Reducing the Cancer Burden in New York City

Cancer Action Network℠
American Cancer Society®

AMERICAN CANCER SOCIETY CANCER ACTION NETWORK

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REDUCING THE CANCER BURDEN IN NEW YORK CITY

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What is the American Cancer Society Cancer Action Network (ACS CAN)?

The American Cancer Society Cancer Action Network (ACS CAN) is making cancer a top priority for public officials and candidates at the federal, state and local levels. ACS CAN empowers advocates across the country to make their voices heard and influence evidence-based public policy change as well as legislative and regulatory solutions that will reduce the cancer burden. As the American Cancer Society's nonprofit, nonpartisan advocacy affiliate, ACS CAN is critical to the fight for a world without cancer.

Reducing suffering and death from cancer relies as much on public policy as it does on proven medical research. As such, ACS CAN has staff in all states and major cities to inform lawmakers and policymakers that they play a critical role in making decisions that can help save more lives from cancer.

In New York State, ACS CAN has a presence at both the State Capitol in Albany and at City Hall in New York City. A team of ACS CAN staff and volunteers in New York ensures that cancer patients, survivors, their families and experts on the disease have a voice in public policy matters relevant to cancer at all levels of government. We mobilize our large, powerful grassroots network of cancer advocacy volunteers across New York State and in all five boroughs of New York City to make sure lawmakers are aware of cancer issues that matter to their constituents.

Working closely with the American Cancer Society's research and cancer control leadership along with ACS staff across New York State, ACS CAN in New York State has been actively involved in efforts to reduce tobacco use, increase access to early detection, promote healthy eating and active living and other public policies.

ACS CAN is strictly nonpartisan and does not endorse, oppose or contribute to candidates or political parties. As a result, we are viewed as a trusted source of health policy information by legislators, policymakers and opinion leaders. The only side ACS CAN takes is the side of cancer patients.

Visit us at www.fightcancer.org/ny.

EXECUTIVE SUMMARY

"You have cancer" may be the most difficult words anyone can hear. Unfortunately, nationwide approximately 40 out of 100 men and 38 out of 100 women will develop cancer during their lifetime[1] according to the American Cancer Society *Cancer Facts & Figures 2018*. 87 percent of all cancers in the United States are diagnosed in people 50 years of age or older.[2] Cancer is the second most common cause of death in the United States after heart disease.[3] The impact that cancer has on New York City is enormous. Every week, on average, approximately 771 New York City residents were diagnosed with cancer and 241 individuals died from the disease between 2011-2015 according to the New York State Cancer Registry.[4] The number of people diagnosed with cancer annually from 2011-2015 on average was nearly twice the capacity of Madison Square Garden.[5]

However, the public fight against cancer often lacks focus and not enough attention is paid to many of the leading causes of cancer. While the lifesaving work of New York's incredible cancer centers are well known, many of the most important decisions made in the fight against cancer are made in the halls of city government.

This report takes an in-depth look at the state of cancer in New York City. *Reducing the Cancer Burden In New York City* examines public data and identifies trends to inform policymakers on how to reduce the number of new cases of cancer, increase access to quality cancer treatment, reduce disparities and enhance the quality of life for those suffering from the disease. *Reducing the Cancer Burden In New York City* reviews the state of cancer in the city, on a borough-by-borough basis and in New York City's neighborhoods.

Reducing the Cancer Burden In New York City includes an in-depth look at the number and rate of all new cancer cases and cancer deaths along with the most common cancers. This report examines the impact of the four most common cancers which combined make up nearly 50 percent of all cancer cases citywide and nearly 50 percent of all cancer deaths citywide. This report also examines cancers caused by the human papillomavirus (HPV) and HPV vaccination rates. The vaccine is available everywhere in New York City and is covered by all private insurance in New York State and those adolescents without insurance can get the vaccine for free with through the Vaccines For Children Program. Included in this report is an examination of the rate of early stage diagnosis of cancer in New York City. Finally, this report includes detailed policy recommendations for how to tackle cancer in New York City.

As this report shows, cancer cases and cancer deaths differ greatly among boroughs and the neighborhoods making up New York City's 59 community districts, in part reflecting the diverse socioeconomic and demographic characteristics across New York City. Despite these differences, no borough or neighborhood should feel complacent. Cancer still impacts too many New Yorkers, and many are avoidable. Every borough and neighborhood experiences cancer incidence and mortality rates that are too high.

A Note About The Data In This Report

Care should be taken in the interpretation of findings for neighborhoods with a small population size because differences may be random variations due to few cases/deaths. Data are based on residence at time of diagnosis. Cancer may have a long latency period before reaching a clinically detectable stage, and between the cancer's initiation and its detection, an individual's residence, personal behaviors and occupation may have changed. Due to the high level of uncertainty referenced above, all neighborhood data is considered approximate and should be interpreted with caution.

This report examines publicly-available cancer data from the New York State Department of Health and the New York City Department of Health and Mental Hygiene. State law requires that all cancers other than basal and squamous cell skin cancer be reported to the New York State Cancer Registry. Average annual cases, average annual deaths and the number of cases per 100,000 population is presented. The rate per 100,000 population is adjusted for age (more cancer would be expected in an older population). Data is averaged over a five-year period, 2011 – 2015.

About New York City Neighborhoods Data

In this report, the New York City neighborhoods correspond to the Public Use Microdata Areas (PUMAs) defined by the U.S. Census Bureau. PUMAs are groups of census tracts containing at least 100,000 people. In New York City, PUMAs approximate the city Community Districts (see http://www1.nyc.gov/assets/planning/download/pdf/data-maps/nyc-population/census2010/puma_cd_map.pdf*.) Direct Community District data is used when available and noted as such. See Appendix E for a map of PUMAs and the approximate corresponding Community Districts.*

FINDINGS

- On average, approximately 40,126 New York City residents were diagnosed with cancer annually between 2011-2015, with 12,453 dying from the disease annually during this period.

- On average, approximately 771 New York City residents were diagnosed with cancer and 241 individuals died from cancer each week from 2011-2015.

- The number of people diagnosed with cancer annually from 2011-2015 on average was nearly twice the capacity of Madison Square Garden.

- Four cancers - lung, prostate, breast and colorectal - account for nearly half (47.4 percent) of all cancer diagnoses and nearly half (45 percent) of all cancer deaths in New York City from 2011-2015.

- Lung and bronchus cancer is the single largest cause of cancer death, causing nearly 2668 deaths yearly from 2011-2015. Colorectal (1,240), female breast (1,027), and Pancreatic (933) cancers were the second, third and fourth most frequent causes of mortality.

- Female breast cancer is New York City's most commonly diagnosed cancer among women, with 5,887 women diagnosed annually between 2011-15, whereas prostate cancer was the most common among men (5,347 new cases annually from 2011-2015).

- Lung and bronchus cancer is New York City's most common cause of cancer death among women, with 1237 women cancer deaths caused annually between 2011-15, and men (1430 deaths annually from 2011-2015).

- Men and women living on Staten Island have the highest incidence rate of new cancer cases overall on average annually between 2011-2015.

- Men and women on Staten Island experience the highest rates of lung and bronchus cancer.

- Women in Manhattan and men in the Bronx have the highest rates of female breast and prostate cancer respectively on average annually between 2011-2015.

- Men living in PUMA *"Neighborhoods"* Morris Heights, Fordham South and Mount Hope (#3707), Brownsville & Ocean Hill (#4007), and Tottenville, Great Kills and Annadale (#3901) have the approximate highest cancer incidence rate overall among men. (See page 15 for definition of PUMA Neighborhoods)

- Men living in PUMA *"Neighborhoods"* Jackson Heights and North Corona (#4102), Sunnyside & Woodside (#4109), and Greenpoint and Williamsburg have the approximate lowest cancer incidence rate overall among men. (See page 15 for definition of PUMA Neighborhoods)

- Women living in PUMA *"Neighborhoods"* Tottenville, Great Kills and Annadale (#3901), New Springville and South Beach (#3902), and Bay Ridge and Dyker Heights (#4013) have the approximate highest cancer incidence rate overall among women. (See page 15 for definition of PUMA Neighborhoods)

- Women living in PUMA *"Neighborhoods"* Greenpoint and Williamsburg (#4001), Jackson Heights and North Corona (#4102) and Washington Heights, Inwood and Marble Hill (#3801) have the approximate lowest cancer incidence rate overall among women. (See page 15 for definition of PUMA Neighborhoods)

- Non-Hispanic Whites have the highest rate, 510 cancer cases per 100,000 males and females, of all cancers on average annually between 2011-2015.

- Non-Hispanic Blacks have the highest cancer death rate, 167 cancer deaths per 100,000 males and females, of all cancers on average annually between 2011-2015.

- Citywide, only 40.9 percent of colorectal cancer diagnosed in men and 40.8 percent of colorectal cancer diagnosed in women are detected at an early stage on average annually between 2011-2015.

- Citywide, only 44 percent of cervical cancer diagnosed in women are detected at an early stage on average annually between 2011-2015.

- Citywide, only 21.6 percent of lung and bronchus cancer diagnosed in men and 28.3 percent of lung and bronchus cancer diagnosed in women are detected at an early stage on average annually between 2011-2015.

- About 30 percent of all cancer deaths are caused by cigarette smoking.

- The combined effects of excess body weight, poor diet, alcohol consumption, and physical inactivity are associated with 18 percent of all cancer cases.

- Certain cancers caused by infectious agents, such as the human papillomavirus (HPV), could be prevented through vaccination.

ACS CAN POLICY RECOMMENDATIONS:

Recommendations for reducing tobacco use:

- Increase funding for tobacco control and cessation programs at the New York City DOHMH from $7.2 million to $11.2 million annually with the additional revenue going toward developing a targeted campaign focused on communities with the highest smoking rates. With additional revenue the DOHMH could:
  - Identify people who use tobacco and who would like to quit and connect them with local cessation services;
  - Provide FDA approved cessation treatments; and
  - Fund promotion of the New York State Quit Line and local support services to populations where smoking rates continue to be the highest.
- Earmark a substantial portion of the revenue generated by the City's 10 percent tax on non-cigarette tobacco products to conduct a smoking cessation program at the New York City Housing Authority in partnership with the DOHMH.
- Restrict the sale of all flavored tobacco products including menthol and electronic cigarettes.
- Require all college and university campuses to be tobacco-free, including the use of electronic cigarettes.

Recommendations for reducing obesity:

- Ensure that the four-year, $385 million capital funding commitment included in the New York City Budget adopted in June 2017 is fulfilled and that all schools have a dedicated space for physical education by 2021.
- Baseline $5 million to the New York City Department of Education for the hiring of full-time certified physical education teachers and support staff to ensure that the progress of recent years continues.
- Strengthen the 2015 New York City physical education in schools reporting law to require the Department of Education to:
  - Post all physical education reporting information on individual school websites;
  - Notify all parents of the availability of the new information;
  - Post the data in a manner searchable by individual school, school district, and borough;
  - Include details on whether there is designated space for physical education instruction, a designated gym space to support the minimum amount of physical activity required of students by law; and
  - Include details on the number of certified teachers on a school level
- Provide a new $30 million annual allocation to the DOHMH for new obesity prevention programming. The money should be used as follows:
  - $2 million to fund and coordinate evidence-based city level childhood obesity prevention activities including parental education;
  - $3 million to establish a healthy corner store initiative to help existing corner stores offer healthier food options to their customers;
  - $10 million to create a Healthy Food Financing Initiative (HFFI) to help food establishments open, expand, and improve in neighborhoods that need food and jobs the most; and
  - $15 million to expand Supplemental Nutrition Assistance Program (SNAP) incentives such as Health Bucks so more New Yorkers can immediately afford fresh fruits and vegetables.

- Establish a tax of at least two cents per ounce on all sugary drinks and dedicate the revenue to obesity prevention programming like those included above.
- Restrict the sale of sugary drinks at public parks, beaches and in schools, including at school events.
- Require healthy eating options on kids' menus in restaurants including ensuring that menu items targeting youth do not include sugary drinks.
- Strengthen current nutrition standards for all foods and beverages sold, served, or marketed in schools, before, during and after regular school hours.
- Strengthen current nutrition standards for all foods and beverages sold, served, or marketed in government buildings and other public service venues to increase access to healthy options.
- Establish zoning rules to promote access to healthy foods.
- Conduct a detailed review of streets and sidewalks to ensure that they enable safe walking, running, bicycling and other forms of physical activity.

Recommendations for preventing cancer and increasing rates of early detection:

- Provide a $3.85 million annual allocation to the DOHMH for cancer prevention programming. The money should be used as follows:
  - $2.7 million annually should go toward cancer prevention patient navigation programming;
    - The NYU Langone Perlmutter Cancer Center is currently in the final year of a $1.35 million annual allocation from the DOHMH; Increasing the amount to $2.7 million annually will allow for the program to help more people in medically underserved areas of New York City access screening for colorectal cancer and breast cancer, regardless of their income or insurance status.
  - $500,000 to the to expand the New York City Community Cares Project;
  - $150,000 to cover the transportation costs of patients that are identified through the New York City Community Cares Project; and
  - $500,000 for a health care provider and parent education campaign aimed at increasing Human papillomavirus (HPV) vaccination rates.
- Establish a cancer screening registry that maintains colon, breast, cervical, and lung and bronchus cancer screening records for New York City residents and allocate an appropriate level of funding for its implementation.
- Ensure that there is at least one endoscopy center open in each borough care provider and parental education programming on the importance of the HPV vaccine.
- Provide $350,000 to the New York City Parks Department for a citywide program to provide to free sunscreen at all New York City parks, pools and beaches.

Recommendations for promoting cancer research:

- Establish a New York City Commission on Cancer Research (NYCCCR) to promote significant and original research in New York City into the causes, prevention, treatment and palliation of cancer and serve as a resource to providers and consumers of cancer services. New York City should appropriate $5 million annually to the Commission.
- Contribute $5 million annually to the New York Fund for Innovation in Research and Scientific Talent (NYFIRST) to bring top scientific talent to New York City's leading medical schools, teaching hospitals and cancer research centers.

REDUCING THE CANCER BURDEN IN NEW YORK CITY: THE BIG PICTURE

On average, 40,126.8 New York City residents were diagnosed with cancer annually between 2011-2015, with 12,453.8 dying from the disease annually during this time. The number of people diagnosed with cancer annually from 2011-2015 on average was nearly twice the capacity of Madison Square Garden.

To put it another way, 771.6 New York City residents were diagnosed with cancer and 241.4 individuals died from cancer each week from 2011-2015.[6]

Four cancer sites in the human body represented nearly half (47.4 percent) of all new cancer cases and nearly half (45 percent) of all cancer deaths in New York City from 2011-2015. They are: cancer of the lung, prostate, breast and colorectal.[7]

Breast cancer represents the largest number of cases, while lung and bronchus cancer are the biggest killer.[8] The following table shows the average annual numbers of cancer cases and deaths of the 25 most common cancers in New York City from 2011-2015.[9]

As seen in the table below[10]:

- Lung and bronchus cancer accounted for 10.6 percent of all cancer cases and 21.4 percent of all cancer deaths.
- Female breast cancer accounted for 14.6 percent of all cancer cases and 8.2 percent of all cancer deaths.
- Prostate cancer accounted for 13.3 percent of all cancer cases and 5.4 percent of all cancer deaths.
- Colorectal cancer accounts for 8.8 percent of all cancer cases and 9.9 percent of all cancer deaths.

Average Annual Numbers of Cancer Cases and Deaths in New York City, 2011-2015

Source: New York State Cancer Registry[11]

Type of Cancer	New Cases	Percent		Type of Cancer	Deaths	Percent
All Invasive Malignant Tumors	**40126.8**	**100**		**All Invasive Malignant Tumors**	**12453.8**	**100**
Female breast	5887.2	14.6		Lung and bronchus	2667.8	21.4
Prostate	5347.6	13.3		Colorectal	1240.6	9.9
Lung and bronchus	4288.2	10.6		Colon excluding rectum	1035.6	8.3
Colorectal	3531.6	8.8		Female breast	1027	8.2
Colon excluding rectum	2504.4	6.2		Pancreas	933	7.4
Thyroid	1813	4.5		Prostate	680	5.4
Non-Hodgkin lymphomas	1764.4	4.3		Liver / intrahepatic bile duct	646.6	5.1
Corpus uterus and NOS	1560.6	3.8		Leukemias	478.6	3.8
Urinary bladder (incl. in situ)	1495.2	3.7		Stomach	438.6	3.5
Kidney and renal pelvis	1259.8	3.1		Non-Hodgkin lymphomas	422.6	3.3
Leukemias	1208.2	3		Ovary	340.4	2.7
Pancreas	1205.4	3		Corpus uterus and NOS	335.2	2.6
Liver / intrahepatic bile duct	1048	2.6		Urinary bladder (incl. in situ)	317.2	2.6
Rectum & rectosigmoid	1027.2	2.5		Brain and other nervous system	263	2.5
Stomach	963.6	2.4		Myeloma	257.8	2.1
Melanoma of the skin	928.2	2.3		Esophagus	234.8	2
Oral cavity and pharynx	870.2	2.1		Kidney and renal pelvis	219.8	1.8
Myeloma	782.4	1.9		Rectum & rectosigmoid	205	1.6
Ovary	589.4	1.4		Oral cavity and pharynx	196.6	1.5
Brain and other nervous system	496.8	1.2		Cervix uteri	139.2	1.1
Cervix uteri	426.6	1		Melanoma of the skin	108	<1
Esophagus	321.2	<1		Larynx	94.8	<1
Larynx	286	<1		Thyroid	48.6	<1
Hodgkin lymphoma	276.6	<1		Hodgkin lymphoma	32.2	<1
Testis	202.8	<1		Testis	7.4	<1

REDUCING THE CANCER BURDEN IN NEW YORK CITY: BOROUGH COMPARISONS

Average Annual Cases and Average Annual Deaths[12]

On average, 11,768 people in Brooklyn, 10,937 people in Queens, 8,348.2 people in Manhattan, 6,230.6 people in the Bronx and 2,843 people on Staten Island were diagnosed with cancer each year from 2011-2015. Sadly, on average 3,757.4 people in Brooklyn, 3,342.4 people in Queens, 2,496 people in Manhattan, 2,040.8 people in the Bronx and 817.2 people on Staten Island lost their lives to cancer each year during the same period. An average **771.6** New Yorkers were diagnosed with cancer ***each week*** and **241.4** New Yorkers died from cancer ***each week*** from 2011-2015**.** The below table provides the number of cancer cases and cancer deaths from 2011-2015 for New York City, Brooklyn, Bronx, Manhattan, Queens, and Staten Island.

Average Annual Cancer Cases and Deaths, 2011-2015

Source: New York State Cancer Registry[13]

Average Annual Incidence and Deaths	Citywide Totals	Brooklyn Totals	Bronx Totals	Manhattan Totals	Staten Island Totals	Queens Totals
Diagnosed each year	40126.8	11768.0	6230.6	8348.2	2843.0	10937.0
Die each year	12453.8	3757.4	2040.8	2496.0	817.2	3342.4
Diagnosed each week	771.6	226.3	119.8	160.5	54.6	210.3
Die each week	241.4	72.2	39.2	48.0	15.7	64.2
Average Annual Incidence	**Citywide Totals**	**Brooklyn Totals**	**Bronx Totals**	**Manhattan Totals**	**Staten Island Totals**	**Queens Totals**
All cancer cases	40126.8	11768.0	6230.6	8348.2	2843.0	10937.0
Lung and bronchus	4288.2	1231.0	646.6	906.4	351.6	1152.6
Prostate	5347.6	1559.2	935.8	1052.4	325.6	1474.6
Female Breast	5887.2	1715.6	875.0	1335.0	396.4	1565.2
Colorectal	3531.6	1083.0	541.0	642.6	233.0	1032.0
Average Annual Deaths	**Citywide Totals**	**Brooklyn Totals**	**Bronx Totals**	**Manhattan Totals**	**Staten Island Totals**	**Queens Totals**
All cancer deaths	12453.8	3757.4	2040.8	2496.0	817.2	3342.4
Lung and bronchus	2667.8	789.8	416.2	538.0	219.6	704.2
Prostate	680.0	216.0	119.2	143.8	35.6	165.4
Female Breast	1027.0	330.6	170.2	206.8	57.0	262.4
Colorectal	1240.6	377.2	210.6	223.4	84.8	344.6

Incidence and Mortality Rates Per 100,000

Cancer incidence and mortality rates, which adjust for differences in population size and age, vary by borough and by cancer type. Overall, between 2011-2015:

- Men and women on Staten Island had the highest overall cancer incidence rates
- Men and women in Queens had the lowest overall cancer incidence rates.
- Men and women in the Bronx had the highest overall cancer mortality rates
- Men and women in Queens had the lowest overall cancer mortality rates.

RATE OF INCIDENCE AND MORTALITY BY BOROUGH[14]

The following table provides cancer incidence and mortality rates for 2011-2015 for New York City, each of the five boroughs and the balance of the state outside New York.

Annual Cancer Incidence and Mortality Rates, 2011-2015 (# of cases per 100,000 population) Males[15]

Cancer Cases Rate Per 100,000 Males	Citywide Males	Brooklyn Males	Bronx Males	Manhattan Males	Queens Males	Staten Island Males
All cancer cases	509.1	507.6	537.9	510.1	479.9	577.1
Lung and bronchus	59.7	62.7	61.8	53.7	56.2	76.1
Prostate	134.8	136	160.6	129.3	126.7	125.4
Colorectal	47.7	50.1	49.3	41.8	48.3	49.4
Cancer Deaths Rate Per 100,000 Males	**Citywide Males**	**Brooklyn Males**	**Bronx Males**	**Manhattan Males**	**Queens Males**	**Staten Island Males**
All cancer deaths	169.8	174.8	193.8	159.5	157.4	184.0
Lung and bronchus	39.9	42.8	43.3	34.1	37.1	50.9
Prostate	20.7	22.8	26.6	20.2	17.0	18.1
Colorectal	16.9	17.1	19.6	14.2	16.9	18.2

Annual Cancer Incidence and Mortality Rates, 2011-2015 (# of cases per 100,000 population) Females[16]

Cancer Cases Rate Per 100,000 Females	Citywide Females	Brooklyn Females	Bronx Females	Manhattan Females	Queens Females	Staten Island Females
All cancer cases	419.5	419.7	408.7	432.5	401.2	441.5
Lung and bronchus	41.7	38.5	40.4	47.4	38.0	56.5
Female Breast	121.2	119.0	112.3	138.0	114.0	134.8
Colorectal	34.7	36.4	34.3	30.8	35.1	38.2
Cancer Deaths Rate Per 100,000 Females	**Citywide Females**	**Brooklyn Females**	**Bronx Females**	**Manhattan Females**	**Queens Females**	**Staten Island Females**
All cancer deaths	124.1	129.6	131.0	121.2	115.0	130.4
Lung and bronchus	24.1	23.2	24.2	26.1	21.2	33.4
Female Breast	20.2	22.3	21.6	19.7	18.0	18.0
Colorectal	12.1	12.9	13.5	10.5	11.0	14.3

Female Breast Cancer Diagnosis and Mortality

- Women in Manhattan had the highest incidence rates.
- Women in the Bronx had the lowest incidence rates.
- Women in Brooklyn had the highest mortality rates.
- Women in Queens had the lowest mortality rates.

Colorectal Cancer Diagnosis and Mortality

- Men in Brooklyn and women on Staten Island had the highest incidence rates.
- Men and women in Manhattan had the lowest incidence.
- Men in the Bronx and women on Staten Island had the highest mortality rates.
- Men and women in Manhattan had the lowest mortality rates.

Lung and Bronchus Cancer Diagnosis and Mortality

- Men and women on Staten Island had the highest incidence rates.
- Men in Manhattan and women in Queens had the lowest incidence rates.
- Men and women on Staten Island had the highest mortality rates.
- Men in Manhattan and women in Queens had the lowest mortality rates.

Prostate Cancer Diagnosis and Mortality

- Men in the Bronx had the highest incidence rates.
- Men on Staten Island had the lowest incidence rates.
- Men in the Bronx had the highest mortality rates.
- Men in Queens had the lowest mortality rates.

REDUCING THE CANCER BURDEN IN NEW YORK CITY: NEIGHBORHOODS

This report examined publicly-available cancer data from the New York State Department of Health. State law requires that all cancers other than keratinocyte skin cancers (basal and squamous cell skin cancers) be reported to the New York State Cancer Registry.

In this report, the New York City ***"Neighborhoods"*** are defined as and correspond to the Public Use Microdata Areas (PUMAs) defined by the U.S. Census Bureau. PUMAs are groups of census tracts containing at least 100,000 people. In New York City, the 55 PUMAs approximate the city's 59 Community Districts. There are ten in Manhattan, ten in the Bronx, eighteen in Brooklyn, fourteen in Queens, and three on Staten Island. The New York State Cancer Registry data is tracked down to the PUMA level.[17] Direct Community District data is used when available and noted as such.

Neighborhood level data are presented in this report based on the number of cases per 100,000 population. The rate per 100,000 population are adjusted for age (more cancer would be expected in an older population). Data are averaged over a five-year period, 2011 – 2015.

Important Considerations About Neighborhood Data
Neighborhood rates often show a wide range of uncertainty due to sparse underlying data (see appendix B), and care should be taken to avoid over-interpreting findings that show large disparities in cancer incidence and mortality. Apparent differences may be only random variations not correctible by standard statistical techniques. These data are based on residence at time of diagnosis or death. Cancer may have a long latency period before reaching a clinically detectable stage, and between the cancer's initiation and its detection the individual's residence, personal behaviors and occupation may have changed.

All Cancer
Below is a breakdown of neighborhoods in New York City with the approximate highest cancer incidence rates of all cancer per 100,000 persons. Due to the high level of uncertainty referenced above, all neighborhood data is considered approximate. The State Health Department has made data public that details neighborhood cancer incidence rates and associated confidence intervals.

- **Men** living in Morris Heights, Fordham South and Mount Hope (#3707), Brownsville & Ocean Hill (#4007), and Tottenville, Great Kills and Annadale (#3901) have the approximate **highest cancer incidence rate overall among men.**

- **Men** living in Jackson Heights and North Corona (#4102), Sunnyside & Woodside (#4109), and Greenpoint and Williamsburg have the approximate **lowest cancer incidence rate overall among men**.

- **Women** living in Tottenville, Great Kills and Annadale (#3901), New Springville and South Beach (#3902), and Bay Ridge and Dyker Heights (#4013) have the approximate **highest cancer incidence rate overall among women.**

- **Women** living in Greenpoint and Williamsburg (#4001), Jackson Heights and North Corona (#4102) and Washington Heights, Inwood and Marble Hill (#3801) have the approximate **lowest cancer incidence rate overall among women.**

- **Staten Island** has the approximate highest **cancer incidence rate** in New York City. All three of the Staten Island neighborhoods have an approximate **cancer incidence rate** in the top ten of all neighborhoods citywide for both men and women.

Lung and Bronchus, Colorectal, Prostate and Female Breast Cancer[18]
Below is a breakdown of neighborhoods in New York City with the approximate highest lung and bronchus cancer, colorectal cancer, female breast cancer and prostate cancer **incidence rate**.

Lung and Bronchus Cancer
- Men and women living in Central Harlem (#3803) have the approximate highest **cancer incidence rate**.
- Men living in Upper West Side and West Side (#3806) and women in East Flatbush, Farragut and Rugby (#4010) have the approximate lowest **cancer incidence rate**.

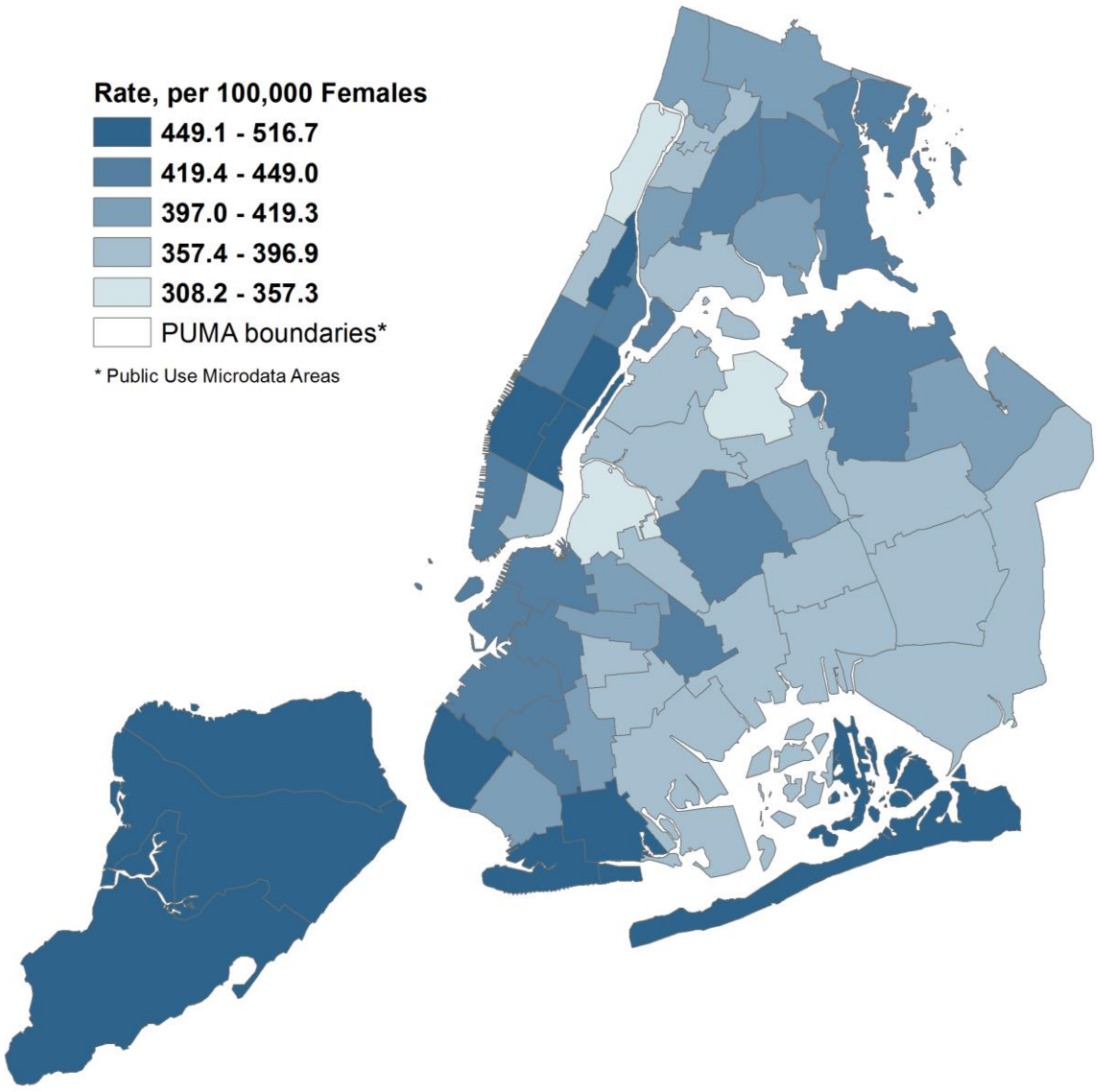
Colorectal Cancer
- Men living in Central Harlem (#3803) and women in Brighton Beach and Coney Island (#3803) have the approximate highest **cancer incidence rate**.
- Men and women living in Upper West Side and West Side (#3806) have the approximate lowest **cancer incidence rate**.

Prostate Cancer
- Men living in East Flatbush, Farragut and Rugby (#4010) have the approximate highest **cancer incidence rate.**
- Men living in Bensonhurst and Bath Beach (#4017) have the approximate lowest **cancer incidence rate**.

Female Breast Cancer
- Women in Murray Hill, Gramercy and Stuyvesant Town (#3808) have the approximate highest **cancer incidence rate**.
- Women in Jackson Heights and North Corona (#4102) have the approximate lowest **cancer incidence rate**.

The following pages of this report show contains detailed maps of New York City showing cancer rates of men and woman by neighborhoods of all cancers and the four leading cancers in New York City.

All Invasive Malignancies, Female, Average Annual Rate, 2011-2015



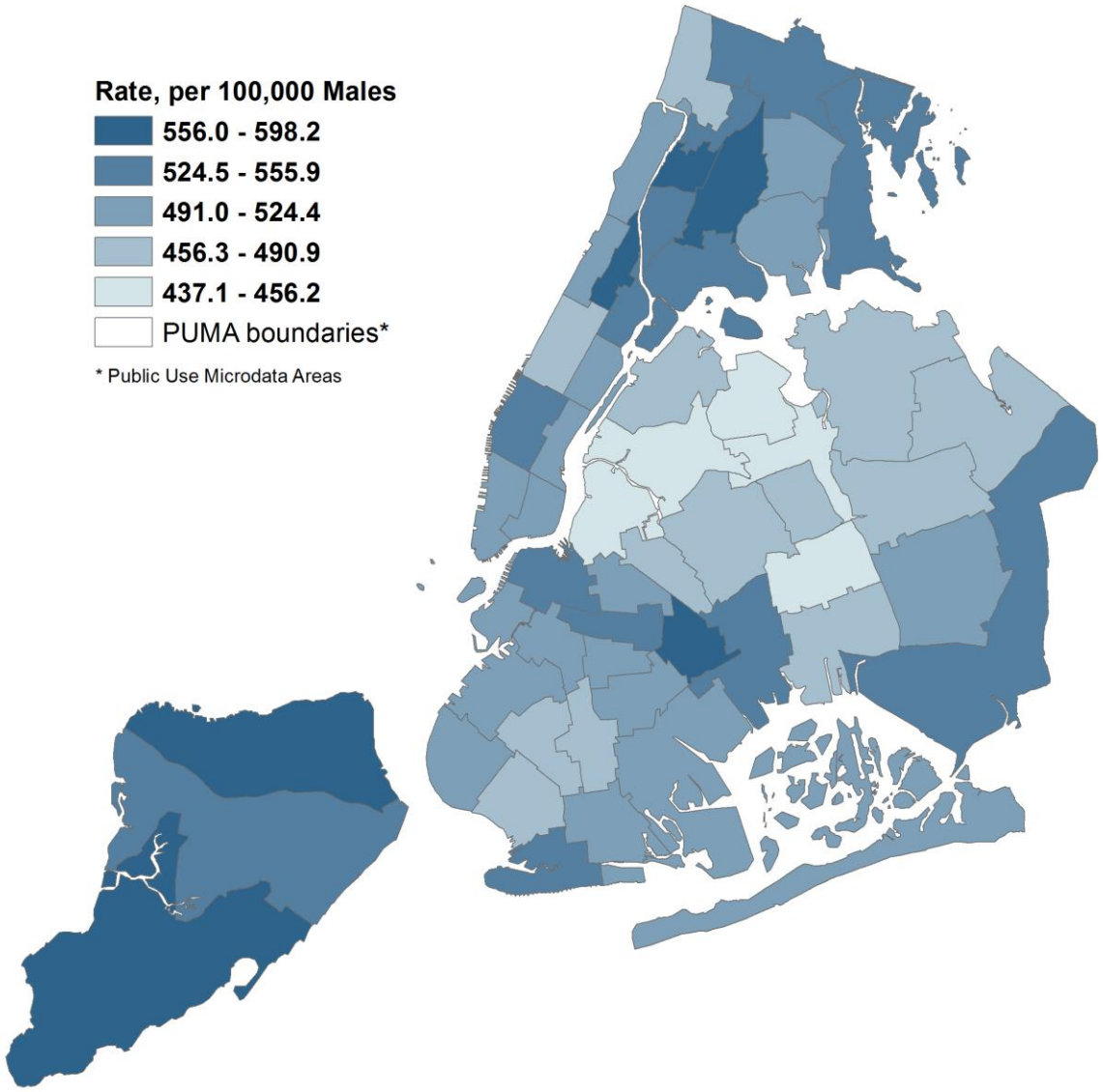
CUNY SPH GRADUATE SCHOOL OF PUBLIC HEALTH & HEALTH POLICY

Maps prepared by Glen D. Johnson, PhD
CUNY School of Public Health and Health Policy
November, 2018

Data Analysis provided by the American Cancer Society Cancer Action Network
Date Source: New York State Cancer Registry

Cancer Action Network
American Cancer Society
acscan.org

All Invasive Malignancies, Male, Average Annual Rate, 2011-2015



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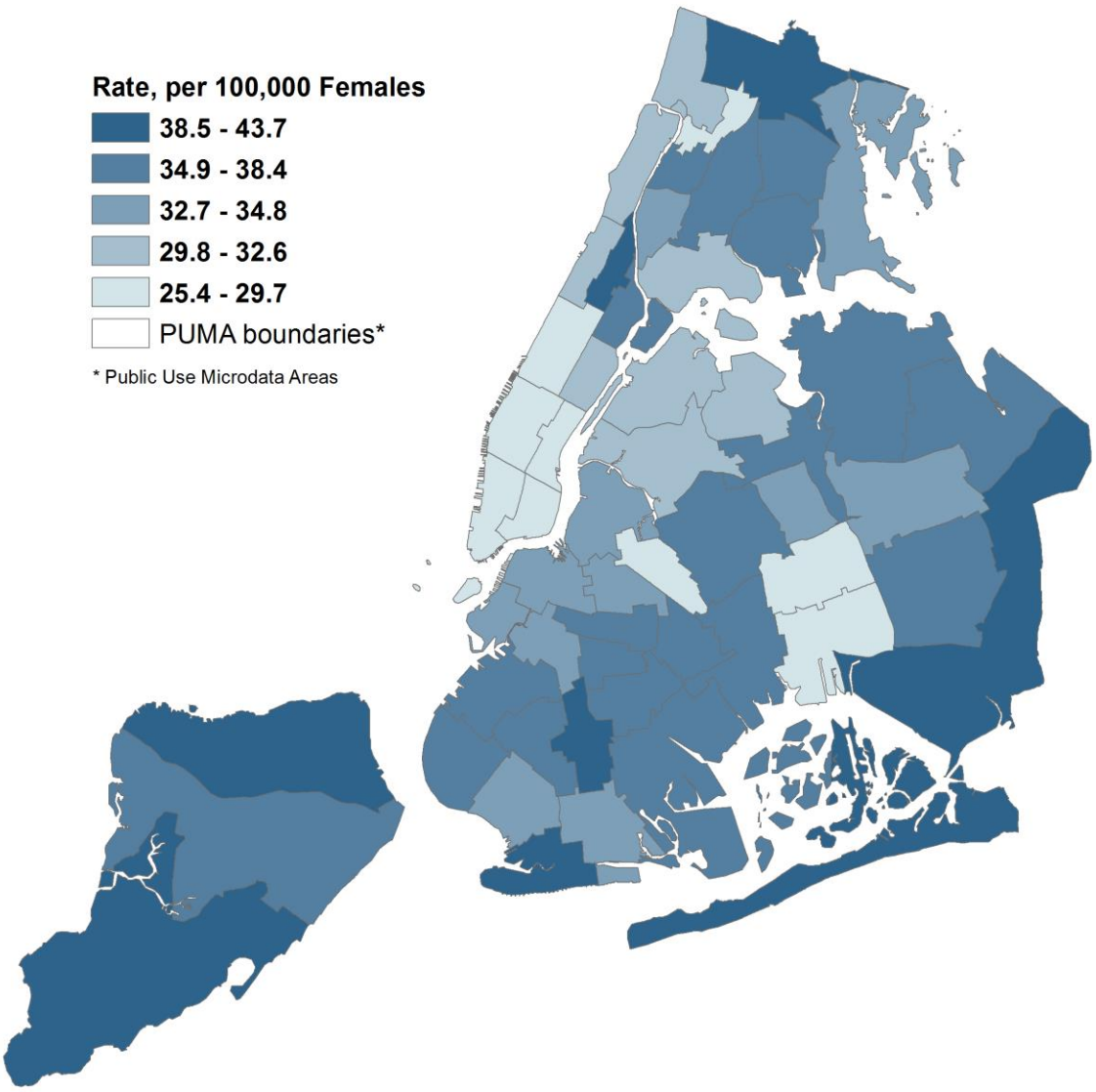
Colorectal Invasive Malignancies, Female, Average Annual Rate, 2011-2015



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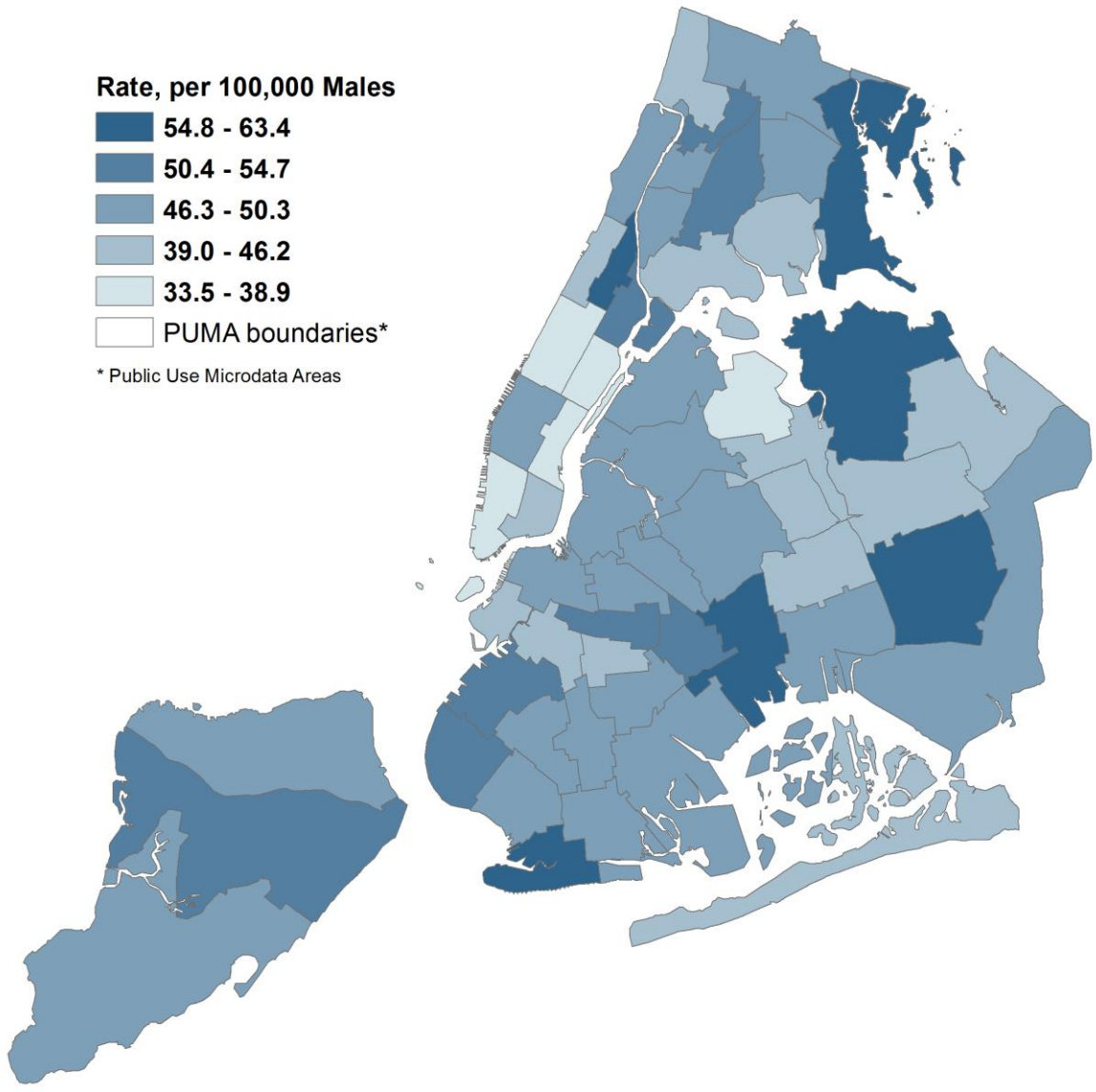
Colorectal Invasive Malignancies, Male, Average Annual Rate, 2011-2015



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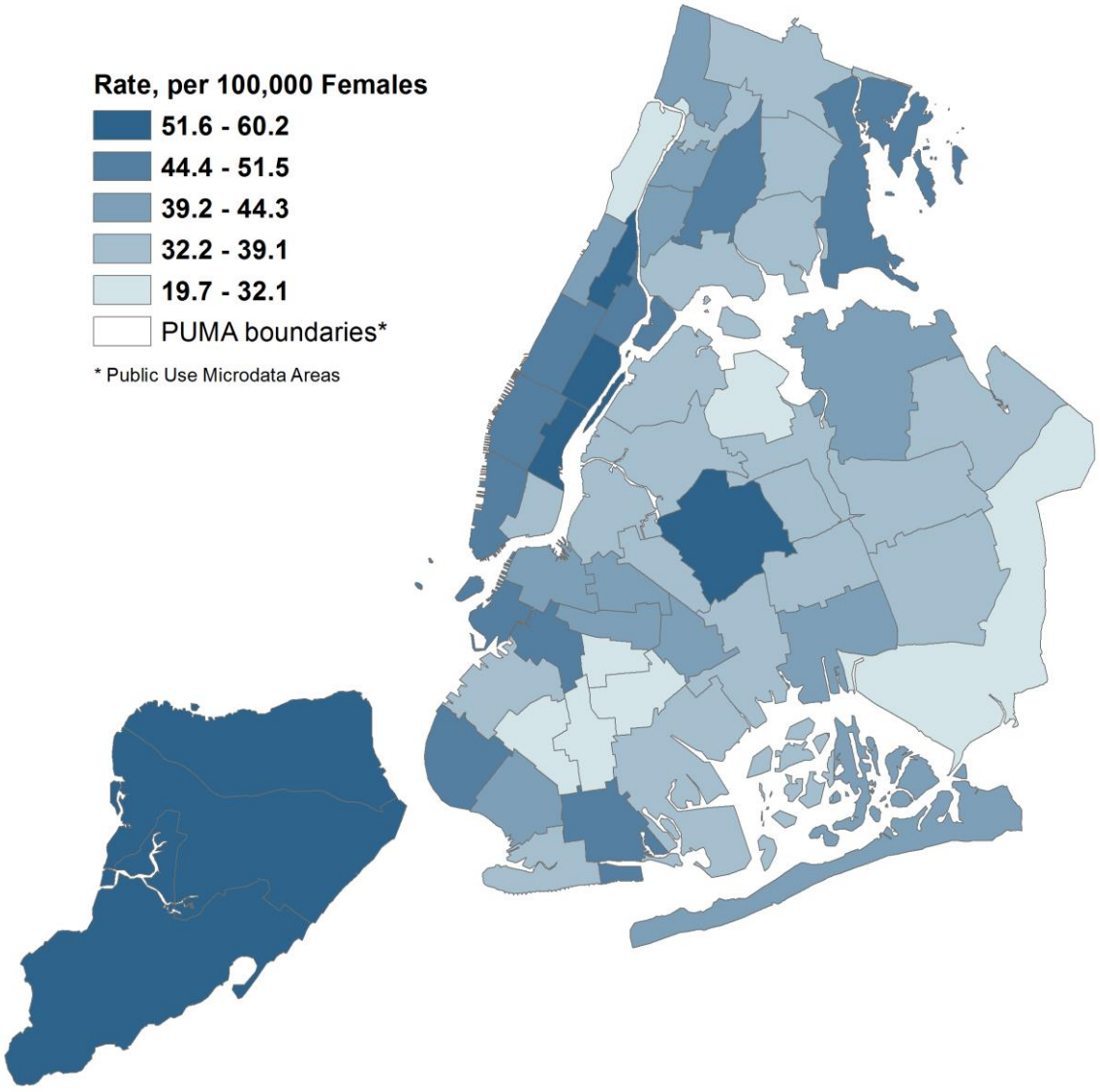
Lung and Bronchus Invasive Malignancies, Female, Average Annual Rate, 2011-2015



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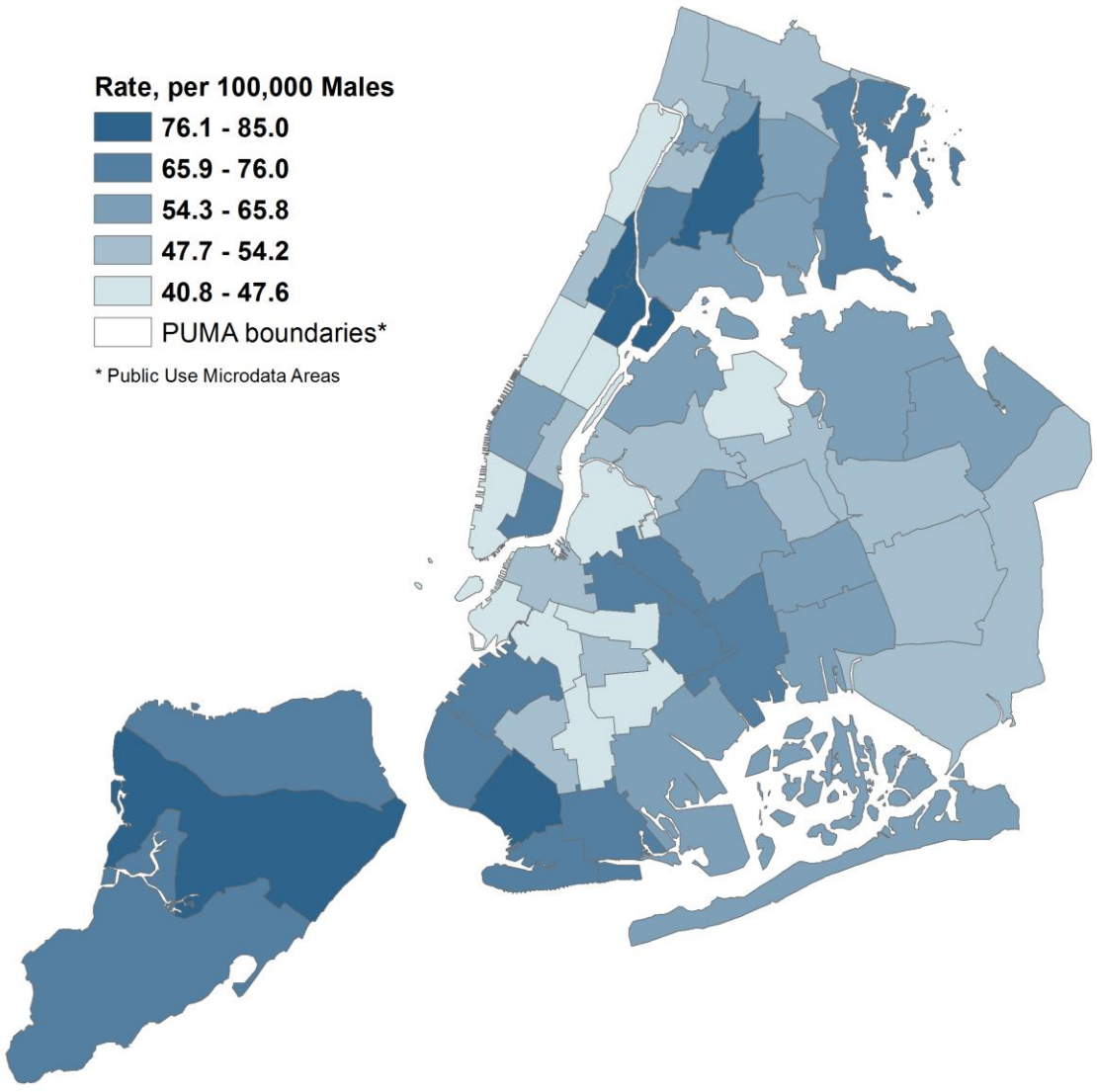
Lung and Bronchus Invasive Malignancies, Male, Average Annual Rate, 2011-2015



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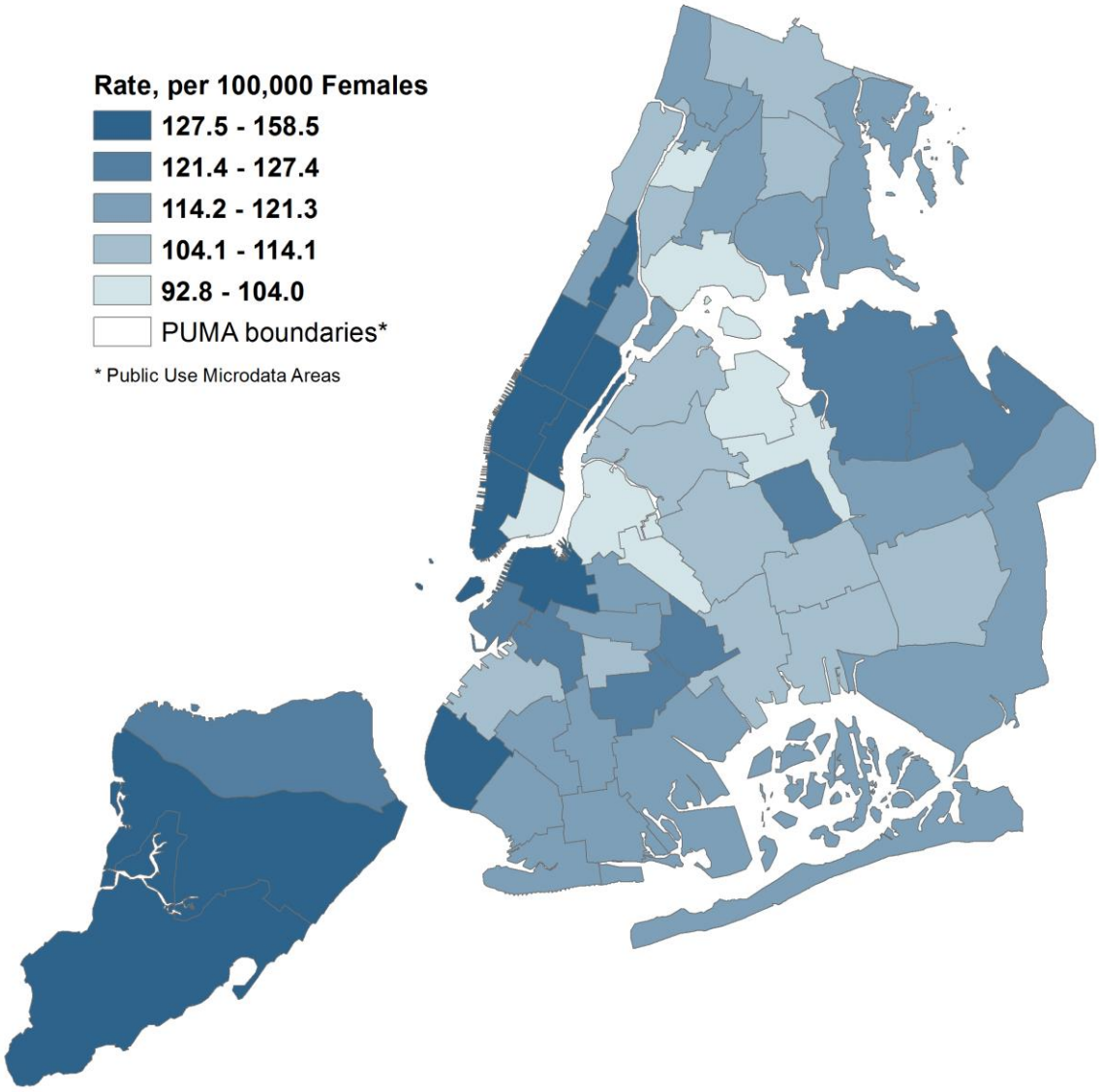
Female Breast Invasive Malignancies, Average Annual Rate, 2011-2015



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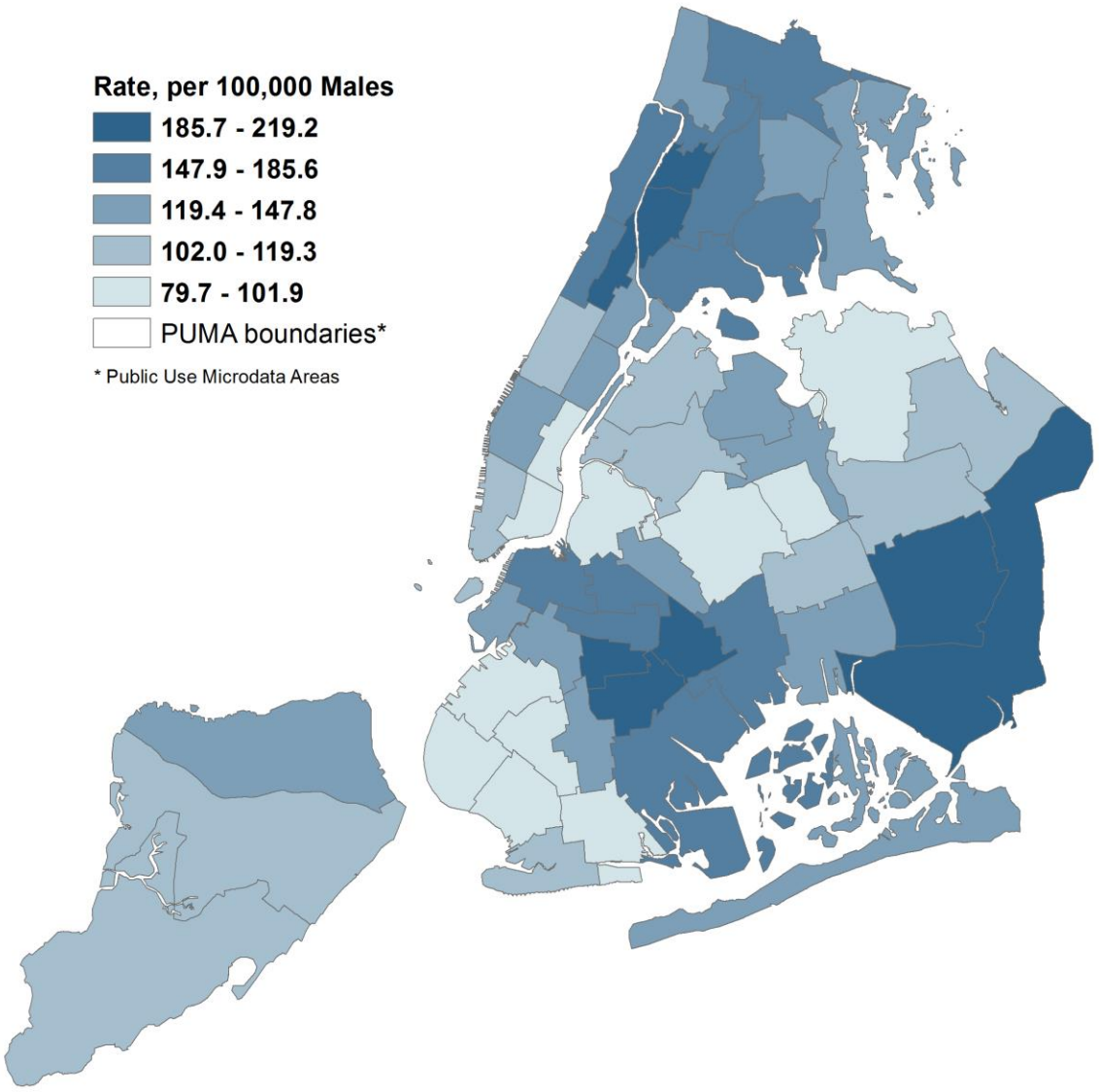
Prostate Invasive Malignancies, Average Annual Rate, 2011-2015



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REDUCING THE CANCER BURDEN IN NEW YORK CITY: RACE AND ETHNICITY

There are differences in cancer incidence rates and cancer death rates in New York City between races and ethnic groups[19]. On average from 2011-2015, non-Hispanic Whites have the highest cancer incidence rate, 510 cancer cases per 100,000 males and females, of all cancers.[20] While on average during this period, Asian and Pacific Islanders have the lowest **cancer incidence rate**, 347.3 cancer incidence per 100,000 males and females, of all cancers.[21]

On average from 2011-2015, non-Hispanic Blacks have the highest cancer death rate, 167.1 cancer deaths per 100,000 males and females, of all cancers.[22] While on average during this period, Asian and Pacific Islanders have the lowest **cancer death rate**, 99.6 cancer deaths per 100,000 males and females, of all cancers.[23]

According to New York State Health Department data, even greater differences exist by race and ethnicity when looking at different types of cancer and breaking down the numbers by male and female.[24]

The following tables provide cancer incidence rates for 2011-2015 in New York City by race and ethnicity, citywide and in each of the five boroughs.[25]

Annual Cancer Incidence Rates, By Ethnicity 2011-2015 (# of cases per 100,000 population) Males, Age Adjusted[26]

Citywide Cancer Cases Rate Per 100,000-Males	Non-Hispanic Black-Male	Non-Hispanic White-Male	Hispanic Origin-Male
All cancer cases	563.2	541.8	441.4
Lung and bronchus	61.4	64.6	44.6
Prostate	218.8	112	131.3
Colorectal	53	47.7	43.9

Annual Cancer Incidence Rates, By Ethnicity 2011-2015 (# of cases per 100,000 population) Females, Age Adjusted[27]

Citywide Cancer Cases Rate Per 100,000-Females	Non-Hispanic Black-Female	Non-Hispanic White-Female	Hispanic Origin-Female
All cancer cases	409.3	497.2	333.2
Lung and bronchus	40.1	53.6	25.6
Colorectal	38.3	36.8	28.3
Female Breast	122.5	145.9	93.1

Annual Cancer Death Rates, By Ethnicity 2011-2015 (# of cases per 100,000 population) Males, Age Adjusted[28]

Citywide Cancer Death Rate Per 100,000-Males	Non-Hispanic Black-Male	Non-Hispanic White-Male	Hispanic Origin-Male
All cancer cases	205.7	168.6	152.8
Lung and bronchus	45.7	42.3	28.8
Prostate	41.7	15.6	21
Colorectal	20.3	16.1	16.5

Annual Cancer Death Rates, By Ethnicity 2011-2015 (# of cases per 100,000 population) Females, Age Adjusted

Citywide Cancer Death Rate Per 100,000-Females	Non-Hispanic Black-Female	Non-Hispanic White-Female	Hispanic Origin-Female
All cancer cases	147.4	132.6	99.6
Lung and bronchus	26.3	29.8	14.4
Colorectal	15.1	12.2	10.2
Female Breast	27	21.1	15.5

Annual Cancer Incidence Rates, By Race 2011-2015 (# of cases per 100,000 population) Males, Age Adjusted[29]

Citywide Cancer Cases Rate Per 100,000-Males	Black-Male	White-Male	Asian & Pacific Islander-Male
All cancer cases	538.0	509.7	370.9
Lung and bronchus	57.6	60.1	60.5
Prostate	207.1	112	61.4
Colorectal	50.4	46.9	40.6

Annual Cancer Incidence Rates, By Race 2011-2015 (# of cases per 100,000 population) Females, Age Adjusted[30]

Citywide Cancer Cases Rate Per 100,000-Females	Black-Female	White-Female	Asian & Pacific Islander-Female
All cancer cases	389.0	443.7	331.1
Lung and bronchus	37.5	45.4	33.1
Colorectal	36.2	34.2	28.7
Female Breast	116.8	127.3	93.2

Annual Cancer Death Rates, By Race 2011-2015 (# of cases per 100,000 population) Males, Age Adjusted[31]

Citywide Cancer Death Rate Per 100,000-Males	Black-Male	White-Male	Asian & Pacific Islander-Male
All cancer cases	179.4	169.3	127.6
Lung and bronchus	39.2	39.9	36.3
Prostate	36.9	16.9	7
Colorectal	17.8	16.6	12.8

Annual Cancer Death Rates, By Race 2011-2015
(# of cases per 100,000 population) Females, Age Adjusted

Citywide Cancer Death Rate Per 100,000-Females	Black-Female	White-Female	Asian & Pacific Islander-Female
All cancer cases	130.3	169.3	77.8
Lung and bronchus	22.9	39.9	15.5
Colorectal	13.4	16.6	7.9
Female Breast	23.7	20	9.4

Lung and bronchus cancer cases per 100,000 males and females by ethnicity[32]

- Non-Hispanic White males had the highest cancer incidence rate of lung and bronchus cancer (64.6) followed by Non-Hispanic Black males (61.4) and Hispanic males (33).
- Non-Hispanic White females had the highest cancer incidence rate of lung and bronchus cancer (53.6) followed by Non-Hispanic Black females (40.1) and Hispanic females (25.6).

Lung and bronchus cancer cases per 100,000 males and females by race

- Asians and Pacific Islander males had the highest cancer incidence rate of lung and bronchus cancer (60.5) followed by White males (60.1) and Black males (57.6).
- White females had the highest cancer incidence rate of lung and bronchus cancer (45.4) followed by Black females (37.5) and Asian and Pacific Islander females (33.1).

Lung and bronchus cancer deaths per 100,000 males and females by ethnicity[33]

- Non-Hispanic Black males had the highest cancer death rate of lung and bronchus cancer (45.7) followed by Non-Hispanic White males (42.3) and Hispanic males (28.3).
- Non-Hispanic White females had the highest cancer death rate of lung and bronchus cancer (29.8) followed by Non-Hispanic Black females (26.3) and Hispanic females (14.4).

Lung and bronchus cancer deaths per 100,000 males and females by race

- White males had the highest cancer death rate of lung and bronchus cancer (39.9) followed Black males (39.2) and Asians and Pacific Islanders (36.3).
- White females had the highest cancer death rate of lung and bronchus cancer (39.9) followed by Black females (22.9) and Asians and Pacific Islanders (15.5).

Prostate cancer cases per 100,000 males by ethnicity and race[34]

- Non-Hispanic Black males had the highest cancer incidence rate of prostate cancer (218.8) followed by Hispanic males (131.3) and Non-Hispanic males (112).
- Black males had the highest cancer incidence rate of prostate cancer (207.1) followed by White males (112) and Asian and Pacific Islander males (61.4).

Prostate cancer deaths per 100,000 males by ethnicity and race[35]

- Non-Hispanic Black males had the highest cancer death rate of prostate cancer (41.7) followed by Hispanic males (21) and Non-Hispanic White males (15.6).

- Black males had the highest cancer death rate of prostate cancer (36.9) followed by White males (16.9) and Asian and Pacific Islander males (7).

Female Breast cancer cases per 100,000 females by ethnicity and race[36]

- Non-Hispanic White females had the highest cancer incidence rate of female breast cancer (145.9) followed by Non-Hispanic Black females (122.5) and Hispanic females (93.1).
- White females had the highest cancer incidence rate of female breast cancer (127.3) followed by Black females (116.8) and Asian & Pacific Islander females (93.2).

Female Breast cancer deaths per 100,000 females by ethnicity and race[37]

- Non-Hispanic Black females had the highest cancer death rate of female breast cancer (27) followed by Non-Hispanic White females (21.1) and Hispanic females (15.5).
- Black females had the highest cancer death rate of female breast (23.7) followed by White females (20) and Asian & Pacific Islander females (9.4).

Colorectal cancer cases per 100,000 males and females by ethnicity[38]

- Non-Hispanic Black males had the highest cancer incidence rate of colorectal cancer (53) followed by Non-Hispanic White males (47.7) and Hispanic males (43.9).
- Non-Hispanic Black females had the highest cancer incidence rate of colorectal cancer (38.3) followed by Non-Hispanic White females (36.8) and Hispanic females (28.3).

Colorectal cancer cases per 100,000 males and females by race

- Black males had the highest cancer incidence rate of colorectal cancer (50.4) followed by White males (46.9) and Asian and Pacific Islander males (40.6).
- Black females had the highest cancer incidence rate of colorectal cancer (36.2) followed White females (34.2) and Asian and Pacific Islander females (28.7).

Colorectal cancer deaths per 100,000 males and females by ethnicity[39]

- Non-Hispanic Black males had the highest cancer death rate of colorectal cancer (20.3) followed by Non-Hispanic White males (12.2) and Hispanic males (10.2).
- Non-Hispanic Black females had the highest cancer death rate of colorectal cancer (15.1) followed by Non-Hispanic White females (12.2) and Hispanic females (10.2).

Colorectal cancer deaths per 100,000 males and females by race

- Black males had the highest cancer death rate of colorectal cancer (17.8) followed by White males (16.6) and Asian and Pacific Islander males (12.8).
- White females had the highest cancer death rate of colorectal cancer (16.6) followed by Black females (13.4) and Asian and Pacific Islander females (7.9).

Cause for alarm

While differences exist between races and ethnic groups and by cancer type, no difference is as much of a cause for alarm than the large disparity in prostate cancer between Non-Hispanic Blacks (218.8) and other racial and ethnic groups. A second cause for alarm is the significant disparity in female breast cancer between Non-Hispanic Whites (145.9) and other racial and ethnic groups.

A BLUEPRINT TO ADDRESS THE CANCER BURDEN IN NEW YORK CITY

Cancer is a complex group of diseases with many causes. More than half of all cancer deaths can be prevented by fully leveraging the knowledge, tools and medical breakthroughs that exist. Providing everyone with the opportunity to live a healthy lifestyle and access cancer screenings - like mammograms and colonoscopies – and vaccinations could save thousands of lives every year.

Our blueprint addresses the cancer burden in New York City. We explore the causes of several of the leading types of cancer and offer comprehensive recommendations for how New York City and New York State can address the cancer burden.

A substantial proportion of cancers could be prevented. Aside from not smoking, maintaining a healthy body weight, being physically active on a regular basis, eating a healthy diet, and limiting alcohol consumption are the most important ways to reduce cancer risk. About 30 percent of all cancer deaths are caused by cigarette smoking.[40] The combined effects of excess body weight, poor diet, alcohol consumption, and physical inactivity are associated with 18 percent of all cancer cases. Certain cancers caused by infectious agents, such as the human papillomavirus (HPV), could be prevented through vaccination. Many of the more than five million skin cancer cases that are diagnosed annually could be prevented by protecting skin from excessive sun exposure and not using indoor tanning devices.

Cancer screening can prevent colorectal and cervical cancers altogether by allowing for the detection and removal of precancerous lesions. Screening also offers the opportunity to detect some cancers early, when treatment is less extensive and more likely to be successful. Screening is known to help reduce mortality for cancers of the female breast, colon, rectum, cervix, and lung.

The blueprint to address the cancer burden in New York City examines the impact of efforts to:

- Reduce tobacco use
- Reduce the obesity epidemic
- Increase cancer screening
- Reduce Human Papillomavirus (HPV) related cancers
- Prevent skin cancer
- Support cancer research

At the end of the blueprint are detailed policy recommendations for each policy area.

REDUCE TOBACCO USE

While we have made substantial progress in reducing tobacco use, the fact remains that smoking is still the leading cause of preventable death in the United States, New York State and New York City.[41] Each year more than 12,000 people in New York City die from illnesses related to tobacco use.[42]

Smoking not only causes cancer, it can damage nearly every organ in the body, including the lungs, heart, blood vessels, reproductive organs, mouth, skin, eyes, and bones. Smoking accounts for about 30 percent of all cancer deaths in the United States,[43] including about 80 percent of all lung and bronchus cancer deaths.[44] Lung and bronchus cancer is the leading cause of cancer death in both men and women and is one of the hardest cancers to treat. The impact of tobacco use goes beyond health. The annual health care costs in New York State directly caused by smoking are $10.39 billion.[45]

In New York State, 6,900 kids under 18 become new daily smokers each year.[46] At the same time, the use of e-cigarettes by minors under 18 is rising rapidly. E-cigarette use among high school students went from 10.5 percent in 2015 to 20.6 percent in 2016.[47]

We can change these grim statistics. The percentage of adults who smoke in New York City in 2016 was 13.1 percent, marking a 39 percent decline since 2002.[48] During this time period the New York City DOHMH led a comprehensive multi-year effort that included multiple legislative measures aimed at reducing the number of people who smoke in New York City.[49] While rates overall are declining, differences in smoking rates continue to exist among boroughs, neighborhoods and different demographic groups.[50]

New York City Percentage of Adults Who Smoke[51]

Source: 2016 NYC Community Health Survey

2013	2014	2015	2016	2017
15.5%	16.1%	13.9%	14.3%	13.1%

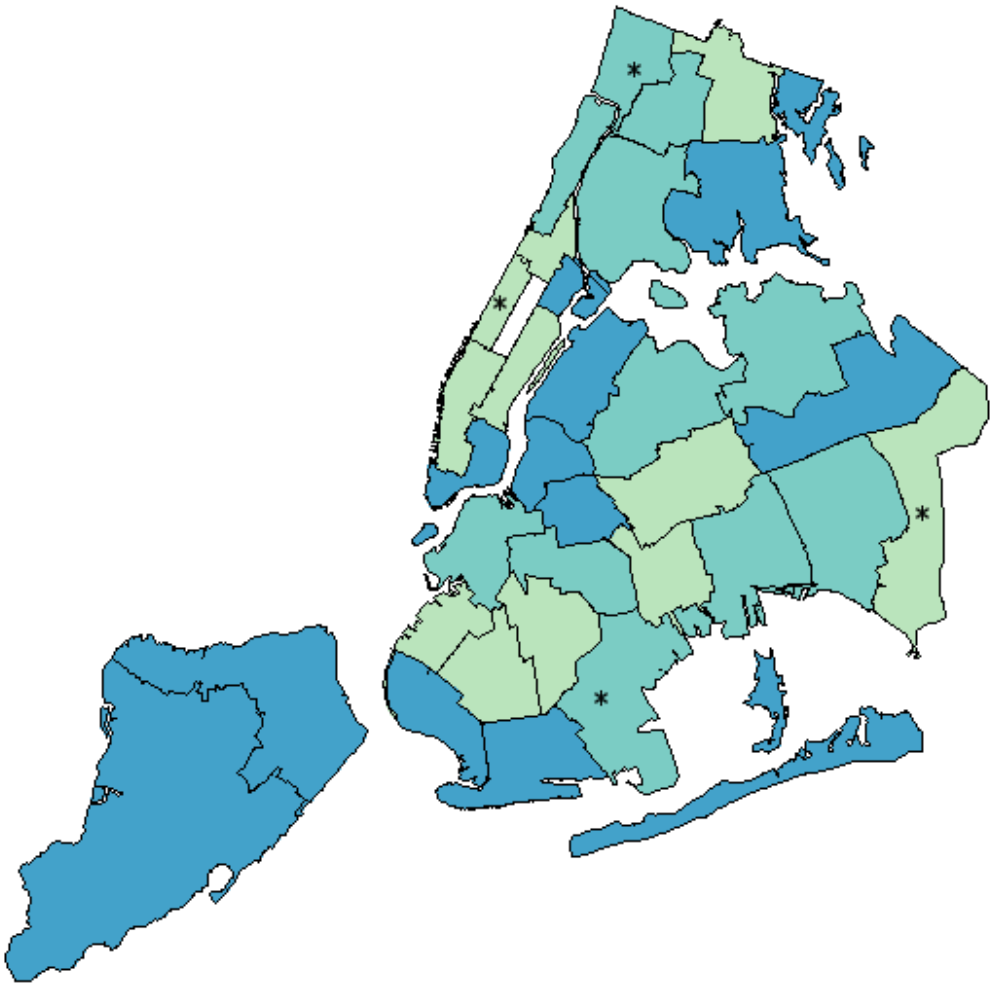
New York City Percentage of Adults Who Smoke by Borough, 2016[52]

Source: 2016 NYC Community Health Survey

Borough	Adult Smoking Rate
Brooklyn	12.2%
Bronx	13.6%
Manhattan	12.8%
Queens	13.6%
Staten Island	15.9%

NYC Community Health Survey 2016

Percentage of individuals who are current smokers, by neighborhood



Bureau of Epidemiology Services, NYC DOHMH

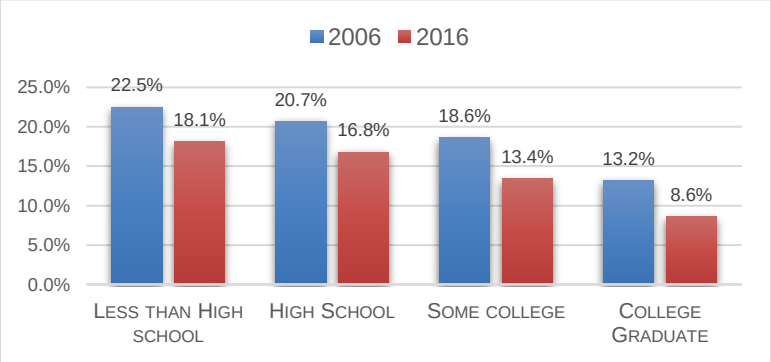
* Estimate should be interpreted with caution, potentially unreliable.

Source: 2016 NYC Community Health Survey

While smoking rates in New York City have declined by 25.1 percent since 2006,[53] they have **not** declined at the same rate for some demographic groups. Between 2006 and 2016, the prevalence of smoking among those with a college degree declined by 34.8 percent while the prevalence of smoking among those with only a high school education declined by 18.8 percent.[54]

Adult Prevalence of Smoking by Education, 2006-2016, Age-unadjusted

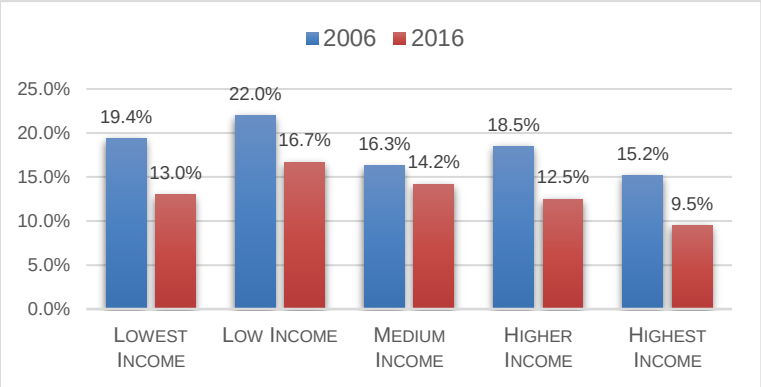
Source: 2016 NYC Community Health Survey



A similar trend exists based on income level. Between 2006 and 2016, the prevalence of smoking among the highest income population declined by 37.5 percent while the prevalence of smoking among the lowest income population declined by only 32.9 percent.[55]

Adult Prevalence of Smoking by Income 2006-2016, Age-unadjusted

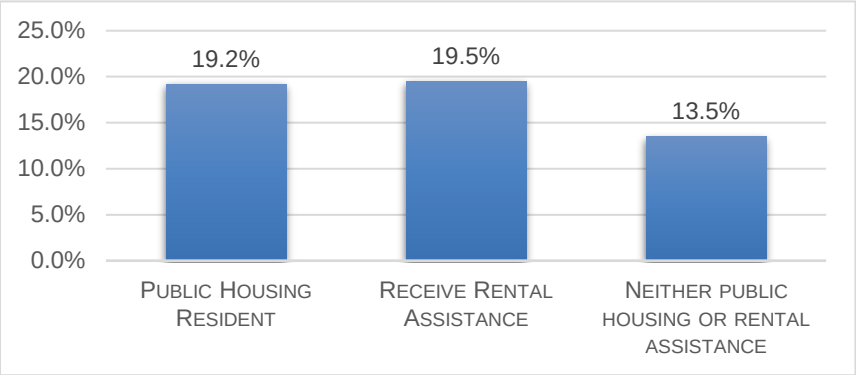
Source: 2016 NYC Community Health Survey



In addition to education and income, New Yorkers who live in public housing (19.2 percent) or receive rental assistance (19.5 percent) are also significantly more likely to smoke than New Yorkers who do not live in public housing or receive rental assistance (13.5 percent).[56]

Adult Prevalence of Smoking by Public Housing or Rental Assistance, 2015, Age-unadjusted

Source: 2015 NYC Community Health Survey



Reducing Smoking Rates

Last year marked a landmark in New York City's efforts to continue reducing smoking rates. In 2018, new laws took effect that raised the minimum prices for cigarettes and all other tobacco products, capped the number of tobacco and e-cigarette retailers citywide, created a retail license for e-cigarettes, increased the fee for a cigarette retail dealer license, required all residential buildings to create and disclose a smoking policy, prohibited smoking, including the use of e-cigarettes in common areas in multiple unit dwellings, and prohibited the sale of tobacco products at pharmacies. But more needs to be done to address the disparities among income and education groups and continue the downward trend in smoking rates. There are two areas where New York City should act to further address smoking rates: restrict the sale of all flavored tobacco products, including menthol and e-cigarettes and increase funding to $11.2 million annually to expand smoking cessation programs and services.

The Menthol Loophole

Menthol makes cigarettes easier to smoke and harder to quit.[57] The chemical compound creates a cooling effect, reduces the harshness of cigarette smoke and suppresses coughing. Those effects may make menthol cigarettes more appealing to young, inexperienced smokers. Research shows that they are more likely to addict youth and more difficult to quit than regular cigarettes.[58] Many people who smoke think menthol cigarettes are less harmful. In fact, there is no evidence that cigarettes, cigars, or smokeless tobacco products that have menthol are safer than other cigarettes. This myth has been perpetuated via a decades long campaign by the tobacco industry.[59]

The 2009 Family Smoking Prevention and Tobacco Control Act implemented a federal prohibition of characterizing flavors other than tobacco or menthol in cigarettes. The prohibition included candy-and fruit-flavors. Additionally, in 2009 a New York City law was adopted that restricted the sale of most forms of flavored tobacco products to certain adult-only venues. The legislation covers "chocolate, vanilla, honey, candy, cocoa, dessert, alcoholic beverage, herb or spice flavors," but exempts "tobacco, menthol, mint or wintergreen flavors." The city sale restriction includes cigars and smokeless tobacco.[60]

Currently 48 percent of adults who smoke use menthol cigarettes in New York City.[61]

Percentage of Adult Smokers Who Use Menthol Cigarettes, 2015, Age-unadjusted[62]

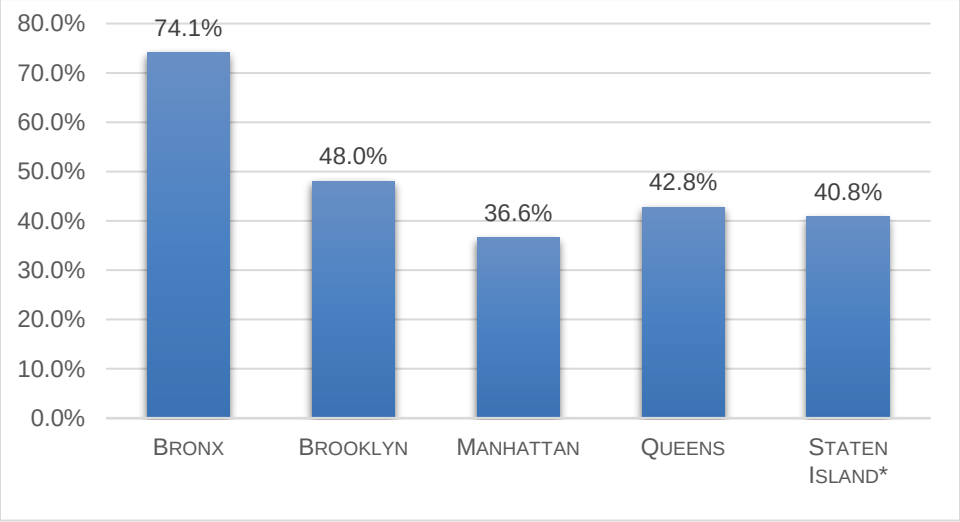
Source: 2015 NYC Community Health Survey

Type of Cigarettes	Percent of Smokers
Menthol cigarettes	48%
Non-menthol cigarettes	52%

There are huge disparities in menthol cigarette use in New York City by borough. While 74.1 percent of people who smoke in the Bronx use menthol cigarettes, only 36.6 percent of people who smoke in Manhattan use menthol cigarettes.[63]

Percentage of Adult Smokers Who Use Menthol Cigarettes, by Borough, 2015, Age-unadjusted[64]

Source: 2015 NYC Community Health Survey

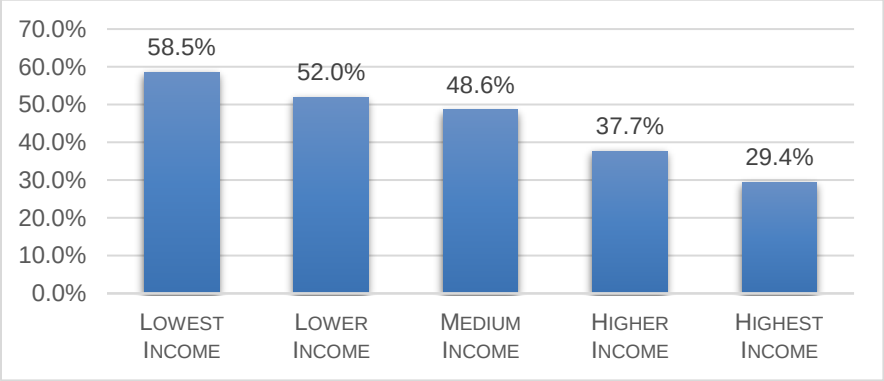


*Estimate should be interpreted with caution. The Estimate's Relative Standard Error for Staten Island is above the acceptable level, making the estimate potentially unreliable.

Use of menthol cigarettes varies by income level. Some 58.5 percent of New Yorkers at the lowest income level smoke menthol cigarettes while only 29.4 percent of New Yorkers at the highest level of income smoke menthol cigarettes. [65]

Percentage of Adult Smokers Who Use Menthol Cigarettes, by Income, 2015, Age-unadjusted[66]

Source: 2015 NYC Community Health Survey



Menthol Cigarettes by Race and Ethnicity

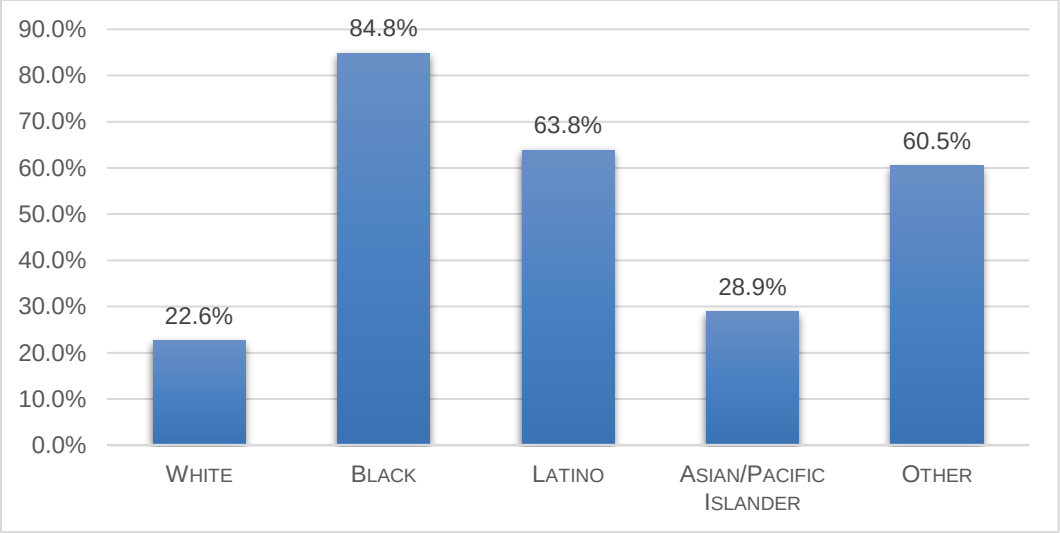
There is a huge racial and ethnic disparity in menthol cigarette use in New York City. While 84.8 percent of Black adults who smoke and 63.8 percent of Latino adults who smoke use menthol cigarettes, only 22.6 percent of White adults who smoke use menthol cigarettes in New York City. [67] This disparity among race and ethnicity is not accidental.

Tobacco companies have specifically targeted minority communities, particularly African-Americans, with intense advertising and promotional efforts. A wealth of research indicates that African-American neighborhoods have a disproportionate number of tobacco retailers, pervasive tobacco marketing, and more marketing of menthol products.[68]

For more than 50 years the tobacco industry has waged an aggressive campaign to market menthol cigarettes to the African-American community through obvious and less obvious sources with great success.[69] While print advertisements, online ads and direct mail to consumers has been the norm, the tobacco industry has also provided financial support to African-American charitable organizations where the connection is not obvious.[70] In 2014, a contribution of $1 million to the National Museum of African American History and Culture was made by the Altria Group, the owner of Philip Morris, one of the world's largest tobacco companies, and the manufacturer of the most well-known brand of menthol cigarettes.[71]

Percentage of Adult Smokers Who Use Menthol Cigarettes, by Race and Ethnicity, 2015, Age-unadjusted[72]

Source: 2015 NYC Community Health Survey



Smoking Cessation

Smoke-free Public Housing

In addition to the health risks posed to tobacco users, smoking poses a significant risk to those living in close proximity.[73] The U.S. Centers for Disease Control and Prevention (CDC) issued a significant warning against the dangers of secondhand smoke in 2016, saying people who live in apartments, townhouses, and condominiums are disproportionately affected by neighbors who smoke. [74] This follows the 2006 U.S. Surgeon General report saying that there is no safe level of second hand smoke.[75] Secondhand smoke is especially problematic for children and other vulnerable populations living in public housing because of the close proximity of their housing units. [76]

Due to the health threat of secondhand smoke, the United States Department of Housing and Urban Development issued a rule that prohibits smoking in all public housing residential units as of July 2018. This will directly impact more than 400,000 New Yorkers living in public housing, a demographic with one of the highest smoking rates in the city. [77] Tenants of these units will be required to sign agreements stating that they will comply with the new smoke-free rule.

The New York City DOHMH and the New York City Housing Authority (NYCHA) have launched a comprehensive effort to ensure compliance with the new rule and promote smoking cessation as part of their healthy housing initiative. If the DOHMH and NYCHA are successful in using this policy as an opportunity to drive down smoking rates among the city's public housing population, New York City will be able to save countless lives. New York City must provide financial support to this effort to ensure that all NYCHA residents looking to quit smoking are able to do so and are complying with the new HUD rule.

New York City Department of Health and Mental Hygiene

The New York City DOHMH has been recognized as a national leader for its comprehensive tobacco control and cessation efforts. Unfortunately, funding for the DOHMH's tobacco control and smoking cessation efforts has dropped by 46 percent since fiscal year 2010, to $7.02 million in fiscal year 2018.[78]

Tobacco Tax Revenue

On June 1, 2018, New York City began collecting a new tax of 10 percent of the wholesale price on smokeless tobacco, cigars and other forms of non-cigarette tobacco. By law the revenue from the new tax must go to NYCHA. But the law does not say how NYCHA must spend the revenue. Since this revenue is being generated by users of tobacco, a substantial portion of that revenue must be dedicated to smoking cessation programs.

Recommendations for Reducing Tobacco Use

- Increase funding for tobacco control and cessation programs at the New York City DOHMH from $7.2 million to $11.2 million annually with the additional revenue going toward developing a targeted campaign focused on communities with the highest smoking rates. With additional revenue the DOHMH could:
    - Identify people who use tobacco and who would like to quit and connect them with local cessation services;
    - Provide FDA approved cessation treatments; and
    - Fund promotion of the New York State Quit Line and local support services to populations where smoking rates continue to be the highest.
- Earmark a substantial portion of the revenue generated by the City's 10 percent tax on non-cigarette tobacco products to conduct a smoking cessation program at the New York City Housing Authority in partnership with the DOHMH.
- Restrict the sale of all flavored tobacco products including menthol and electronic cigarettes.
- Require all college and university campuses to be tobacco-free, including the use of electronic cigarettes.

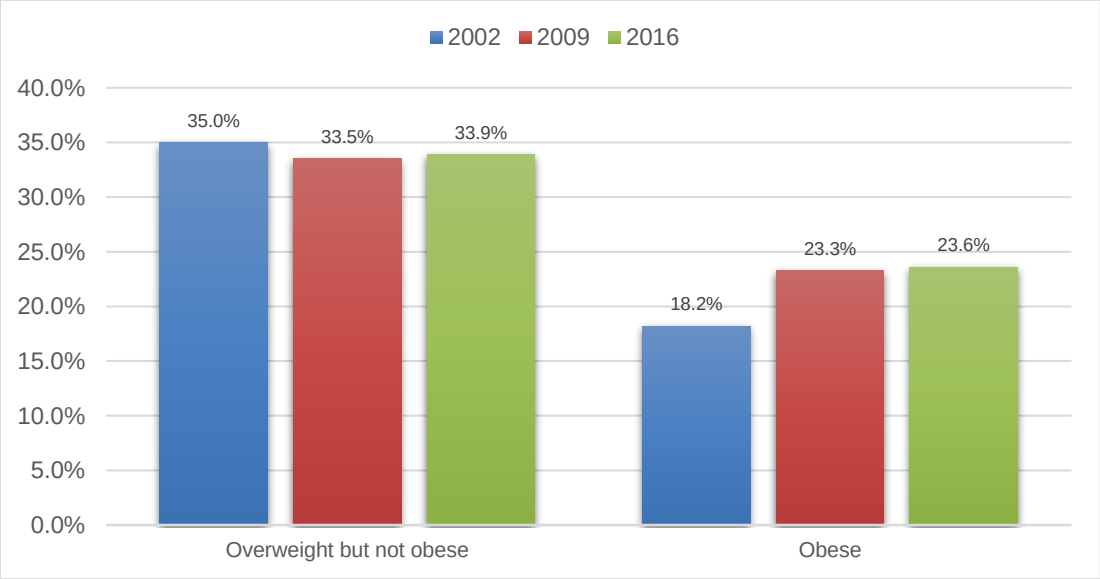
REDUCE THE OBESITY EPIDEMIC

The combined effects of excess body weight, poor diet, alcohol consumption, and physical inactivity is associated with about 18 percent of all cancers.[79] A significant portion of cancers in New York City could be prevented by addressing these factors. Excess body weight increases the risk for several common cancers, including cancers of the female breast (postmenopausal), colon and rectum, uterus, kidney, adenocarcinoma of the esophagus, pancreas, ovary, liver, gastric cardia, gallbladder, thyroid, meningioma, and multiple myeloma.[80]

In New York City, obesity is an epidemic. In 2016, more than half of adult New Yorkers were overweight (body mass index [BMI*] between 25.0 and 29.9; 33.9 percent) or have obesity (BMI 30.0 or more; 23.6 percent).[81] Obesity can begin early in life. Nearly half of all elementary school children and Head Start children are either overweight or have obesity. [82] In New York City, 1 in 5 kindergarten students, and 1 in 4 Head Start children, have obesity. [83] Adult obesity has been steadily on the rise, increasing 22.8 percent since 2002.[84]

Overweight and Obese Adults by Year (age adjusted) Trends, New York City[85]

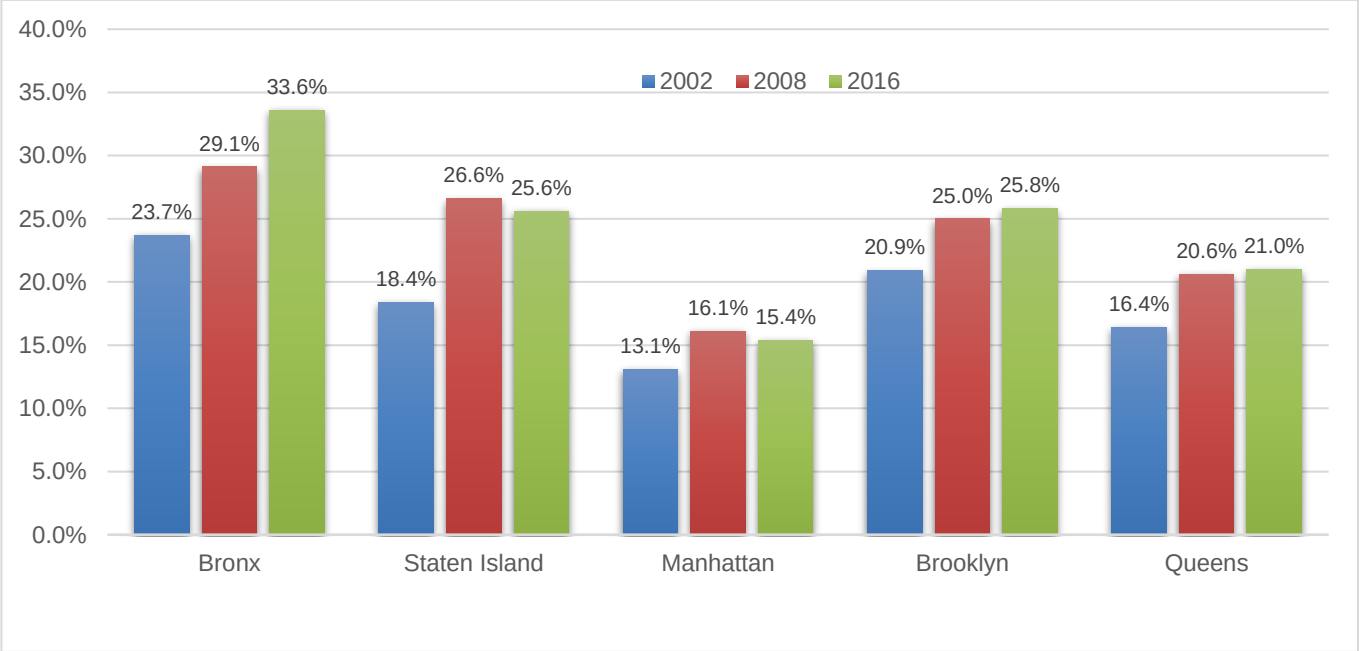
Source: 2016 NYC Community Health Survey



* Definition of Overweight and obesity: Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness. To calculate BMI, go to https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/english_bmi_calculator/bmi_calculator.html. If your BMI is less than 18.5, it falls within the underweight range. If your BMI is 18.5 to <25, it falls within the normal. If your BMI is 25.0 to <30, it falls within the overweight range. If your BMI is 30.0 or higher, it falls within the obese range.

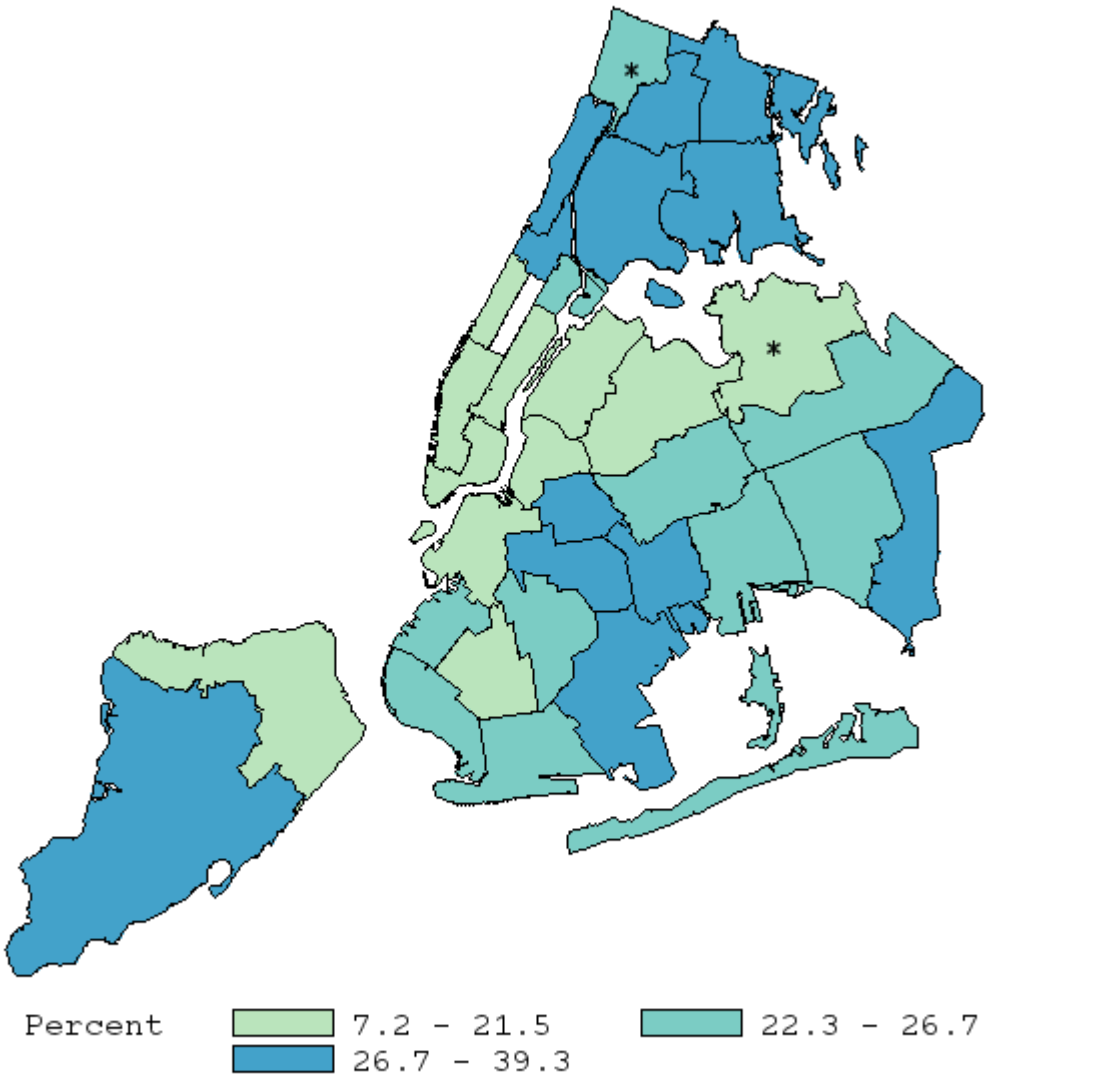
Adult Obesity by Borough (age adjusted) Trends, New York City, 2002-2016[86]

Source: 2016 NYC Community Health Survey



Since 2002, the adult obesity rate has increased in all five boroughs including the Bronx (by 39.2 percent), Staten Island (by 39.1 percent), Manhattan (by 17.5 percent), Brooklyn (by 23.4 percent), and Queens (by 28 percent).[87]

NYC Community Health Survey 2016
Percentage obese adults, by neighborhood



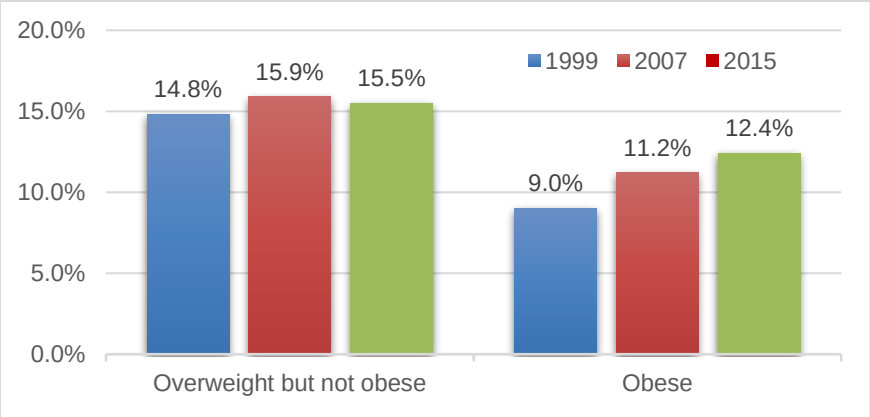
Source: 2016 NYC Community Health Survey

Youth Obesity Rates

The rate of public high school students in grades 9 through 12 who are overweight or have obesity is increasingly threatening the long-term health of New Yorkers. The rate of youth in this age group who have obesity increased 37.7 percent since 1999.[88]

Overweight and Obese by Year (age adjusted) Trends, New York City, 1999-2015[89]

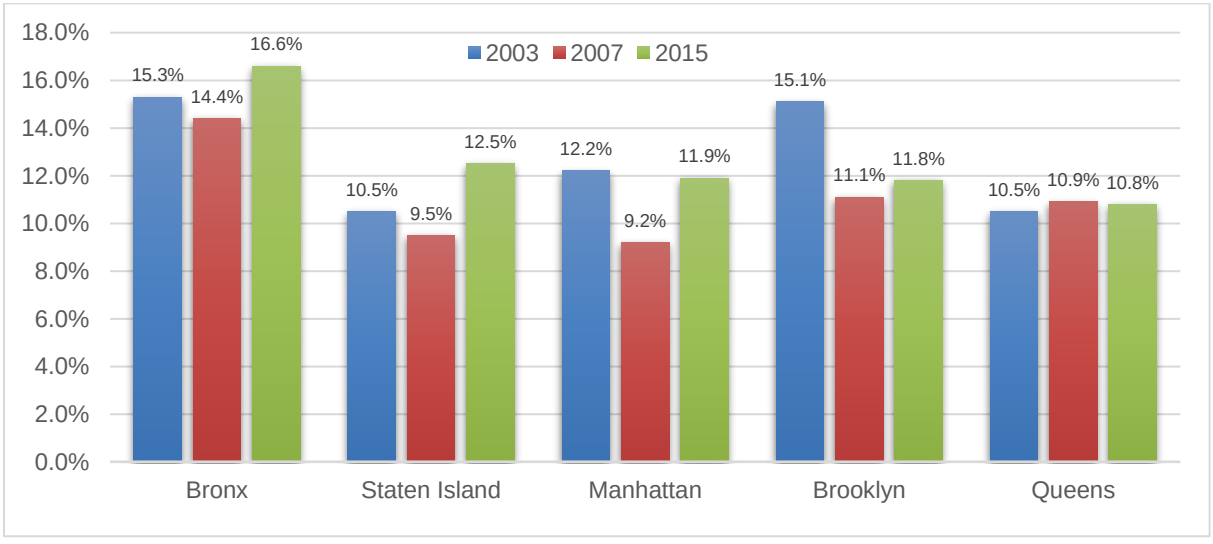
Source: 2015 NYC Youth Risk Behavior Survey



Youth obesity rates are the highest in the Bronx (16.6 percent) and the lowest in Queens (10.8 percent).[90] Youth obesity rates have increased in the Bronx by 8.4 percent and on Staten Island by 19 percent since 2003.[91] Queens had an increase of only 2.7 percent. Only Brooklyn has experienced a decline, dropping 21.8 percent since 2003. [92]

Youth Obesity by Borough (age adjusted) Trends, New York City, 2003-2015[93]

Source: 2015 NYC Youth Risk Behavior Survey

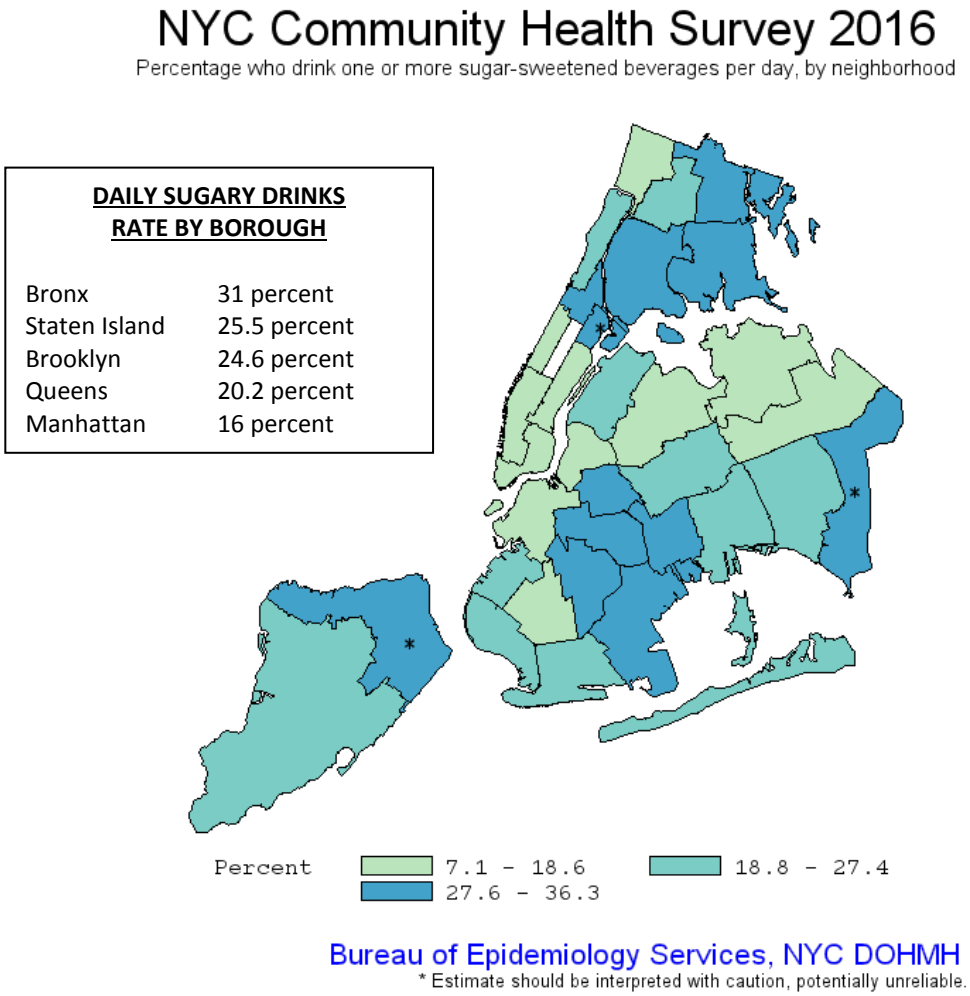


Sugary Drinks

Sugary drinks, also known as sugar-sweetened beverages, are the leading source of added sugar and one of the leading sources of calories in Americans' diets.[94] While the percentage of New Yorkers who consume one or more sugary drinks per day has declined by 36.7 percent between 2007 and 2016, to 22.7 percent, that number has remained roughly flat since 2013. Meanwhile the percentage of New Yorkers who are overweight or obese has increased between 1999 and 2015. [95]

According to the 2016 New York City Community Health Survey, 27.6 percent of adults in New York City whose self-reported height and weight qualifies them as having obesity consumed one or more sugary drinks each day and 34.2 percent of adults whose self-reported height and weight qualifies them as overweight but not having obesity consumed one or more sugary drinks each day.[96]

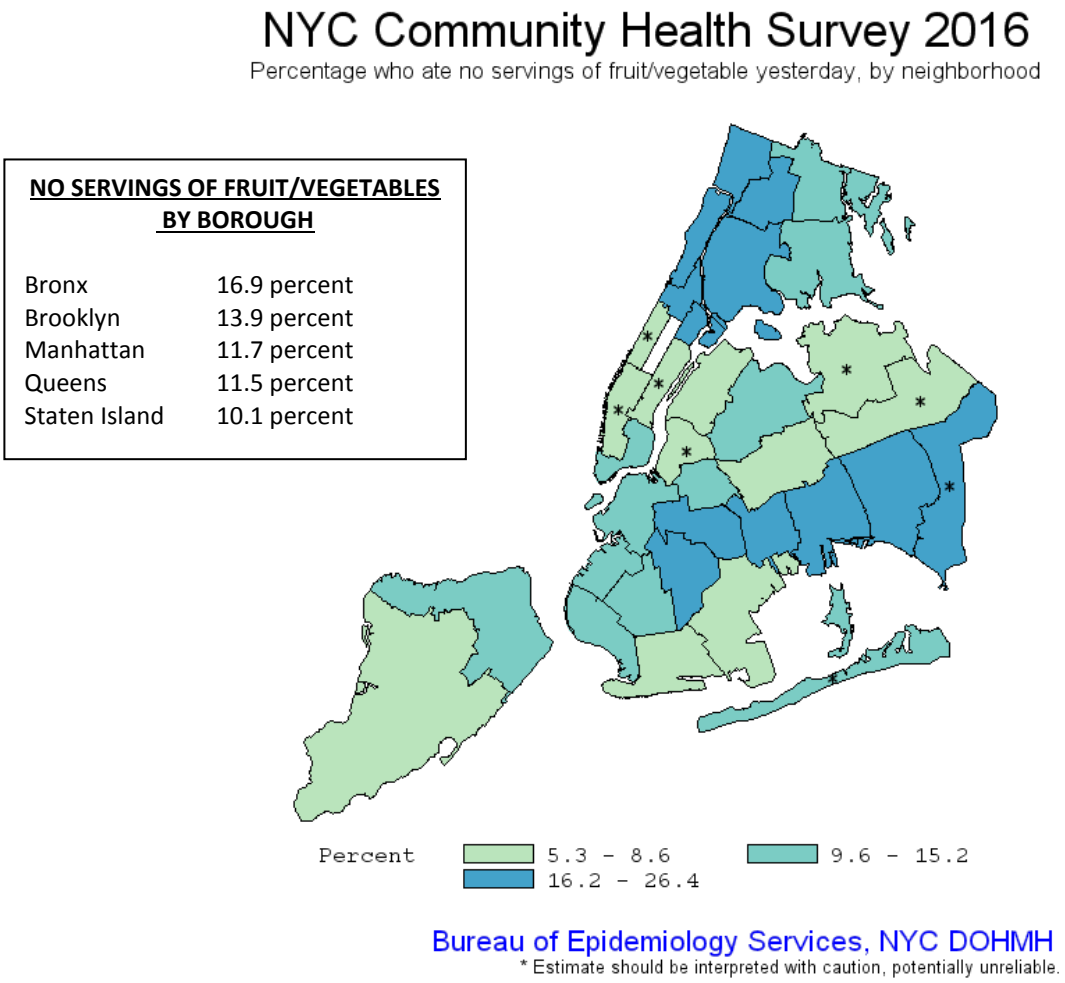
Sugary drink consumption rates are the highest in the Bronx (31 percent) while they are the lowest in Manhattan (16 percent.[97]



Source: 2016 NYC Community Health Survey

Fruits and Vegetables

Eating a diet packed full of healthy fruits and vegetables can help to maintain a healthy weight. The American Cancer Society (ACS) recommends consuming a healthy diet, with an emphasis on plant foods, to reduce cancer risk. Recommendations include choosing foods and beverages in amounts that achieve and maintain a healthy weight, limiting consumption of processed and red meats, consuming fruits and vegetables and whole grains instead of refined grain products, and limiting alcohol intake for those who drink alcoholic beverages.[98] According to the 2016 New York City Community Health Survey, 13 percent of adults in New York City had zero total servings of fruit and/or vegetables in the day before being surveyed. [99]



Source: 2016 NYC Community Health Survey

Physical Activity

According to the 2016 New York City Community Health Survey, 28.4 percent of adults in New York City had zero physical exercise in the 30 days before being surveyed. The results varied widely by neighborhood. [100] (See map below). The adult physical exercise rates differed between boroughs.

Physical activity is important for maintaining a healthy weight. The American Cancer Society guidelines for nutrition and physical education recommend that adults should get at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity activity each week (or a combination of these), spread throughout the week.[101] Children and teens should get at least 60 minutes of moderate or vigorous intensity activity each day, with vigorous activity on at least 3 days each week.[102]

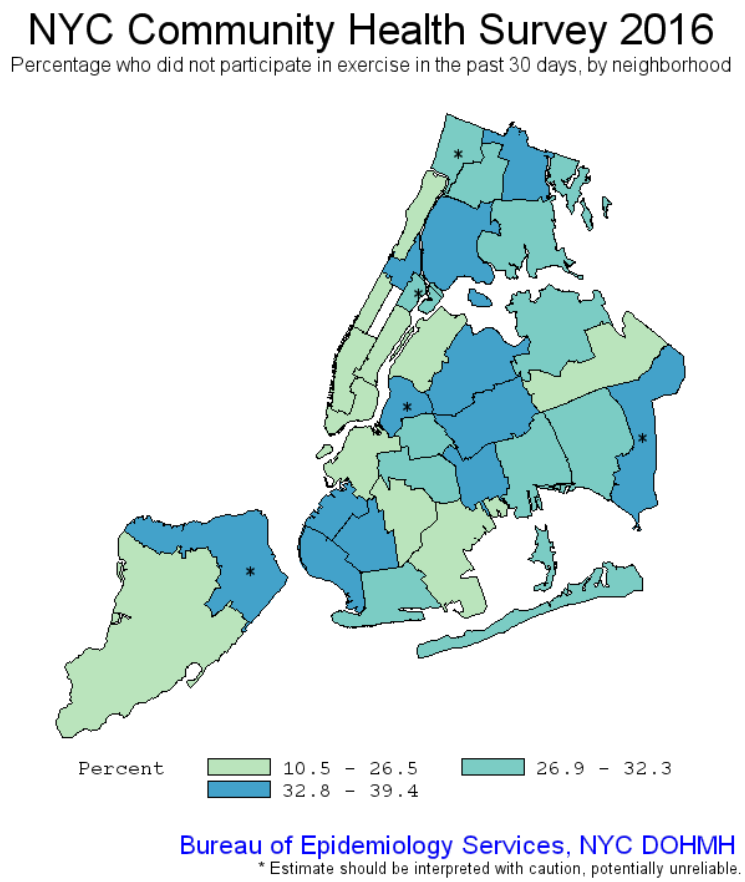
According to the 2016 New York City Youth Risk Behavior Survey only 20.9 percent of youth in New York City were physically active for the recommended total of at least 60 minutes per day on seven of past seven days.[103] The youth physical activity rates differed between boroughs.

ADULTS MEETING WEEKLY RECOMMENDED PHYSICAL EXERCISE STANDARD

Bronx	33.1 percent
Brooklyn	28.9 percent
Manhattan	19.8 percent
Queens	31.5 percent
Staten Island	28.1 percent

YOUTH MEETING DAILY RECOMMENDED PHYSICAL ACTIVITY STANDARD

Bronx	20.9 percent
Brooklyn	21.2 percent
Manhattan	20.5 percent
Queens	20.4 percent
Staten Island	22.6 percent



Source: 2016 NYC Community Health Survey

Physical Education

One of the most important ways to ensure children are physically active and developing lifelong active living habits is through physical education in our schools. Students receiving effective physical education perform better physically, mentally, and emotionally.[104, 105, 106, 107, 108]Engaging in a comprehensive physical education taught by a certified physical education teacher means students are more likely to grow up at a healthier weight, putting them at a lower risk for chronic diseases like cancer, heart disease and diabetes.[109, 110, 111] Physical education also helps kids focus, perform, and behave better in class, leading to improved academic outcomes.[112] The New York State Education Department (NYSED) has clear physical education requirements for public schools. These include standards for instructional time and frequency, space, and personnel.

New York State Physical Education Requirements

Grade Level	Frequency	Duration	Instructors
Grades K-3	Daily	120 minutes/week	Certified PE teachers or teachers under the direction and supervision of a certified PE teacher
Grades 4-6	At least 3 times/week; if housed in a middle school, grades 5-6 can attend class 3 class periods/week in one semester and 2 class periods/week in the other semester	120 minutes/week	Certified PE teachers or teachers under the direction and supervision of a certified PE teacher; if housed in a middle school, grades 5-6 must be taught by a certified PE teacher
Grades 7-12	3 class periods/week in one semester and 2 class periods/week in the other semester	90 minutes/week	Certified PE teachers only

Unfortunately, New York City fails to comply with the state physical education requirements. A 2015 report by New York City Comptroller Scott Stringer showed that most schools across the five boroughs were failing to meet even minimal physical education standards, including the required frequency or duration and having the appropriate instructors or space.[113] According to the 2015 New York City Youth Risk Behavior Survey, only 36 percent of students attended a physical education class daily during an average week while they were in school.[114] The result: most of New York City's 1.1 million school children are not staying physically active in school.

Improving Physical Education in New York City

When Mayor Bill de Blasio campaigned for office in 2013 he committed to improving physical education in New York City. In his first-term, the mayor launched two major initiatives over two years to boost physical education.

In 2016, Mayor Bill de Blasio committed $100 million over four years to expand physical education programming in New York City schools. The investment would allow New York City to hire 500 new certified physical education teachers and provide them the support they need to succeed. While this commitment is historic, the money runs out after 2020. At that point, it is unclear if the commitment to funding physical education teachers will continue.

In 2017, Mayor de Blasio announced a Universal Physical Education initiative to provide all schools with a designated physical education space by 2021. The initiative focuses on around 200 schools, out of a total of 1,629, that do not have a gymnasium, and commits $385 million in capital funding to improve current and secure new facilities for physical education. While the 2016 and 2017 investments mark a historic turn in New York City's commitment to improve physical education, it is yet to be determined if these steps will be enough to bring New York City into compliance with state physical education requirements.

Recommendations for Reducing Obesity

Reducing obesity rates is a difficult challenge we face as a society. As there is not one single contributing factor to obesity, there is no easy answer and no one single approach will work. We must take an all-of-the-above approach to addressing this challenge. We must ensure that both children and adults have access to and are able to practice healthy eating and active living. We must take steps to reign in sugary drink consumption, promote healthy eating (especially fruits and vegetables), and take steps to increase physical activity. New York City should immediately act to:

- Ensure that the four-year, $385 million capital funding commitment included in the New York City Budget adopted in June 2017 is fulfilled and that all schools have a dedicated space for physical education by 2021.
- Baseline $5 million to the New York City Department of Education for the hiring of full-time certified physical education teachers and support staff to ensure that the progress of recent years continues.
- Strengthen the 2015 New York City physical education in schools reporting law to require the Department of Education to:
    - Post all physical education reporting information on individual school websites;
    - Notify all parents of the availability of the new information;
    - Post the data in a manner searchable by individual school, school district, and borough;
    - Include details on whether there is designated space for physical education instruction, a designated gym space to support the minimum amount of physical activity required of students by law; and
    - Include details on the number of certified teachers on a school level.
- Provide a new $30 Million annual allocation to the DOHMH for new obesity prevention programming. The money should be used as follows:
    - $2 million to fund and coordinate evidence-based city level childhood obesity prevention activities including parental education;
    - $3 million to establish a healthy corner store initiative to help existing corner stores offer healthier food options to their customers;
    - $10 million to create a Healthy Food Financing Initiative (HFFI) to help food establishments open, expand, and improve in neighborhoods that need food and jobs the most; and
    - $15 million to expand Supplemental Nutrition Assistance Program (SNAP) incentives such as Health Bucks so more New Yorkers can immediately afford fresh fruits and vegetables.
- Establish a tax of at least two cents per ounce on all sugary drinks and dedicate the revenue to obesity prevention programming like those included above.
- Restrict the sale of sugary drinks at public parks, beaches and in schools, including at school events.
- Require healthy eating options on kids' menus in restaurants including ensuring that menu items targeting youth do not include sugary drinks.

- Strengthen current nutrition standards for all foods and beverages sold, served, or marketed in schools, before, during and after regular school hours.
- Strengthen current nutrition standards for all foods and beverages sold, served, or marketed in government buildings and other public service venues to increase access to healthy options.
- Establish zoning rules to promote access to healthy foods.
- Conduct a detailed review of streets and sidewalks to ensure that they enable safe walking, running, bicycling, and other forms of physical activity.

INCREASE CANCER SCREENING IN NEW YORK CITY

Cancer screening increases the chances of detecting certain cancers early, when treatment is more likely to be effective. The American Cancer Society recommends screening for cancers of the breast, cervix, colon and rectum, and lung. For most cancers, five-year survival is generally higher when detected at an early stage.[115] Unfortunately disparities in cancer screening rates and stage of diagnosis exist by race/ethnicity, cancer type, gender, borough, and neighborhood.

Important Note about Prostate Cancer

The American Cancer Society recommends[116] that men make an informed decision with a health care provider about whether to be tested for prostate cancer. Research has not yet proven that the potential benefits of testing outweigh the harms of testing and treatment. We believe that men should not be tested without first learning about what we know and don't know about the risks and possible benefits of testing and treatment. Starting at age 50, men should talk to a health care provider about the pros and cons of testing, so they can decide if testing is the right choice for them.

The table below shows the percent of cancer cases diagnosed at early stage in males and females by borough for the most common cancers where a screening test is available.[117] According to the New York State Cancer Registry, early stage cancers are those which are confined to the organ of origin at diagnosis.

Percent of Cancer Cases Diagnosed at Early Stage in Males, 2011-2015

Source: New York State Cancer Registry

Region	Colorectal	Lung
New York City	40.8	21.6
Bronx	43.2	18.2
Brooklyn	41.2	20.6
Manhattan	39	25.3
Queens	40.3	22
Staten Island	41.8	21.7

Percent of Cancer Cases Diagnosed at Early Stage in Females, 2011-2015

Source: New York State Cancer Registry

Region	Colorectal	Lung	Breast	Cervix
New York City	40.8	28.3	63.4	44
Bronx	42.3	25.4	62.3	44.3
Brooklyn	40.9	27.4	59.6	43.5
Manhattan	39.2	32.7	67.2	43.2
Queens	41.4	26.4	64.1	44.2
Staten Island	38.5	29.9	67.1	48.4

The table below shows the percent of cancer cases diagnosed at early stage in males and females in New York City by race for the most common cancers where a screening test is available

Percent of Cancer Cases Diagnosed at Early Stage in New York City by Race, 2011-2015

Source: New York State Cancer Registry

	Colorectal	Lung	Female breast	Cervix
Black Male	40.6	17.6	N/A	N/A
White Male	40.3	23.4	N/A	N/A
Black Female	40.9	23.4	57.6	36.7
White Female	39.9	30.4	65.7	46.6

Female Breast Cancer Early Detection

The outlook for women with breast cancer varies by the stage (extent) of the cancer. In general, the survival rates are better for women with earlier stage cancers; 5-year survival for localized (early stage) disease is about 99%.[118]
According to New York State Department of Health:

- Citywide, only 63.4 percent of women were diagnosed with breast cancer at an early stage, when treatment is more likely to be effective.
- Woman in Brooklyn have the lowest proportion.
- Women in Manhattan have the highest proportion.[119]

Colorectal Cancer Early Detection

The 5-year relative survival rate for people with the earliest stage colorectal cancer is about 90 percent.[120]
According to New York State Department of Health:

- Citywide, only 40.9 percent of men and 40.8 percent of women were diagnosed with colorectal cancer at an early stage when treatment is more likely to be effective.
- Men in Manhattan and women on Staten Island have the lowest proportion.
- Men and women in the Bronx have the highest proportion.[121]

Lung and Bronchus Cancer Early Detection

The 5-year survival rate for people with the earliest stage is about 56 percent.[122]
According to New York State Department of Health:

- Citywide, only 21.6 percent of men and 28.3 percent of women were diagnosed with lung and bronchus cancer at an early stage when treatment is more likely to be effective.
- Men and women in the Bronx have the lowest proportion.
- Men and women in Manhattan have the highest proportion.[123]

Cervical Cancer Early Detection

The 5-year survival rate for people with the earliest stage cervical cancer is about 92%. According to New York State Health Department:[124]

According to New York State Department of Health:

- Citywide, only 44 percent of women were diagnosed with cervical cancer at an early stage when treatment is more likely to be effective.
- Woman in Manhattan have the lowest proportion.
- Women on Staten Island have the highest proportion:[125]

New York City Neighborhoods (PUMA Districts)

Different proportions of cancer diagnosed at an early stage are found among neighborhoods in New York City[126]

According to New York State Department of Health:

Lung and bronchus cancer diagnosed at an early stage

- Men and women living in Upper East Side (#3805) have the highest proportion.
- Men and women living in Crown Heights North and Prospect Heights have the lowest proportion.

Colorectal cancer diagnosed at an early stage

- Men and women living in Bedford Park, Fordham North and Norwood have the highest proportion.
- Men and women living in Chinatown and Lower East Side) have the lowest proportion.

Female breast cancer diagnosed at an early stage

- Women in Upper East Side (#3805) have the highest proportion.
- Women in Brownsville & Ocean Hill (#4007) have the lowest proportion.

Increasing Rates of Screening

Cancer screening increases the chances of detecting certain cancers early, when treatment is most likely to be effective. Screening tests are used to find cancer before a person has any symptoms. All New Yorkers deserve to have access to a screening that could save their lives. To review the American Cancer Society screening guidelines go to www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines.html.

Recommendations to Increase Cancer Screening

The New York City DOHMH coordinates a citywide effort to increase cancer screening for uninsured and underinsured New Yorkers. For breast, colorectal, cervical and prostate cancers over the past fifteen years, the effort has seen historic increases in colorectal cancer screening rates and declines in racial disparities among New York City.[127] Yet many New Yorkers are lacking access to potentially lifesaving cancer screening. Barriers to screening include lack of transportation to and from appointments, time off for screening, cost, and insurance coverage. Many of these barriers could be addressed with public and private support.

Specifically, ACS CAN recommends that New York City:

- Provide a new $3.85 million annual allocation to the DOHMH for cancer prevention programming. The money should be used as follows:
    - $2.7 million annually should go toward cancer prevention patient navigation programming.
        - The NYU Langone Perlmutter Cancer Center is currently in the final year of a $1.35 million annual allocation from the DOHMH; Increasing the amount to $2.7 million annually will allow for the program to help more people in medically underserved areas of New York City access screening for colorectal cancer and breast cancer, regardless of their income or insurance status.
    - $500,000 to the to expand the New York City Community Cares Project.
    - $150,000 to cover the transportation costs of patients that are identified through the New York City Community Cares Project.
    - $500,000 for a health care provider and parent education campaign aimed at increasing Human papillomavirus (HPV) vaccination rates.
- Establish a cancer screening registry that maintains colon, breast, cervical, and lung and bronchus cancer screening records for New York City residents and allocate an appropriate level of funding for its implementation.
- Ensure that there is at least one endoscopy center open in each borough care provider and parental education programming on the importance of the HPV vaccine.
- Provide $350,000 to the New York City Parks Department for a citywide program to provide to free sunscreen at all New York City parks, pools and beaches.

REDUCE HUMAN PAPILLOMAVIRUS (HPV) RELATED CANCERS

Every year, approximately 976 New York City residents are diagnosed with a cancer related to human papillomavirus (HPV) according to the New York State Department of Health.[128] Two thirds of those cases are in women.[129] HPV related cancers are preventable.

HPV is a group of more than 150 related viruses. Some types of HPV are known for causing cancer. HPV causes most cases of cervical cancer, as well as many vaginal, vulvar, anal, penile, and oropharyngeal cancers (cancers of the throat and tongue).[130] High risk HPV types, or types of HPV that can cause cancer in both men and women, cause approximately 5 percent of all cancers worldwide.[131]

- Cervical cancer: Virtually all caused by HPV.
- Anal cancer: 95 percent caused by HPV.
- Oropharyngeal cancers: 70 percent caused by HPV.
- Rarer cancers: HPV causes 65 percent vaginal cancers, 50 percent vulvar cancers, 35 percent penile cancers.

Vaccine that Can Prevent Cancer

The HPV vaccine can prevent infection by certain types of HPV, and some of the cancers linked to those types. The vaccine helps prevent infection by the most common types of HPV. These types of HPV cause about 70 percent of all cervical cancers and pre-cancers, as well as many cancers of the anus, penis, vulva, vagina, and throat. HPV vaccines help prevent about 90 percent of cervical cancers. [132]

The American Cancer Society's (ACS) Recommendations for HPV Vaccination:

- ✓ Routine HPV vaccination for girls and boys should be started at age 11 or 12. The vaccination series can be started as early as age 9.
- ✓ HPV vaccination is also recommended for females 13 to 26 years old and for males 13 to 21 years old who have not started the vaccine series, or who have started but not completed the series. Males 22 to 26 years old may also be vaccinated. [133]

Citywide HPV Vaccination Rates

Despite the widespread availability of the vaccine,[134] a substantial number of youth ages 13-17 have not completed the HPV vaccine series, with 67.5 percent of girls and 62.6 percent of boys in New York City having done so.[135] Meanwhile, significant gaps exist in vaccination rates from borough to borough and neighborhood to neighborhood.

New York City HPV vaccine series completion (%), Youth Age 13-17[136]

Sources: 2013-2017 data provided by the New York City Mayor's Management Report, 2017
*2018 data provided by the NYC DOHMH Citywide Immunization Registry

2013	2014	2015	2016	2017	2018*
26.1%	32.5%	38.5%	44.2%	56.0%	65.0%

HPV Vaccination Rates by Borough

According to the New York City DOHMH Citywide Immunization Registry[137], adolescent girls living in the Bronx (77 percent) and adolescent boys in the Bronx (72.9 percent) have the highest rate of HPV vaccination in New York City. Adolescent girls living on Staten Island (34.5 percent) and adolescent boys on Staten Island (30 percent) have the lowest rate of HPV vaccination in New York City. In addition to the differences between boroughs, significant disparities exist between neighborhoods. These gaps in vaccination rates are leaving large numbers of New Yorkers unnecessarily at risk.

HPV Vaccination Rates by Community District

HPV vaccination rate data by Community District in this report comes from the New York City DOHMH Citywide Immunization Registry. The Citywide Immunization Registry includes data on each of New York City's 59 Community Districts.[138] See the appendix for a map of all community districts and their corresponding neighborhoods.

According to the Citywide Immunization Registry, the Bronx is home to seven out of the ten Community districts with the highest rate of HPV vaccination completion.[139] Meanwhile two out the three districts on Staten Island are among the top ten list of community districts with the lowest rate of HPV vaccination completion. [140]

See the appendix for a complete list of community districts and their most recent HPV vaccination rates.

Increasing Citywide HPV Vaccination Rates

While HPV vaccine series completion among adolescents (females and males) 13-17 years of age increased by 149 percent between 2013 and 2018, it remains at only 65 percent in 2018.[141] More progress needs to be made if we are to meet the American Cancer Society's national goal of 80 percent vaccine coverage.

The biggest predictor of HPV vaccination uptake is an effective recommendation from a health care professional – specifically a family medicine or pediatric professional.[142] According to the American Association of Cancer Research, 59 percent of physicians only recommend vaccination to those they believe to be "at risk," 26 percent of physicians do not give timely recommendations for girls and 39 percent of physicians do not give timely recommendations for boys. [143] A strong and clear recommendation from a provider is critical to ensuring that boys and girls get the vaccine. [144]

The significant rise in vaccination rates in New York City over the past five years comes as a result of a strong commitment by various stakeholders. Some of the interventions leading to this increase were:

- Enhancing provider education
- Assessing vaccination coverage levels in health care provider offices and providing feedback to the practices
- Conducting media campaigns
- Engaging community partners[145]

80 percent by 2026

In 2018 the American Cancer Society launched a national ***HPV Cancer Free*** campaign that partners with volunteers, parents, providers, health care organizations, and community leaders to increase HPV vaccination rates for preteens to at least 80 percent by June 8, 2026 -- the 20-year anniversary of the FDA's approval of the first HPV vaccine.

There are two core campaign goals that will guide the ACS campaign:

- Increase HPV vaccination rates for preteens.
- Eliminate gender disparity and reduce geographic disparities in HPV vaccination.

Recommendations to Reduce Human Papillomavirus (HPV) Related Cancers

While it will be a challenge, there is a model for how New York City and the American Cancer Society can work together to boost vaccination.

More than a decade ago, New York City and the American Cancer Society partnered together to launch a citywide effort to curb colon cancer deaths. With the leadership of the DOHMH and funding from the Administrations of Michael Bloomberg and Bill de Blasio and the New York City Council, New York City dramatically increased colonoscopy rates. [146]

New York City should follow this model and launch an aggressive campaign focused on:

- Educating and training providers on how to give accurate, consistent and strong HPV vaccination recommendations to their patients.
- Increasing parents' knowledge about the importance of protecting their children with the HPV vaccine and the appropriate time for a child to be vaccinated.

To ensure that this campaign is a success, New York City should provide $500,000 in funding to the New York City DOHMH to coordinate evidence-based city level health care provider and parental education programming on the importance of the HPV vaccine.

PREVENT SKIN CANCER

Nearly 1,000 cases of melanoma of the skin are diagnosed in New York City annually, according to the New York State Cancer Registry. Over 100 lives are lost to the disease each year.[147] Ultraviolet (UV) radiation, from the sun and indoor tanning devices, can cause skin cancer as well as eye damage and premature aging of the skin. Severe sunburn during childhood significantly increases the risk of melanoma later in life. Safety in the sun at the beach and every time outdoors is important to prevent skin cancer, as is avoiding all indoor tanning.

Recommendations to Prevent Skin Cancer

New York City should leverage its purchasing power and private sector partnerships to ensure that a lack of sunscreen is never the reason for increasing skin cancer rates. The New York City Department of Parks & Recreation launched a pilot project in 2017 that provided free sunscreen at all city beaches. That program should be expanded and made permanent.

- New York City should allocate $350,000 to the New York City Parks Department for a citywide program to provide free sunscreen at all New York City parks, pools and beaches.

SUPPORT CANCER RESEARCH

While New York City is better known for banking and media than biotech and medical research, the life science sector plays a major role in New York City.

In addition to the lifesaving advances in the fight against cancer resulting from the work of medical research, biomedical research, and the life science sectors generally, these sectors are also a critically important component of New York City's economy. In 2017, the National Institutes of Health (NIH) alone made 5,056 awards totaling nearly $2.4 billion to research institutions in New York State, of which 75% – nearly $1.8 billion – accrued to institutions in New York City.[148] The American Cancer Society Inc. provided 54 awards totaling nearly $28 million to institutions in New York City in 2017.[149] Private institutions—including nine academic medical centers across the city—are involved in groundbreaking research.

Despite the strong benefit of this research, recent studies have shown that funding for medical research overall is harder to find in general, and the current approach favors low-risk research and proposals by older scientists and with little diversity.[150] New York City has an opportunity to not only promote groundbreaking medical research but harness the power of New York's diverse workforce.

New York City should support bold investment in entrepreneurial science to maintain and grow this vital part of our innovation economy. Public investment has, until recently, not kept pace with major public investments in states such as California (with its $3 billion stem cell program),[151] Texas (with a $3 billion cancer initiative),[152] Massachusetts (with a $1.5 billion life sciences initiative),[153] and others. These investments have positioned those regions to recruit scientific talent, attract and retain life sciences companies and spur significant private investment.

While major life sciences investments by New York City (LifeSciNYC) and New York State (Life Sciences Initiative) have the potential to significantly improve New York's leadership role, it is time for New York City to make itself not just the financial and media capitol of the world but also the leader in cancer research.

Recommendations for Promoting Cancer Research

New York City should establish a New York City Commission on Cancer Research (NYCCCR) to promote significant and original research in New York City into the causes, prevention, treatment and palliation of cancer and serve as a resource to providers and consumers of cancer services. New York City should provide $5 million annually to the Commission.

Additionally, New York City should contribute $5 million annually to the New York Fund for Innovation in Research and Scientific Talent (NYFIRST) to bring top scientific talent to New York City's leading medical schools, teaching hospitals and cancer research centers.

BACKGROUND ON DATA SOURCES

Details on the sources of data used in this report come directly from the New York State Cancer Registry, the New York City Community Health Survey, the New York City Youth Risk Behavior Survey and the New York City Immunization Registry. Available information includes data sources, what is in the cancer registry, what the registry does to protect privacy, how long it takes to process cancer data, what kind of data is released by the registry, what type of data is available, an explanation of rates vs counts, age adjusted rates, confidence intervals and unstable rates, and considerations when comparing statistics over time.

New York State Cancer Registry
In New York State, Public Health Law Section 2401 requires that all physicians, dentists, laboratories, and other health care providers notify the Department of Health (the Department) of every case of cancer or other malignant disease. Through the New York State Cancer Registry, the Department collects, processes and reports information about New Yorkers diagnosed with cancer. https://www.health.ny.gov/statistics/cancer/registry/

New York City Community Health Survey
The New York City Community Health Survey (CHS) is a telephone survey conducted annually by the DOHMH, Division of Epidemiology, Bureau of Epidemiology Services. CHS provides robust data on the health of New Yorkers, including neighborhood, borough, and citywide estimates on a broad range of chronic diseases and behavioral risk factors. The CHS is a cross-sectional telephone survey with an annual sample of approximately 10,000 randomly selected adults aged 18 and older from all five boroughs of New York City (Manhattan, Brooklyn, Queens, Bronx, and Staten Island). The survey results are analyzed and disseminated to track the health of New Yorkers, influence health program decisions, and increase the understanding of the relationship between health behavior and health status. http://www1.nyc.gov/site/doh/data/data-sets/community-health-survey.page

New York City Youth Risk Behavior Survey
The NYC Youth Risk Behavior Survey (YRBS) is conducted through an ongoing collaboration between the NYC Health Department, the Department of Education and the National Centers for Disease Control and Prevention (CDC). The City's YRBS is part of the CDC's National Youth Risk Behavior Surveillance System. Based on the protocol developed by CDC, the survey has been conducted in odd-numbered years since 1997. The survey's primary purpose is to monitor priority health risk behaviors that contribute to the leading causes of mortality, morbidity and social problems among youth in the city. https://www1.nyc.gov/site/doh/data/data-sets/nyc-youth-risk-behavior-survey.page

New York City Immunization Registry
The New York Citywide Immunization Registry (CIR) keeps immunization records for all New York City residents — children and adults. The City Health code section 11.07 and New York State Public Health Law 2168 require that all health care providers who order the administration of an immunization for any individual age 18 years old and younger in New York City must report the immunizations administered within 14 days to the Registry.
https://www1.nyc.gov/site/doh/providers/reporting-and-services/citywide-immunization-registry-cir.page

PUMAs
In this report, the New York City neighborhoods correspond to the Public Use Microdata Areas (PUMAs) defined by the U.S. Census Bureau. PUMAs are groups of census tracts containing at least 100,000 people. In New York City, PUMAs approximate the city Community Districts (see http://www1.nyc.gov/assets/planning/download/pdf/data-maps/nyc-population/census2010/puma_cd_map.pdf). Direct Community District data is used when available and noted as such.

For more information on specific cancers visit www.cancer.org.

REFERENCES

[1] Cancer Facts & Figures 2018. (n.d.). Retrieved July 2, 2018, from https://www.cancer.org/research/cancer-facts-statistics/all-cancer-facts-figures/cancer-facts-figures-2018.html
[2] Ibid
[3] Ibid
[4] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[5] "Madison Square Garden Arena." Radio City Music Hall History | Official Site, www.msg.com/venue-rentals/madison-square-garden.
[6] New York State Cancer Registry, Cancer Incidence and Mortality for New York City, 2010-2014
[7] Ibid
[8] Ibid
[9] Ibid
[10] Ibid
[11] New York State Cancer Registry, Cancer Data for New York State Counties, 2010-2014
[12] Ibid
[13] Ibid
[14] Ibid
[15] Ibid
[16] Ibid
[17] http://www1.nyc.gov/assets/planning/download/pdf/data-maps/nyc-population/census2010/puma_cd_map.pdf
[18] New York State Department of Health, New York State Cancer Registry Cancer Incidence by New York City Neighborhood, 2010-2014
[19] Ibid
[20] Ibid
[21] Ibid
[22] Ibid
[23] Ibid
[24] Ibid
[25] Ibid
[26] Ibid
[27] Ibid
[28] Ibid
[29] Ibid
[30] Ibid
[31] Ibid
[32] Ibid
[33] Ibid
[34] Ibid
[35] Ibid
[36] Ibid
[37] Ibid
[38] Ibid
[39] Ibid
[40] Islami F, Goding Sauer A, Miller KD, Siegel RL, Fedewa SA, Jacobs EJ, McCullough ML, Patel AV, Ma J, Soerjomataram I, Flanders WD. Proportion and Number of Cancer Cases and Deaths Attributable to Potentially Modifiable Risk Factors in the United States. CA: A Cancer Journal for Clinicians. 2018 Jan 1;68(1):31-54.
[41] "Smoking & Tobacco Use." Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 20 Feb. 2018, www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm.
[42] New York City Department of Health and Mental Hygiene, Smoking, www1.nyc.gov/site/doh/health/health-topics/smoking.page.
[43] Islami F, Goding Sauer A, Miller KD, Siegel RL, Fedewa SA, Jacobs EJ, McCullough ML, Patel AV, Ma J, Soerjomataram I, Flanders WD. Proportion and Number of Cancer Cases and Deaths Attributable to Potentially Modifiable Risk Factors in the United States. CA: A Cancer Journal for Clinicians. 2018 Jan 1;68(1):31-54.
[44] Ibid
[45] CDC, Best Practices for Comprehensive Tobacco Control Programs, 2014.

[46] Campaign for Tobacco-Free Kids, Key State-Specific Tobacco-Related Data & Rankings. Retrieved from https://www.tobaccofreekids.org/assets/factsheets/0176.pdf, December 21, 2018 /
[47] "Department of Health." Get the Facts - Electronic Cigarettes (E-Cigarettes) and Similar Devices, www.health.ny.gov/prevention/tobacco_control/campaign/e-cigarettes/.
[48] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[49] Mayor de Blasio Signs Sweeping Legislation to Curb Smoking, Tobacco Usage. (2017, August 28). Retrieved from http://www1.nyc.gov/office-of-the-mayor/news/565-17/mayor-de-blasio-signs-sweeping-legislation-curb-smoking-tobacco-usage#/0
[50] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[51] Mayor's Management Report (MMR). (n.d.). Retrieved January 02, 2018, from http://www1.nyc.gov/site/operations/performance/mmr.page
[52] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[53] Ibid
[54] Ibid
[55] Source: 2016 NYC Community Health Survey
[56] New York City Department of Health and Mental Hygiene, 2015 NYC Community Health Survey
[57] Initiative, T. (2017, October 16). The Truth About: Menthol. Retrieved January 05, 2018, from https://truthinitiative.org/news/truth-about-menthol
[58] Initiative, T. (2017, October 16). The Truth About: Menthol. Retrieved January 05, 2018, from https://truthinitiative.org/news/truth-about-menthol
[59] Initiative, T. (2017, October 16). The Truth About: Menthol. Retrieved January 05, 2018, from https://truthinitiative.org/news/truth-about-menthol
[60] Flavored Tobacco Product Sale. (n.d.). Retrieved January 02, 2018, from http://www1.nyc.gov/nyc-resources/service/2919/flavored-tobacco-product-sale
[61] New York City Department of Health and Mental Hygiene, 2009 and 2015 NYC Community Health Surveys
[62] Ibid
[63] Ibid
[64] Ibid
[65] Ibid
[66] Ibid
[67] Ibid
[68] Lee, JGL, et al., "A Systematic Review of Neighborhood Disparities in Point-of-Sale Tobacco Marketing," American Journal of Public Health, published online ahead of print July 16, 2015.
[69] Initiative, T. (2016, February 08). #NoMentholMondays: The targeted marketing of menthols and African-American history. Retrieved January 05, 2018, from https://truthinitiative.org/news/nomentholmondays-targeted-marketing-menthols-and-african-american-history
[70] Initiative, T. (2016, February 08). #NoMentholMondays: The targeted marketing of menthols and African-American history. Retrieved January 05, 2018, from https://truthinitiative.org/news/nomentholmondays-targeted-marketing-menthols-and-african-american-history
[71] Initiative, T. (2016, February 08). #NoMentholMondays: The targeted marketing of menthols and African-American history. Retrieved January 05, 2018, from https://truthinitiative.org/news/nomentholmondays-targeted-marketing-menthols-and-african-american-history
[72] New York City Department of Health and Mental Hygiene, 2015 NYC Community Health Survey
[73] "Secondhand Smoke: Dangers in Apartments and Condos." Healthline, Healthline Media, www.healthline.com/health-news/dangers-of-secondhand-smoke-in-apartments-condominiums#1.
[74] "Secondhand Smoke: Dangers in Apartments and Condos." Healthline, Healthline Media, www.healthline.com/health-news/dangers-of-secondhand-smoke-in-apartments-condominiums#1.
[75] U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.
[76] "Secondhand Smoke: Dangers in Apartments and Condos." Healthline, Healthline Media, www.healthline.com/health-news/dangers-of-secondhand-smoke-in-apartments-condominiums#1.
[77] New York City Department of Health and Mental Hygiene, 2015 NYC Community Health Survey
[78] Mayor's Office of Management and Budget Publications. (n.d.). Retrieved April 19, 2018, from http://www1.nyc.gov/site/omb/publications/publications.page
[79] Islami, F, et al. "Proportion and Number of Cancer Cases and Deaths Attributable to Potentially Modifiable Risk Factors in the United States." CA: a Cancer Journal for Clinicians., U.S. National Library of Medicine, Jan. 2018, www.ncbi.nlm.nih.gov/pubmed/29160902.
[80] Does body weight affect cancer risk? (n.d.). Retrieved April 19, 2018, from https://www.cancer.org/cancer/cancer-causes/diet-physical-activity/body-weight-and-cancer-risk/effects.html
[81] "Obesity." NYC, New York City Department of Health and Mental Hygiene, www1.nyc.gov/site/doh/health/health-topics/obesity.page.
[82] "Obesity." NYC, New York City Department of Health and Mental Hygiene, www1.nyc.gov/site/doh/health/health-topics/obesity.page.
[83] "Obesity." NYC, New York City Department of Health and Mental Hygiene, www1.nyc.gov/site/doh/health/health-topics/obesity.page.
[84] Obesity. (n.d.). Retrieved January 03, 2018, from http://www1.nyc.gov/site/doh/health/health-topics/obesity.page
[85] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[86] New York City Department of Health and Mental Hygiene, 2015 NYC Youth Risk Behavior Survey
[87] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[88] New York City Department of Health and Mental Hygiene, 2015 NYC Youth Risk Behavior Survey

[89] Ibid
[90] Ibid
[91] Ibid
[92] Ibid
[93] Ibid
[94] U.S. Department of Health and Human Services and U.S. Department of Agriculture. Dietary Guidelines for Americans, 2015-2010. January 2016. Available at http://health.gov/dietaryguidelines/2015/guidelines/.
[95] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[96] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[97] Ibid
[98] Kushi LH, Doyle C, McCullough M, et al. American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention. CA Cancer J Clin 2012; 62:30-67.
[99] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[100] New York City Department of Health and Mental Hygiene, 2016 NYC Community Health Survey
[101] ACS Guidelines for Nutrition and Physical Activity. (n.d.). Retrieved April 19, 2018, from https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/guidelines.html
[102] ACS Guidelines for Nutrition and Physical Activity. (n.d.). Retrieved April 19, 2018, from https://www.cancer.org/healthy/eat-healthy-get-active/acs-guidelines-nutrition-physical-activity-cancer-prevention/guidelines.html
[103] New York City Department of Health and Mental Hygiene, 2015 NYC Youth Risk Behavior Survey
[104] U.S. Department of Health and Human Services. 2008 Physical Activity Guidelines for Americans. Available at http://www.health.gov/paguidelines/.Med. 2009; 163(11):1014-1021.
[105] Shore SM, Sachs ML, Lidicker JR, et. al. Decreased scholastic achievement in overweight middle school students. Obesity 2008;16,1535–1538.
[106] Geier AB, et. al. The Relationship Between Relative Weight and School Attendance. Obesity 2007. 15:2157-2161.
[107] Centers for Disease Control and Prevention. The Association Between School-Based Physical Activity, Including Physical Education, and Academic Performance U.S. Department of Health and Human Services; 2010
[108] Active Living Research, A National Program of the Robert Wood Johnson Foundation. Active Education: Physical Education, Physical Activity and Academic Performance. Research Brief. Fall 2007. Available online at http://www.activelivingresearch.org/resourcesearch/summaries.
[109] Meyer, AA, Kundt, G, Lenschow, U, Schuff-Werner, P. Kienast W. Improvement of early vascular changes and cardiovascular risk factors in obese children after a sixmonth exercise program. J Am Coll Cardiol, 2006; 48:1865-1870.
[110] Datar A, Sturm R. Physical education in elementary school and body mass index: Evidence from the early childhood longitudinal study. *American Journal of Public Health.* Sept. 2004; 94,9.
[111] Madsen KA. et al., Physical activity opportunities associated with fitness and weight status among adolescents in low-income communities. *Arch Pediatr Adolesc Med.* 2009; 163(11):1014-1021.
[112] Kohl, H. W., & I. (2013, October 30). Physical Activity, Fitness, and Physical Education: Effects on Academic Performance. Retrieved April 19, 2018, from https://www.ncbi.nlm.nih.gov/books/NBK201501/
[113] Stringer, S. (n.d.). Dropping the Ball: Disparities in Physical Education in New York City. Retrieved January 05, 2018, from https://comptroller.nyc.gov/reports/dropping-the-ball-disparities-in-physical-education-in-new-york-city/
[114] New York City Department of Health and Mental Hygiene, 2015 NYC Youth Risk Behavior Survey
[115] American Cancer Society, What is a 5-year survival rate?, https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/breast-cancer-survival-rates.html
[116] "Cancer Screening Guidelines | Detecting Cancer Early." American Cancer Society, www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html.
[117] New York State Department of Health, Percent of Cancers Diagnosed at an Early Stage by County, 2010-2014, https:atistics/cancer/registry/table3/tb3county.htm//www.health.ny.gov/st
[118] American Cancer Society. Cancer Facts & Figures 2018. Atlanta: American Cancer Society, 2018. https://www.cancer.org/cancer/breast-cancer/understanding-a-breast-cancer-diagnosis/breast-cancer-survival-rates.html
[119] New York State Department of Health, Percent of Cancers Diagnosed at an Early Stage by County, 2010-2014, https:atistics/cancer/registry/table3/tb3county.htm//www.health.ny.gov/st
[120] American Cancer Society. Cancer Facts & Figures 2018. Atlanta: American Cancer Society, 2018, https://www.cancer.org/cancer/colon-rectal-cancer/detection-diagnosis-staging/survival-rates.html
[121] New York State Department of Health, Percent of Cancers Diagnosed at an Early Stage by County, 2010-2014, https:atistics/cancer/registry/table3/tb3county.htm//www.health.ny.gov/st
[122] American Cancer Society. Cancer Facts & Figures 2018. Atlanta: American Cancer Society, 2018
[123] New York State Department of Health, Percent of Cancers Diagnosed at an Early Stage by County, 2010-2014, https:atistics/cancer/registry/table3/tb3county.htm//www.health.ny.gov/st

[124]American Cancer Society. Cancer Facts & Figures 2018. Atlanta: American Cancer Society, 2018, https://www.cancer.org/cancer/cervical-cancer/detection-diagnosis-staging/survival.html
[125] New York State Department of Health, Percent of Cancers Diagnosed at an Early Stage by County, 2010-2014, https:atistics/cancer/registry/table3/tb3county.htm//www.health.ny.gov/st
[126] New York State Department of Health, Percent of Cancers Diagnosed at an Early Stage by NYC Neighborhood, 2010-2014
[127] "Citywide-Colon-Cancer-Control-Coalition." NYC DOHMH, www1.nyc.gov/site/doh/providers/resources/citywide-colon-cancer-control-coalition.page.
[128] HPV-Related Cancer and Vaccination Rates, 2015, NYS Cancer Registry available at https://www.health.ny.gov/statistics/cancer/docs/hpv_related_cancers_and_vaccination_rates_2015.pdf
[129] HPV-Related Cancer and Vaccination Rates, 2015, NYS Cancer Registry available at https://www.health.ny.gov/statistics/cancer/docs/hpv_related_cancers_and_vaccination_rates_2015.pdf
[130] NIH/NCI, https://www.cancer.gov
[131] HPV and Cancer. (n.d.). Retrieved April 19, 2018, from https://www.cancer.org/cancer/cancer-causes/infectious-agents/hpv/hpv-and-cancer-info.html
[132] https://www.cancer.org/cancer/cancer-causes/infectious-agents/hpv/hpv-vaccines.html
[133] https://www.cancer.org/cancer/cancer-causes/infectious-agents/hpv/hpv-vaccines.html
[134] 19, 2017 Published: Oct. "The HPV Vaccine: Access and Use in the U.S." The Henry J. Kaiser Family Foundation, 19 Oct. 2017, www.kff.org/womens-health-policy/fact-sheet/the-hpv-vaccine-access-and-use-in/.
[135] NYC DOHMH Citywide Immunization Registry. Retrieved July 5, 2018
[136] NYC DOHMH Citywide Immunization Registry. Retrieved July 5, 2018
[137] New York City Department of Health and Mental Hygiene, Citywide Immunization Registry, 2017
[138] https://www1.nyc.gov/assets/doh/downloads/pdf/data/2015_CHP_Atlas.pdf
[139] https://www1.nyc.gov/assets/doh/downloads/pdf/data/2015_CHP_Atlas.pdf
[140] https://www1.nyc.gov/assets/doh/downloads/pdf/data/2015_CHP_Atlas.pdf
[141] http://www1.nyc.gov/assets/operations/downloads/pdf/mmr2017/2017_mmr.pdf
[142] Hswen, Y., Gilkey, M. B., Rimer, B. K., & Brewer, N. T. (2017, January). Improving physician recommendations for HPV vaccination: The role of professional organizations. Retrieved April 19, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5145747/
[143] Hswen, Y., Gilkey, M. B., Rimer, B. K., & Brewer, N. T. (2017, January). Improving physician recommendations for HPV vaccination: The role of professional organizations. Retrieved April 19, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5145747/
[144] Hswen, Y., Gilkey, M. B., Rimer, B. K., & Brewer, N. T. (2017, January). Improving physician recommendations for HPV vaccination: The role of professional organizations. Retrieved April 19, 2018, from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5145747/
[145] NYS Department of Health, The Human Papillomavirus (HPV) Vaccine. (n.d.). Retrieved April 19, 2018, from https://www.health.ny.gov/diseases/communicable/human_papillomavirus/
[146] "Citywide-Colon-Cancer-Control-Coalition." NYC DOHMH, www1.nyc.gov/site/doh/providers/resources/citywide-colon-cancer-control-coalition.page.
[147] NYS Department of Health; Skin Cancer. (n.d.). Retrieved from https://www.health.ny.gov/diseases/cancer/skin/
[148] NIH Awards by Location & Organization. 2018. U.S. Department of Health & Human Services
[149] Ibid
[150] Carroll, Aaron E. "Why the Medical Research Grant System Could Be Costing Us Great Ideas." The New York Times, The New York Times, 18 June 2018, www.nytimes.com/2018/06/18/upshot/why-the-medical-research-grant-system-could-be-costing-us-great-ideas.html.
[151] How Do You Measure Up?, 2017, American Cancer Society Cancer Action Network
[152] Ibid
[153] Ibid

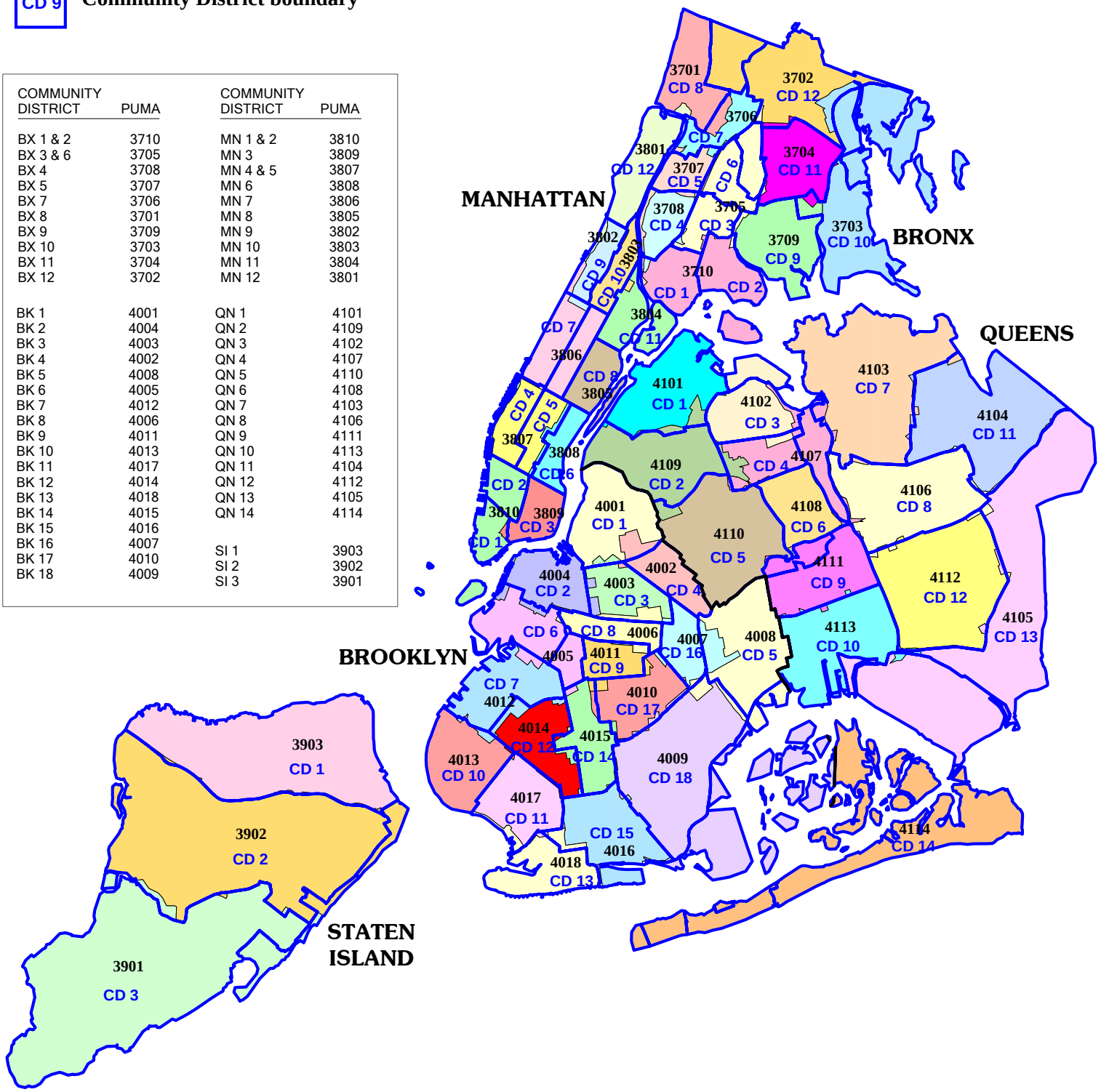
APPENDIX

New York City PUMAS and Community Districts

3701 **PUMA areas are color-themed**

CD 9 **Community District boundary**

COMMUNITY DISTRICT	PUMA	COMMUNITY DISTRICT	PUMA
BX 1 & 2	3710	MN 1 & 2	3810
BX 3 & 6	3705	MN 3	3809
BX 4	3708	MN 4 & 5	3807
BX 5	3707	MN 6	3808
BX 7	3706	MN 7	3806
BX 8	3701	MN 8	3805
BX 9	3709	MN 9	3802
BX 10	3703	MN 10	3803
BX 11	3704	MN 11	3804
BX 12	3702	MN 12	3801
BK 1	4001	QN 1	4101
BK 2	4004	QN 2	4109
BK 3	4003	QN 3	4102
BK 4	4002	QN 4	4107
BK 5	4008	QN 5	4110
BK 6	4005	QN 6	4108
BK 7	4012	QN 7	4103
BK 8	4006	QN 8	4106
BK 9	4011	QN 9	4111
BK 10	4013	QN 10	4113
BK 11	4017	QN 11	4104
BK 12	4014	QN 12	4112
BK 13	4018	QN 13	4105
BK 14	4015	QN 14	4114
BK 15	4016		
BK 16	4007	SI 1	3903
BK 17	4010	SI 2	3902
BK 18	4009	SI 3	3901



Source: U.S. Census Bureau, 2000 Public Use Microdata Area (PUMA)
Population Division - New York City Department of City Planning

BRONX

CD	PUMA	PUMA NAME
1 & 2	3710	Hunts Point, Longwood & Melrose
3 & 6	3705	Belmont, Crotona Park East & East Tremont
4	3708	Concourse, Highbridge & Mount Eden
5	3707	Morris Heights, Fordham South & Mount Hope
7	3706	Bedford Park, Fordham North & Norwood
8	3701	Riverdale, Fieldston & Kingsbridge
9	3709	Castle Hill, Clason Point & Parkchester
10	3703	Co-op City, Pelham Bay & Schuylerville
11	3704	Pelham Parkway, Morris Park & Laconia
12	3702	Wakefield, Williamsbridge & Woodlawn

BROOKLYN

CD	PUMA	PUMA NAME
1	4001	Greenpoint & Williamsburg
2	4004	Brooklyn Heights & Fort Greene
3	4003	Bedford-Stuyvesant
4	4002	Bushwick
5	4008	East New York & Starrett City
6	4005	Park Slope, Carroll Gardens & Red Hook
7	4012	Sunset Park & Windsor Terrace
8	4006	Crown Heights North & Prospect Heights
9	4011	Crown Heights So., Prospect Lefferts & Wingate
10	4013	Bay Ridge & Dyker Heights
11	4017	Bensonhurst & Bath Beach
12	4014	Borough Park, Kensington & Ocean Parkway
13	4018	Brighton Beach & Coney Island
14	4015	Flatbush & Midwood
15	4016	Sheepshead Bay, Gerritsen Beach & Homecrest
16	4007	Brownsville & Ocean Hill
17	4010	East Flatbush, Farragut & Rugby
18	4009	Canarsie & Flatlands

STATEN ISLAND

CD	PUMA	PUMA NAME
1	3903	Port Richmond, Stapleton & Mariner's Harbor
2	3902	New Springville & South Beach
3	3901	Tottenville, Great Kills & Annadale

MANHATTAN

CD	PUMA	PUMA NAME
1 & 2	3810	Battery Park City, Greenwich Village & Soho
3	3809	Chinatown & Lower East Side
4 & 5	3807	Chelsea, Clinton & Midtown Business Disrict
6	3808	Murray Hill, Gramercy & Stuyvesant Town
7	3806	Upper West Side & West Side
8	3805	Upper East Side
9	3802	Hamilton Hts, Manhattanville & West Harlem
10	3803	Central Harlem
11	3804	East Harlem
12	3801	Washington Heights, Inwood & Marble Hill

QUEENS

CD	PUMA	PUMA NAME
1	4101	Astoria & Long Island City
2	4109	Sunnyside & Woodside
3	4102	Jackson Heights & North Corona
4	4107	Elmhurst & South Corona
5	4110	Ridgewood, Glendale & Middle Village
6	4108	Forest Hills & Rego Park
7	4103	Flushing, Murray Hill & Whitestone
8	4106	Briarwood, Fresh Meadows & Hillcrest
9	4111	Richmond Hill & Woodhaven
10	4113	Howard Beach & Ozone Park
11	4104	Bayside, Douglaston & Little Neck
12	4112	Jamaica, Hollis & St. Albans
13	4105	Queens Village, Cambria Heights & Rosedale
14	4114	Far Rockaway, Breezy Point & Broad Channel

NEW YORK CITY

Cancer Burden Profile, 2019

In 2019, the American Cancer Society Cancer Action Network estimates*:

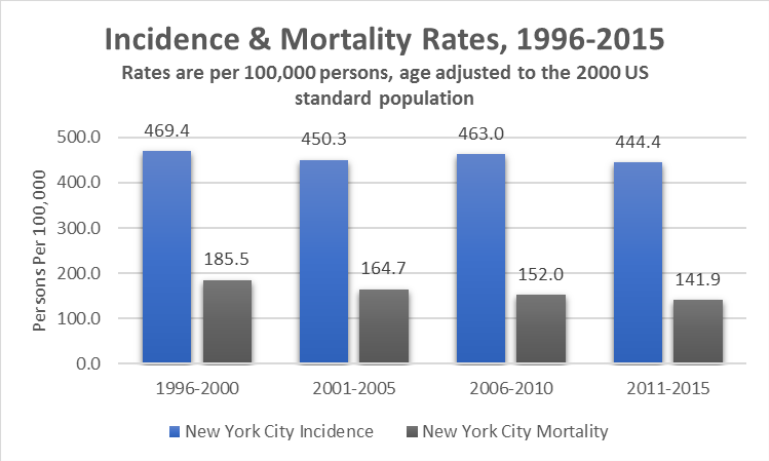
40,000 new cases of cancer will be diagnosed in New York City and 12,000 cancer deaths will occur.

Between 2011-2015 in New York City there was*:

- An average of 40,126.8 cancer cases annually and an average of 12,453 cancer deaths annually
- An average of 771.6 individuals were diagnosed with cancer each week and an average of 241.4 individuals died from cancer each week

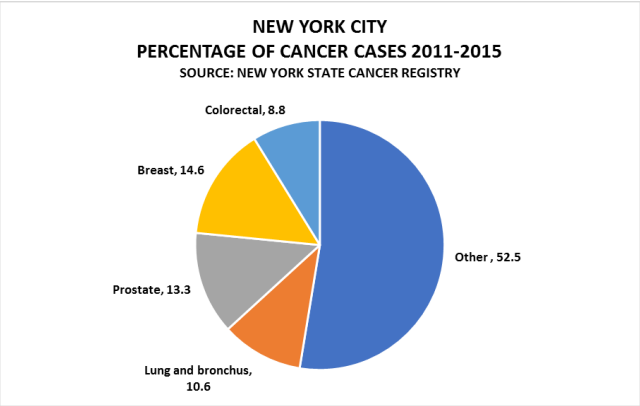
The changing burden in New York City*:

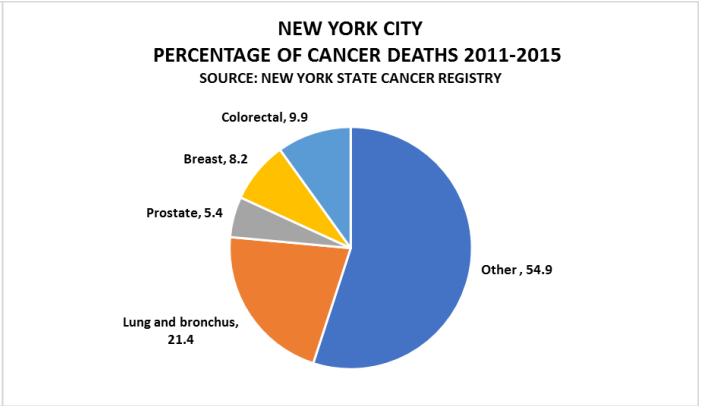
- There was an average of 469.4 cancer cases per 100,000 persons per year from 1996-2000. This rate was 444.4 from 2011-2015.
- There was an average of 185.5 cancer deaths per 100,000 persons per year from 1996-2000. This rate was 141.9 from 2011-2015.



Between 2011-2015, four cancer sites represented 47.7 percent of all cancer cases and 46.5 percent of all cancer deaths.*

- Lung & bronchus cancer account for **10.6 percent** of all cancer cases and **21.4 percent** of all cancer deaths.
- Prostate cancer accounts for **13.3 percent** of all cancer cases and **5.4 percent** of all cancer deaths.
- Female breast cancer accounts for **14.6 percent** of all cancer cases and **8.2 percent** of all cancer deaths.
- Colorectal cancer accounts for **8.8 percent** of all cancer cases and **9.9 percent** of all cancer deaths.





*Estimates based on average annual cases and deaths 2000-2015, NYS DOH, State Cancer Registry, 2019

New York City Demographics		
	New York State	New York City
Total Population (2016)	19,745,289	8,537,673
Population Density (people/ sq. mile.2010)	411.2	27,013
Percent Population Age 65+ (2016)	15.4%	12.1%
Percent Population in Poverty (2015)	14.7%	20.6%
Median Household Income (2011-15)	$59,269	$53,373
Less than H.S. Diploma (% of 25+ pop., 2016)	14.4%	19.7%
Source: U.S. Census Bureau, 2016		

New York City Cases and Cancer Deaths Per Year, 2011-2015		
Cancer Site	Cases	Deaths
All sites	40126.8	12453.8
Lung and bronchus	4288.2	2667.8
Prostate	5347.6	680
Breast	5887.2	1027
Colorectal	3531.6	1240.6
Source: NYS DOH, State Cancer Registry, 2017		

New York State and New York City Average Annual Incidence and Mortality Rates Per 100,000 People, 2011-2015*

All Cancers (malignant sites)				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
New York City	509.1	419.5	169.8	124.1
New York State	542	454.8	180.8	133.7

Prostate				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
New York City	134.8	N/A	20.7	N/A
New York State	131.7	N/A	18.4	N/A

Colorectal				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
New York City	47.7	34.7	16.9	12.1
New York State	46	35	16.1	11.6

Cervical				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
New York City	N/A		N/A	
New York State	N/A		N/A	

Female Breast				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
New York City	N/A	121.2	N/A	20.2
New York State	N/A	131.3	N/A	19.8

Lung and Bronchus				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
New York City	59.7	41.7	39.9	24.1
New York State	69.1	54.1	46.8	32.3

**Rates are per 100,000 persons age-adjusted to the 2010 U.S. standard population*

#Rate is suppressed when fewer than 4 cases or deaths to ensure statistical reliability

Source: NYS DOH, State Cancer Registry, 2017

New York City Percent of Cases Detected at Early Stage, 2011-2015

Cancer Site	All NYS	All NYC	NYS excl. NYC	Cancer Site	All NYS	All NYC	NYS excl. NYC
Colorectal	41	40.8	41	**Prostate**	80.6	80.1	80.6
Lung	23.8	24.9	23.8	**Cervical**	43.6	44	43.6
				Female Breast	66.8	63.4	66.8

The best survival rate occurs for those who are diagnosed with early stage disease. The higher the number the better.

Source: NYS DOH, State Cancer Registry, 2017

*Estimates based on average annual cases and deaths 2000-2015, NYS DOH, State Cancer Registry, 2019

BROOKLYN

Cancer Burden Profile, 2019

In 2019, the American Cancer Society Cancer Action Network estimates*:

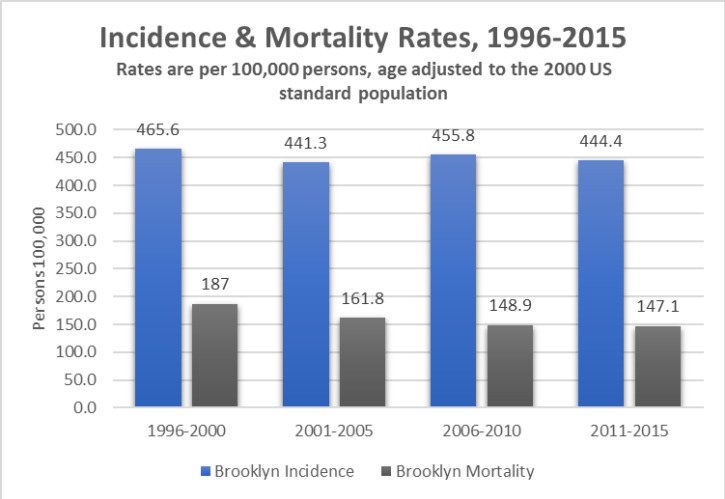
40,000 new cases of cancer will be diagnosed in New York City and 12,000 cancer deaths will occur.

Between 2011-2015 in Brooklyn there were*:

- An average of 11,768 cancer cases annually and an average of 3,757.4 cancer deaths annually
- An average of 226.3 individuals were diagnosed with cancer each week and an average of 72.2 individuals died from cancer each week

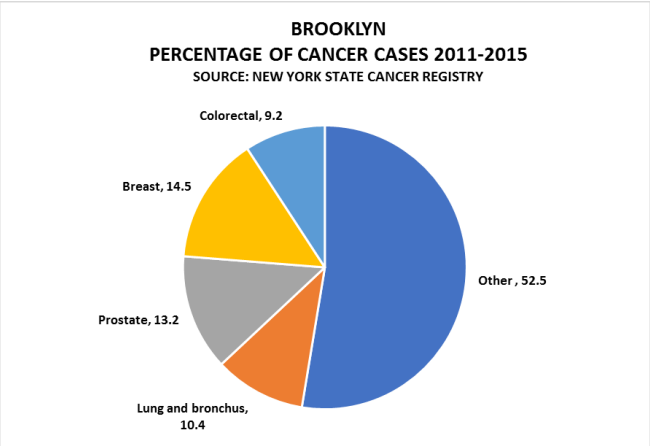
The changing burden in Brooklyn*:

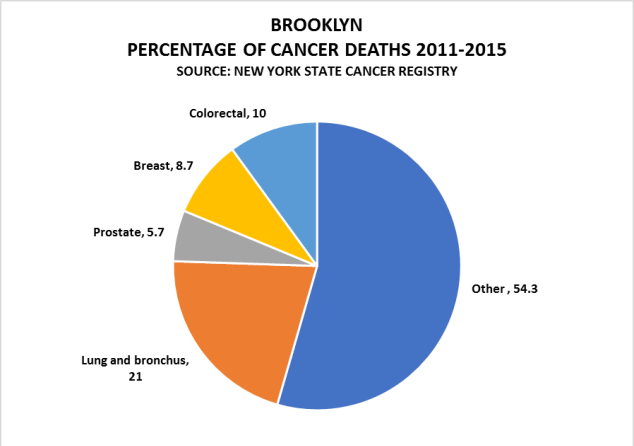
- There was an average of 465.6 cancer cases per 100,000 persons per year from 1996-2000. This rate was 444.4 from 2011-2015.
- There was an average of 187 cancer deaths per 100,000 persons per year from 1996-2000. This rate was 147.1 from 2011-2015.



Between 2011-2015, four cancer sites represented 47.4 percent of all cancer cases and 45.6 percent of all cancer deaths.*

- Lung & bronchus cancer account for **10.4 percent** of all cancer cases and **21 percent** of all cancer deaths.
- Prostate cancer accounts for **13.2 percent** of all cancer cases and **5.7 percent** of all cancer deaths.
- Female breast cancer accounts for **14.5 percent** of all cancer cases and **8.7 percent** of all cancer deaths.
- Colorectal cancer accounts for **9.2 percent** of all cancer cases and **10 percent** of all cancer deaths.





New York Cancer Burden Profile, 2019

*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

Brooklyn Demographics		
	Brooklyn	New York City
Total Population (2016)	2,629,150	8,537,673
Population Density (people/ sq. mile.2010)	35,369.1	27,013
Percent Population Age 65+ (2016)	12.7%	12.1%
Percent Population in Poverty (2015)	22.3%	20.6%
Median Household Income (2011-15)	$48,201	$53,373
Less than H.S. Diploma (% of 25+ pop., 2016)	20.7%	19.7%
Source: U.S. Census Bureau, 2016		

Brooklyn Cases and Cancer Deaths Per Year, 2011-2015		
Cancer Site	Cases	Deaths
All sites	11768	3757.4
Lung and bronchus	1231	789.8
Prostate	1559.2	216
Breast	1715.6	330.6
Colorectal	1083	377.2
Source: NYS DOH, State Cancer Registry, 2018		

Brooklyn Average Annual Incidence and Mortality Rates Per 100,000 People, 2011-2015*

All Cancers (malignant sites)				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Brooklyn	507.6	419.7	174.8	129.6
New York City	509.1	419.5	169.8	124.1
New York State	542	454.8	180.8	133.7

Prostate				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Brooklyn	136	N/A	22.8	N/A
New York City	134.8	N/A	20.7	N/A
New York State	131.7	N/A	18.4	N/A

Colorectal				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Brooklyn	50.1	36.4	17.1	12.9
New York City	47.7	34.7	16.9	12.1
New York State	46	35	16.1	11.6

Cervical				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Brooklyn	N/A		N/A	
New York City	N/A		N/A	
New York State	N/A		N/A	

Female Breast				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Brooklyn	N/A	119	N/A	22.3
New York City	N/A	121.2	N/A	20.2
New York State	N/A	131.3	N/A	19.8

Lung and Bronchus				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Brooklyn	62.7	38.5	42.8	23.2
New York City	59.7	41.7	39.9	24.1
New York State	69.1	54.1	46.8	32.3

**Rates are per 100,000 persons age-adjusted to the 2010 U.S. standard population*

#Rate is suppressed when fewer than 4 cases or deaths to ensure statistical reliability

Source: NYS DOH, State Cancer Registry, 2018

Brooklyn Percent of Cases Detected at Early Stage, 2011-2015

Cancer Site	Brooklyn	All NYC	All NYS	Cancer Site	Brooklyn	All NYC	All NYS
Colorectal	41.1	40.8	41	**Prostate**	81.4	80.1	80.6
Lung	23.7	24.9	23.8	**Cervical**	43.5	44	43.6
				Female Breast	59.6	63.4	66.8

The best survival rate occurs for those who are diagnosed with early stage disease. The higher the number the better.

Source: NYS DOH, State Cancer Registry, 2018

*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

BRONX

Cancer Burden Profile, 2019

In 2019, the American Cancer Society Cancer Action Network estimates*:

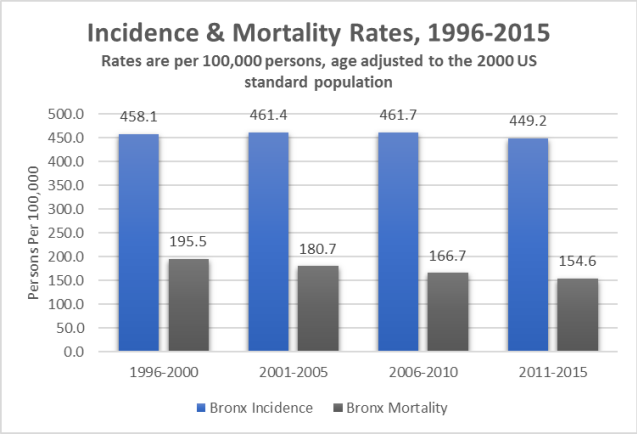
40,000 new cases of cancer will be diagnosed in New York City and 12,000 cancer deaths will occur.

Between 2011-2015 in the Bronx there were*:

- An average of 6,230.6 cancer cases annually and an average of 2,040.8 cancer deaths annually
- An average of 119.8 individuals were diagnosed with cancer each week and an average of 39.2 individuals died from cancer each week

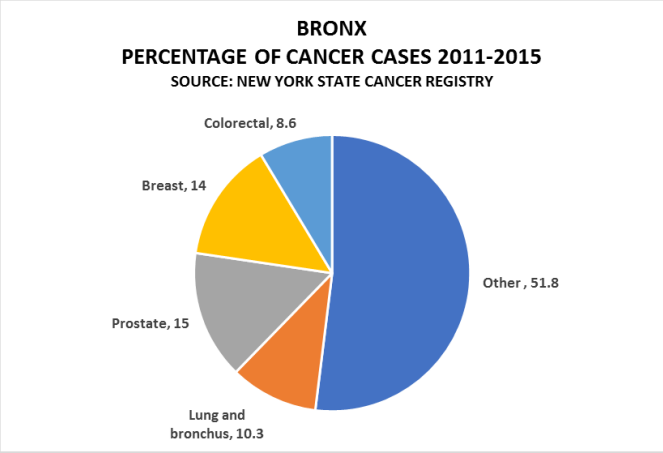
The changing burden in the Bronx*:

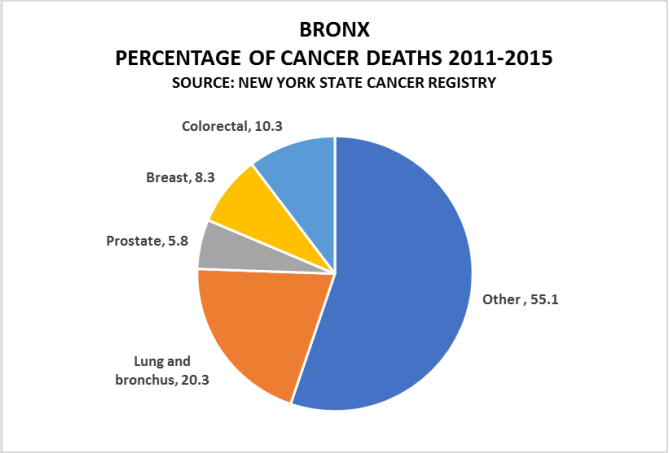
- There was an average of 458.1 cancer cases per 100,000 persons per year from 1996-2000. This rate was 449.2 from 2011-2015.
- There was an average of 195.5 cancer deaths per 100,000 persons per year from 1996-2000. This rate was 154.6 from 2011-2015.



Between 2011-2015, four cancer sites represented 48.1 percent of all cancer cases and 44.8 percent of all cancer deaths.*

- Lung & bronchus cancer account for **10.3 percent** of all cancer cases and **20.3 percent** of all cancer deaths.
- Prostate cancer accounts for **15 percent** of all cancer cases and **5.8 percent** of all cancer deaths.
- Female breast cancer accounts for **14 percent** of all cancer cases and **8.3 percent** of all cancer deaths.
- Colorectal cancer accounts for **8.6 percent** of all cancer cases and **10.3 percent** of all cancer deaths.





*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

Bronx Demographics		
	Bronx	New York City
Total Population (2016)	1,455,720	8,537,673
Population Density (people/ sq. mile.2010)	32,903.6	27,013
Percent Population Age 65+ (2016)	11.7%	12.1%
Percent Population in Poverty (2015)	30.3%	20.6%
Median Household Income (2011-15)	$34,299	$53,373
Less than H.S. Diploma (% of 25+ pop., 2016)	29.4%	19.7%
Source: U.S. Census Bureau, 2016		

Bronx Cases and Cancer Deaths Per Year, 2011-2015		
Cancer Site	Cases	Deaths
All sites	6230.6	2040.8
Lung and bronchus	646.6	416.2
Prostate	935.8	119.2
Breast	875	170.2
Colorectal	541	210.6
Source: NYS DOH, State Cancer Registry, 2018		

Bronx Average Annual Incidence and Mortality Rates Per 100,000 People, 2011-2015*

All Cancers (malignant sites)				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Bronx	537.9	408.7	193.8	131
New York City	509.1	419.5	169.8	124.1
New York State	542	454.8	180.8	133.7

Prostate				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Bronx	160.6	N/A	26.6	N/A
New York City	134.8	N/A	20.7	N/A
New York State	131.7	N/A	18.4	N/A

Colorectal				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Bronx	49.3	34.3	19.6	13.5
New York City	47.7	34.7	16.9	12.1
New York State	46	35	16.1	11.6

Cervical				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Bronx	N/A		N/A	
New York City	N/A		N/A	
New York State	N/A		N/A	

Female Breast				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Bronx	N/A	112.3	N/A	21.6
New York City	N/A	121.2	N/A	20.2
New York State	N/A	131.3	N/A	19.8

Lung and Bronchus				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Bronx	61.8	40.4	43.3	34.2
New York City	59.7	41.7	39.9	24.1
New York State	69.1	54.1	46.8	32.3

**Rates are per 100,000 persons age-adjusted to the 2010 U.S. standard population*

#Rate is suppressed when fewer than 4 cases or deaths to ensure statistical reliability

Source: NYS DOH, State Cancer Registry, 2018

Bronx Percent of Cases Detected at Early Stage, 2011-2015

Cancer Site	Bronx	All NYC	All NYS	Cancer Site	Bronx	All NYC	All NYS
Colorectal	42.7	40.8	41	**Prostate**	79.6	80.1	80.6
Lung	21.7	24.9	23.8	**Cervical**	44.3	44	43.6
				Female Breast	62.3	63.4	66.8

The best survival rate occurs for those who are diagnosed with early stage disease. The higher the number the better.

Source: NYS DOH, State Cancer Registry, 2018

*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

MANHATTAN

Cancer Burden Profile, 2019

In 2019, the American Cancer Society Cancer Action Network estimates*:

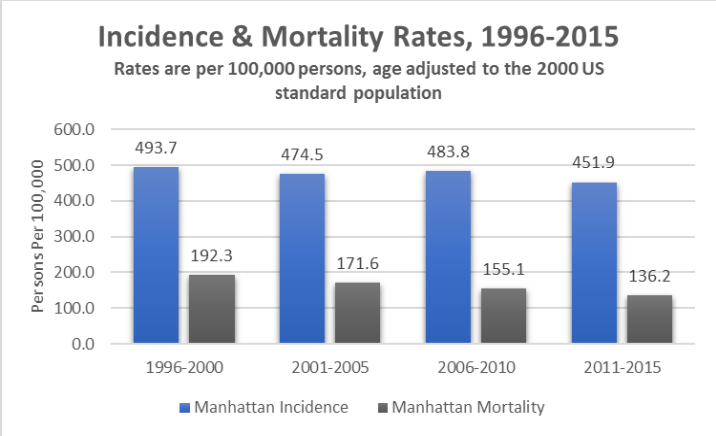
40,000 new cases of cancer will be diagnosed in New York City and 12,000 cancer deaths will occur.

Between 2011-2015 in Manhattan there were*:

- An average of 8,348.2 cancer cases annually and an average of 2,496 cancer deaths annually
- An average of 160.5 individuals were diagnosed with cancer each week and an average of 48 individuals died from cancer each week

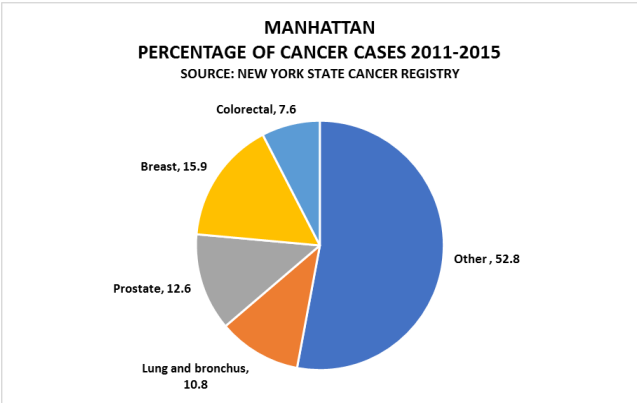
The changing burden in Manhattan*:

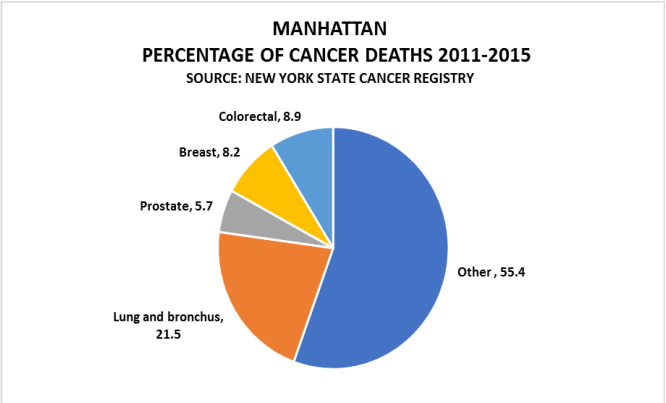
- There was an average of 493.7 cancer cases per 100,000 persons per year from 1996-2000. This rate was 451.9 from 2011-2015.
- There was an average of 192.3 cancer deaths per 100,000 persons per year from 1996-2000. This rate was 136.2 from 2011-2015.



Between 2011-2015, four cancer sites represented 47.1 percent of all cancer cases and 44.5 percent of all cancer deaths.*

- Lung & bronchus cancer account for **10.8 percent** of all cancer cases and **21.5 percent** of all cancer deaths.
- Prostate cancer accounts for **12.6 percent** of all cancer cases and **5.7 percent** of all cancer deaths.
- Female breast cancer accounts for **15.9 percent** of all cancer cases and **8.2 percent** of all cancer deaths.
- Colorectal cancer accounts for **7.6 percent** of all cancer cases and **8.9 percent** of all cancer deaths.





*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

Manhattan Demographics		
	Manhattan	New York City
Total Population (2016)	1,643,734	8,537,673
Population Density (people/ sq. mile.2010)	69,467.5	27,013
Percent Population Age 65+ (2016)	14.9%	12.1%
Percent Population in Poverty (2015)	17.6%	20.6%
Median Household Income (2011-15)	$72,871	$53,373
Less than H.S. Diploma (% of 25+ pop., 2016)	13.4%	19.7%
Source: U.S. Census Bureau, 2016		

Manhattan Cases and Cancer Deaths Per Year, 2011-2015		
Cancer Site	Cases	Deaths
All sites	8348.2	2496
Lung and bronchus	906.4	538
Prostate	1052.4	143.8
Breast	1335	206.8
Colorectal	642.6	223.4
Source: NYS DOH, State Cancer Registry, 2018		

Manhattan Average Annual Incidence and Mortality Rates Per 100,000 People, 2011-2015*

All Cancers (malignant sites)	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Manhattan	510.1	432.5	159.5	121.2
New York City	509.1	419.5	169.8	124.1
New York State	542	454.8	180.8	133.7

Prostate	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Manhattan	129.3	N/A	20.2	N/A
New York City	134.8	N/A	20.7	N/A
New York State	131.7	N/A	18.4	N/A

Colorectal	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Manhattan	41.8	30.8	14.2	10.5
New York City	47.7	34.7	16.9	12.1
New York State	46	35	16.1	11.6

Cervical	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Manhattan				
New York City				
New York State				

Female Breast	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Manhattan	N/A	138	N/A	119.7
New York City	N/A	121.2	N/A	20.2
New York State	N/A	131.3	N/A	19.8

Lung and Bronchus	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Manhattan	53.7	47.4	34.1	26.1
New York City	59.7	41.7	39.9	24.1
New York State	69.1	54.1	46.8	32.3

**Rates are per 100,000 persons age-adjusted to the 2010 U.S. standard population*

#Rate is suppressed when fewer than 4 cases or deaths to ensure statistical reliability

Source: NYS DOH, State Cancer Registry, 2018

Manhattan Percent of Cases Detected at Early Stage, 2011-2015

Cancer Site	Manhattan	All NYC	All NYS	Cancer Site	Manhattan	All NYC	All NYS
Colorectal	39.1	40.8	41	**Prostate**	75.8	80.1	80.6
Lung	29.4	24.9	23.8	**Cervical**	43.2	44	43.6
				Female Breast	67.2	63.4	66.8

The best survival rate occurs for those who are diagnosed with early stage disease. The higher the number the better.

Source: NYS DOH, State Cancer Registry, 2018

*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

QUEENS

Cancer Burden Profile, 2019

In 2019, the American Cancer Society Cancer Action Network estimates*:

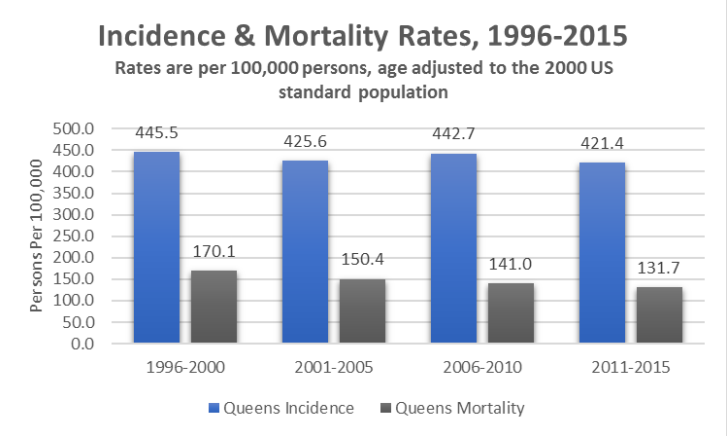
40,000 new cases of cancer will be diagnosed in New York City and 12,000 cancer deaths will occur.

Between 2011-2015 in Queens there were*:

- An average of 6,230.6 cancer cases annually and an average of 2,040.8 cancer deaths annually
- An average of 119.8 individuals were diagnosed with cancer each week and an average of 39.2 individuals died from cancer each week

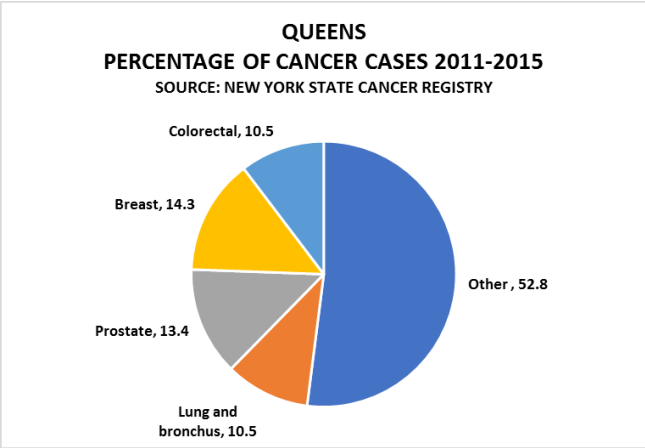
The changing burden in Queens*:

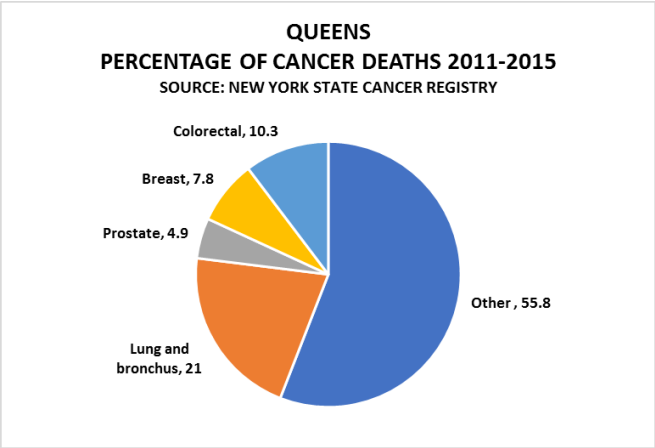
- There was an average of 445.5 cancer cases per 100,000 persons per year from 1996-2000. This rate was 421.4 from 2011-2015.
- There was an average of 170.1 cancer deaths per 100,000 persons per year from 1996-2000. This rate was 131.7 from 2011-2015.



Between 2011-2015, four cancer sites represented 48.1 percent of all cancer cases and 44.8 percent of all cancer deaths.*

- Lung & bronchus cancer account for **10.3 percent** of all cancer cases and **21 percent** of all cancer deaths.
- Prostate cancer accounts for **13.4 percent** of all cancer cases and **4.9 percent** of all cancer deaths.
- Female breast cancer accounts for **14.3 percent** of all cancer cases and **2.8 percent** of all cancer deaths.
- Colorectal cancer accounts for **10.5 percent** of all cancer cases and **10.3 percent** of all cancer deaths.





New York State Cancer Burden Profile, 2019

*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

Queens Demographics		
	Queens	New York City
Total Population (2016)	2,333,054	8,537,673
Population Density (people/ sq. mile.2010)	20,553.6	27,013
Percent Population Age 65+ (2016)	14.2%	12.1%
Percent Population in Poverty (2015)	13.9%	20.6%
Median Household Income (2011-15)	$57,720	$53,373
Less than H.S. Diploma (% of 25+ pop., 2016)	19.6%	19.7%
Source: U.S. Census Bureau, 2016		

Queens Cases and Cancer Deaths Per Year, 2011-2015		
Cancer Site	Cases	Deaths
All sites	10937	3342.4
Lung and bronchus	1152.6	704.2
Prostate	1474.6	165.4
Breast	1565.2	262.4
Colorectal	1032	344.6
Source: NYS DOH, State Cancer Registry, 2018		

Queens Average Annual Incidence and Mortality Rates Per 100,000 People, 2011-2015*

All Cancers (malignant sites)				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Queens	479.9	401.2	157.4	115
New York City	509.1	419.5	169.8	124.1
New York State	542	454.8	180.8	133.7

Prostate				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Queens	126.7	N/A	17	N/A
New York City	134.8	N/A	20.7	N/A
New York State	131.7	N/A	18.4	N/A

Colorectal				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Queens	48.3	35.1	16.9	11
New York City	47.7	34.7	16.9	12.1
New York State	46	35	16.1	11.6

Cervical				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Queens				
New York City				
New York State				

Female Breast				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Queens	N/A	114	N/A	18
New York City	N/A	121.2	N/A	20.2
New York State	N/A	131.3	N/A	19.8

Lung and Bronchus				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Queens	56.2	38	37.1	21.2
New York City	59.7	41.7	39.9	24.1
New York State	69.1	54.1	46.8	32.3

**Rates are per 100,000 persons age-adjusted to the 2010 U.S. standard population*

#Rate is suppressed when fewer than 4 cases or deaths to ensure statistical reliability

Source: NYS DOH, State Cancer Registry, 2018

Queens Percent of Cases Detected at Early Stage, 2011-2015

Cancer Site	Queens	All NYC	All NYS	Cancer Site	Queens	All NYC	All NYS
Colorectal	40.9	40.8	41	**Prostate**	81.6	80.1	80.6
Lung	24.1	24.9	23.8	**Cervical**	44.2	44	43.6
				Female Breast	64.1	63.4	66.8

The best survival rate occurs for those who are diagnosed with early stage disease. The higher the number the better.

Source: NYS DOH, State Cancer Registry, 2018

*Estimates based on average annual cases and deaths 2000-2014, NYS DOH, State Cancer Registry, 2019

STATEN ISLAND

Cancer Burden Profile, 2019

In 2019, the American Cancer Society Cancer Action Network estimates*:

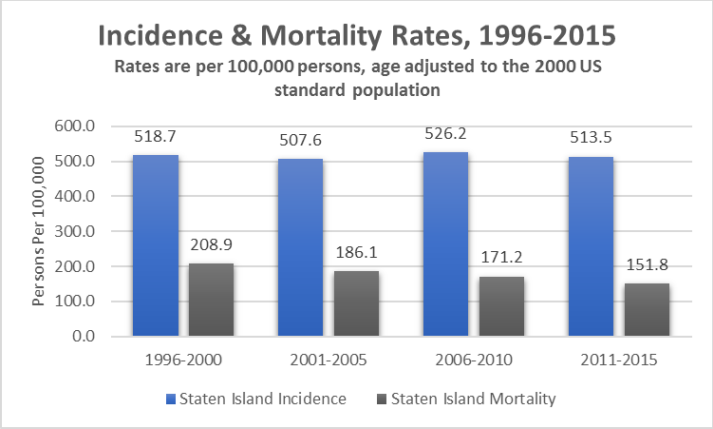
40,000 new cases of cancer will be diagnosed in New York City and 12,000 cancer deaths will occur.

Between 2011-2015 in the Staten Island there were*:

- An average of 6,230.6 cancer cases annually and an average of 2,040.8 cancer deaths annually
- An average of 119.8 individuals were diagnosed with cancer each week and an average of 39.2 individuals died from cancer each week

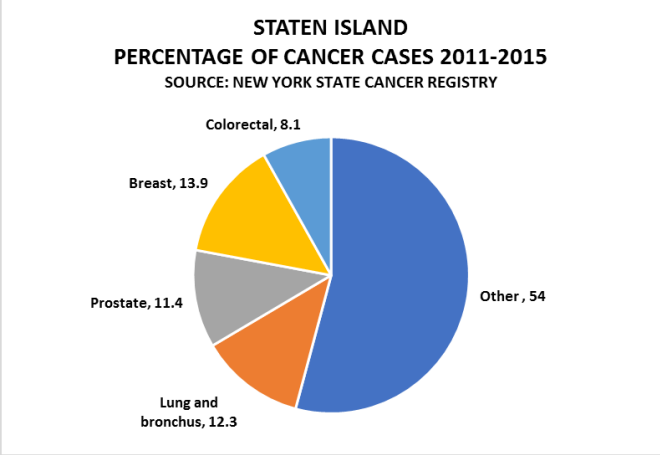
The changing burden on Staten Island*:

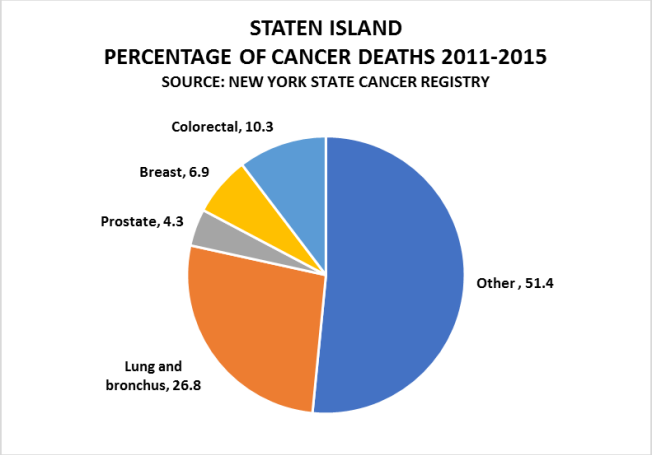
- There was an average of 518.7 cancer cases per 100,000 persons per year from 1996-2000. This rate was 513.5 from 2011-2015.
- There was an average of 208.9 cancer deaths per 100,000 persons per year from 1996-2000. This rate was 151.8 from 2011-2015.



Between 2011-2015, four cancer sites represented 48.1 percent of all cancer cases and 44.8 percent of all cancer deaths.*

- Lung & bronchus cancer account for **12.3 percent** of all cancer cases and **26.8 percent** of all cancer deaths.
- Prostate cancer accounts for **11.4 percent** of all cancer cases and **4.3 percent** of all cancer deaths.
- Female breast cancer accounts for **13.9 percent** of all cancer cases and **6.9 percent** of all cancer deaths.
- Colorectal cancer accounts for **8.1 percent** of all cancer cases and **10.3 percent** of all cancer deaths.





New York Cancer Burden Profile, 2019

*Estimates based on average annual cases and deaths 2000-2015, NYS DOH, State Cancer Registry, 2019

Staten Island Demographics		
	Staten Island	New York City
Total Population (2016)	476,015	8,537,673
Population Density (people/ sq. mile.2010)	8,030.3	27,013
Percent Population Age 65+ (2016)	15.4%	12.1%
Percent Population in Poverty (2015)	14.2%	20.6%
Median Household Income (2011-15)	$73,197	$53,373
Less than H.S. Diploma (% of 25+ pop., 2016)	11.3%	19.7%
Source: U.S. Census Bureau, 2016		

Staten Island Cases and Cancer Deaths Per Year, 2011-2015		
Cancer Site	Cases	Deaths
All sites	2843	817.2
Lung and bronchus	351.6	219.6
Prostate	325.6	35.6
Breast	396.4	57
Colorectal	233	84.8
Source: NYS DOH, State Cancer Registry, 2018		

Staten Island Average Annual Incidence and Mortality Rates Per 100,000 People, 2011-2015*

All Cancers (malignant sites)				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Staten Island	577.1	491.5	184	130.4
New York City	509.1	419.5	169.8	124.1
New York State	542	454.8	180.8	133.7

Prostate				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Staten Island	125.4	N/A	18.1	N/A
New York City	134.8	N/A	20.7	N/A
New York State	131.7	N/A	18.4	N/A

Colorectal				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Staten Island	49.4	38.2	18.2	14.3
New York City	47.7	34.7	16.9	12.1
New York State	46	35	16.1	11.6

Cervical				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Staten Island				
New York City				
New York State				

Female Breast				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Staten Island	N/A	134.8	N/A	18
New York City	N/A	121.2	N/A	20.2
New York State	N/A	131.3	N/A	19.8

Lung and Bronchus				
	Incidence Rates		Mortality Rates	
	Male	Female	Male	Female
Staten Island	76.1	56.5	50.9	33.4
New York City	59.7	41.7	39.9	24.1
New York State	69.1	54.1	46.8	32.3

**Rates are per 100,000 persons age-adjusted to the 2010 U.S. standard population*

#Rate is suppressed when fewer than 4 cases or deaths to ensure statistical reliability

Source: NYS DOH, State Cancer Registry, 2018

Staten Island Percent of Cases Detected at Early Stage, 2011-2015

Cancer Site	Staten Island	All NYC	All NYS	Cancer Site	Staten Island	All NYC	All NYS
Colorectal	40.2	40.8	41	**Prostate**	82.4	80.1	80.6
Lung	25.7	24.9	23.8	**Cervical**	48.4	44	43.6
				Female Breast	67.1	63.4	66.8

The best survival rate occurs for those who are diagnosed with early stage disease. The higher the number the better.

Source: NYS DOH, State Cancer Registry, 2018

*Estimates based on average annual cases and deaths 2000-2015, NYS DOH, State Cancer Registry, 2019


Cancer Action
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