
CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS 2011 – 2015:

STATEWIDE REPORT

*With a Special Overview: Using Environmental Public Health Tracking
for Radon Awareness and Cancer Prevention*

Office of Data Management and Outcomes Assessment

Office of Population Health

Massachusetts Department of Public Health

July 2018



This page intentionally left blank.

CANCER INCIDENCE AND MORTALITY IN MASSACHUSETTS 2011 – 2015:

STATEWIDE REPORT

**With a Special Overview: *Using Environmental Public Health Tracking
for Radon Awareness and Cancer Prevention***

Charlie Baker, Governor

Karyn Polito, Lieutenant Governor

Marylou Sudders, Secretary of Health and Human Services

Monica Bharel, Commissioner of Public Health

Abigail Averbach, Assistant Commissioner and Director,
Office of Population Health

Natalie Nguyen Durham, Director, Office of Data Management and
Outcomes Assessment

Susan T. Gershman, Director, Massachusetts Cancer Registry

Massachusetts Department of Public Health

July 2018

ACKNOWLEDGMENTS

This report was prepared by Susan T. Gershman, Director, Massachusetts Cancer Registry, and Massachusetts Cancer Registry staff and consultants. Special thanks are given to Annie MacMillan and Richard Knowlton for their diligent work in preparing the data for this report. Thanks are also given to consultant Nancy Weiss for her editing efforts. Thanks are given to Vanessa Neergheen of the Massachusetts Registry of Vital Records and Statistics for providing the mortality data and Malena Hood of the Office of Special Analytic Projects, Office of Population Health for providing the population data. Thanks are also given to Vannalyn Abille, Lisa Hebert, Melanie Jetter, Sharon Lee, Brenda Netreba, all of the Bureau of Environmental Health (BEH), and Greg Tocco, formerly of the BEH, for the special section “Using Environmental Public Health Tracking for Radon Awareness and Cancer Prevention”.

Massachusetts Cancer Registry Staff

Susan T. Gershman, MS, MPH, PhD, CTR, <i>Director</i>	
Nancy Donovan, MA, CTR, <i>Cancer Registrar</i>	Jayne Nussdorfer, CTR, <i>Cancer Registrar</i>
Richard Knowlton, MS, <i>Epidemiologist</i>	Barbara J. Rhodes, CMA, CTR, <i>Cancer Registrar/Death Clearance Coordinator</i>
Ann MacMillan, MPH, <i>Epidemiologist</i>	Pamela Shuttle, CTR, RHIT, <i>Cancer Registrar/Non-Hospital Reporting Coordinator</i>
Mary Mroszczyk, CTR, <i>Geocoding/ Special Projects Coordinator</i>	Hung Tran, <i>Software Developer</i>
Jeremiah Nesser, <i>Technical Assistant for Special Projects</i>	

Massachusetts Cancer Registry Advisory Committee

Lindsay Frazier, MD, ScM (<i>Chair</i>)	
Martie Carnie, Community Representative	Larissa Nekhlyudov, MD, MPH
Anita Christie, RN, MHA, CPHQ	Al Ozonoff, MA, PhD
Deborah Dillon, MD	Sigalle Reiss, MPH, RS/REHS
Joanna Haas, MD	Paul C. Shroy, MD, MPH
Joseph Jacobson, MD	Ingrid Stendhal, CTR
Nancy Keating, MD, MPH	Susan Sturgeon, DrPH, MPH
Carol Lowenstein, CTR, MBA	Jan Sullivan, MS
Gail Merriam, MSW, MPH	Michelle A. Williams, MS, SM, ScD

The data in this report are intended for public use and may be reproduced without permission. Proper acknowledgement of the source is requested.

For further information, please contact the following:

Massachusetts Cancer Registry.....	(617) 624-5642
Research and Epidemiology.....	(617) 624-5642
Occupational Health Surveillance.....	(617) 624-5632
Bureau of Environmental Health.....	(617) 624-5757
Cancer Prevention and Control Initiative.....	(617) 624-5479
Massachusetts Department of Public Health website.....	www.mass.gov/dph

We acknowledge the Centers for Disease Control and Prevention for its support of the staff and the printing and distribution of this report under cooperative agreement 5 NU58DP006271-01-00 awarded to the Massachusetts Cancer Registry at the Massachusetts Department of Public Health. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

TABLE OF CONTENTS

	<u>Page</u>
Executive Summary.....	1
Introduction.....	6
Overall Content.....	7
Special Overview: Using Environmental Public Health Tracking for Radon Awareness and Cancer Prevention.....	8
Figures & Tables.....	13
Figure 1. Percentage of cancer incident cases by cancer type and sex, Massachusetts, 2011-2015.....	14
Figure 2. Incidence rates for ten leading cancer types by sex, Massachusetts, 2011-2015.....	15
Figure 3. Percentage of cancer deaths by cancer type and sex, Massachusetts, 2011-2015.....	16
Figure 4. Mortality rates for ten leading cancer types by sex, Massachusetts, 2011-2015.....	17
Table 1. Age-specific incidence rates and median ages at diagnosis for selected cancer sites, Massachusetts, 2011-2015, males	18
Table 2. Age-specific incidence rates and median ages at diagnosis for selected cancer sites, Massachusetts, 2011-2015, females	19
Table 3. Age-specific incidence rates and median ages at diagnosis for selected cancer sites, Massachusetts, 2011-2015, total	20
Figure 5. Annual Percent Change (APC) in age-adjusted cancer rates among males, Massachusetts, 2011-2015	21
Figure 6. Annual Percent Change (APC) in age-adjusted cancer rates among females, Massachusetts, 2011-2015.....	22
Table 4. Annual age-adjusted incidence rates for selected cancer sites, Massachusetts, 2011-2015, males.....	23
Table 5. Annual age-adjusted incidence rates for selected cancer sites, Massachusetts, 2011-2015, females.....	24
Table 6. Annual age-adjusted incidence rates for selected cancer sites, Massachusetts, 2011-2015, total	25
Table 7. Annual age-adjusted mortality rates for selected cancer sites, Massachusetts, 2011-2015, males	26
Table 8. Annual age-adjusted mortality rates for selected cancer sites, Massachusetts, 2011-2015, females.....	27

Table 9. Annual age-adjusted mortality rates for selected cancer sites, Massachusetts, 2011-2015, total.	28
Table 10. Five leading cancer incidence rates by race/ethnicity and sex, Massachusetts, 2011-2015	29
Table 11. Number and percentage of incident cases for selected cancer sites by race/ethnicity, Massachusetts, males, 2011-2015	30
Table 12. Number and percentage of incident cases for selected cancer sites by race/ethnicity, Massachusetts, females, 2011-2015	31
Table 13. Number and percentage of incident cases for selected cancer sites by race/ethnicity, Massachusetts, total, 2011-2015	32
Table 14. Age-adjusted incidence rates and 95% confidence limits (95% CL) for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, males.....	33
Table 15. Age-adjusted incidence rates and 95% confidence limits (95% CL) for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, females.....	34
Table 16. Age-adjusted incidence rates and 95% confidence limits (95% CL) for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, total.....	35
Table 17. Five leading cancer mortality rates by race/ethnicity and sex, Massachusetts, 2011-2015	36
Table 18. Number and percentage of deaths for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, males	37
Table 19. Number and percentage of deaths for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, females	38
Table 20. Number and percentage of deaths for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, total	39
Table 21. Age-adjusted mortality rates and 95% confidence limits (95% CL) for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, males	40
Table 22. Age-adjusted mortality rates and 95% confidence limits (95% CL) for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, females.....	41
Table 23. Age-adjusted mortality rates and 95% confidence limits (95% CL) for selected cancer sites by race/ethnicity, Massachusetts, 2011-2015, total	42
Table 24. Incidence rates for selected cancer sites by sex, Massachusetts and U.S. (2011-2015)	43
Table 25. Mortality rates for selected cancer sites by sex, Massachusetts and U.S. (2011-2015)	44

Appendices.....	45
Appendix I. ICD codes used for this report	46
Appendix II. Population and rate changes	49
Appendix III. Population estimates by age, race/ethnicity, and sex, Massachusetts, 2011-2015.....	50
Appendix IV. Racial/ethnic breakdown of the Massachusetts and NAACCR populations, 2011-2015.....	51
References	52

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Cancer Incidence and Mortality in Massachusetts, 2011-2015: Statewide Report presents cancer incidence and mortality data for the Commonwealth from 2011 through 2015. The report includes numbers and rates for 24 types of cancer, information on age-specific patterns, an examination of patterns by race/ethnicity, and a comparison of Massachusetts and national cancer rates. A special section on Environmental Public Health Tracking and Radon is also included. 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. *In situ* means the cancer cells are still in the place that they started and have not spread at all.

All counts and average annual age-adjusted rates presented in this Executive Summary are for the period 2011-2015 and are for Massachusetts residents, unless otherwise stated.

OVERALL:

- Total number of new cases – 183,661, an average of 36,732 annually (males= 87,884; females = 95,757)
- Total number of cancer deaths – 64,097, an average of 12,819 annually (males=32,392; females=31,705)
- Incidence rate (age-adjusted) for all cancers combined for total population – 466.1 per 100,000 persons
- Mortality rate (age-adjusted) for all cancer deaths combined for total population – 156.1 per 100,000 persons.

MOST COMMONLY DIAGNOSED CANCERS & CANCER DEATH CAUSES BY SEX:

Incidence (newly diagnosed cases)

- Males – *prostate cancer* accounted for 23.2% of all newly diagnosed cancers among males
- Females – *invasive breast cancer* accounted for 30.0% of all newly diagnosed cancers among females.

Mortality (cancer deaths)

- Males – *cancer of the bronchus and lung* accounted for 26.3% of all cancer deaths among males
- Females – *cancer of the bronchus and lung* also accounted for 27.1% of all cancer deaths among females.

TRENDS 2011-2015:

Trend Calculation Update: The annual percent change (APC) is a summary measure of the trend over a specific time period. As of this report, we will be using the coefficient of variation (CV) to determine which APC rates to suppress and which to flag as being unreliable. The CV is calculated by dividing the mean incidence or mortality age-adjusted rate for each of the five years by the standard error and multiplying that by 100. According to the US Census, a CV less than 15% indicates a high reliability and can be presented without caution, a CV between

15-30% indicates a medium reliability and can be presented with care, and a CV over 30% indicates a low reliability and can only be presented with extreme caution (footnote). This report presents all trends with a high reliability and all trends with a medium reliability with a footnote. Any trends with a low reliability are not presented and are indicated with 'NA'.

Footnote- Barbara M. Parmenter and Janet Lau, 'Estimating and Mapping Reliability for American Community Survey Data', revised 2/14/2013, available: <http://ocw.tufts.edu/data/74/1624027.pdf>

Statistically Significant Incidence Trends – Males

- All cancers combined decreased 3.1% per year.
- Bronchus & lung cancer decreased 2.9% per year.
- Esophageal cancer decreased 5.2% per year.
- Hodgkin's lymphoma decreased 6.3% per year.
- Kidney and renal pelvis cancer increased 4.1% per year.
- Melanoma of skin decreased 7.1% per year.
- Non-Hodgkin's lymphoma increased 1.5% per year.
- Testicular cancer decreased by 2.2% per year.

Statistically Significant Mortality Trends – Males

- All cancers deaths combined decreased 2.4% per year.
- Bronchus and lung cancer decreased 2.2% per year.
- Kidney and renal pelvis cancer increased 6.7% per year.

Statistically Significant Incidence Trends – Females

- All cancers combined decreased 0.7% per year.
- Multiple myeloma decreased 4.7% per year.
- Pancreatic cancer increased 3.0% per year.
- Urinary bladder cancer decreased 3.1% per year.

Statistically Significant Mortality Trends – Females

- All cancers deaths combined decreased 1.7% per year.
- Breast cancer deaths decreased 1.5% per year.

RATES BY RACE/ETHNICITY: (*Unless otherwise noted, the term 'racial/ethnic groups' in this report refers to white non-Hispanic, black non-Hispanic, Asian non-Hispanic and Hispanic.*)

Males Incidence

- Black, non-Hispanic males had the highest total age-adjusted incidence rates, significantly higher than Asian, non-Hispanic and Hispanic males.
- Cancers of prostate, bronchus and lung, and colon/rectum were the top 3 leading cancer types in each racial/ethnic group except White, non-Hispanics. For White, non-Hispanic males, urinary bladder cancer was among the top 3, (after prostate and bronchus and lung).
- White, non-Hispanic males had significantly higher rates of cancers of the brain and other nervous system, esophagus, leukemia, oral cavity and pharynx, and urinary bladder when compared to all other race/ethnic groups.

- Black, non-Hispanic males had significantly higher rates of multiple myeloma and prostate cancer when compared to all other race/ethnic groups.
- Black, non-Hispanic, Asian, non-Hispanic, and Hispanic males had significantly higher rates of liver and intrahepatic bile duct cancer when compared to white, non-Hispanic males.

Males Mortality

- Black, non-Hispanic males had the highest total cancer mortality rate, significantly higher compared to Asian, non-Hispanics and Hispanic but not significantly higher than white, non-Hispanic males.
- Cancer of the bronchus and lung was the leading cause of cancer death for each racial/ethnic group. White and black, non-Hispanics had comparable rates but significantly elevated rates compared to the other two racial/ethnic groups.
- The mortality rate for prostate cancer was significantly elevated among black, non-Hispanic males compared to the other racial/ethnic groups.
- The mortality rate for liver and intrahepatic cancer was highest among Asian, non-Hispanics, significantly elevated compared to white, non-Hispanics and Hispanics, but not compared to black, non-Hispanics.

Females Incidence

- White, non-Hispanic females had the highest total age-adjusted incidence rates, significantly higher than those of all other racial/ethnic groups.
- Breast cancer was the most commonly diagnosed cancer for each racial/ethnic group.
- The second most common cancer diagnosed was bronchus and lung for each racial/ethnic group except Hispanics. Thyroid was the second most common cancer for Hispanics, followed by bronchus and lung.
- Compared to all other racial/ethnic groups, white, non-Hispanic females had significantly higher rates of the following cancer types: invasive breast, *in situ* breast, and bronchus and lung.
- Black, non-Hispanic females had significantly higher rates of multiple myeloma compared to all other racial/ethnic groups.
- Black, non-Hispanic and Hispanic females had significantly higher rates of cervical cancer compared to white, non-Hispanic females, but not compared to Asian, non-Hispanic females.
- Asian, non-Hispanic females had significantly higher liver and intrahepatic bile duct cancer rates compared to white non-Hispanics and black non-Hispanics, but not compared to Hispanics.
- Hispanic females had significantly higher rates of multiple myeloma compared to white, non-Hispanic and Asian, non-Hispanic females, but not compared to Black, non-Hispanic females.

Females Mortality

- Black and white, non-Hispanic females had the highest total cancer mortality rates, significantly higher than for Asian, non-Hispanic and Hispanic females.

- Cancer of the bronchus and lung was the leading cause of cancer death among all racial/ethnic groups. White, non-Hispanic females had significantly elevated rates compared to the other racial/ethnic groups.
- Black, non-Hispanic females had significantly elevated uterine cancer and multiple myeloma mortality rates when compared to the other racial/ethnic groups. Their breast cancer mortality rate was significantly elevated compared to that of Asian, non-Hispanic and Hispanic females, but was not significantly elevated compared to white, non-Hispanic females.

MASSACHUSETTS VS. NATIONAL RATES

Males and Females Incidence

Overall age-adjusted cancer incidence rates in Massachusetts were significantly lower than national rates for males, and were significantly higher than national rates for females. Among the cancers significantly elevated for females were invasive and *in situ* breast, bronchus and lung, uterine, esophageal, oral cavity and pharynx, thyroid, and urinary bladder. Among those cancers significantly elevated for males were esophageal, liver and intrahepatic bile ducts, testicular, thyroid and urinary bladder. Incidence rates that were significantly lower compared to the U.S. among females were cervix uteri, colon and rectum, leukemia, and liver and intrahepatic bile ducts, while among males the cancer types included bronchus and lung, colon and rectum, larynx, leukemia, melanoma of skin, and prostate.

Males and Females Mortality

Overall age-adjusted cancer mortality rates in Massachusetts were significantly lower from national rates for both males and females. However, male esophageal cancer mortality rates were significantly elevated compared to the U.S. Several cancers had significantly lower mortality rates compared to the U.S. For males, these were colon/rectum, bronchus and lung, kidney and renal pelvis, larynx, multiple myeloma, non-Hodgkin lymphoma, and prostate cancer. For females, these were breast, cervix uteri, colon/rectum, kidney and renal pelvis, and liver and intrahepatic bile duct cancer.

INTRODUCTION

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, 2011-2015: 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 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 2011 through 2015;*
- Provides detailed information on the most commonly occurring types of cancer for 2011 through 2015;
- Examines cancer incidence patterns by age, sex, and race/ethnicity;
- Reviews Massachusetts cancer incidence and mortality trends for 2011 through 2015;
- Compares Massachusetts incidence and mortality data with respective national data; and
- Features a special section on “Using Environmental Public Health Tracking for Radon Awareness and Cancer Prevention.”

The report is organized into the following sections:

- **SPECIAL OVERVIEW** which provides more detailed information on a specific topic of interest in Massachusetts. This report has a special overview of radon awareness and cancer prevention.
- **FIGURES & TABLES** which present cancer incidence and mortality data for 24 types of cancer for 2011-2015. 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** which 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.*

Note: For more detailed information on the methods of the Massachusetts Cancer Registry, please refer to *Cancer Incidence and Mortality in Massachusetts 2006-2010: Statewide Report (1)*. For national trends, please refer to the *Annual Report to the Nation on the Status of Cancer, 1975-2014, Featuring Survival (2)*.

SPECIAL OVERVIEW:

Using Environmental Public Health Tracking for Radon Awareness and Cancer Prevention

Using Environmental Public Health Tracking for Radon Awareness and Cancer Prevention

The Massachusetts Environmental Public Health Tracking (EPHT) website (www.mass.gov/dph/matracking) hosted by the Massachusetts Department of Public Health/Bureau of Environmental Health (MDPH/BEH) and funded by the U.S. Centers for Disease Control and Prevention (CDC) provides an opportunity for the public to look at environmental data and chronic disease rates statewide and locally.



Chronic diseases - such as heart disease, stroke, cancer, and diabetes - are among the most prevalent, costly, and preventable of all health problems. With the help of MA EPHT, we can reduce the burden of these diseases by using data to:

- Inform decision makers
- Develop stronger, evidence-based programs, targeted interventions, and policies
- Evaluate programs and progress

In support of the goals of the 2017-2021 Massachusetts State Cancer Plan, the MA EPHT website provides information on both cancer incidence and radon to fulfill the objectives to:

- 1) Reduce exposure to radon by increasing testing in homes, and
- 2) Provide access to information on cancer risks from environmental exposures to increase awareness and prevention.

Cancer Incidence Data on MA EPHT

Cancer incidence data is just one of many health datasets that are available on the MA EPHT website. Two different types of statistics are presented for many different cancer types and are calculated using data from the MCR:

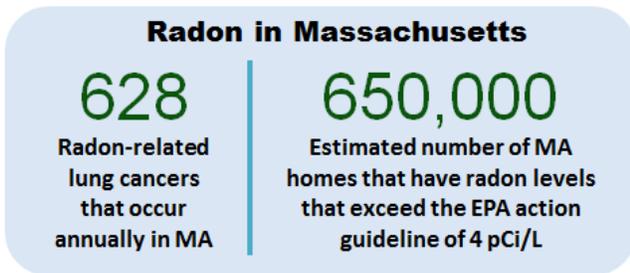
Direct Age-Adjusted Incidence Rates - These are most appropriate for large, stable study populations such as a states or counties. They may be used to compare cancer incidence in one relatively large area to another relatively large area (such as one county to another).

Standardized Incidence Ratios (SIRs) - These are most appropriate for small areas, such as communities or census tracts within a community. They are used to evaluate whether the incidence of cancer within a small area differs from that of the state as a whole.

This information may be viewed and downloaded as maps, tables, and charts.

Radon Information on MA EPHT

Did you know that radon is the second leading cause of lung cancer in the U.S.? The U.S. Environmental Protection Agency (EPA) estimates that over 21,000 lung cancer deaths in the U.S. each year are related to radon.



Radon gas decays into microscopic particles that can be inhaled into the lungs. Radon particles trapped in the lungs continue to breakdown, damaging the lung tissue during this decay process. This damage increases the risk of developing lung cancer. Among people who have never smoked, radon is the leading cause of lung cancer.

Radon also increases the chance of lung cancer in people that smoke. For those who are exposed to elevated indoor radon levels, people who smoke have up to 10 times the risk of developing lung cancer than people who have never smoked. The MA EPHT website provides information on radon as well as a radon risk table and a map of radon zones in Massachusetts.

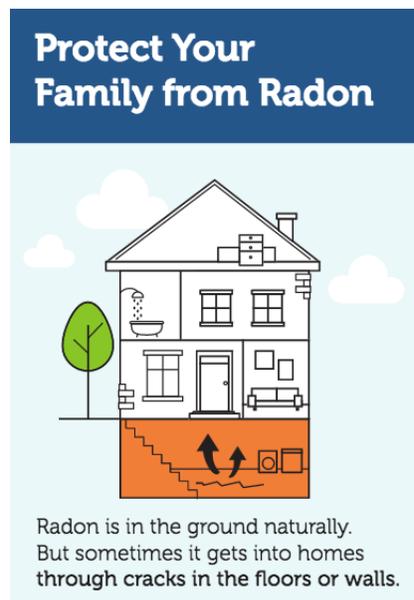
How does radon enter homes?

Radon is a naturally occurring radioactive gas that is odorless, colorless, and tasteless. As a gas, radon can move through pathways in soil and rock formations.

Radon can enter homes through:

- cracks and crevices in the foundation floors and walls
- floor wall joints
- penetrations of utility lines and sump holes
- private water well

Once inside an enclosed space, such as a home, radon can collect. Most radon gas found in a home comes up from the ground, so the amount of radon is likely to be greater in the lowest levels of the home. Radon levels are usually higher in the winter time because, during the heating season, warm air rises and escapes. This creates a vacuum in the lowest part of the house that causes the house to draw air, including radon, from below the home. Any equipment that exhausts air or requires venting can also contribute to the vacuum effect.



Testing the air in a home is the only way to know if indoor radon levels are elevated. If you test your home in warm weather and get a low result, it is wise to test again during the heating season. If you have a private well, you should have your water tested for radon too. For more information, see the resources listed below.

For More Information

MDPH Resources:

- Massachusetts Environmental Public Health Tracking (MA EPHT): www.mass.gov/dph/matracking
- Massachusetts State Cancer Plan: www.mass.gov/2017-2021-massachusetts-cancer-plan
- MDPH/BEH Radon Fact Sheet: <http://www.mass.gov/eohhs/docs/dph/environmental/iaq/radon-fact-sheet-2016.pdf>
- Massachusetts Cancer Registry (MCR): www.mass.gov/dph/mcr

Additional Resources:

- CDC's National Environmental Public Health Tracking (EPHT) Program: www.cdc.gov/nceh/tracking
- EPA's Citizen's Guide to Radon: www.epa.gov/radon/pubs/citguide.html
- EPA's Home Buyer's and Seller's Guide to Radon: <https://www.epa.gov/radon/home-buyers-and-sellers-guide-radon>
- MassDEP's Guide to Water Quality Testing for Private Wells: <http://www.mass.gov/eea/agencies/massdep/water/drinking/protect-your-family-a-guide-to-water-quality-testing-f.html>

Contact:

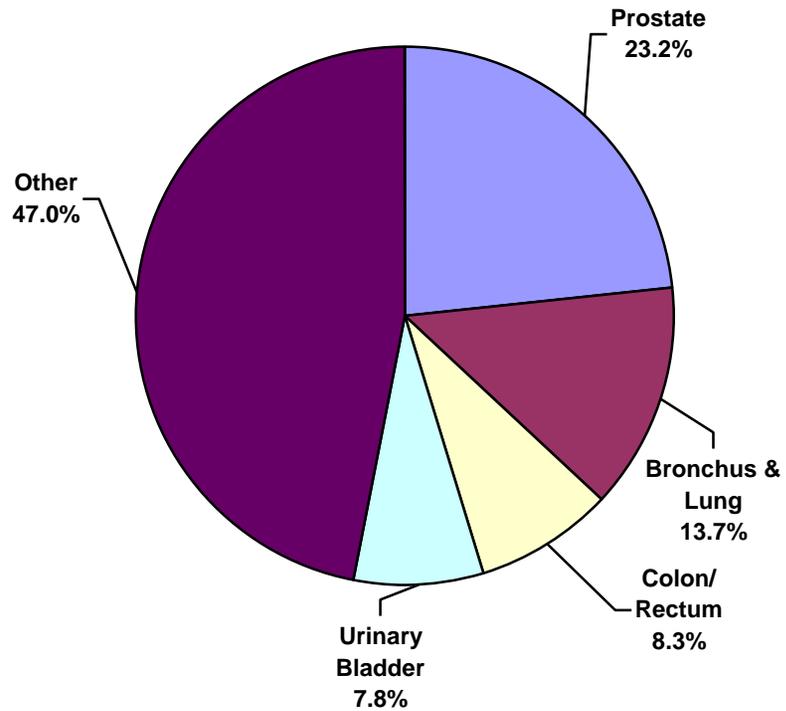
- Bureau of Environmental Health
Massachusetts Department of Public Health
www.mass.gov/dph/environmental_health
Phone: 617-624-5757 | Fax: 617-624-5183 | TTY: 617-624-5286
DPH-MA-EPHT@state.ma.us

- Radon Unit
Massachusetts Department of Public Health/Bureau of Environmental Health
www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/exposure-topics/iaq/radon/
Phone: 1-800-RADON-95 or (800) 723-6695 or (413) 586-7525 ext. 3185
- Tobacco Cessation and Prevention Program
Massachusetts Department of Public Health
www.makesmokinghistory.org
Phone: 1-800-QUIT-NOW or (800) 784-8669

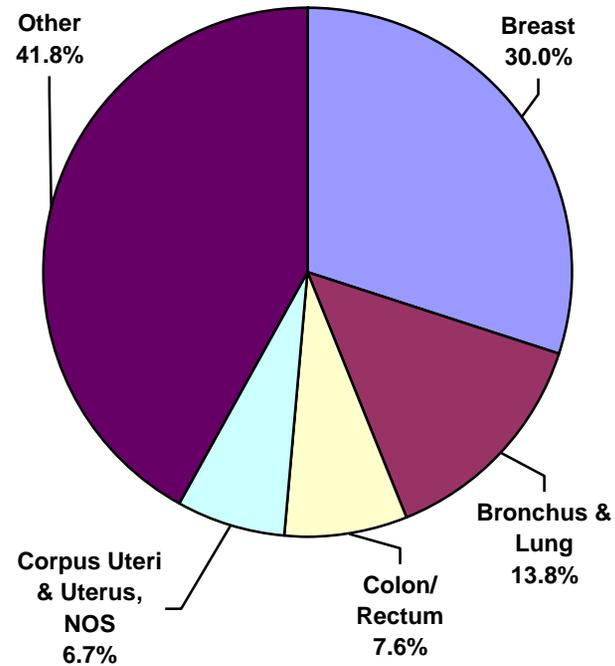
FIGURES & TABLES

Figure 1.
PERCENTAGE OF CANCER INCIDENT CASES BY CANCER TYPE AND SEX
Massachusetts, 2011-2015

MALES (N=87,884)

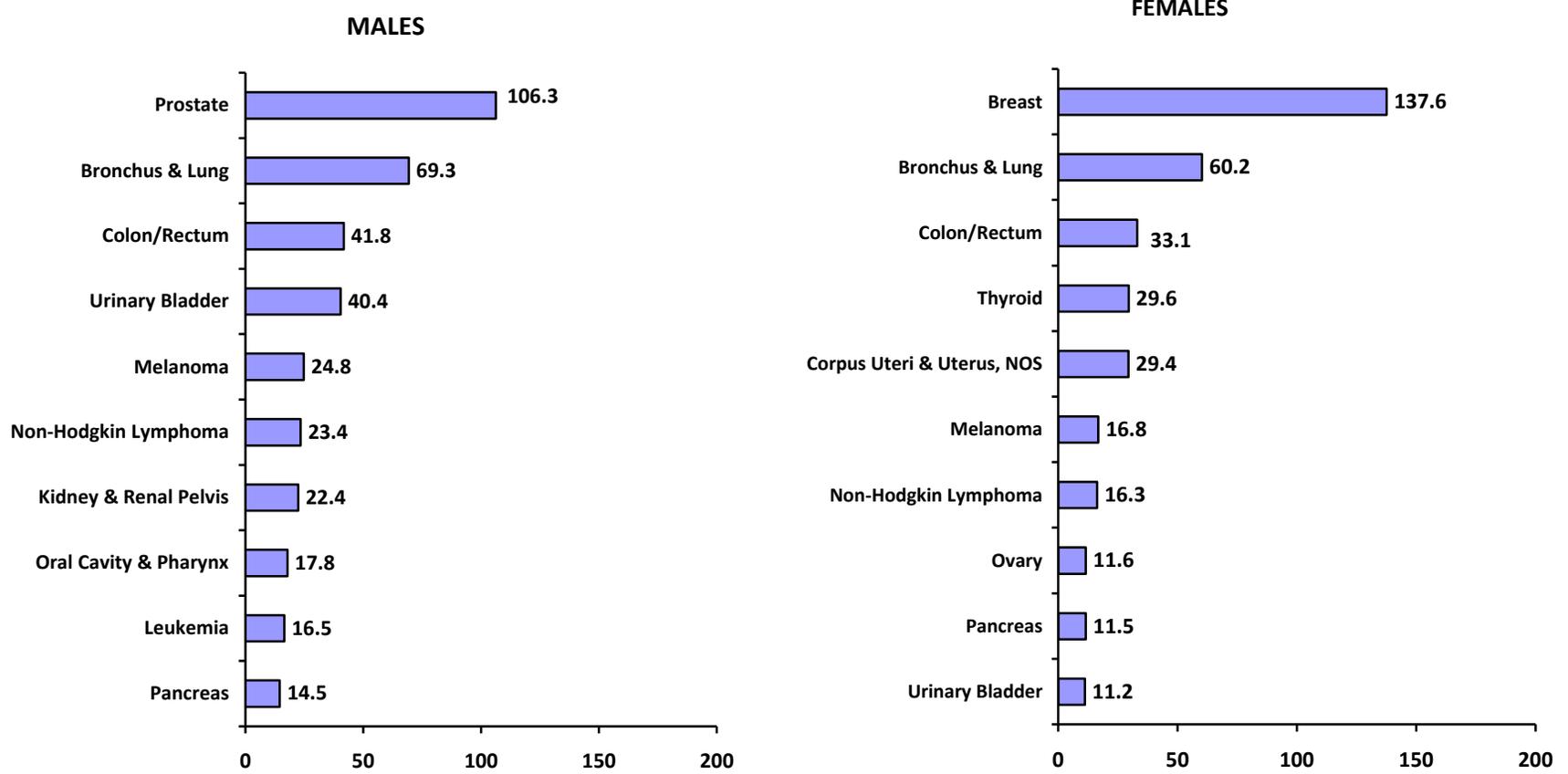


FEMALES (N=95,757)



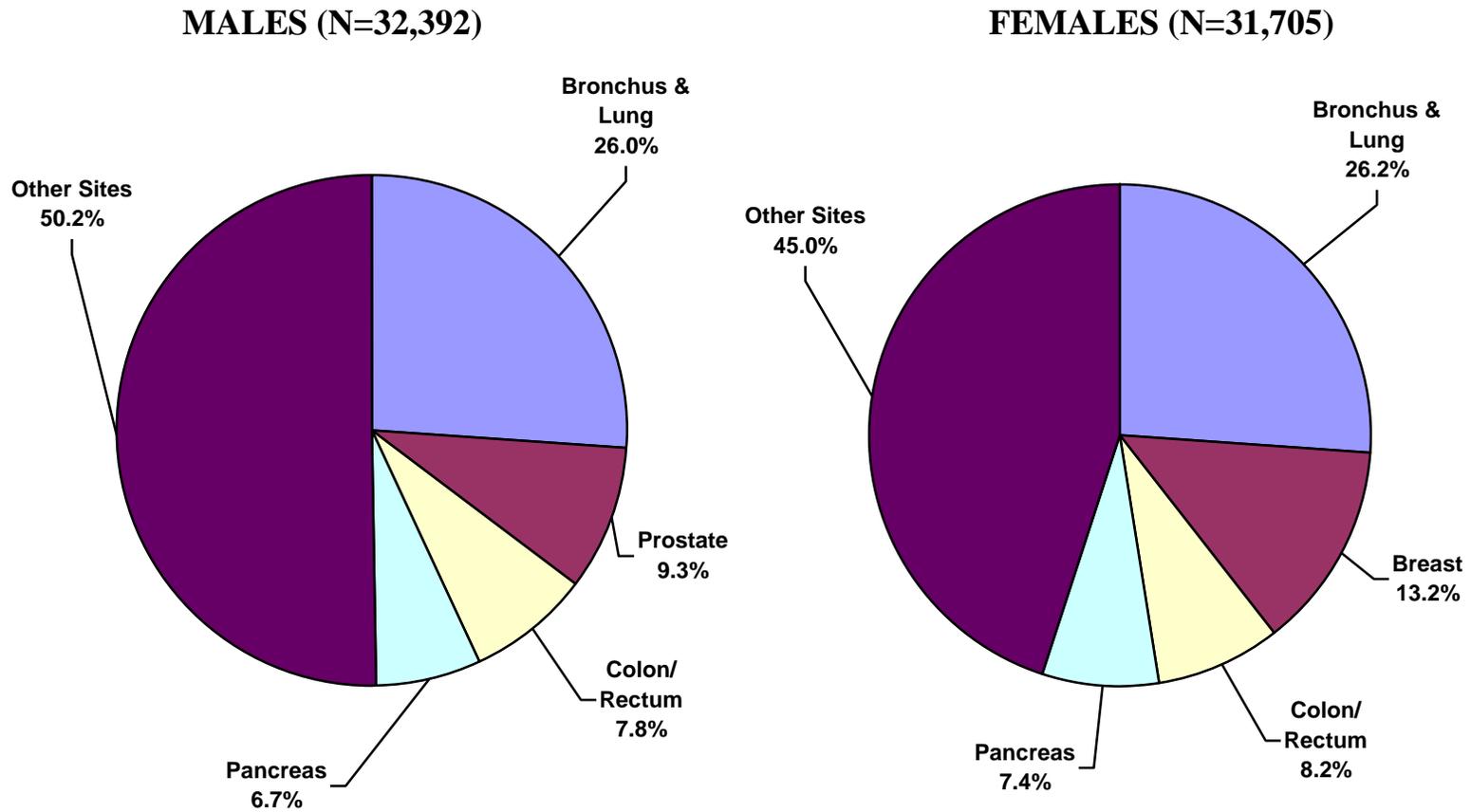
Source: Massachusetts Cancer Registry

Figure 2.
INCIDENCE RATES¹ FOR TEN LEADING CANCER TYPES BY SEX
Massachusetts, 2011-2015



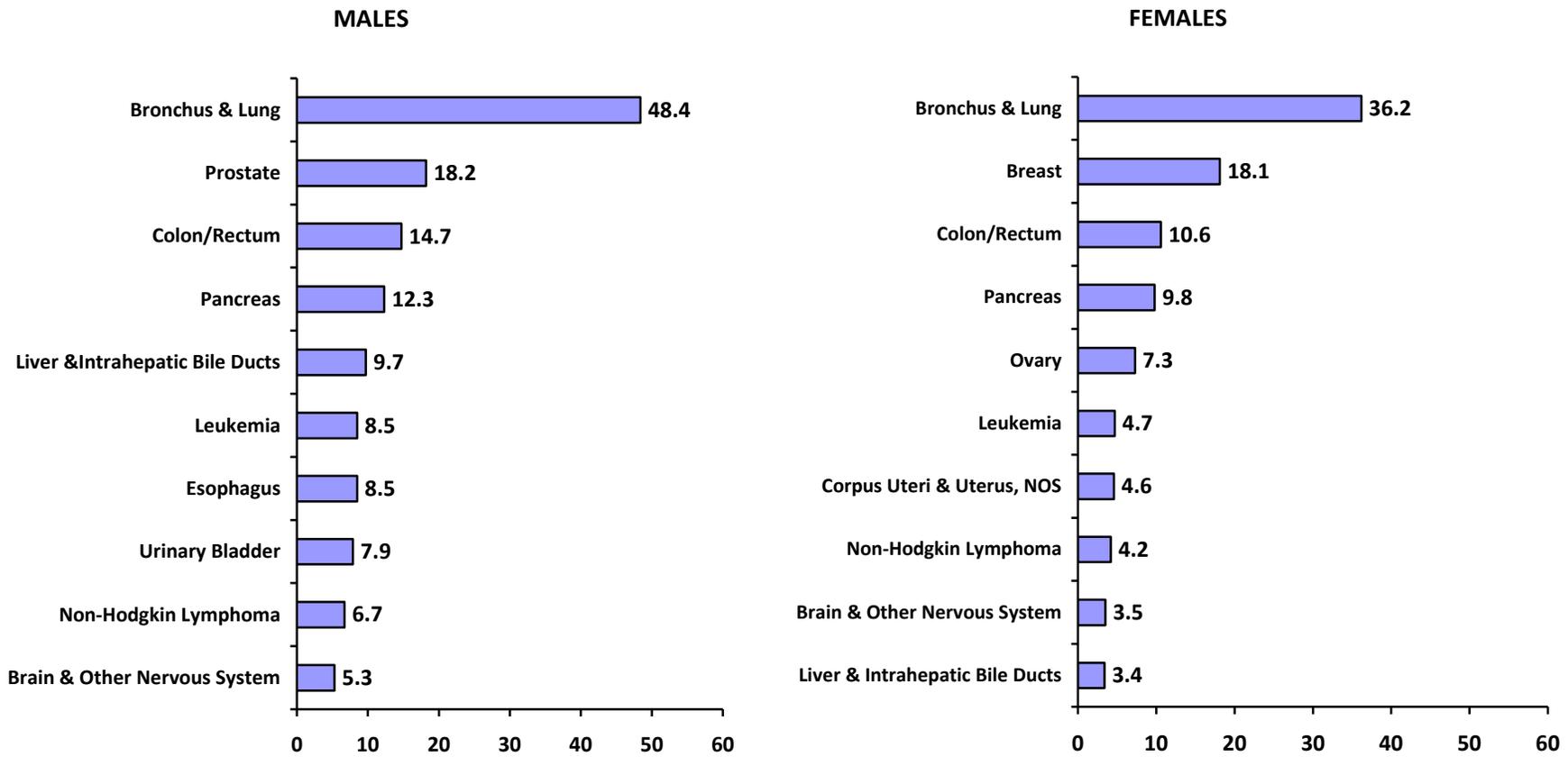
¹Rates are age-adjusted to the 2000 U.S. Standard Population. NOS – Not Otherwise Specified.
 Source: Massachusetts Cancer Registry

Figure 3.
PERCENTAGE OF CANCER DEATHS BY CANCER TYPE AND SEX
Massachusetts, 2011-2015



Source: Massachusetts Vital Statistics

Figure 4.
MORTALITY RATES¹ FOR TEN LEADING CANCER TYPES BY SEX
Massachusetts, 2011-2015



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

Table 1.
Massachusetts, 2011-2015
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGE AT DIAGNOSIS FOR SELECTED CANCER SITES
MALES

Cancer Site / Type	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+	Median Age
All Sites	28.4	13.9	11.9	23.5	38.5	55.1	74.3	98.5	161.1	280.6	552.0	899.5	1342.4	1839.5	2405.9	2665.8	2821.0	2807.7	66
Brain & Other Nervous System	5.2	3.8	2.7	2.8	2.5	4.9	4.1	3.5	4.4	5.9	8.6	11.5	16.5	20.4	27.2	29.5	31.0	21.3	60
Breast	--	0.1	--	--	--	--	0.3	0.2	0.6	0.9	1.3	2.1	3.3	5.0	7.8	5.9	11.0	8.5	68
Breast <i>in situ</i> ²	--	--	--	--	--	--	--	0.1	0.2	0.1	0.2	0.3	0.3	0.4	1.0	1.4	0.4	0.8	68
Bronchus & Lung	0.1			0.1	0.5	0.5	1.5	2.7	7.6	19.2	50.5	101.9	160.1	259.7	414.5	514.1	547.4	441.4	71
Colon / Rectum	--	--	0.1	0.5	0.8	2.4	5.6	9.5	21.1	33.7	67.1	66.5	85.4	123.5	176.1	217.8	261.6	331.8	67
Esophagus	--	--	--	--	0.1	0.2	0.3	0.8	1.9	6.1	9.5	19.6	30.7	36.8	54.7	51.8	58.7	51.1	67
Hodgkin Lymphoma	--	0.5	1.1	2.7	5.4	5.6	4.9	2.9	3.6	3.4	2.7	3.1	4.3	4.2	5.2	5.9	3.8	3.6	42
Kidney & Renal Pelvis	2.8	0.6	0.1	0.3	0.5	1.5	3.5	8.2	14.8	22.3	35.4	46.8	63.4	80.9	98.8	102.0	90.9	66.9	63
Larynx	--	--	0.1	--	--	0.2	0.3	0.5	0.8	2.8	6.5	14.1	16.8	23.1	29.6	29.5	34.8	18.9	66
Leukemia	8.5	3.8	2.5	3.8	3.0	3.1	3.9	3.5	7.3	9.9	12.0	20.6	33.1	47.7	67.8	91.5	101.5	114.8	67
Liver & Intrahepatic Bile Ducts	1.3	--	0.3	0.3	0.4	0.2	0.4	1.3	2.1	6.1	18.1	39.2	52.0	49.9	51.1	63.5	65.1	47.5	64
Melanoma of Skin		0.1		0.4	1.6	3.7	6.5	7.5	12.2	18.5	26.2	42.4	54.5	76.8	109.1	142.5	160.9	153.8	67
Multiple Myeloma	--	--	--	--	--	0.3	0.2	1.2	2.6	6.2	8.2	14.0	21.3	27.5	43.1	44.2	60.2	46.7	67
Non-Hodgkin Lymphoma	1.4	1.4	1.3	2.5	4.0	2.9	5.7	9.0	12.2	16.4	24.8	36.4	50.7	73.2	96.0	118.7	157.1	146.6	66
Oral Cavity & Pharynx	--	0.2	0.1	0.4	0.6	1.4	2.1	3.5	8.6	20.6	33.9	48.0	61.6	65.1	68.2	74.2	56.4	49.1	62
Pancreas	--	--	0.1	--	0.1	0.2	0.6	1.4	3.3	8.0	13.6	25.4	35.3	54.2	71.4	87.5	104.1	108.7	69
Prostate	0.1	--	--	--	--	--	0.1	0.3	8.1	34.7	142.4	272.9	447.9	589.9	621.9	479.9	316.1	324.2	65
Stomach	--	--	--	0.1	--	0.4	1.0	1.9	2.8	5.1	9.7	14.7	20.9	31.3	47.1	55.8	66.2	70.9	69
Testis	0.3	0.1	0.1	2.9	11.0	16.2	14.9	14.0	10.7	8.3	6.7	3.5	2.2	1.5	1.6	0.6	1.5	1.2	35
Thyroid	0.2	--	0.4	1.1	3.4	6.0	9.9	13.6	15.3	16.4	17.1	22.2	22.1	23.1	24.5	23.2	19.3	8.1	54
Urinary Bladder	--	--	--	0.3	0.6	0.7	1.3	2.4	5.8	12.2	26.4	43.3	82.0	135.9	221.5	281.3	344.5	405.1	72
Other Sites	8.4	3.1	3.0	5.5	4.1	4.8	7.2	10.4	15.1	23.7	31.2	51.5	78.3	109.8	168.6	246.4	329.0	387.4	70

¹ per 100,000 ² Breast *in situ* is excluded from 'All Sites'. ³ Dashes indicate age groups with no incident cases. Source: Massachusetts Cancer Registry

Table 2.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGE AT DIAGNOSIS FOR SELECTED CANCER SITES
Massachusetts, 2011-2015
FEMALES

Cancer Site / Type	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+	Median Age
All Sites	23.6	12.4	15.8	21.4	44.5	75.4	129.4	201.2	330.7	473.7	659.0	812.1	1090.2	1462.4	1827.6	2038.6	2079.2	1799.4	66
Brain & Other Nervous System	3.6	3.7	3.6	2.8	2.4	2.7	3.2	3.8	4.7	4.2	5.7	8.7	11.4	14.7	17.5	19.3	21.9	17.1	61
Breast	--	--	0.1	0.1	1.8	10.7	30.4	70.6	141.2	216.0	254.4	274.1	365.8	465.7	508.3	490.2	451.2	322.1	62
Breast <i>in situ</i> ²	--	--	--	0.2	0.2	1.1	4.9	14.0	65.1	101.8	101.3	93.3	101.9	124.3	115.1	104.5	64.6	25.8	57
Bronchus & Lung	0.1	--	0.1	0.4	0.5	0.4	0.8	2.9	10.3	23.9	57.7	95.5	145.1	238.7	383.1	435.7	396.5	267.0	71
Cervix Uteri	--	--	--	0.1	0.4	2.6	6.7	8.9	10.4	8.9	8.4	6.7	9.0	9.6	7.5	7.3	8.7	7.4	51
Colon / Rectum	--	0.1	0.3	0.7	1.2	2.5	5.0	11.3	20.7	28.6	52.1	46.4	60.5	86.3	129.9	181.7	222.7	254.7	71
Corpus Uteri & Uterus, NOS	--	--	0.1	--	0.2	1.9	2.7	9.7	14.8	26.8	52.9	81.6	112.6	135.1	124.4	96.5	84.3	52.8	63
Esophagus	--	--	--	--	--	--	0.3	--	0.8	1.2	1.2	3.5	6.3	9.4	13.0	11.8	13.9	14.2	71
Hodgkin Lymphoma	--	--	0.9	3.4	6.0	4.3	3.9	2.9	3.0	1.4	2.4	2.8	2.9	2.5	2.8	3.4	4.5	1.7	38
Kidney & Renal Pelvis	1.9	0.8	0.3	0.3	0.3	1.3	2.6	4.2	7.1	10.0	16.3	20.8	27.2	35.7	46.4	54.1	47.2	35.1	66
Larynx	--	--	--	--	--	--	--	0.1	0.2	1.0	2.9	4.5	2.9	6.7	8.3	5.6	4.5	5.5	67
Leukemia	7.6	4.1	1.9	1.2	2.8	3.2	2.4	3.5	5.0	5.3	9.1	13.7	18.4	24.6	34.1	50.4	54.4	61.5	68
Liver & Intrahepatic Bile Ducts	0.3	--	0.2	0.3	0.3	0.1	0.5	0.5	1.1	1.7	4.1	8.6	12.9	12.4	15.1	22.5	23.1	19.9	68
Melanoma of Skin	0.2	0.2	0.5	0.7	4.1	9.8	12.7	11.1	16.7	19.9	25.8	29.6	37.1	42.1	50.5	56.4	65.9	58.7	61
Multiple Myeloma	--	--	--	--	--	0.3	0.2	1.0	1.2	3.2	6.1	9.9	13.4	20.9	23.3	31.3	35.8	31.5	70
Non-Hodgkin Lymphoma	0.1	0.6	0.9	1.2	1.8	2.5	3.7	5.9	8.9	12.7	19.7	26.6	40.7	53.9	66.8	82.4	105.2	80.9	68
Oral Cavity & Pharynx	--	--	0.3	0.5	0.6	0.8	1.8	2.6	4.1	6.2	10.6	15.3	18.9	25.8	29.3	31.3	31.1	32.5	66
Ovary	0.2	0.1	0.5	1.1	1.5	2.4	3.7	4.5	6.2	13.8	22.3	25.4	30.5	35.4	42.4	48.3	44.7	38.9	63
Pancreas	--	--	--	0.1	0.1	--	0.5	1.4	2.3	4.2	9.4	15.2	24.7	42.7	61.4	75.3	89.5	101.4	74
Stomach	--	--	--	0.2	0.4	0.4	0.5	1.5	3.4	4.2	4.7	7.6	9.0	12.9	19.3	24.2	33.1	35.3	71
Thyroid	0.2	0.1	1.9	4.5	17.0	24.4	40.1	43.8	49.8	54.5	52.1	48.5	46.1	47.8	41.1	36.5	24.4	12.7	50
Urinary Bladder	--	--	0.3	0.3	0.2	0.1	0.5	1.1	2.4	3.2	9.0	16.2	26.0	38.1	62.4	79.2	88.7	81.1	73
Other Sites	9.3	2.7	3.7	3.5	2.9	4.9	7.2	10	16.4	23.0	31.8	51.0	68.9	101.1	140.8	195.2	228.0	267.0	71

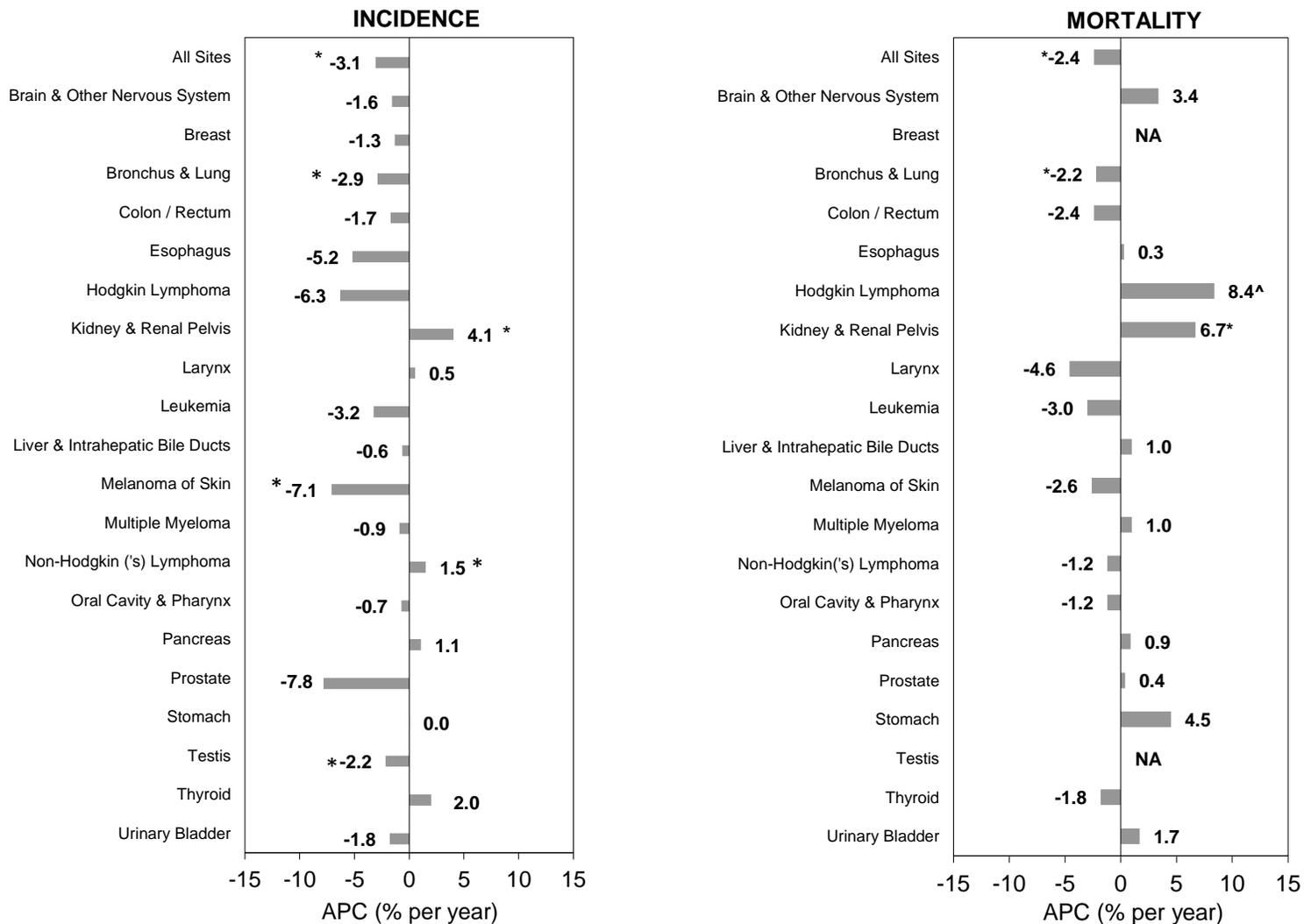
¹ per 100,000 ² Breast *in situ* is excluded from 'All Sites'. ³ Dashes indicate age groups with no incident cases. Source: Massachusetts Cancer Registry

Table 3.
AGE-SPECIFIC INCIDENCE RATES¹ AND MEDIAN AGE AT DIAGNOSIS FOR SELECTED CANCER SITES
Massachusetts, 2011-2015
TOTAL

Cancer Site / Type	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+	Median Age
All Sites	26.1	13.1	13.8	22.5	41.5	65.3	102.2	150.9	248.2	379.6	606.9	854.4	1210.5	1639.0	2089.5	2308.9	2373.4	2122.7	66
Brain & Other Nervous System	4.4	3.7	3.1	2.8	2.4	3.8	3.6	3.7	4.6	5.1	7.1	10.0	13.8	17.4	21.9	23.7	25.5	18.5	60
Breast	--	0.1	0.1	0.0	0.9	5.4	15.5	36.1	72.7	111.1	131.2	142.9	193.2	250.1	281.9	281.5	276.7	221.6	62
Breast <i>in situ</i> ²	--	--	--	0.1	0.1	0.6	2.5	7.2	33.5	52.2	52.0	48.4	53.5	66.3	63.5	60.1	39.2	17.8	57
Bronchus & Lung	0.1	--	0.1	0.3	0.5	0.5	1.1	2.8	9.0	21.6	54.2	98.7	152.3	248.5	397.4	469.5	456.3	322.9	71
Cervix Uteri	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Colon / Rectum	--	0.1	0.2	0.6	1.0	2.5	5.3	10.4	21.0	31.1	59.4	56.1	72.3	103.7	150.8	197.3	238.1	279.4	69
Corpus Uteri & Uterus, NOS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Esophagus	--	--	--	--	0.0	0.1	0.3	0.4	1.3	3.6	5.2	11.2	17.9	22.3	31.9	29.1	31.7	26.1	68
Hodgkin Lymphoma	--	0.3	1.0	3.1	5.7	5.0	4.4	2.9	3.3	2.4	2.6	2.9	3.5	3.4	3.9	4.5	4.2	2.3	40
Kidney & Renal Pelvis	2.4	0.7	0.2	0.3	0.4	1.4	3.1	6.2	10.9	16.0	25.6	33.3	44.5	56.9	70.1	74.7	64.5	45.3	64
Larynx	--	--	0.1	--	--	0.1	0.1	0.3	0.5	1.8	4.7	9.1	9.5	14.4	17.9	15.9	16.5	9.8	66
Leukemia	8.1	4.0	2.2	2.5	2.9	3.1	3.2	3.5	6.1	7.5	10.5	17.0	25.4	35.4	49.3	68.1	73.1	78.6	67
Liver & Intrahepatic Bile Ducts	0.8	--	0.3	0.3	0.4	0.1	0.4	0.9	1.6	3.9	10.9	23.4	31.6	30.0	31.4	40.2	39.8	28.8	64
Melanoma of Skin	0.1	0.2	0.3	0.6	2.8	6.8	9.6	9.3	14.5	19.2	26.0	35.8	45.4	58.3	77.0	93.5	103.7	89.2	65
Multiple Myeloma	--	--	--	--	--	0.3	0.2	1.1	1.9	4.7	7.2	11.9	17.2	24.0	32.2	36.9	45.5	36.4	69
Non-Hodgkin Lymphoma	0.8	1.1	1.1	1.9	2.9	2.7	4.7	7.5	10.5	14.5	22.2	31.3	45.4	63.0	80.1	98.0	125.7	102.0	67
Oral Cavity & Pharynx	--	0.1	0.2	0.5	0.6	1.1	2.0	3.1	6.3	13.2	21.9	31.0	39.2	44.2	46.9	49.8	41.1	37.8	63
Ovary	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pancreas	--	--	0.1	0.0	0.1	0.1	0.5	1.4	2.8	6.0	11.4	20.1	29.8	48.1	65.9	80.6	95.3	103.8	71
Prostate	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Stomach	--	--	0.1	0.1	0.2	0.4	0.8	1.7	3.1	4.6	7.1	11.0	14.6	21.5	31.9	37.8	46.2	46.7	70
Testis	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thyroid	0.2	0.1	1.2	2.8	10.2	15.2	25.2	29.0	33.0	35.9	35.1	35.8	34.7	36.3	33.6	30.8	22.4	11.2	51
Urinary Bladder	--	--	0.2	0.3	0.4	0.4	0.9	1.7	4.1	7.6	17.5	29.2	52.7	83.9	134.4	166.3	190.1	184.9	72
Other Sites	8.9	2.9	3.4	4.5	3.5	4.8	7.2	10.2	15.7	23.4	31.5	51.3	73.4	105.2	153.5	217.3	268.0	305.7	70

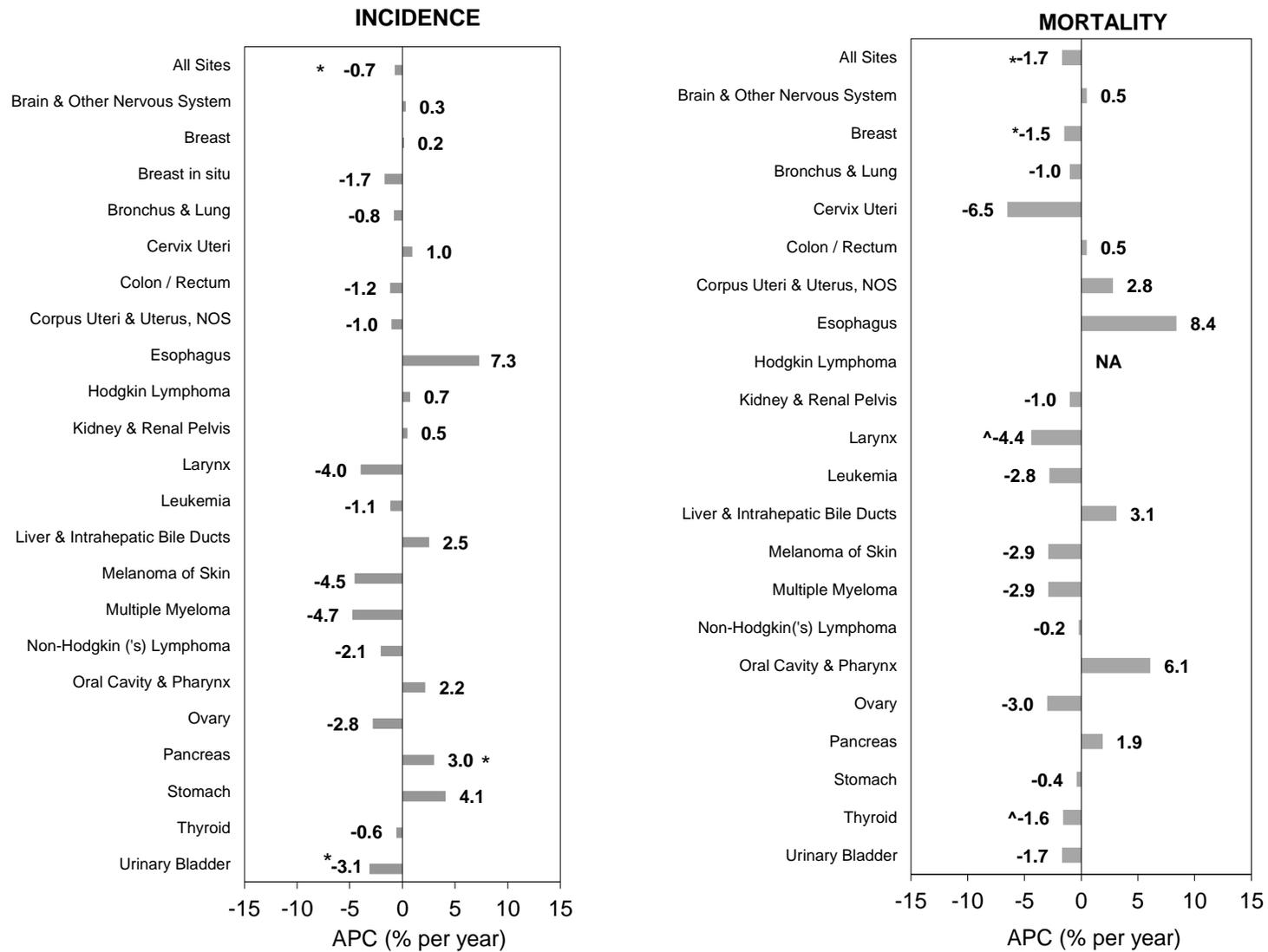
¹ per 100,000 ² Breast *in situ* is excluded from 'All Sites'. ³ Dashes indicate age groups with no incident cases or cancers found in only one sex. Source: Massachusetts Cancer Registry

Figure 5.
ANNUAL PERCENT CHANGE (APC) IN AGE-ADJUSTED CANCER RATES AMONG MALES
Massachusetts, 2011-2015



*APC is statistically significant ($p \leq 0.05$). Values appearing directly on a bar have been bolded for ease of reading only. ^ indicates a medium reliability trend (CV between 15 and 30). NA indicates an unreliable trend (CV greater than 30) therefore the APC is not presented. Source: Massachusetts Cancer Registry

Figure 6.
ANNUAL PERCENT CHANGE (APC) IN AGE-ADJUSTED CANCER RATES AMONG FEMALES
Massachusetts, 2011-2015



*APC is statistically significant ($p \leq 0.05$). Values appearing directly on a bar have been bolded for ease of reading only. ^ indicates a medium reliability trend (CV between 15 and 30). NA indicates an unreliable trend (CV greater than 30) therefore the APC is not presented. Source: Massachusetts Cancer Registry.

Table 4.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2011-2015
MALES

Cancer Site / Type	2011	2012	2013	2014	2015
All Sites	538.9	500.6	483.5	480.9	470.4
Brain & Other Nervous System	7.9	7.4	9.1	7.6	7.2
Breast	1.5	1.2	1.5	1.4	1.3
Breast <i>in situ</i>³	0.2	0.2	0.1	0.1	0.3
Bronchus & Lung	74.5	71.2	67.1	68.6	65.5
Colon / Rectum	43.5	42.2	40.7	44.2	39.0
Esophagus	11.0	9.8	9.8	9.2	8.7
Hodgkin Lymphoma	3.6	3.6	3.1	3.1	2.8
Kidney & Renal Pelvis	20.6	20.9	23.2	23.3	23.8
Larynx	5.3	5.2	6.3	5.7	5.2
Leukemia	17.3	17.6	16.0	16.4	15.2
Liver & Intrahepatic Bile Ducts	12.4	14.2	12.5	12.5	12.8
Melanoma of Skin	29.2	25.8	25.0	22.8	21.5
Multiple Myeloma	8.0	8.2	8.9	7.5	8.0
Non-Hodgkin Lymphoma	22.6	22.9	23.6	24.0	23.8
Oral Cavity & Pharynx	18.0	18.7	16.7	18.0	17.7
Pancreas	14.3	14.3	14.8	13.9	15.3
Prostate	138.2	107.0	97.7	93.3	98.4
Stomach	9.0	8.9	10.3	10.0	8.5
Testis	6.7	6.7	6.6	6.5	6.1
Thyroid	10.8	10.4	9.3	11.4	11.4
Urinary Bladder	41.6	42.4	39.7	39.1	39.6

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

²per 100,000 males

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

Source: Massachusetts Cancer Registry

Table 5.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2011-2015

FEMALES

Cancer Site / Type	2011	2012	2013	2014	2015
All Sites	457.4	457.0	447.3	447.3	446.0
Brain & Other Nervous System	6.3	5.6	6.1	5.6	6.4
Breast	137.3	137.1	137.4	138.7	137.6
Breast <i>in situ</i>³	41.6	42.6	42.6	40.9	39.0
Bronchus & Lung	60.8	61.1	60.8	58.7	59.6
Cervix Uteri	5.1	5.0	4.9	5.5	5.1
Colon / Rectum	34.3	33.2	33.2	32.3	32.8
Corpus Uteri & Uterus, NOS	31.2	28.3	29.8	27.6	30.0
Esophagus	2.0	1.7	2.4	2.6	2.3
Hodgkin Lymphoma	2.7	2.6	2.4	2.8	2.7
Kidney & Renal Pelvis	10.6	10.9	10.7	10.8	10.9
Larynx	1.4	1.8	1.2	1.2	1.4
Leukemia	10.2	9.9	10.2	9.0	10.1
Liver & Intrahepatic Bile Ducts	3.3	3.8	4.1	4.1	3.6
Melanoma of Skin	18.6	17.8	16.2	15.7	15.7
Multiple Myeloma	6.0	5.2	5.3	5.0	4.8
Non-Hodgkin Lymphoma	15.8	17.9	16.9	15.9	15.1
Oral Cavity & Pharynx	6.2	7.9	7.3	6.7	7.5
Ovary	12.1	12.9	10.5	11.3	11.2
Pancreas	10.9	11.0	11.6	12.2	12.0
Stomach	4.5	4.3	4.3	5.0	5.1
Thyroid	30.7	29.7	27.0	31.4	29.0
Urinary Bladder	12.1	11.7	10.8	10.9	10.7

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

²per 100,000 males

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

Source: Massachusetts Cancer Registry

Table 6.
ANNUAL AGE-ADJUSTED¹ INCIDENCE RATES² FOR SELECTED CANCER SITES
Massachusetts, 2011-2015
TOTAL

Cancer Site / Type	2011	2012	2013	2014	2015
All Sites	489.8	472.6	459.8	457.9	452.5
Brain & Other Nervous System	7.0	6.4	7.5	6.5	6.8
Breast	--	--	--	--	--
Breast <i>in situ</i>³	--	--	--	--	--
Bronchus & Lung	66.4	65.0	63.2	62.6	61.8
Cervix Uteri	--	--	--	--	--
Colon / Rectum	38.3	37.2	36.5	37.6	35.5
Corpus Uteri & Uterus, NOS	--	--	--	--	--
Esophagus	5.9	5.3	5.7	5.5	5.2
Hodgkin Lymphoma	3.1	3.1	2.7	3.0	2.8
Kidney & Renal Pelvis	15.3	15.5	16.4	16.5	16.8
Larynx	3.2	3.3	3.5	3.2	3.1
Leukemia	13.3	13.3	12.7	12.2	12.3
Liver & Intrahepatic Bile Ducts	7.5	8.5	8.0	7.9	7.7
Melanoma of Skin	23.0	21.0	19.8	18.7	18.0
Multiple Myeloma	6.9	6.5	6.9	6.1	6.2
Non-Hodgkin Lymphoma	18.7	20.0	19.9	19.5	18.9
Oral Cavity & Pharynx	11.6	12.9	11.7	11.9	12.3
Ovary	--	--	--	--	--
Pancreas	12.5	12.6	13.0	13.0	13.5
Prostate	--	--	--	--	--
Stomach	6.5	6.4	6.9	7.2	6.5
Testis	3.3	3.3	3.3	3.2	3.0
Thyroid	21.0	20.3	18.5	21.7	20.4
Urinary Bladder	24.6	24.8	23.1	22.8	23.0

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

²per 100,000 total population

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

⁴Dashes indicate cancers found in only one sex or predominantly in one sex (breast cancer).

Source: Massachusetts Cancer Registry

Table 7.
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2011-2015
MALES

Cancer Site / Type	2011	2012	2013	2014	2015
All Sites	197.5	190.1	185.9	184.6	177.1
Brain & Other Nervous System	5.0	5.0	5.2	5.2	5.8
Breast	0.2	0.4	0.4	0.4	0.1
Bronchus & Lung	47.6	48.3	46.2	45.7	43.7
Colon / Rectum	14.7	14.6	13.8	14.7	13.0
Esophagus	8.3	8.4	7.5	8.1	8.6
Hodgkin Lymphoma	0.2	0.3	0.3	0.3	0.3
Kidney & Renal Pelvis	4.0	4.5	4.7	5.3	5.1
Larynx	1.7	1.2	1.4	1.5	1.2
Leukemia	8.4	8.1	9.0	7.9	7.3
Liver & Intrahepatic Bile Ducts	9.0	8.8	10.2	9.5	9.1
Melanoma of Skin	3.7	3.7	4.0	3.8	3.2
Multiple Myeloma	3.8	3.7	3.3	4.1	3.8
Non-Hodgkin Lymphoma	7.2	5.9	6.2	6.4	6.5
Oral Cavity & Pharynx	3.5	3.6	3.5	3.2	3.5
Pancreas	11.8	11.2	12.4	11.7	12.1
Prostate	17.4	17.4	17.5	17.9	17.5
Stomach	3.7	3.9	3.4	4.1	4.5
Testis	0.1	0.2	0.2	0.03	0.1
Thyroid	0.7	0.6	0.7	0.5	0.7
Urinary Bladder	7.5	7.1	7.7	7.6	7.9

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

Source: Massachusetts Vital Statistics

Table 8
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2011-2015
FEMALES

Cancer Site / Type	2011	2012	2013	2014	2015
All Sites	139.4	138.6	136.2	130.1	131.8
Brain & Other Nervous System	3.6	3.4	3.4	3.4	3.7
Breast	18.1	18.2	17.6	17.3	17.2
Bronchus & Lung	35.7	35.9	34.5	34.5	34.6
Cervix Uteri	1.4	1.2	0.9	1.2	1.0
Colon / Rectum	9.9	10.6	11.0	10.1	10.4
Corpus Uteri & Uterus, NOS	4.3	3.9	4.8	4.3	4.7
Esophagus	1.4	1.4	1.2	1.9	1.8
Hodgkin Lymphoma	0.2	0.2	0.2	0.1	0.2
Kidney & Renal Pelvis	2.2	2.0	2.0	1.8	2.2
Larynx	0.5	0.3	0.4	0.3	0.4
Leukemia	4.7	4.9	5.0	4.2	4.4
Liver & Intrahepatic Bile Ducts	3.0	3.2	3.7	3.6	3.3
Melanoma of Skin	1.8	1.8	2.1	1.7	1.6
Multiple Myeloma	2.5	2.7	2.6	2.6	2.2
Non-Hodgkin Lymphoma	4.1	4.0	4.3	4.1	4.0
Oral Cavity & Pharynx	1.1	1.0	1.2	1.3	1.3
Ovary	7.8	6.7	7.6	6.5	6.8
Pancreas	9.4	9.3	8.9	9.5	10.2
Stomach	2.1	2.3	2.4	2.2	2.1
Thyroid	0.5	0.3	0.5	0.4	0.4
Urinary Bladder	2.3	2.5	2.6	2.1	2.3

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

² per 100,000 females

Source: Massachusetts Vital Statistics

Table 9.
ANNUAL AGE-ADJUSTED¹ MORTALITY RATES² FOR SELECTED CANCER SITES
Massachusetts, 2011-2015
TOTAL³

Cancer Site / Type	2011	2012	2013	2014	2015
All Sites	162.7	159.6	156.4	152.4	150.0
Brain & Other Nervous System	4.3	4.1	4.2	4.2	4.7
Breast	-	-	-	-	-
Bronchus & Lung	40.7	41.1	39.3	39.2	38.3
Cervix Uteri	-	-	-	-	-
Colon / Rectum	12.0	12.3	12.2	12.1	11.6
Corpus Uteri & Uterus, NOS	-	-	-	-	-
Esophagus	4.4	4.5	4.0	4.6	4.8
Hodgkin Lymphoma	0.2	0.2	0.2	0.2	0.2
Kidney & Renal Pelvis	3.0	3.1	3.2	3.4	3.5
Larynx	1.0	0.7	0.8	0.8	0.8
Leukemia	6.2	6.2	6.7	5.7	5.7
Liver & Intrahepatic Bile Ducts	5.7	5.7	6.7	6.2	5.8
Melanoma of Skin	2.6	2.6	2.9	2.6	2.3
Multiple Myeloma	3.1	3.2	2.9	3.2	2.9
Non-Hodgkin Lymphoma	5.4	4.8	5.1	5.1	5.1
Oral Cavity & Pharynx	2.2	2.2	2.3	2.2	2.3
Ovary	-	-	-	-	-
Pancreas	10.5	10.2	10.5	10.5	11.1
Prostate	-	-	-	-	-
Stomach	2.8	3.0	2.8	3.0	3.1
Testis	-	-	-	-	-
Thyroid	0.6	0.4	0.6	0.4	0.5
Urinary Bladder	4.4	4.3	4.7	4.3	4.5

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

² per 100,000 total population

³Dashes indicate cancers found in only one sex or predominantly in one sex (breast cancer).

Table 10.
FIVE LEADING CANCER INCIDENCE RATES BY RACE/ETHNICITY AND SEX
Massachusetts, 2011-2015

MALES

AGE-ADJUSTED¹ INCIDENCE RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Prostate 100.2	Prostate 182.5	Bronchus & Lung 57.7	Prostate 107.5
2	Bronchus & Lung 71.2	Bronchus & Lung 64.8	Prostate 56.5	Bronchus & Lung 38.9
3	Urinary Bladder 42.9	Colon / Rectum 46.9	Colon / Rectum 32.4	Colon / Rectum 35.3
4	Colon / Rectum 41.9	Kidney and Renal Pelvis 21.8	Liver and Intrahepatic Bile Ducts 25.9	Liver and Intrahepatic Bile Ducts 21.8
5	Melanoma of Skin 27.3	Liver and Intrahepatic Bile Ducts 19.4	Urinary Bladder 14.6	Non-Hodgkin Lymphoma 20.1

FEMALES

AGE-ADJUSTED¹ INCIDENCE RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Breast 143.7	Breast 121.5	Breast 90.8	Breast 90.0
2	Bronchus & Lung 63.8	Bronchus & Lung 43.3	Bronchus & Lung 33.1	Thyroid 28.5
3	Colon / Rectum 33.3	Colon / Rectum 35.4	Thyroid 29.6	Bronchus & Lung 27.8
4	Corpus Uteri & Uterus, NOS 30.4	Corpus Uteri & Uterus, NOS 26.7	Colon / Rectum 28.4	Colon / Rectum 25.3
5	Thyroid 29.7	Thyroid 22.8	Corpus Uteri & Uterus, NOS 15.4	Corpus Uteri & Uterus, NOS 21.2

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

² per 100,000

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

Source: Massachusetts Cancer Registry

Table 11.
NUMBER AND PERCENTAGE OF INCIDENT CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2011-2015
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	87884	100.0	76121	100.0	4535	100.0	2216	100.0	3344	100.0
Brain & Other Nervous System	1347	1.5	1193	1.6	46	1.0	32	1.4	65	1.9
Breast ³	242	0.3	210	0.3	12	0.3	11	0.5	9	0.3
Bronchus & Lung	11999	13.7	10799	14.2	503	11.1	364	16.4	281	8.4
Colon / Rectum	7291	8.3	6282	8.3	404	8.9	233	10.5	292	8.7
Esophagus	1747	2.0	1618	2.1	58	1.3	35	1.6	26	0.8
Hodgkin Lymphoma	547	0.6	445	0.6	32	0.7	17	0.8	48	1.4
Kidney & Renal Pelvis	4028	4.6	3506	4.6	198	4.4	80	3.6	189	5.7
Larynx	1013	1.2	896	1.2	41	0.9	6	0.3	56	1.7
Leukemia	2793	3.2	2441	3.2	111	2.4	72	3.2	104	3.1
Liver & Intrahepatic Bile Ducts	2436	2.8	1823	2.4	196	4.3	190	8.6	199	6.0
Melanoma of Skin	4305	4.9	4047	5.3	8	0.2	10	0.5	16	0.5
Multiple Myeloma	1429	1.6	1188	1.6	120	2.6	33	1.5	70	2.1
Non-Hodgkin Lymphoma	4045	4.6	3543	4.7	167	3.7	95	4.3	193	5.8
Oral Cavity & Pharynx	3327	3.8	2931	3.9	129	2.8	111	5.0	128	3.8
Pancreas	2556	2.9	2277	3.0	131	2.9	54	2.4	76	2.3
Prostate	20389	23.2	16641	21.9	1694	37.4	385	17.4	923	27.6
Stomach	1624	1.8	1266	1.7	138	3.0	83	3.7	111	3.3
Testis	1045	1.2	931	1.2	17	0.4	19	0.9	60	1.8
Thyroid	1851	2.1	1564	2.1	60	1.3	104	4.7	80	2.4
Urinary Bladder	6872	7.8	6422	8.4	136	3.0	89	4.0	141	4.2
Other Sites	6998	8.0	6098	8.0	334	7.4	193	8.7	277	8.3

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. ³Breast *in situ* cases are excluded from 'All Sites' and breast cancer counts.

Source: Massachusetts Cancer Registry

Table 12.
NUMBER AND PERCENTAGE OF INCIDENT CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2011-2015
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	95757	100.0	83467	100.0	4522	100.0	2760	100.0	3904	100.0
Brain & Other Nervous System	1169	1.2	1004	1.2	49	1.1	43	1.6	64	1.6
Breast ³	28737	30.0	25182	30.2	1391	30.8	871	31.6	1117	28.6
Bronchus & Lung	13239	13.8	12182	14.6	475	10.5	257	9.3	268	6.9
Cervix Uteri	949	1.0	658	0.8	93	2.1	72	2.6	119	3.0
Colon / Rectum	7284	7.6	6313	7.6	399	8.8	235	8.5	273	7.0
Corpus Uteri & Uterus, NOS	6463	6.7	5673	6.8	309	6.8	144	5.2	261	6.7
Esophagus	493	0.5	445	0.5	22	0.5	9	0.3	14	0.4
Hodgkin Lymphoma	472	0.5	385	0.5	22	0.5	12	0.4	51	1.3
Kidney & Renal Pelvis	2281	2.4	1975	2.4	129	2.9	41	1.5	111	2.8
Larynx	316	0.3	284	0.3	17	0.4	3	0.1	8	0.2
Leukemia	2064	2.2	1763	2.1	81	1.8	65	2.4	106	2.7
Liver & Intrahepatic Bile Ducts	847	0.9	646	0.8	59	1.3	70	2.5	61	1.6
Melanoma of Skin	3452	3.6	3197	3.8	12	0.3	6	0.2	38	1.0
Multiple Myeloma	1182	1.2	914	1.1	150	3.3	19	0.7	86	2.2
Non-Hodgkin Lymphoma	3536	3.7	3046	3.6	153	3.4	88	3.2	193	4.9
Oral Cavity & Pharynx	1552	1.6	1350	1.6	59	1.3	59	2.1	65	1.7
Ovary	2477	2.6	2159	2.6	107	2.4	88	3.2	91	2.3
Pancreas	2636	2.8	2323	2.8	140	3.1	67	2.4	83	2.1
Stomach	1027	1.1	766	0.9	94	2.1	74	2.7	83	2.1
Thyroid	5440	5.7	4266	5.1	274	6.1	315	11.4	432	11.1
Urinary Bladder	2526	2.6	2340	2.8	76	1.7	18	0.7	54	1.4
Other Sites	7615	8.0	6596	7.9	411	9.1	204	7.4	326	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. ³Breast *in situ* cases are excluded from 'All Sites' and from breast cancer counts.

Source: Massachusetts Cancer Registry

Table 13.
NUMBER AND PERCENTAGE OF INCIDENT CASES FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2011-2015
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	183661	100.0	159603	100.0	9059	100.0	4977	100.0	7248	100.0
Brain & Other Nervous System	2517	1.4	2198	1.4	95	1.0	75	1.5	129	1.8
Breast⁴	28980	15.8	25393	15.9	1403	15.5	882	17.7	1126	15.5
Bronchus & Lung	25241	13.7	22983	14.4	978	10.8	621	12.5	549	7.6
Cervix Uteri	949	0.5	658	0.4	93	1.0	72	1.4	119	1.6
Colon / Rectum	14576	7.9	12596	7.9	803	8.9	468	9.4	565	7.8
Corpus Uteri & Uterus, NOS	6464	3.5	5674	3.6	309	3.4	144	2.9	261	3.6
Esophagus	2240	1.2	2063	1.3	80	0.9	44	0.9	40	0.6
Hodgkin Lymphoma	1020	0.6	831	0.5	54	0.6	29	0.6	99	1.4
Kidney & Renal Pelvis	6310	3.4	5482	3.4	327	3.6	121	2.4	300	4.1
Larynx	1329	0.7	1180	0.7	58	0.6	9	0.2	64	0.9
Leukemia	4857	2.6	4204	2.6	192	2.1	137	2.8	210	2.9
Liver & Intrahepatic Bile Ducts	3284	1.8	2469	1.5	255	2.8	261	5.2	260	3.6
Melanoma of Skin	7758	4.2	7245	4.5	20	0.2	16	0.3	54	0.7
Multiple Myeloma	2611	1.4	2102	1.3	270	3.0	52	1.0	156	2.2
Non-Hodgkin Lymphoma	7583	4.1	6590	4.1	321	3.5	183	3.7	386	5.3
Oral Cavity & Pharynx	4879	2.7	4281	2.7	188	2.1	170	3.4	193	2.7
Ovary	2478	1.3	2160	1.4	107	1.2	88	1.8	91	1.3
Pancreas	5192	2.8	4600	2.9	271	3.0	121	2.4	159	2.2
Prostate	20389	11.1	16641	10.4	1694	18.7	385	7.7	923	12.7
Stomach	2651	1.4	2032	1.3	232	2.6	157	3.2	194	2.7
Testis	1045	0.6	931	0.6	17	0.2	19	0.4	60	0.8
Thyroid	7292	4.0	5830	3.7	335	3.7	419	8.4	512	7.1
Urinary Bladder	9399	5.1	8763	5.5	212	2.3	107	2.1	195	2.7
Other Sites	14617	8.0	12697	8.0	745	8.2	397	8.0	603	8.3

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

² Total includes persons classified as a 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, 2011-2015
MALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	493.9	490.6-497.3	498.2	494.5-501.8	514.6	498.4-530.7	312.4	298.6-326.2	376.6	362.0-391.1
Brain & Other Nervous System	7.9	7.4-8.3	8.5	8.0-9.0	4.5	3.1-5.9	3.5	2.3-4.8	4.9	3.5-6.4
Breast	1.4	1.2-1.6	1.4	1.2-1.6	*	*	*	*	*	*
Breast <i>in situ</i>⁴	0.2	0.1-0.2	0.2	0.1-0.2	*	*	*	*	*	*
Bronchus & Lung	69.3	68.0-70.6	71.2	69.8-72.5	64.8	58.7-70.9	57.7	51.5-64.0	38.9	33.9-44.0
Colon / Rectum	41.8	40.9-42.8	41.9	40.9-43.0	46.9	41.9-51.8	32.4	28.0-36.8	35.3	30.6-40.1
Esophagus	9.7	9.2-10.1	10.3	9.8-10.8	6.8	4.9-8.7	5.2	3.3-7.0	3.5	2.0-4.9
Hodgkin Lymphoma	3.2	3.0-3.5	3.4	3.1-3.8	2.8	1.8-3.8	*	*	3.5	2.2-4.8
Kidney & Renal Pelvis	22.4	21.7-23.1	23.0	22.2-23.8	21.8	18.6-25.1	10.3	7.9-12.7	18.7	15.7-21.7
Larynx	5.5	5.2-5.9	5.6	5.3-6.0	4.8	3.3-6.4	*	*	6.3	4.5-8.2
Leukemia	16.5	15.9-17.1	17.0	16.3-17.7	12.4	9.9-15.0	9.5	7.1-11.8	10.0	7.6-12.3
Liver & Intrahepatic Bile Ducts	12.9	12.4-13.4	11.2	10.7-11.7	19.4	16.5-22.3	25.9	22.0-29.7	21.8	18.4-25.2
Melanoma of Skin	24.8	24.0-25.6	27.3	26.4-28.1	*	*	*	*	*	*
Multiple Myeloma	8.1	7.7-8.5	7.8	7.3-8.2	14.5	11.7-17.3	4.4	2.8-5.9	7.4	5.5-9.3
Non-Hodgkin Lymphoma	23.4	22.6-24.1	23.9	23.1-24.7	17.6	14.7-20.4	12.5	9.8-15.2	20.1	16.8-23.4
Oral Cavity & Pharynx	17.8	17.2-18.4	18.3	17.6-19.0	14.2	11.6-16.8	13.9	11.2-16.6	14.3	11.5-17.1
Pancreas	14.5	13.9-15.1	14.8	14.2-15.4	16.3	13.3-19.3	7.9	5.7-10.2	9.5	7.0-11.9
Prostate	106.3	104.8-107.8	100.2	98.6-101.7	182.5	173.3-191.8	56.5	50.6-62.4	107.5	99.9-115.1
Stomach	9.3	8.9-9.8	8.4	7.9-8.8	17.8	14.6-21.1	12.2	9.4-14.9	13.9	10.9-16.8
Testis	6.5	6.1-6.9	8.0	7.4-8.5	*	*	*	*	3.1	2.3-4.0
Thyroid	10.6	10.2-11.1	11.2	10.6-11.8	6.1	4.5-7.7	10.7	8.6-12.9	6.5	4.9-8.1
Urinary Bladder	40.4	39.4-41.4	42.9	41.8-43.9	18.1	14.8-21.3	14.6	11.3-17.8	19.2	15.6-22.7

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, 2011-2015
FEMALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	450.9	448.0-453.8	464.5	461.2-467.8	399.1	387.3-410.9	307.2	295.3-319.1	327.0	315.9-338.0
Brain & Other Nervous System	6.0	5.6-6.3	6.3	5.9-6.7	4.2	3.0-5.3	4.4	3.1-5.8	4.8	3.5-6.1
Breast	137.6	136.0-139.3	143.7	141.9-145.6	121.5	115.0-128.0	90.8	84.6-97.0	90.0	84.4-95.6
Breast <i>in situ</i>⁴	41.4	40.5-42.3	43.3	42.3-44.4	38.0	34.4-41.6	31.4	27.8-35.0	28.6	25.5-31.6
Bronchus & Lung	60.2	59.1-61.2	63.8	62.6-64.9	43.3	39.3-47.3	33.1	28.9-37.3	27.8	24.3-31.3
Cervix Uteri	5.1	4.8-5.5	4.6	4.2-4.9	8.2	6.5-9.8	7.1	5.4-8.8	9.5	7.6-11.3
Colon / Rectum	33.1	32.3-33.9	33.3	32.5-34.2	35.4	31.9-39.0	28.4	24.6-32.1	25.3	22.1-28.5
Corpus Uteri & Uterus, NOS	29.4	28.7-30.1	30.4	29.6-31.2	26.7	23.7-29.8	15.4	12.8-18.0	21.2	18.5-23.9
Esophagus	2.2	2.0-2.4	2.2	2.0-2.5	1.9	1.1-2.7	*	*	*	*
Hodgkin Lymphoma	2.6	2.4-2.9	2.8	2.6-3.1	1.7	1.0-2.5	*	*	3.3	2.3-4.3
Kidney & Renal Pelvis	10.8	10.3-11.2	11.0	10.5-11.5	11.1	9.2-13.1	4.9	3.3-6.5	9.1	7.2-10.9
Larynx	1.4	1.3-1.6	1.5	1.3-1.7	*	*	*	*	*	*
Leukemia	9.9	9.4-10.3	10.0	9.5-10.5	7.0	5.4-8.5	6.9	5.1-8.6	8.3	6.6-10.1
Liver & Intrahepatic Bile Ducts	3.8	3.5-4.0	3.3	3.0-3.6	5.0	3.7-6.3	9.2	7.0-11.5	6.4	4.7-8.1
Melanoma of Skin	16.8	16.2-17.3	19.0	18.3-19.7	*	*	*	*	3.0	1.9-4.0
Multiple Myeloma	5.3	5.0-5.6	4.6	4.3-5.0	13.7	11.5-16.0	2.4	1.3-3.5	8.1	6.3-10.0
Non-Hodgkin Lymphoma	16.3	15.8-16.9	16.4	15.8-17.0	13.4	11.2-15.6	10.2	8.0-12.4	17.3	14.6-19.9
Oral Cavity & Pharynx	7.1	6.8-7.5	7.2	6.8-7.6	4.9	3.6-6.2	6.9	5.1-8.7	5.8	4.3-7.3
Ovary	11.6	11.1-12.1	12.0	11.5-12.5	9.1	7.3-10.8	9.4	7.4-11.5	7.0	5.5-8.5
Pancreas	11.5	11.1-12.0	11.6	11.1-12.1	12.9	10.8-15.1	9.0	6.8-11.3	8.0	6.1-9.8
Stomach	4.7	4.4-5.0	3.9	3.7-4.2	8.8	7.0-10.6	9.2	7.0-11.3	7.4	5.7-9.1
Thyroid	29.6	28.7-30.4	29.7	28.8-30.7	22.8	20.0-25.5	29.6	26.3-33.0	28.5	25.7-31.4
Urinary Bladder	11.2	10.8-11.7	12.0	11.5-12.5	7.3	5.6-8.9	*	*	5.4	3.8-6.9

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'.

* 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, 2011-2015

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	466.1	463.9-468.2	475.2	472.8-477.6	445.3	435.8-454.8	307.9	298.9-316.9	345.4	336.7-354.2
Brain & Other Nervous System	6.8	6.6-7.1	7.3	7.0-7.6	4.3	3.4-5.2	4.0	3.1-5.0	4.9	3.9-5.9
Breast	-- ⁵	--	--	--	--	--	--	--	--	--
Breast <i>in situ</i>⁴	--	--	--	--	--	--	--	--	--	--
Bronchus & Lung	63.8	63.0-64.6	66.6	65.7-67.4	51.6	48.2-54.9	44.1	40.5-47.7	32.4	29.5-35.3
Cervix Uteri	--	--	--	--	--	--	--	--	--	--
Colon / Rectum	37.0	36.4-37.6	37.1	36.5-37.8	40.0	37.2-42.9	30.2	27.3-33.1	29.4	26.7-32.1
Corpus Uteri & Uterus, NOS	--	--	--	--	--	--	--	--	--	--
Esophagus	5.5	5.3-5.8	5.9	5.6-6.1	4.0	3.1-4.9	2.9	2.0-3.8	2.2	1.5-3.0
Hodgkin Lymphoma	2.9	2.7-3.1	3.1	2.9-3.3	2.3	1.6-2.9	1.2	0.7-1.7	3.3	2.6-4.1
Kidney & Renal Pelvis	16.1	15.7-16.5	16.5	16.1-17.0	15.7	13.9-17.5	7.4	6.0-8.8	13.3	11.6-14.9
Larynx	3.3	3.1-3.4	3.3	3.2-3.5	2.9	2.1-3.7	*	*	3.1	2.3-3.9
Leukemia	12.8	12.4-13.1	13.1	12.6-13.5	9.1	7.8-10.5	8.0	6.6-9.4	9.0	7.6-10.4
Liver & Intrahepatic Bile Ducts	7.9	7.7-8.2	6.9	6.6-7.2	11.5	10.0-12.9	17.0	14.8-19.1	13.2	11.4-14.9
Melanoma of Skin	20.0	19.6-20.5	22.4	21.8-22.9	1.0	0.6-1.5	*	*	2.4	1.7-3.1
Multiple Myeloma	6.5	6.3-6.8	6.0	5.8-6.3	14.1	12.3-15.8	3.3	2.4-4.3	7.9	6.6-9.2
Non-Hodgkin Lymphoma	19.4	19.0-19.9	19.7	19.2-20.2	15.3	13.6-17.1	11.3	9.5-13.0	18.5	16.5-20.6
Oral Cavity & Pharynx	12.1	11.7-12.4	12.4	12.0-12.8	8.9	7.6-10.2	10.2	8.6-11.8	9.5	8.0-11.0
Ovary	--	--	--	--	--	--	--	--	--	--
Pancreas	12.9	12.5-13.3	13.1	12.7-13.5	14.6	12.8-16.4	8.5	6.9-10.1	8.6	7.1-10.0
Prostate	--	--	--	--	--	--	--	--	--	--
Stomach	6.7	6.4-7.0	5.9	5.6-6.1	12.4	10.8-14.1	10.6	8.8-12.3	10.1	8.5-11.7
Testis	--	--	--	--	--	--	--	--	--	--
Thyroid	20.4	19.9-20.9	20.7	20.1-21.2	15.0	13.4-16.7	20.7	18.6-22.7	18.2	16.5-19.8
Urinary Bladder	23.6	23.1-24.1	25.2	24.6-25.7	11.6	10.0-13.2	7.8	6.2-9.3	11.1	9.4-12.8

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 Dashes indicate cancers found in only one sex or predominantly in one sex (breast cancer). * 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, 2011-2015

MALES

AGE-ADJUSTED¹ MORTALITY RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Bronchus & Lung 50.0	Bronchus & Lung 46.6	Bronchus & Lung 35.4	Bronchus & Lung 23.3
2	Prostate 17.9	Prostate 36.3	Liver & Intrahepatic Bile Duct 14.4	Prostate 15.5
3	Colon/Rectum 15.0	Colon/Rectum 16.0	Colon/Rectum 9.2	Liver & Intrahepatic Bile Duct 12.9
4	Pancreas 12.7	Liver & Intrahepatic Bile Duct 14.5	Prostate 7.2	Colon/Rectum 9.9
5	Esophagus 9.1	Pancreas 12.7	Pancreas 5.7	Stomach 8.1

FEMALES

AGE-ADJUSTED¹ MORTALITY RATE²				
RANK	White, non-Hispanic	Black, non-Hispanic	Asian, non-Hispanic	Hispanic
1	Bronchus & Lung 38.5	Bronchus & Lung 28.0	Bronchus & Lung 18.3	Bronchus & Lung 12.0
2	Breast 18.7	Breast 20.6	Colon/Rectum 8.9	Breast 10.7
3	Colon/Rectum 10.6	Colon/Rectum 12.8	Breast 7.6	Colon/Rectum 9.0
4	Pancreas 10.0	Pancreas 9.5	Pancreas 7.6	Pancreas 5.0
5	Ovary 7.8	Corpus Uteri & Uterus, NOS 8.6	Liver & Intrahepatic Bile Duct 5.3	Non-Hodgkin Lymphoma 4.5

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

² per 100,000

Source: Massachusetts Vital Statistics

Table 18.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2011-2015
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	32,392	100.0	29105	100.0	1469	100.0	747	100.0	905	100.0
Brain & Other Nervous System	945	2.9	873	3.0	28	2.0	13	1.7	25	2.8
Breast	59	0.2	57	0.2	1	0.1	1	0.1	0	0.0
Bronchus & Lung	8409	26.0	7657	26.3	345	23.5	210	28.1	166	18.3
Colon / Rectum	2544	7.8	2278	7.8	129	8.8	60	8.0	63	7.0
Esophagus	1544	4.8	1444	5.0	45	3.1	23	3.1	23	2.5
Hodgkin Lymphoma	48	0.2	37	0.1	2	0.1	2	0.3	7	0.8
Kidney & Renal Pelvis	879	2.7	807	2.8	36	2.5	9	1.2	25	2.8
Larynx	263	0.8	232	0.8	11	0.7	5	0.7	12	1.3
Leukemia	1409	4.3	1283	4.4	45	3.1	27	3.6	45	5.0
Liver & Intrahepatic Bile Ducts	1809	5.6	1416	4.9	137	9.3	132	17.7	112	12.4
Melanoma of Skin	666	2.1	649	2.2	6	0.4	1	0.1	5	0.5
Multiple Myeloma	663	2.0	568	2.0	53	3.6	13	1.7	26	2.9
Non-Hodgkin Lymphoma	1128	3.5	1027	3.5	37	2.5	20	2.7	35	3.9
Oral Cavity & Pharynx	666	2.1	576	2.0	35	2.4	21	2.8	28	3.1
Pancreas	2181	6.7	1978	6.8	94	6.4	37	5.0	60	6.6
Prostate	3005	9.3	2651	9.1	217	14.8	34	4.5	87	9.6
Stomach	705	2.2	545	1.9	52	3.5	39	5.2	63	7.0
Testis	24	0.1	23	0.1	0	0.0	0	0.0	1	0.1
Thyroid	114	0.3	104	0.4	3	0.2	2	0.3	4	0.4
Urinary Bladder	1318	4.1	1258	4.3	30	2.0	10	1.6	14	1.5
Other Sites	4013	12.4	3642	12.5	163	11.1	88	11.8	104	11.5

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 Vital Statistics

Table 19.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2011-2015
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	31,705	100.0	28,599	100.0	1478	100.0	623	100.0	860	2.7
Brain & Other Nervous System	757	2.4	692	2.4	21	1.4	20	3.2	23	2.7
Breast	4178	13.2	3730	13.0	231	15.6	69	11.1	123	14.3
Bronchus & Lung	8327	26.2	7746	27.1	303	20.5	137	22.0	114	13.3
Cervix Uteri	253	0.8	195	0.7	26	1.8	7	1.1	21	2.4
Colon / Rectum	2591	8.2	2286	8.0	142	9.6	66	10.6	85	9.9
Corpus Uteri & Uterus, NOS	1078	3.4	913	3.2	96	6.5	22	3.5	39	4.5
Esophagus	382	1.2	350	1.2	12	0.8	7	1.1	11	1.3
Hodgkin Lymphoma	45	0.1	40	0.1	0	0.0	1	0.2	3	0.3
Kidney & Renal Pelvis	511	1.6	478	1.7	14	0.9	2	0.3	13	1.5
Larynx	92	0.3	85	0.3	2	0.1	1	0.2	3	0.3
Leukemia	1110	3.5	997	3.5	52	3.5	17	2.7	41	4.8
Liver & Intrahepatic Bile Ducts	809	2.5	675	2.4	44	3.0	43	6.9	43	5.0
Melanoma of Skin	422	1.3	413	1.4	2	0.1	2	0.3	4	0.5
Multiple Myeloma	640	2.0	544	1.9	66	4.5	4	0.6	23	2.7
Non-Hodgkin Lymphoma	1015	3.2	921	3.2	33	2.2	22	3.5	37	4.3
Oral Cavity & Pharynx	300	0.9	269	0.9	10	0.7	9	1.4	10	1.2
Ovary	1689	5.3	1552	5.4	74	5.0	26	4.2	29	3.4
Pancreas	2346	7.4	2125	7.4	103	7.0	55	8.8	53	6.2
Stomach	534	1.7	419	1.5	42	2.8	33	5.3	36	4.2
Thyroid	105	0.3	86	0.3	7	0.5	3	0.5	9	1.1
Urinary Bladder	612	1.9	581	2.0	20	1.4	4	0.6	6	0.7
Other Sites	3909	12.3	3502	12.2	178	12.0	73	11.7	134	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 Vital Statistics

Table 20.
NUMBER AND PERCENTAGE OF DEATHS FOR SELECTED CANCER SITES BY RACE/ETHNICITY¹
Massachusetts, 2011-2015
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	64097	100.0	57707	100.0	2947	100.0	1370	110.0	1765	100.0
Brain & Other Nervous System	1702	2.7	1565	2.7	49	1.7	33	2.4	48	2.7
Breast	4237	6.6	3790	6.6	232	7.9	70	5.1	123	7.0
Bronchus & Lung	16736	26.1	15403	26.7	648	22.0	347	25.3	280	15.9
Cervix Uteri	253	0.4	195	0.3	26	0.9	7	0.5	21	1.2
Colon / Rectum	5135	8.0	4564	7.9	271	9.2	126	9.2	148	8.4
Corpus Uteri & Uterus, NOS	1078	1.7	913	1.6	96	3.3	22	1.6	39	2.2
Esophagus	1926	3.0	1794	3.1	57	1.9	30	2.2	34	1.9
Hodgkin Lymphoma	93	0.2	77	0.1	2	0.1	3	0.2	10	0.6
Kidney & Renal Pelvis	1390	2.2	1285	2.2	50	1.7	11	0.8	38	2.2
Larynx	355	0.6	317	0.5	13	0.4	6	0.4	15	0.9
Leukemia	2519	3.9	2280	4.0	97	3.3	44	3.2	86	4.9
Liver & Intrahepatic Bile Ducts	2618	4.1	2091	3.6	181	6.1	175	12.8	155	8.8
Melanoma of Skin	1088	1.7	1062	1.8	8	0.3	3	0.2	9	0.5
Multiple Myeloma	1303	2.0	1112	1.9	119	4.1	17	1.2	49	2.8
Non-Hodgkin Lymphoma	2143	3.3	1948	3.4	70	2.4	42	3.1	72	4.1
Oral Cavity & Pharynx	966	1.5	845	1.5	45	1.5	30	2.2	38	2.1
Ovary	1689	2.6	1552	2.7	74	2.5	26	1.9	29	1.6
Pancreas	4527	7.1	4103	7.1	197	6.7	92	6.7	113	6.4
Prostate	3005	4.7	2651	4.6	217	7.4	34	2.5	87	4.9
Stomach	1239	1.9	964	1.7	94	3.2	72	5.3	99	5.6
Testis	24	0.04	23	0.04	0	0.0	0	0.0	1	0.1
Thyroid	219	0.3	190	0.3	10	0.3	5	0.4	13	0.7
Urinary Bladder	1930	3.0	1839	3.2	50	1.7	14	1.0	20	1.0
Other Sites	7922	12.4	7144	12.4	341	11.5	161	11.7	238	13.5

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.

Table 21.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2011-2015
MALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	186.8	184.8-188.9	190.8	188.6-192.9	198.2	188.1-208.3	119.8	111.2-128.4	122.9	114.9-130.9
Brain & Other Nervous System	5.3	4.9-5.6	5.7	5.3-6.1	2.6	1.7-3.7	*	*	2.4	1.4-3.3
Breast	0.3	0.2-0.4	0.4	0.3-0.5	*	*	*	*	*	*
Bronchus & Lung	48.4	47.4-49.4	50.0	48.9-51.1	46.6	41.7-51.4	35.4	30.6-40.2	23.3	19.8-26.9
Colon / Rectum	14.7	14.1-15.3	15.0	14.4-15.6	16.0	13.2-18.7	9.2	6.8-11.5	9.9	7.5-12.4
Esophagus	8.5	8.1-9.0	9.1	8.6-9.6	5.8	4.1-7.5	4.3	2.5-6.1	3.1	1.8-4.3
Hodgkin Lymphoma	0.3	0.2-0.4	0.3	0.2-0.4	*	*	*	*	*	*
Kidney & Renal Pelvis	4.9	4.6-5.3	5.1	4.8-5.5	4.9	3.3-6.5	*	*	2.7	1.6-3.7
Larynx	1.5	1.3-1.6	1.5	1.3-1.7	*	*	*	*	*	*
Leukemia	8.5	8.0-8.9	8.8	8.3-9.2	6.4	4.5-8.2	4.2	2.6-5.8	5.6	4.0-7.2
Liver & Intrahepatic Bile Ducts	9.7	9.3-10.2	8.7	8.3-9.2	14.5	12.1-16.9	19.5	16.2-22.9	12.9	10.5-15.3
Melanoma of Skin	3.8	3.6-4.1	4.3	4.0-4.6	*	*	*	*	*	*
Multiple Myeloma	3.9	3.6-4.2	3.8	3.5-4.1	7.4	5.4-9.4	*	*	4.3	2.6-5.9
Non-Hodgkin Lymphoma	6.7	6.3-7.1	6.9	6.5-7.3	4.9	3.3-6.4	3.0	1.7-4.4	4.5	3.0-6.0
Oral Cavity & Pharynx	3.6	3.3-3.9	3.6	3.3-3.9	4.2	2.8-5.6	2.9	1.7-4.2	3.7	2.3-5.1
Pancreas	12.3	11.8-12.9	12.7	12.2-13.3	12.7	10.1-15.3	5.7	3.9-7.6	7.4	5.5-9.3
Prostate	18.2	17.6-18.9	17.9	17.2-18.6	36.3	31.5-41.2	7.2	4.8-9.6	15.5	12.3-18.8
Stomach	4.1	3.8-4.4	3.6	3.3-3.9	7.3	5.4-9.4	5.6	3.9-7.4	8.1	6.1-10.1
Testis	0.1	0.1-0.2	0.2	0.1-0.2	*	*	*	*	*	*
Thyroid	0.6	0.5-0.8	0.7	0.5-0.8	*	*	*	*	*	*
Urinary Bladder	7.9	7.4-8.3	8.4	7.9-8.9	4.8	3.1-6.6	*	*	*	*

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 Vital Statistics

Table 22.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2011-2015
FEMALES

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	135.2	133.7-136.7	139.3	137.6-140.9	134.9	128.0-141.7	79.4	73.2-85.6	86.2	80.4-91.9
Brain & Other Nervous System	3.5	3.2-3.7	3.8	3.5-4.0	*	*	2.2	1.2-3.1	2.1	1.2-2.9
Breast	18.1	17.6-18.7	18.7	18.1-19.2	20.6	18.0-23.3	7.6	5.8-9.4	10.7	8.8-12.6
Bronchus & Lung	36.2	35.4-37.0	38.5	37.6-39.4	28.0	27.8-31.1	18.3	15.2-21.3	12.0	9.8-14.2
Cervix Uteri	1.2	1.0-1.3	1.1	1.0-1.3	2.2	1.3-3.0	*	*	1.9	1.1-2.7
Colon / Rectum	10.6	10.2-11.0	10.6	10.2-11.0	12.8	10.7-14.9	8.9	6.7-11.0	9.1	7.1-11.0
Corpus Uteri & Uterus, NOS	4.6	4.3-4.8	4.4	4.1-4.7	8.6	6.9-10.4	2.6	1.5-3.7	3.9	2.7-5.2
Esophagus	1.6	1.4-1.8	1.7	1.5-1.8	*	*	*	*	*	*
Hodgkin Lymphoma	0.2	0.1-0.3	0.2	0.1-0.3	*	*	*	*	*	*
Kidney & Renal Pelvis	2.1	1.9-2.3	2.2	2.0-2.4	*	*	*	*	*	*
Larynx	0.4	0.3-0.5	0.4	0.3-0.5	*	*	*	*	*	*
Leukemia	4.7	4.5-5.0	4.8	4.5-5.1	5.0	3.6-6.3	*	*	3.9	2.7-5.1
Liver & Intrahepatic Bile Ducts	3.4	3.2-3.7	3.3	3.0-3.5	4.0	2.8-5.2	5.3	3.7-6.9	4.3	3.0-5.6
Melanoma of Skin	1.8	1.6-2.0	2.1	1.9-2.3	*	*	*	*	*	*
Multiple Myeloma	2.6	2.4-2.8	2.5	2.3-2.7	6.2	4.7-7.7	*	*	2.5	1.5-3.5
Non-Hodgkin Lymphoma	4.2	3.9-4.4	4.3	4.0-4.5	3.0	2.0-4.1	3.1	1.8-4.4	4.5	3.0-5.9
Oral Cavity & Pharynx	1.2	1.1-1.4	1.2	1.1-1.4	*	*	*	*	*	*
Ovary	7.3	7.0-7.7	7.8	7.4-8.2	6.4	5.0-7.9	3.1	1.9-4.2	2.6	1.7-3.6
Pancreas	9.8	9.4-10.1	10.0	9.6-10.5	9.5	7.6-11.3	7.6	5.6-9.7	5.0	3.7-6.4
Stomach	2.3	2.1-2.5	2.0	1.8-2.2	4.0	2.8-5.2	4.0	2.6-5.4	3.3	2.2-4.4
Thyroid	0.4	0.3-0.5	0.4	0.3-0.5	*	*	*	*	*	*
Urinary Bladder	2.4	2.2-2.6	2.6	2.4-2.8	*	*	*	*	*	*

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 Vital Statistics

Table 23.
AGE-ADJUSTED¹ MORTALITY RATES² AND 95% CONFIDENCE LIMITS (95% CL)
FOR SELECTED CANCER SITES BY RACE/ETHNICITY³
Massachusetts, 2011-2015
TOTAL

Cancer Site / Type	All Races		White, non-Hispanics		Black, non-Hispanics		Asian, non-Hispanics		Hispanics	
	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL	Rates	95% CL
All Sites	156.1	154.8-157.3	160.1	158.8-161.4	158.2	152.5-163.9	97.3	92.1-102.4	101.4	96.6-106.1
Brain & Other Nervous System	4.3	4.1-4.5	4.6	4.4-4.9	2.3	1.6-3.0	1.8	1.2-2.5	2.2	1.6-2.9
Breast	-	-	-	-	-	-	-	-	-	-
Bronchus & Lung	41.2	40.6-41.8	43.2	42.5-43.9	35.2	32.5-37.9	25.8	23.1-28.6	16.8	14.8-18.8
Cervix Uteri	-	-	-	-	-	-	-	-	-	-
Colon / Rectum	12.4	12.0-12.7	12.5	12.1-12.9	14.2	12.5-15.9	9.1	7.5-10.6	9.3	7.8-10.9
Corpus Uteri & Uterus, NOS	-	-	-	-	-	-	-	-	-	-
Esophagus	4.6	4.4-4.8	5.0	4.7-5.2	2.9	2.2-3.7	2.4	1.5-3.3	2.0	1.3-2.7
Hodgkin Lymphoma	0.2	0.2-0.3	0.2	0.2-0.3	*	*	*	*	*	*
Kidney & Renal Pelvis	3.3	3.2-3.5	3.5	3.3-3.7	2.6	1.9-3.3	*	*	1.9	1.3-2.5
Larynx	0.9	0.8-0.9	0.9	0.8-1.0	*	*	*	*	*	*
Leukemia	6.3	6.0-6.5	6.5	6.2-6.7	5.3	4.3-6.4	3.1	2.1-4.0	4.6	3.6-5.6
Liver & Intrahepatic Bile Ducts	6.3	6.0-6.5	5.7	5.5-6.0	8.7	7.4-10.0	11.8	10.0-13.5	8.0	6.8-9.3
Melanoma of Skin	2.7	2.5-2.8	3.0	2.8-3.2	*	*	*	*	*	*
Multiple Myeloma	3.1	3.0-3.3	3.0	2.8-3.2	6.7	5.5-7.9	*	*	3.2	2.3-4.1
Non-Hodgkin Lymphoma	5.2	5.0-5.5	5.4	5.1-5.6	3.8	2.9-4.7	3.1	2.1-4.0	4.5	3.5-5.6
Oral Cavity & Pharynx	2.3	2.2-2.5	2.3	2.2-2.5	2.3	1.6-2.9	1.9	1.2-2.6	2.2	1.5-2.9
Ovary	-	-	-	-	-	-	-	-	-	-
Pancreas	10.9	10.6-11.2	11.3	10.9-11.6	11.0	9.4-12.5	6.8	5.4-8.2	6.0	4.9-7.1
Prostate	-	-	-	-	-	-	-	-	-	-
Stomach	3.0	2.9-3.2	2.7	2.5-2.8	5.3	4.2-6.4	4.8	3.7-5.9	5.3	4.3-6.4
Testis	-	-	-	-	-	-	-	-	-	-
Thyroid	0.5	0.5-0.6	0.5	0.4-0.6	*	*	*	*	*	*
Urinary Bladder	4.6	4.4-4.8	4.9	4.7-5.1	2.9	2.1-3.8	*	*	1.3	0.7-1.8

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 Dashes indicate cancers found in only one sex or predominantly in one sex (breast cancer).

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

Source: Massachusetts Vital Statistics

Table 24.
INCIDENCE RATES¹ FOR SELECTED CANCER SITES BY SEX
Massachusetts (2011-2015) and U.S. (2010-2014)

Cancer Site / Type	MALES				FEMALES			
	Massachusetts		United States		Massachusetts		United States	
	Rate	95% CL						
All Sites	493.9*	490.6-497.3	502.0	501.5-502.6	450.9*	448.0-453.8	418.0	417.6-418.4
Brain & Other Nervous System	7.9	7.4-8.3	7.7	7.7-7.8	6.0	5.6-6.3	5.6	5.5-5.6
Breast	1.4	1.2-1.6	1.3	1.3-1.3	137.6*	136.0-139.3	123.6	123.4-123.8
Breast <i>in situ</i> ²	0.2	0.1-0.2	N/A	N/A	41.4*	40.5-42.3	30.6	30.5-30.7
Bronchus & Lung	69.3*	68.0-70.6	73.0	72.8-73.2	60.2*	59.1-61.2	52.8	52.6-52.9
Cervix Uteri	--	--	--	--	5.1*	4.8-5.5	7.6	7.5-7.6
Colon / Rectum	41.8*	40.9-42.8	45.9	45.7-46.0	33.1*	32.3-33.9	34.8	34.7-35.0
Corpus Uteri & Uterus, NOS	--	--	--	--	29.4*	28.7-30.1	25.9	25.8-26.0
Esophagus	9.7*	9.2-10.1	8.0	7.9-8.0	2.2*	2.0-2.4	1.8	1.8-1.8
Hodgkin Lymphoma	3.2	3.0-3.5	3.0	3.0-3.1	2.6	2.4-2.9	2.4	2.3-2.4
Kidney & Renal Pelvis	22.4	21.7-23.1	21.8	21.7-21.9	10.8	10.3-11.2	11.3	11.2-11.4
Larynx	5.5*	5.2-5.9	6.0	6.0-6.1	1.4	1.3-1.6	1.4	1.3-1.4
Leukemia	16.5*	15.9-17.1	17.6	17.5-17.7	9.9*	9.4-10.3	10.7	10.6-10.8
Liver & Intrahepatic Bile Ducts	12.9*	12.4-13.4	12.1	12.0-12.2	3.8*	3.5-4.0	4.2	4.1-4.2
Melanoma of Skin	24.8*	24.0-25.6	26.6	26.4-26.7	16.8	16.2-17.3	16.3	16.2-16.4
Multiple Myeloma	8.1	7.7-8.5	8.1	8.0-8.2	5.3	5.0-5.6	5.3	5.3-5.4
Non-Hodgkin Lymphoma	23.4	22.6-24.1	22.9	22.8-23.0	16.3	15.8-16.9	15.8	15.7-15.8
Oral Cavity & Pharynx	17.8	17.2-18.4	17.4	17.3-17.5	7.1*	6.8-7.5	6.4	6.3-6.4
Ovary	--	--	--	--	11.6	11.1-12.1	11.4	11.4-11.5
Pancreas	14.5	13.9-15.1	14.2	14.2-14.3	11.5	11.1-12.0	11.1	11.0-11.1
Prostate	106.3*	104.8-107.8	115.0	114.8-115.2	--	--	--	--
Stomach	9.3	8.9-9.8	9.2	9.1-9.3	4.7	4.4-5.0	4.6	4.6-4.7
Testis	6.5*	6.1-6.9	5.5	5.5-5.6	--	--	--	--
Thyroid	10.6*	10.2-11.1	7.2	7.1-7.2	29.6*	28.7-30.4	21.1	21.0-21.2
Urinary Bladder	40.4*	39.4-41.4	35.8	35.7-36.0	11.2*	10.8-11.7	8.8	8.8-8.9

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

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

N/A – not available

* indicates that the Massachusetts incidence rate differed significantly from the national rate ($p < 0.05$).

Data Sources: Massachusetts: Massachusetts Cancer Registry and United States: NAACCR Fast Stats: An interactive tool for quick access to key NAACCR cancer statistics. North American Association of Central Cancer Registries.

<http://www.naacrr.org/>. (Accessed on 1-12-2018)

Table 25.
MORTALITY RATES¹ FOR SELECTED CANCER SITES BY SEX
Massachusetts and U.S. (2011-2015)

Cancer Site / Type	MALES				FEMALES			
	Massachusetts		United States		Massachusetts		United States	
	Rate	95% CL						
All Sites	186.8*	184.8-188.9	196.3	196.0-196.6	135.2*	133.7-136.7	139.8	139.6-140.1
Brain & Other Nervous System	5.3	4.9-5.6	5.3	5.3-5.4	3.5	3.2-3.7	3.6	3.5-3.6
Breast	0.3	0.2-0.4	0.3	0.3-0.3	18.1*	17.6-18.7	20.9	20.8-21.0
Bronchus & Lung	48.4*	47.4-49.4	53.6	53.5-53.8	36.2	35.4-37.0	35.4	35.3-35.5
Cervix Uteri	-	-	-	-	1.2*	1.0-1.3	2.3	2.3-2.3
Colon / Rectum	14.7*	14.1-15.3	17.4	17.3-17.5	10.6*	10.2-11.0	12.4	12.4-12.5
Corpus Uteri & Uterus, NOS	-	-	-	-	4.6	4.3-4.8	4.6	4.6-4.7
Esophagus	8.5*	8.1-9.0	7.2	7.1-7.3	1.6	1.4-1.8	1.5	1.5-1.5
Hodgkin Lymphoma	0.3	0.2-0.4	0.4	0.4-0.4	0.2	0.1-0.2	0.3	0.2-0.3
Kidney & Renal Pelvis	4.9*	4.6-5.3	5.6	5.6-5.7	2.1*	1.9-2.3	2.4	2.4-22.5
Larynx	1.5*	1.3-1.6	1.8	1.8-1.8	0.4	0.3-0.5	0.4	0.3-0.4
Leukemia	8.5	8.0-8.9	8.9	8.8-8.9	4.7	4.5-5.0	4.9	4.9-5.0
Liver & Intrahepatic Bile Ducts	9.7	9.3-10.2	9.5	9.4-9.5	3.4*	3.2-3.7	3.8	3.8-3.9
Melanoma of Skin	3.8	3.6-4.1	3.9	3.8-3.9	1.8	1.6-2.0	1.6	1.6-1.7
Multiple Myeloma	3.9*	3.6-4.2	4.3	4.3-4.4	2.6	2.4-2.8	2.8	2.7-2.8
Non-Hodgkin Lymphoma	6.7*	6.3-7.1	7.4	7.3-7.5	4.2	3.9-4.4	4.5	4.4-4.5
Oral Cavity & Pharynx	3.6	3.3-3.9	3.9	3.8-3.9	1.2	1.1-1.4	1.3	1.3-1.3
Ovary	-	-	-	-	7.3	7.0-7.7	7.2	7.1-7.2
Pancreas	12.3	11.8-12.9	12.6	12.5-12.6	9.8	9.4-10.1	9.5	9.5-9.6
Prostate	18.2*	17.6-18.9	19.4	19.3-19.5	-	-	-	-
Stomach	4.1	3.8-4.4	4.3	4.2-4.3	2.3	2.1-2.5	2.3	2.3-2.3
Testis	0.1	0.1-0.2	0.2	0.2-0.2	-	-	-	-
Thyroid	0.6	0.5-0.8	0.5	0.5-0.5	0.4	0.3-0.5	0.5	0.5-0.5
Urinary Bladder	7.9	7.4-8.3	7.5	7.5-7.6	2.4	2.2-2.6	2.1	2.1-2.2

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

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

N/A – not applicable

* indicates that the Massachusetts mortality rate differed significantly from the national rate (p < 0.05).

Data Sources: Massachusetts: Massachusetts Vital Statistics and United States: National Center for Health Statistics.

APPENDICES

**APPENDIX I
ICD CODES USED FOR THIS REPORT**

Cancer Site/Type	<i>.....Codes.....</i>	
	ICD-O-3*	ICD-10**
Brain & Other Nervous System	C70.0-C72.9 except 9050-9055, 9140, 9590-9992	C70-C72
Breast (includes <i>in situ</i>)	C50.0 – C50.9 except 9050-9055, 9140, 9590-9992	C50
Bronchus & Lung	C34.0 – C34.9 except 9050-9055, 9140, 9590-9992	C34
Cervix Uteri	C53.0 – C53.9 except 9050-9055, 9140, 9590-9992	C53
Colon/ Rectum	C18.0-C18.9, C19.9, C20.9, C26.0 except 9050-9055, 9140, 9590-9992	C18 – C20, C26.0
Corpus Uteri & Uterus, NOS	C54.0 – C54.9, C55.9 except 9050-9055, 9140, 9590-9992	C54 – C55
Esophagus	C15.0-C15.9 except 9050-9055, 9140, 9590-9992	C15
Hodgkin Lymphoma	C00.00 – C80.9 (includes 9650-9667)	C81
Kidney & Renal Pelvis	C64.9, C65.9 except 9050-9055, 9140, 9590-9992	C64- C65
Larynx	C32.0 – C32.9 except 9050-9055, 9140, 9590-9992	C32

Leukemia	C00.0 – C80.9 (includes 9733, 9742, 9800-9801, 9805-9809, 9820, 9826, 9831-9836, 9840, 9860- 9861, 9863, 9865-9867, 9869- 9876, 9891, 9895-9898, 9910- 9911, 9920, 9930-9931, 9940, 9945-9946, 9948, 9963-9964)	C90.1, C91 – C95
	C42.0, C42.1, C42.4 (includes 9811-9818, 9823, 9827, 9837)	
Liver and Intrahepatic Bile Ducts	C22.0, C22.1 except 9050-9055, 9140, 9590-9992	C22
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	C02.4, C098, C099, C111, C142, C379, C422, C770- C779 (includes 9590-9597, 9670-9671, 9673, 9675, 9678- 9680, 9684, 9687-9691, 9695, 9698-9702, 9705, 9708-9709, 9712, 9714-9719, 9724-9729, 9735, 9737-9738, 9811-9818, 9823, 9827, 9837)	C82 – C85, C96.3
	All sites except C02.4, C90.8- C09.9, C11.1, C14.2, C37.9, C42.2, C77.0-C77.9 (includes 9590-9597, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9688, 9689-9691, 9695, 9698- 9702, 9705, 9708-9709, 9712, 9714-9719, 9724-9729, 9735, 9737, 9738)	
	All sites except C02.4, c09.8- C09.9, C11.1, C14.2, C37.9, C42.0-C42.2, c42.4, C77.0- C77.9 (includes 9811-9818, 9823, 9827, 9837)	

Oral Cavity & Pharynx	C00.0 – C14.8 except 9050-9055, 9140, 9590-9992	C00 – C14
Ovary	C56.9 except 9050-9055, 9140, 9590-9992	C56
Pancreas	C25.0 – C25.9 except 9050-9055, 9140, 9590-9992	
Prostate	C61.9 except 9050-9055, 9140, 9590-9992	C61
Stomach	C16.0 – C16.9 except 9050-9055, 9140, 9590-9992	C16
Testis	C62.0 – C62.9 except 9050-9055, 9140, 9590-9992	C62
Thyroid	C73.9 except 9050-9055, 9140, 9590-9992	C73
Urinary Bladder (includes <i>in situ</i>)	C67.0 – C67.9 except 9050-9055, 9140, 9590-9992	C67

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

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

APPENDIX II:

Population and Rate Changes

The population estimates for 2011-2015 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. (3) 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 <http://www.mass.gov/eohhs/docs/dph/cancer/state/registry-statewide-00-04-report.pdf>

Appendix III

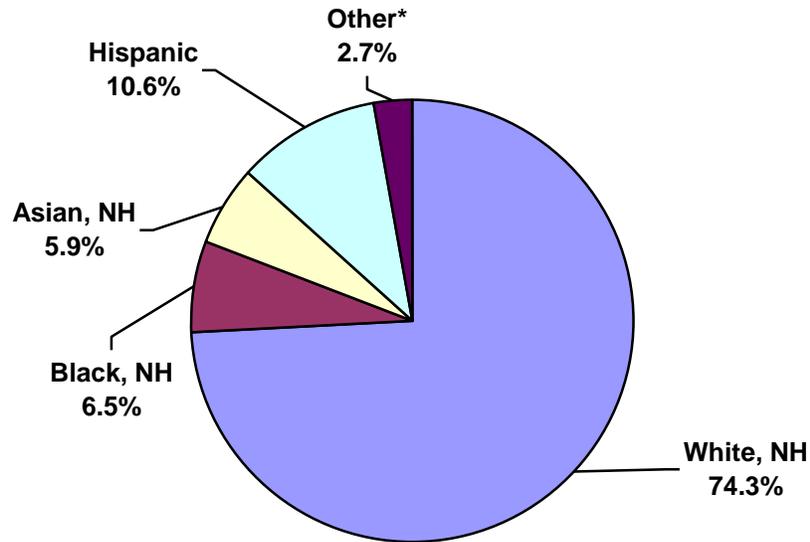
POPULATION ESTIMATES BY AGE, RACE/ETHNICITY, AND SEX Massachusetts, 2011-2015

Age Group	White, non-Hispanic			Black, non-Hispanic			Asian, non-Hispanic			Hispanic			Total
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total	
00-04	599582	572123	1171705	89827	84540	174367	69502	67869	137371	174587	166763	341350	
05-09	647533	618894	1266427	89285	84545	173830	68095	67552	135647	160176	154452	314628	
10-14	712339	679236	1391575	88149	84700	172849	62596	63726	126322	151779	146428	298207	
15-19	818320	800816	1619136	100453	98611	199064	70209	76924	147133	164804	157439	322243	
20-24	832986	834697	1667683	109635	107192	216827	90551	97938	188489	175779	166330	342109	
25-29	820012	825186	1645198	93392	94324	187716	99234	111954	211188	160076	152239	312315	
30-34	749333	759781	1509114	82815	88511	171326	94803	106739	201542	150186	147639	297825	
35-39	694231	713345	1407576	76803	83213	160016	86589	95411	182000	128862	133550	262412	
40-44	808466	842405	1650871	76304	83508	159812	81411	87656	169067	112245	121365	233610	
45-49	938105	975726	1913831	78866	84123	162989	67390	72734	140124	100361	110546	210907	
50-54	1019746	1064497	2084243	75759	81341	157100	56875	61950	118825	82382	93083	175465	
55-59	956796	1014650	1971446	62403	69649	132052	46583	52775	99358	61788	72103	133891	
60-64	823817	896351	1720168	46705	54976	101681	37077	42678	79755	43954	53257	97211	
65-69	647698	726488	1374186	31740	40768	72508	25370	29383	54753	29601	38432	68033	
70-74	438022	523693	961715	20329	29264	49593	18884	21646	40530	18782	25836	44618	
75-79	313303	410083	723386	13806	22188	35994	13580	15533	29113	11642	17619	29261	
80-84	240271	364116	604387	8543	15842	24385	8095	10333	18428	6808	11451	18259	
85+	229216	489437	718653	7043	16512	23555	5936	9300	15236	5749	10680	16429	

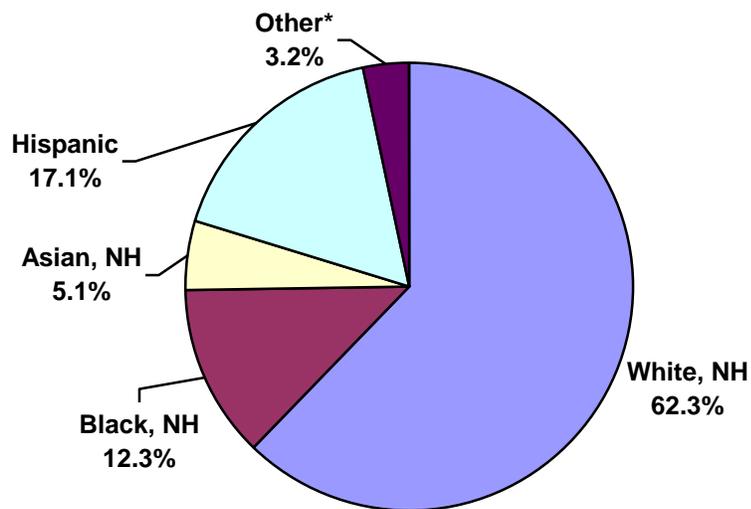
Population Data Source: United States Census Data (2011-2015)

Appendix IV
Racial/Ethnic Breakdown of the Massachusetts and United States Populations*

Massachusetts (2011-2015)



United States (2011-2015)



Data Source: United States Census Data, American Community Survey, 2011-2015

*Other includes people reporting 2 or more races.

REFERENCES

REFERENCES FOR GENERAL REPORT

1. Massachusetts Cancer Registry, Cancer Incidence and Mortality in Massachusetts, 2006-2010: Statewide Report, Available at: www.mass.gov/dph/mcr
2. Ahmedin Jemal et al. (2017), Annual Report to the Nation on the Status of Cancer, 1975-2014, Featuring Survival. J Natl Cancer Inst. <https://academic.oup.com/jnci/article-lookup/doi/10.1093/jnci/djx030>
3. National Center for Health Statistics, U.S. Department of Health and Human Services. Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Vintage 2015 Bridged Race postcensal population estimates for July 1, 2010 to July 1, 2015 by year, county, single year of age (0-85+ years), bridged race, Hispanic origin, and sex Available at: https://www.cdc.gov/nchs/nvss/bridged_race/data_documentation.htm#vintage2015