6. Cancer Risk and Death Appendix Data Tables

This chapter presents data on the following indicators related to cancer risk and cancer deaths:

6.1. Cancer Incidence and Deaths
- o Age adjusted death rate - All cancers, breast cancer, colorectal cancer, leukemia, lung cancer, prostate cancer (1999-2001, 2006-2008)
- o Observed and expected incidence, standardized incidence ratio - All cancers, breast cancer, colorectal cancer, leukemia, lung cancer, prostate cancer (2003-2007)

6.2. Smoking
- o % current smokers (1999-2001, 2008-2010)
- o % former smokers (1999-2001, 2008-2010)
- o % of current smokers who smoke ≤10 cigarettes a day, 11-20 cigarettes a day (1999-2001, 2008-2010)

Presented for each indicator is an explanation of the indicator, the data, the source of the data, a Healthy People 2020 objective when available, and a comment on whether there are any statistically significant differences between each community in CHNA 18 and Massachusetts.

A note on determining statistical significance:
The 95% confidence interval (95% CI) is a range of values that has a 95% chance of including the observed percentage. Observed rates are subject to statistical variation; even if the observed percentages are identical in two populations, the populations may differ because of random variation. The confidence interval describes the precision of the observed rate as an estimate of the underlying risk, with a wider interval indicating less certainty about this estimate. The width of the interval reflects the size of the population and the number of cases; smaller populations with fewer cases lead to wider confidence intervals.

The *statistical significance* of differences between rates can be estimated based on whether the confidence intervals overlap. For example, if the 95% confidence intervals for the birth rate for a community and state do not overlap, it is safe to conclude that the rates are statistically different (i.e., the difference is very unlikely to be due to sampling error).

6.2 Cancer Incidence and Deaths

Age adjusted death rate: The death rate is the number of deaths per 100,000 persons. Age adjustment is a statistical method that takes into account age-distribution differences between populations by taking the 2000 US population distribution and applying it to the other time periods under consideration. This assures that changes in the death rate are not merely reflections of any changes in the population age distribution.

Observed and Expected Case Count: The **observed** case count for a particular type of cancer in a city/town is the actual number of newly diagnosed cases among residents of that city/town for 2003-2007. The **expected** case count for a particular type of cancer is a calculated number based on that city/town's population distribution for the time period 2003-2007, and the corresponding statewide average annual age-specific incidence rates

Standardized Incidence Ratio: A Standardized Incidence Ratio is an indirect method of adjustment for age and sex that describes in numerical terms how a city/town's cancer experience in a given time period compares with that of the state as a whole calculated as (obs / exp) x 100. A standardized incidence ratio of more than 100 indicates that a community's cancer incidence rate is higher than expected compared to the statewide average. A standardized incidence ratio of less than 100 indicates a less than expected cancer incidence rate compared to Massachusetts.

*NC = Not Calculated: The standardized incidence ratio was not calculated when the number of observations is less than 5

Healthy People 2020 Objectives:
- Reduce the overall age-adjusted cancer death rate to 160.6 deaths per 100,000 population
- Reduce the age-adjusted female breast cancer death rate to 20.6 deaths per 100,000 females
- Reduce the age-adjusted colorectal cancer death rate to 14.5 deaths per 100,000 population
- Reduce the age-adjusted lung cancer death rate to 45.5 deaths per 100,000 population
- Reduce the age-adjusted prostate cancer death rate to 21.2 deaths per 100,000 males

All Types of cancer deaths

	Age Adjusted Death Rate (95% CI)	
	1999-2001	**2006-2008**
Brookline	167.10 (148.00 - 186.19)	134.17 (116.86 - 151.49)
Dedham	228.22 (197.11 - 259.33)	178.91 (151.94 - 205.89)
Dover	163.27 (97.61 - 228.92)	181.40 (112.42 - 250.38)
Needham	166.29 (142.82 - 189.75)	147.52 (125.59 - 169.45)
Newton	172.59 (157.75 - 187.43)	140.99 (127.91 - 154.08)
Waltham	203.21 (182.52 - 223.90)	158.98 (141.08 - 176.89)
Wellesley	145.08 (120.63 - 169.53)	135.51 (111.60 - 159.42)
Weston	132.49 (98.67 - 166.32)	105.53 (76.25 - 134.81)
Westwood	191.54 (156.35 - 226.72)	180.39 (144.24 - 216.55)
CHNA 18	177.39 (169.48 - 185.30)	146.99 (139.87 - 154.10)
Massachusetts	203.65 (201.70 - 205.60)	180.70 (178.90 - 182.50)
United States	198.8	178.13

Source: Vital Records (MassCHIP custom report); National Vital Statistics Reports

Comment:
Are there any statistically significant differences over time or between the CHNA and Massachusetts?
- The age-adjusted death rate decreased from 1999-2001 to 2006-2008 in Newton, Waltham, CHNA 18 and Massachusetts
- In 2006-2008, Weston had a significantly lower age-adjusted death rate compared to CHNA 18
- In 2006-2008, Brookline, Needham, Newton, Waltham, Wellesley, and Weston, and CHNA 18 had significant lower age-adjusted death rates compared to Massachusetts

All types of cancer incidence (2003-2007)

	Observed	Expected	Standardized Incidence Ratio (95% CI)
Brookline			
Male	717	719.9	99.6 (92.4 - 107.2)
Female	824	777.3	106.0 (98.9 - 113.5)
Dedham			
Male	405	396.8	102.1 (92.4 - 112.5)
Female	406	375.2	108.2 (97.9 - 119.3)
Dover			
Male	79	87.1	90.8 (71.8 - 113.1)
Female	82	71.6	114.5 (91.1 - 142.1)
Needham			
Male	470	477.9	98.3 (89.6 - 107.6)
Female	519	489.6	106.0 (97.1 - 115.5)
Newton			
Male	1,231	1,312.9	93.8 (88.6 - 99.2)
Female	1,331	1,278.1	104.1 (98.6 - 109.9)
Waltham			
Male	712	802.0	88.8 (82.4 - 95.5)
Female	807	790.7	102.1 (95.1 - 109.4)
Wellesley			
Male	355	391.2	90.8 (81.6 - 100.7)
Female	365	384.6	94.9 (85.4 - 105.2)
Weston			
Male	174	215.7	80.7 (69.1 - 93.6)
Female	163	181.0	90.1 (76.8 - 105.0)
Westwood			
Male	240	258.5	92.9 (81.5 - 105.4)
Female	268	242.3	110.6 (97.8 - 124.7)
Massachusetts			
Male	NA	NA	100.0 (100.0 - 100.0)
Female	NA	NA	100.0 (100.0 - 100.0)

Source: Cancer Registry (MassCHIP Instant Topics)

Are there any statistically significant differences between CHNA 18 and Massachusetts?
- Newton, Waltham, and Weston men had a lower incidence rate than would be expected compared to Massachusetts

Breast Cancer Deaths (Female)

	Age Adjusted Death Rate (95% CI)	
	1999-2001	2006-2008
Brookline	27.66 (17.72 - 37.60)	18.64 (9.91 - 27.37)
Dedham	39.02 (21.57 - 56.48)	26.20 (12.64 - 39.76)
Dover	18.01 (0.00 - 43.04)	28.40 (0.00 - 67.92)
Needham	18.37 (7.83 - 28.91)	29.14 (15.71 - 42.56)
Newton	26.96 (18.94 - 34.99)	20.24 (13.39 - 27.10)
Waltham	25.64 (15.56 - 35.71)	18.98 (10.69 - 27.26)
Wellesley	27.27 (13.29 - 41.26)	18.75 (6.84 - 30.66)
Weston	30.67 (8.77 - 52.57)	21.41 (3.28 - 39.54)
Westwood	17.96 (3.85 - 32.07)	21.63 (6.39 - 36.88)
CHNA 18	27.01 (22.82 - 31.19)	21.10 (17.45 - 24.75)
Massachusetts	26.82 (25.87 - 27.77)	21.47 (20.64 - 22.30)
United States	26.41	22.96

Source: Vital Records (MassCHIP custom report)

Comment:
Are there any statistically significant differences over time or between the CHNA and Massachusetts?
- From 1999-2001 to 2006-2008 the age-adjusted breast cancer death rate declined in Massachusetts, but was statistically the same across each community and CHNA 18
- In 2006-2008, there are no differences between each community and CHNA 18 or Massachusetts

Breast cancer incidence (2003-2007)

	Observed	Expected	Standardized Incidence Ratio (95% CI)
Brookline			
Male	0	1.6	NC*
Female	245	217.3	112.7 (99.1 - 127.8)
Dedham			
Male	3	0.9	NC*
Female	118	105.0	112.4 (93.0 - 134.6)
Dover			
Male	0	0.2	NC*
Female	30	22.1	135.6 (91.5 - 193.6)
Needham			
Male	1	1.1	NC*
Female	166	133.8	124.1 (105.9 - 144.4)
Newton			
Male	1	3.1	NC*
Female	431	359.9	119.8 (108.7 - 131.6)
Waltham			
Male	1	1.8	NC*
Female	233	219.5	106.2 (93.0 - 120.7)
Wellesley			
Male	2	0.9	NC*
Female	118	108.6	108.7 (89.9 - 130.1)
Weston			
Male	1	0.5	NC*
Female	46	51.2	89.9 (65.8 - 119.9)
Westwood			
Male	0	0.6	NC*
Female	68	66.0	103.0 (80.0 - 130.6)
Massachusetts			
Male	NA	NA	100.0 (100.0 - 100.0)
Female	NA	NA	100.0 (100.0 - 100.0)

Source: Cancer Registry (MassCHIP Instant Topics)

Are there any statistically significant differences between CHNA 18 and Massachusetts?
- Needham and Newton women had a higher incidence rate than would be expected compared to Massachusetts

Colorectal Cancer Deaths

	Age Adjusted Death Rate (95% CI)	
	1999-2001	**2006-2008**
Brookline	22.96 (15.94 - 29.99)	15.89 (9.74 - 22.04)
Dedham	25.96 (15.56 - 36.36)	11.80 (4.74 - 18.86)
Dover	22.34 (0.00 - 47.99)	14.74 (0.00 - 35.24)
Needham	15.46 (8.33 - 22.59)	10.49 (4.84 - 16.15)
Newton	15.04 (10.69 - 19.39)	10.19 (6.81 - 13.57)
Waltham	18.71 (12.50 - 24.93)	9.85 (5.49 - 14.20)
Wellesley	13.67 (6.20 - 21.14)	5.34 (0.54 - 10.14)
Weston	25.30 (10.24 - 40.35)	3.05 (0.00 - 7.37)
Westwood	20.97 (9.74 - 32.20)	10.28 (2.30 - 18.25)
CHNA 18	18.47 (15.94 - 21.00)	10.42 (8.55 - 12.29)
Massachusetts	21.64 (21.01 - 22.28)	16.13 (15.60 - 16.67)
United States	20.57	16.79

Source: Vital Records (MassCHIP custom report), National Cancer Institute

Comment:
Are there any statistically significant differences over time or between the CHNA and Massachusetts?
- The age-adjusted death rate decreased from 1999-2001 to 2006-2008 in Weston, CHNA 18, and Massachusetts
- In 2006-2008, CHNA 18, Newton, Waltham, Wellesley, and Weston had significantly lower age-adjusted death rates compared to Massachusetts

Colorectal cancer incidence (2003-2007)

	Observed	Expected	Standardized Incidence Ratio (95% CI)
Brookline			
Male	66	72.6	90.9 (70.3 - 115.7)
Female	68	80.7	84.3 (65.4 - 106.8)
Dedham			
Male	32	40.3	79.4 (54.3 - 112.1)
Female	36	39.2	91.9 (64.4 - 127.2)
Dover			
Male	6	8.7	69.2 (25.3 - 150.7)
Female	6	6.4	93.9 (34.3 - 204.4)
Needham			
Male	45	49.5	90.8 (66.2 - 121.5)
Female	57	55.1	103.4 (78.3 - 133.9)
Newton			
Male	114	135.1	84.4 (69.6 - 101.4)
Female	116	134.2	86.4 (71.4 - 103.7)
Waltham			
Male	57	80.3	71.0 (53.8 - 92.0)
Female	98	81.5	120.3 (97.6 - 146.6)
Wellesley			
Male	28	39.7	70.6 (46.9 - 102.0)
Female	38	39.6	95.9 (67.9 - 131.7)
Weston			
Male	13	22.3	58.2 (30.9 - 99.5)
Female	15	19.3	77.8 (43.5 - 128.4)
Westwood			
Male	22	27.1	81.0 (50.0 - 122.7)
Female	33	27.2	121.3 (83.5 - 170.3)
Massachusetts			
Male	NA	NA	100.0 (100.0 - 100.0)
Female	NA	NA	100.0 (100.0 - 100.0)

Source: Cancer Registry (MassCHIP Instant Topics)

Are there any statistically significant differences between CHNA 18 and Massachusetts?
- Waltham and Weston men had a higher lower rate than would be expected compared to Massachusetts

Leukemia Deaths

	Age Adjusted Death Rate (95% CI)	
	1999-2001	**2006-2008**
Brookline	7.26 (3.25 - 11.27)	7.84 (3.64 - 12.04)
Dedham	7.48 (1.93 - 13.02)	7.91 (2.38 - 13.43)
Dover	9.70 (0.00 - 23.33)	0.00 (0.00 - 0.00)
Needham	10.22 (4.33 - 16.12)	4.92 (1.13 - 8.72)
Newton	12.49 (8.47 - 16.52)	4.48 (2.15 - 6.82)
Waltham	9.24 (4.82 - 13.65)	5.07 (1.91 - 8.23)
Wellesley	7.29 (1.88 - 12.71)	7.32 (1.83 - 12.81)
Weston	2.32 (0.00 - 6.85)	4.60 (0.00 - 11.05)
Westwood	8.41 (0.81 - 16.01)	11.31 (2.66 - 19.96)
CHNA 18	9.21 (7.41 - 11.02)	6.02 (4.59 - 7.45)
Massachusetts	7.41 (7.03 - 7.78)	6.73 (6.38 - 7.08)
United States	7.67	7.09

Source: Vital Records (MassCHIP custom report); National Cancer Institute

Comment:
Are there any statistically significant differences over time or between the CHNA and Massachusetts?
- The age-adjusted death rate decreased from 1999-2001 to 2006-2008 in Newton
- There were no statistically significant differences between each community and CHNA 18 or Massachusetts in 2006-2008

Leukemia Incidence (2003-2007)

	Observed	Expected	Standardized Incidence Ratio (95% CI)
Brookline			
Male	31	18.9	164.1 (111.5 - 232.9)
Female	16	16.3	98.0 (56.0 - 159.2)
Dedham			
Male	11	10.2	107.9 (53.8 - 193.1)
Female	8	7.7	103.4 (44.5 - 203.7)
Dover			
Male	1	2.2	NC*
Female	1	1.4	NC*
Needham			
Male	14	12.6	111.2 (60.7 - 186.5)
Female	10	10.5	95.0 (45.5 - 174.7)
Newton			
Male	22	34.2	64.3 (40.3 - 97.3)
Female	23	26.4	87.0 (55.1 - 130.5)
Waltham			
Male	10	21.1	47.4 (22.7 - 87.2)
Female	19	16.5	115.4 (69.4 - 180.2)
Wellesley			
Male	16	10.1	158.0 (90.2 - 256.6)
Female	9	8.1	111.3 (50.8 - 211.3)
Weston			
Male	2	5.6	NC*
Female	3	3.8	NC*
Westwood			
Male	8	6.9	116.8 (50.3 - 230.1)
Female	5	5.2	95.9 (30.9 - 223.9)
Massachusetts			
Male	NA	NA	100.0 (100.0 - 100.0)
Female	NA	NA	100.0 (100.0 - 100.0)

Source: Cancer Registry (MassCHIP Instant Topics)

Are there any statistically significant differences between CHNA 18 and Massachusetts?
- Newton and Waltham men had a lower incidence rate, and Brookline men had a higher incidence rate than would be expected compared to Massachusetts

Lung Cancer Deaths

	Age Adjusted Death Rate (95% CI)	
	1999-2001	2006-2008
Brookline	35.34 (26.39 - 44.29)	28.52 (20.46 - 36.58)
Dedham	66.77 (49.83 - 83.71)	46.78 (33.00 - 60.55)
Dover	30.90 (3.16 - 58.63)	27.73 (0.39 - 55.08)
Needham	34.93 (24.21 - 45.66)	33.87 (23.35 - 44.39)
Newton	34.00 (27.35 - 40.65)	31.43 (25.11 - 37.76)
Waltham	46.94 (36.94 - 56.93)	49.78 (39.69 - 59.86)
Wellesley	26.36 (15.80 - 36.93)	26.26 (15.56 - 36.96)
Weston	16.59 (4.28 - 28.90)	21.82 (8.25 - 35.40)
Westwood	53.21 (34.47 - 71.94)	48.58 (30.21 - 66.96)
CHNA 18	38.95 (35.21 - 42.70)	35.70 (32.13 - 39.26)
Massachusetts	54.75 (53.73 - 55.78)	50.94 (49.97 - 51.90)
United States	55.52	50.69

Source: Vital Records (MassCHIP Custom Report), National Cancer Institute

Comment:
Are there any statistically significant differences over time or between the CHNA and Massachusetts?
- The age-adjusted death rate decreased from 1999-2001 to 2006-2008 in Massachusetts
- In 2006-2008, CHNA 18, Brookline, Needham, Newton, Wellesley, and Weston had significantly lower age-adjusted death rates compared to Massachusetts

Lung Cancer Incidence (2003-2007)

	Observed	Expected	Standardized Incidence Ratio (95% CI)
Brookline			
Male	66	97.6	67.6 (52.3 - 86.1)
Female	84	105.0	80.0 (63.8 - 99.1)
Dedham			
Male	47	55.9	84.1 (61.8 - 111.8)
Female	60	54.9	109.2 (83.3 - 140.6)
Dover			
Male	7	11.7	59.6 (23.9 - 122.8)
Female	9	9.6	93.3 (42.6 - 177.2)
Needham			
Male	43	67.3	63.9 (46.2 - 86.0)
Female	59	70.1	84.2 (64.1 - 108.6)
Newton			
Male	104	182.9	56.9 (46.5 - 68.9)
Female	141	180.4	78.2 (65.8 - 92.2)
Waltham			
Male	108	110.1	98.1 (80.5 - 118.4)
Female	95	112.5	84.4 (68.3 - 103.2)
Wellesley			
Male	19	54.2	35.0 (21.1 - 54.7)
Female	27	54.1	49.9 (32.9 - 72.7)
Weston			
Male	15	30.3	49.5 (27.7 - 81.7)
Female	16	25.5	62.8 (35.9 - 102.1)
Westwood			
Male	24	36.8	65.1 (41.7 - 96.9)
Female	38	35.3	107.6 (76.1 - 147.7)
Massachusetts			
Male	NA	NA	100.0 (100.0 - 100.0)
Female	NA	NA	100.0 (100.0 - 100.0)

Source: Cancer Registry (MassCHIP Instant Topics)

Are there any statistically significant differences between CHNA 18 and Massachusetts?
- Brookline, Needham, Newton, Wellesley, Weston, and Westwood men, and Brookline, Newton, and Wellesley women had a lower incidence rate than would be expected compared to Massachusetts

Prostate Cancer Deaths

	Age Adjusted Death Rate (95% CI)	
	1999-2001	**2006-2008**
Brookline	30.76 (17.28 - 44.25)	22.89 (11.89 - 33.88)
Dedham	29.48 (11.05 - 47.92)	17.11 (4.44 - 29.78)
Dover	50.57 (0.00 - 108.78)	27.49 (0.00 - 65.96)
Needham	33.95 (17.35 - 50.55)	17.61 (5.99 - 29.24)
Newton	20.78 (12.64 - 28.91)	22.90 (15.19 - 30.62)
Waltham	30.73 (17.09 - 44.38)	17.59 (8.00 - 27.19)
Wellesley	33.58 (14.51 - 52.64)	10.73 (0.23 - 21.23)
Weston	15.91 (0.00 - 33.95)	11.73 (0.00 - 25.44)
Westwood	19.49 (2.41 - 36.57)	19.03 (3.49 - 34.57)
CHNA 18	27.19 (22.20 - 32.18)	19.38 (15.47 - 23.29)
Massachusetts	30.99 (29.71 - 32.26)	23.42 (22.38 - 24.46)
United States	30.45	23.64

Source: Vital Records (MassCHIP custom report); National Cancer Institute

Comment:
Are there any statistically significant differences over time or between the CHNA and Massachusetts?
- The age-adjusted death rate decreased from 1999-2001 to 2006-2008 in Massachusetts
- In 2006-2008, Wellesley had a significantly lower age-adjusted death rate compared to Massachusetts

Prostate Cancer Incidence (2003-2007)

	Observed	Expected	Standardized Incidence Ratio (95% CI)
Brookline			
Male	212	198.6	106.7 (92.9 - 122.1)
Dedham			
Male	127	110.9	114.5 (95.4 - 136.2)
Dover			
Male	35	25.4	137.7 (95.9 - 191.5)
Needham			
Male	145	131.5	110.3 (93.0 - 129.7)
Newton			
Male	379	362.8	104.5 (94.2 - 115.5)
Waltham			
Male	206	220.2	93.6 (81.2 - 107.2)
Wellesley			
Male	128	110.7	115.6 (96.4 - 137.4)
Weston			
Male	70	60.9	115.0 (34.1 - 247.1)
Westwood			
Male	70	70.5	99.3 (77.4 - 125.5)
Massachusetts			
Male	NA	NA	100.0 (100.0 - 100.0)

Source: Cancer Registry (MassCHIP Instant Topics)

Are there any statistically significant differences between CHNA 18 and Massachusetts?
- There are no difference in incidence rates than what would be expected compared to Massachusetts

6.2 Smoking*

% Current Smoker: This is the percent of respondents aged 18 and over who reported smoking 100 cigarettes in their lifetime and now smoke everyday or some days

% Former Smoker: This is the percent of respondents aged 18 and over who reported smoking 100 cigarettes in their lifetime and now do not smoke at all

% ≤10 cigarettes/day: This is the percent of current smokers who reported smoking 10 or fewer cigarettes a day

% 11-20 cigarettes/day: This is the percent of current smokers who reported smoking 20 or less, but more than 10, cigarettes a day

Healthy People 2020 objective: Reduce the percent of adults aged 18 and older who are current cigarette smokers to 12.0%

Smoking Prevalence

	% Current Smoker (95% CI)		% Former Smoker (95% CI)	
	1999-2001	**2008-2010**	**1999-2001**	**2008-2010**
CHNA 18	13.8 (10.5 - 17.1)	7.4 (5.0 - 9.7)	27.3 (23.5 - 31.1)	29.9 (26.9 - 32.9)
Massachusetts	19.9 (19.2 - 20.5)	15.5 (14.9 - 16.2)	27.7 (27.0 - 28.4)	28.6 (28.0 - 29.2)
United States	23.2	20.2	NA	NA

*Data for the CHNA does not include Brookline because the custom report did not allow the addition of Brookline
Source: BRFSS (MassCHIP Custom Report); National Health Interview Survey via the CDC

Smoking Intensity

	% ≤10 cigarettes/day (95% CI)		% 11-20 cigarettes/day (95% CI)	
	1999-2001	**2008-2010**	**1999-2001**	**2008-2010**
CHNA 18	50.0 (37.0 - 63.0)	59.8 (44.0 - 75.6)	30.1 (18.7 - 41.6)	33.6 (17.8 - 49.3)
Massachusetts	45.6 (43.8 - 47.4)	56.2 (54.2 - 58.2)	40.8 (39.0 - 42.5)	35.8 (33.9 - 37.7)

*Data for the CHNA does not include Brookline because the custom report did not allow the addition of Brookline
Source: BRFSS (MassCHIP Custom Report)

Comment:

Are there any statistically significant differences over time or between the CHNA and Massachusetts?

- From 1999-2001 to 2008-2010, the percent of individuals who reported that they were current smokers decreased in CHNA 18 and Massachusetts
- In 2008-2010, CHNA 18 had a lower percent of current smokers compared to Massachusetts
- In Massachusetts, but not in CHNA 18, the percent of current smokers who reported smoking less than 10 cigarettes a day increased and the percent of current smokers who reported smoking between 11 and 20 cigarettes a day decreased