

Cancer Incidence and Mortality In Boston Neighborhoods, 2002-2006



Richard Knowlton, MS
Susan Gershman, PhD
Massachusetts Cancer Registry
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Purpose of the Report

- Assess the burden of cancer in Boston at a more local level, understanding that the neighborhoods of Boston are distinct entities with distinct economic, racial, and ethnic components.
- The data in this report will help plan prevention and education efforts and support services at a neighborhood level.

Neighborhoods of Boston

- Boston=19% Poverty

- MA=9% Poverty

>20% Below Poverty:

- Allston/Brighton
- Jamaica Plain
- Mattapan
- Roxbury
- South End
- Fenway/Kenmore (37%-
very large student
population)

15-20% Below Poverty:

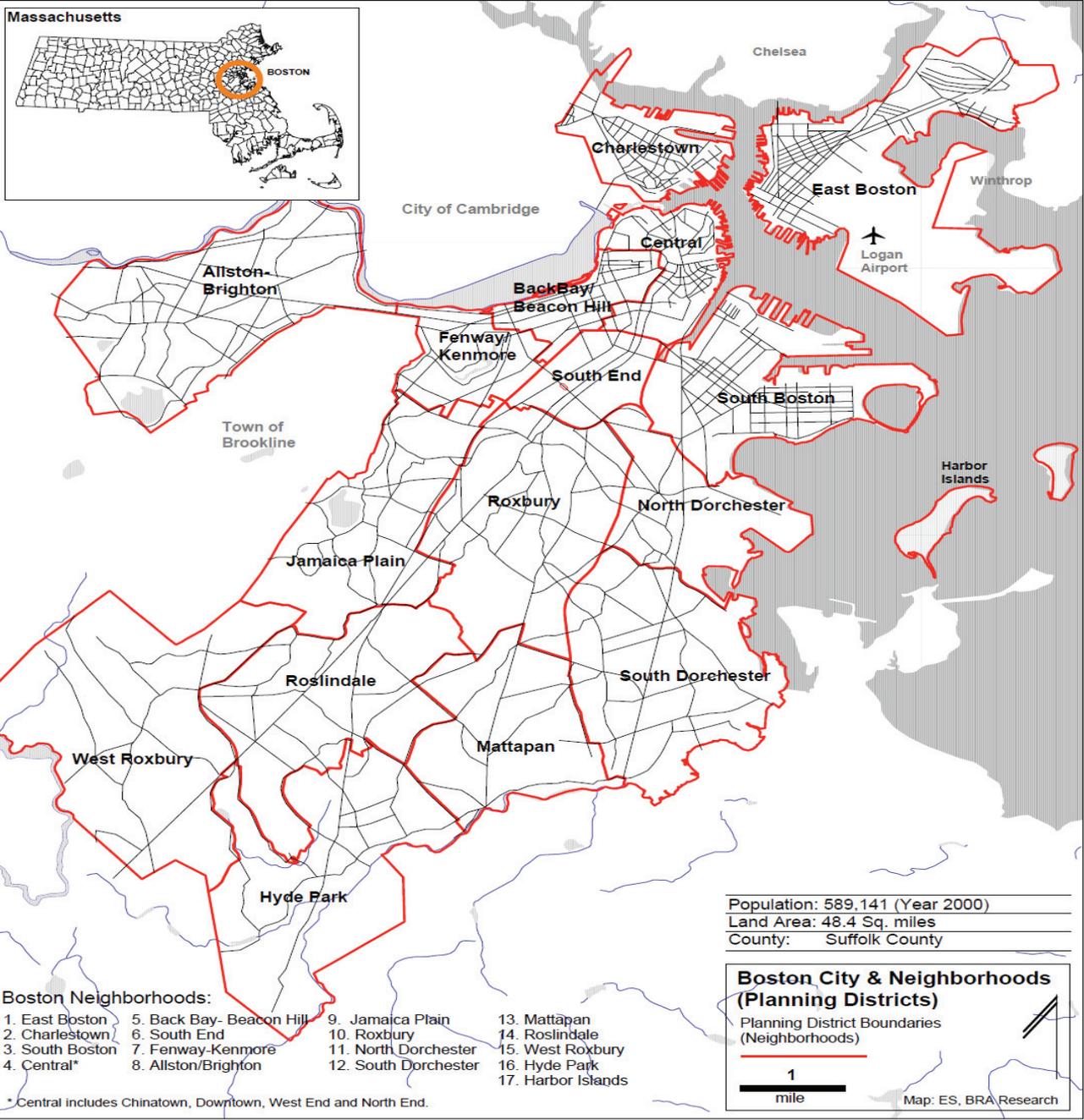
- Charlestown
- Dorchester
- East Boston
- North/West End
- South Boston

<15% Below Poverty:

- Back Bay/Beacon Hill
- Hyde Park
- Roslindale
- West Roxbury

(Poverty levels determined by US Census and HUD methodology.)

BOSTON CITY AND NEIGHBORHOODS (PLANNING DISTRICTS)



Methods

- Neighborhoods were defined by census tract definitions used in a series of Boston Redevelopment Authority Reports.
- Using MCR Data, SIRs were calculated by comparing the observed and expected numbers of cases based on the MA rate for 23 types of cancer and all invasive cancers combined. Using MA death data, SMRs were calculated to compare observed and expected numbers of cancer deaths based on MA rates.
- All data on income, poverty level, race, and language are from the 2000 US Census.

Exclusions:

- In both the incidence and the mortality files, people with addresses of nursing homes or homeless shelters were excluded from the neighborhood analyses as it was not known whether they were residents of the neighborhood or from another area and temporarily residing in a nursing home or homeless shelter.

Limitations:

- The neighborhoods for this report are based on census tracts and not blocks. When certain tracts straddled two neighborhoods at the block level, we assigned the neighborhood for the census tract based on where the majority population in the tract lived.
- The neighborhoods themselves may have variations in economics based on census blocks and are not necessarily monolithic.
- Neighborhoods with large student populations such as Fenway/Kenmore and Allston/Brighton have higher poverty rates due in large part to student incomes.
- Due to the time it takes to geocode data, 2006 data were the most recently available.

Cancer Variations by Neighborhood:

- Prostate
- Female Breast
- Lung
- Colorectal
- Stomach
- Liver
- Melanoma

Prostate Cancer:

- Rates were significantly elevated in the following neighborhoods:
 - Hyde Park (SIR)
 - Jamaica Plain (SIR)
 - Mattapan (SIR)
 - Roslindale (SIR and SMR)
 - Roxbury (SIR and SMR)
 - South End (SIR)
- All of these neighborhoods had a black population of greater than 15% (MA is 5% black). East Boston, South Boston, Charlestown (all <5% black) had significantly lower SIRS for prostate cancer.
- Mattapan and Hyde Park, both areas with large Haitian populations had the highest SIRs for prostate cancer in the city.

Female Breast Cancer

- Rates were significantly elevated in the following neighborhoods:
 - North/West End (SIR)
 - Hyde Park (SMR)
 - Jamaica Plain (SMR)
 - Roslindale (SMR)
 - Roxbury (SMR)
- In Mattapan (77% black) and Roxbury (63% black), females were significantly more likely to be diagnosed at a later stage of breast cancer. These are both communities with greater than 20% of the population living below the poverty level.

Lung Cancer:

- Rates were significantly elevated in the following neighborhoods:
 - South Boston females (SIR); males and females (SMR)
 - Dorchester males (SIR)
 - North/West End males (SIR)
 - Jamaica Plain males (SMR)
 - Roxbury males (SMR)
- South Boston has smoking rates 50% higher than the city average. It has recently been the target of smoking cessation programs.
- The North/West End and Dorchester are home to large Chinese and Vietnamese populations, respectively. Males in both of these groups have high smoking rates.

Colorectal Cancer:

- Rates were significantly elevated in the following neighborhoods:
 - Hyde Park females (SIR)
 - North/West End males and females (SIR)
 - Jamaica Plain males (SIR and SMR)
 - South Boston males (SIR)
 - Roslindale males and females (SIR and SMR)
- In South Boston, females were significantly more likely to be diagnosed at a later stage. Males were not. Mortality rates were not elevated in South Boston for females.

Stomach Cancer:

- Rates were significantly elevated in the following neighborhoods:
 - Hyde Park females (SIR)
 - Jamaica Plain (SIR)
 - North/West End males (SIR and SMR)
 - Roxbury males and females (SMR)
 - Allston/Brighton males and females (SMR)
 - Roslindale males (SIR and SMR)
- These are neighborhoods with large Asian, black, and Hispanic populations. These groups all have higher rates of stomach cancer due in part to *Helicobacter pylori* infection.

Liver Cancer:

- Rates were significantly elevated in the following neighborhoods:
 - North End/West End males and females (SIR)
 - North End/West End males (SMR)
 - Allston/Brighton males (SMR)
 - Jamaica Plain (SMR)
 - Mattapan males (SMR)
 - Roxbury males (SMR)
 - South Boston males (SMR)

Liver Cancer:

- Liver cancer is related to:
 - Hepatitis B and C infection due to injection drug use
 - Cirrhosis of the liver due to alcoholism
 - Chronic hepatitis B infection acquired through maternal transmission (Eastern Asian groups-Chinese, Vietnamese)
- There appears to be a correlation between poverty level due to these risk factors and liver cancer. The neighborhoods with the three smallest percentages of people living below the poverty level (West Roxbury, Hyde Park, and Back Bay/Beacon Hill) did not have significantly elevated mortality rates of liver cancer.

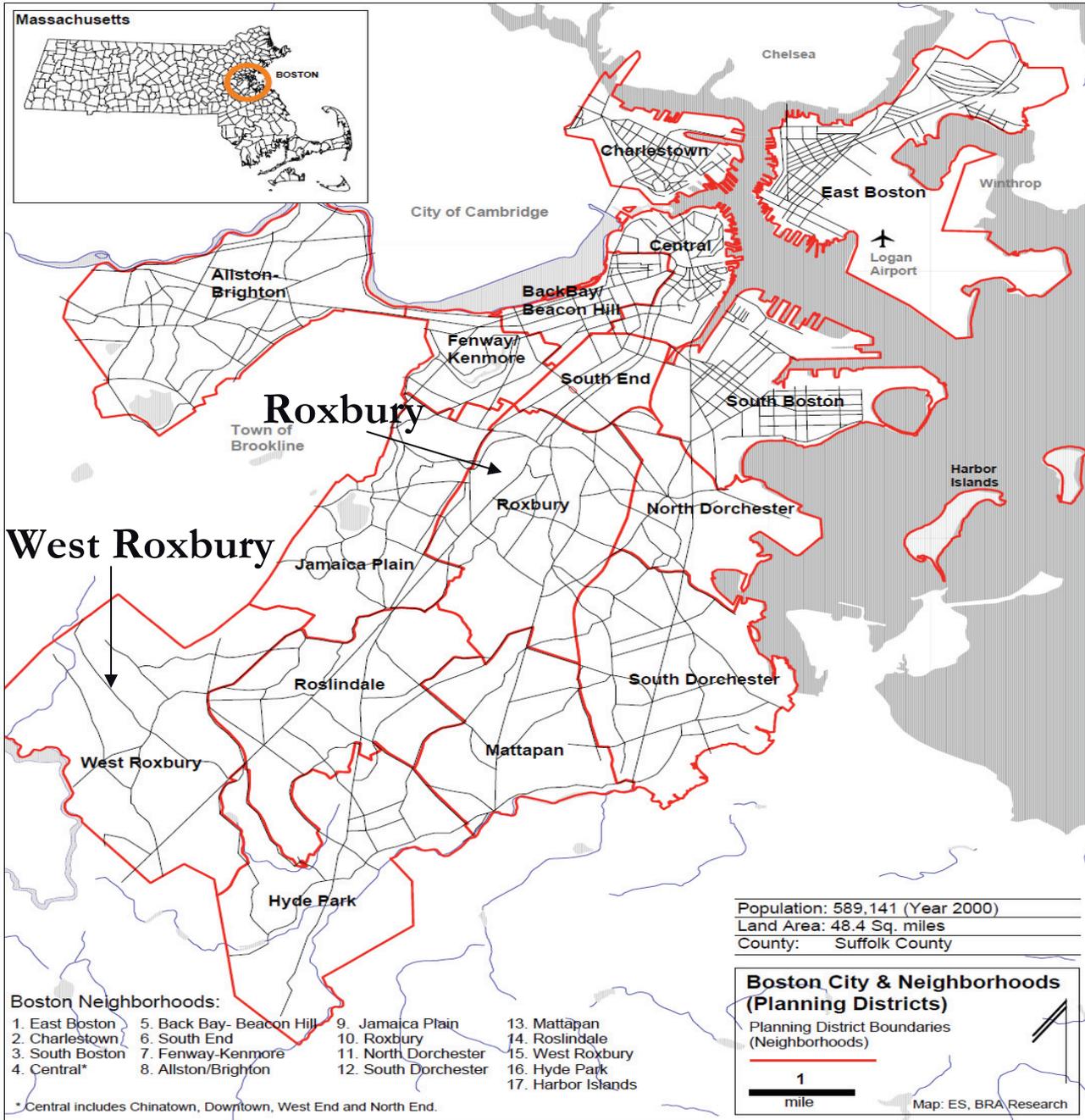
Melanoma

- Rates were significantly elevated in the following neighborhoods:
 - Back Bay/Beacon Hill males and females (SIR)
 - Charlestown males and females (SIR)
 - Jamaica Plain males and females (SIR)
 - North/West End males and females (SIR)
 - West Roxbury males and females (SIR)
 - South Boston females (SIR and SMR)
 - Roslindale males (SMR)
- With the exception of Jamaica Plain and Roslindale, these were all neighborhoods with a white population of 70% or more. The incident cases in Jamaica Plain and the deaths in Roslindale were all among whites.

A Tale of Two Cities:

Roxbury and West Roxbury

BOSTON CITY AND NEIGHBORHOODS (PLANNING DISTRICTS)



Roxbury (56,658 people/9.6% of Boston):



Roxbury

- Founded in 1630 and originally named 'Rocksberry' due to the abundance of puddingstone. It was incorporated into Boston in 1868.
- In 1862, the New England Hospital for Women and Children, a pioneer teaching hospital for female doctors and nurses was established.
- In the early 1900s there was a large Jewish population. By the postwar period, large migrations of blacks from the South established Roxbury as the center of the black community in Boston.
- The 2000 the racial/ethnic breakdown was 5% white, 63% black, 24% Hispanic, and 1% Asian. English was spoken in 66% of the households, Spanish in 22%, and French Creole in 6%.
- The median income was \$27,133 with 27% of residents living below the poverty level, the highest percent in Boston outside of the largely student Fenway/Kenmore neighborhood.

Cancer in Roxbury:

■ Among females in Roxbury:

- The incidence of cervical cancer and myeloma was significantly elevated compared to the state.
- All cancers, breast cancer, and stomach cancer had a significantly elevated mortality compared to the state.
- The percentage of local stage diagnoses of breast cancer was significantly lower in Roxbury (56.4%) compared to the state (67.6%).

■ Among males in Roxbury:

- The incidence of myeloma and prostate cancer was significantly elevated compared to the state.
- Mortality for all cancers, lung cancer, liver cancer, oral cancer, prostate cancer, and stomach cancer was also significantly elevated.
- The percentage of local/regional stage diagnoses of prostate cancer was significantly lower in Roxbury (92.0%) compared to the state (96.4%).

West Roxbury (28,753 people/4.9% of Boston):



West Roxbury

- Originally part of Roxbury, it broke away in 1851 and was then annexed by Boston in 1894.
- In the 1840s, Brook Farm was established as a Transcendentalist enclave. Visitors included Nathaniel Hawthorne, Ralph Waldo Emerson, and Horace Greeley.
- The 2000 the racial/ethnic breakdown was 84% white, 6% black, 5% Hispanic, and 4% Asian, English was spoken in 79% of the households, Spanish in 4%, and Greek in 3%.
- The median income was \$54,860 with 6% of residents living below the poverty level, the lowest percent in Boston.

Cancer in West Roxbury:

■ Among females in West Roxbury:

- The incidences of all cancers, brain cancer, and melanoma were significantly elevated compared to the state.
- There were no cancers with significantly elevated mortality compared to the state.
- There were no significant differences in stage at diagnosis for breast cancer and colorectal cancer among females as compared to the state.

■ Among males in West Roxbury:

- The incidences of melanoma, myeloma, and all cancers were all significantly elevated compared to the state.
- There were no cancers with significantly elevated mortality compared to the state.
- There were no significant differences in stage at diagnosis for prostate cancer and colorectal cancer among males as compared to the state.

Cancer in the Two 'Cities':

- Roxbury and West Roxbury are geographically very close to each other, but are very different in many ways, with economics and racial/ethnic breakdowns reflected in the cancers in these two neighborhoods.
- The incident cancers that were significantly elevated in Roxbury were consistent with cancers that would be elevated in a neighborhood where 63% of the residents are black, such as prostate cancer and multiple myeloma while those in West Roxbury (melanoma) were consistent with a neighborhood that is 84% white.

Cancer in the Two 'Cities':

- Breast cancer and prostate cancer were both more likely to be diagnosed at a later stage in Roxbury.
- The incidence for all cancers was significantly elevated in West Roxbury for both sexes, but this was driven by the significant elevation in melanoma.
- Leukemia was the only cancer with an elevated mortality rate among West Roxbury males while several cancers had significantly elevated mortality rates in Roxbury. Some of these cancers such as stomach and liver are related to poor economic conditions (new immigrant, drug addiction) more than race/ethnicity while others such as prostate and female breast have a racial component.

Conclusions:

- The neighborhoods of Boston are very unique entities with very different distributions of cancer incidence and mortality, partly based on economics and race.
- Behavioral risk factors specific to certain neighborhoods such as smoking rates, alcohol abuse, or injection drug use are related to cancer.
- Neighborhoods with a higher prevalence of specific infections related to high risk behavior and/or economic status have significantly higher incidences of certain cancers.
 - Hepatitis B and C infections (liver cancer)
 - HIV infections (non-Hodgkin lymphoma, multiple myeloma)
 - HPV infections (cervical cancer, certain oral cancers)
 - Helicobacter pylori infections (stomach cancer)

Implications:

- Knowing the cancer distribution of a specific neighborhood can help target resources for screening, prevention, and treatment services at neighborhood hospitals and health centers.

- Neighborhood Specific Educational Outreach Examples:
 1. Hep B vaccinations and Hep B and C screenings in neighborhoods with elevated liver cancer.
 2. Smoking cessation programs geared to areas with significantly elevated lung cancer SIRs, such as the program in South Boston.
 3. Testing and treatment programs for *Helicobacter pylori* infection in areas with elevated stomach cancer.
 4. Education about the use of sunscreen and monitoring the skin in areas with elevated melanoma.
 5. Breast, prostate, and colorectal cancer screening and helping those who need it get connected with follow up treatment after a positive result especially geared to neighborhoods with elevated mortality rates.

Acknowledgements:

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