
**CANCER INCIDENCE AND
MORTALITY
IN MASSACHUSETTS
2004-2008:
STATEWIDE REPORT**

Bureau of Health Information, Statistics,
Research, and Evaluation

Massachusetts Department of Public Health

August 2011



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IN MASSACHUSETTS
2004-2008:
STATEWIDE REPORT

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

Cancer Incidence and Mortality in Massachusetts, 2004-2008: Statewide Report presents cancer incidence and mortality data for the Commonwealth from 2004 through 2008. The report includes numbers and rates for 24 types of cancer, detailed information about the most commonly occurring types of cancer, information on age-specific patterns, a discussion of cancer trends, an examination of patterns by race/ethnicity, and a comparison of Massachusetts and national cancer rates. Data are provided on invasive cancers only, with the exceptions of urinary bladder (which includes *in situ* and invasive cancers combined) and *in situ* breast cancer.

Highlights from the report

- From 2004 through 2008 there were 181,417 newly diagnosed cases of cancer and 65,802 cancer deaths among Massachusetts residents, an average of 36,283 cases and 13,160 deaths annually. The average annual age-adjusted incidence rate for all cancers combined was 511.9 per 100,000 persons and the average annual age-adjusted mortality rate was 182.4 per 100,000 persons. Over the period 2004-2008, incidence rates for all invasive cancer sites decreased annually by 1.1% for males and increased by 0.3% for females, although neither change was statistically significant. Mortality from all types of cancer combined decreased by 1.4% annually for males and by 2.2% for females from 2004 to 2008. Only the decrease in female mortality was statistically significant.
- Prostate cancer was the most common type of newly diagnosed cancer among Massachusetts males accounting for approximately 28% of new cancers among Massachusetts males from 2004 to 2008. The average annual age-adjusted incidence rate of prostate cancer was 162.2 per 100,000 males. From 2004 through 2008, the annual incidence rate of prostate cancer decreased an average of 0.3% per year and the mortality rate of prostate cancer decreased by 1.6% per year, neither change being statistically significant.
- From 2004 to 2008, invasive breast cancer was the most common type of newly diagnosed cancer among Massachusetts females, accounting for 28.5% of new cancers among females. The average annual age-adjusted incidence rate of breast cancer was 133.5 per 100,000 females. The incidence rate of female invasive breast cancer remained stable over the years 2004-2008, with a 1% non-significant increase. The mortality rate from invasive breast cancer decreased during this period by 3.9% annually, but the change also was not statistically significant. The age-adjusted incidence rate of *in situ* breast cancer for Massachusetts females was 46.1 per 100,000. From 2004 through 2008, the incidence of *in situ* breast cancer increased 2.4% annually, a statistically significant change.
- Cancer of the bronchus and lung was the most common cause of cancer deaths among both Massachusetts males and females between 2004 and 2008, accounting for 28.4% of all cancer deaths among males and 26.6% of all cancer deaths among females. During this time period, the mortality rate of cancer of the bronchus and lung in Massachusetts decreased 2.0% annually for males and 1.3% annually for females. Neither of these decreases was statistically significant. The incidence rate of cancer of the bronchus and lung remained stable for Massachusetts females during 2004-2008, but decreased significantly by 2.1% annually for males.
- Colo-rectal cancer incidence decreased significantly among both Massachusetts males and females during 2004-2008. For males, the incidence rate decreased 6.7% per year, and for

females, 4.5% per year. Mortality from colo-rectal cancer also declined significantly among Massachusetts males and females (4.2%, and 3.9% per year for males and females respectively).

- The incidence of thyroid cancer increased significantly among both Massachusetts males and females during 2004-2008. For males, the incidence rate increased 16.5% per year, and for females, 11.0% per year. Mortality from thyroid cancer increased 1.4% per year for males and 3.7% for females, although neither change was statistically significant.

During 2004-2008, the following patterns in cancer incidence and mortality for Massachusetts males and females were seen:

- Black, non-Hispanic males had the highest total cancer age-adjusted incidence and mortality rates among Massachusetts males. Both rates were significantly higher than those of all other racial/ethnic groups (white, non-Hispanics, Asian, non-Hispanics, and Hispanics).
- Cancers of the prostate, bronchus and lung, and colon/rectum were the top three most commonly diagnosed cancers among men, although rankings differed by racial/ethnic group.
- Cancer of the bronchus and lung was the most common cause of cancer death for each male racial/ethnic group, while prostate ranked second among white and black, non-Hispanics and Hispanics, colon/rectum third among white, black, and Asian, non-Hispanics, and liver and intrahepatic bile ducts second among Asian, non-Hispanics and third among Hispanics.
- For all types of cancer combined, white, non-Hispanic women had the highest age-adjusted incidence rate among Massachusetts females and black, non-Hispanic women had the highest age-adjusted mortality rate. The incidence rate for white, non-Hispanic females was statistically significantly higher than those of all other groups. The mortality rate for black, non-Hispanic females was significantly higher than Asian, non-Hispanics and Hispanics, but not white, non-Hispanics.
- Breast cancer was the most commonly diagnosed cancer for each female racial/ethnic group. Cancers of the bronchus and lung, colon/rectum, and thyroid were also leading cancers among females. Cancer of the bronchus and lung ranked second and colon/rectum third for white, non-Hispanic and black, non-Hispanic females. For Asian, non-Hispanic females and Hispanics, colon/rectum was second and thyroid was third.
- Cancer of the bronchus and lung was the leading cause of cancer death among all female race/ethnicities in Massachusetts except Hispanic females, where breast cancer was the most common cause of death and lung and bronchus the second most common. Breast cancer was ranked second among white and black, non-Hispanics and third among Asian, non-Hispanics while colon/rectum ranked second among Asian, non-Hispanics and third among black and white, non-Hispanics and Hispanics.
- Age-adjusted cancer incidence rates in Massachusetts were generally higher than their national counterparts. The Massachusetts male and female incidence rates for all sites combined for the period 2004 through 2008 were 590.9 per 100,000 and 460.6 per 100,000, respectively, while the 2004-2008 rates for the North American Association of Central Cancer Registries (NAACCR) were 553.0 and 416.5 per 100,000, respectively.
- Age-adjusted cancer mortality rates in Massachusetts males and females for 2004-2008 were nearly identical to the age-adjusted mortality rates in the United States for 2003-2007 (Note: 2008 US death data were not available at the time of publication of this report). The Massachusetts

male and female mortality rates for all sites combined were 225.8 and 155.6 per 100,000, respectively, while the national rates for males and females were 225.4 and 155.4 per 100,000, respectively.

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INTRODUCTION

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INTRODUCTION

The Massachusetts Cancer Registry (MCR) collects reports of newly diagnosed cases of cancer and routinely compiles summaries of cancer incidence and mortality data. This report, *Cancer Incidence and Mortality in Massachusetts, 2004-2008: Statewide Report*, is produced annually with the most recently available statewide data. Another report, *Cancer Incidence in Massachusetts: City and Town Supplement*, is also produced annually and contains information for the 351 cities and towns in Massachusetts. Electronic versions of these reports may be found on the Internet at <http://www.mass.gov/dph/mcr>.

Overall Content

This report:

- provides statewide information on cancer incidence and mortality in Massachusetts for twenty-four types of cancer and for all cancers combined for 2004 through 2008;*
- provides detailed information on the most commonly occurring types of cancer for 2004 through 2008;
- examines cancer incidence patterns by age, sex, and race/ethnicity;
- reviews Massachusetts cancer incidence and mortality trends for 2004 through 2008; and
- compares Massachusetts incidence and mortality data with respective national data.

The rest of the report is organized into the following sections:

- **METHODS** provides a detailed explanation of the data collection, data processing, and statistical techniques employed in this report and a discussion of the limitations to consider when reviewing the data.
- **OVERVIEW** provides an overview of cancer incidence and mortality data in Massachusetts from 2004 through 2008, including leading types of cancer, cancer incidence by age and sex, cancer trends, cancer patterns by race/ethnicity, and a comparison of rates for Massachusetts with those for the U.S.
- **FIGURES & TABLES** present cancer incidence and mortality data for 24 types of cancer for 2004-2008. There are 6 figures and 24 tables in this section with breakdowns by sex, race/ethnicity, year, age group, state and national comparisons, and cancer type.
- **APPENDICES** provide information supplemental to this report, including a listing of codes used to prepare the report, information on population and rate changes, and population estimates.
- **REFERENCES**

* *The Massachusetts incidence data in this report include only invasive cancers for 22 of the 24 types of cancer. Cancer of the urinary bladder includes both in situ and invasive cases. Cancer of the breast in situ is presented as a separate category, but is not included in the "all sites combined" data.*

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METHODS

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METHODS

Data Sources

Cancer Incidence

The MCR collects reports of newly diagnosed cancer cases from health care facilities and practitioners throughout Massachusetts. Facilities reporting to the MCR in 2008 included 68 Massachusetts acute care hospitals, 7 radiation centers, 3 endoscopy centers, 4 surgical centers, 14 independent laboratories, 1 medical practice association, 1 radiation/oncology center and approximately 500 private practice physicians. Reports from dermatologists' offices and dermatopathology laboratories, particularly on cases of melanoma, have only been collected by the MCR since 2001. Reports from urologists' offices have only been collected by the MCR since 2002. Currently, the MCR collects information on *in situ* and invasive cancers and benign tumors of the brain and associated tissues. The MCR does not collect information on basal and squamous cell carcinomas of the skin.

The MCR also collects information from reporting hospitals on cases diagnosed and treated in staff physician offices when this information is available. Not all hospitals report this type of case, however, and some hospitals report such cases as if the patients had been diagnosed and treated by the hospital directly. Collecting these types of data makes the MCR's overall case ascertainment more complete. Some cancer types that may be reported to the MCR in this manner are melanoma, prostate, colon/rectum, and oral cancers.

In addition, the MCR identifies previously unreported cancer cases through review of death certificate data to further improve case completeness. This process is referred to as death clearance and identifies cancers mentioned on death certificates that were not previously reported to the MCR. In some instances, the MCR obtains additional information on these cases through follow-up activities with hospitals, nursing homes, hospice residences, and physicians' offices. In other instances, a cancer-related cause of death recorded on a Massachusetts death certificate is the only source of information for a cancer case. These "death certificate only" cancer diagnoses are, therefore, poorly documented, and have not been confirmed by review of complete clinical and pathological information. Such cases are included in this report, but they comprise less than 3% of all cancer cases.

All case reports that provided the basis for this report were coded following the *International Classification of Diseases for Oncology, Third Edition (ICD-O-3)*, which was implemented in North America with cases diagnosed as of January 1, 2001 (1).

Each year, the North American Association of Central Cancer Registries (NAACCR) reviews cancer registry data for quality, completeness, and timeliness. The NAACCR certification results for the MCR for diagnosis years 2004-2007 are presented in Table A. Results from the 2008 certification were not available at the time of the publication of this report. For 2004-2008, the MCR's annual case count was estimated by NAACCR to be more than 95% complete each year. The MCR has achieved the gold standard for this certification element as well as for six other certification elements for each case year since 1997. (See Table A.)

The Massachusetts cancer cases presented in this report are primary cases of cancer diagnosed among Massachusetts residents during 2004-2008 and reported to the MCR as of May 16, 2011. These data include some additional cases diagnosed in 2003-2007 that were not counted in the previous report,

Cancer Incidence and Mortality in Massachusetts 2003-2007: Statewide Report because they were reported to the MCR too late to be incorporated in that report.

Cancer sites/types are grouped according to coding definitions adapted from the National Cancer Institute (NCI)'s Surveillance, Epidemiology and End Results (SEER) Program (Appendix I). The Massachusetts data presented are invasive cancers, with the exception of urinary bladder and breast cancer. Both *in situ* and invasive cancers are presented for these sites. (See section 'Definition of Cancer Sites' on page 14 for additional information about the urinary bladder category.) *In situ* cancers are neoplasms diagnosed at the earliest stage, before they have spread; they are limited to a small number of cells and have not invaded the organ itself. Invasive cancers have spread beyond the layer of cells where they started and have the potential to spread to other parts of the body. Typically, published incidence rates do not combine invasive and *in situ* cancers due to differences in the biologic significance, survival prognosis, and types of treatment of the tumors. Because a substantial number of breast cancers are diagnosed at a pre-invasive (*in situ*) stage, we present an additional category for these data that is separate from the invasive breast cancer data. The *in situ* breast cancer cases are not included in the totals for all cancer sites combined. Due to the specific nature of the diagnostic techniques and treatment patterns for bladder cancer, *in situ* and invasive cancers of the urinary bladder are combined and *in situ* urinary bladder cases are included in the totals for all cancer sites combined.

The national incidence data for comparison are from NAACCR. The NAACCR incidence rates are for the period 2004-2008 and include data from 40 states and 5 metropolitan areas, covering about 80% of the United States population, including Massachusetts (2).

Cancer Mortality

The Massachusetts death data were obtained from the Massachusetts Registry of Vital Records and Statistics, which has legal responsibility for collecting reports of deaths in this state. Death reports from 2004 to 2008 were coded using the *International Classification of Diseases, Tenth Revision* (ICD-10) (3). The cancer site/type groups for deaths in this report were based on cancer site/type categories from the NCI's SEER Program (Appendix I). These SEER cancer site/type definitions are the standard categories commonly used by cancer registries. The cancer mortality data published in this report may differ slightly from the cancer mortality data published in *Massachusetts Deaths*, the annual Massachusetts Department of Public Health mortality surveillance publication because *Massachusetts Deaths* uses cancer site/type groupings from the National Center for Health Statistics.

The national mortality data presented here are taken from the 'Annual Report to the Nation on the Status of Cancer, 1975-2007' which used data from the CDC's National Center for Health Statistics (NCHS) (4). Since 2008 national death data were not available at the time of the publication of this report, the mortality rates for the entire U.S. population from 2003-2007 were used. As a result of this, 2004-2008 Massachusetts death data were compared with 2003-2007 U.S. death data throughout the report.

Definitions

Population Estimates

All of the population estimates used in this report were produced by the National Center for Health Statistics (NCHS) in collaboration with the U.S. Census Bureau's Population Estimation Program. The NCHS reallocates the multiple race categories from the Census Bureau population estimates file to create four mutually exclusive race categories that are consistent with the race categories used to collect cancer incidence and cancer mortality data. The population data used in this report for the calculation of rates are presented in Appendix III.

Race/Ethnicity

The MCR uses an algorithm developed by NAACCR called the NAACCR Hispanic Identification Algorithm (NHIA) to help classify Hispanic ethnicity. The algorithm is only applied to cases with an unknown Spanish/Hispanic origin or cases that have been classified as Hispanic based on a Spanish surname only. The algorithm uses last name, maiden name, birthplace, race, and sex to determine the ethnicity of these cases.

The race/ethnicity categories presented in this report are mutually exclusive. Cases and deaths are only included in one race/ethnicity category. The race/ethnicity tables include the categories white, non-Hispanic; black, non-Hispanic; Asian, non-Hispanic; and Hispanic. The total population in Massachusetts also includes unknown races/ethnicities and Native Americans. As a result, the number of cases for the total population is not the sum of cases by race/ethnicity presented in the tables.

Statistical Terms

- *Age-Specific Rates* – Age-specific rates were calculated by dividing the number of people in an age group who were diagnosed with cancer or died of cancer in a given time frame by the number of people in that same age group overall in that time frame. They are presented as rates per 100,000 residents and are site- and sex-specific.
- *Age-Adjusted Rates* – An age-adjusted incidence or mortality rate is a weighted average of the age-specific rates, where the weights are the proportions of persons in the corresponding age groups of a standard 100,000 population. The potential confounding effect of age is eliminated when comparing age-adjusted rates for populations with different age structures. The 2000 U.S. Census Bureau population distribution was used as a standard. Rates were age-adjusted using eighteen 5-year age groups. Age-adjusted rates can only be compared if they are adjusted to the same standard population. It is also important to note that differences in methodologies used in calculating rates, such as number of age groups used, may cause slight variations in results.
- *Confidence Intervals (CI) or Confidence Limits (CL)* – The confidence interval (CI)—also called a confidence limit (CL)—is a range of values determined by the degree of variability of the data within which the true value should lie. The 95% confidence intervals presented in this report mean that 95 times out of 100 this range of values will contain the true one. The confidence interval indicates the precision of the rate calculation; the wider the interval, the less certain the rate. Statistically, the width of the interval reflects the size of the population and the number of events; smaller populations and smaller number of cases yield less precise estimates that have wider confidence intervals. Confidence intervals were used in the report as a conservative statistical test to estimate the difference between the age-adjusted incidence or mortality rates with the probability of error of 5% or less ($p \leq 0.05$). Rates and confidence intervals were not calculated when there were fewer than 20 cases.
- *Estimated Annual Percent Change (EAPC)* – The EAPC is a statistical method for trend analysis. It shows how much a cancer rate has increased or decreased over the observed period of time. This estimation assumes that the change in incidence or mortality rates is constant during the observed time period. The EAPC for a short time period (2004-2008 for this report) was calculated using the SEER method. The $EAPC = 100 * (e^m - 1)$, where m is a slope of the linear regression line, which is an approximation of the function of the natural logarithm of the rates by the year of diagnosis (5). A

positive EAPC corresponds to an increasing trend, while a negative EAPC corresponds to a decreasing trend. All of the EAPC values calculated in this report were statistically tested for significance ($p \leq 0.05$) against the hypothesis that they are equal to zero (the rate is neither increasing nor decreasing).

- *Median Age at Diagnosis* – The median age at diagnosis is the point (in age) where half of cancer cases occurred below this age and half of cases occurred above this age.

Interpreting the Data

When interpreting cancer incidence and mortality data in this report, it is important to consider the following:

Border Areas and Neighboring States

Some areas of Massachusetts appear to have low cancer incidence, but this may be due to loss of cases in Massachusetts residents who were diagnosed in neighboring or other states and not reported to the MCR. Presently the MCR has reciprocal reporting agreements with the following fifteen states for improving case ascertainment: Alaska, Arkansas, Connecticut, Florida, Maine, Mississippi, New Hampshire, New York, North Carolina, Rhode Island, South Carolina, Texas, Vermont, Wisconsin, and Wyoming.

Cases Diagnosed in Non-Hospital Settings

During the time period covered by this report, the MCR's primary information source for most newly diagnosed cases of cancer was hospitals. In addition, the MCR collected information from reporting hospitals on cases diagnosed and treated in staff physician offices, when this information was available. In 2001, dermatologists and dermatopathology laboratories were added as reporting sources. The addition of these new reporting sources may elevate the incidence of melanoma diagnosed in the years 2001 and later. In 2002, urologists' offices and a general laboratory were added as reporting sources. Some types of cancer in this report, such as prostate cancer, may be under-reported because they are diagnosed primarily by private physicians, private laboratories, health maintenance organizations, or radiotherapy centers that escape the case identification systems used by hospitals. The exact extent of this under-reporting has not been determined exactly, but cases included in this report represent the great majority of cases statewide and provide an essential basis for evaluating statewide cancer incidence patterns.

Definition of Cancer Sites

Reports published by the MCR since 2004 use a definition for urinary bladder that includes both *in situ* and invasive cancers. Prior reports included only invasive cases in the urinary bladder category. This change was made to conform to the definitions of the NCI's SEER Program. The addition of *in situ* cases in this category has elevated both the number of cases and rates for this site and for all sites combined compared with reports published prior to 2004. The first statewide report to use this expanded definition was *Cancer Incidence and Mortality in Massachusetts 1997-2001: Statewide Report*.

The implementation of ICD-O-3 coding in 2001, and corresponding cancer site recodes, has changed the incidence of some types of tumors, especially ovarian cancer, leukemias, and lymphomas. These changes may affect annual site-specific incidence, causing a drop or spike in 2004-2008 rates, as well as the incidence of all sites combined and average annual incidence rates. Therefore, caution should be exercised when comparing rates in 2004-2008 with those prior to 2001.

Trends

Trend data also should be interpreted with caution. Apparent increases or decreases in cancer incidence over time may reflect changes in diagnostic methods or case reporting rather than true changes in cancer occurrence. Also, cancer incidence trends may appear more favorable than they actually are because they have not been adjusted for reporting error or delay (6). Typically, statewide Massachusetts cancer incidence data are released about two years after the close of a diagnosis year; for example, data for cases diagnosed between January 1, 2008 and December 31, 2008 are being released for the first time in early 2011. The MCR continues to receive case reports on an ongoing basis even after the data are released. These delayed case reports, as well as corrections to cases based on subsequent details from the reporting facilities, result in reporting delay and data changes; thus, the more recent diagnosis years may be less complete and accurate than the earlier diagnosis years. Finally, the following should be considered when interpreting trend data:

- The EAPC assumes that the change in rate is the same over the entire time period examined, which may or may not be true for the trends examined in this report.
- If the percent difference in rates between the years 2004 and 2008 is small, the statistical significance of the EAPC may have no practical importance.

Race/Ethnicity

Race/ethnicity data for cancer cases are based on information in the medical record. These data for cancer deaths are based on information from death certificates as reported by next-of-kin and funeral directors. Errors in these source documents may lead to incorrect classification of race/ethnicity. Also, completeness of the race/ethnicity data may vary for cancer cases and cancer deaths. Some race/ethnicity categories may be under-reported, thus, counts and rates may under-represent the true incidence of cancer in these populations. The NAACCR Hispanic Identification Algorithm (NHIA) has been implemented in this report to help classify Hispanic ethnicity.

National Data Comparisons:

Age-adjusted incidence and mortality rates in Massachusetts were compared with national rates shown in Table 24 of this report. As mentioned in the section on data sources, the national incidence data are from the North American Association of Central Cancer Registries (NAACCR) and the death data are from the CDC's National Center for Health Statistics. It is important to interpret these data comparisons cautiously. Cancer rates may be affected by differences in the racial/ethnic composition of the population, differences in population estimates used for rate calculations, the prevalence of cancer risk factors, and cancer screening rates. Thus, cancer rates in Massachusetts and NAACCR areas or the United States may differ because of one or more of these variations.

Additionally, national incidence and mortality data in this report do not contain confidence interval estimates for the rates. As a result, it is not possible to determine whether a Massachusetts rate for a specific cancer is significantly higher or lower than the national rate. Therefore the text only states whether the rate of a specific cancer is higher or lower in Massachusetts.

Table A.
North American Association of Central Cancer Registries (NAACCR) Certification Results
for the Massachusetts Cancer Registry (MCR), 2004-2008

Registry Element	Gold Standard	Silver Standard	MCR Results By Year					Standard Achieved
			2004	2005	2006	2007	2008	
Completeness of case ascertainment §	95%	90%	>95%	>95%	95%	>95%	>95%	Gold
Unknown "age at diagnosis"	≤2%	≤3%	0.0%	0.0%	0.0%	0.0%	0.0%	Gold
Unknown "sex"	≤2%	≤3%	0.0%	0.0%	0.0%	0.0%	0.0%	Gold
Unknown "race"	≤3%	≤5%	1.4%	1.6%	1.5%	1.5%	0.9%	Gold
"Death certificate only" cases †	≤3%	≤5%	1.8%	1.5%	1.9%	1.6%	2.8%	Gold
Duplicate primary cases	≤0.1%	≤0.2%	0.05%	0.03%	0.02%	0.02%	0.0%	Gold
Timeliness	Data submitted within 24 months of close of calendar year.						Gold	

§ Completeness of case ascertainment was estimated by methods from the NAACCR.

† "Death certificate only" cases are cases that are identified through the death certificate clearance process and only have information from a death certificate.

OVERVIEW

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OVERVIEW

From 2004 through 2008, there were 181,417¹ newly diagnosed cases of cancer in Massachusetts residents – 90,882 in males and 90,523 in females. On average, 36,280 new cancer cases were diagnosed annually during this time period. For all types of cancer combined, the average annual age-adjusted incidence rate was 590.9 cases per 100,000 among males and 460.6 cases per 100,000 among females.

During the same time period, there were 65,802 deaths due to cancer – 33,028 males and 32,774 females or an average of 13,160 cancer deaths annually. For all cancer sites combined, the age-adjusted mortality rate was 225.8 deaths per 100,000 among males and 155.6 deaths per 100,000 among females.

Leading Types of Cancer

Incidence

Males

The most commonly diagnosed type of cancer in Massachusetts males from 2004-2008 was prostate cancer, followed by cancers of the bronchus and lung, colon/rectum, and urinary bladder. These four cancer types comprised approximately 58% of newly diagnosed cases. Prostate cancer alone comprised approximately 28% of all male incident cases (Figure 1).

From 2004-2008, the age-adjusted incidence rates for these four leading types of cancer were 162.2 cases per 100,000 for prostate cancer, 82.8 cases per 100,000 for cancer of the bronchus and lung, 56.8 cases per 100,000 for colo-rectal cancer, and 45.6 cases per 100,000 for urinary bladder cancer. Other leading cancer types for males included melanoma, non-Hodgkin lymphoma, cancer of the kidney and renal pelvis, cancer of the oral cavity and pharynx, leukemia, and pancreatic cancer (Figure 2).

Females

Among Massachusetts females, the most commonly diagnosed cancer types were cancers of the breast, bronchus and lung, colon/rectum, and corpus uteri (uterus), representing approximately 59% of new cancer cases diagnosed during 2004-2008. Invasive breast cancer alone comprised 28.5% of all female incident cases (Figure 1).

From 2004-2008, the age-adjusted incidence rates for these four leading types of cancer were 133.5 cases per 100,000 for breast cancer, 64.5 cases per 100,000 for cancer of the bronchus and lung, 42.1 cases per 100,000 for colo-rectal cancer, and 29.7 cases per 100,000 for cancer of the uterus. Other leading cancer types for females included thyroid cancer, melanoma, non-Hodgkin lymphoma, ovarian cancer, urinary bladder cancer, and pancreatic cancer (Figure 2).

¹ The male and female case counts will not add up to the total case count because the MCR collects two additional sex/gender classifications (transsexuals and persons with sex chromosome abnormalities/hermaphrodites).

Mortality

Males

Cancer of the bronchus and lung was the leading cause of cancer death for Massachusetts males during 2004 and 2008 accounting for 28% of all cancer deaths in males. Prostate cancer ranked second in mortality. The third and fourth most common causes of cancer death were cancers of the colon/rectum and pancreas, respectively. These four types of cancer comprised 53% of all cancer deaths for this time period (Figure 3).

From 2004 to 2008, the age-adjusted mortality rates for the four leading causes of cancer death in males were 63.8 deaths per 100,000 for cancer of the bronchus and lung, 23.8 deaths per 100,000 for prostate cancer, 20.0 deaths per 100,000 for colo-rectal cancer, and 13.1 deaths per 100,000 for pancreatic cancer. Other leading causes of cancer death for males during this time period included cancer of the esophagus, urinary bladder, leukemia, liver and intrahepatic bile ducts, non-Hodgkin lymphoma, and cancers of the kidney and renal pelvis (Figure 4).

Females

Cancer of the bronchus and lung was also the leading cause of cancer death for Massachusetts females for 2004 through 2008. Bronchus and lung cancer accounted for approximately 27% of all cancer deaths in females. Breast cancer ranked second in mortality for females. The third and fourth most common causes of cancer death were cancers of the colon/rectum and pancreas, respectively. These four types of cancer comprised 57% of all cancer deaths for this time period (Figure 3).

From 2004 to 2008, the age-adjusted mortality rates for these four leading causes of cancer death were 42.7 deaths per 100,000 for cancer of the bronchus and lung, 22.2 deaths per 100,000 for breast cancer, 14.3 deaths per 100,000 for colo-rectal cancer, and 10.3 deaths per 100,000 for pancreatic cancer. Other leading causes of cancer death among females during this time period included ovarian cancer, non-Hodgkin lymphoma, leukemia, and cancers of the uterus, brain and other nervous system, and liver and intrahepatic bile ducts (Figure 4).

Cancer Incidence Patterns by Age

The likelihood of being diagnosed with cancer increased steadily with age for most cancers. The age-specific incidence rate for all sites combined for males rose from 24.0 per 100,000 in the age group 0-4 to 3425.7 per 100,000 in the age group 80-84 (Table 1). For females, the age-specific rate for all sites combined increased from 24.0 per 100,000 for ages 0-4 to 2203.5 per 100,000 for ages 80-84 (Table 2). The cancer incidence rate for people aged 85 and above declined for both males and females (Tables 1 and 2).

The median age of diagnosis for all cancers combined, was 67.0 years for males and 66.0 years for females (Tables 1 and 2). For many of the cancer types presented in this report, the median age at diagnosis was age 60 or older. The following cancers were diagnosed at a younger median age (males and females are combined for cancers occurring in both sexes): brain and other nervous system (median age – 58.0), breast *in situ* (median age – 56.0), cervix (median age – 49.0), Hodgkin lymphoma (median age – 39.0), testis (median age – 35.0), and thyroid (median age – 49.0) (Tables 1-3).

Cancer Trends

Incidence

All of the data describing percent increases and decreases per year are based upon the estimated annual percent change (EAPC). From 2004 to 2008, overall cancer incidence in Massachusetts declined non-significantly for both males (-1.1%) and females (-1.4%). Nationally, cancer incidence rates for all cancer sites combined decreased by 0.7% per year for males from 1998 to 2007 and by 0.6% per year for females from 1998 to 2007, both decreases being statistically significant (7). Incidence trends for the leading cancers affecting Massachusetts males and females are discussed below and shown in Figures 5 and 6. Tables 4, 5, and 6 present age-adjusted incidence rates by diagnosis year for males, females and both sexes respectively.

Males

Among Massachusetts males between 2004 and 2008, the incidence rate of prostate cancer decreased by 0.3% per year, although this decrease was not statistically significant (Figure 5). The incidence rate of prostate cancer declined from 157.3 cases per 100,000 males in 2004 to 152.0 cases per 100,000 males in 2008 (Table 4). In addition, there was an overall decrease in prostate cancer from its peak incidence of 217.4 per 100,000 in 1992. Nationally, the incidence of prostate cancer showed a non-significant decrease of 0.6% per year between 1998 and 2007. The increase in prostate cancer incidence during the late 1980s and early 1990s is attributed to changes in diagnostic methodology and increased prostate-specific antigen (PSA) screening (8). Since 1992, the national incidence rate for prostate cancer has fluctuated with a decline from 1992-1995, an increase from 1995-2001, a decrease from 2001-2005, and then an increase from 2005-2007, however, none of these changes were statistically significant (7).

In Massachusetts, the age-adjusted incidence rate of cancer of the bronchus and lung in males declined by 2.1% per year between 2004 and 2008, a statistically significant decline (Figure 5). The incidence rate for cancer of the bronchus and lung fell from 84.7 cases per 100,000 males in 2004 to 79.0 cases per 100,000 in 2008 (Table 4). Nationally, the incidence rates for male cancer of the lung and bronchus declined significantly by 2.0% per year from 1998 to 2007 (7).

The incidence rate of colo-rectal cancer in Massachusetts males decreased from 65.8 in 2004 to 49.7 cases per 100,000 in 2008. The estimated annual percent decrease was 6.7 % and was statistically significant (Figure 5). National data show that colo-rectal cancer incidence rates decreased significantly by 2.9% per year from 1998 to 2007 for males (7).

The only cancer that showed a significant increase from 2004 to 2008 among males in Massachusetts was thyroid cancer with an estimated annual percent change of 16.5%. Nationally, thyroid cancer also increased significantly by 6.0% annually from 1998 to 2007 (7).

Females

Invasive breast cancer incidence in Massachusetts females showed non-significant increases of 1.0% annually during the period 2004-2008 (Figure 6). The incidence rate increased from 133.5 cases per 100,000 females in 2004 to 139.2 cases per 100,000 in 2008 (Table 5). Breast cancer incidence in the U.S. rose during the 1990s which was attributed to increased mammography screening (9). Nationally, breast cancer incidence rates then decreased significantly by 1.4% from 1998-2007 (4). Breast cancer incidence rates in women stabilized from 2003 to 2007 after decreasing sharply from 2002 to 2003, which correlated with the dramatic decrease in the use of hormone replacement therapy (HRT). The stabilization of the rates after 2003 may in part reflect the role of HRT as a promoting rather than an

initiating agent in the development of breast cancer (4). The incidence of cancer of the bronchus and lung among Massachusetts females increased non-significantly by 0.1% per year between 2004 and 2008. The rate rose from 63.6 cases per 100,000 females in 2004 to 64.9 cases per 100,000 in 2008 (Table 5). The national rate of cancer of the bronchus and lung among females decreased significantly by 0.3% per year from 1998 to 2007 (7).

The incidence rate of colo-rectal cancer, which is the third most common cancer among Massachusetts females, decreased significantly by 4.5% per year from 2004 through 2008. The rate declined from 46.5 in 2004 to 38.6 per 100,000 in 2008. Nationally, the rates for colo-rectal cancer also decreased significantly by 2.2% per year from 1998-2007 (7).

The annual incidence rate for uterine cancer, the fourth most commonly diagnosed cancer among Massachusetts women showed non-significant increases of 2.4% over the years 2004 to 2008 (Figure 6). Nationally, the rates for uterine cancer decreased significantly by 0.2% per year from 1998-2007 (7).

Among Massachusetts females, thyroid cancer incidence rates significantly increased by 11.0% per year for 2004 - 2008. Nationally, the rates for thyroid cancer in females also increased significantly 6.6% per year from 1998-2007 (7). These increases have been observed in the U.S. as well as globally. Although changes in diagnostic procedures, including the introduction and greater use of ultrasound and fine-needle biopsy, have likely contributed to the increase in incidence, more research on the relationship between temporal trends, diagnostic procedures, and exposure to radiation and other potential risk factors is needed (4). For more detailed information on thyroid cancer in Massachusetts, please refer to the MCR publication *Data Report: Thyroid Cancer in Massachusetts* (10). This report, which was updated in January 2011, can be accessed at www.mass.gov/dph/mcr under "Special Reports."

In addition to the trends mentioned above, other significant decreases in incidence rates in Massachusetts women for 2004-2008 included cervical cancer (6.2% per year) and urinary bladder cancer (2.8% per year). Nationally, cervical cancer incidence rates significantly decreased by 2.7% annually from 2004 to 2008 and urinary bladder rates by 1.0% from 1998 to 2007 (4). During the past 40 years, both the number of cases and deaths from cervical cancer have decreased significantly. This decline largely is the result of many women getting regular [Pap tests](#), which can find cervical precancer before it develops into cancer (11).

Liver cancer and *in situ* breast cancer incidence rates increased significantly by 8.3% and 2.4% respectively in the same time period. Nationally, rates for liver cancer increased significantly for females by 1.8% from 1998-2007. *In situ* breast cancer data was not available nationally (7). The increase in liver cancer incidence can be explained in part by increases in chronic hepatitis B and hepatitis C infections which then become liver cancer. These infections account for an estimated 78 percent of liver cancer worldwide, and many of the estimated 3.8-5.3 million persons living with chronic viral hepatitis in the United States are unaware of their infection (12).

Mortality

For 2004 to 2008, cancer mortality decreased by 1.4% per year for Massachusetts males and 2.2% per year for females. The decrease among females was statistically significant, while the decrease among males was not (Figures 5 and 6). Recent national data for all cancer sites combined show statistically significant declines in mortality rates of 1.8% per year for men and 1.1% per year for women from 1998-2007 (4).

Males

Among Massachusetts males, mortality from bronchus and lung, prostate, and colo-rectal cancers all decreased from 2004 to 2008, although only the decrease from colo-rectal cancer was statistically significant. Deaths due to prostate cancer decreased 1.6% per year; cancer of the bronchus and lung, 2.0% per year; and colo-rectal cancer, 4.2% per year. Additionally, deaths from non-Hodgkin lymphoma decreased significantly by 3.8% annually (Figure 5). Nationally, deaths from several cancers decreased significantly from 1998-2007 including prostate (3.9%), stomach (3.5%), non-Hodgkin lymphoma (3.0%), colon/rectum (2.8%), larynx (2.4%), bronchus and lung (2.1%), oral and pharynx (1.5%), and brain and central nervous system (1.3%) (4).

Females

For Massachusetts females, mortality rates for cancers of the bronchus and lung and breast declined 1.3% and 3.9% per year, respectively, although neither decline was statistically significant. The female colo-rectal cancer mortality rate declined significantly by 3.9% per year. Additionally, deaths from cancer of the cervix and non-Hodgkin lymphoma also decreased significantly by 9.1% and 6.7% respectively. Nationally, deaths from several cancers showed statistically significant declines from 1998-2007 including non-Hodgkin lymphoma (3.4%), stomach (3.0%), colorectal (2.6%), cervical (2.2%), oral and pharynx (2.1%), and breast (2.0%) while lung cancer mortality decreased non-significantly by 0.2% per year (4).

It is important to note that the mortality rates for most cancers with significant increases or decreases are low (Tables 7 and 8). A trend based on a small number of deaths may not be stable over a longer period. As a result, the statistical significance of EAPC for these sites may have no practical public health importance.

Cancer Patterns by Race/Ethnicity

Incidence

Table 10 presents the five leading cancers (based on age-adjusted rates) by race/ethnicity and sex for 2004-2008. Tables 11, 12, and 13 show the distribution of cases by cancer type for all races combined and by race/ethnicity groups for males, females, and both sexes for the period 2004-2008. Age-adjusted rates and respective 95% confidence intervals or limits (95% CL) for all races combined and by race/ethnicity, cancer type, and sex are presented in Tables 14, 15, and 16. (See the Methods section of this report for more information about confidence intervals.)

Overall, of the total 181,417 newly diagnosed cancer cases during 2004-2008, 163,500 (90.1%) occurred in white, non-Hispanics, 7,089 (3.9%) in black, non-Hispanics, 3,318 (1.8%) in Asian, non-Hispanics, and 5,010 (2.8%) in Hispanics (Table 13). Of the remaining cases, (0.06%) occurred in American Indians and (1.3%) occurred in those whose race/ethnicity was unknown.

Males

Based on age-adjusted rates, the rankings of the most common types of cancer among Massachusetts males by race/ethnicity are as follows:
(See Table 10 for rates.)

- Prostate cancer: First among all racial/ethnicity groups.
- Lung cancer: Second among white, non-Hispanic, black, non-Hispanic, and Asian, non-Hispanic men; third among Hispanic men.
- Colo-rectal cancer: Second among Hispanic men; third among white, non-Hispanic, black, non-Hispanic, and Asian, non-Hispanic men.
- Urinary bladder cancer: Fourth among white, non-Hispanic, and Hispanic men; fifth among black non-Hispanic men.
- Liver cancer: Fourth among Asian, non-Hispanic men; fifth among Hispanic men.
- Melanoma: Fifth among white, non-Hispanic men.
- Kidney cancer: Fourth among black, non-Hispanic men.
- Stomach: Fifth among Asian, non-Hispanic men

From 2004 through 2008, black, non-Hispanic males had the highest incidence rate of all cancer types combined (628.3 per 100,000), significantly higher than the rates for all other male racial/ethnic groups (Table 14). Asian, non-Hispanic males had the significantly lowest incidence rate of all sites combined (331.7 per 100,000). Black, non-Hispanic males had a significantly elevated rate of prostate cancer (247.6 per 100,000) when compared to the rates for other race/ethnicity groups. Nationally, prostate cancer incidence rates decreased non-significantly by 1.0% from 1998-2007 among black, non-Hispanic males. The 2003-2007 national incidence rates, however, still remained higher than in white, non-Hispanic males (230.7 vs. 143.8) (4). Asian, non-Hispanic men in Massachusetts had a significantly higher rate of liver cancer compared with the other groups. Nationally, the rate for liver cancer among Asians from 2003-2007 was nearly triple that of white, non-Hispanics (21.6 vs. 8.2 per 100,000) (4).

Females

Based on age-adjusted rates, the most common types of cancer diagnosed among Massachusetts females include:

(See Table 10 for rates.)

- Breast cancer: First among women of all racial/ethnic groups.
- Lung cancer: Second among white, non-Hispanic and black, non-Hispanic women; fourth among Asian, non-Hispanic and Hispanic women.
- Colo-rectal cancer: Second among Asian, non-Hispanic and Hispanic women; third among white, non-Hispanic and black, non-Hispanic women.
- Uterine cancer: Fourth among white, non-Hispanic, black, non-Hispanic; fifth among Asian non-Hispanic and Hispanic women.
- Thyroid cancer: Third among Asian, non-Hispanic and Hispanic women; fifth among white non-Hispanic, black, non-Hispanic and Hispanic women.

During 2004-2008, white, non-Hispanic females had the highest incidence rate of all cancer types combined (470.7 per 100,000) among all racial/ethnic groups (Table 15). This rate was significantly higher than the rates for the other female groups ($p \leq 0.05$). Asian, non-Hispanic females had an incidence rate for all sites combined (308.3 per 100,000) which was significantly lower than the rate for white and black, non-Hispanics (470.7 and 400.6 per 100,000, respectively). The rates of invasive breast and lung cancer were statistically significantly higher for white, non-Hispanic females—137.3 and 67.8 cases per 100,000, respectively—than for the other racial/ethnic groups. The breast cancer *in situ* incidence rate was also statistically significantly higher among white, non-Hispanic females (47.5 cases per 100,000) than among the other race/ethnicity groups (Table 15).

Mortality

Table 17 presents the five leading causes of cancer mortality by race/ethnicity and sex. The number of cancer-related deaths, age-adjusted mortality rates, and 95% confidence intervals by cancer type, race/ethnicity, and sex are presented in Tables 18 through 23.

Of the 65,802 deaths from cancer between 2004 and 2008, 60,946 occurred among white, non-Hispanics, 2,651 among black, non-Hispanics, 940 among Asian, non-Hispanics, and 1,183 among Hispanics (Table 20). Overall death rates were significantly higher in the black, non-Hispanic population as compared with all other race/ethnicity groups, which is consistent with national data (4).

Males

Based on age-adjusted rates, rankings of the five most common causes of cancer deaths among Massachusetts males are: (See Table 17 for rates.)

- Lung cancer: First among men of all racial/ethnic groups.
- Prostate cancer: Second among white, non-Hispanic, black, non-Hispanic, and Hispanic men; fourth among Asian, non-Hispanic men.
- Liver cancer: Second among Asian, non-Hispanic men; third among Hispanic men; fifth among black, non-Hispanic men.
- Colo-rectal cancer: Third among white, non-Hispanic, black, non-Hispanic, and Asian, non-Hispanic men; fourth among Hispanic men.
- Pancreatic cancer: Fourth among white, non-Hispanic and black, non-Hispanic men.

- Stomach cancer: Fifth among Asian, non-Hispanic and Hispanic men.
- Esophageal cancer: Fifth among white, non-Hispanic men.

For all types of cancer deaths combined for 2004-2008, black, non-Hispanic males had the highest age-adjusted mortality rate (276.5 deaths per 100,000 males), significantly higher than the rates for the three other racial/ethnic groups (Table 21). Compared with white, non-Hispanics, black, non-Hispanic males also had significantly higher mortality rates for the following cancers:

- liver cancer (13.7 per 100,000 vs. 8.0 per 100,000) (note: no statistical difference compared to Asian, non-Hispanics and Hispanics),
- multiple myeloma (8.1 per 100,000 vs. 4.3 per 100,000),
- prostate cancer (49.2 per 100,000 vs. 23.6 per 100,000), and
- stomach cancer (12.1 per 100,000 vs. 5.2 per 100,000).

Mortality data were limited for both Asian, non-Hispanic and Hispanic males due to small numbers, but Asian, non-Hispanic males had the highest mortality rate of cancer of the liver and intrahepatic bile ducts, 20.1 per 100,000 (Table 21). This rate was significantly higher than that for white, non-Hispanic males and Hispanics, but not for black non-Hispanic males.

Females

The five most common causes of cancer deaths among Massachusetts females based on age-adjusted rates are: (See Table 17 for rates.)

- Lung cancer: First among white, non-Hispanic, black, non-Hispanic, and Asian, non-Hispanic women; second among Hispanic women.
- Breast cancer: First among Hispanic women; second among white, non-Hispanic and black non-Hispanic women; third among Asian, non-Hispanic women.
- Colo-rectal cancer: Third among white, non-Hispanic, black, non-Hispanic, and Hispanic women; second among Asian, non-Hispanic women.
- Pancreatic cancer: Fourth among all groups.
- Liver cancer: Fifth among Asian, non-Hispanic women.
- Uterine cancer: Fifth among Hispanic women.
- Ovarian cancer: Fifth among white, non-Hispanic women.
- Leukemia: Fifth among black, non-Hispanic women.

For all types of cancer deaths combined during 2004-2008, black, non-Hispanic females had the highest age-adjusted mortality rate among females, with 166.6 deaths per 100,000 females (Table 22). This rate was statistically significantly elevated compared with the rates for Asian, non-Hispanic females and Hispanic females, but not white, non-Hispanics. White, non-Hispanic females had statistically significantly elevated mortality rates of lung cancer (44.8 per 100,000) compared with the other racial/ethnic groups. Breast cancer mortality rates were statistically significantly higher among black, non-Hispanic females compared with the other racial/ethnic groups. White, non-Hispanic females in turn had significantly elevated breast cancer mortality rates when compared with Asian, non-Hispanics and Hispanics. The mortality rate from colo-rectal cancer was statistically significantly higher in white, non-Hispanic and black, non-Hispanic females compared with the other two racial/ethnic groups (Table 22).

Massachusetts and U.S. Comparisons

Age-adjusted incidence and mortality rates in Massachusetts are compared with national rates in Table 24. The national incidence and mortality data are from the North American Association of Central Cancer Registries (NAACCR). It is important to interpret these data cautiously. Cancer rates may be affected by differences in the racial/ethnic composition of the population, differences in population estimates, the prevalence of cancer risk factors, and cancer screening rates. Cancer rates in Massachusetts and NAACCR areas or the United States may differ because of these variations. Both Massachusetts and national incidence and mortality data cover the period 2004-2008.

Incidence

The NAACCR incidence data represent about 80% of the U.S. population, including 81% of whites, 75% of blacks, 90% of Asian/Pacific Islanders, and 91% of Hispanics/Latinos (2). For all cancer sites combined, the age-adjusted incidence rates were 11% higher for Massachusetts females than or females in the NAACCR areas (460.6 vs. 416.5 respectively); the rates for Massachusetts males were somewhat higher (7%) (590.9 *vs.* 553.0) (Table 24). The incidence rates in Massachusetts were higher than the incidence rates in the NAACCR areas for the following leading cancers: male and female colo-rectal, male and female urinary bladder, male and female melanoma, female bronchus and lung, female breast, prostate, and uterine. Lung cancer incidence among males was lower in Massachusetts than in the NAACCR areas (82.8 versus 84.4 per 100,000 males). The incidence of *in situ* breast cancer in females was higher in Massachusetts than in NAACCR registries (46.1 versus 30.1 per 100,000 females). The incidence rate of cervical cancer in Massachusetts was lower than the incidence rate in the NAACCR registries (6.0 versus 8.1 per 100,000 females) (Table 24).

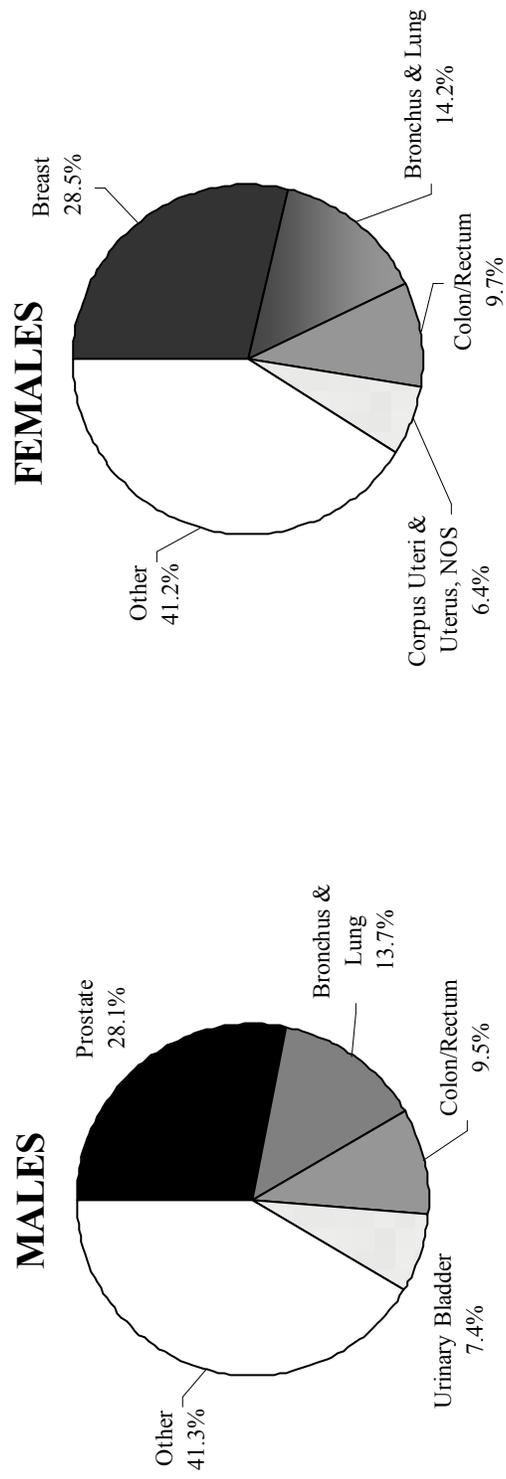
Mortality

The national mortality data cover the entire United States population. For males, the age-adjusted mortality rate in Massachusetts was slightly higher than the age-adjusted mortality rate in the United States for all cancer sites combined, 225.8 versus 225.4 per 100,000 males. Lung cancer and prostate cancer mortality rates were lower for Massachusetts compared with the U.S., while bladder, liver, pancreas, and esophagus cancer mortality rates were higher. For females, the age-adjusted mortality rate for all cancer sites combined in Massachusetts was slightly higher than the national rate (155.6 versus 155.4 per 100,000) (Table 24). Breast, liver, cervical, colorectal cancer mortality rates were slightly lower in Massachusetts compared with the U.S. while lung, pancreatic, and bladder cancer mortality rates were slightly higher.

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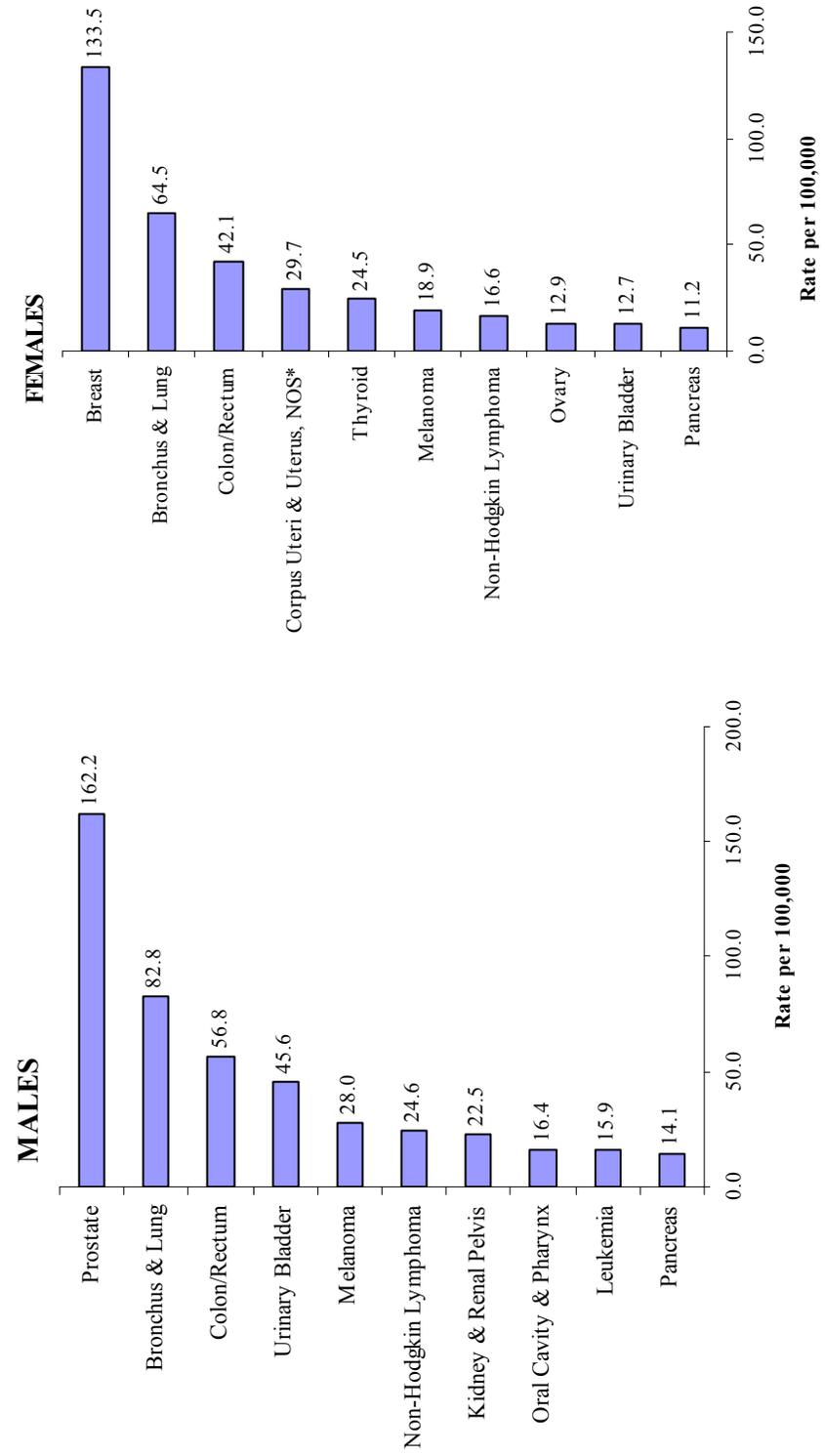
FIGURES & TABLES

Figure 1.
CANCER INCIDENCE CASES BY CANCER TYPE AND SEX
Massachusetts, 2004-2008



Source: Massachusetts Cancer Registry

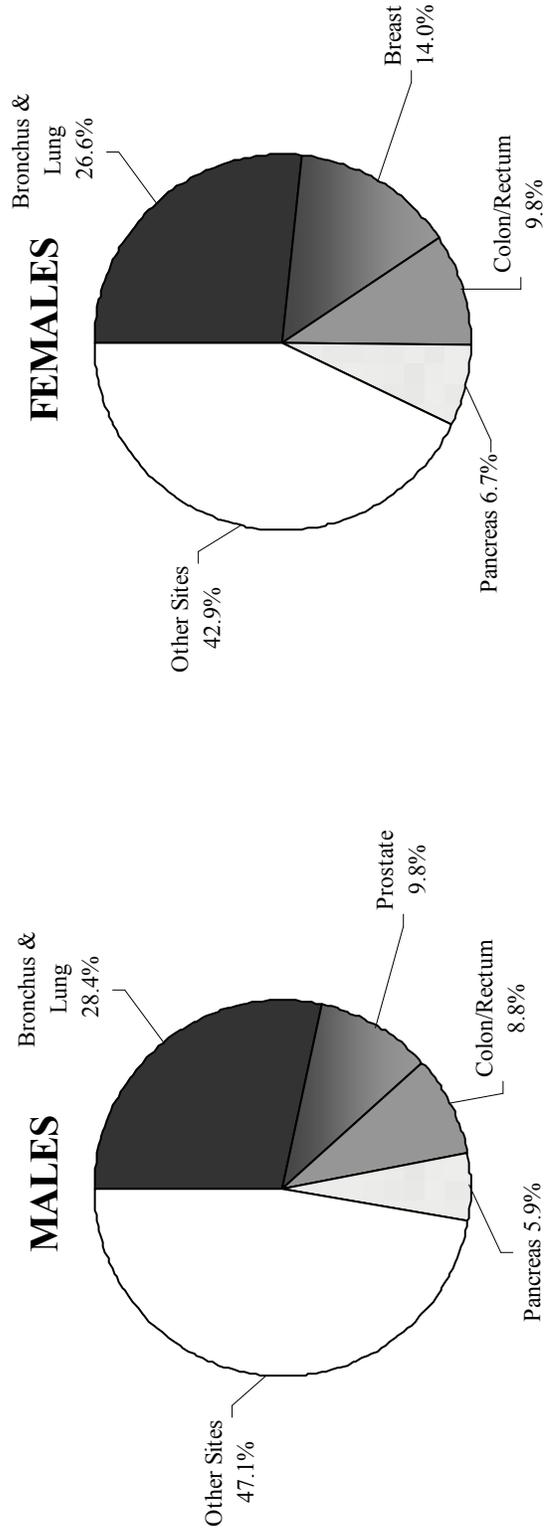
Figure 2.
INCIDENCE RATES¹ FOR TEN LEADING CANCER TYPES BY SEX
Massachusetts, 2004-2008



¹ Rates are age-adjusted to the 2000 U.S. Standard Population. * NOS – Not Otherwise Specified.

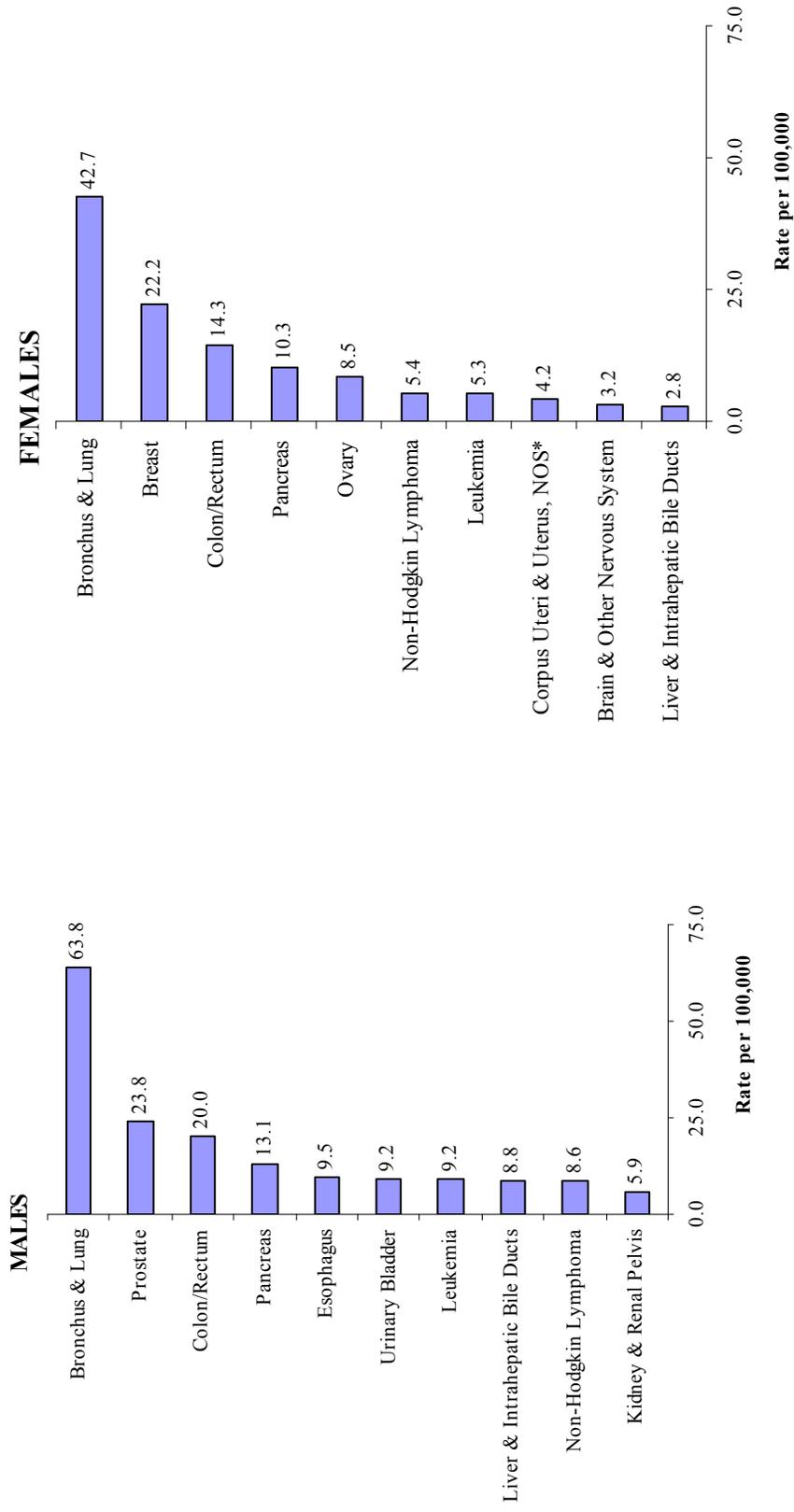
Source: Massachusetts Cancer Registry

Figure 3.
CANCER DEATHS BY CANCER TYPE AND SEX
Massachusetts, 2004-2008



Source: Massachusetts Cancer Registry

Figure 4.
MORTALITY RATES¹ FOR TEN LEADING CANCER TYPES BY SEX
 Massachusetts, 2004-2008



¹ Rates are age-adjusted to the 2000 U.S. Standard Population. * NOS – Not Otherwise Specified.

Source: Massachusetts Cancer Registry

Table 1.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGES FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
MALES

Cancer Site / Type	Age Groups																Median Age		
	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+
All Sites	24.0	13.6	15.4	25.3	34.2	54.4	74.1	101.2	169.0	307.9	636.4	1064.6	1662.5	2345.9	2914.8	3229.1	3425.7	3401.3	67.0
Brain & Other Nervous System	5.0	4.3	2.1	2.7	1.6	3.5	4.1	4.5	5.8	9.2	9.9	14.7	16.3	19.2	30.7	32.3	38.7	25.8	57.0
Breast	--	--	--	--	--	--	--	0.1	0.4	0.5	1.2	1.9	3.0	6.3	5.4	8.1	7.7	10.5	68.5
Breast <i>in situ</i>²	--	--	--	0.1	0.1	0.1	--	0.1	0.1	0.2	0.2	0.6	0.3	0.8	2.1	--	--	--	63.0
Bronchus & Lung	0.3	--	0.1	0.3	0.2	1.0	1.6	3.9	10.0	29.2	60.7	116.2	212.7	348.9	482.6	587.4	602.3	499.5	71.0
Colon / Rectum	--	--	0.1	0.7	0.4	1.8	3.9	9.1	17.5	30.8	70.5	86.9	127.4	203.3	264.5	325.9	390.7	464.2	69.0
Esophagus	--	--	--	--	--	0.1	0.5	0.9	2.5	5.7	14.9	25.5	36.7	48.0	57.9	60.9	71.6	50.0	66.0
Hodgkin Lymphoma	--	0.8	2.0	3.5	4.8	7.7	5.5	4.9	4.5	3.4	3.1	3.8	4.7	4.0	6.1	5.8	8.9	4.7	39.0
Kidney & Renal Pelvis	1.6	0.2	0.2	0.1	0.6	1.0	2.8	6.2	11.7	22.1	32.8	44.3	65.8	85.8	90.4	111.2	114.9	90.0	64.0
Larynx	--	--	--	--	--	--	0.2	0.7	1.6	3.1	7.8	15.5	23.3	29.8	31.6	32.0	36.7	29.5	66.0
Leukemia	8.8	3.6	3.6	3.5	2.9	2.7	3.3	3.3	5.4	8.6	13.2	20.9	33.6	40.5	64.0	82.0	103.7	123.2	66.0
Liver & Intrahepatic Bile Ducts	0.9	--	--	0.1	0.2	0.4	0.6	1.4	3.1	9.4	24.6	32.6	32.1	36.5	48.9	54.0	49.1	43.7	62.0
Melanoma of Skin	--	0.2	0.6	1.2	2.7	5.0	8.1	12.5	16.5	24.0	31.7	50.6	69.3	92.2	115.7	133.5	144.7	160.5	64.0
Multiple Myeloma	--	--	--	--	--	0.2	0.4	1.1	2.3	3.0	8.6	11.7	18.5	24.4	38.5	39.5	46.0	54.2	69.0
Non-Hodgkin Lymphoma	0.7	1.7	3.1	3.4	2.6	4.2	6.3	9.3	14.1	17.5	28.0	39.5	53.6	71.8	98.0	120.7	163.6	155.8	65.0
Oral Cavity & Pharynx	--	0.2	0.3	0.6	0.8	0.6	1.7	3.9	9.6	18.0	31.2	48.8	54.4	54.9	56.4	59.0	56.9	61.6	60.0
Pancreas	--	--	--	0.1	0.1	0.2	0.5	1.4	2.7	6.4	12.2	21.8	37.8	51.6	68.0	91.8	108.3	104.2	70.0
Prostate	0.1	--	--	--	--	--	0.2	1.2	13.4	54.0	192.6	388.7	637.7	869.6	934.1	797.6	628.6	592.7	66.0
Stomach	--	--	--	--	0.2	0.6	1.0	1.1	3.2	6.4	8.7	13.9	23.3	37.6	53.1	70.1	82.8	92.1	71.0
Testis	0.2	0.1	0.2	3.4	9.3	13.9	16.2	14.2	10.3	7.9	5.6	3.0	2.3	1.2	1.2	1.1	--	2.1	35.0
Thyroid	--	--	0.2	1.7	2.2	4.1	6.5	8.1	9.9	13.0	15.0	15.7	19.3	20.2	22.9	21.7	13.2	12.1	53.0
Urinary Bladder	--	0.1	--	0.1	0.5	1.1	2.0	2.8	6.6	13.3	28.1	52.6	102.8	163.0	240.6	322.9	400.4	400.0	73.0
Other Sites	6.4	2.4	3.1	4.0	5.1	6.4	8.8	10.6	17.8	22.7	36.1	55.9	87.9	137.1	204.0	271.7	357.0	424.8	70.0

¹ per 100,000 ² Breast *in situ* is excluded from "All Sites." ³ Dashed-out age groups had no incident cases.

Source: Massachusetts Cancer Registry

Table 2.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGES FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
FEMALES

Cancer Site / Type	Age Groups															Median Age			
	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+
All Sites	24.0	10.4	12.6	22.2	42.6	72.9	123.9	196.5	315.2	495.2	655.5	861.7	1166.9	1507.0	1795.9	2062.7	2203.5	1939.8	66.0
Brain & Other Nervous System	5.6	3.3	2.6	2.3	2.2	3.2	3.5	3.2	4.2	5.5	6.0	9.7	11.9	15.3	18.2	18.9	23.3	16.3	59.0
Breast	--	--	--	--	1.0	7.4	26.0	69.8	133.2	219.2	249.4	293.7	361.4	426.0	431.4	466.3	467.8	361.9	61.0
Breast <i>in situ</i> ²	--	--	--	--	0.2	1.3	4.7	17.6	63.3	107.5	117.8	114.6	128.6	123.2	123.9	113.8	90.4	37.6	56.0
Bronchus & Lung	--	--	--	0.1	0.4	0.8	2.2	4.7	14.1	34.3	57.9	103.3	191.3	292.3	388.9	413.5	378.1	251.5	71.0
Cervix Uteri	--	--	--	0.5	1.3	4.0	8.7	10.1	9.9	10.5	8.9	10.8	7.4	11.3	8.4	9.1	9.8	8.9	49.0
Colon / Rectum	--	--	--	0.2	0.4	1.4	4.7	7.4	15.7	30.5	61.5	89.5	121.8	112.2	102.9	101.0	84.3	60.8	75.0
Corpus Uteri & Uterus, NOS	--	--	--	0.2	0.4	1.4	4.7	7.4	15.7	30.5	61.5	89.5	121.8	112.2	102.9	101.0	84.3	60.8	75.0
Esophagus	--	--	--	--	--	--	0.1	0.2	0.5	1.1	1.3	4.0	4.8	11.3	13.5	18.7	19.0	14.6	74.0
Hodgkin Lymphoma	--	0.2	1.3	3.9	5.4	4.5	4.2	3.7	3.9	2.0	2.1	2.7	2.7	3.5	2.8	5.1	4.1	2.5	39.0
Kidney & Renal Pelvis	1.6	0.6	--	0.1	0.5	0.9	1.9	3.9	6.4	9.8	15.1	21.9	28.3	41.3	52.5	50.8	55.0	31.7	67.0
Larynx	--	--	--	--	--	0.1	0.2	0.3	0.5	1.2	2.6	3.5	5.8	6.6	9.0	4.9	4.1	4.4	65.0
Leukemia	8.7	3.0	2.9	1.9	1.5	2.8	3.1	3.3	4.9	6.5	8.3	10.7	19.5	25.3	36.5	44.5	54.3	56.0	69.0
Liver & Intrahepatic Bile Ducts	0.9	0.1	0.1	0.1	0.1	0.4	0.3	0.5	0.8	1.8	4.5	6.3	7.2	9.2	12.6	18.7	21.9	19.2	72.0
Melanoma of Skin	0.2	0.5	0.5	2.3	8.3	12.5	15.6	16.7	20.4	27.5	28.0	30.2	39.7	42.4	46.1	55.5	66.2	54.9	57.0
Multiple Myeloma	--	--	--	--	--	0.1	--	0.1	1.1	2.4	5.0	8.4	10.1	14.1	19.3	28.4	30.1	25.1	73.0
Non-Hodgkin Lymphoma	0.4	0.4	1.0	1.8	2.1	2.7	3.4	5.2	7.7	11.2	18.5	28.4	41.0	56.7	66.5	92.9	106.4	88.0	70.0
Oral Cavity & Pharynx	--	--	0.3	0.3	0.6	2.0	1.5	2.2	3.8	6.1	10.5	13.4	17.6	21.2	25.3	29.3	23.3	28.7	65.0
Ovary	--	0.3	0.4	1.1	1.9	1.7	3.3	5.2	8.3	14.9	23.3	27.1	39.0	39.1	48.0	47.5	53.7	46.0	63.0
Pancreas	--	--	--	0.1	0.1	0.2	0.1	0.7	2.7	5.0	10.0	15.9	25.2	41.4	56.6	78.0	79.7	91.2	75.0
Stomach	--	0.1	--	--	--	0.4	0.8	1.1	1.8	2.5	3.7	6.1	8.4	13.0	22.5	28.9	34.7	50.0	76.0
Thyroid	0.1	0.1	0.9	4.7	12.3	20.4	31.9	38.1	40.5	43.5	42.3	43.2	37.7	42.6	36.0	29.9	21.0	9.9	48.0
Urinary Bladder	--	--	--	0.1	0.2	0.6	0.4	1.5	2.7	5.3	9.5	20.3	30.3	50.8	69.0	83.3	90.4	89.3	74.0
Other Sites	6.6	2.0	2.8	2.8	3.5	4.9	7.6	10.6	17.3	25.0	34.9	53.9	71.5	108.7	147.9	186.3	248.4	265.0	73.0

¹ per 100,000 ² Breast *in situ* is excluded from "All Sites." ³ Dashed-out age groups had no incident cases.

Source: Massachusetts Cancer Registry

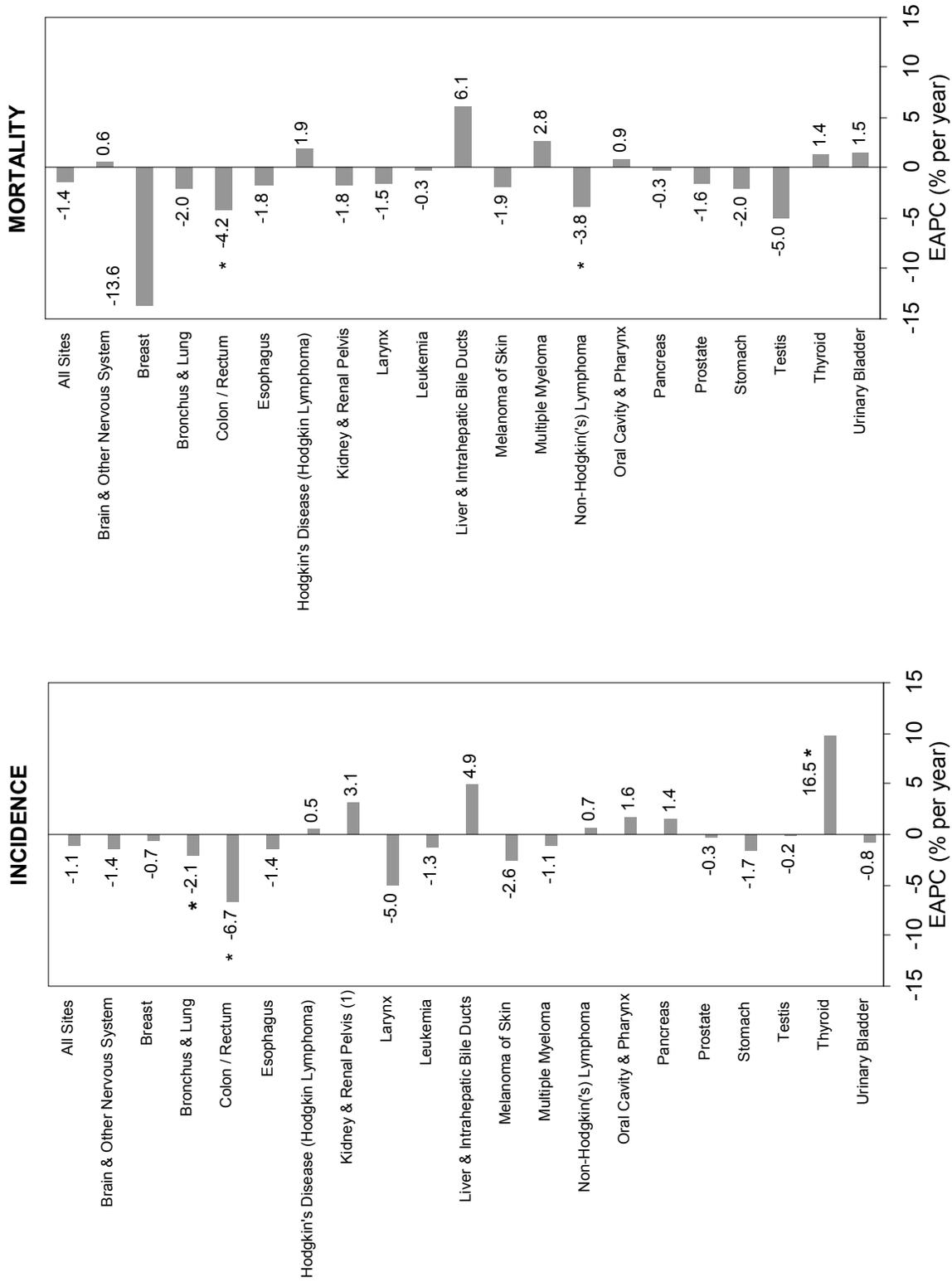
Table 3.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGES FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
TOTAL

Cancer Site / Type	Age Groups															Median Age			
	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+
All Sites	24.0	12.1	14.1	23.7	38.4	63.7	99.2	149.7	243.0	403.2	646.3	959.6	1401.8	1894.2	2290.9	2546.2	2657.1	2358.4	67.0
Brain & Other Nervous System	5.3	3.8	2.4	2.5	1.9	3.4	3.8	3.8	5.0	7.3	7.9	12.1	14.0	17.1	23.7	24.4	29.0	19.0	58.0
Breast	--	--	--	--	0.5	3.7	13.1	35.5	67.6	111.8	128.5	153.0	191.6	232.4	242.9	276.3	297.1	261.3	61.0
Breast <i>in situ</i>²	--	--	--	0.0	0.1	0.7	2.4	9.0	32.1	54.7	60.5	59.7	67.8	66.7	70.0	66.6	56.9	26.8	56.0
Bronchus & Lung	0.2	--	0.0	0.2	0.3	0.9	1.9	4.3	12.1	31.8	59.3	109.6	201.4	318.4	430.4	485.6	461.3	322.5	71.0
Cervix Uteri	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	49.0
Colon / Rectum	--	--	0.0	0.4	0.6	1.9	4.2	8.5	16.2	30.1	61.0	72.3	104.7	159.7	218.6	282.2	351.2	392.6	72.0
Corpus Uteri & Uterus, NOS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	62.0
Esophagus	--	--	--	--	--	0.0	0.3	0.6	1.5	3.3	8.0	14.4	19.9	28.3	33.1	36.2	38.5	24.7	68.0
Hodgkin Lymphoma	--	0.5	1.6	3.7	5.1	6.1	4.8	4.3	4.2	2.7	2.6	3.2	3.7	3.7	4.3	5.4	5.9	3.2	39.0
Kidney & Renal Pelvis	1.6	0.4	0.1	0.1	0.5	1.0	2.3	5.0	9.0	15.8	23.7	32.7	46.0	61.8	69.3	75.9	77.2	48.4	65.0
Larynx	--	--	--	--	--	0.0	0.2	0.5	1.0	2.1	5.1	9.2	14.1	17.3	19.0	16.1	16.2	11.6	66.0
Leukemia	8.8	3.3	3.2	2.7	2.2	2.8	3.2	3.3	5.1	7.6	10.7	15.7	26.2	32.3	48.7	60.1	72.6	75.2	68.0
Liver & Intrahepatic Bile Ducts	0.9	0.1	0.0	0.1	0.1	0.4	0.4	0.9	2.0	5.6	14.3	19.0	19.0	21.8	28.6	33.3	32.0	26.2	64.0
Melanoma of Skin	--	0.2	0.5	1.7	5.5	8.7	11.9	14.6	18.5	25.8	29.8	40.1	53.7	65.4	76.9	87.8	95.3	85.3	62.0
Multiple Myeloma	--	--	--	--	--	0.1	0.2	0.6	1.7	2.7	6.7	9.9	14.0	19.0	27.8	33.0	36.0	33.5	71.0
Non-Hodgkin Lymphoma	0.6	1.1	2.1	2.6	2.3	3.4	4.8	7.2	10.9	14.3	23.1	33.8	47.0	63.7	80.5	104.4	127.6	107.4	68.0
Oral Cavity & Pharynx	--	0.1	0.3	0.4	0.7	1.3	1.6	3.1	6.7	12.0	20.6	30.5	35.1	36.8	39.1	41.6	35.8	38.1	61.0
Ovary	--	0.2	0.2	0.5	1.0	0.9	1.7	2.7	4.2	7.6	11.9	14.0	20.5	21.2	26.7	27.8	33.7	32.9	63.0
Pancreas	--	--	--	0.1	0.1	0.2	0.3	1.1	2.7	5.7	11.1	18.7	31.2	46.2	61.6	83.7	90.3	94.9	73.0
Prostate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	66.0
Stomach	--	0.1	--	--	0.1	0.5	0.9	1.1	2.5	4.4	6.1	9.9	15.5	24.4	36.0	46.0	52.5	62.1	73.0
Testis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	35.0
Thyroid	0.1	0.1	0.5	3.2	7.2	12.2	19.3	23.4	25.3	28.5	29.0	29.9	29.0	32.2	30.2	26.5	18.1	10.5	49.0
Urinary Bladder	--	0.1	--	0.1	0.3	0.9	1.2	2.2	4.6	9.2	18.6	35.8	64.7	102.6	144.9	182.6	205.5	178.3	73.0
Other Sites	6.5	2.2	2.9	3.4	4.3	5.7	8.2	10.6	17.5	23.9	35.5	54.9	79.3	121.8	172.7	221.7	288.7	310.7	71.0

¹ per 100,000 ² Breast *in situ* is excluded from "All Sites." ³ Dashed-out age groups had no incident cases or are found only in one sex.

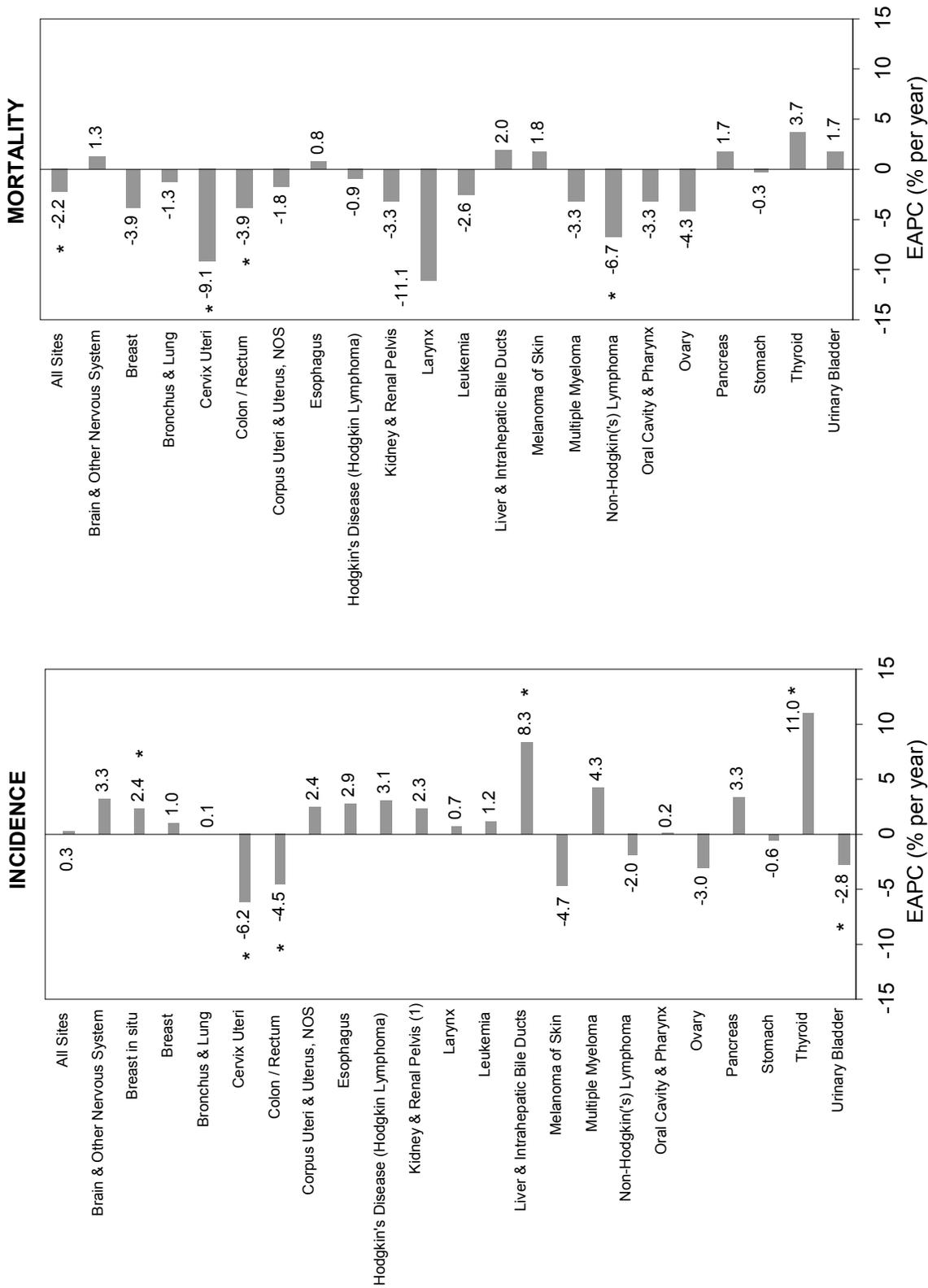
Source: Massachusetts Cancer Registry

Figure 5.
ESTIMATED ANNUAL PERCENT CHANGE (EAPC) IN AGE-ADJUSTED CANCER RATES AMONG MALES
Massachusetts, 2004-2008



* EAPC is statistically significant (p ≤ 0.05). Values appearing directly on a bar have been bolded for ease of reading only. Source: Massachusetts Cancer Registry

Figure 6.
ESTIMATED ANNUAL PERCENT CHANGE (EAPC) IN AGE-ADJUSTED CANCER RATES AMONG FEMALES
Massachusetts, 2004-2008



* EAPC is statistically significant ($p \leq 0.05$). Values appearing directly on a bar have been bolded for ease of reading only. Source: Massachusetts Cancer Registry

Table 4.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
MALES

Cancer Site / Type	2004	2005	2006	2007	2008
All Sites (Excluding Breast <i>in situ</i>)	594.1	595.9	612.0	590.8	563.0
Brain & Other Nervous System	9.1	8.7	8.2	9.3	8.2
Breast	1.3	1.0	1.6	1.3	1.1
Breast <i>in situ</i>³	0.2	0.2	0.3	0.1	0.2
Bronchus & Lung	84.7	87.0	83.4	80.4	79.0
Colon / Rectum	65.8	59.5	57.6	52.0	49.7
Esophagus	12.6	10.7	11.3	11.6	11.3
Hodgkin Lymphoma	3.8	4.0	3.9	4.2	3.8
Kidney & Renal Pelvis	20.2	22.8	23.6	22.1	23.9
Larynx	7.1	6.7	7.3	5.8	5.9
Leukemia	16.7	15.5	15.6	16.4	15.2
Liver & Intrahepatic Bile Ducts	10.0	10.6	12.5	11.3	12.3
Melanoma of Skin	27.4	27.9	32.4	28.4	23.8
Multiple Myeloma	7.5	7.0	7.1	7.0	7.1
Non-Hodgkin Lymphoma	23.8	24.7	24.9	25.3	24.3
Oral Cavity & Pharynx	15.8	16.3	16.4	16.1	17.2
Pancreas	13.2	14.4	14.5	14.1	14.3
Prostate	157.3	161.8	171.9	168.0	152.0
Stomach	12.2	10.7	9.2	10.7	11.2
Testis	5.7	7.0	6.2	6.4	5.9
Thyroid	6.2	8.4	8.2	9.0	9.6
Urinary Bladder	46.0	45.4	47.3	45.5	44.1

¹ Rates are age-adjusted to the 2000 U.S. Standard Population

² per 100,000 males

³ Breast *in situ* is excluded from "All Sites."

Source: Massachusetts Cancer Registry

Table 5.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
FEMALES

Cancer Site / Type	2004	2005	2006	2007	2008
All Sites (Excluding Breast <i>in situ</i>)	457.9	455.0	469.2	457.6	463.7
Brain & Other Nervous System	5.5	6.0	6.8	6.3	6.3
Breast	133.5	130.2	132.0	132.5	139.2
Breast <i>in situ</i>³	44.4	45.1	44.6	48.0	48.5
Bronchus & Lung	63.6	65.7	65.0	63.5	64.9
Cervix Uteri	7.0	6.0	6.2	5.3	5.4
Colon / Rectum	46.5	44.1	41.6	40.2	38.6
Corpus Uteri & Uterus, NOS	29.1	27.6	30.7	29.6	31.7
Esophagus	2.3	2.6	2.5	2.5	2.7
Hodgkin Lymphoma	2.8	2.6	3.4	2.7	3.2
Kidney & Renal Pelvis	9.8	11.1	12.0	10.7	11.2
Larynx	1.6	1.3	1.6	1.4	1.6
Leukemia	9.7	9.3	9.7	9.5	10.2
Liver & Intrahepatic Bile Ducts	2.7	2.8	3.2	3.5	3.6
Melanoma of Skin	19.7	19.5	20.8	18.8	15.8
Multiple Myeloma	3.8	3.6	4.8	4.1	4.4
Non-Hodgkin Lymphoma	17.2	16.6	16.8	17.2	15.3
Oral Cavity & Pharynx	6.4	6.0	7.2	6.3	6.3
Ovary	13.8	13.5	12.6	11.9	12.6
Pancreas	10.3	10.4	12.6	11.0	11.8
Stomach	4.8	4.5	4.9	4.6	4.6
Thyroid	18.5	22.2	25.8	28.2	27.7
Urinary Bladder	13.6	13.2	12.5	12.3	12.2

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 females

³ Breast *in situ* is excluded from 'All Sites.'

Source: Massachusetts Cancer Registry

Table 6.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
TOTAL

Cancer Site / Type	2004	2005	2006	2007	2008
All Sites (Excluding Breast <i>in situ</i>)	511.4	511.9	525.0	510.1	501.6
Brain & Other Nervous System	7.1	7.2	7.4	7.6	7.2
Breast	73.2	71.4	72.4	72.4	75.9
Breast <i>in situ</i>³	23.7	24.1	23.9	25.5	25.7
Bronchus & Lung	71.9	74.2	72.1	70.0	70.2
Cervix Uteri	--	--	--	--	--
Colon / Rectum	55.0	50.8	48.3	45.2	43.4
Corpus Uteri & Uterus, NOS	--	--	--	--	--
Esophagus	6.8	6.2	6.4	6.5	6.5
Hodgkin Lymphoma	3.2	3.3	3.6	3.4	3.5
Kidney & Renal Pelvis	14.4	16.2	17.0	15.8	16.9
Larynx	4.0	3.7	4.1	3.3	3.5
Leukemia	12.7	12.0	12.1	12.3	12.2
Liver & Intrahepatic Bile Ducts	6.0	6.3	7.4	7.1	7.5
Melanoma of Skin	22.8	22.6	25.5	22.7	18.9
Multiple Myeloma	5.4	5.1	5.8	5.3	5.6
Non-Hodgkin Lymphoma	20.0	20.2	20.4	20.6	19.2
Oral Cavity & Pharynx	10.7	10.7	11.4	10.7	11.2
Ovary	--	--	--	--	--
Pancreas	11.5	12.2	13.5	12.3	12.9
Prostate	--	--	--	--	--
Stomach	7.9	7.1	6.7	7.2	7.5
Testis	--	--	--	--	--
Thyroid	12.6	15.5	17.2	18.8	18.8
Urinary Bladder	26.9	26.6	26.7	26.0	25.4

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 total population

³ Breast *in situ* is excluded from "All Sites."

⁴ Dashed-out cancers are those found in only one sex.

Source: Massachusetts Cancer Registry

Table 7.
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
MALES

Cancer Site / Type	2004	2005	2006	2007	2008
All Sites	232.5	224.5	233.1	222.3	217.6
Brain & Other Nervous System	4.7	5.4	5.6	5.4	4.8
Breast	0.6	0.3	0.5	0.3	0.3
Bronchus & Lung	65.8	64.1	66.6	62.2	60.4
Colon / Rectum	21.6	20.3	21.2	19.0	18.0
Esophagus	9.2	10.3	10.0	9.0	9.0
Hodgkin Lymphoma	0.4	0.3	0.4	0.4	0.4
Kidney & Renal Pelvis	6.3	5.3	6.1	6.1	5.4
Larynx	2.6	2.0	1.7	2.0	2.4
Leukemia	9.1	8.9	10.0	9.2	8.9
Liver & Intrahepatic Bile Ducts	7.2	9.3	8.8	9.0	9.8
Melanoma of Skin	4.2	4.3	4.4	4.3	3.8
Multiple Myeloma	4.3	4.0	4.3	4.6	4.6
Non-Hodgkin Lymphoma	9.0	9.2	8.8	8.0	8.0
Oral Cavity & Pharynx	4.3	3.4	3.6	4.1	4.1
Pancreas	12.8	13.7	13.2	13.0	12.9
Prostate	25.0	22.6	25.1	24.2	22.3
Stomach	6.0	5.6	5.9	5.0	5.7
Testis	0.3	0.1	0.1	0.2	0.2
Thyroid	0.7	0.3	0.4	0.7	0.5
Urinary Bladder	9.7	8.2	9.5	8.6	10.2

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 males

Source: Massachusetts Cancer Registry

Table 8.
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
FEMALES

Cancer Site / Type	2004	2005	2006	2007	2008
All Sites	162.9	158.3	157.2	150.5	149.6
Brain & Other Nervous System	3.3	3.0	3.0	3.2	3.4
Breast	24.0	22.9	23.1	20.0	21.0
Bronchus & Lung	43.1	43.7	43.1	42.5	40.9
Cervix Uteri	1.7	1.6	1.4	1.1	1.2
Colon / Rectum	15.4	15.3	14.1	13.5	13.5
Corpus Uteri & Uterus, NOS	4.2	4.4	4.3	3.7	4.2
Esophagus	2.1	2.0	2.0	2.0	2.2
Hodgkin Lymphoma	0.3	0.2	0.3	0.3	0.3
Kidney & Renal Pelvis	2.4	2.4	2.7	2.4	2.1
Larynx	0.5	0.7	0.4	0.6	0.3
Leukemia	5.8	5.1	5.5	4.5	5.5
Liver & Intrahepatic Bile Ducts	3.0	2.5	2.8	3.0	3.0
Melanoma of Skin	1.6	2.7	2.0	1.9	2.2
Multiple Myeloma	2.5	2.6	2.6	2.5	2.1
Non-Hodgkin Lymphoma	6.1	6.2	5.3	4.7	4.9
Oral Cavity & Pharynx	1.5	1.1	1.7	1.3	1.2
Ovary	9.2	8.3	9.5	8.2	7.4
Pancreas	10.1	10.0	9.8	11.1	10.4
Stomach	3.0	2.1	2.1	2.5	2.7
Thyroid	0.4	0.4	0.6	0.4	0.4
Urinary Bladder	2.5	2.8	2.0	2.4	2.9

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 females

Source: Massachusetts Cancer Registry

Table 9.
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2004-2008
TOTAL

Cancer Site / Type	2004	2005	2006	2007	2008
All Sites	188.9	184.1	186.1	177.8	175.6
Brain & Other Nervous System	4.0	4.1	4.2	4.1	4.1
Breast	14.0	13.1	13.3	11.5	12.0
Bronchus & Lung	52.0	51.9	52.5	50.3	48.7
Cervix Uteri	-	-	-	-	-
Colon / Rectum	18.0	17.4	17.0	15.7	15.3
Corpus Uteri & Uterus, NOS	-	-	-	-	-
Esophagus	5.0	5.6	5.5	5.0	5.2
Hodgkin Lymphoma	0.4	0.3	0.4	0.3	0.3
Kidney & Renal Pelvis	4.0	3.6	4.1	3.9	3.4
Larynx	1.4	1.3	1.0	1.2	1.2
Leukemia	7.1	6.6	7.3	6.2	6.7
Liver & Intrahepatic Bile Ducts	4.9	5.5	5.4	5.6	5.9
Melanoma of Skin	2.7	3.3	3.0	2.9	2.8
Multiple Myeloma	3.2	3.2	3.3	3.3	3.2
Non-Hodgkin Lymphoma	7.2	7.4	6.8	6.0	6.1
Oral Cavity & Pharynx	2.8	2.1	2.5	2.6	2.5
Ovary	-	-	-	-	-
Pancreas	11.2	11.6	11.3	11.9	11.5
Prostate	-	-	-	-	-
Stomach	4.2	3.5	3.6	3.5	3.9
Testis	-	-	-	-	-
Thyroid	0.5	0.3	0.5	0.5	0.4
Urinary Bladder	5.2	4.9	4.9	4.7	5.7

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000 total population

³ Dashed-out cancers are those found in only one sex.

Source: Massachusetts Cancer Registry

Table 10.
FIVE LEADING CANCER INCIDENCE RATES BY RACE/ETHNICITY AND SEX
Massachusetts, 2004-2008

MALES

AGE-ADJUSTED¹ INCIDENCE RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Prostate 155.2	Prostate 247.6	Prostate 72.8	Prostate 163.9
2	Bronchus & Lung 84.5	Bronchus & Lung 87.1	Bronchus & Lung 56.0	Colon / Rectum 39.8
3	Colon / Rectum 57.1	Colon / Rectum 54.8	Colon / Rectum 42.6	Bronchus & Lung 42.3
4	Urinary Bladder 47.7	Kidney & Renal Pelvis 26.2	Liver & Intrahepatic Bile Ducts 31.3	Urinary Bladder 19.2
5	Melanoma of Skin 29.4	Urinary Bladder 25.1	Stomach 15.1	Liver & Intrahepatic Bile Ducts 17.7

FEMALES

AGE-ADJUSTED¹ INCIDENCE RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Breast ³ 133.5	Breast 118.9	Breast 81.9	Breast 90.4
2	Bronchus & Lung 67.8	Bronchus & Lung 45.0	Colon / Rectum 39.0	Colon / Rectum 36.9
3	Colon / Rectum 42.0	Colon / Rectum 40.6	Thyroid 30.5	Thyroid 23.0
4	Corpus Uteri & Uterus, NOS 30.3	Corpus Uteri & Uterus, NOS 25.8	Bronchus & Lung 29.8	Bronchus & Lung 22.7
5	Thyroid 24.4	Thyroid 22.2	Corpus Uteri & Uterus, NOS 18.8	Corpus Uteri & Uterus, NOS 22.7

¹ Rates are age-adjusted to the 2000 U.S. Standard Population

² per 100,000

³ Breast cancer rates do not include breast *in situ* cases.

Source: Massachusetts Cancer Registry

Table 11.
INCIDENCE CASES AND PERCENTAGE OF CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2004-2008
MALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases
All Sites	90882	100.0	81498	100.0	3750	100.0	1509	100.0	2471	100.0
Brain & Other Nervous System	1355	1.5	1253	1.5	27	0.7	24	1.6	46	1.9
Breast³	190	0.2	177	0.2	7	0.2	1	0.1	3	0.1
Bronchus & Lung	12417	13.7	11489	14.1	480	12.8	223	14.8	194	7.9
Colon / Rectum	8601	9.5	7782	9.5	322	8.6	193	12.8	216	8.7
Esophagus	1796	2.0	1675	2.1	64	1.7	23	1.5	28	1.1
Hodgkin Lymphoma	625	0.7	556	0.7	23	0.6	9	0.6	35	1.4
Kidney & Renal Pelvis	3547	3.9	3202	3.9	174	4.6	48	3.2	103	4.2
Larynx	1031	1.1	945	1.2	37	1.0	7	0.5	33	1.3
Leukemia	2392	2.6	2164	2.7	63	1.7	48	3.2	75	3.0
Liver & Intrahepatic Bile Ducts	1825	2.0	1419	1.7	112	3.0	168	11.1	120	4.9
Melanoma of Skin	4334	4.8	4039	5.0	9	0.2	6	0.4	24	1.0
Multiple Myeloma	1085	1.2	929	1.1	80	2.1	15	1.0	48	1.9
Non-Hodgkin Lymphoma	3776	4.2	3395	4.2	144	3.8	71	4.7	121	4.9
Oral Cavity & Pharynx	2664	2.9	2404	2.9	98	2.6	60	4.0	79	3.2
Pancreas	2128	2.3	1961	2.4	83	2.2	30	2.0	50	2.0
Prostate	25547	28.1	22034	27.0	1481	39.5	303	20.1	806	32.6
Stomach	1617	1.8	1353	1.7	99	2.6	58	3.8	98	4.0
Testis	990	1.1	916	1.1	13	0.3	10	0.7	39	1.6
Thyroid	1343	1.5	1185	1.5	37	1.0	52	3.4	45	1.8
Urinary Bladder	6724	7.4	6399	7.9	126	3.4	48	3.2	87	3.5
Other Sites	6895	7.6	6221	7.6	271	7.2	112	7.4	221	8.9

¹ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category.

² The number of cases for all races is not the sum of cases by race/ethnicity. ³ Breast *in situ* cases are excluded from "All Sites" and breast cancer counts.

Source: Massachusetts Cancer Registry

Table 12.
INCIDENCE CASES AND PERCENTAGE OF CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2004-2008
FEMALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases
All Sites	90523	100.0	81991	100.0	3339	100.0	1809	100.0	2539	100.0
Brain & Other Nervous System	1132	1.3	1041	1.3	17	0.5	23	1.3	46	1.8
Breast³	25807	28.5	23380	28.5	1025	30.7	523	28.9	738	29.1
Bronchus & Lung	12834	14.2	12158	14.8	362	10.8	144	8.0	137	5.4
Cervix Uteri	1068	1.2	829	1.0	86	2.6	41	2.3	96	3.8
Colon / Rectum	8818	9.7	7986	9.7	323	9.7	201	11.1	249	9.8
Corpus Uteri & Uterus, NOS	5813	6.4	5248	6.4	213	6.4	114	6.3	182	7.2
Esophagus	509	0.6	459	0.6	28	0.8	8	0.4	13	0.5
Hodgkin Lymphoma	499	0.6	437	0.5	17	0.5	7	0.4	33	1.3
Kidney & Renal Pelvis	2131	2.4	1926	2.3	99	3.0	22	1.2	71	2.8
Larynx	296	0.3	271	0.3	14	0.4	1	0.1	9	0.4
Leukemia	1877	2.1	1672	2.0	74	2.2	46	2.5	66	2.6
Liver & Intrahepatic Bile Ducts	644	0.7	519	0.6	36	1.1	45	2.5	38	1.5
Melanoma of Skin	3556	3.9	3285	4.0	12	0.4	10	0.6	23	0.9
Multiple Myeloma	859	0.9	736	0.9	74	2.2	8	0.4	33	1.3
Non-Hodgkin Lymphoma	3337	3.7	3016	3.7	117	3.5	60	3.3	101	4.0
Oral Cavity & Pharynx	1266	1.4	1124	1.4	43	1.3	47	2.6	37	1.5
Ovary	2522	2.8	2312	2.8	63	1.9	58	3.2	69	2.7
Pancreas	2335	2.6	2137	2.6	103	3.1	39	2.2	52	2.0
Stomach	994	1.1	821	1.0	70	2.1	53	2.9	49	1.9
Thyroid	4314	4.8	3561	4.3	204	6.1	221	12.2	240	9.5
Urinary Bladder	2624	2.9	2492	3.0	57	1.7	16	0.9	44	1.7
Other Sites	7288	8.1	6581	8.0	302	9.0	122	6.7	213	8.4

¹ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category.

² The number of cases for all races is not the sum of cases by race/ethnicity. ³ Breast *in situ* cases are excluded from "All Sites" and from breast cancer counts.

Source: Massachusetts Cancer Registry

Table 13.
INCIDENCE CASES AND PERCENTAGE OF CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2004-2008
TOTAL²

Cancer Site / Type	All Races ³		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases	Cases	% of Cases
All Sites	181417	100.0	163500	100.0	7089	100.0	3318	100.0	5010	100.0
Brain & Other Nervous System	2487	1.4	2294	1.4	44	0.6	47	1.4	92	1.8
Breast⁴	25998	14.3	23558	14.4	1032	14.6	524	15.8	741	14.8
Bronchus & Lung	25253	13.9	23649	14.5	842	11.9	367	11.1	331	6.6
Cervix Uteri	1068	0.6	829	0.5	86	1.2	41	1.2	96	1.9
Colon / Rectum	17419	9.6	15768	9.6	645	9.1	394	11.9	465	9.3
Corpus Uteri & Uterus, NOS	5813	3.2	5248	3.2	213	3.0	114	3.4	182	3.6
Esophagus	2306	1.3	2135	1.3	92	1.3	31	0.9	41	0.8
Hodgkin Lymphoma	1124	0.6	993	0.6	40	0.6	16	0.5	68	1.4
Kidney & Renal Pelvis	5678	3.1	5128	3.1	273	3.9	70	2.1	174	3.5
Larynx	1327	0.7	1216	0.7	51	0.7	8	0.2	42	0.8
Leukemia	4269	2.4	3836	2.3	137	1.9	94	2.8	141	2.8
Liver & Intrahepatic Bile Ducts	2469	1.4	1938	1.2	148	2.1	213	6.4	158	3.2
Melanoma of Skin	7891	4.3	7325	4.5	21	0.3	16	0.5	47	0.9
Multiple Myeloma	1945	1.1	1666	1.0	154	2.2	23	0.7	81	1.6
Non-Hodgkin Lymphoma	7115	3.9	6413	3.9	261	3.7	131	3.9	222	4.4
Oral Cavity & Pharynx	3930	2.2	3528	2.2	141	2.0	107	3.2	116	2.3
Ovary	2523	1.4	2313	1.4	63	0.9	58	1.7	69	1.4
Pancreas	4463	2.5	4098	2.5	186	2.6	69	2.1	102	2.0
Prostate	25549	14.1	22036	13.5	1481	20.9	303	9.1	806	16.1
Stomach	2611	1.4	2174	1.3	169	2.4	111	3.3	147	2.9
Testis	990	0.5	916	0.6	13	0.2	10	0.3	39	0.8
Thyroid	5658	3.1	4746	2.9	241	3.4	273	8.2	285	5.7
Urinary Bladder	9348	5.2	8891	5.4	183	2.6	64	1.9	131	2.6
Other Sites	14183	7.8	12802	7.8	573	8.1	234	7.1	434	8.7

¹ Cases are only included in one race/ethnicity category. ² Total includes persons classified as transsexual and persons of unknown sex.

³ The number of cases for all races is not the sum of cases by race/ethnicity. ⁴ Breast *in situ* cases are excluded from "All Sites" and from breast cancer counts.

Source: Massachusetts Cancer Registry

**Table 14.
AGE-ADJUSTED¹ INCIDENCE RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2004-2008
MALES**

Cancer Site / Type	All Races		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL
All Sites (Excluding Breast <i>in situ</i>)	590.9	587.0-594.8	592.3	588.2-596.4	628.3	606.4-650.1	331.7	313.6-349.9	444.3	424.2-464.3
Brain & Other Nervous System	8.7	8.2-9.2	9.4	8.9-9.9	3.0	1.8-4.1	4.7	2.6-6.8	5.9	3.8-8.1
Breast	1.3	1.1-1.4	1.3	1.1-1.5	*	*	*	*	*	*
Breast <i>in situ</i> ⁴	0.2	0.1-0.2	0.2	0.1-0.3	*	*	*	*	*	*
Bronchus & Lung	82.8	81.3-84.3	84.5	83.0-86.1	87.1	78.7-95.5	56.0	48.2-63.9	42.3	35.7-48.8
Colon / Rectum	56.8	55.6-58.0	57.1	55.8-58.4	54.8	48.2-61.4	42.6	36.1-49.1	39.8	33.8-45.8
Esophagus	11.5	11.0-12.0	11.9	11.3-12.5	11.0	8.1-14.0	5.7	3.2-8.3	5.0	2.9-7.1
Hodgkin Lymphoma	4.0	3.6-4.3	4.4	4.0-4.7	2.9	1.6-4.2	*	*	2.9	1.8-4.0
Kidney & Renal Pelvis	22.5	21.8-23.3	22.9	22.1-23.7	26.2	22.0-30.3	10.2	7.0-13.3	16.4	12.8-20.1
Larynx	6.6	6.2-7.0	6.7	6.3-7.1	6.2	4.0-8.4	*	*	5.9	3.7-8.0
Leukemia	15.9	15.2-16.5	16.3	15.6-17.0	11.0	7.8-14.1	8.9	6.1-11.7	10.3	7.3-13.4
Liver & Intrahepatic Bile Ducts	11.4	10.8-11.9	10.0	9.4-10.5	17.2	13.7-20.7	31.3	26.2-36.4	17.7	14.1-21.2
Melanoma of Skin	28.0	27.1-28.8	29.4	28.5-30.4	*	*	*	*	3.3	1.8-4.8
Multiple Myeloma	7.1	6.7-7.6	6.8	6.4-7.3	13.6	10.3-16.9	*	*	10.2	6.9-13.4
Non-Hodgkin Lymphoma	24.6	23.8-25.4	25.0	24.1-25.8	20.2	16.6-23.8	14.5	10.8-18.2	16.3	12.8-19.8
Oral Cavity & Pharynx	16.4	15.7-17.0	16.6	16.0-17.3	14.0	11.1-17.0	9.6	7.0-12.3	11.9	9.0-14.8
Pancreas	14.1	13.5-14.7	14.4	13.7-15.0	15.6	11.9-19.4	7.5	4.6-10.4	9.6	6.6-12.6
Prostate	162.2	160.2-164.2	155.2	153.1-157.2	247.6	234.2-261.1	72.8	64.1-81.4	163.9	151.6-176.3
Stomach	10.8	10.3-11.4	10.1	9.5-10.6	18.7	14.8-22.6	15.1	10.9-19.2	18.6	14.4-22.8
Testis	6.2	5.8-6.6	7.4	6.9-7.9	*	*	*	*	2.5	1.7-3.3
Thyroid	8.3	7.8-8.7	8.6	8.1-9.1	4.9	3.2-6.7	7.2	5.2-9.3	6.2	4.0-8.3
Urinary Bladder	45.6	44.5-46.7	47.7	46.5-48.9	25.1	20.3-29.9	11.4	7.9-14.8	19.2	14.7-23.7

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ² per 100,000

³ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category.

⁴ Breast *in situ* is excluded from "All Sites."

* An age-adjusted incidence rate was not calculated when there were fewer than 20 cases.

Source: Massachusetts Cancer Registry

Table 15.
AGE-ADJUSTED¹ INCIDENCE RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2004-2008
FEMALES

Cancer Site / Type	All Races			White, non-Hispanic			Black, non-Hispanic			Asian, non-Hispanic			Hispanic		
	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	
All Sites (Excluding Breast <i>in situ</i>)	460.6	457.5-463.6	470.7	467.4-474.0	400.6	386.8-414.4	308.3	293.3-323.3	327.4	313.5-341.4					
Brain & Other Nervous System	6.2	5.8-6.5	6.7	6.2-7.1	*	*	3.2	1.8-4.5	3.8	2.6-5.1					
Breast	133.5	131.8-135.1	137.3	135.6-139.1	118.9	111.6-126.3	81.9	74.6-89.3	90.4	83.4-97.4					
Breast <i>in situ</i> ⁴	46.1	45.2-47.1	47.5	46.4-48.6	36.4	32.4-40.5	33.3	28.6-38.0	33.6	29.5-37.7					
Bronchus & Lung	64.5	63.3-65.6	67.8	66.6-69.0	45.0	40.3-49.7	29.8	24.7-34.8	22.7	18.7-26.7					
Cervix Uteri	6.0	5.6-6.3	5.5	5.1-5.9	9.8	7.7-11.9	6.4	4.3-8.5	10.5	8.2-12.8					
Colon / Rectum	42.1	41.2-43.0	42.0	41.1-43.0	40.6	36.1-45.1	39.0	33.3-44.6	36.9	32.0-41.9					
Corpus Uteri & Uterus, NOS	29.7	29.0-30.5	30.3	29.5-31.2	25.8	22.3-29.3	18.8	15.2-22.3	22.7	19.2-26.3					
Esophagus	2.5	2.3-2.7	2.5	2.2-2.7	3.5	2.2-4.9	*	*	*	*					
Hodgkin Lymphoma	2.9	2.7-3.2	3.2	2.9-3.5	*	*	*	*	3.4	2.0-4.7					
Kidney & Renal Pelvis	11.0	10.5-11.4	11.2	10.6-11.7	11.8	9.4-14.2	4.1	2.3-5.9	9.2	6.9-11.5					
Larynx	1.5	1.3-1.7	1.6	1.4-1.8	*	*	*	*	*	*					
Leukemia	9.7	9.2-10.1	9.8	9.3-10.3	8.8	6.8-10.9	6.8	4.8-8.9	7.2	5.2-9.1					
Liver & Intrahepatic Bile Ducts	3.2	2.9-3.4	2.8	2.6-3.1	4.3	2.9-5.8	9.4	6.5-12.2	6.1	4.1-8.2					
Melanoma of Skin	18.9	18.3-19.5	20.4	19.7-21.2	*	*	*	*	2.5	1.4-3.6					
Multiple Myeloma	4.2	3.9-4.5	3.9	3.7-4.2	9.3	7.1-11.4	*	*	5.0	3.2-6.8					
Non-Hodgkin Lymphoma	16.6	16.0-17.2	16.7	16.1-17.4	13.5	11.0-16.0	11.1	8.1-14.0	14.2	11.2-17.3					
Oral Cavity & Pharynx	6.4	6.1-6.8	6.4	6.0-6.8	5.1	3.5-6.6	7.4	5.2-9.6	5.4	3.5-7.3					
Ovary	12.9	12.4-13.4	13.4	12.8-13.9	7.4	5.5-9.3	8.7	6.3-11.0	8.8	6.5-11.1					
Pancreas	11.2	10.8-11.7	11.3	10.8-11.8	13.3	10.7-15.9	8.2	5.6-10.9	8.3	5.9-10.8					
Stomach	4.7	4.4-5.0	4.2	3.9-4.5	9.3	7.1-11.5	10.5	7.5-13.4	7.5	5.2-9.7					
Thyroid	24.5	23.8-25.2	24.4	23.5-25.2	22.2	19.1-25.3	30.5	26.3-34.7	23.0	19.8-26.2					
Urinary Bladder	12.7	12.2-13.2	13.4	12.9-13.9	7.9	5.8-10.0	*	*	7.3	5.0-9.6					

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ² per 100,000

³ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category.

⁴ Breast *in situ* is excluded from "All Sites."

* An age-adjusted incidence rate was not calculated when there were fewer than 20 cases.

Source: Massachusetts Cancer Registry

Table 16.
AGE-ADJUSTED¹ INCIDENCE RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2004-2008
TOTAL

Cancer Site / Type	All Races		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL
All Sites (Excluding Breast <i>in situ</i>)	511.9	509.5-514.3	518.1	515.5-520.6	490.1	478.2-501.9	316.6	305.1-328.1	374.5	363.0-386.1
Brain & Other Nervous System	7.3	7.0-7.6	7.9	7.5-8.2	2.4	1.7-3.2	3.8	2.6-5.0	4.7	3.5-5.8
Breast	73.1	72.2-74.0	75.0	74.0-76.0	67.6	63.4-71.9	42.8	38.9-46.6	50.0	46.1-54.0
Breast <i>in situ</i> ⁴	24.6	24.1-25.1	25.2	24.7-25.8	20.3	18.0-22.5	17.2	14.8-19.7	18.3	16.0-20.6
Bronchus & Lung	71.6	70.7-72.5	74.2	73.2-75.2	61.3	57.0-65.6	41.6	37.2-46.1	30.9	27.4-34.5
Cervix Uteri	---	---	---	---	---	---	---	---	---	---
Colon / Rectum	48.5	47.7-49.2	48.5	47.8-49.3	46.6	42.9-50.3	40.9	36.6-45.2	38.4	34.6-42.3
Corpus Uteri & Uterus, NOS	---	---	---	---	---	---	---	---	---	---
Esophagus	6.5	6.2-6.7	6.7	6.4-6.9	6.5	5.2-7.9	3.5	2.2-4.7	3.3	2.2-4.5
Hodgkin Lymphoma	3.4	3.2-3.6	3.7	3.5-4.0	2.3	1.6-3.1	*	*	3.2	2.3-4.2
Kidney & Renal Pelvis	16.1	15.6-16.5	16.3	15.9-16.8	18.0	15.8-20.2	6.9	5.2-8.7	12.3	10.3-14.3
Larynx	3.7	3.5-3.9	3.8	3.6-4.0	3.5	2.5-4.5	*	*	3.2	2.2-4.3
Leukemia	12.3	11.9-12.6	12.5	12.1-12.9	9.4	7.8-11.1	7.7	6.0-9.3	8.5	6.8-10.1
Liver & Intrahepatic Bile Ducts	6.9	6.6-7.1	6.0	5.7-6.3	9.8	8.2-11.5	20.0	17.1-22.8	11.5	9.5-13.4
Melanoma of Skin	22.5	22.0-23.0	24.0	23.4-24.5	1.6	0.9-2.3	*	*	2.8	1.9-3.8
Multiple Myeloma	5.4	5.2-5.7	5.2	4.9-5.4	11.0	9.2-12.9	2.4	1.4-3.5	7.1	5.4-8.8
Non-Hodgkin Lymphoma	20.1	19.6-20.6	20.3	19.8-20.8	16.5	14.4-18.6	12.6	10.3-15.0	15.3	13.0-17.6
Oral Cavity & Pharynx	10.9	10.6-11.3	11.1	10.7-11.5	9.0	7.4-10.5	8.5	6.8-10.2	8.4	6.8-10.1
Ovary	---	---	---	---	---	---	---	---	---	---
Pancreas	12.5	12.1-12.8	12.6	12.2-13.0	14.1	12.0-16.2	7.9	5.9-9.8	9.0	7.0-10.9
Prostate	---	---	---	---	---	---	---	---	---	---
Stomach	7.3	7.0-7.6	6.7	6.4-7.0	13.2	11.2-15.3	12.4	10.0-14.8	12.3	10.1-14.4
Testis	---	---	---	---	---	---	---	---	---	---
Thyroid	16.6	16.2-17.0	16.7	16.2-17.1	14.2	12.4-16.1	19.2	16.8-21.6	14.9	13.0-16.9
Urinary Bladder	26.3	25.7-26.8	27.6	27.0-28.1	14.6	12.4-16.8	7.0	5.2-8.8	12.2	9.9-14.5

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ² per 100,000
³ Race/ethnicity categories are mutually exclusive. Cases are only included in one race/ethnicity category. ⁴ Breast *in situ* cases are excluded from "All Sites."
⁵ Dashed-out cancers are found in only one sex. * An age-adjusted incidence rate was not calculated when there were fewer than 20 cases.
Source: Massachusetts Cancer Registry

Table 17.
FIVE LEADING CANCER MORTALITY RATES BY RACE/ETHNICITY AND SEX
Massachusetts, 2004-2008

MALES

AGE-ADJUSTED¹ MORTALITY RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Bronchus & Lung 65.2	Bronchus & Lung 74.7	Bronchus & Lung 39.0	Bronchus & Lung 24.8
2	Prostate 23.6	Prostate 49.2	Liver & Intrahepatic Bile Ducts 20.1	Prostate 16.0
3	Colon / Rectum 20.2	Colon / Rectum 23.3	Colon / Rectum 11.9	Liver & Intrahepatic Bile Ducts 11.7
4	Pancreas 13.3	Pancreas 16.8	Prostate 10.1	Colon / Rectum 11.2
5	Esophagus 9.9	Liver & Intrahepatic Bile Ducts 13.7	Stomach 6.3	Stomach 9.4

FEMALES

AGE-ADJUSTED¹ MORTALITY RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Bronchus & Lung 44.8	Bronchus & Lung 34.5	Bronchus & Lung 18.0	Breast 11.8
2	Breast 22.7	Breast 27.6	Colon / Rectum 9.1	Bronchus & Lung 11.7
3	Colon / Rectum 14.5	Colon / Rectum 16.7	Breast 7.7	Colon / Rectum 9.1
4	Pancreas 10.3	Pancreas 12.9	Pancreas 7.7	Pancreas 6.8
5	Ovary 8.9	Leukemia 6.4	Liver & Intrahepatic Bile Duct 6.3	Corpus Uteri & Uterus, NOS 4.4

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² per 100,000

Source: Massachusetts Cancer Registry

Table 18.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2004-2008
MALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths
All Sites	33028	100	30474	100	1359	100	529	100	625	100
Brain & Other Nervous System	814	2.5	771	2.5	15	1.1	10	1.9	17	2.7
Breast	58	0.2	49	0.2	6	0.4	1	0.2	2	0.3
Bronchus & Lung	9394	28.4	8751	28.7	377	27.7	147	27.8	112	17.9
Colon / Rectum	2896	8.8	2663	8.7	121	8.9	50	9.5	60	9.6
Esophagus	1457	4.4	1362	4.5	56	4.1	17	3.2	18	2.9
Hodgkin Lymphoma	62	0.2	58	0.2	3	0.2	1	0.2	0	0.0
Kidney & Renal Pelvis	870	2.6	825	2.7	24	1.8	7	1.3	14	2.2
Larynx	325	1.0	299	1.0	19	1.4	2	0.4	5	0.8
Leukemia	1327	4.0	1226	4.0	52	3.8	18	3.4	28	4.5
Liver & Intrahepatic Bile Ducts	1380	4.2	1123	3.7	84	6.2	94	17.8	76	12.2
Melanoma of Skin	630	1.9	623	2.0	1	0.1	1	0.2	5	0.8
Multiple Myeloma	631	1.9	565	1.9	43	3.2	4	0.8	16	2.6
Non-Hodgkin Lymphoma	1237	3.7	1142	3.7	50	3.7	18	3.4	22	3.5
Oral Cavity & Pharynx	602	1.8	542	1.8	23	1.7	23	4.3	14	2.2
Pancreas	1957	5.9	1809	5.9	85	6.3	21	4.0	41	6.6
Prostate	3222	9.8	2966	9.7	172	12.7	27	5.1	51	8.2
Stomach	820	2.5	687	2.3	60	4.4	23	4.3	49	7.8
Testis	30	0.1	29	0.1	0	0.0	0	0.0	1	0.2
Thyroid	75	0.2	68	0.2	2	0.1	3	0.6	2	0.3
Urinary Bladder	1293	3.9	1249	4.1	28	2.1	5	0.9	11	1.8
Other Sites	3948	12.0	3667	12.0	138	10.2	57	10.8	81	13.0

¹ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

² The number of deaths for all races is not the sum of deaths by race/ethnicity.

Source: Massachusetts Cancer Registry

Table 19.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2004-2008
FEMALES

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths
All Sites	32774	100.0	30472	100.0	1292	100.0	411	100.0	558	100.0
Brain & Other Nervous System	627	1.9	599	2.0	11	0.9	2	0.5	14	2.5
Breast	4598	14.0	4235	13.9	234	18.1	41	10.0	85	15.2
Bronchus & Lung	8710	26.6	8283	27.2	263	20.4	79	19.2	75	13.4
Cervix Uteri	270	0.8	225	0.7	22	1.7	6	1.5	17	3.0
Colon / Rectum	3228	9.8	3008	9.9	122	9.4	42	10.2	54	9.7
Corpus Uteri & Uterus, NOS	867	2.6	782	2.6	47	3.6	11	2.7	27	4.8
Esophagus	433	1.3	400	1.3	24	1.9	4	1.0	4	0.7
Hodgkin Lymphoma	54	0.2	49	0.2	1	0.1	1	0.2	3	0.5
Kidney & Renal Pelvis	507	1.5	481	1.6	16	1.2	3	0.7	5	0.9
Larynx	101	0.3	97	0.3	3	0.2	0	0.0	1	0.2
Leukemia	1104	3.4	1006	3.3	50	3.9	22	5.4	24	4.3
Liver & Intrahepatic Bile Ducts	605	1.8	520	1.7	31	2.4	28	6.8	23	4.1
Melanoma of Skin	425	1.3	415	1.4	3	0.2	2	0.5	3	0.5
Multiple Myeloma	528	1.6	468	1.5	39	3.0	3	0.7	16	2.9
Non-Hodgkin Lymphoma	1206	3.7	1119	3.7	37	2.9	23	5.6	25	4.5
Oral Cavity & Pharynx	291	0.9	275	0.9	7	0.5	4	1.0	5	0.9
Ovary	1763	5.4	1664	5.5	49	3.8	18	4.4	30	5.4
Pancreas	2188	6.7	2017	6.6	95	7.4	34	8.3	39	7.0
Stomach	545	1.7	469	1.5	38	2.9	24	5.8	12	2.2
Thyroid	93	0.3	82	0.3	6	0.5	2	0.5	3	0.5
Urinary Bladder	567	1.7	532	1.7	26	2.0	3	0.7	6	1.1
Other Sites	4064	12.4	3746	12.3	168	13.0	59	14.4	87	15.6

¹ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

² The number of deaths for all races is not the sum of deaths by race/ethnicity.

Source: Massachusetts Cancer Registry

Table 20.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2004-2008
TOTAL

Cancer Site / Type	All Races ²		White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic	
	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths	Deaths	% of Deaths
All Sites	65802	100.0	60946	100.0	2651	100.0	940	100.0	1183	100.0
Brain & Other Nervous System	1441	2.2	1370	2.2	26	1.0	12	1.3	31	2.6
Breast	4656	7.1	4284	7.0	240	9.1	42	4.5	87	7.4
Bronchus & Lung	18104	27.5	17034	27.9	640	24.1	226	24.0	187	15.8
Cervix Uteri	270	0.4	225	0.4	22	0.8	6	0.6	17	1.4
Colon / Rectum	6124	9.3	5671	9.3	243	9.2	92	9.8	114	9.6
Corpus Uteri & Uterus, NOS	867	1.3	782	1.3	47	1.8	11	1.2	27	2.3
Esophagus	1890	2.9	1762	2.9	80	3.0	21	2.2	22	1.9
Hodgkin Lymphoma	116	0.2	107	0.2	4	0.2	2	0.2	3	0.3
Kidney & Renal Pelvis	1377	2.1	1306	2.1	40	1.5	10	1.1	19	1.6
Larynx	426	0.6	396	0.6	22	0.8	2	0.2	6	0.5
Leukemia	2431	3.7	2232	3.7	102	3.8	40	4.3	52	4.4
Liver & Intrahepatic Bile Ducts	1985	3.0	1643	2.7	115	4.3	122	13.0	99	8.4
Melanoma of Skin	1055	1.6	1038	1.7	4	0.2	3	0.3	8	0.7
Multiple Myeloma	1159	1.8	1033	1.7	82	3.1	7	0.7	32	2.7
Non-Hodgkin Lymphoma	2443	3.7	2261	3.7	87	3.3	41	4.4	47	4.0
Oral Cavity & Pharynx	893	1.4	817	1.3	30	1.1	27	2.9	19	1.6
Ovary	1763	2.7	1664	2.7	49	1.8	18	1.9	30	2.5
Pancreas	4145	6.3	3826	6.3	180	6.8	55	5.9	80	6.8
Prostate	3222	4.9	2966	4.9	172	6.5	27	2.9	51	4.3
Stomach	1365	2.1	1156	1.9	98	3.7	47	5.0	61	5.2
Testis	30	0.0	29	0.0	0	0.0	0	0.0	1	0.1
Thyroid	168	0.3	150	0.2	8	0.3	5	0.5	5	0.4
Urinary Bladder	1860	2.8	1781	2.9	54	2.0	8	0.9	17	1.4
Other Sites	8012	12.2	7413	12.2	306	11.5	116	12.3	168	14.2

¹Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

²The number of deaths for all races is not the sum of deaths by race/ethnicity.

Source: Massachusetts Cancer Registry

Table 21.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2004-2008
MALES

Cancer Site / Type	All Races			White, non-Hispanic			Black, non-Hispanic			Asian, non-Hispanic			Hispanic		
	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	
All Sites	225.8	223.3-228.3	229.1	226.5-231.7	276.5	260.3-292.7	131.8	119.6-144.0	126.7	115.4-138.1					
Brain & Other Nervous System	5.2	4.8-5.6	5.6	5.2-6.0	*	*	*	*	*	*	*	*	*	*	
Breast	0.4	0.3-0.5	0.4	0.3-0.5	*	*	*	*	*	*	*	*	*	*	
Bronchus & Lung	63.8	62.5-65.1	65.2	63.8-66.6	74.7	66.5-82.8	39.0	32.2-45.8	24.8	19.7-30.0					
Colon / Rectum	20.0	19.2-20.7	20.2	19.4-21.0	23.3	18.8-27.9	11.9	8.3-15.5	11.2	7.9-14.4					
Esophagus	9.5	9.0-10.0	9.9	9.3-10.4	9.3	6.7-11.9	*	*	*	*					
Hodgkin Lymphoma	0.4	0.3-0.5	0.4	0.3-0.5	*	*	*	*	*	*					
Kidney & Renal Pelvis	5.9	5.5-6.2	6.1	5.7-6.5	5.3	3.0-7.7	*	*	*	*					
Larynx	2.1	1.9-2.4	2.2	1.9-2.4	*	*	*	*	*	*					
Leukemia	9.2	8.7-9.7	9.4	8.9-9.9	10.6	7.4-13.8	*	*	4.5	2.4-6.6					
Liver & Intrahepatic Bile Ducts	8.8	8.4-9.3	8.0	7.6-8.5	13.7	10.4-16.9	20.1	15.7-24.4	11.7	8.7-14.7					
Melanoma of Skin	4.2	3.9-4.5	4.6	4.3-5.0	*	*	*	*	*	*					
Multiple Myeloma	4.3	4.0-4.7	4.3	3.9-4.6	8.1	5.5-10.8	*	*	*	*					
Non-Hodgkin Lymphoma	8.6	8.1-9.1	8.7	8.2-9.3	9.0	6.3-11.7	*	*	4.1	2.1-6.1					
Oral Cavity & Pharynx	3.9	3.6-4.2	3.9	3.6-4.2	3.8	2.2-5.4	4.7	2.6-6.9	*	*					
Pancreas	13.1	12.5-13.7	13.3	12.7-13.9	16.8	12.8-20.8	5.2	2.8-7.6	8.3	5.4-11.1					
Prostate	23.8	23.0-24.6	23.6	22.8-24.5	49.2	41.4-57.0	10.1	6.2-14.0	16.0	11.4-20.5					
Stomach	5.6	5.2-6.0	5.2	4.8-5.6	12.1	8.8-15.4	6.3	3.6-9.0	9.4	6.4-12.4					
Testis	0.2	0.1-0.2	0.2	0.1-0.3	*	*	*	*	*	*					
Thyroid	0.5	0.4-0.6	0.5	0.4-0.6	*	*	*	*	*	*					
Urinary Bladder	9.2	8.7-9.7	9.7	9.1-10.2	6.4	3.7-9.0	*	*	*	*					

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ² per 100,000

³ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

* An age-adjusted mortality rate was not calculated when there were fewer than 20 deaths.

Source: Massachusetts Cancer Registry

Table 22.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2004-2008
FEMALES

Cancer Site / Type	All Races			White, non-Hispanic			Black, non-Hispanic			Asian, non-Hispanic			Hispanic		
	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	
All Sites	155.6	153.9-157.3	159.1	157.2-160.9	166.6	157.4-175.8	85.5	76.9-94.1	85.1	77.5-92.7					
Brain & Other Nervous System	3.2	2.9-3.4	3.4	3.1-3.7	*	*	*	*	*	*				*	
Breast	22.2	21.5-22.8	22.7	22.0-23.4	27.6	24.0-31.2	7.7	5.2-10.2	11.8	9.0-14.5					
Bronchus & Lung	42.7	41.7-43.6	44.8	43.8-45.7	34.5	30.2-38.7	18.0	13.9-22.0	11.7	8.9-14.5					
Cervix Uteri	1.4	1.2-1.6	1.3	1.1-1.5	2.6	1.5-3.7	*	*	*	*				*	
Colon / Rectum	14.3	13.8-14.9	14.5	14.0-15.0	16.7	13.7-19.7	9.1	6.2-11.9	9.1	6.5-11.6					
Corpus Uteri & Uterus, NOS	4.2	3.9-4.4	4.1	3.8-4.4	6.2	4.4-8.0	*	*	4.4	2.6-6.1					
Esophagus	2.0	1.9-2.2	2.1	1.9-2.3	3.0	1.8-4.2	*	*	*	*				*	
Hodgkin Lymphoma	0.3	0.2-0.4	0.3	0.2-0.4	*	*	*	*	*	*				*	
Kidney & Renal Pelvis	2.4	2.2-2.6	2.5	2.2-2.7	*	*	*	*	*	*				*	
Larynx	0.5	0.4-0.6	0.5	0.4-0.7	*	*	*	*	*	*				*	
Leukemia	5.3	4.9-5.6	5.3	4.9-5.6	6.4	4.6-8.2	3.4	1.9-4.9	3.3	1.9-4.6					
Liver & Intrahepatic Bile Ducts	2.8	2.6-3.1	2.7	2.4-2.9	4.0	2.5-5.4	6.3	3.9-8.6	3.9	2.2-5.6					
Melanoma of Skin	2.1	1.9-2.3	2.3	2.0-2.5	*	*	*	*	*	*				*	
Multiple Myeloma	2.4	2.2-2.7	2.3	2.1-2.6	5.4	3.7-7.1	*	*	*	*				*	
Non-Hodgkin Lymphoma	5.4	5.1-5.8	5.5	5.1-5.8	4.9	3.3-6.5	5.1	2.9-7.2	4.0	2.3-5.7					
Oral Cavity & Pharynx	1.4	1.2-1.5	1.4	1.3-1.6	*	*	*	*	*	*				*	
Ovary	8.5	8.1-8.9	8.9	8.5-9.4	6.3	4.5-8.1	*	*	4.2	2.6-5.8					
Pancreas	10.3	9.8-10.7	10.3	9.9-10.8	12.9	10.2-15.5	7.7	5.0-10.3	6.8	4.5-9.0					
Stomach	2.5	2.3-2.7	2.3	2.1-2.5	5.1	3.4-6.7	4.9	2.9-6.9	*	*				*	
Thyroid	0.4	0.3-0.5	0.4	0.3-0.5	*	*	*	*	*	*				*	
Urinary Bladder	2.5	2.3-2.7	2.6	2.3-2.8	3.8	2.3-5.2	*	*	*	*				*	

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ² per 100,000

³ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

* An age-adjusted mortality rate was not calculated when there were fewer than 20 deaths.

Source: Massachusetts Cancer Registry

Table 23.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2004-2008
TOTAL

Cancer Site / Type	All Races			White, non-Hispanic			Black, non-Hispanic			Asian, non-Hispanic			Hispanic		
	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	Rate	95% CL	
All Sites	182.4	181.0-183.8	185.7	184.2-187.2	205.7	197.5-213.8	106.2	99.0-113.3	102.5	96.1-108.9					
Brain & Other Nervous System	4.1	3.9-4.3	4.4	4.2-4.6	1.5	0.9-2.1	*	*	1.9	1.1-2.6					
Breast	12.8	12.4-13.2	13.0	12.6-13.4	16.4	14.2-18.5	4.2	2.9-5.6	6.8	5.2-8.5					
Bronchus & Lung	51.1	50.3-51.8	52.9	52.1-53.7	49.9	45.9-53.8	27.4	23.7-31.2	17.1	14.4-19.8					
Cervix Uteri	- ⁴	-	-	-	-	-	-	-	-	-					
Colon / Rectum	16.7	16.3-17.1	16.8	16.4-17.3	19.6	17.0-22.1	10.5	8.2-12.7	10.1	8.1-12.2					
Corpus Uteri & Uterus, NOS	-	-	-	-	-	-	-	-	-	-					
Esophagus	5.3	5.0-5.5	5.4	5.2-5.7	5.7	4.4-7.0	2.5	1.4-3.7	1.8	1.0-2.6					
Hodgkin Lymphoma	0.3	0.3-0.4	0.3	0.3-0.4	*	*	*	*	*	*					
Kidney & Renal Pelvis	3.8	3.6-4.0	4.0	3.7-4.2	3.1	2.1-4.1	*	*	*	*					
Larynx	1.2	1.1-1.3	1.2	1.1-1.4	1.7	1.0-2.4	*	*	*	*					
Leukemia	6.8	6.5-7.0	6.9	6.6-7.2	7.9	6.3-9.5	3.8	2.5-5.1	3.8	2.6-4.9					
Liver & Intrahepatic Bile Ducts	5.5	5.2-5.7	5.0	4.8-5.3	8.1	6.5-9.6	12.8	10.4-15.2	7.5	5.9-9.1					
Melanoma of Skin	2.9	2.8-3.1	3.2	3.0-3.4	*	*	*	*	*	*					
Multiple Myeloma	3.2	3.0-3.4	3.1	2.9-3.3	6.5	5.1-8.0	*	*	3.1	1.9-4.2					
Non-Hodgkin Lymphoma	6.7	6.4-7.0	6.8	6.5-7.0	6.6	5.2-8.0	4.8	3.2-6.3	4.0	2.7-5.3					
Oral Cavity & Pharynx	2.5	2.3-2.6	2.5	2.3-2.7	2.1	1.4-2.9	2.5	1.5-3.6	*	*					
Ovary	-	-	-	-	-	-	-	-	-	-					
Pancreas	11.5	11.2-11.9	11.7	11.3-12.0	14.3	12.2-16.5	6.6	4.7-8.4	7.5	5.7-9.3					
Prostate	-	-	-	-	-	-	-	-	-	-					
Stomach	3.8	3.6-4.0	3.5	3.3-3.7	7.8	6.2-9.4	5.5	3.9-7.2	5.1	3.7-6.5					
Testis	-	-	-	-	-	-	-	-	-	-					
Thyroid	0.5	0.4-0.5	0.5	0.4-0.5	*	*	*	*	*	*					
Urinary Bladder	5.1	4.8-5.3	5.3	5.0-5.5	4.7	3.4-6.0	*	*	*	*					

¹ Rates are age-adjusted to the 2000 U.S. Standard Population. ² per 100,000

³ Race/ethnicity categories are mutually exclusive. Deaths are only included in one race/ethnicity category.

⁴ Dashed-out cancers are found in only one sex.

* An age-adjusted mortality rate was not calculated when there were fewer than 20 deaths.

Source: Massachusetts Cancer Registry

Table 24.
INCIDENCE AND MORTALITY RATES¹ FOR SELECTED CANCER SITES BY SEX
Massachusetts, 2004-2008, and U.S., 2003-2007*

Cancer Site / Type	MALES				FEMALES			
	Incidence		Mortality		Incidence		Mortality	
	MA	NAACCR	MA	U.S.	MA	NAACCR	MA	U.S.
All Sites	590.9	553.0	225.8	225.4	460.6	416.5	155.6	155.4
Brain & Other Nervous System	8.7	7.9	5.2	5.2	6.2	5.3	3.2	3.5
Breast	1.3	1.4	0.4	0.3	132.1	121.2	22.2	24.0
Breast <i>in situ</i>²	0.2	0.2	n/a ⁴	n/a	46.1	30.1	n/a ⁴	n/a
Bronchus & Lung	82.8	84.4	63.8	68.8	64.5	55.7	42.7	40.6
Cervix Uteri	— ³	—	—	—	6.0	8.1	1.4	2.4
Colon / Rectum	56.8	55.7	20.0	21.2	42.1	41.4	14.3	14.9
Corpus Uteri & Uterus, NOS	—	—	—	—	29.7	23.4	4.2	4.1
Esophagus	11.5	8.7	9.5	7.8	2.5	2.0	2.0	1.7
Hodgkin Lymphoma	4.0	3.2	0.4	0.5	2.9	2.5	0.3	0.3
Kidney & Renal Pelvis	22.5	20.7	5.9	5.9	11.0	10.9	2.4	2.7
Larynx	6.6	7.0	2.1	2.2	1.5	1.5	0.5	0.5
Leukemia	15.9	16.1	9.2	9.7	9.7	9.7	5.3	5.4
Liver & Intrahepatic Bile Ducts	11.4	9.0	8.8	7.7	3.2	2.8	2.8	3.2
Melanoma of Skin	28.0	23.8	4.2	4.0	18.9	15.4	2.1	1.7
Multiple Myeloma	7.1	7.2	4.3	4.4	4.2	4.6	2.4	2.9
Non-Hodgkin Lymphoma	24.6	23.4	8.6	8.7	16.6	16.3	5.4	5.5
Oral Cavity & Pharynx	16.4	16.2	3.9	3.9	6.4	6.2	1.4	1.4
Ovary	—	—	—	—	12.9	12.7	8.5	8.6
Pancreas	14.1	13.4	13.1	12.3	11.2	10.4	10.3	9.4
Prostate	162.2	152.9	23.8	24.7	—	—	—	—
Stomach	10.8	9.5	5.6	5.3	4.7	4.7	2.5	2.7
Testis	6.2	5.4	0.2	0.2	—	—	—	—
Thyroid	8.3	5.5	0.5	0.5	24.5	16.3	0.4	0.5
Urinary Bladder	45.6	37.6	9.2	7.5	12.7	9.4	2.5	2.2

¹ Rates are age-adjusted to the 2000 U.S. Standard Population.

² Breast *in situ* cases are excluded from “All Sites” and from breast cancer counts.

³ Dashed-out cancers are found in only one sex.

⁴ Rates are not available for that cancer subtype.

*National death data for 2008 are not yet available.

Sources: Massachusetts Registry of Vital Statistics and the National Center for Health Statistics (NCHS).

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APPENDICES

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APPENDIX I

ICD CODES USED FOR THIS REPORT

Cancer Site / Type C o d e s	
	ICD-O-3*	ICD-10**
Brain & Other Nervous System	C70.0 - C72.9 except 9590 - 9989	C70 - C72
Breast (includes <i>in situ</i>)	C50.0 - C50.9 except 9590 - 9989	C50
Bronchus & Lung	C34.0 - C34.9 except 9590 - 9989	C34
Cervix Uteri	C53.0 - C53.9 except 9590 - 9989	C53
Colon / Rectum	C18.0 - C18.9, C19.9, C20.9, C26.0 except 9590 - 9989	C18 - C20, C26.0
Corpus Uteri & Uterus, NOS	C54.0 - C54.9, C55.9 except 9590 - 9989	C54 - C55
Esophagus	C15.0 - C15.9 except 9590 - 9989	C15
Hodgkin Lymphoma	C00.0 - C80.9 (includes 9650 - 9667)	C81
Kidney & Renal Pelvis	C64.9, C65.9 except 9590 - 9989	C64 - C65
Larynx	C32.0 - C32.9 except 9590 - 9989	C32
Leukemia	C00.0 - C80.9 (includes 9733, 9742, 9800 - 9820, 9826, 9831 - 9948, 9963-9964) C42.0, C42.1, C42.4 (includes 9823, 9827)	C90.1, C91 - C95
Liver and Intrahepatic Bile Ducts	C22.0, C22.1 except 9590 - 9989	C22

..... *C o d e s*

Cancer Site /Type	ICD-O-3*	ICD-10**
Melanoma of Skin	C44.0 - C44.9 (includes 8720 - 8790)	C43
Multiple Myeloma	C00.0 - C80.9 (includes 9731, 9732, 9734)	C90.0, C90.2
Non-Hodgkin Lymphoma	C00.0 - C80.9 (includes 9590 - 9596, 9670 - 9729) All sites except C42.0, C42.1, C42.4 (includes 9823, 9827)	C82 - C85, C96.3
Oral Cavity & Pharynx	C00.0 - C14.8 except 9590 - 9989	C00 - C14
Ovary	C56.9 except 9590 - 9989	C56
Pancreas	C25.0 - C25.9 except 9590 - 9989	C25
Prostate	C61.9 except 9590 - 9989	C61
Stomach	C16.0 - C16.9 except 9590 - 9989	C16
Testis	C62.0 - C62.9 except 9590 - 9989	C62
Thyroid	C73.9 except 9590 - 9989	C73
Urinary Bladder (includes <i>in situ</i>)	C67.0 - C67.9 except 9590 - 9989	C67

* *International Classification of Diseases for Oncology, 3d Ed.* (1) (includes codes added since publication) for incidence data

** *International Classification of Diseases, Tenth Revision* (3) (includes codes added since publication) for mortality data

APPENDIX II:

Population and Rate Changes

The Population estimates for 2004-2008 that were used in this report were produced by the National Center for Health Statistics (NCHS) in collaboration with the U.S. Census Bureau's Population Estimation Program. The NCHS takes the Census Bureau population estimates file and reallocates the multiple race categories required by the 1997 Office of Management and Budget (OMB) specifications back into the four race categories specified in the 1977 OMB specifications so that the estimates will be compatible with previous years' populations.(11) The estimates are divided into mutually exclusive racial/ethnic categories similar to those of the MCR.

Please note that the statewide age-adjusted rates published in this report cannot be compared with those published in reports prior to July 2007, because the overall population count and the age distribution of the population, which were based on the Census 2000 count, differ.

The difference in the new population estimates is pronounced for Hispanics and black, non-Hispanics. The Hispanic and black, non-Hispanic populations have increased 15% since 2000, while the overall state population has increased by 1%. It is important to remember that both age-adjusted cancer incidence and cancer death rates are not a measure of the actual risk of cancer or of death from it. Rather, age-adjusted rates are summary measures used to compare cancer incidence and mortality trends over time or among different populations whose age distributions differ. For specific examples of the effect of new population estimates on age-adjusted rates, see Appendix II in the report *Cancer Incidence and Mortality in Massachusetts 2000-2004: Statewide Report*, available at www.mass.gov/dph/mcr.

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Appendix III

POPULATION ESTIMATES BY AGE, RACE/ETHNICITY, AND SEX
Massachusetts, 2004-2008

Age Group	White, non-Hispanic		Black, non-Hispanic		Asian, non-Hispanic		Hispanic					
	Males	Females	Total	Males	Females	Total	Males	Females	Total			
0-4	695,213	665,448	1,360,661	85,779	82,230	168,009	64,024	64,410	128,434	140,382	135,048	275,430
5-9	739,771	706,642	1,446,413	78,945	75,050	153,995	54,242	55,571	109,813	123,300	119,012	242,312
10-14	808,167	764,214	1,572,381	85,017	81,535	166,552	49,539	49,285	98,824	124,522	117,047	241,569
15-19	886,338	867,459	1,753,797	90,407	89,215	179,622	55,169	60,161	115,330	127,358	121,289	248,647
20-24	815,888	821,362	1,637,250	84,163	81,910	166,073	64,138	70,856	134,994	127,776	113,191	240,967
25-29	767,933	770,335	1,538,268	78,958	76,068	155,026	75,622	81,385	157,007	132,890	115,673	248,563
30-34	767,186	784,194	1,551,380	72,585	74,959	147,544	85,977	87,157	173,134	117,000	111,716	228,716
35-39	912,087	942,555	1,854,642	71,325	77,740	149,065	75,421	75,018	150,439	104,350	105,678	210,028
40-44	1,053,363	1,077,286	2,130,649	75,383	79,331	154,714	61,997	62,041	124,038	92,683	95,836	188,519
45-49	1,079,724	1,114,289	2,194,013	69,504	72,655	142,159	50,322	52,395	102,717	71,544	76,953	148,497
50-54	976,648	1,023,524	2,000,172	54,899	58,773	113,672	40,514	43,052	83,566	51,984	58,632	110,616
55-59	857,735	913,659	1,771,394	41,376	47,813	89,189	30,628	33,769	64,397	37,647	44,421	82,068
60-64	650,670	715,072	1,365,742	27,659	36,300	63,959	20,662	22,041	42,703	25,084	30,748	55,832
65-69	466,586	540,587	1,007,173	19,920	27,308	47,228	16,740	17,072	33,812	16,513	21,970	38,483
70-74	385,292	482,008	867,300	14,971	22,096	37,067	11,699	13,033	24,732	10,797	15,703	26,500
75-79	333,194	469,651	802,845	10,680	16,845	27,525	7,632	9,900	17,532	7,487	10,770	18,257
80-84	242,617	411,299	653,916	6,246	12,223	18,469	4,742	6,590	11,332	4,492	7,380	11,872
85+	178,720	450,043	628,763	3,727	9,676	13,403	3,350	5,731	9,081	3,908	7,478	11,386

Source: United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Bridged-Race Population Estimates, United States July 1st resident population by state, county, age, sex, bridged-race, and Hispanic origin compiled from 1990-1999 bridged-race intercensal population estimates and 2000-2009 (Vintage 2009) bridged -race postcensal population estimates, on CDC WONDER On-line Database. Accessed at <http://wonder.cdc.gov/bridged-race-v2009.html> on Oct 4, 2010

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