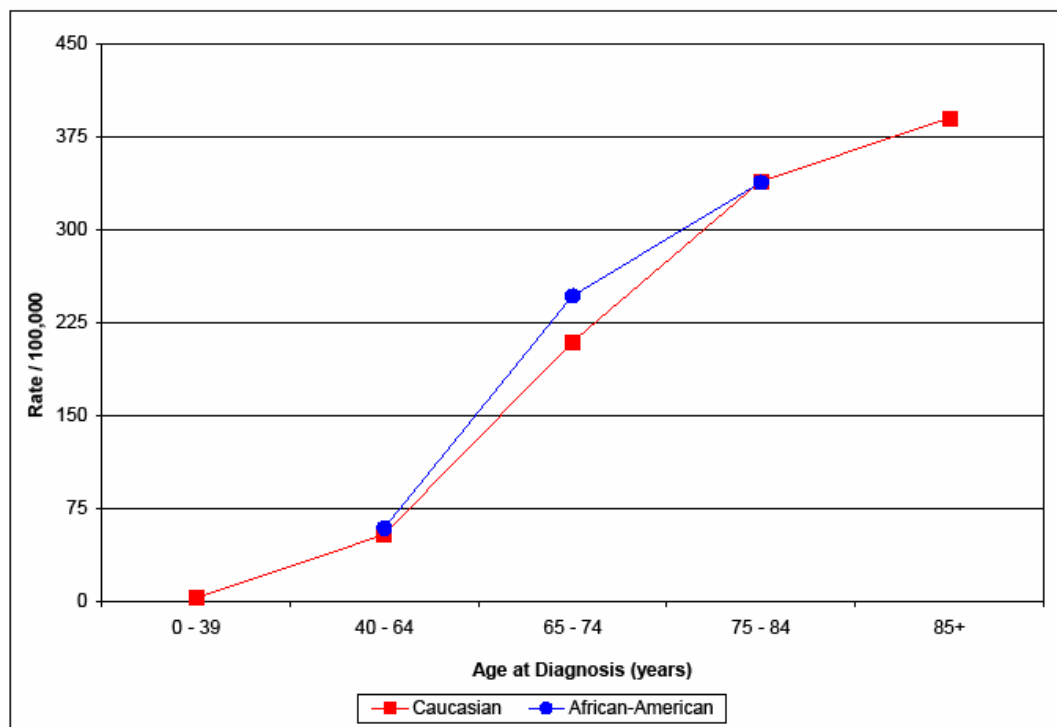
Age Group	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
0–39	2.1	2.4	---	2.3	---	---	---	---	---
40–64	55.1	66.7	44.3	53.6	66.5	41.3	58.7	65.6	52.9
65–74	216.0	254.8	182.6	209.0	247.9	175.2	246.3	291.8	211.2
75–84	341.8	367.8	323.8	338.8	359.6	324.3	337.8	389.2	306.8
85+	386.4	514.0	333.7	389.9	494.5	346.2	---	---	---

\* = Rates are per 100,000 population.

--- = Rate based on fewer than 25 cases.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 6.3. Age-Specific Colorectal Cancer Incidence Rates in Delaware, by Race: 2001-05**



NOTE: Rates for African-Americans ages 0-39 and 85+ are not displayed due to patient confidentiality rules.  
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

## Colorectal Cancer by Stage at Diagnosis

**Table 6.4. Number of Colorectal Cancer Cases in Delaware, by Stage at Diagnosis, Race and Sex: 2001-05**

Stage at Diagnosis	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
Local	794	410	384	662	340	322	111	60	51
Regional	975	498	477	824	426	398	134	62	72
Distant	370	198	172	298	162	136	67	32	35
Unknown	166	73	93	132	57	75	16	8	8
<b>Total</b>	<b>2,305</b>	<b>1,179</b>	<b>1,126</b>	<b>1,916</b>	<b>985</b>	<b>931</b>	<b>328</b>	<b>162</b>	<b>166</b>

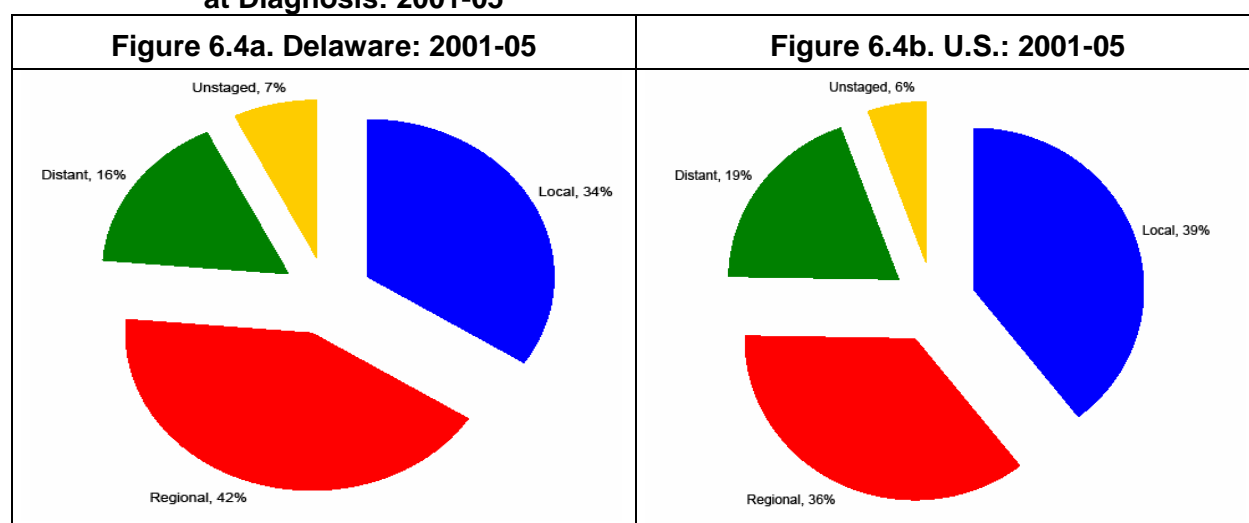
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 6.5. Percentage of Colorectal Cancer Cases in Delaware, by Stage at Diagnosis, Race and Sex: 2001-05**

Stage at Diagnosis	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
Local	34.4	34.8	34.1	34.6	34.5	34.6	33.8	37.0	30.7
Regional	42.3	42.2	42.4	43.0	43.2	42.7	40.9	38.3	43.4
Distant	16.1	16.8	15.3	15.6	16.4	14.6	20.4	19.8	21.1
Unknown	7.2	6.2	8.3	6.9	5.8	8.1	4.9	4.9	4.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

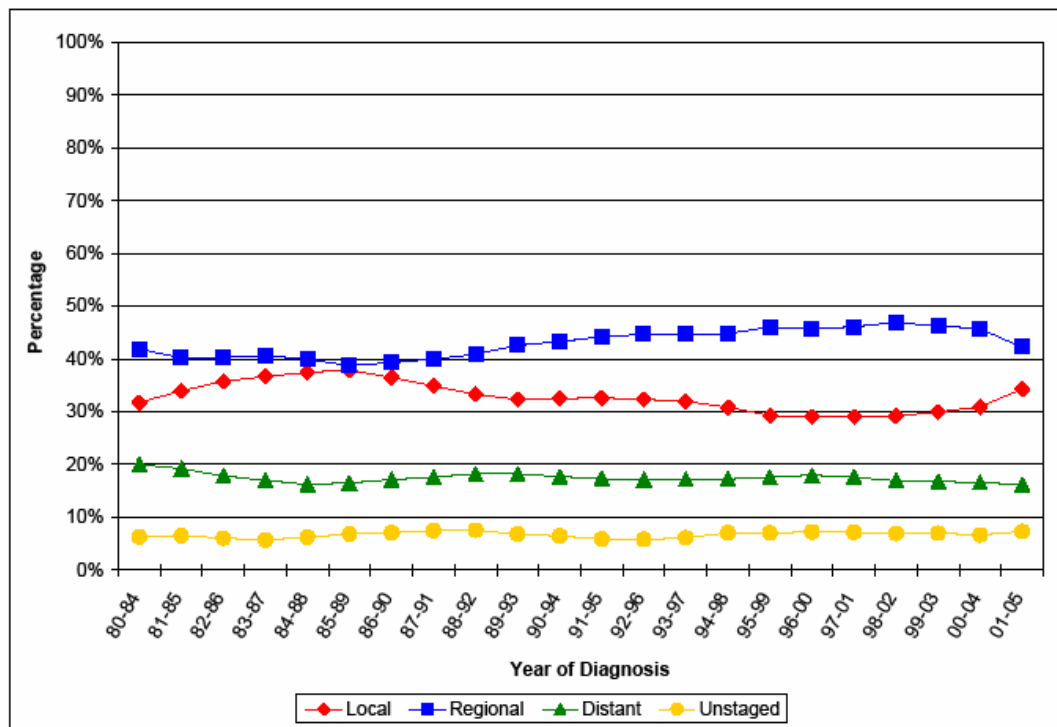
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 6.4. Percentage of Colorectal Cancer Cases in Delaware and the U.S., by Stage at Diagnosis: 2001-05**



SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2008.

**Figure 6.5. Percentage of Colorectal Cancer Cases in Delaware, by Stage at Diagnosis: 1980–2005**



SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

## Colorectal Cancer Mortality

**Table 6.6. Number of Colorectal Cancer Deaths in Delaware and Counties, by Race and Sex: 2001-05**

	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	843	429	414	698	354	344	141	72	69
<b>Kent</b>	133	69	64	104	53	51	27	14	13
<b>New Castle</b>	476	231	245	393	193	200	81	37	44
<b>Sussex</b>	234	129	105	201	108	93	33	21	12

SOURCE: Delaware Health Statistics Center, 2007.

**Table 6.7. Five-Year Average Age-Adjusted Colorectal Cancer Mortality Rates\* in the U.S., Delaware and Counties, by Race and Sex: 2001-05**

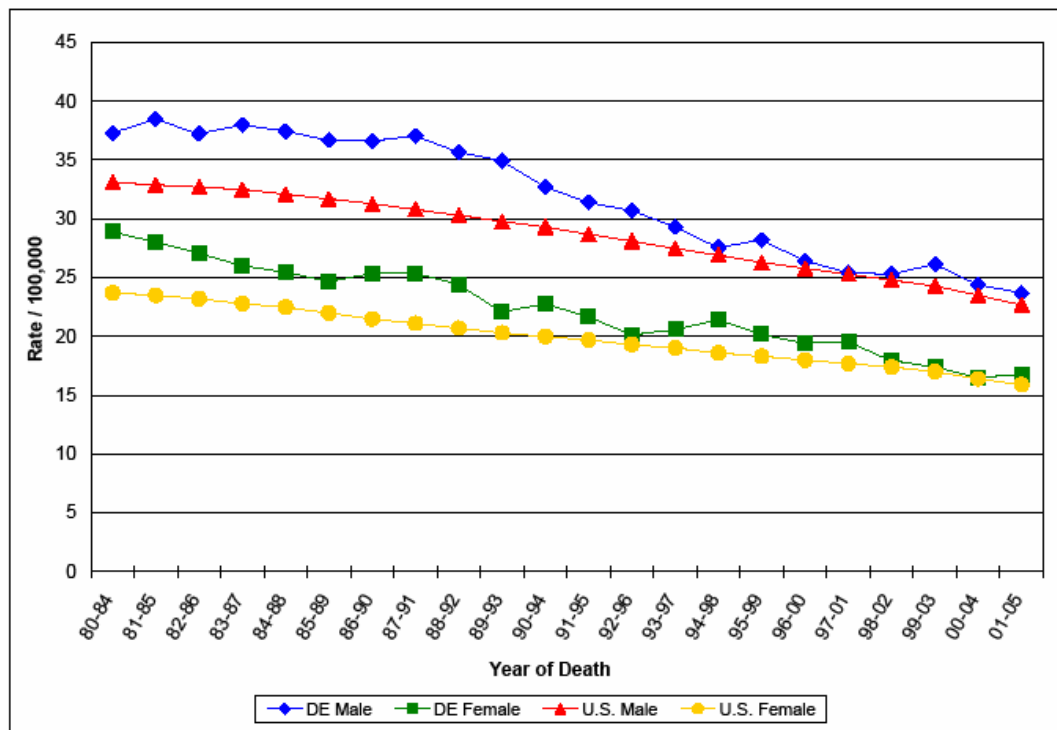
RACE AND REGION	SEX		
	All	Male	Female
<b>ALL RACES</b>			
United States	18.8 (18.7, 18.8)	22.7 (22.6, 22.8)	15.9 (15.8, 15.9)
Delaware	19.5 (18.2, 20.8)	23.5 (21.3, 25.9)	16.4 (14.9, 18.1)
Kent	20.7 (17.3, 24.6)	25.4 (19.6, 32.3)	17.6 (13.5, 22.4)
New Castle	19.1 (17.4, 20.9)	22.7 (19.8, 25.9)	16.5 (14.5, 18.7)
Sussex	19.7 (17.2, 22.4)	24.2 (20.1, 29.0)	15.7 (12.8, 19.2)
<b>CAUCASIAN</b>			
United States	18.3 (18.2, 18.3)	22.1 (22.0, 22.3)	15.3 (15.2, 15.4)
Delaware	18.8 (17.4, 20.2)	22.6 (20.2, 25.1)	15.9 (14.2, 17.7)
Kent	19.8 (16.2, 24.0)	23.3 (17.3, 30.7)	17.2 (12.8, 22.7)
New Castle	18.7 (16.9, 20.6)	22.5 (19.4, 26.0)	15.8 (13.7, 18.2)
Sussex	18.5 (16.0, 21.4)	22.2 (18.1, 27.1)	15.4 (12.4, 19.1)
<b>AFRICAN-AMERICAN</b>			
United States	26.1 (25.8, 26.4)	31.8 (31.3, 32.3)	22.4 (22.0, 22.7)
Delaware	25.8 (21.6, 30.5)	32.8 (25.2, 41.7)	21.0 (16.2, 26.5)
Kent	26.9 (17.6, 39.2)	33.5 (17.6, 56.7)	---
New Castle	22.7 (17.9, 28.4)	26.5 (18.0, 37.2)	20.2 (14.5, 27.1)
Sussex	34.1 (23.4, 47.7)	52.0 (32.0, 79.3)	---

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

--- = Rate based on fewer than 25 deaths.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

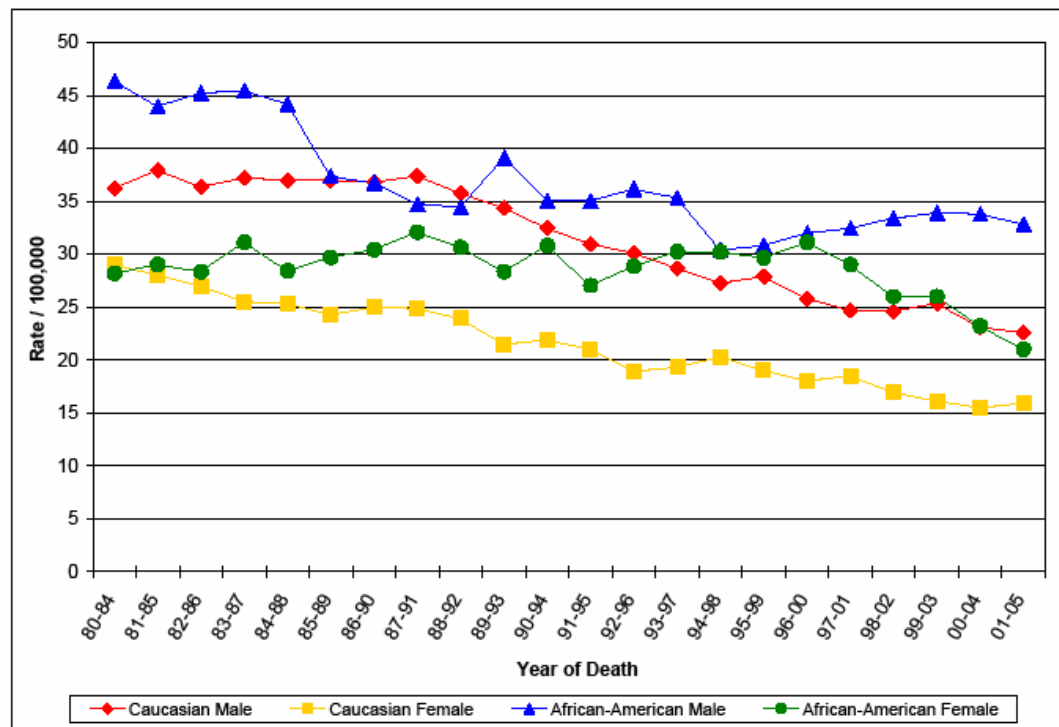
**Figure 6.6. Five-Year Average Age-Adjusted Colorectal Cancer Mortality Rates\* in the U.S. and Delaware, by Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

**Figure 6.7. Five-Year Average Age-Adjusted Colorectal Cancer Mortality Rates\* in Delaware, by Race and Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
SOURCE: Delaware Health Statistics Center, 2007.

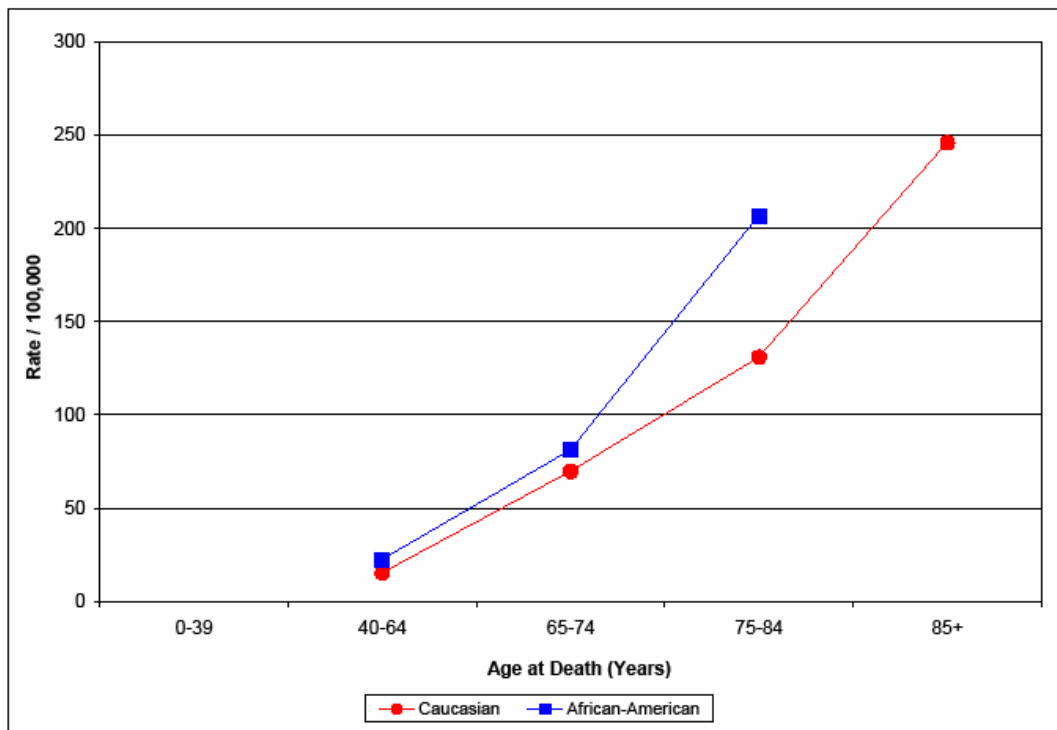
**Table 6.8. Age-Specific Colorectal Cancer Mortality Rates\* in Delaware, by Race and Sex: 2001-05**

Age Group	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
0-39	---	---	---	---	---	---	---	---	---
40-64	16.1	18.7	13.6	15.2	17.8	12.7	22.4	25.9	19.4
65-74	70.6	93.1	51.4	69.7	94.0	48.4	81.2	---	---
75-84	138.5	168.0	118.2	130.8	149.2	118.0	206.7	335.5	---
85+	242.5	270.8	230.8	245.9	284.3	229.9	---	---	---

\* = Rates are per 100,000 population.  
--- = Rate based on fewer than 25 deaths.  
SOURCE: Delaware Health Statistics Center, 2007.



**Figure 6.8. Age-Specific Colorectal Cancer Mortality Rates\* in Delaware, by Race: 2001-05**



NOTE: Rates for either race ages 0-39 and African-Americans ages 85+ are not displayed due to patient confidentiality rules.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

## 7. Lung and Bronchial Cancer

### Risk Factors and Early Detection

#### **Risk Factors for Lung Cancer**

- Tobacco use: cigarette, cigar and pipe smoking
  - An estimated 87 percent of lung cancers are caused by smoking cigarettes, cigars or pipes
  - The longer a person has smoked and the more packs smoked per day, the greater the risk
- Occupational exposures to known lung carcinogens, including asbestos, mustard gas, radioactive ores and heavy metals
- Exposure to secondhand smoke
- Exposure to radon gas
- Radiation therapy to the chest, especially for people who smoke
- Personal history of lung cancer
- Family history of lung cancer
- Diseases such as silicosis, berylliosis and chronic obstructive pulmonary disease

#### **Possible Risk Factors for Lung Cancer**

- Diets low in fruits and vegetables
- High levels of arsenic in drinking water
- Heavy alcohol use
- Smoking marijuana
- Exposure to air pollution

#### **Protective Factors**

- Never smoking
- Stopping smoking at any age
- Diets rich in fruits and possibly vegetables
- Engaging in recommended levels of physical activity

#### **Early Detection of Lung Cancer**

There is currently no effective screening test for lung cancer. The American Cancer Society recommends that people at higher risk for lung cancer be aware of their risk and discuss it with their doctor.

In addition to lung cancer, cigarette smoking is recognized as a risk factor in the development of numerous other cancers, including cervical, esophageal, kidney, laryngeal, oral and pharyngeal, pancreatic and urinary bladder cancers.

#### **Current Trends in Smoking in Delaware and the U.S.**

Current smoking trends may be predictive of cancer rates in the 2030s. In the 1980s (i.e., the time period relevant to current lung and bronchial cancer rates), Delaware's smoking prevalence rates were among

the highest in the country. Almost one-third of Delaware adults smoked during 1979–82. Delaware's smoking rate declined to approximately 25 percent in the 1990s and is now less than 20 percent.

- In 2007, the prevalence of cigarette smoking in Delaware was comparable to prevalence in the U.S. (18.9 percent vs. 19.8 percent, respectively).
  - In Delaware, there were no significant differences among current smokers with regard to sex or race. On the other hand, at the national level, males were significantly more likely to be current smokers than women and African-Americans were significantly more likely to be current smokers than Caucasians.
- The prevalence of cigarette smoking was significantly higher for Delawareans between the ages of 18 and 64 compared to those 65 and older (21.0 percent vs. 9.9 percent, respectively).
- Delaware college graduates were significantly less likely to be current smokers than Delawareans with less than a college degree (9.8 percent vs. 23.9 percent, respectively).
- Delawareans earning less than \$25,000 per year were significantly more likely to be current smokers than Delawareans earning more than \$25,000 per year (30.9 percent vs. 17.0 percent, respectively).

## Data Highlights

### New Cancer Cases and Deaths (Tables 7.1 and 7.6)

- From 2001-05, 3,476 lung cancer cases were diagnosed in Delaware. Lung cancer accounted for 15.8 percent of all new cancer cases diagnosed during this time period.
  - Of the 3,476 lung cancer cases diagnosed from 2001-05, 1,863 cases (53.9 percent) were male. The remaining 1,604 cases (46.1 percent) were female.
  - From 2001-05, lung cancer was the second most commonly diagnosed cancer among both males and females in Delaware.
- Lung cancer was the leading cause of cancer deaths among Delaware males and females during 2001-05, accounting for 30.6 percent of all cancer deaths.
  - From 2001-05, 2,673 Delaware residents died from lung cancer; 1,497 deaths (56.0 percent) occurred among males and 1,176 (44.0 percent) among females.

### Incidence and Mortality Rates (Tables 7.2 and 7.7)

- Delaware's 2001-05 lung cancer incidence rate (78.9 per 100,000) was significantly higher than the U.S. rate (68.7 per 100,000).
  - The 2001-05 lung cancer incidence rate for African-American males was significantly higher than for Caucasian males at both the state and national levels.
  - In Delaware, the 2001-05 lung cancer incidence rates were not significantly different between African-American and Caucasian females (64.3 per 100,000 vs. 66.7 per 100,000, respectively). At the national level, the lung cancer incidence rate for African-American females (56.8 per 100,000) was significantly higher than the rate for Caucasian females (53.9 per 100,000).
  - Regardless of race, the 2001-05 lung cancer incidence rates for males were significantly higher than rates for females at the state and national levels.
  - In Delaware, 2001-05 lung cancer incidence rates at the county level did not differ significantly from state rates with one exception: the rate for Caucasians of both sexes in Kent County (90.1 per 100,000) was significantly higher than the state rate for Caucasians of both sexes (78.5 per 100,000).
- Delaware's 2001-05 lung cancer mortality rates were significantly higher than comparable U.S. rates for all race and sex groups except African-American males.

- Regardless of race, the 2001-05 lung cancer mortality rates for males were significantly higher than for females at both the state and national levels.
  - In Delaware, 2001-05 lung cancer mortality rates at the county level did not differ significantly from state rates, with one exception: the rate for Caucasian males in Kent County (101.5 per 100,000) was significantly elevated compared to the state rate for Caucasian males (77.7).

### **Trends in Cancer Incidence and Mortality (Figures 7.1–7.2 and 7.6–7.7)**

- Since the 1980s, in both Delaware and the U.S., lung cancer incidence rates have decreased among males, but increased among females.
  - From 1991-95 to 2001-05, Delaware's male lung cancer incidence rate decreased 19.7 percent while the comparable U.S. rate fell 17.2 percent. During the same time, Delaware's female lung cancer incidence rate increased 2.5 percent while the comparable U.S. rate increased 4.0 percent.
  - In Delaware, from 1991-95 to 2001-05, the African-American male lung cancer incidence rate fell 35.6 percent while the Caucasian male lung cancer incidence rate fell 16.7 percent. During this same time, Delaware's lung cancer incidence rate for Caucasian females increased 6.0 percent while the incidence rate for African-American females increased 11.4 percent.
- Delaware's male and female lung cancer mortality rates have historically been higher than comparable U.S. rates. Among Delaware males, however, this disparity has decreased over time. From 1987–91, when Delaware's lung cancer mortality rate peaked among men, the state rate was 21 percent greater than the national rate. From 2001-05, Delaware's male lung cancer mortality rate was 10 percent greater than the national rate.
- No significant differences in Delaware's 2001-05 lung cancer mortality rates were observed between African-Americans and Caucasians of either sex.

### **Age-Specific Incidence and Mortality Rates (Tables 7.3 and 7.8, Figures 7.3 and 7.8)**

- In Delaware, from 2001-05, lung cancer incidence increased with age, with a peak incidence observed among Delawareans ages 75-84. In this age group, the male lung cancer incidence rate was approximately 1.6 times higher than the female rate.

### **Stage at Diagnosis of Lung Cancer (Tables 7.4–7.5, Figures 7.4–7.5)**

- In Delaware, from 2001-05, 18.4 percent, 27.0 percent and 46.7 percent of lung and bronchial cancers were diagnosed at the local, regional and distant stage, respectively. In the U.S., from 2000–2006, comparable percentages were 16.2 percent, 22.0 percent and 52.8 percent, respectively.
- Among Delawareans diagnosed with lung cancer, the proportion of those diagnosed with advanced disease did not differ by race. Among African-Americans diagnosed with the disease, 73.4 percent of cases were diagnosed in the regional or distant stages. Among Caucasians, 75.4 percent of cases were diagnosed in the regional or distant stages.
- Among those diagnosed with lung cancer, African-American and Caucasian females were more likely to be diagnosed with local-stage disease compared to their male counterparts.
- There has been minimal change in the stage distribution of lung cancer since the early 1980s.

## Lung and Bronchial Cancer Incidence

**Table 7.1. Number of Lung and Bronchial Cancer Cases in Delaware and Counties, by Race and Sex: 2001-05**

	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	3,476	1,872	1,604	2,947	1,570	1,377	496	282	214
<b>Kent</b>	580	321	259	486	267	219	86	50	36
<b>New Castle</b>	1,867	966	901	1,539	783	756	312	172	140
<b>Sussex</b>	1,029	585	444	922	520	402	98	60	38

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

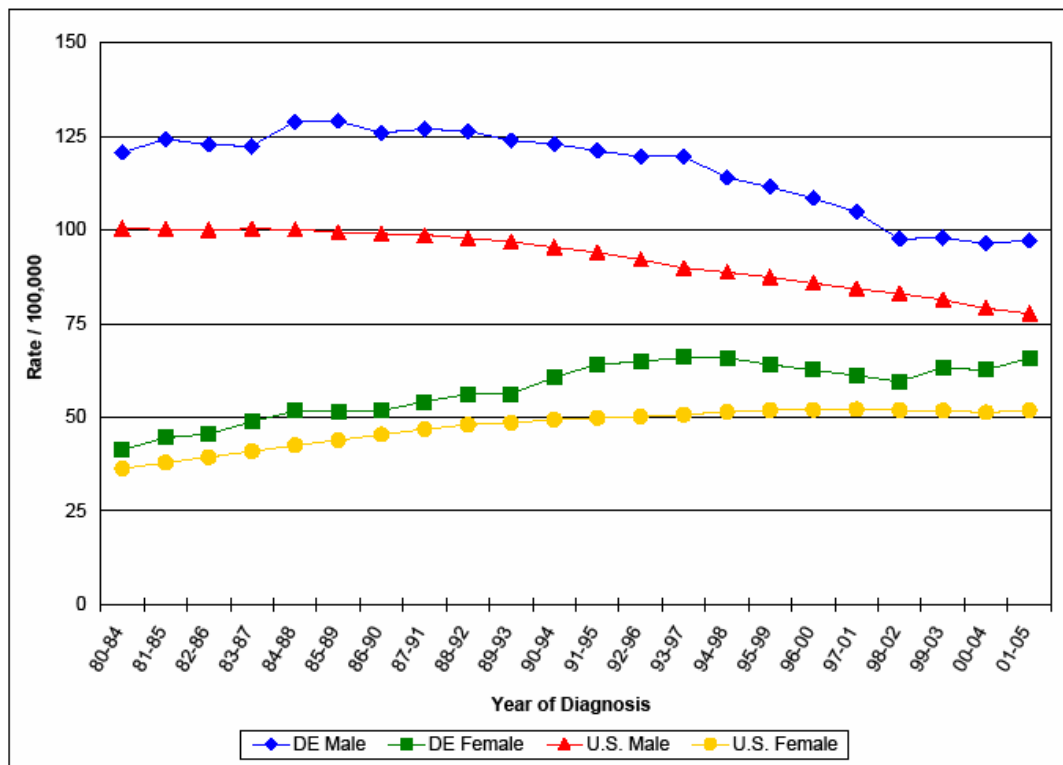
**Table 7.2. Five-Year Average Age-Adjusted Lung and Bronchial Cancer Incidence Rates\* in the U.S., Delaware and Counties, by Race and Sex: 2001-05**

RACE AND REGION	SEX		
	All	Male	Female
<b>ALL RACES</b>			
United States	62.7 (62.3, 63.1)	77.7 (76.9, 78.4)	51.9 (51.4, 52.4)
Delaware	78.9 (76.3, 81.5)	97.2 (92.8, 101.6)	65.7 (62.5, 68.9)
Kent	88.0 (80.9, 95.2)	110.8 (98.7, 122.9)	71.1 (62.4, 79.7)
New Castle	74.7 (71.3, 78.1)	90.0 (84.4, 95.7)	64.1 (59.9, 68.3)
Sussex	83.4 (78.3, 88.5)	104.5 (96.0, 113.0)	67.2 (61.0, 73.5)
<b>CAUCASIAN</b>			
United States	63.5 (63.1, 64.0)	77.0 (76.2, 77.9)	53.9 (53.3, 54.5)
Delaware	78.5 (75.7, 81.3)	95.0 (90.3, 99.7)	66.7 (63.1, 70.2)
Kent	90.1 (82.1, 98.1)	111.9 (98.5, 125.3)	73.8 (64.0, 83.6)
New Castle	74.1 (70.4, 77.8)	87.4 (81.3, 93.5)	65.0 (60.4, 69.7)
Sussex	82.2 (76.9, 87.5)	101.3 (92.6, 110.0)	67.7 (61.1, 74.3)
<b>AFRICAN-AMERICAN</b>			
United States	77.0 (75.4, 78.7)	107.3 (104.1, 110.5)	56.8 (55.0, 58.7)
Delaware	85.3 (77.8, 92.8)	116.0 (102.4, 129.5)	64.3 (55.7, 72.9)
Kent	85.1 (68.1, 105.1)	112.4 (83.4, 148.2)	64.4 (45.1, 89.2)
New Castle	80.8 (71.9, 89.8)	107.5 (91.4, 123.6)	63.3 (52.8, 73.8)
Sussex	99.2 (80.6, 120.9)	145.7 (111.2, 187.5)	66.7 (47.2, 91.5)

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

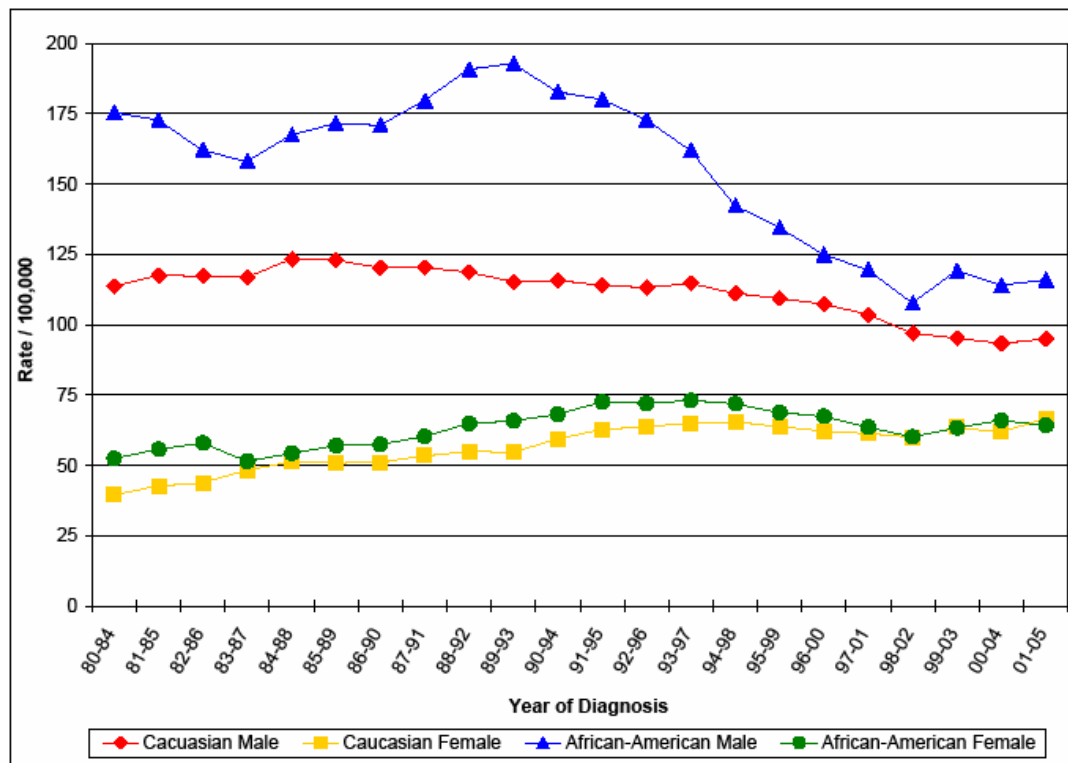
SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 7.1. Five-Year Average Age-Adjusted Lung and Bronchial Cancer Incidence Rates\* in the U.S. and Delaware, by Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
 SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 7.2. Five-Year Average Age-Adjusted Lung and Bronchial Cancer Incidence Rates\* in Delaware, by Race and Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 7.3. Age-Specific Lung and Bronchial Cancer Incidence Rates\* in Delaware, by Race and Sex: 2001-05**

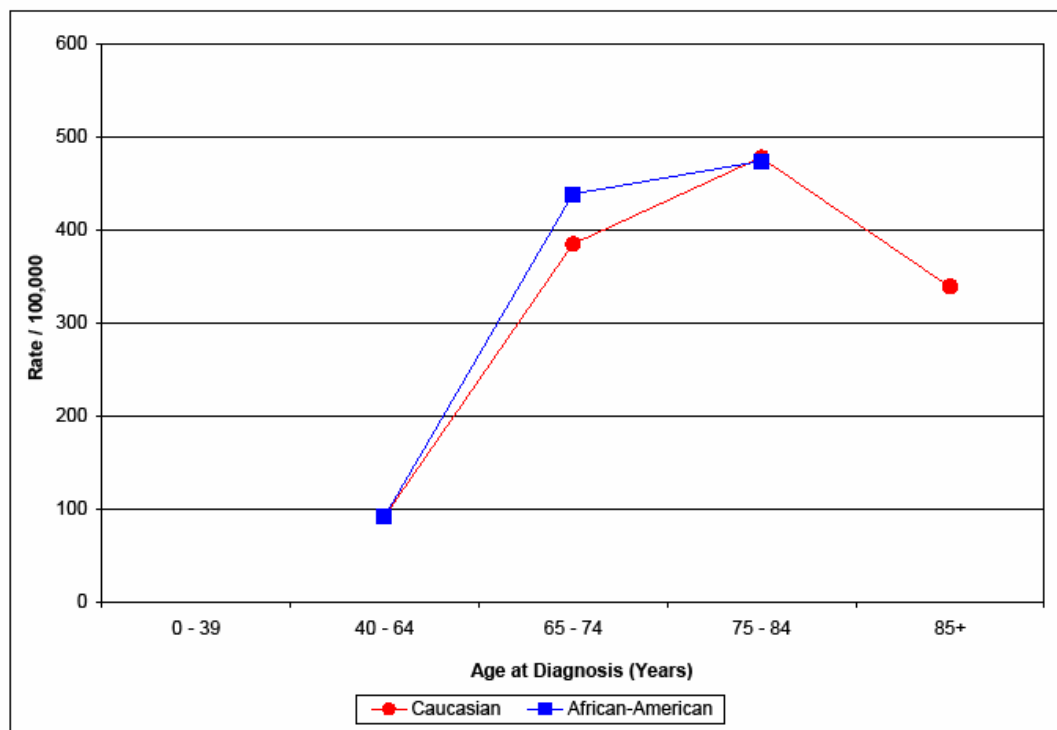
Age Group	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
0–39	1.21	---	---	---	---	---	---	---	---
40–64	89.61	98.74	81.09	91.21	97.03	85.65	91.20	118.31	68.41
65–74	389.67	477.92	313.91	384.62	466.70	313.05	438.48	564.90	340.74
75–84	474.51	608.37	382.46	477.8	604.01	389.74	473.89	684.47	347.19
85+	339.55	574.74	242.27	338.95	568.64	242.82	---	---	---

\* = Rates are per 100,000 population.

--- = Rate based on fewer than 25 cases.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 7.3. Age-Specific Lung and Bronchial Cancer Incidence Rates in Delaware, by Race: 2001-05**



NOTE: Rates for either race ages 0-39 and African-Americans ages 85+ are not displayed due to patient confidentiality rules.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

### Lung and Bronchial Cancer by Stage at Diagnosis

**Table 7.4. Number of Lung and Bronchial Cancer Cases in Delaware, by Stage at Diagnosis, Race and Sex: 2001-05**

Stage at Diagnosis	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
Local	634	302	332	532	251	281	96	47	49
Regional	934	477	457	779	391	388	145	81	64
Distant	1,614	936	678	1,370	791	579	228	135	93
Unknown	272	148	124	244	129	115	26	17	9
<b>Total</b>	<b>3,454</b>	<b>1,863</b>	<b>1,591</b>	<b>2,925</b>	<b>1,562</b>	<b>1,363</b>	<b>495</b>	<b>280</b>	<b>215</b>

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

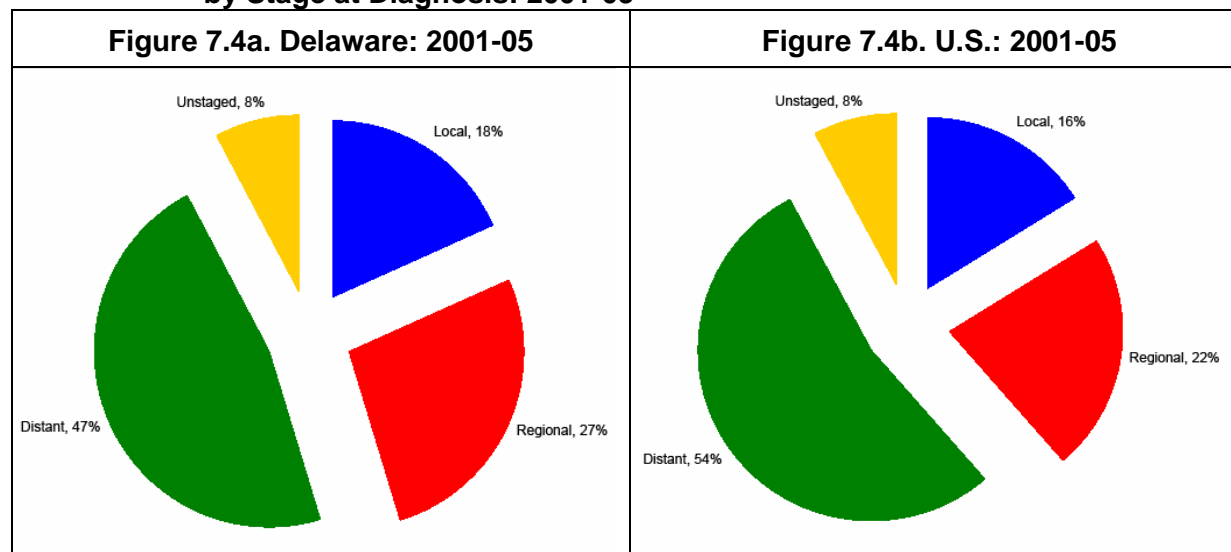


**Table 7.5. Percentage of Lung and Bronchial Cancer Cases in Delaware, by Stage at Diagnosis, Race and Sex: 2001-05**

Stage at Diagnosis	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
Local	18.4	16.2	20.9	18.2	16.1	20.6	19.4	16.8	22.8
Regional	27.0	25.6	28.7	26.6	25.0	28.5	29.3	28.9	29.8
Distant	46.7	50.2	42.6	46.8	50.6	42.5	46.1	48.2	43.3
Unknown	7.9	7.9	7.8	8.3	8.3	8.4	5.3	6.1	4.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

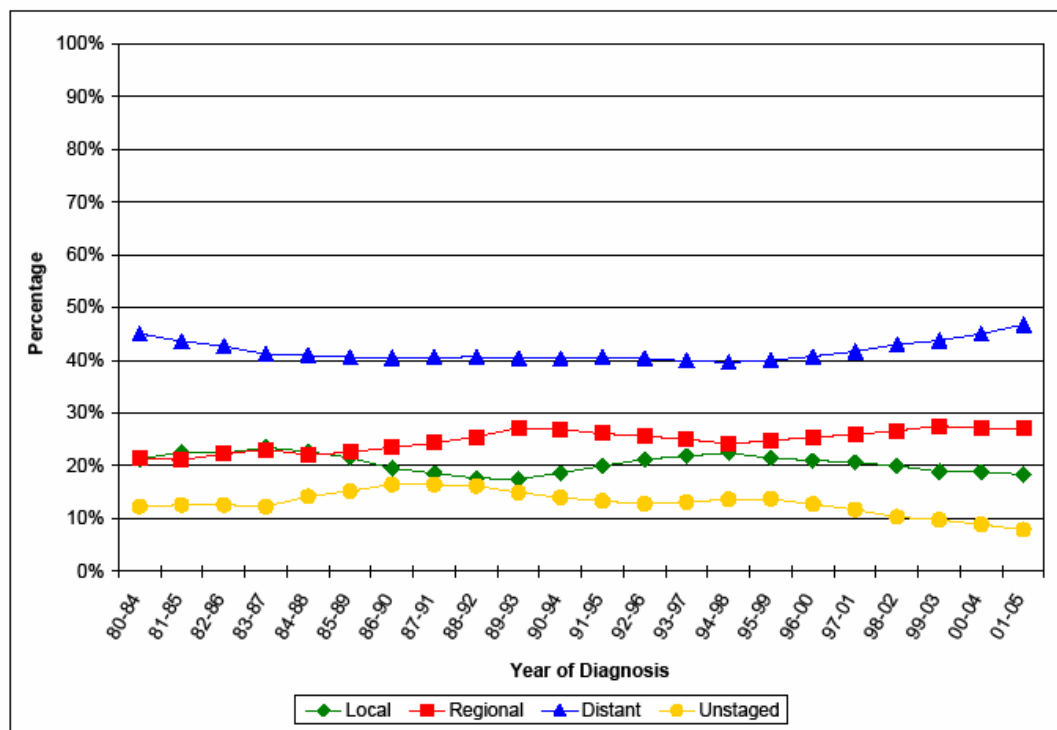
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 7.4. Percentage of Lung and Bronchial Cancer Cases in Delaware and the U.S., by Stage at Diagnosis: 2001-05**



SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2008; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 7.5. Percentage of Lung and Bronchial Cancer Cases in Delaware, by Stage at Diagnosis: 1980–2005**



SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

## Lung and Bronchial Cancer Mortality

**Table 7.6. Number of Lung and Bronchial Cancer Deaths in Delaware and Counties, by Race and Sex: 2001-05**

	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
<b>Delaware</b>	2,673	1,497	1,176	2,265	1,262	1,003	387	224	163
<b>Kent</b>	465	280	185	391	233	158	71	45	26
<b>New Castle</b>	1,420	767	653	1,173	632	541	236	128	108
<b>Sussex</b>	788	450	338	701	397	304	80	51	29

SOURCE: Delaware Health Statistics Center, 2007.

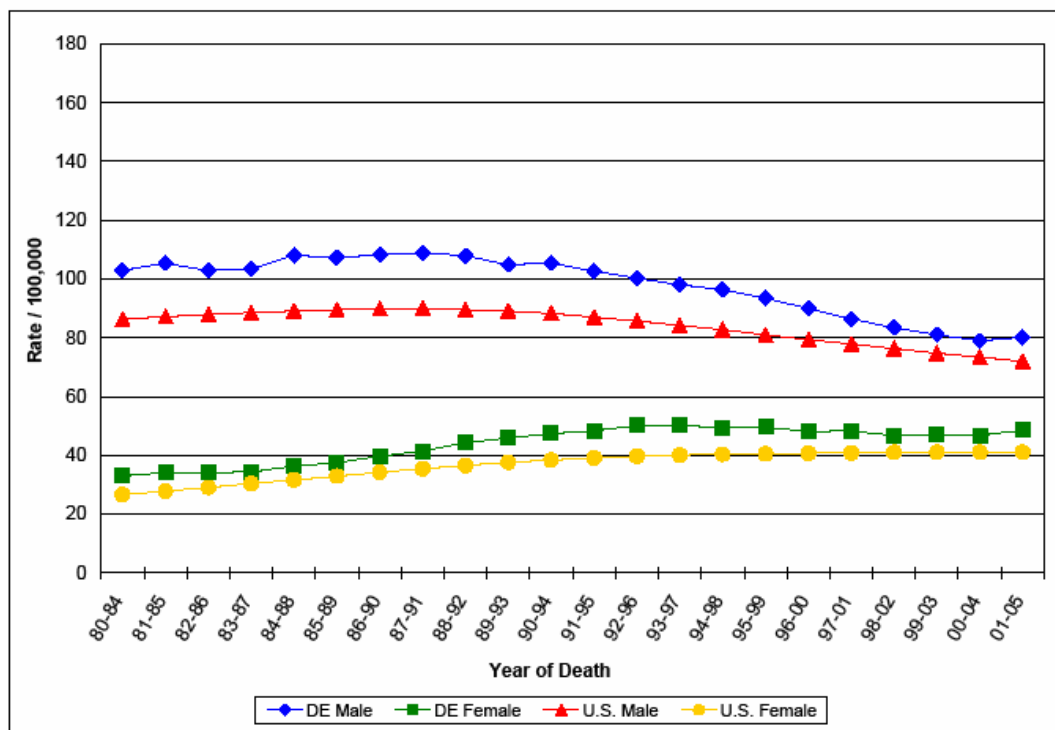
**Table 7.7. Five-Year Average Age-Adjusted Lung and Bronchial Cancer Mortality Rates\* in the U.S., Delaware and Counties, by Race and Sex: 2001-05**

RACE AND REGION	SEX		
	All	Male	Female
<b>ALL RACES</b>			
United States	54.1 (53.9, 54.2)	72.0 (71.8, 72.2)	41.0 (40.9, 41.2)
Delaware	60.9 (58.6, 63.3)	79.4 (75.3, 83.6)	47.6 (44.9, 50.4)
Kent	71.2 (64.9, 78.0)	99.8 (88.1, 112.5)	50.6 (43.6, 58.5)
New Castle	57.1 (54.2, 60.2)	73.1 (67.9, 78.5)	45.9 (42.4, 49.5)
Sussex	63.6 (59.2, 68.3)	81.5 (73.9, 89.7)	50.1 (44.8, 55.9)
<b>CAUCASIAN</b>			
United States	54.4 (54.3, 54.5)	71.3 (71.1, 71.6)	42.0 (41.9, 42.2)
Delaware	60.2 (57.8, 62.8)	77.7 (73.4, 82.1)	47.5 (44.6, 50.6)
Kent	73.0 (65.9, 80.6)	101.5 (88.6, 115.8)	52.9 (45.0, 61.9)
New Castle	56.2 (53.1, 59.6)	71.6 (66.0, 77.4)	45.2 (41.5, 49.3)
Sussex	62.1 (57.5, 67.0)	78.4 (70.6, 86.9)	49.9 (44.4, 56.1)
<b>AFRICAN-AMERICAN</b>			
United States	60.9 (60.5, 61.4)	93.1 (92.2, 93.9)	39.9 (39.5, 40.4)
Delaware	68.4 (61.6, 75.8)	94.7 (81.9, 108.8)	50.4 (42.8, 58.7)
Kent	69.8 (54.2, 88.2)	95.7 (68.8, 129.1)	49.0 (31.9, 71.4)
New Castle	63.4 (55.3, 72.3)	85.0 (69.5, 102.7)	50.0 (40.8, 60.5)
Sussex	82.1 (65.0, 102.0)	126.3 (93.5, 166.1)	50.6 (33.9, 72.5)

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

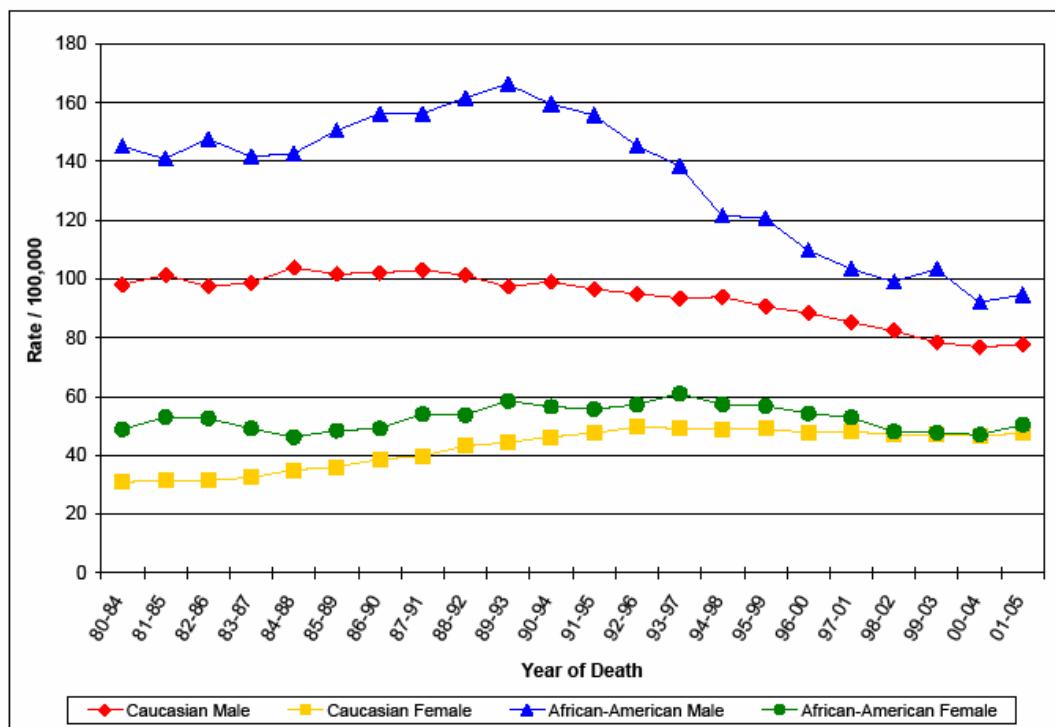
**Figure 7.6. Five-Year Average Age-Adjusted Lung and Bronchial Cancer Mortality Rates\* in the U.S. and Delaware, by Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

**Figure 7.7. Five-Year Average Age-Adjusted Lung and Bronchial Cancer Mortality Rates\* in Delaware, by Race and Sex: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCE: Delaware Health Statistics Center, 2007.

**Table 7.8. Age-Specific Lung and Bronchial Cancer Mortality Rates\* in Delaware, by Race and Sex: 2001-05**

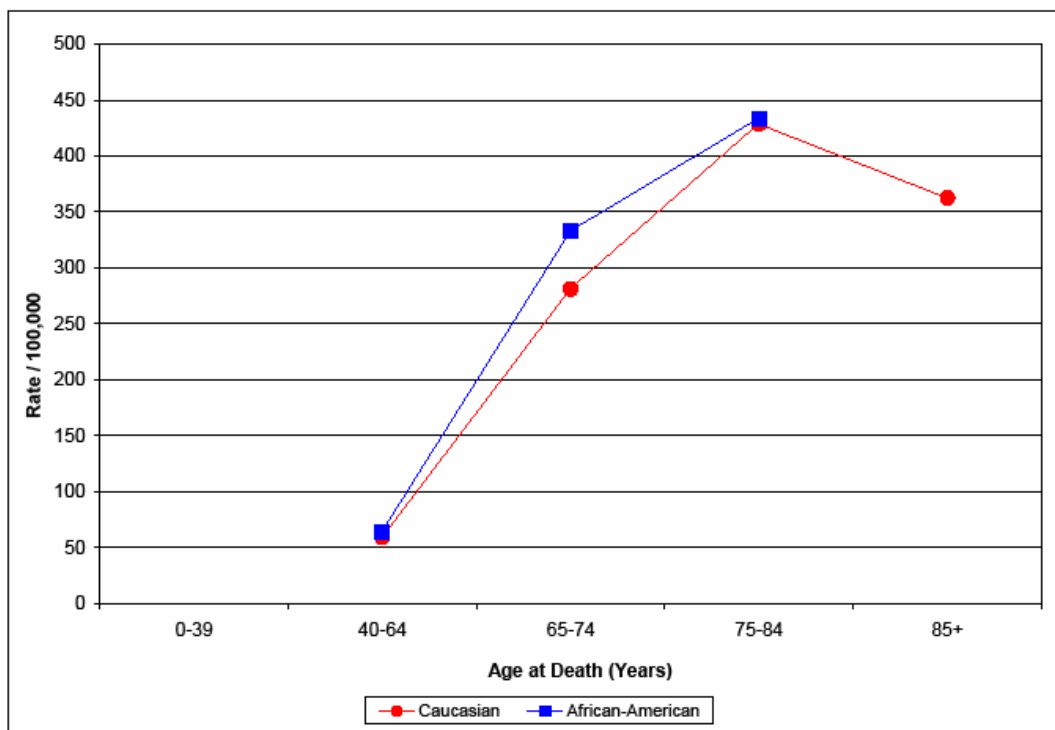
Age Group	All Races			Caucasian			African-American		
	All	Male	Female	All	Male	Female	All	Male	Female
0–39	---	---	---	---	---	---	---	---	---
40–64	58.8	70.8	47.7	58.9	68.1	50.1	64.2	92.4	40.4
65–74	286.3	357.5	225.1	281.1	353.0	218.4	332.9	403.5	278.4
75–84	425.2	568.9	326.5	428.7	567.1	332.2	433.6	644.2	306.8
85+	365.4	596.8	269.7	362.5	593.4	266.1	384.7	---	---

\* = Rates are per 100,000 population.

--- = Rate based on fewer than 25 deaths.

SOURCE: Delaware Health Statistics Center, 2007.

**Figure 7.8. Age-Specific Lung and Bronchial Cancer Mortality Rates in Delaware, by Race: 2001-05**



NOTE: Rates for either race ages 0-39 and African-Americans ages 85+ are not displayed due to patient confidentiality rules.

SOURCE: Delaware Health Statistics Center, 2007.

## 8. Prostate Cancer

### Risk Factors and Early Detection

#### Risk Factors for Prostate Cancer

- Increasing age: the risk of prostate cancer rises rapidly after age 50
- Family history of prostate cancer
- African-American race
- Nationality: prostate cancer is most commonly diagnosed cancer among men in North America, northwestern Europe, Australia and the Caribbean

#### Possible Risk Factors for Prostate Cancer

- Diets high in red meat and other high-fat foods (especially animal fats) and low in fruits and vegetables
- Diets high in calcium
- Heavy alcohol use
- Inflammation of the prostate gland
- Welders, battery manufacturers, rubber workers, and workers exposed to cadmium may be at greater risk

#### Protective Factors

- High levels of physical activity, particularly in older men, may lower the risk of advanced prostate cancer

#### Early Detection of Prostate Cancer

- Digital rectal exam
- Prostate-specific antigen (PSA) blood test

The American Cancer Society does not support routine testing for prostate cancer at this time. However, it recommends that the digital rectal exam and PSA blood test be offered yearly, beginning at age 50, and that men discuss their situation and risk with their doctor.

Recent data from the Behavioral Risk Factor Surveillance System (BRFSS) provide information on the pattern of prostate cancer screening among Delawarean men:

- In 2007, 66.5 percent of Delaware males ages 40 and older reported ever having had a PSA blood test. No national data are available for comparison for 2007.
- Out of those Delaware males who reported ever having had a PSA test, 89.6 percent were tested within the past two years.
- No significant differences were found by race, age, education, or income levels.

## Data Highlights

### New Cancer Cases and Deaths (Tables 8.1 and 8.6)

- Prostate cancer was the most frequently diagnosed cancer among Delaware males. From 2001-05, it accounted for 3,430 (29.7 percent) of newly diagnosed cancer cases among males.
- Prostate cancer was responsible for 10.4 percent of all cancer deaths among Delaware males from 2001-05.

### Incidence and Mortality Rates (Tables 8.2 and 8.7)

- Delaware's 2001-05 overall prostate cancer rate (all races combined) was significantly higher than the national rate. However, when broken down by race, only Delaware's African-American prostate cancer rate was significantly higher than the comparable U.S. rate. Delaware's Caucasian prostate cancer rate was not significantly different from the Caucasian prostate cancer rate at the U.S. level.
- From 2001-05, Delaware's African-American prostate cancer rate was significantly higher than the state rate for Caucasians.
- The prostate cancer rate for Sussex County males (135.8 per 100,000) was significantly lower than the rates for New Castle and Kent Counties (192.1 per 100,000 and 191.3 per 100,000, respectively).
- Delaware's 2001-05 overall prostate cancer mortality rates, as well as the African-American and Caucasian rates, were not significantly different from comparable U.S. rates.
- Within Delaware, the 2001-05 prostate cancer mortality rate for African-Americans was significantly higher than the Caucasian rate (54.4 per 100,000 vs. 26.4 per 100,000, respectively).
- No significant differences in prostate cancer mortality rates were observed by county of residence.

### Trends in Cancer Incidence and Mortality (Figures 8.1–8.2 and 8.6–8.7)

- From 1991-95 to 2001-05, Delaware's prostate cancer incidence rate fell 19.9 percent. During the same time period, the national prostate cancer incidence rate decreased 16.3 percent.
- From 1991–95, when prostate cancer incidence rates peaked in Delaware, the rate for African-American men was nearly 74.5 percent greater than the Caucasian rate. From 2001-05, the difference in prostate cancer rates between African-American and Caucasian Delawareans had decreased slightly to 67.6 percent.
- From 1991-95 to 2001-05, Delaware's prostate cancer mortality rate fell 29.4 percent. During the same time period, the national prostate cancer mortality rate decreased 31.0 percent.
- In Delaware, the difference in prostate cancer mortality rates between African-Americans and Caucasians has decreased slightly over time. From 1991-95, the African-American prostate cancer mortality rate was 2.64 times greater than the rate for Caucasians. From 2001-05, the African-American prostate cancer mortality rate was 2.06 times greater than the rate for Caucasians.

### Age-Specific Incidence and Mortality Rates (Tables 8.3 and 8.8, Figures 8.3 and 8.8)

- From 2001-05, prostate cancer incidence rates in Delaware increased with age, peaking among males ages 65-74. During the same time, prostate cancer mortality rates increased with age.

### Stage at Diagnosis of Prostate Cancer (Tables 8.4–8.5, Figures 8.4–8.5)

- In Delaware, from 2001-05, 86.7 percent, 6.8 percent and 2.9 percent of prostate cancers were diagnosed at the local, regional and distant stage respectively. At the national level, from 2001-2005, comparable percentages were 88.0 percent, 5.0 percent and 4.0 percent, respectively.



- In Delaware, from 2001-05, 339 cases (9.8 percent of all prostate cancers) were diagnosed in the late (i.e., regional or distant) stages. The proportion of late stage diagnoses did not differ substantially by race.
- The proportion of local stage prostate cancers increased from 1980-84 to 2001-05 (from 49.6 percent to 86.4 percent, respectively). During the same time, the proportion of distant stage prostate cancer diagnoses decreased from 27.3 percent to 2.9 percent.

## Prostate Cancer Incidence

**Table 8.1. Number of Prostate Cancer Cases in Delaware and Counties, by Race: 2001-05**

	<b>All Male</b>	<b>Caucasian Male</b>	<b>African-American Male</b>
<b>Delaware</b>	3,430	2,652	677
<b>Kent</b>	559	406	118
<b>New Castle</b>	2,091	1,573	475
<b>Sussex</b>	780	673	84

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

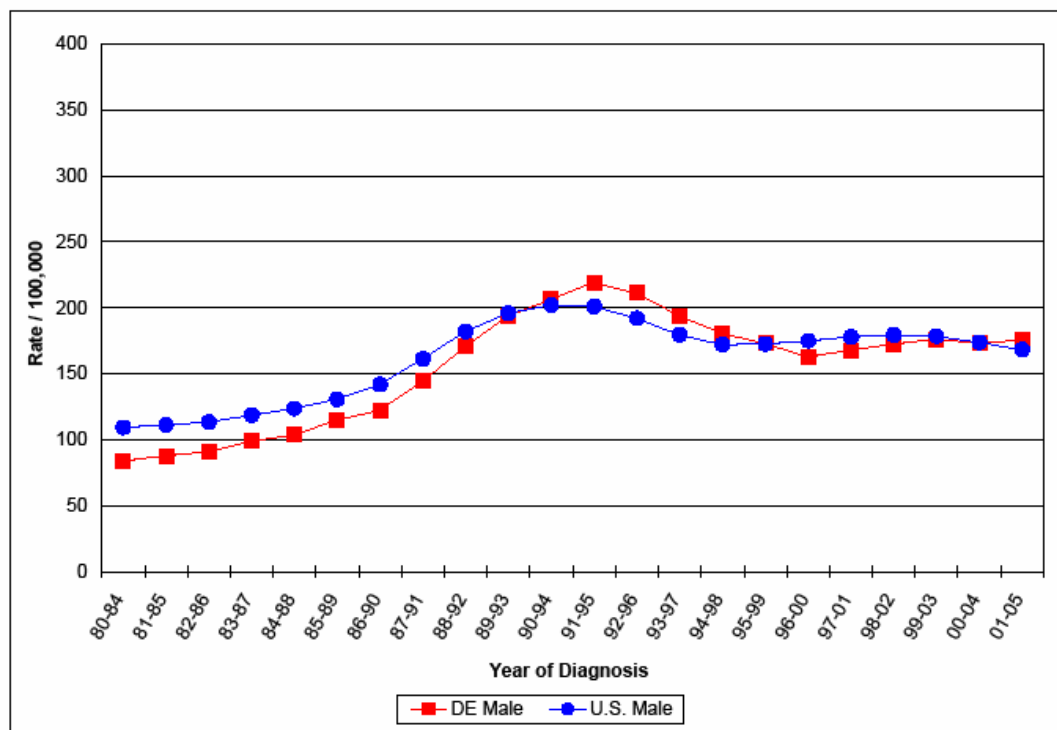
**Table 8.2. Five-Year Average Age-Adjusted Prostate Cancer Incidence Rates\* in the U.S., Delaware and Counties, by Race: 2001-05**

	<b>All Male</b>	<b>Caucasian Male</b>	<b>African-American Male</b>
<b>United States</b>	168.2 (167.1, 169.3)	164.5 (163.4, 165.7)	255.9 (251.1, 260.7)
<b>Delaware</b>	175.6 (169.7, 181.4)	159.1 (153.1, 165.1)	266.7 (246.7, 286.7)
<b>Kent</b>	191.3 (175.7, 207.0)	171.2 (154.8, 187.5)	244.6 (201.2, 288.0)
<b>New Castle</b>	192.1 (183.38, 200.3)	174.6 (166.0, 183.2)	290.2 (264.1, 316.3)
<b>Sussex</b>	135.8 (126.3, 145.2)	126.3 (116.8, 135.7)	206.2 (165.0, 255.4)

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

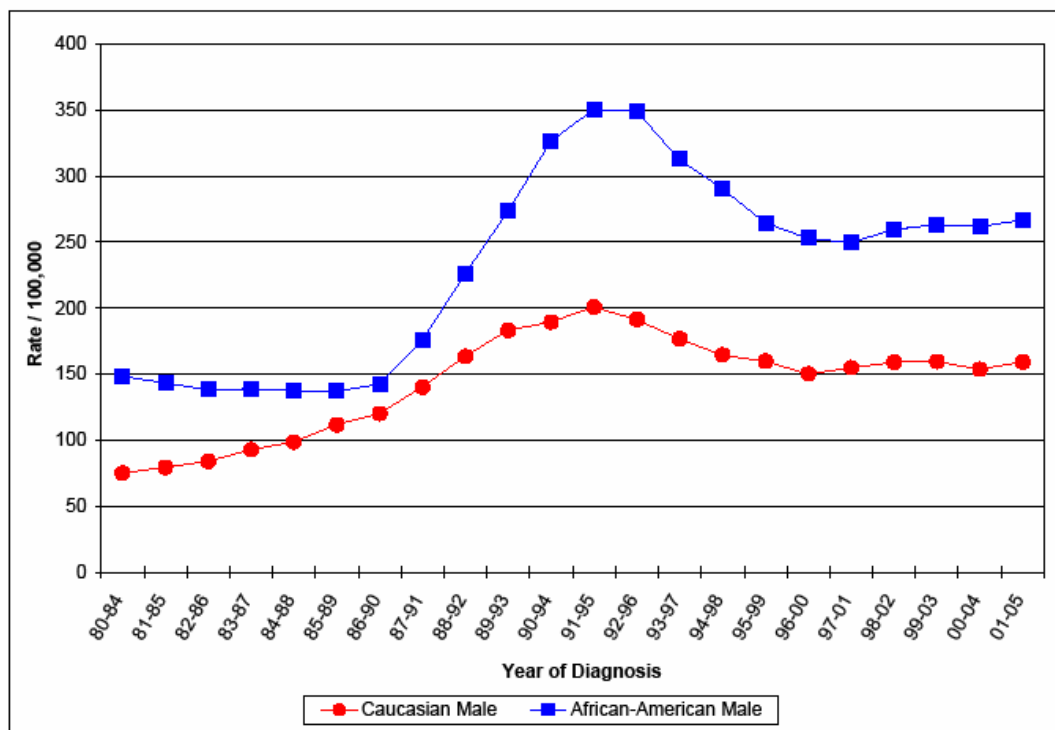
SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2007; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2008.

**Figure 8.1. Five-Year Average Age-Adjusted Prostate Cancer Incidence Rates\* in the U.S. and Delaware: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
 SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2007; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2007.

**Figure 8.2. Five-Year Average Age-Adjusted Prostate Cancer Incidence Rates\* in Delaware, by Race: 1980–2005**



\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 8.3. Age-Specific Prostate Cancer Incidence Rates\* in Delaware, by Race: 2001-05**

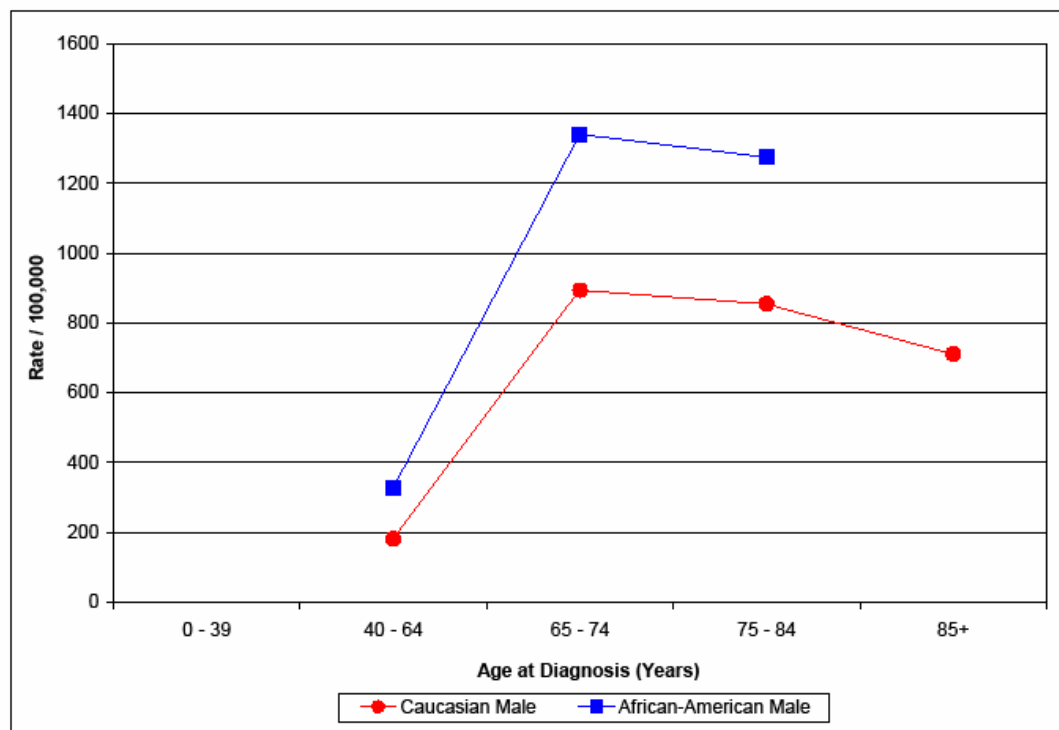
Age Group	All Male	Caucasian Male	African-American Male
0–39	0.45	---	---
40–64	206.1	181.2	326.3
65–74	958.1	894.1	1340.9
75–84	910.0	854.1	1275.0
85+	757.1	710.8	---

\* = Rates are per 100,000 population.

--- = Rate based on fewer than 25 cases.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 8.3. Age-Specific Prostate Cancer Incidence Rates in Delaware, by Race: 2001-05**



NOTE: Rates for either race ages 0-39 and African-Americans ages 85+ are not displayed due to patient confidentiality rules.

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

### Prostate Cancer by Stage at Diagnosis

**Table 8.4. Number of Prostate Cancer Cases in Delaware, by Stage at Diagnosis and Race: 2001-05**

Stage at Diagnosis	All Male	Caucasian Male	African-American Male
Local	2995	2331	584
Regional	237	185	44
Distant	102	76	24
Unknown	133	97	30
<b>Total</b>	<b>3467</b>	<b>2689</b>	<b>682</b>

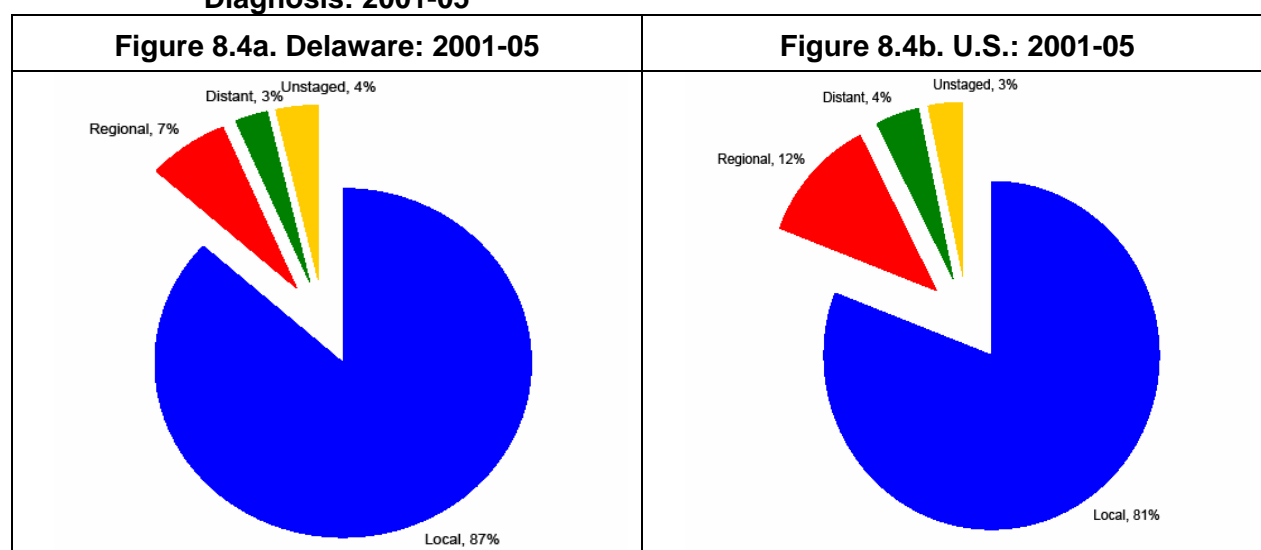
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table 8.5. Percentage of Prostate Cancer Cases in Delaware, by Stage at Diagnosis and Race: 2001-05**

Stage at Diagnosis	All Male	Caucasian Male	African-American Male
Local	86.4	86.7	85.6
Regional	6.8	6.9	6.5
Distant	2.9	2.8	3.5
Unknown	3.8	3.6	4.4
Total	100.0	100.0	100.0

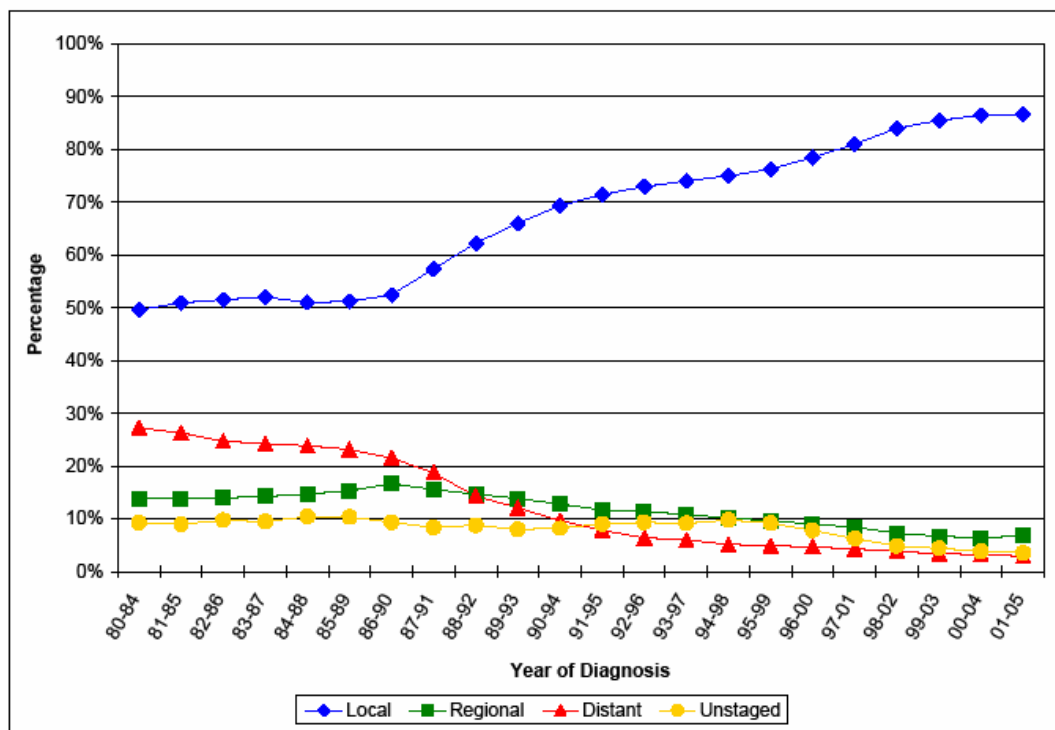
SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Figure 8.4. Percentage of Prostate Cancer Cases in Delaware and the U.S., by Stage at Diagnosis: 2001-05**



SOURCES: Delaware: Delaware Cancer Registry, Delaware's Division of Public Health, 2007; U.S.: Surveillance, Epidemiology, and End Results Program, National Cancer Institute, 2008.

**Figure 8.5. Percentage of Prostate Cancer Cases in Delaware, by Stage at Diagnosis: 1980–2005**



SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

## Prostate Cancer Mortality

**Table 8.6. Number of Prostate Cancer Deaths in Delaware and Counties, by Race: 2001–2005**

	All Male	Caucasian Male	African-American Male
<b>Delaware</b>	477	373	99
<b>Kent</b>	71	48	23
<b>New Castle</b>	279	219	58
<b>Sussex</b>	127	106	18

SOURCE: Delaware Health Statistics Center, 2007.

**Table 8.7. Five-Year Average Age-Adjusted Prostate Cancer Mortality Rates\* in the U.S., Delaware and Counties, by Race: 2001-05**

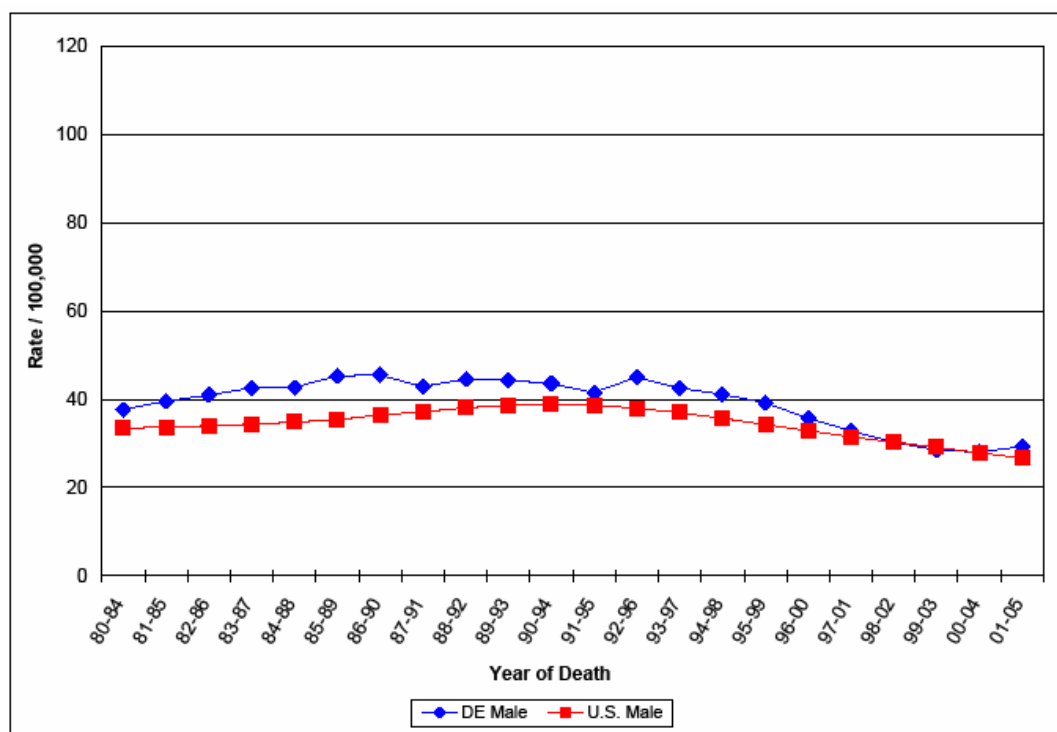
	All Male	Caucasian Male	African-American Male
United States	26.7 (26.6, 26.9)	24.6 (24.5, 24.7)	59.4 (58.6, 60.1)
Delaware	29.3 (26.7, 32.1)	26.4 (23.7, 29.2)	54.4 (43.7, 66.6)
Kent	29.7 (23.0, 37.7)	25.5 (18.6, 34.0)	---
New Castle	30.8 (27.2, 34.7)	27.8 (24.2, 31.8)	57.2 (42.5, 74.5)
Sussex	26.7 (22.1, 32.1)	24.6 (20.0, 30.1)	---

\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

--- = Rate based on fewer than 25 deaths.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.

**Figure 8.6. Five-Year Average Age-Adjusted Prostate Cancer Mortality Rates\* in the U.S. and Delaware: 1980–2005**

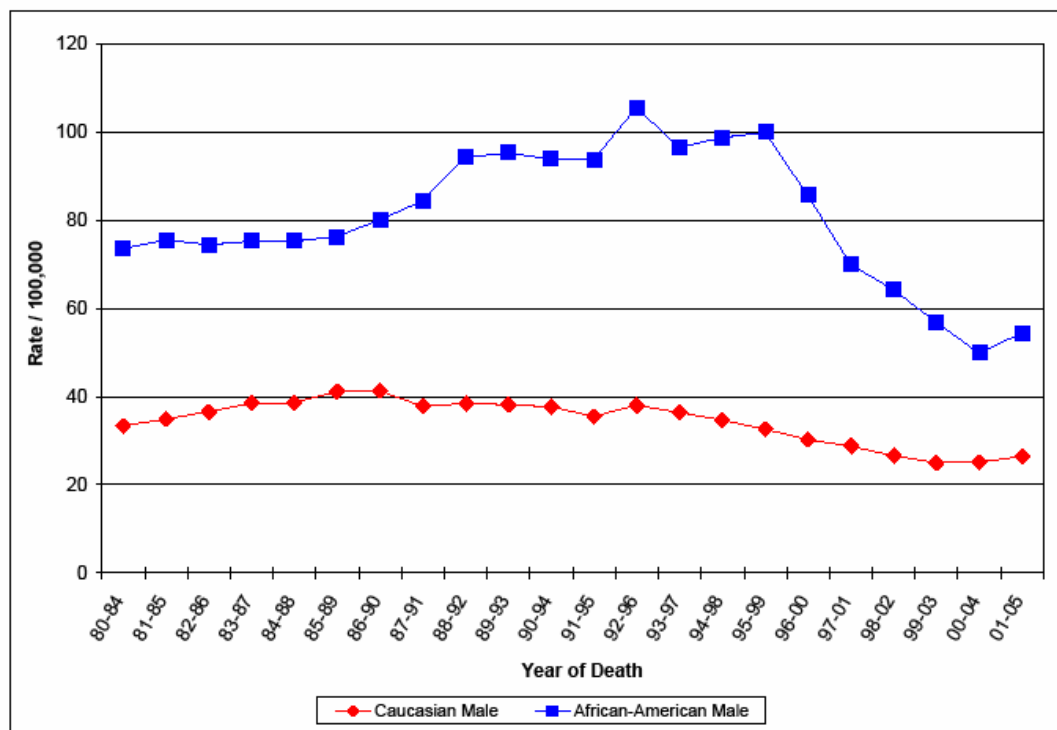


\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.

SOURCES: Delaware: Delaware Health Statistics Center, 2007; U.S.: National Center for Health Statistics, 2007.



**Figure 8.7. Five-Year Average Age-Adjusted Prostate Cancer Mortality Rates\* in Delaware, by Race: 1980–2005**



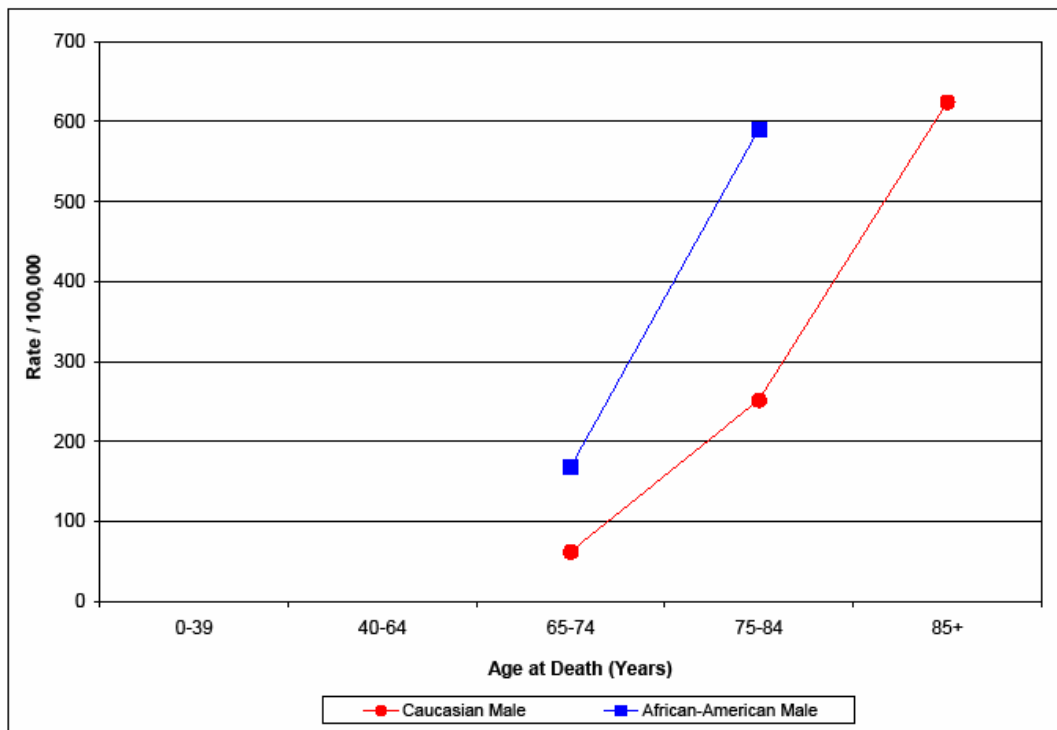
\* = Rates are per 100,000 population and age-adjusted to the 2000 U.S. standard population.  
SOURCE: Delaware Health Statistics Center, 2007.

**Table 8.8. Age-Specific Prostate Cancer Mortality Rates\* in Delaware, by Race: 2001-05**

Age Group	All Male	Caucasian Male	African-American Male
0–39	---	---	---
40–64	6.0	---	---
65–74	73.9	61.5	167.6
75–84	283.8	251.6	590.5
85+	635.5	624.3	---

\* = Rates are per 100,000 population.  
SOURCE: Delaware Health Statistics Center, 2007.

**Figure 8.8. Age-Specific Prostate Cancer Mortality Rates in Delaware, by Race: 2001-05**



NOTE: Rates for either race ages 0-39 and 40-64 and for African-Americans aged 85+ are not displayed due to patient confidentiality rules.

SOURCE: Delaware Health Statistics Center, 2007.

## References

- Anderson, R. N. & Rosenberg, H. M. (1998). *Age Standardization of Death Rates: Implementation of the Year 2000 Standard*. (Rep. No. 47(3)). Hyattsville, Maryland: National Center for Health Statistics.
- Coughlin, S. S., Clutter, G. G., & Hutton, M. (1999). Ethics in Cancer Registries. *Journal of Cancer Registry Management*, 26, 5-10.
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- Klein, R. J. & Schoenborn, C. A. (2001). *Age-adjustment using the 2000 projected U.S. population* (Rep. No. 20). Hyattsville, Maryland: National Center for Health Statistics.
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## APPENDIX A

### HISPANIC CANCER RATES

Hispanic cancer rates were not calculated for this report because several methodological issues prevent Hispanic rates from being fairly compared with cancer rates for Caucasians and African-Americans. Cancer rates are calculated by dividing the number of cancer cases (numerator) by a population (denominator); therefore, cancer rates are heavily influenced by changes or uncertainties in the number of cancer cases and the size of the population. Specific issues that suggest that Hispanic cancer rates would be subject to misinterpretation are presented below:

- **Uncertain estimate of Delaware's Hispanic population**—estimates of Delaware's population are derived from a census performed every 10 years by the U.S. Census Bureau. The Delaware Population Consortium (DPC) uses Census data to estimate the Delaware population between Census years. In 1997, the DPC began releasing studies on special topics of interest, including Hispanic population estimates. Because the estimates are calculated from mortality, fertility, labor force and migration statistics, and because these statistics are based on a small population of Hispanics, the DPC urged that the Hispanic population estimates presented in its studies be used with caution (Delaware Population Consortium. *Delawareans of Hispanic Origin, 1991–1998*. Population Study Series. PS-00-01, April 2000). For these reasons, the estimates are not included in the DPC's annual Delaware population projection. In less-populated areas, such as small states, and especially in subsets of the population (for example, for one sex or one county), even a small inaccuracy can result in a substantial error in the cancer rate.
- **Inaccurate recording of Hispanic ethnicity on death certificates**—race and Hispanic origin are treated as distinct concepts and reported separately on death certificates and to the Delaware Cancer Registry, in accordance with guidelines from the federal Office of Management and Budget. To assess the completeness of the reporting of Hispanic ethnicity, expected numbers of cancer cases and deaths in the Hispanic population were calculated and compared with the actual (observed) reports. Because the Hispanic population is younger than the overall Delaware population, and because cancer rates increase with age, the expected values were age-adjusted to ensure comparability. There were 89 deaths from cancer reported on death certificates between 2001 and 2005, but 153 deaths were expected. Similarly, 412 incident cancer cases were reported to the registry, but 476 cases were expected. Although this analysis is a cursory attempt to estimate the degree of underreporting of Hispanic ethnicity, it demonstrates the possibility of significantly inaccurate Hispanic cancer rates.<sup>1</sup>
- **Small number of cases or deaths and small population sizes**—an incidence or mortality rate is an estimate, and the reliability of estimates can be measured by calculating a confidence interval. A narrow confidence interval suggests that the rate is a good estimate; a wide confidence interval suggests that the rate should be interpreted with caution. If the confidence intervals of two rates do not overlap, the rates are considered to be statistically

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<sup>1</sup> This analysis assumes that the risk of cancer in the Hispanic population, for any particular age, is the same as in the Delaware population as a whole. The indirect standardization of age adjustment was used to calculate the expected number of cases and deaths in the Hispanic population. The indirect method applies the age-specific rates of a standard population (Delaware's 2000–04 rates) to the age distribution of the study (Hispanic) population to estimate the expected deaths or cases in the study population. Indirect adjustment is used when the number of deaths or cases in each age group in the study population is too small to calculate stable age-specific rates. The rest of this report uses the direct standardization of age adjustment, which is explained in appendix B.

different. Both the size of the numerator (the number of cases or deaths) and denominator (the population) determine the width of the confidence interval.

To illustrate the impact of these statistical concepts on the calculation of Hispanic cancer rates, five-year average annual age-adjusted cancer rates were compared for three racial/ethnic groups, along with their 95-percent confidence intervals. A 95-percent confidence interval is a range of values in which, under identical repeated samplings of the population, includes the actual rate 95% of the time.

As shown in the tables below, the small numerators and denominators for the Hispanic population produced larger confidence intervals than those for Caucasian and African-American populations.

**Table A1. Cancer Cases, Population and Age-Adjusted Cancer Incidence Rates in Delaware: 2001-05**

Race/Ethnicity	Average Annual Cases (2001-05)	Average Annual Population (2001-05)	Age-Adjusted Incidence Rate per 100,000	95% Confidence Interval	
				Lower	Upper
Hispanic	412	227,648	437.7	389.1	486.3
Caucasian	18,109	3,116,389	501.5	494.0	508.9
African-American	3,264	846,532	530.7	512.2	549.8

SOURCE: Delaware Cancer Registry, Delaware's Division of Public Health, 2008.

**Table A2. Cancer Deaths, Population and Age-Adjusted Cancer Mortality Rates in Delaware: 2001-05**

Race/Ethnicity	Average Annual Deaths (2001-05)	Average Annual Population (2001-05)	Age-Adjusted Mortality Rate per 100,000	95% Confidence Interval	
				Lower	Upper
Hispanic	89	227,648	120.7	92.8	148.6
Caucasian	7,332	3,116,389	200.5	195.9	205.2
African-American	1,334	846,532	236.6	223.7	249.9

SOURCE: Delaware Health Statistics Center, 2007.

## **APPENDIX B METHODOLOGY**

Appendix B documents the materials, data sources and statistical methods that were used to generate the counts and age-adjusted and age-specific incidence and mortality rates discussed in this report. Coding and classification schemes, as well as a description of technical terms, are provided below.

### **SOURCES OF DATA**

#### **Incidence Data:**

##### **Delaware Cancer Registry**

This report includes incident cancer cases that were diagnosed between January 1, 2001, and December 31, 2005, and reported to the Delaware Cancer Registry (DCR) by November 2008. Incidence trends were based on cancer diagnoses from January 1, 1980, to December 31, 2005, reported to DCR by November 2008. In total, 22,023 cases of malignant cancer were diagnosed among Delawareans from 2001-05. This number includes individuals with cancers diagnosed at more than one site, also known as multiple primaries.

The DCR adheres to reporting procedures consistent with those adopted by the American Cancer Society (ACS) and the National Cancer Institute's (NCI) Surveillance, Epidemiology, and End Results (SEER) Program. Currently, reporting procedures exclude all cases of benign brain cancers and *in situ* cancer, except *in situ* bladder cancer. Invasive and *in situ* bladder cancer cases were included in the analyses because of the difficulty in distinguishing between the two cancer categories based on the language used by pathologists.

The International Classification of Diseases for Oncology, Second Edition (ICD-O-2) was used to describe the topography (primary anatomic site) and morphology (histology) for cancers reported between 1988 and 2000. Cancers diagnosed between 2001 and 2005 were coded using the International Classification of Diseases for Oncology, Third Edition (ICD-O-3). The topography code defines both the site of the tumor and the cancer type. Five-digit morphology codes were used to describe tumor histology and behavior. The first four digits of the morphology codes define the histology of the cancer, and the fifth digit indicates whether the cancer was malignant, benign, *in situ* or uncertain. Consistent with the publication of the Centers for Disease Control and Prevention's (CDC) U.S. Cancer Statistics, Kaposi's sarcoma and mesothelioma were considered separate sites, based on histology codes.

##### **SEER Program**

SEER data were used to compare Delaware's incidence and mortality rates with those for the U.S. Established in 1971 after legislation was passed by Congress, SEER collects, analyzes and disseminates data for cancer control, diagnosis and treatment. Several population-based registries that are representative of the different regions in the U.S. routinely collect data to allow SEER to produce cancer incidence and mortality statistics. Connecticut, Hawaii, Iowa, New Mexico, Utah and metropolitan areas of Detroit in Michigan and San Francisco and Oakland in California have provided data to SEER since January 1, 1973. Other states that participate include parts of Georgia and Washington, Kentucky, Louisiana, New Jersey and the remaining counties in California. Recently, SEER expanded data collection activities to 17

population-based registries. This report was based on the nine registries that have provided data to SEER since 1974–75. These registries include Atlanta, Connecticut, Detroit, Hawaii, Iowa, New Mexico, San Francisco-Oakland, Seattle-Puget Sound and Utah.

## **Mortality Data:**

### **Delaware Health Statistics Center**

Cancer mortality data were provided by the Delaware Health Statistics Center. The data file was compiled from all death certificates filed in Delaware between 1980 and 2005. Five-year average age-adjusted mortality rates were based on deaths that occurred between 2001 and 2005. Trends in cancer mortality were presented for deaths that occurred between 1980 and 2005.

Underlying cause-of-death codes were based on the International Classification of Diseases, Ninth Edition (ICD-9) for deaths that occurred between 1980 and 1998. The International Classification of Diseases, Tenth Edition (ICD-10) was used to code deaths that occurred between 2000 and 2005. To determine the underlying cause of death, the sequence of events leading to the individual's death and recorded on the death certificate are run through the Automated Classification of Medical Entities (ACME) software used by the National Center for Health Statistics. This program uses a series of rules and hierarchies of events to select the most appropriate underlying cause of death.

### **National Center for Health Statistics**

U.S. mortality data were obtained from the National Center for Health Statistics and used to make comparisons between cancer mortality rates at the state and national levels. U.S. death data were compiled from all death certificates filed in the 50 states and the District of Columbia between 1980 and 2004. Cancer deaths were coded in accordance with World Health Organization regulations, which stipulate that cancer deaths be coded using the most current revision of the International Classification of Diseases. Accordingly, deaths that occurred prior to 1999 were coded using ICD-9. Beginning with 1999, deaths were coded using ICD-10.

## **Population Data:**

### **Standard Population**

The year 2000 standard U.S. population was used for age adjustment of incidence and mortality rates. The standard population was used for direct standardization of the incidence and mortality rates to enable comparisons among populations (i.e., U.S. vs. Delaware) that have different age structures.

### **Population Estimates, 2001-05**

Cancer incidence and mortality rates for the U.S. are calculated using SEER population estimates and are based on the numbers estimated by the census. Delaware rates were based on population estimates provided by the Delaware Population Consortium. The population data for Delaware are presented in appendix D.

## **RISK FACTORS AND EARLY DETECTION**

Cancer risk factors and effective means of preventing cancer are described at the beginning of each chapter of this report. Three web sites were used as primary sources to update risk factors for cancer: (1) The American Cancer Society ([www.cancer.org](http://www.cancer.org)); (2) The National Cancer Institute ([www.cancer.gov](http://www.cancer.gov)); and (3) WebMD ([www.webmd.com](http://www.webmd.com)).

### **Behavioral Risk Factor Surveillance System (BRFSS)**

Behavioral Risk Factor Surveillance System data provided estimates of risk factor prevalence across Delaware and the U.S. Cancer risk factor data for Delaware and the U.S. were obtained from CDC's interactive data system. The most recent updates included data from 2005 or 2006, depending on the risk factor. Risk factor data are included in appropriate chapters for site-specific cancers; supplemental data on obesity, physical inactivity and diet are presented in appendix E.

## **STATISTICAL METHODOLOGY AND TECHNICAL TERMS**

Age-adjusted and age-, race- and sex-specific incidence and mortality rates are presented in this report to describe the pattern of cancer incidence and mortality in Delaware. All rates and corresponding 95-percent confidence intervals were computed using SEER\*Stat. All cancer rates are expressed as the five-year average per 100,000 population.

### **Direct Standardization and Age-Adjusted Incidence and Mortality Rates**

The age distribution of a population is an important determinant of the burden of cancer. Because cancer incidence and mortality increase with age, crude rates cannot be used for comparisons of cancer statistics between sexes, racial or ethnic groups, or geographic entities across different time spans. To enable comparisons that were independent of the age distribution of the population of Delaware, age-adjusted rates were calculated (Anderson & Rosenberg, 1998; Klein & Schoenborn, 2001; Goodman & Wilkens, 1994). Age-adjusted incidence and mortality rates for Delaware were computed using an external reference population with a fixed standard age distribution. Age-adjusted rates represent the theoretical cancer rate in a population with an age distribution identical to the reference or standard population.

Incidence and mortality rates were adjusted to the U.S. standard million population in 2000. This process involved calculating the age-specific incidence or mortality rates for the residents of Delaware and then applying or multiplying these rates to the proportion of individuals in the same age group in the reference population. The individual age-specific rates were then summed to obtain the overall age-adjusted rate.

The formula for an age-adjusted rate can be presented as follows:

$$\text{Age-Adjusted Rate} = \sum (w_i \times ((c_i/n_i) \times 100,000))$$

Where  $c_i$  is the number of new cases or deaths in the  $i$  age group,  $n_i$  is the population estimate for the  $i$  age group and  $w_i$  is the proportion of the standard population in the  $i$  age group. All rates were expressed per 100,000 of the population.



## Age-Specific Incidence and Mortality Rates

Age-related differences in the risk of cancer incidence and mortality were assessed using age-specific rates. Age-specific rates were calculated by dividing the number of cancer cases or deaths that occurred during a specific time period among five age groups (0–39, 40–64, 65–74, 75–84, and 85 and older). The total number of cases or deaths for each of the five age groups was then divided by the total population of the age group in Delaware during the same time period. Rates were expressed per 100,000 of the population.

## Race- and Sex-Specific Incidence and Mortality Rates

Race- and sex-specific incidence and mortality rates were calculated to assess how cancer patterns differed across subgroups within the state. These rates were calculated by dividing the number of cases or deaths that occurred in each race and/or sex group by the total population in the corresponding race and/or sex group over the same time period. These rates were adjusted to the U.S. standard population and expressed per 100,000 of the population.

## Confidence Intervals

Age-adjusted incidence and mortality rates are subject to chance variation, particularly when they are based on a small number of cancer cases or deaths occurring over a limited time period or in a limited geographic area. Aggregating several years of data provides more reliable estimates of incidence and mortality in these situations. The level of uncertainty associated with incidence and mortality statistics can be estimated by the standard error used to calculate the 95-percent confidence interval. Confidence intervals were calculated using SEER\*Stat, using the method developed by Tiwari, et al. 2006.

## Stage at Diagnosis

The stage of diagnosis describes the extent to which cancers had spread from the site of origin by the time of diagnosis. SEER summary staging was used to define the stage at diagnosis for all incident cancer cases. Cancer cases diagnosed between 1980 and 2000 were coded according to Summary Stage 1977; cases diagnosed between 2001 and 2003 were coded using the codes for Summary Stage 2000. Beginning in 2004, SEER Summary Stage 2000 was derived using the Collaborative Staging Algorithm.

Three categories were used to code the stage for any particular cancer site:

- **Local:** tumor is invasive but confined to the organ of origin.
- **Regional:** tumor has extended beyond the limits of the organ of origin, but there is no evidence of distant metastasis.
- **Distant:** cancer cells have detached from the tumor at the primary site and begun growing at a new site in the body.

## OTHER TECHNICAL INFORMATION

### Suppression of Data

Data presentation was limited to those rates that were based on an adequate number of cancer cases or deaths. Rates that were based on a very small number of cases were unstable and could not be reliably interpreted.

Suppressing incidence and mortality statistics based on a small number of new cancer cases or deaths also helps protect patient privacy and confidentiality (Coughlin et al., 1999; McLaughlin, 2002). Cancer counts were suppressed using the recommendations of the National Center for Health Statistics. Incidence and mortality counts of fewer than six cases were suppressed. Age-adjusted incidence and mortality rates based on fewer than 25 cases or deaths were also suppressed. The same criteria were applied to age-, race- and sex-specific incidence and mortality rates.

### **Definition of Race/Ethnicity**

Race groupings in this report included Caucasian, African-American, and Other. Race groupings did not take into account residents' ethnicity. For incidence and mortality rates, the total population included people of Hispanic ethnicity and those of unknown race. Hispanic ethnicity for incidence data was based on the North American Association of Central Cancer Registries Hispanic Identification Algorithm, and for mortality data on the ethnicity reported on the death certificate.

**APPENDIX C**  
**PRIMARY SITE DEFINITIONS FOR CANCER**  
**INCIDENCE AND MORTALITY**

<b>Cancer Site</b>	<b>ICD-O-3</b>	<b>ICD-10</b>
All malignant cancers	C000–C809*	C00–C97
Colon and rectum	C180–C209, C260**	C18–C20, C26
Lung and bronchus	C340–C349**	C34
Breast	C500–C509**	C50
Cervix	C530–C539**	C53
Prostate	C619**	C61

\* The category “All malignant cancers” included *in situ* bladder cancers.

\*\* Tumors with the following histology codes were excluded from analyses: 9050–9055, 9140 and 9590–9989.

**APPENDIX D**  
**DELAWARE POPULATION ESTIMATES (FIVE-YEAR TOTALS),**  
**BY SEX, RACE, YEARS AND AGE GROUP: 1980–2005**

Years	TOTAL POPULATION																		Total
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	
1980–84	214,207	215,224	238,510	284,928	287,504	257,448	240,373	198,978	169,336	160,852	159,719	157,164	137,314	112,545	82,140	56,216	35,859	27,646	3,035,963
1981–85	218,519	217,674	235,624	278,183	285,957	262,204	247,217	205,957	176,370	163,939	158,955	156,135	138,915	115,869	84,762	58,120	36,884	28,312	3,069,596
1982–86	222,918	220,151	232,773	271,597	284,419	267,048	254,255	213,182	183,696	167,085	158,194	155,112	140,534	119,290	87,468	60,088	37,938	28,995	3,104,743
1983–87	227,406	222,657	229,956	265,167	282,889	271,982	261,493	220,660	191,326	170,291	157,437	154,097	142,173	122,813	90,260	62,123	39,023	29,694	3,141,447
1984–88	231,983	225,191	227,174	258,889	281,367	277,007	268,938	228,400	199,273	173,559	156,684	153,088	143,831	126,440	93,141	64,227	40,139	30,410	3,179,741
1985–89	236,653	227,754	224,425	252,761	279,854	282,125	276,595	236,411	207,551	176,889	155,935	152,086	145,508	130,174	96,115	66,402	41,286	31,143	3,219,667
1986–90	241,417	230,346	221,710	246,778	278,349	287,338	284,469	244,704	216,172	180,283	155,189	151,090	147,204	134,018	99,184	68,651	42,467	31,894	3,261,263
1987–91	247,002	233,344	221,422	239,937	277,915	290,859	292,199	253,305	226,107	183,991	155,843	150,234	148,777	137,280	102,762	70,853	43,848	33,044	3,308,722
1988–92	252,939	237,039	222,907	234,247	276,897	292,805	298,751	262,638	234,402	190,346	158,034	149,705	149,883	139,752	106,802	73,121	45,335	34,445	3,360,048
1989–93	258,679	241,198	226,409	230,132	275,530	292,343	303,805	272,267	241,848	198,345	162,375	149,809	150,596	141,613	110,952	75,571	46,885	36,158	3,414,515
1990–94	263,575	245,976	231,812	228,278	273,079	289,734	307,523	281,967	248,810	207,578	168,638	150,931	150,828	142,664	115,253	78,238	48,501	38,109	3,471,495
1991–95	267,276	251,644	238,648	229,237	269,266	285,672	309,672	291,351	255,795	218,395	176,552	152,922	150,922	142,984	119,406	81,230	50,469	40,220	3,531,662
1992–96	268,230	257,884	244,332	234,502	262,602	282,623	309,916	300,043	261,684	230,929	184,172	156,088	150,842	143,580	122,749	84,821	52,337	42,224	3,589,559
1993–97	267,318	264,096	249,956	241,269	256,251	279,379	309,039	307,035	269,684	240,209	193,595	160,553	150,922	144,422	125,162	88,785	54,357	44,091	3,646,121
1994–98	265,318	270,063	255,087	249,306	251,098	276,614	306,836	312,437	278,979	247,970	203,452	166,464	151,575	145,375	127,290	92,731	56,609	45,874	3,703,078
1995–99	263,097	275,155	259,963	257,829	248,402	273,725	303,060	316,753	288,783	254,999	213,433	173,368	153,324	146,388	128,811	96,676	59,072	47,686	3,760,523
1996–2000	260,887	278,384	265,330	265,682	248,998	269,598	298,611	319,891	298,156	261,724	224,182	181,016	155,416	147,743	130,117	100,350	61,687	49,464	3,817,237
1997–2001	260,222	279,236	271,171	270,361	254,617	262,938	294,526	321,205	306,718	267,541	236,586	188,557	158,410	148,605	131,729	103,494	64,856	51,192	3,871,965
1998–2002	261,182	278,111	276,995	273,420	262,695	255,987	290,542	320,747	314,036	275,407	246,059	197,923	162,941	149,202	133,595	106,149	68,385	53,284	3,926,663
1999–2003	263,147	275,728	282,716	276,063	270,531	250,646	286,717	318,458	319,534	284,720	253,936	208,082	168,894	150,079	135,437	108,913	72,185	55,811	3,981,596
2000–2004	264,703	270,578	285,718	277,493	277,587	245,714	280,543	313,374	325,255	296,648	262,791	219,919	176,929	152,903	138,167	112,027	76,375	58,800	4,035,524
2001–2005	269,887	268,661	288,360	279,988	283,773	248,988	276,405	308,047	328,334	306,127	269,536	230,755	184,250	154,074	138,993	113,367	79,463	61,847	4,090,855

SOURCE: Delaware Population Consortium, October 2008.

# **TOTAL MALE POPULATION**

<b>Years</b>	<b>0-4</b>	<b>5-9</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>35-39</b>	<b>40-44</b>	<b>45-49</b>	<b>50-54</b>	<b>55-59</b>	<b>60-64</b>	<b>65-69</b>	<b>70-74</b>	<b>75-79</b>	<b>80-84</b>	<b>85+</b>	<b>Total</b>
1980-84	109,306	109,805	121,585	141,190	140,621	126,224	117,528	96,927	82,646	78,388	77,061	74,473	65,132	50,443	33,955	21,202	11,611	7,269	1,465,366
1981-85	111,544	111,121	120,157	137,931	140,086	128,782	121,035	100,443	86,114	79,862	76,725	74,084	65,854	51,973	35,246	22,030	11,988	7,332	1,482,307
1982-86	113,828	112,453	118,745	134,748	139,553	131,392	124,646	104,086	89,727	81,364	76,391	73,698	66,584	53,549	36,586	22,890	12,378	7,395	1,500,013
1983-87	116,159	113,801	117,350	131,638	139,021	134,054	128,365	107,861	93,492	82,895	76,058	73,314	67,322	55,173	37,976	23,784	12,780	7,458	1,518,501
1984-88	118,537	115,165	115,971	128,600	138,491	136,771	132,195	111,773	97,415	84,454	75,727	72,931	68,068	56,846	39,420	24,712	13,196	7,522	1,537,794
1985-89	120,964	116,546	114,608	125,632	137,964	139,543	136,139	115,827	101,503	86,043	75,397	72,551	68,823	58,570	40,919	25,677	13,625	7,587	1,557,918
1986-90	123,441	117,943	113,261	122,733	137,438	142,371	140,201	120,028	105,762	87,662	75,069	72,173	69,585	60,346	42,474	26,679	14,068	7,652	1,578,887
1987-91	126,361	119,575	113,147	119,415	137,266	144,393	144,160	124,332	110,654	89,453	75,440	71,791	70,326	61,932	44,245	27,669	14,586	7,935	1,602,682
1988-92	129,420	121,562	113,881	116,683	136,734	145,559	147,517	129,015	114,657	92,613	76,507	71,522	70,884	63,213	46,211	28,723	15,182	8,316	1,628,201
1989-93	132,392	123,724	115,770	114,714	136,060	145,319	150,055	133,884	118,210	96,587	78,550	71,575	71,327	64,282	48,108	29,921	15,851	8,786	1,655,113
1990-94	134,893	126,195	118,659	113,863	134,793	143,882	151,941	138,762	121,554	101,108	81,480	72,141	71,505	65,105	49,980	31,199	16,567	9,376	1,683,004
1991-95	136,777	129,054	122,259	114,510	132,759	141,725	152,970	143,435	124,882	106,389	85,222	73,078	71,636	65,589	51,812	32,650	17,462	10,031	1,712,240
1992-96	137,127	132,227	125,389	117,153	129,509	139,932	153,216	147,705	127,627	112,514	88,790	74,649	71,602	66,183	53,329	34,376	18,327	10,620	1,740,276
1993-97	136,560	135,384	128,537	120,476	126,511	138,066	152,850	151,106	131,610	116,796	93,387	76,842	71,604	66,898	54,471	36,193	19,279	11,215	1,767,785
1994-98	135,513	138,493	131,217	124,569	124,021	136,681	151,765	153,614	136,352	120,327	98,249	79,630	71,829	67,657	55,678	37,857	20,366	11,836	1,795,655
1995-99	134,370	141,136	133,699	128,994	122,710	135,375	149,777	155,661	141,353	123,570	103,159	82,833	72,633	68,311	56,850	39,503	21,522	12,507	1,823,964
1996-2000	133,161	142,939	136,383	132,978	123,174	133,430	147,574	157,118	146,142	126,696	108,399	86,446	73,549	69,158	57,860	41,098	22,776	13,252	1,852,133
1997-2001	132,716	143,337	139,243	135,903	125,672	130,319	145,374	157,968	150,411	129,323	114,470	90,033	74,975	69,650	59,001	42,519	24,294	13,961	1,879,169
1998-2002	133,022	142,634	142,083	138,230	129,134	127,095	143,248	157,865	153,944	133,336	118,785	94,643	77,147	69,924	60,295	43,821	25,892	14,804	1,905,901
1999-2003	133,607	141,297	144,922	139,954	132,619	124,625	141,349	156,805	156,439	138,155	122,341	99,690	79,962	70,284	61,539	45,363	27,474	15,850	1,932,275
2000-2004	133,866	138,540	146,752	141,377	136,179	121,992	138,334	154,139	159,016	144,235	126,427	105,497	83,734	71,511	62,883	47,165	29,106	16,901	1,957,654
2001-2005	135,892	137,371	148,268	142,997	139,739	123,643	136,421	151,602	160,384	149,058	129,508	110,787	87,274	71,935	63,444	48,149	30,422	18,095	1,984,989

SOURCE: Delaware Population Consortium, October 2008.

# TOTAL FEMALE POPULATION

Years	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1980-84	104,902	105,418	116,924	143,736	146,881	131,220	122,842	102,049	86,690	82,462	82,657	82,688	72,182	62,100	48,170	35,008	24,246	20,361	1,570,536
1981-85	106,976	106,551	115,467	140,250	145,868	133,416	126,178	105,512	90,256	84,074	82,228	82,047	73,061	63,894	49,496	36,082	24,893	20,959	1,587,208
1982-86	109,091	107,697	114,028	136,848	144,862	135,649	129,604	109,093	93,968	85,718	81,802	81,411	73,950	65,739	50,858	37,188	25,557	21,574	1,604,637
1983-87	111,248	108,855	112,607	133,529	143,863	137,919	133,123	112,795	97,833	87,394	81,378	80,780	74,851	67,638	52,258	38,328	26,239	22,208	1,622,846
1984-88	113,447	110,025	111,203	130,290	142,871	140,227	136,738	116,623	101,857	89,102	80,956	80,154	75,763	69,592	53,696	39,503	26,940	22,861	1,641,848
1985-89	115,689	111,208	109,817	127,130	141,885	142,574	140,451	120,581	106,047	90,844	80,536	79,533	76,686	71,602	55,174	40,714	27,659	23,533	1,661,663
1986-90	117,976	112,404	108,448	124,046	140,906	144,961	144,264	124,673	110,409	92,620	80,119	78,917	77,620	73,670	56,692	41,962	28,398	24,224	1,682,310
1987-91	120,640	113,769	108,274	120,523	140,646	146,461	148,036	128,971	115,454	94,537	80,402	78,442	78,453	75,346	58,505	43,178	29,261	25,098	1,705,994
1988-92	123,518	115,476	109,025	117,564	140,161	147,244	151,232	133,623	119,745	97,732	81,525	78,181	79,000	76,537	60,585	44,395	30,153	26,123	1,731,819
1989-93	126,286	117,475	110,640	115,418	139,469	147,023	153,749	138,383	123,639	101,757	83,825	78,235	79,270	77,330	62,842	45,649	31,034	27,370	1,759,392
1990-94	128,683	119,782	113,153	114,415	138,286	145,852	155,582	143,205	127,256	106,470	87,157	78,790	79,324	77,559	65,273	47,039	31,934	28,733	1,788,491
1991-95	130,498	122,590	116,390	114,727	136,507	143,947	156,702	147,916	130,913	112,005	91,330	79,843	79,287	77,395	67,594	48,581	33,007	30,190	1,819,422
1992-96	131,103	125,658	118,943	117,349	133,093	142,691	156,700	152,338	134,056	118,415	95,382	81,439	79,241	77,397	69,420	50,445	34,010	31,604	1,849,283
1993-97	130,758	128,712	121,419	120,793	129,740	141,313	156,188	155,930	138,074	123,412	100,207	83,711	79,318	77,523	70,691	52,591	35,079	32,877	1,878,336
1994-98	129,805	131,570	123,871	124,736	127,077	139,933	155,071	158,823	142,627	127,643	105,203	86,834	79,746	77,718	71,612	54,874	36,243	34,037	1,907,423
1995-99	128,726	134,019	126,264	128,834	125,692	138,350	153,282	161,092	147,431	131,428	110,275	90,535	80,691	78,077	71,961	57,173	37,550	35,178	1,936,559
1996-2000	127,727	135,445	128,948	132,704	125,824	136,169	151,037	162,773	152,014	135,028	115,783	94,570	81,867	78,585	72,257	59,252	38,911	36,212	1,965,104
1997-2001	127,506	135,899	131,928	134,457	128,945	132,619	149,152	163,237	156,307	138,218	122,117	98,525	83,436	78,955	72,728	60,976	40,562	37,231	1,992,796
1998-2002	128,161	135,478	134,912	135,190	133,561	128,892	147,294	162,882	160,092	142,071	127,274	103,281	85,794	79,278	73,300	62,328	42,493	38,481	2,020,762
1999-2003	129,539	134,430	137,794	136,109	137,912	126,022	145,368	161,653	163,095	146,566	131,594	108,392	88,931	79,795	73,898	63,550	44,712	39,962	2,049,321
2000-2004	130,837	132,038	138,966	136,116	141,408	123,722	142,209	159,235	166,239	152,413	136,364	114,422	93,195	81,392	75,284	64,862	47,269	41,899	2,077,870
2001-2005	133,995	131,290	140,092	136,991	144,034	125,345	139,984	156,445	167,950	157,069	140,028	119,968	96,976	82,139	75,549	65,218	49,041	43,752	2,105,866

SOURCE: Delaware Population Consortium, October 2008.

# **TOTAL CAUCASIAN POPULATION**

<b>Years</b>	<b>0-4</b>	<b>5-9</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>35-39</b>	<b>40-44</b>	<b>45-49</b>	<b>50-54</b>	<b>55-59</b>	<b>60-64</b>	<b>65-69</b>	<b>70-74</b>	<b>75-79</b>	<b>80-84</b>	<b>85+</b>	<b>Total</b>
1980-84	161,578	164,018	181,424	224,599	233,283	209,496	197,457	164,950	140,805	135,974	137,745	137,055	121,128	98,211	72,417	49,295	32,140	24,892	2,486,467
1981-85	165,108	165,832	179,045	218,700	231,353	213,038	202,745	170,315	146,500	138,347	136,602	135,821	122,426	101,259	74,803	51,006	33,035	25,460	2,511,395
1982-86	168,715	167,666	176,697	212,956	229,439	216,640	208,175	175,855	152,425	140,762	135,468	134,598	123,738	104,402	77,268	52,776	33,955	26,041	2,537,576
1983-87	172,401	169,520	174,380	207,363	227,541	220,304	213,750	181,575	158,590	143,218	134,344	133,386	125,064	107,642	79,814	54,607	34,901	26,635	2,565,035
1984-88	176,168	171,395	172,093	201,917	225,659	224,029	219,474	187,481	165,005	145,717	133,229	132,185	126,404	110,983	82,444	56,502	35,873	27,244	2,593,802
1985-89	180,017	173,291	169,836	196,614	223,792	227,817	225,351	193,578	171,679	148,260	132,123	130,995	127,758	114,428	85,161	58,463	36,872	27,866	2,623,901
1986-90	183,950	175,207	167,609	191,451	221,941	231,670	231,386	199,873	178,624	150,847	131,026	129,816	129,127	117,980	87,967	60,492	37,899	28,503	2,655,366
1987-91	187,894	177,153	166,863	185,435	220,429	233,668	236,950	206,300	186,376	153,654	131,079	128,661	130,340	120,965	91,201	62,536	39,077	29,527	2,688,106
1988-92	191,482	179,322	167,125	180,133	217,986	233,865	241,209	213,099	192,430	158,654	132,454	127,698	131,049	123,163	94,871	64,638	40,365	30,776	2,720,317
1989-93	194,527	181,518	168,606	175,680	215,064	231,556	243,878	219,891	197,450	164,885	135,647	127,228	131,291	124,781	98,560	66,965	41,688	32,322	2,751,535
1990-94	196,541	183,858	171,241	172,627	211,065	227,003	245,006	226,480	201,837	171,857	140,503	127,525	130,982	125,640	102,304	69,478	43,072	34,075	2,781,094
1991-95	197,412	186,426	174,732	171,429	205,735	220,756	244,418	232,502	205,982	179,838	146,738	128,525	130,397	125,760	105,836	72,293	44,756	35,969	2,809,504
1992-96	196,651	189,133	177,569	173,360	198,474	215,370	242,035	237,686	209,264	188,958	152,691	130,589	129,548	126,041	108,655	75,544	46,418	37,738	2,835,726
1993-97	194,914	191,522	180,524	176,197	191,712	209,970	238,546	241,328	214,237	194,942	160,089	133,824	128,769	126,460	110,586	79,153	48,220	39,380	2,860,373
1994-98	192,142	193,572	183,087	180,113	185,796	205,241	233,844	243,436	220,158	199,443	167,649	138,299	128,457	126,835	112,312	82,600	50,327	40,896	2,884,205
1995-99	188,932	194,765	185,366	184,555	181,700	200,659	227,822	244,375	226,303	203,325	174,928	143,676	129,091	127,140	113,534	85,979	52,617	42,427	2,907,193
1996-2000	184,527	194,549	187,688	188,692	180,124	195,312	221,186	244,155	231,860	206,909	182,487	149,683	130,063	127,584	114,588	89,037	55,043	43,903	2,927,389
1997-2001	181,606	192,937	190,124	190,745	182,626	188,335	215,368	242,431	236,668	209,906	191,266	155,510	131,973	127,505	115,785	91,683	57,891	45,339	2,947,698
1998-2002	180,206	190,281	192,184	191,812	187,218	181,454	210,062	239,373	240,546	214,723	197,260	162,833	135,299	127,174	117,089	93,824	61,061	47,125	2,969,523
1999-2003	180,280	186,740	193,974	192,646	191,680	176,071	205,224	235,036	242,929	220,703	201,862	170,609	139,929	127,053	118,258	96,126	64,358	49,368	2,992,844
2000-2004	186,835	187,987	200,127	198,216	200,774	177,758	205,887	234,912	250,735	233,093	210,952	182,185	148,499	130,262	121,191	99,448	68,324	52,255	3,089,440
2001-2005	190,276	184,030	199,279	197,701	202,464	177,487	199,949	227,159	250,088	238,326	214,137	189,424	153,961	130,197	120,959	100,382	70,818	54,891	3,101,528

SOURCE: Delaware Population Consortium, October 2008.

# **CAUCASIAN MALE POPULATION**

<b>Years</b>	<b>0-4</b>	<b>5-9</b>	<b>10-14</b>	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>35-39</b>	<b>40-44</b>	<b>45-49</b>	<b>50-54</b>	<b>55-59</b>	<b>60-64</b>	<b>65-69</b>	<b>70-74</b>	<b>75-79</b>	<b>80-84</b>	<b>85+</b>	<b>Total</b>
1980-84	82,959	83,837	93,237	111,461	115,453	104,632	98,145	81,339	69,237	66,809	66,667	65,197	57,578	44,196	29,758	18,440	10,352	6,397	1,205,694
1981-85	84,785	84,833	92,019	108,599	114,559	106,506	100,888	84,155	72,123	67,961	66,144	64,724	58,206	45,589	30,962	19,201	10,689	6,443	1,218,386
1982-86	86,651	85,841	90,817	105,811	113,673	108,413	103,707	87,068	75,129	69,132	65,625	64,255	58,841	47,026	32,215	19,993	11,037	6,490	1,23,1724
1983-87	88,558	86,861	89,631	103,095	112,793	110,354	106,606	90,082	78,261	70,324	65,110	63,789	59,484	48,508	33,519	20,818	11,396	6,537	1,245,726
1984-88	90,507	87,893	88,459	100,448	111,919	112,330	109,586	93,200	81,523	71,537	64,600	63,327	60,133	50,037	34,875	21,677	11,766	6,584	1,260,401
1985-89	92,499	88,937	87,303	97,869	111,053	114,341	112,649	96,427	84,921	72,771	64,094	62,868	60,789	51,615	36,286	22,572	12,149	6,632	1,275,775
1986-90	94,536	89,993	86,162	95,356	110,193	116,388	115,797	99,764	88,461	74,025	63,592	62,412	61,453	53,243	37,755	23,503	12,544	6,680	1,291,859
1987-91	96,603	91,084	85,801	92,401	109,365	117,553	118,677	103,103	92,377	75,404	63,670	61,899	62,058	54,702	39,395	24,463	12,993	6,954	1,308,504
1988-92	98,415	92,299	85,916	89,772	108,060	117,753	120,867	106,617	95,377	77,933	64,379	61,412	62,459	55,871	41,201	25,486	13,518	7,317	1,324,653
1989-93	99,976	93,496	86,759	87,553	106,568	116,515	122,185	110,104	97,882	81,089	65,921	61,169	62,693	56,848	42,907	26,655	14,105	7,762	1,340,188
1990-94	100,944	94,755	88,204	86,059	104,476	114,058	122,732	113,431	100,104	84,572	68,261	61,295	62,616	57,611	44,554	27,878	14,727	8,326	1,354,604
1991-95	101,316	96,062	90,063	85,584	101,649	110,756	122,359	116,385	102,202	88,543	71,293	61,697	62,429	58,057	46,110	29,235	15,517	8,943	1,368,200
1992-96	100,728	97,455	91,652	86,573	98,014	107,767	121,224	118,867	103,867	93,072	74,142	62,694	62,034	58,543	47,411	30,791	16,313	9,468	1,380,616
1993-97	99,722	98,630	93,312	87,994	94,667	104,786	119,500	120,558	106,495	95,906	77,803	64,290	61,582	59,097	48,364	32,446	17,187	10,003	1,392,341
1994-98	98,201	99,623	94,637	90,036	91,660	102,343	117,163	121,394	109,608	98,028	81,613	66,398	61,292	59,607	49,390	33,899	18,212	10,551	1,403,657
1995-99	96,518	100,126	95,789	92,340	89,600	100,026	114,113	121,704	112,789	99,912	85,260	68,933	61,495	59,930	50,431	35,331	19,290	11,134	1,414,720
1996-2000	94,269	99,975	96,920	94,357	88,932	97,325	110,832	121,464	115,584	101,719	88,998	71,844	61,777	60,338	51,357	36,685	20,435	11,787	1,424,600
1997-2001	92,809	98,925	98,067	95,791	89,892	93,851	107,793	120,723	117,874	103,230	93,364	74,654	62,618	60,355	52,324	37,907	21,789	12,415	1,434,381
1998-2002	92,038	97,369	99,020	96,917	91,678	90,456	104,973	119,239	119,639	105,824	96,193	78,306	64,200	60,112	53,379	38,978	23,227	13,155	1,444,703
1999-2003	91,842	95,475	99,777	97,689	93,503	87,784	102,418	117,163	120,526	109,002	98,354	82,255	66,392	59,923	54,320	40,294	24,611	14,094	1,455,422
2000-2004	94,820	96,174	102,959	101,051	98,245	88,770	102,796	117,238	124,250	115,365	102,790	88,032	70,507	61,313	55,810	42,205	26,227	15,137	1,503,689
2001-2005	96,066	94,122	102,499	101,109	99,283	88,512	99,695	113,475	123,768	118,023	104,439	91,687	73,275	61,092	55,900	43,050	27,313	16,179	1,509,487

SOURCE: Delaware Population Consortium, October 2008.



# CAUCASIAN FEMALE POPULATION

Years	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1980-84	78,619	80,179	88,187	113,136	117,829	104,864	99,309	83,606	71,566	69,165	71,077	71,854	63,550	54,015	42,639	30,847	21,787	18,481	1,280,710
1981-85	80,323	80,997	87,026	110,099	116,793	106,532	101,853	86,153	74,375	70,386	70,456	71,092	64,219	55,670	43,813	31,793	22,344	18,998	1,292,922
1982-86	82,064	81,824	85,880	107,144	115,766	108,227	104,463	88,778	77,294	71,629	69,840	70,338	64,895	57,376	45,020	32,769	22,915	19,529	1,305,751
1983-87	83,842	82,659	84,750	104,269	114,748	109,948	107,139	91,483	80,327	72,893	69,230	69,592	65,578	59,134	46,259	33,774	23,501	20,076	1,319,202
1984-88	85,660	83,502	83,634	101,470	113,739	111,697	109,883	94,271	83,479	74,180	68,626	68,854	66,269	60,945	47,533	34,810	24,102	20,637	1,333,291
1985-89	87,517	84,354	82,533	98,746	112,739	113,474	112,698	97,143	86,755	75,490	68,027	68,124	66,967	62,812	48,842	35,878	24,719	21,214	1,348,032
1986-90	89,414	85,214	81,446	96,096	111,747	115,279	115,585	100,103	90,159	76,823	67,433	67,401	67,673	64,736	50,187	36,979	25,352	21,808	1,363,437
1987-91	91,290	86,069	81,061	93,036	111,064	116,114	118,271	103,194	93,997	78,251	67,409	66,761	68,282	66,261	51,788	38,067	26,082	22,563	1,379,558
1988-92	93,067	87,022	81,208	90,361	109,925	116,111	120,341	106,481	97,052	80,722	68,076	66,286	68,590	67,291	53,660	39,149	26,846	23,453	1,395,640
1989-93	94,551	88,022	81,847	88,126	108,496	115,042	121,693	109,787	99,568	83,796	69,726	66,059	68,598	67,933	55,649	40,309	27,583	24,557	1,411,340
1990-94	95,596	89,103	83,037	86,568	106,589	11,2945	122,275	113,048	101,733	87,285	72,242	66,230	68,366	68,029	57,749	41,600	28,345	25,750	1,426,490
1991-95	96,096	90,364	84,668	85,845	104,086	110,000	122,059	116,117	103,780	91,295	75,446	66,828	67,968	67,703	59,727	43,058	29,238	27,026	1,441,304
1992-96	95,923	91,678	85,917	86,788	100,461	107,603	120,811	118,818	105,397	95,886	78,549	67,895	67,515	67,498	61,244	44,753	30,105	28,269	1,455,110
1993-97	95,192	92,892	87,211	88,204	97,046	105,184	119,046	120,770	107,742	99,036	82,286	69,534	67,187	67,363	62,222	46,707	31,033	29,377	1,468,032
1994-98	93,941	93,950	88,449	90,077	94,136	102,898	116,682	122,041	110,550	101,414	86,036	71,901	67,164	67,227	62,921	48,701	32,115	30,345	1,480,548
1995-99	92,414	94,638	89,577	92,216	92,100	100,633	113,708	122,671	113,514	103,413	89,668	74,743	67,596	67,210	63,103	50,648	33,328	31,293	1,492,473
1996-2000	90,257	94,574	90,768	94,336	91,192	97,987	110,354	122,691	116,276	105,190	93,489	77,839	68,286	67,246	63,230	52,351	34,608	32,116	1,502,789
1997-2001	88,797	94,011	92,057	94,954	92,734	94,483	107,575	121,708	118,795	106,677	97,902	80,856	69,354	67,150	63,461	53,776	36,102	32,924	1,513,316
1998-2002	88,168	92,912	93,163	94,895	95,540	90,998	105,089	120,134	120,907	108,899	101,067	84,527	71,099	67,061	63,710	54,846	37,834	33,970	1,524,819
1999-2003	88,438	91,266	94,197	94,957	98,177	88,286	102,806	117,873	122,403	111,701	103,508	88,353	73,537	67,130	63,938	55,832	39,748	35,274	1,537,423
2000-2004	92,015	91,813	97,168	97,165	102,529	88,988	103,091	117,674	126,485	117,728	108,162	94,153	77,992	68,949	65,381	57,243	42,097	37,118	1,585,751
2001-2005	94,210	89,908	96,780	96,592	103,181	88,975	100,254	113,684	126,320	120,303	109,698	97,737	80,686	69,105	65,059	57,332	43,505	38,712	1,592,041

SOURCE: Delaware Population Consortium, October 2008.

# TOTAL AFRICAN-AMERICAN POPULATION

Years	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1980-84	46,897	45,434	51,959	55,157	49,134	42,910	37,844	29,625	24,715	22,107	19,988	18,744	15,266	13,530	9,147	6,527	3,534	2,579	495,097
1981-85	47,798	46,196	51,582	54,338	49,512	44,071	39,300	31,127	25,939	22,701	20,217	18,846	15,518	13,785	9,379	6,711	3,653	2,675	503,348
1982-86	48,717	46,971	51,208	53,532	49,893	45,264	40,812	32,705	27,223	23,311	20,448	18,949	15,774	14,045	9,617	6,900	3,776	2,774	511,919
1983-87	49,653	47,759	50,837	52,737	50,277	46,489	42,383	34,362	28,572	23,938	20,682	19,052	16,035	14,310	9,861	7,095	3,903	2,878	520,823
1984-88	50,607	48,560	50,468	51,954	50,664	47,747	44,014	36,104	29,987	24,581	20,919	19,156	16,300	14,579	10,111	7,295	4,034	2,986	530,066
1985-89	51,579	49,374	50,102	51,183	51,054	49,040	45,708	37,934	31,472	25,241	21,159	19,260	16,569	14,853	10,367	7,500	4,170	3,097	539,662
1986-90	52,570	50,202	49,738	50,423	51,446	50,367	47,468	39,856	33,031	25,919	21,402	19,366	16,843	15,132	10,630	7,711	4,310	3,212	549,627
1987-91	54,172	51,175	50,053	49,380	52,258	51,673	49,437	41,844	34,988	26,674	21,825	19,558	17,117	15,379	10,960	7,860	4,499	3,339	562,191
1988-92	56,275	52,448	50,874	48,472	53,098	53,002	51,406	44,030	36,959	27,792	22,436	19,828	17,401	15,598	11,303	8,018	4,680	3,490	577,111
1989-93	58,557	53,977	52,253	48,037	53,735	54,200	53,281	46,384	39,055	29,223	23,336	20,179	17,717	15,768	11,715	8,128	4,887	3,653	594,086
1990-94	60,844	55,778	54,147	48,271	54,031	55,213	55,154	48,880	41,207	31,038	24,457	20,707	18,070	15,855	12,203	8,261	5,096	3,840	613,053
1991-95	62,920	57,989	56,443	49,280	53,969	56,174	56,918	51,458	43,509	33,330	25,785	21,344	18,506	15,917	12,721	8,409	5,361	4,035	634,069
1992-96	63,895	60,622	58,351	51,544	53,045	57,127	58,446	54,115	45,547	36,102	27,134	22,050	19,002	16,076	13,133	8,703	5,540	4,245	654,678
1993-97	64,057	63,449	60,202	54,537	52,021	57,719	59,830	56,586	47,878	38,767	28,753	22,904	19,548	16,313	13,491	8,991	5,742	4,437	675,224
1994-98	64,021	66,258	62,036	57,806	51,513	57,973	61,017	58,851	50,440	41,418	30,550	23,991	20,152	16,671	13,774	9,404	5,871	4,663	696,409
1995-99	63,978	68,919	63,926	61,065	51,864	57,878	61,835	61,040	53,223	43,955	32,627	25,196	20,862	17,138	13,925	9,881	6,005	4,905	718,221
1996-2000	64,374	71,027	66,136	64,067	53,217	57,262	62,534	63,030	56,076	46,437	35,125	26,486	21,569	17,779	14,029	10,386	6,143	5,175	740,853
1997-2001	65,054	72,187	68,668	66,184	55,750	56,044	62,816	64,727	58,871	48,620	38,016	27,870	22,250	18,402	14,284	10,768	6,400	5,421	762,333
1998-2002	66,052	72,427	71,468	67,799	58,888	54,819	62,668	66,024	61,387	50,999	40,812	29,515	23,093	19,006	14,657	11,168	6,678	5,686	783,147
1999-2003	66,965	72,306	74,289	69,286	62,010	54,087	62,215	66,882	63,510	53,597	43,489	31,386	24,127	19,632	15,102	11,524	7,083	5,923	803,414
2000-2004	68,151	71,914	76,162	70,577	66,593	55,493	62,171	67,673	65,877	56,687	46,259	33,577	25,318	20,323	15,571	11,724	7,570	6,208	827,848
2001-2005	68,509	71,176	77,157	71,577	69,120	56,766	60,849	67,403	67,128	59,057	48,388	35,892	26,367	20,800	16,146	11,841	7,995	6,499	842,670

SOURCE: Delaware Population Consortium, October 2008.

# AFRICAN-AMERICAN MALE POPULATION

Years	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1980-84	23,413	22,932	25,771	27,047	22,479	19,198	17,162	13,572	11,436	10,281	9,361	8,588	7,120	5,899	3,946	2,611	1,200	808	232,824
1981-85	23,891	23,338	25,628	26,664	22,826	19,852	17,861	14,215	11,990	10,553	9,467	8,635	7,190	6,021	4,026	2,670	1,235	825	236,887
1982-86	24,379	23,752	25,485	26,286	23,179	20,528	18,588	14,888	12,570	10,832	9,574	8,683	7,261	6,146	4,108	2,731	1,271	842	241,103
1983-87	24,876	24,173	25,343	25,914	23,537	21,227	19,345	15,593	13,179	11,118	9,682	8,730	7,333	6,274	4,191	2,793	1,308	859	245,475
1984-88	25,384	24,602	25,202	25,547	23,901	21,949	20,133	16,332	13,817	11,412	9,792	8,778	7,405	6,404	4,276	2,856	1,346	877	250,013
1985-89	25,902	25,038	25,062	25,185	24,270	22,696	20,952	17,106	14,487	11,714	9,903	8,826	7,478	6,536	4,363	2,921	1,386	896	254,721
1986-90	26,431	25,482	24,922	24,828	24,646	23,468	21,805	17,916	15,189	12,024	10,016	8,874	7,552	6,671	4,451	2,988	1,427	914	259,606
1987-91	27,285	25,995	25,079	24,352	25,172	24,218	22,764	18,777	16,088	12,375	10,225	8,954	7,649	6,779	4,574	3,013	1,490	925	265,715
1988-92	28,423	26,651	25,469	23,967	25,637	24,958	23,744	19,765	16,981	12,890	10,507	9,083	7,758	6,867	4,719	3,041	1,549	946	272,956
1989-93	29,636	27,393	26,167	23,794	25,968	25,603	24,686	20,891	17,881	13,544	10,917	9,253	7,899	6,933	4,882	3,067	1,618	969	281,102
1990-94	30,855	28,277	27,146	23,910	26,118	26,116	25,636	22,121	18,792	14,367	11,411	9,519	8,077	6,950	5,074	3,113	1,699	992	290,173
1991-95	31,970	29,365	283,38	24,385	26,063	26,594	26,507	23,431	19,740	15,413	11,998	9,853	8,291	6,933	5,303	3,192	1,792	1,021	300,191
1992-96	32,488	30,680	29,423	25,424	25,618	27,040	27,287	24,768	20,517	16,699	12,595	10,229	8,522	6,981	5,470	3,339	1,848	1,074	310,000
1993-97	32,547	32,134	30,512	26,801	25,168	27,304	27,979	26,010	21,491	17,863	13,334	10,665	8,813	7,062	5,612	3,469	1,919	1,118	319,801
1994-98	32,560	33,663	31,509	28,385	24,975	27,411	28,532	2,7136	22,672	18,977	14,152	11,193	9,144	7,209	5,755	3,633	1,978	1,172	330,057
1995-99	32,552	35,111	32,505	30,077	25,127	27,411	28,852	28,229	24,010	20,038	15,112	11,746	9,515	7,440	5,829	3,802	2,041	1,242	340,637
1996-2000	32,685	36,310	33,646	31,728	25,735	27,143	29,164	29,185	25,459	21,032	16,268	12,317	9,918	7,763	5,853	3,995	2,125	1,313	351,639
1997-2001	32,932	37,013	34,893	33,052	26,898	26,607	29,251	30,042	269,02	21,814	17,623	12,941	10,315	8,083	5,963	4,143	2,259	1,370	362,099
1998-2002	33,346	37,160	36,259	34,125	28,367	26,072	29,153	30,712	28,173	22,838	18,820	13,682	10,760	8,434	6,114	4,330	2,382	1,451	372,179
1999-2003	33,649	37,065	37,728	34,977	29,887	25,801	28,952	31,108	29,249	24,061	19,928	14,541	11,254	8,799	6,307	4,524	2,530	1,535	381,895
2000-2004	34,094	36,791	38,896	35,893	32,393	26,525	29,075	31,372	30,367	25,505	21,024	15,503	11,760	9,106	6,464	4,604	2,668	1,620	393,660
2001-2005	34,188	36,266	39,520	36,444	33,924	27,149	28,578	31,249	30,938	26,711	21,811	16,539	12,189	9,379	6,730	4,627	2,824	1,717	400,783

SOURCE: Delaware Population Consortium, October 2008.

# AFRICAN-AMERICAN FEMALE POPULATION

Years	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total
1980-84	23,486	22,500	26,187	28,110	26,638	23,700	20,681	16,052	13,279	11,827	10,628	10,155	8,143	7,631	5,200	3,915	2,336	1,769	262,237
1981-85	23,909	22,856	25,953	27,674	26,662	24,203	21,438	16,910	13,949	12,149	10,751	10,210	8,323	7,764	5,352	4,039	2,419	1,847	266,408
1982-86	24,339	23,217	25,721	27,245	26,686	24,717	22,223	17,814	14,653	12,480	10,875	10,266	8,508	7,899	5,508	4,167	2,505	1,929	270,752
1983-87	24,777	23,584	25,491	26,822	26,709	25,242	23,036	18,766	15,393	12,819	11,001	10,322	8,696	8,036	5,669	4,300	2,594	2,015	275,272
1984-88	25,223	23,957	25,263	26,407	26,733	25,778	23,879	19,769	16,170	13,168	11,128	10,379	8,888	8,176	5,835	4,437	2,687	2,104	279,981
1985-89	25,677	24,336	25,037	25,997	26,757	26,326	24,753	20,826	16,985	13,526	11,256	10,436	9,084	8,318	6,005	4,578	2,783	2,197	284,877
1986-90	26,139	24,720	24,813	25,594	26,781	26,885	25,660	21,939	17,842	13,894	11,386	10,494	9,285	8,462	6,180	4,723	2,883	2,295	289,975
1987-91	26,887	25,179	24,972	25,028	27,073	27,446	26,670	23,068	18,900	14,298	11,601	10,605	9,463	8,600	6,388	4,848	3,009	2,411	296,445
1988-92	27,852	25,797	25,404	24,506	27,453	28,040	27,660	24,264	19,978	14,902	11,929	10,746	9,640	8,732	6,585	4,978	3,131	2,544	304,139
1989-93	28,921	26,584	26,086	24,242	27,764	28,595	28,594	25,493	21,174	15,679	12,419	10,926	9,817	8,835	6,834	5,063	3,269	2,684	312,978
1990-94	29,989	27,501	27,002	24,361	27,913	29,097	29,518	26,760	22,415	16,671	13,045	11,188	9,992	8,905	7,129	5,148	3,397	2,848	322,880
1991-95	30,951	28,624	28,105	24,896	27,906	29,580	30,411	28,027	23,768	17,917	13,787	11,492	10,215	8,984	7,418	5,217	3,568	3,014	333,879
1992-96	31,407	29,943	28,928	26,120	27,427	30,087	31,159	29,347	25,031	19,403	14,540	11,821	10,480	9,095	7,663	5,364	3,692	3,171	344,678
1993-97	31,511	31,314	29,690	27,737	26,853	30,415	31,852	30,577	26,387	20,904	15,419	12,239	10,735	9,251	7,878	5,521	3,823	3,319	355,424
1994-98	31,461	32,595	30,528	29,420	26,538	30,562	32,485	31,715	27,768	22,441	16,398	12,798	11,008	9,462	8,019	5,771	3,893	3,490	366,352
1995-99	31,426	33,808	31,421	30,987	26,737	30,467	32,983	32,811	29,213	23,917	17,516	13,449	11,348	9,698	8,096	6,080	3,965	3,663	377,584
1996-2000	31,689	34,717	32,490	32,339	27,482	30,120	33,370	33,845	30,617	25,405	18,857	14,169	11,650	10,016	8,177	6,391	4,018	3,862	306,470
1997-2001	32,122	35,174	33,775	33,132	28,852	29,438	33,564	34,685	31,970	26,806	20,393	14,929	11,936	10,319	8,322	6,625	4,141	4,051	233,242
1998-2002	32,707	35,267	35,209	33,674	30,521	28,747	33,515	35,311	33,214	28,161	21,992	15,833	12,333	10,571	8,544	6,838	4,296	4,235	410,968
1999-2003	33,316	35,241	36,561	34,310	32,123	28,287	33,263	35,775	34,262	29,535	23,562	16,845	12,872	10,833	8,795	7,000	4,552	4,388	421,519
2000-2004	34,057	35,123	37,266	34,684	34,200	28,968	33,096	36,301	35,510	31,182	25,235	18,074	13,558	11,217	9,107	7,120	4,902	4,588	434,188
2001-2005	34,321	34,910	37,637	35,133	35,196	29,617	32,271	36,154	36,190	32,346	26,577	19,353	14,178	11,421	9,416	7,214	5,171	4,782	441,887

SOURCE: Delaware Population Consortium, October 2008.

## APPENDIX E

### BEHAVIORAL RISK FACTORS

Delaware's Behavioral Risk Factor Surveillance System (BRFSS), an annual survey of adults ages 18 and older, is a collaborative effort between Delaware's Division of Public Health and the Centers for Disease Control and Prevention (CDC). The BRFSS survey includes a core set of questions developed by CDC and is administered annually as a random-digit-dial telephone survey in all 50 states. The BRFSS survey was developed to monitor the statewide prevalence of behavioral risk factors among adults that relate to premature morbidity and mortality. Questions in the survey include lifestyle behaviors (including tobacco use, fruit and vegetable consumption, exercise and weight control), cancer screening practices, health status and health care access and use. The data provided below relate specifically to risk factor prevalence and cancer screening practices among Delawareans.

More information about Delaware's BRFSS is available at <http://www.state.de.us/dhss/dph/dpc/brfsurveys.html>. General information on the BRFSS is available at <http://www.cdc.gov/brfss/>.

#### Overweight/Obesity

Being overweight or obese is a risk factor for several cancers, including female breast (in postmenopausal females), colorectal, kidney and uterine cancers. In addition, being overweight or obese is a major risk factor for other chronic diseases, including coronary heart disease, type 2 diabetes and stroke.

The CDC defines "overweight" as a body mass index (BMI) greater than or equal to 25 and less than 30; "obese" is defined as a BMI greater than or equal to 30. BMI is calculated using an individual's height and weight. The following data are specific to the 2007 BRFSS:

- In Delaware, 65.1 percent of adults ages 18 and over were overweight or obese. At the national level, 62.9 percent of adults were overweight or obese. This difference was not statistically significant.
- The prevalence of overweight/obese people in Delaware differed significantly by sex: 73.4 percent of males and 57.0 percent of females were overweight or obese.
- While more African-Americans were overweight/obese than Caucasians in Delaware (73.2 percent vs. 64.2 percent, respectively), the difference was not statistically significant.
- In Delaware, the prevalence of overweight/obese was highest among adults aged 50 to 64 years (71.4 percent). This number was significantly higher than the percent of overweight/obese adults aged 18-49 (62.2 percent) but not significantly higher than adults aged 65 and older (65.8 percent).
- In Kent, New Castle and Sussex counties, 68.1 percent, 62.8 percent and 68.8 percent of adults, respectively, were overweight/obese. These numbers were not significantly different.
- No significant differences were observed by education level or income level.

#### Physical Activity

Lack of physical activity is a substantiated risk factor for colorectal cancer and a suspected risk factor for other cancers (e.g., prostate cancer). The benefits of regular sustained physical activity also include reduction in risk for other chronic diseases including coronary heart disease, type 2 diabetes, and stroke, as well as improved overall well-being.

BRFSS questions examine the intensity, duration and frequency of activity reported by respondents. Respondents are considered "physically active" if they engage in 30 or more minutes of moderate activity at least five days per week or 20 or more minutes of vigorous activity at least three days per week. The following data are specific to the 2007 BRFSS:

- In Delaware, 47.9 percent of adults ages 18 and older were considered physically active. At the national level, 49.5 percent of adults were physically active. The state and national percentages were not statistically significantly different.
- Physical activity differed significantly by sex. Only 44.1 percent of Delaware females met the recommended levels of physical activity, compared to 52.2 percent of Delaware males.
- Significantly more Caucasians (49.9 percent) met the recommended level of physical activity than did African-Americans (38.2 percent) in Delaware.
- The prevalence of physical activity in Delaware was significantly greater for adults aged 18-49 (52.7 percent) compared to adults aged 50-64 (44.3 percent) and adults aged 65 and older (37.5 percent).
- The prevalence of physical activity was positively correlated with annual income; Delawareans earning more than \$50,000 annually were significantly more likely to meet physical activity recommendations (51.8 percent) compared to Delawareans earning less than \$25,000 per year (39.9 percent) and Delawareans earning between \$25-50,000 per year (42.2 percent).
- No significant differences were observed by county of residence or by education level.

### Dietary Fruits and Vegetables

A diet high in fruits and vegetables is a protective factor against numerous cancers, including breast, cervical, colorectal, uterine, esophageal, oral cavity, ovarian, pancreatic, prostate, and stomach cancers. The following data are specific to the 2007 BRFSS:

- Significantly fewer adults aged 18 and older in Delaware (21.4 percent) consumed five or more servings of fruits and vegetables a day compared to adults at the national level (24.4 percent).
- While fewer Delaware males than females consumed five or more servings of fruits and vegetables daily (19.4 percent and 23.2 percent, respectively), the difference was not statistically significant.
- In Delaware, a larger percentage of African-Americans (22.9 percent) than Caucasians (20.7 percent) consumed five or more servings of fruits and vegetables daily but the difference was not statistically significant.
- No significant differences were observed by county of residence, age group or income level.



For questions or comments related to this report, please contact the Division of Public Health at the following address:

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