Screening Amenable Cancers in New York State

Introduction

The purpose of this report is to describe patterns and trends in the incidence and mortality of screening-detectable cancers within New York State (NYS) using data from the New York State Cancer Registry (NYSCR), the United States census, and national health surveys. Cancer screening refers to the use of tests to detect cancer, or conditions that may lead to cancer, before symptoms appear. Generally, cancer treatment is more effective when the disease is found earlier. The United States Preventive Services Task Force (USPSTF) is an independent panel of national experts that weighs the evidence from screening research studies and issues recommendations on cancer screening. These recommendations are typically endorsed by the NYS Department of Health.

Screening guidelines vary, depending on the type of cancer, and can change as a result of new and emerging technology and research. Until December 2013, there were just three primary cancer sites for which the USPSTF found screening to be beneficial: breast,[1] cervical,[2] and colorectal.[3] For these three cancer sites, screening has been shown to reduce the number of cancer-related deaths. In December 2013, the USPSTF issued new screening recommendations for lung cancer; these recommendations only apply to heavy smokers or former smokers.[4] Because population-based screening for lung cancer has yet to be implemented, lung cancer is not included in this report.

Screening: Tests and Recommendations for Individuals at Average Risk

Breast cancer

The most effective test for breast cancer screening is a mammogram, which is an x-ray of the breast. Having regular mammograms can lower the risk of dying from breast cancer by detecting tumors when they are small and more easily treatable. The USPSTF recommends mammograms every two years for women between the ages of 50 and 74 years. It also suggests that women between the ages of 40 and 49 years make an individual decision about when to begin screening and the appropriate frequency in consultation with their physicians.

Cervical cancer

There are two screening tests for cervical cancer. The Pap test, or Pap smear, involves collecting cells from the cervix and examining them under a microscope to detect abnormalities. The human papillomavirus (HPV) test uses a similar mechanism to detect certain subtypes of the HPV virus, which are known to cause cervical cancer. When these tests are performed at the same time it is known as HPV co-testing. The USPSTF recommends screening for cervical cancer in women ages 21 to 65 years with a Pap test every three years or, for women ages 30 to 65 years who want to lengthen the screening interval, screening

with HPV co-testing every five years. Pap tests for persons under age 21 or over 65, or co-testing for persons under age 30, are not recommended.

Pre-cancerous lesions identified through these screening tests can be surgically removed and thus never develop into malignant invasive cancer. The benefits of cervical cancer screening increase with age. A recent study found little benefit for women in their 20s, a modest benefit for women in their 30s, and a substantial benefit for women age 40 to 64, with a reduction in risk of cervical cancer of between 60% and 80%.[5] The benefits were most pronounced in reducing cancers that had begun to spread beyond the cervix, which are the most lethal. For this reason, cervical cancer screening is widely viewed as one of the major success stories in public health in the twentieth century. The recent introduction of a vaccine for the strains of HPV most commonly associated with cervical cancer is expected to further reduce the already-low cervical cancer rates in the population.[6]

Colorectal cancer

There are three standard tests used to screen for colorectal cancer: high-sensitivity fecal occult blood test (FOBT or stool test), flexible sigmoidoscopy, and colonoscopy. An FOBT test uses either the chemical guaiac (gFOBT) or antibodies (iFOBT) to detect blood in a stool sample taken at home and returned to the physician office or lab. It is non-invasive and inexpensive. Flexible sigmoidoscopy is a test where a doctor inserts a thin, flexible lighted tube into the rectum and checks for pre-cancerous polyps or cancer in the rectum and lower third of the colon. This procedure is much more invasive than FOBT but also much more definitive. A colonoscopy is a similar procedure using a longer tube that can reach the entire colon. Most pre-cancerous polyps and some cancers can be removed during this procedure. A colonoscopy is used as a follow-up when there are unusual findings in either of the other two screening tests.

The USPSTF recommends an annual FOBT, sigmoidoscopy every five years with FOBT every three years, or colonoscopy every ten years for adults 50 to 75 years of age. Routine screening is not recommended outside this age range. There is strong evidence that both incidence and mortality are reduced by all three of these tests.[7,8] Assuming equally high adherence, the different recommended screening strategies provide similar benefit.[8]

Data Sources Used in this Report

New York State Cancer Registry (NYSCR)

The NYSCR collects information about all NYS residents diagnosed with cancer. This reporting is mandated by law, and is required of all physicians, dentists, laboratories, and other health care providers. For the time period emphasized in this report (2000-10), NYSCR data has been certified to meet the highest (gold) standard of quality by the North American Association of Central Cancer Registries (NAACCR) for completeness, timeliness, and accuracy.

Behavioral Risk Factor Surveillance System

In 1984, the Centers for Disease Control and Prevention (CDC) developed a telephone-based health survey to collect information on health risk behavior, preventive health practices, and health care known as the Behavioral Risk Factor Surveillance System (BRFSS). It is currently conducted in all 50 states, plus Washington, D.C., Puerto Rico, US Virgin Islands, and Guam. More than 350,000 adults are interviewed by phone each year and the survey serves as a way for states to track, develop, evaluate, and support health-related policies, programs and legislative efforts. In 2008-09, NYS conducted an Expanded BRFSS that used a different sampling method to assess and estimate information at the county level.[9] The Expanded BRFSS reached 650 people in each county, with New York City treated as a single county. As an individual's cancer screening history is not reported to the NYSCR, the BRFSS served as the source of information on screening prevalence used in this report. Time trends included in this report make use of the annual BRFSS data while maps make use of the Expanded BRFSS.

Census

Populations used in the calculations in this report originated from the United States Census Bureau. A complete count of the population including age, sex, and race/ethnicity is taken every decade, in years ending in zero. For other years, an estimation method is used which incorporates births, deaths, and interstate migration. The specific population values in this report were published by the National Cancer Institute through a special arrangement with the U.S. Census Bureau for the purposes of national cancer surveillance.

Incidence and Mortality by Demographic Characteristics

Table 1 illustrates variations in the incidence and mortality of the breast, cervical, and colorectal cancer by demographic characteristics. Breast cancer is the leading cause of cancer (excluding skin cancer) and the second leading cause of cancer deaths among women in NYS. For breast cancer, age-adjusted incidence rates in New York City are somewhat below those in the rest of the state, but mortality rates are identical. Some of this geographic difference in rates is accounted for by differences among racial/ethnic groups. Compared to white non-Hispanics (hereafter abbreviated as whites), black non-Hispanics (hereafter blacks) have lower incidence and Hispanics have still lower incidence. Hispanics have comparably lower mortality than whites, but for blacks, the relationship is reversed: mortality is 25% higher than for whites. This means that while blacks are less likely to be diagnosed with breast cancer than whites, they are much more likely to die from it once diagnosed.

For cervical cancer, incidence and mortality are higher in New York City than the rest of the state, and higher among blacks and Hispanics than whites. In particular, the mortality rate among blacks is more than double that of whites. Cervical cancer has a strong inverse correlation with socioeconomic status (that is, poorer women have higher rates) and this is partially reflected in the differences among racial/ethnic groups.

Colorectal cancer is the fourth most common cancer in NYS (excluding skin cancer) and overall the second leading cause of cancer deaths. Incidence and mortality rates are similar between New York City and the rest of the state. Blacks have higher incidence and mortality than whites, and Hispanics have lower incidence and mortality than whites. The most striking pattern is by gender, where males have 30% higher incidence and 40% higher mortality than females.

Table 1. Incidence and mortality rates for screening amenable cancers by selected characteristics, New York State, 2006-2010.

Cancer	Characteristic	Incidence			Mortality		
		Cases[1]	Rate[2]	95% C.I. (+/-	Cases[1]	Rate[2]	95% C.I. (+/-
Breast	**Region**						
	New York State	14,604	127.7	0.9	2,678	22.1	0.4
	New York City	5,379	117.4	1.4	1,054	22.1	0.6
	NYS excluding NYC	9,210	134.3	1.2	1,624	22.1	0.5
	Race/ethnicity						
	White non-Hispanic	10,755	140.0	1.2	1945	22.6	0.5
	Black non-Hispanic	1,870	116.1	2.4	455	28.3	1.2
	Hispanic	1,257	90.3	2.3	206	15.8	1.0
	Other non-Hispanic	627	82.1	2.9	64	9.3	1.0
Cervix	**Region**						
	New York State	893	8.4	0.2	264	2.3	0.1
	New York City	444	9.9	0.4	137	3.0	0.2
	NYS excluding NYC	448	7.4	0.3	127	1.9	0.1
	Race/ethnicity						
	White non-Hispanic	461	7.0	0.3	137	1.8	0.1
	Black non-Hispanic	201	12.6	0.8	77	4.8	0.5
	Hispanic	158	10.7	0.8	39	2.8	0.4
	Other non-Hispanic	64	8.6	0.9	11	1.7	0.4
Colorectal	**Region**						
	New York State	9,779	46.2	0.4	3,387	15.9	0.2
	New York City	3,815	46.9	0.7	1,337	16.5	0.4
	NYS excluding NYC	5,959	45.8	0.5	2,050	15.5	0.3
	Gender						
	Male	4,809	53.3	0.7	1,653	19.0	0.4
	Female	4,970	40.9	0.5	1,733	13.6	0.3
	Race/ethnicity						
	White non-Hispanic	7,075	46.4	0.5	2,486	15.7	0.3
	Black non-Hispanic	1,330	50.9	1.2	494	19.7	0.8
	Hispanic	874	39.8	1.2	273	13.5	0.7
	Other non-Hispanic	439	36.0	1.5	118	10.9	0.9

Source of data: New York State Cancer Registry. Data provisional, November 2012.

[1] Average number of new cases per year; rounded to the nearest integer.

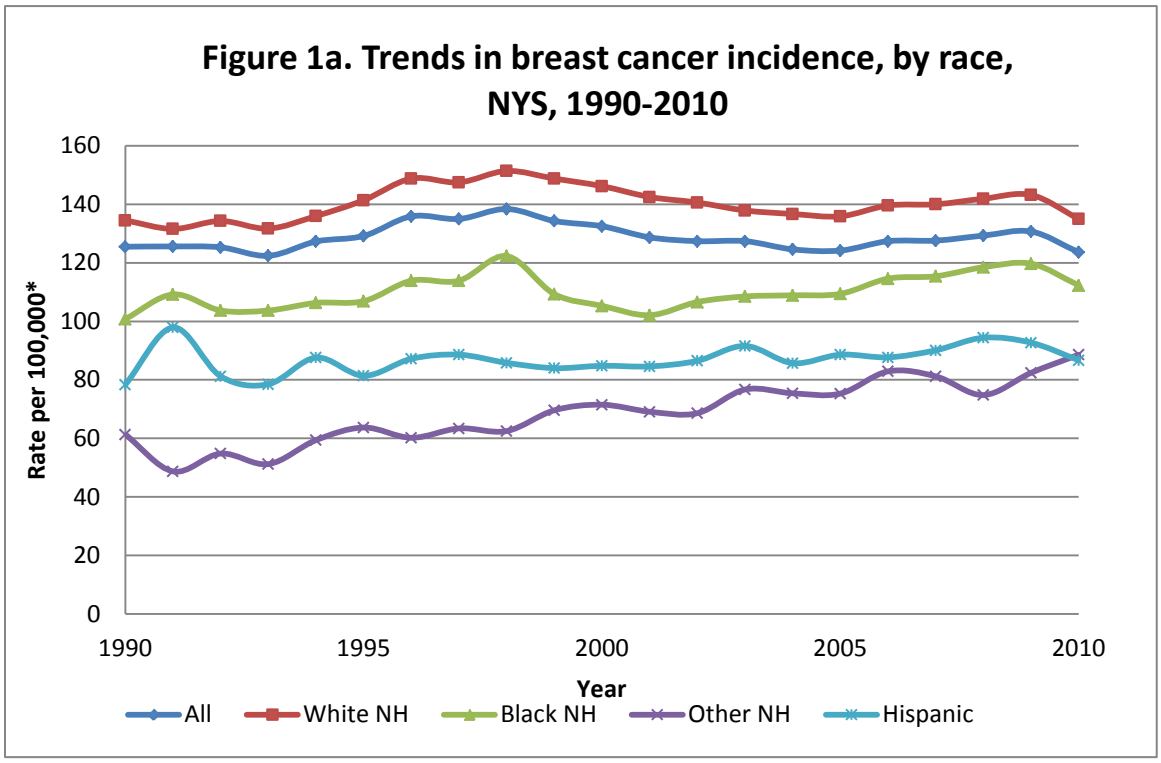
[2] Rates are per 100,000 persons, age adjusted to the 2000 U.S. standard population, with 95% confidence intervals.

Incidence and Mortality Trends by Race

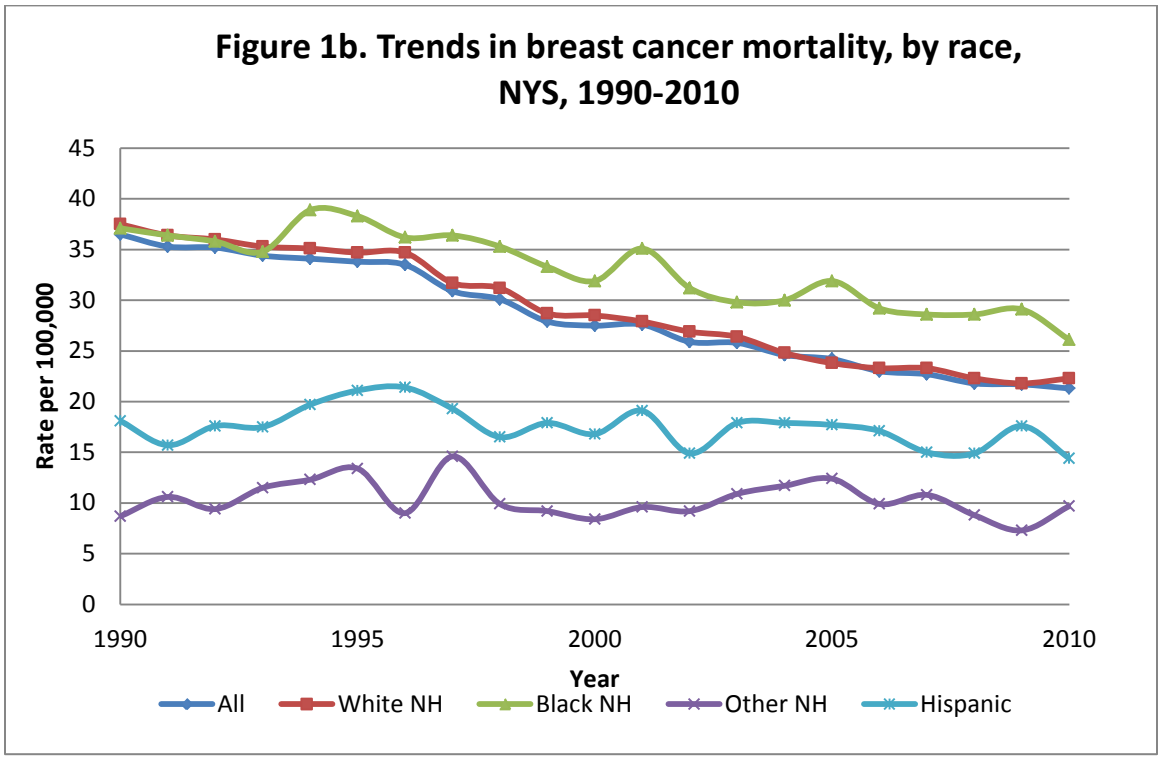
Incidence and mortality trends by race for breast cancer are shown in Figures 1a and 1b. A statistical technique known as joinpoint analysis allows us to summarize the prevailing trend directions over the years. For incidence, overall trends have been flat since 2002 after decreasing from a 1998 peak. However, blacks have seen an increasing trend since 2001 and Hispanics since 1990, albeit a very gradual one. For mortality, all groups except “other” have seen a pronounced and sustained decrease since 1990.

Cervical cancer incidence has seen generally downward trends since 1995 (Figure 2a). For whites, rates have leveled off since 2000, but blacks and Hispanics have seen pronounced declines over the entire period from 1990-2010. The black-white and Hispanic-white disparities are therefore declining, as can be seen by the relative position of the lines. These patterns are mirrored in the mortality data (Figure 2b), where sustained declines among all groups except “other” have been seen since 1990 and the black-white disparity has been shrinking.

Colorectal cancer incidence has also been in steep decline since about 2000 (Figure 3a). Rates have dropped by over 3% per year every year since then, though whites have seen closer to a 4% annual drop. The decline among blacks has been less pronounced - closer to 2% - though it did start earlier (1998), and white-black disparities remain small. For Hispanics, the drop has exceeded 4% per year but did not begin until 2004. It should be noted that until 2003, colorectal cancer incidence was higher among whites than blacks in NYS. Since 2003 incidence has been higher among blacks. Mortality has been on the decline since 1990 and particularly since 1995. For blacks and Hispanics the decline began more recently, in 1997 and 2003, respectively (Figure 3b).

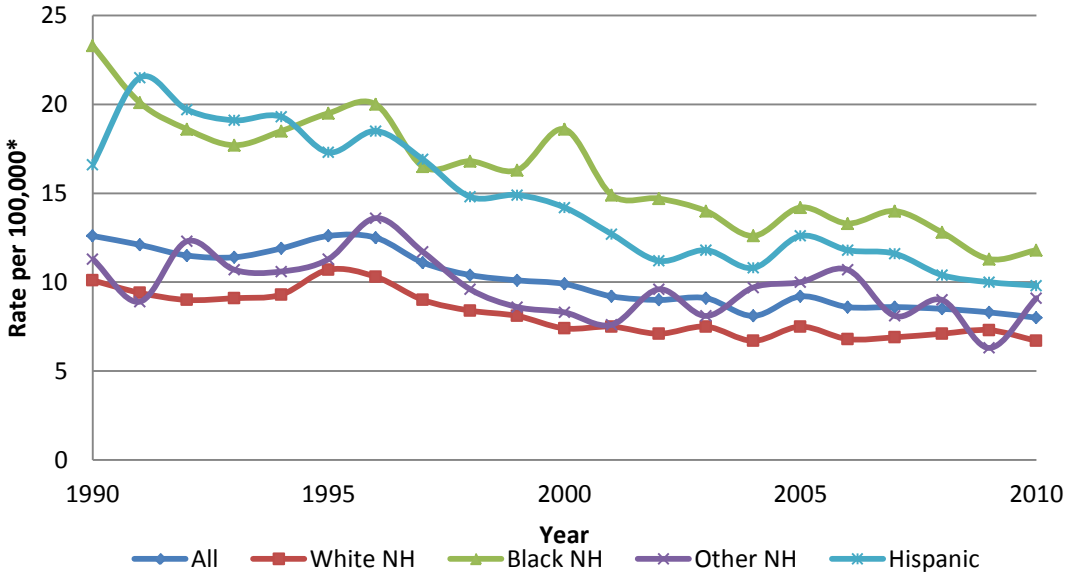


*Age-adjusted to the U.S. standard million population. NH = Non-Hispanic.



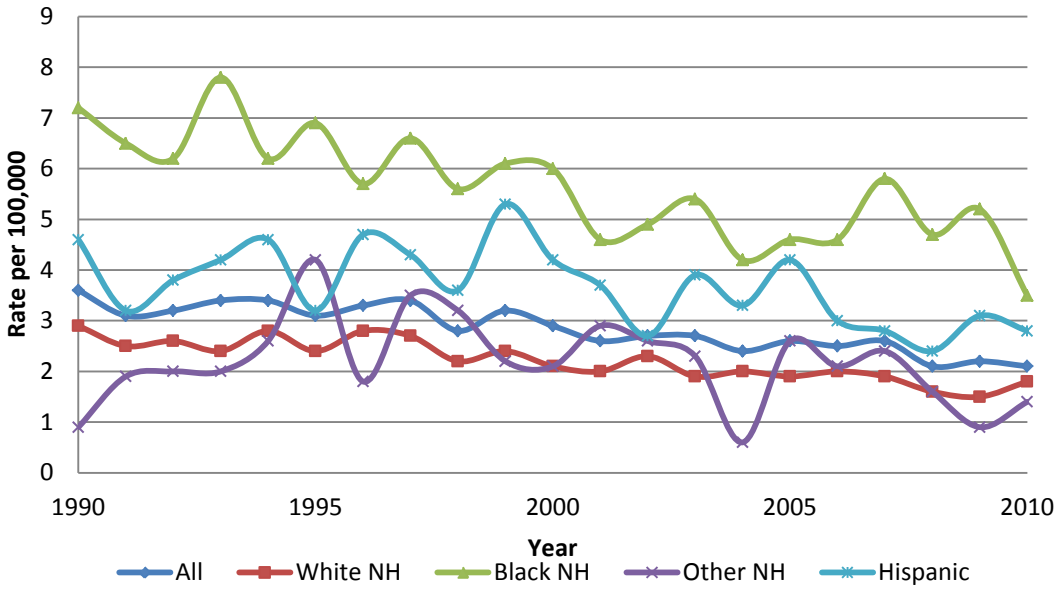
*Age-adjusted to the U.S. standard million population. NH = Non-Hispanic.

Figure 2a. Trends in Cervical Cancer Incidence, NYS, 1990-2010



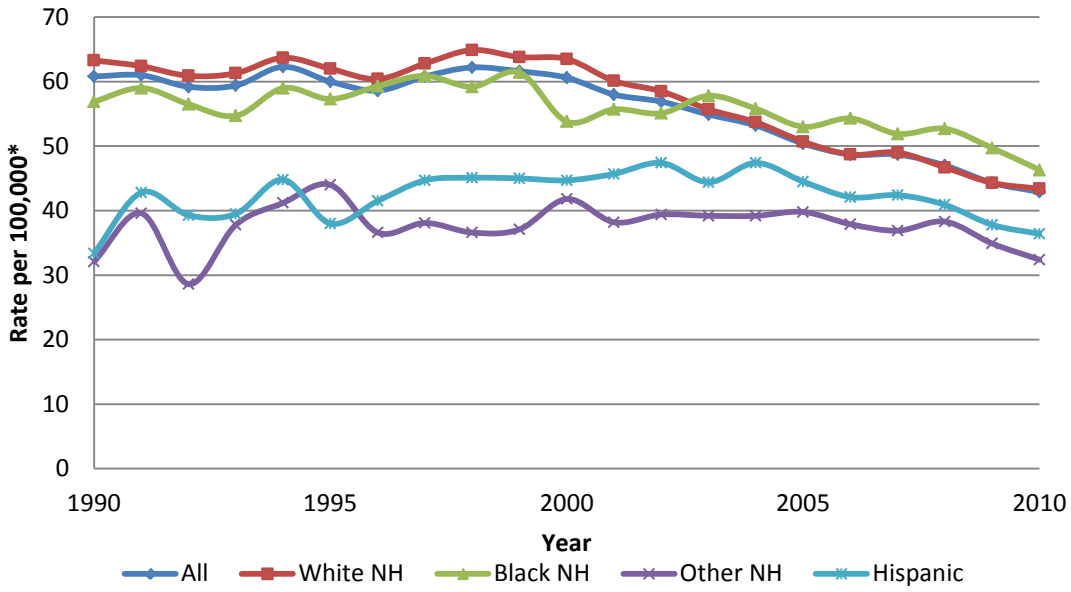
*Age-adjusted to the U.S. standard million population. NH = Non-Hispanic.

Figure 2b. Trends in Cervical Cancer Mortality, NYS, 1990-2010



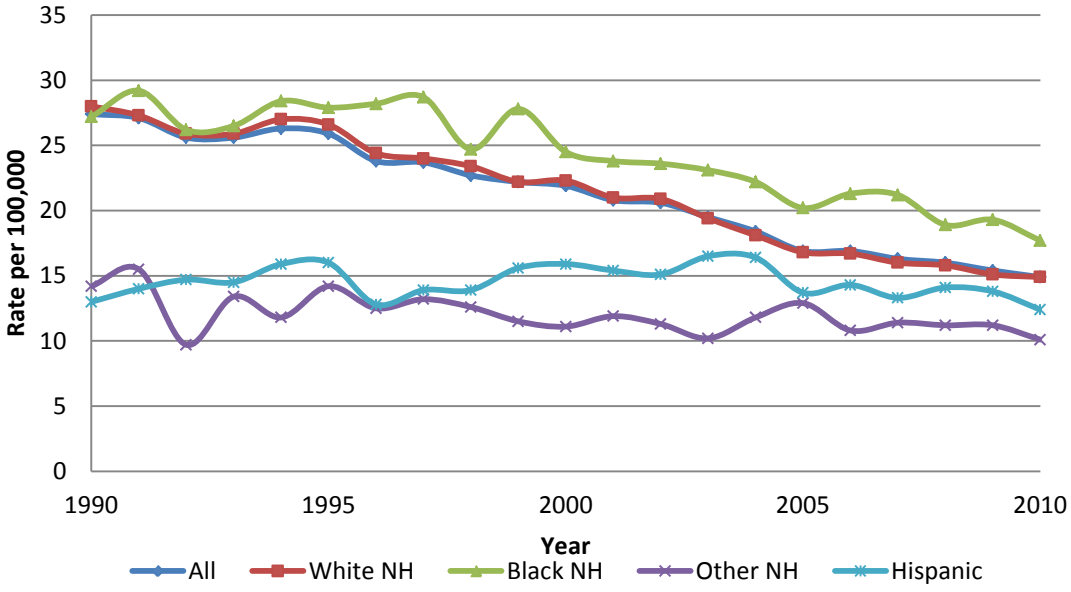
* Age-adjusted to the U.S. standard million population. NH = Non-Hispanic.

Figure 3a. Trends in colorectal cancer incidence, by race, NYS, 1990-2010



*Age-adjusted to the U.S. standard million population. NH = Non-Hispanic

Figure 3b. Trends in colorectal cancer mortality, by race, NYS, 1990-2010



*Age-adjusted to the U.S. standard million population. NH = Non-Hispanic.

Screening Rates

Screening rates for breast,[10] cervical[11] and colorectal[12] cancer as of 2010 exhibit substantial demographic variation, as shown in Table 2. Seventy-eight percent of all women aged 40-74 had a mammogram within the past 2 years, but only 61% of Hispanic women. Higher income groups had screening rates at or near 80%, compared with values in the mid-70s for lower income groups. Women who did not complete high school were similarly below average. Only 56% of uninsured women had a mammogram within the past 2 years.

The disparities for cervical cancer showed a similar pattern. While the Hispanic, education, and insurance disparities were smaller than for breast, the income disparity was larger, and disabled persons were less likely to report being screened.

Demographic disparities were greatest for colorectal cancer. Overall screening rates were 69%, but this ranged from 57% among the lowest income group to 75% among the highest income group. A similar gradient was seen for educational level. The screening rate was only 41% among the uninsured.

Figures 4, 5, and 6 highlight trends in cancer screening rates over the last decade. Mammography utilization over that time period shows no obvious trend (Figure 4). In 2010, mammogram utilization in the past two years among the 40-49 and 50-74 age groups was lower than in 2000 but higher than in 2004, but not by an amount that is statistically meaningful. Pap test utilization in NYS has been very high and essentially flat over the past decade (Figure 5), occupying a narrow 1 to 2 percent range. The trend in colorectal cancer screening utilization in New York State since 2000 has been strongly upward (Figure 6).

Table 2. Cancer screening among New York adults by selected characteristics, 2010 BRFSS.[10,11,12]

	Breast Cancer Screening		Cervical Cancer Screening		Colorectal Cancer Screening	
	Age 40-74		Age 18 or older*		Age 50-75	
	Mammogram within past 2 years		Pap test within past 3 years		FOBT in past year, OR sigmoidoscopy OR colonoscopy in past 10 years	
	%[a]	95% CI[a]	%	95% CI	%	95% CI
Total New York State (NYS)	**77.7**	**75.9-79.4**	**83.7**	**82.2-85.0**	**69.2**	**67.5-70.8**
Sex						
Male					69.1	66.3-71.7
Female					69.3	67.1-71.4
Race/Ethnicity						
Non-Hispanic White	77.9	75.9-79.8	84.5	83.0-85.9	70.3	68.4-72.1
Non-Hispanic Black	78.8	73.2-83.5	86.3	81.7-89.9	70.2	64.5-75.3
Non-Hispanic Other	83.8	78.0-88.4	85.4	79.7-89.7	63.9	56.5-70.6
Hispanic	61.0	51.1-70.1	72.5	64.5-79.3	61.0	51.5-69.7
Annual household income						
< $15,000	73.8	67.2-79.6	76.0	69.7-81.4	56.6	50.3-62.7
$15,000-$24,999	72.9	67.5-77.7	78.0	73.6-81.9	64.7	59.7-69.4
$25,000-$34,999	74.3	67.3-80.3	79.2	74.1-83.6	63.3	57.2-69.1
$35,000-$49,999	77.5	72.0-82.1	85.1	80.5-88.7	68.8	63.9-73.4
$50,000-$74,999	78.8	73.9-83.0	88.7	85.4-91.3	71.7	67.3-75.7
≥ $75,000	79.8	76.6-82.7	90.0	87.5-92.0	74.8	71.7-77.6
Missing[b]	79.2	74.2-83.4	75.0	69.9-79.5	68.1	63.1-72.7
Educational attainment						
Less than high school	72.4	63.8-79.6	81.7	75.2-86.8	55.7	48.5-62.7
High school or GED	78.2	74.7-81.3	76.3	72.8-79.5	63.4	59.9-66.8
Some post-high school	77.7	74.0-81.0	84.3	81.1-87.0	71.4	67.9-74.7
College graduate	78.1	75.4-80.6	87.6	85.6-89.4	74.2	71.7-76.5
Insurance status[c]						
Yes	79.6	77.8-81.3	85.3	83.9-86.6	71.5	69.8-73.2
No	56.1	48.5-63.4	70.6	63.8-76.6	40.6	33.8-47.8
Disability[d]						
Yes	76.0	72.7-79.1	77.2	74.0-80.0	70.2	67.2-73.0
No	78.2	76.1-80.3	85.4	83.8-87.0	68.8	66.6-70.8
Residence						
New York City (NYC)	79.6	76.7-82.2	82.6	80.1-84.9	68.0	65.1-70.8
NYS exclusive of NYC	76.3	74.0-78.5	84.5	82.6-86.1	70.0	67.8-72.0

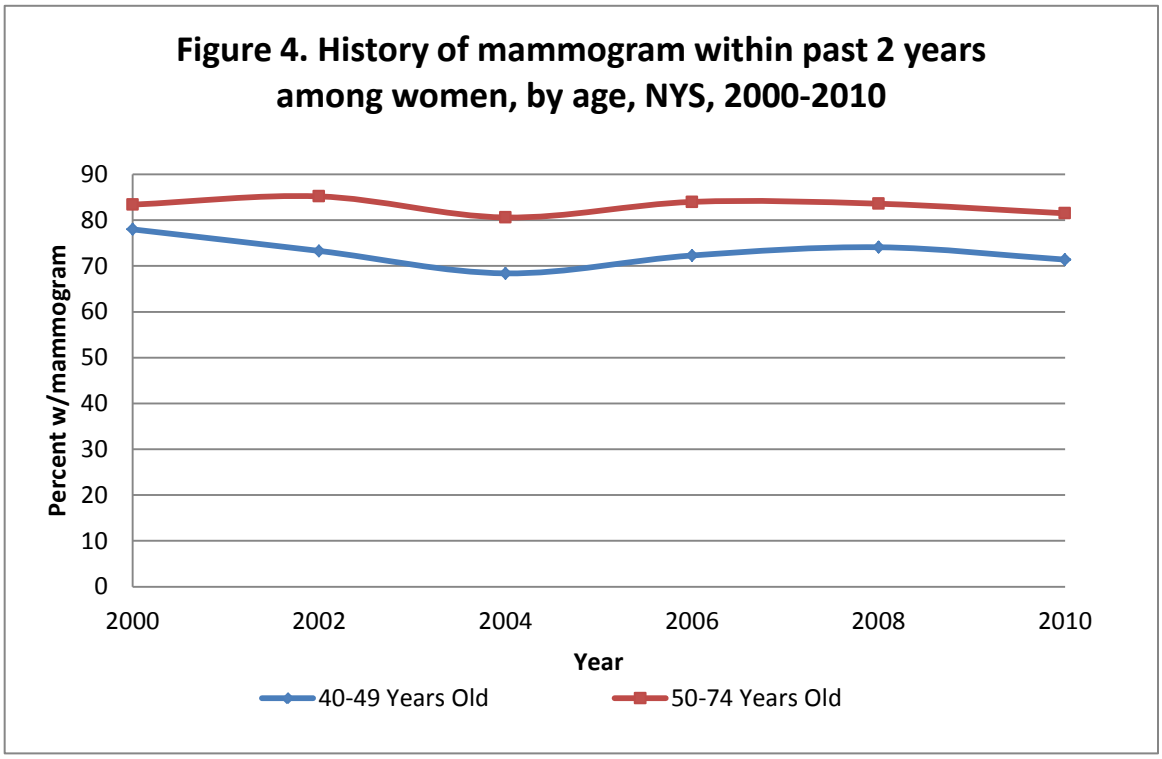
* Does not include data from women who reported having a hysterectomy.

[a] %=Percentage; 95%CI=Confidence interval (at the 95 percent probability level), Percentages are weighted to population characteristics.

[b] "Missing" category included because more than 10% of the sample did not report income.

[c] All respondents who report any kind of health coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare.

[d] All respondents who report activity limitations due to physical, mental, or emotional problems OR have health problems that require the use of special equipment.



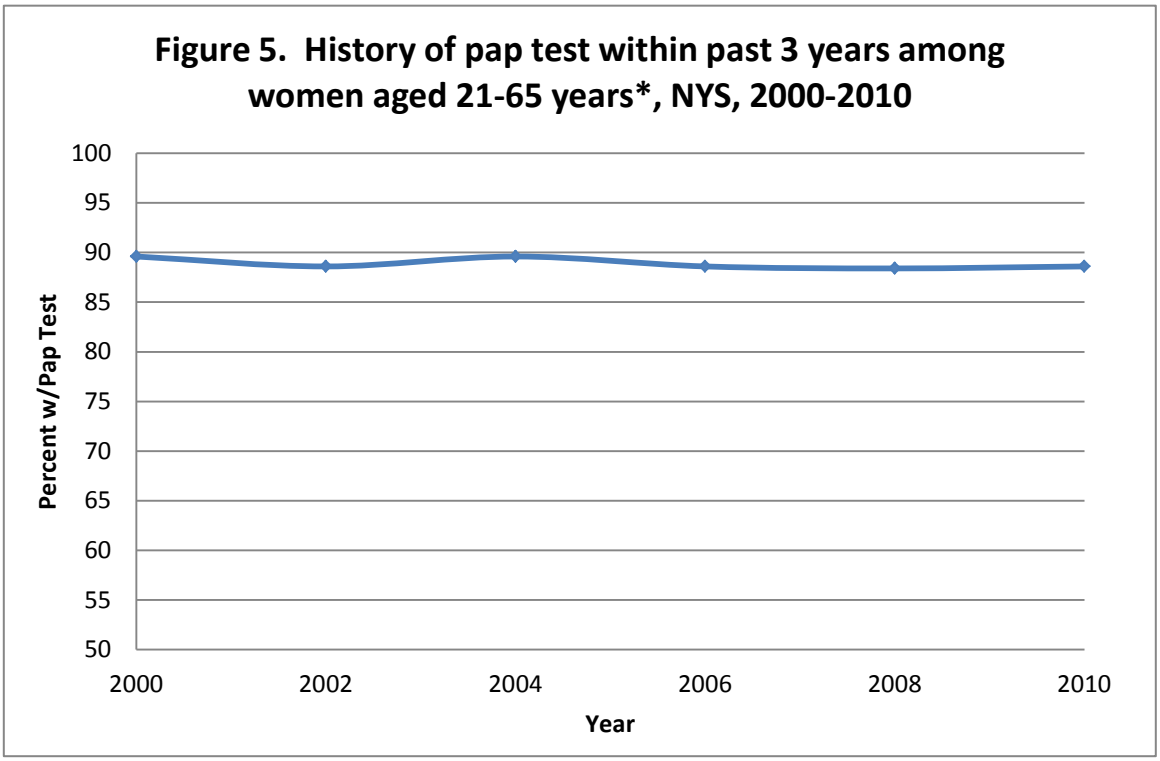
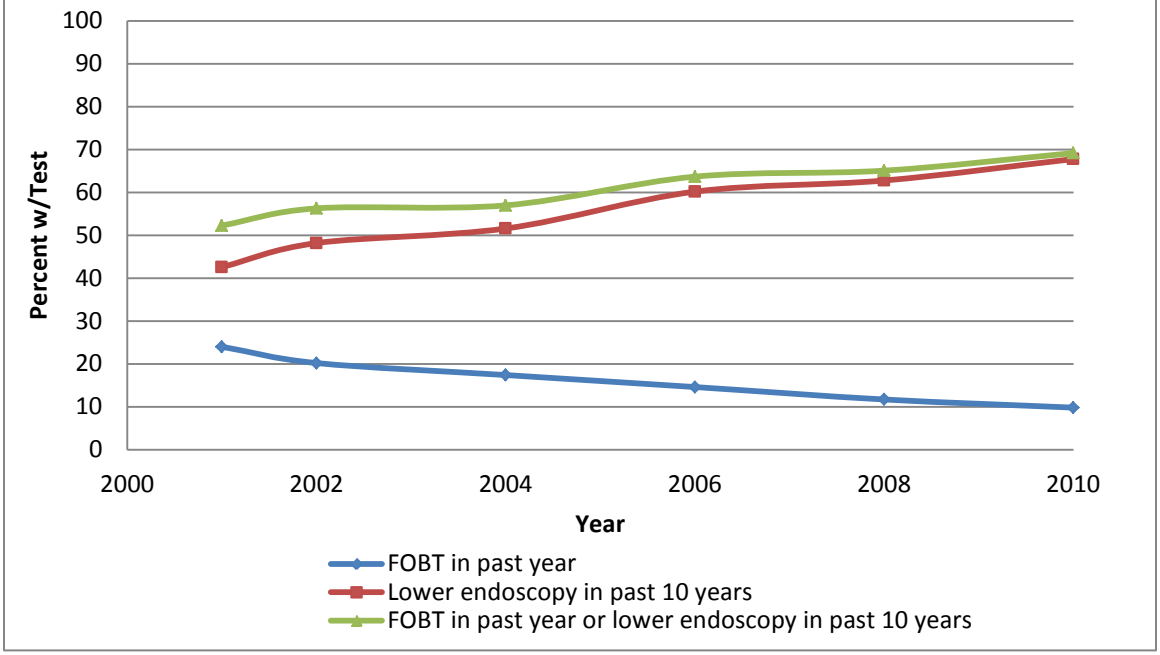


*Figure does not include data from women who reported having a hysterectomy.

Figure 6. History of colorectal cancer screening among adults aged 50-75 years, NYS, 2001-2010



Definition of Summary Stage

Summary Staging is the most basic way of categorizing how far a cancer has spread from its point of origin. In the simplest form it has three categories: localized, regional, and distant.

Local stage: a **localized** cancer is limited to the organ of origin; it has spread no farther than the organ in which it started.

Regional stage: the cancer has extended beyond the limits of the organ of origin. This can be either through spread into adjacent organs or surrounding tissue, or spread into nearby lymph nodes, or both.

Distant stage: the cancer has spread beyond adjacent organs/tissues or nearby lymph nodes. Most commonly this involves distant metastases, that is, tumor cells have broken away from the original tumor, have travelled to other parts of the body, and have begun to grow in the new location.

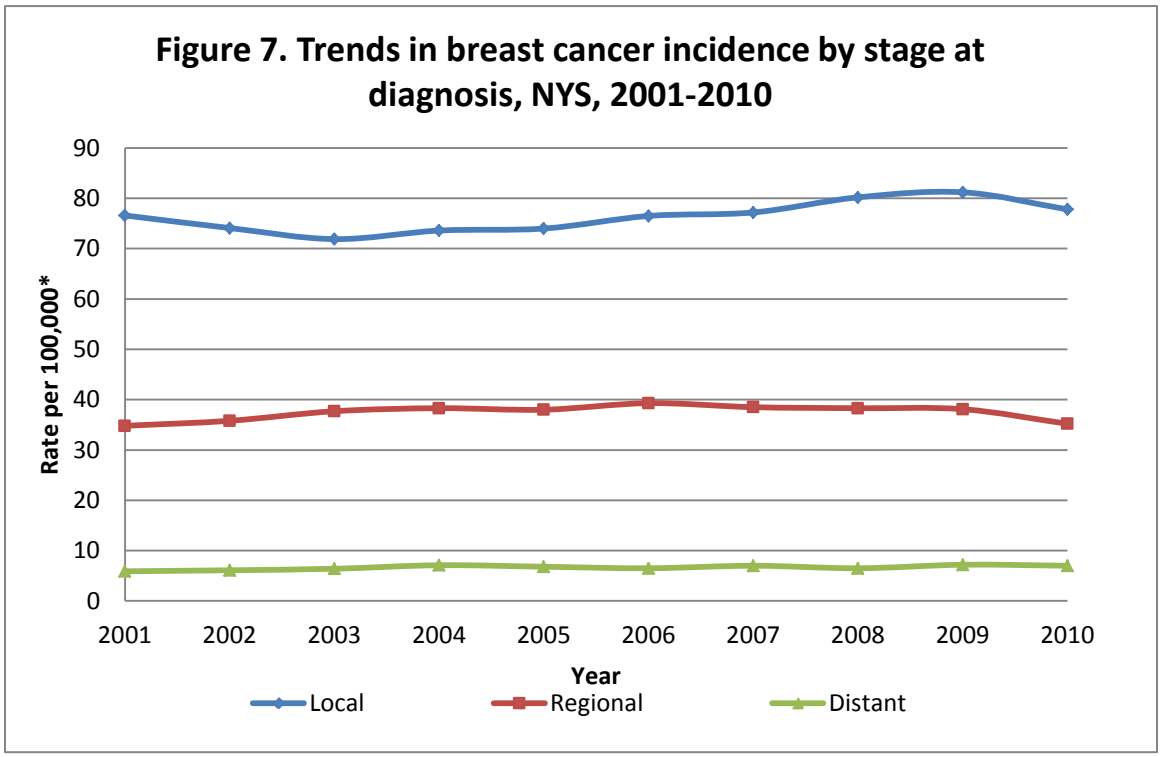
Relating Cancer Incidence and Screening Rates

There is often a correlation between cancer incidence rates and cancer screening test utilization. As breast cancer screening rates increase, rates of regional and distant stage disease should decrease and rates of local stage disease should increase, representing the cases that would have been detected at a later stage in the absence of screening (see stage definitions above). For cervical and colorectal cancer, screening tests also identify pre-cancerous lesions which when removed can prevent cancer from occurring altogether, thus potentially reducing incidence at all stages. This section describes the patterns seen in stage-specific cancer incidence as compared to screening rates reported through the BRFSS, and describes cancer incidence as compared to county-level cancer screening rates reported through the Expanded BRFSS. For breast cancer, the later comparison is based on incidence of late stage disease (i.e., regional and distant since mammography screening cannot prevent breast cancer).

Breast cancer

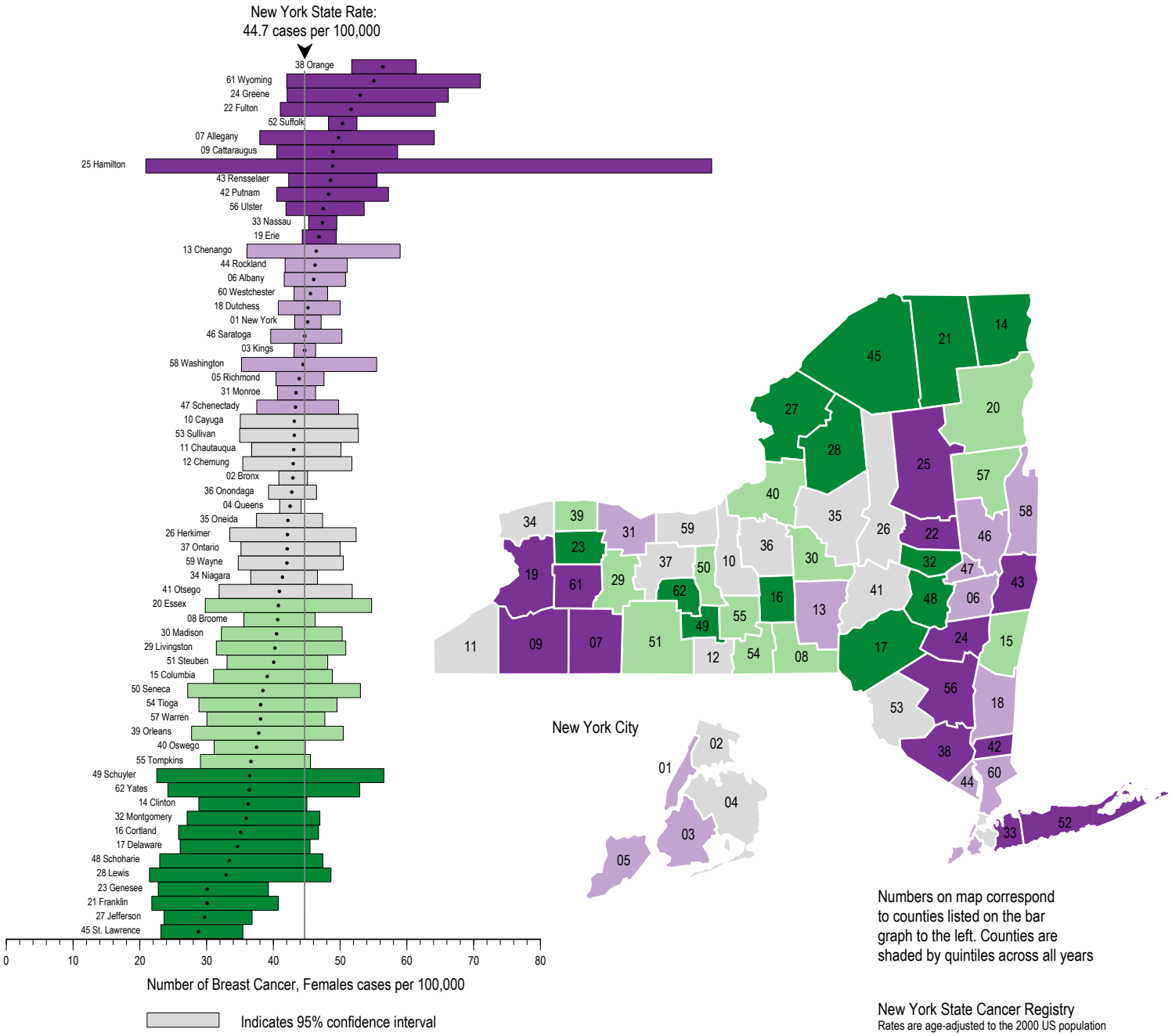
Mammography rates have been high and steady over the past decade in New York (Figure 4). If mammography was the sole or primary driver of incidence rates by stage, then we would expect little change in incidence over the same time period. However, joinpoint analysis suggests that diagnosis at local stage has been increasing since 2003; diagnosis at regional stage has been flat since 2006; and diagnosis at distant stage has been increasing over the entire decade, although its rate remains very low (Figure 7). This pattern is consistent with national data showing that distant stage breast cancer has been increasing generally and particularly among women aged 25-39, where no screening effect can exist.[13] Clearly there are additional factors beyond the simple population-wide mammography utilization rate that are impacting breast cancer incidence.

Figure 8a shows that rates for breast cancer diagnosed at regional and distant stage ranged from a low of 29 per 100,000 in St. Lawrence County (35% below the state average) to a high of 56 per 100,000 in Orange County (25% above the state average). Mammogram utilization statewide was 83%, ranging at the county level from 73% (Sullivan) to 89% (Yates), with Erie (Buffalo), Monroe (Rochester), and Onondaga (Syracuse) counties and several of their neighbors among those with the highest values (Figure 8b). There is a slight tendency for counties with higher regional and distant stage breast cancer rates to have lower mammography utilization. Interpretation of this finding should consider other risk factors for breast cancer which may vary geographically, including age, family history, genetics, hormonal factors (e.g. having fewer children, having a first child at a later age), long term use of postmenopausal hormones, and excessive consumption of alcohol.



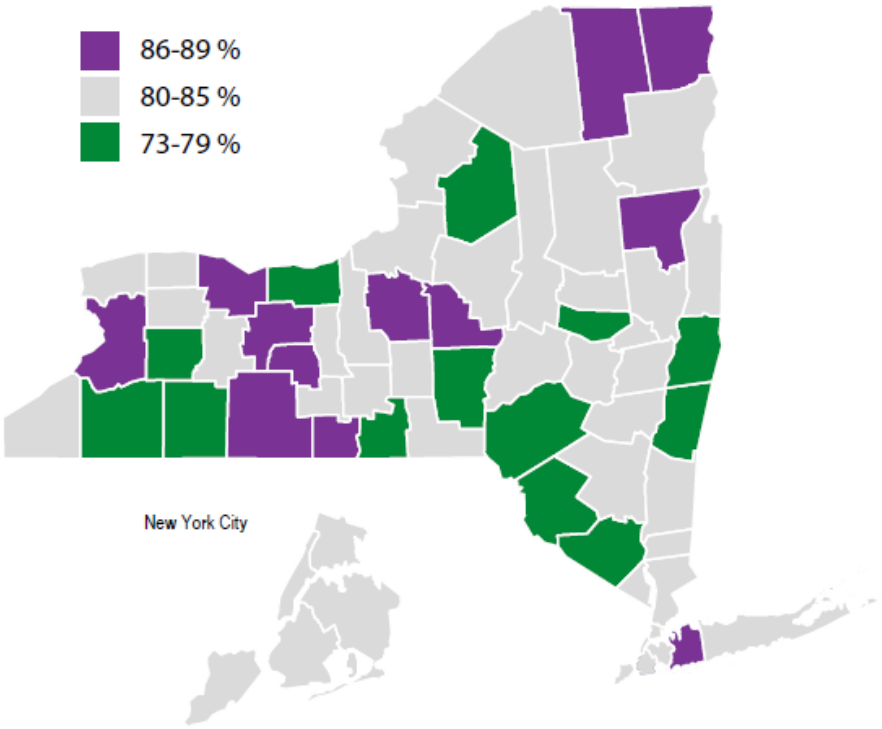
*Age-adjusted to the U.S. standard million population.

Figure 8a. Late-stage,* age-adjusted breast cancer incidence rate, by county, NYS, 2006-2010



*Late stage equals regional and distant stage

Figure 8b. Percentage of women aged 50 and older who had a mammogram in the past two years, by county, NYS, 2008-2009



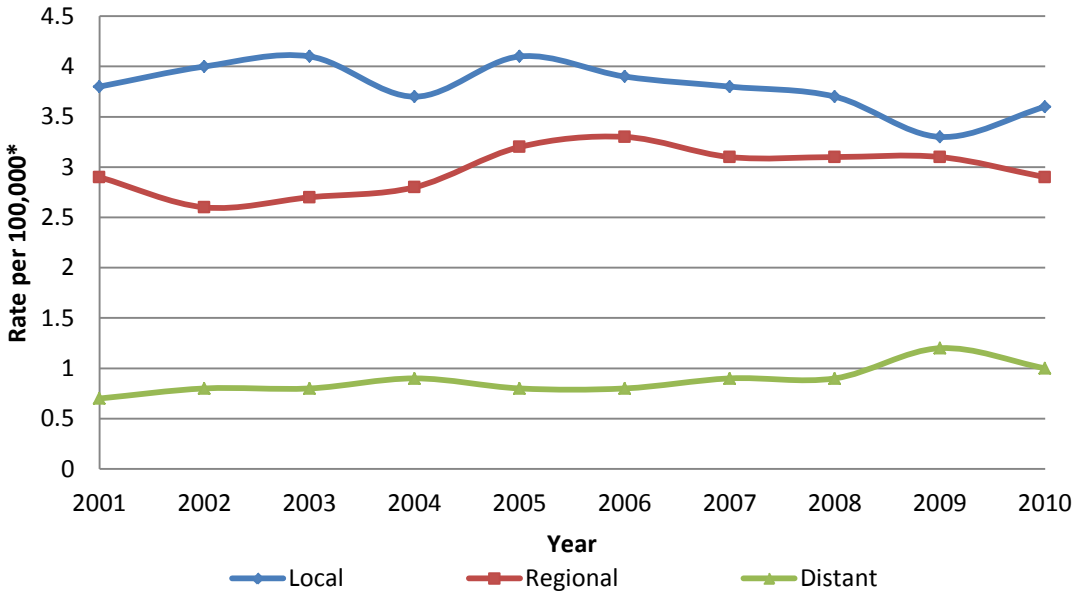
Cervical cancer

Cervical cancer screening rates have been high and steady over the last decade (Figure 5), and cervical cancer incidence has been stable over the same period (Figure 9). Joinpoint analysis indicates no significant trends in the incidence of cancers at a local and regional stage and a statistically significant upward trend in incidence of cancers at a distant stage, albeit of small magnitude, between 1 and 2 per million.

As with breast cancer, if screening rates were the primary driver of incidence rates, we would not expect to see such an increase. Therefore, additional factors are likely to be involved. The increase in distant stage incidence could be related to the demographic disparities in cervical cancer screening presented earlier.

County rates of cervical cancer exhibit roughly a four-fold variation (Figure 10a). While some of this results from very small numbers of cases in low-population counties, there is still a two-fold variation between the New York City counties of Bronx, Kings (Brooklyn) and Queens, and larger upstate counties such as Monroe and Albany. This sharp geographic disparity is consistent with an association with poverty that is typical of HPV-associated cancers. County level Pap test utilization shows no obvious pattern (Figure 10b) and is not correlated with the cervical cancer rates shown in Figure 10a.

Figure 9. Trends in cervical cancer incidence by stage at diagnosis, NYS, 2001-2010



*Age-adjusted to the U.S. standard million population.

Figure 10a. Age-adjusted cervical cancer incidence rate, by county, NYS, 2006-2010

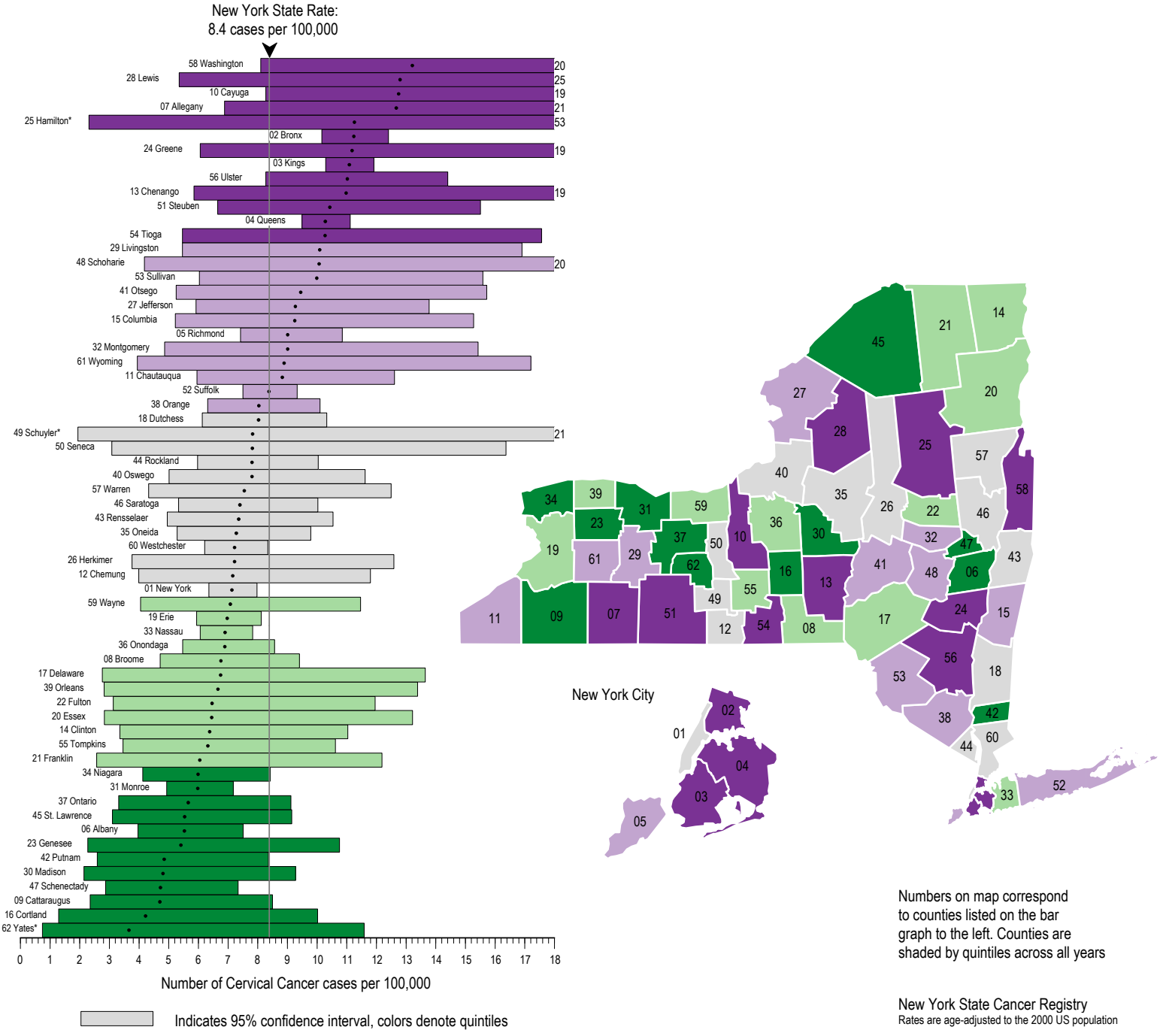
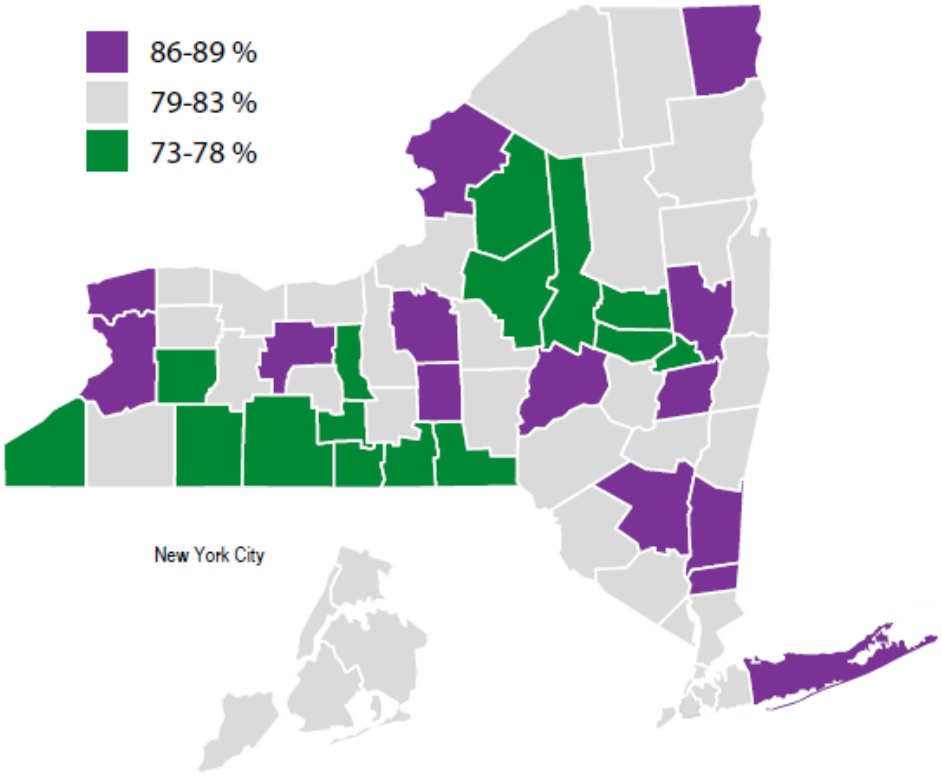


Figure 10b. Percentage of women aged 18 and older who had a pap test in the past three years, by county, NYS, 2008-2009

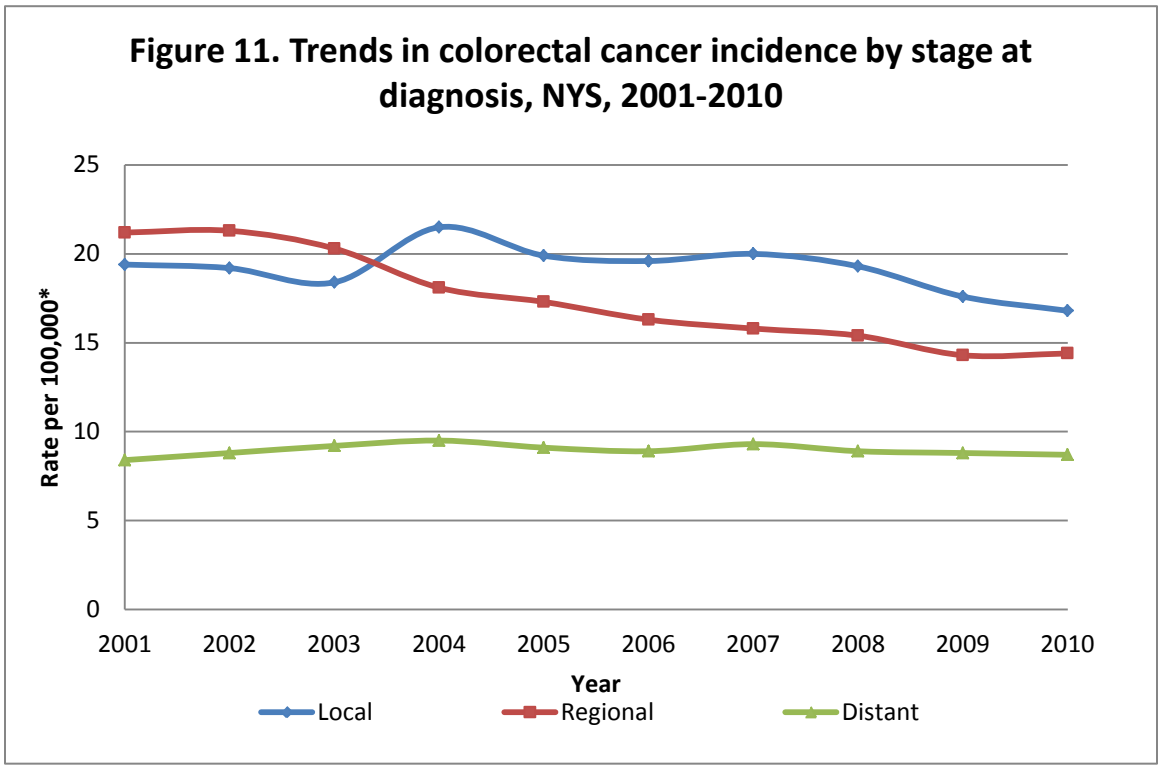


Colorectal cancer

New York has seen a downward trend in colorectal cancer incidence over the past decade, corresponding to the net upward trend in colorectal cancer screening in NYS since 2000 (Figure 6). According to a joinpoint analysis, the trend is most pronounced for regional stage for which incidence has declined by nearly 5% per year over the entire decade. The incidence of distant stage cancers has declined by a more modest 1% per year since 2004. There is also a suggestion of a decline in diagnosis at local stage since 2007 (Figure 11), which is consistent with the ability of colorectal cancer screening to identify precancerous lesions.

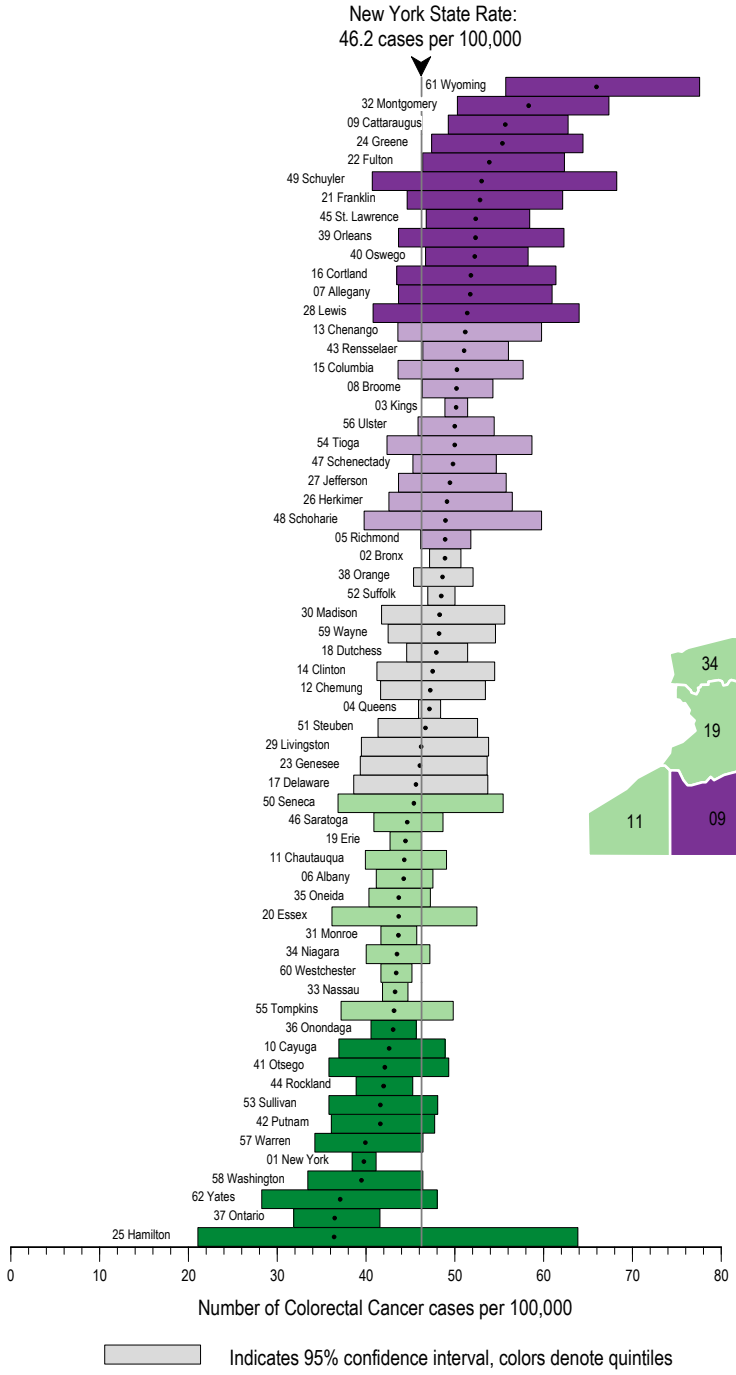
A marked decline in late-stage incidence due to screening can only occur if the screened population is representative of the population as a whole. If instead it is more likely to be comprised of persons already positively engaged with the health care system, then its effect could be diminished, as many of the screen-detected cancers would have been caught before progressing to distant stage even in the absence of a formal screening program. The large disparities in colorectal cancer screening utilization (Table 2) suggest this may be the case, and that those not following screening recommendations in 2010 represent a difficult to reach population that is also at the highest risk of dying of colorectal cancer.

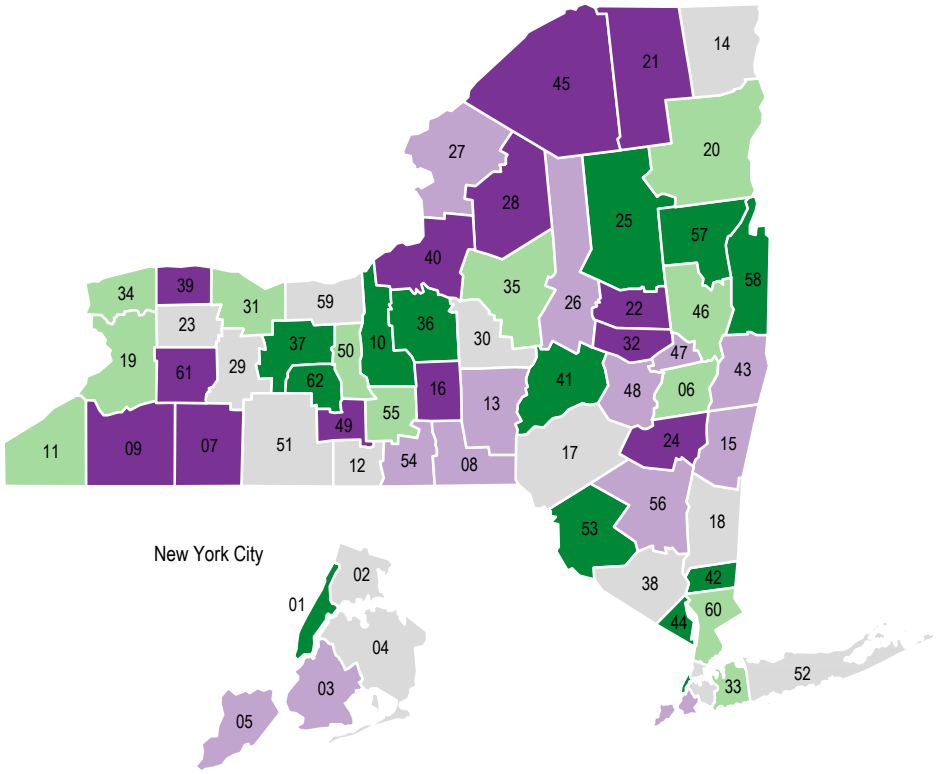
County level variation in colorectal cancer falls between that seen for breast and cervical cancer (Figure 12a). Rural areas appear to be at higher risk, as every one of the counties in the highest quintile fits this description, though high variability due to small numbers could be influencing this finding. Screening utilization, as measured by having had a colonoscopy or sigmoidoscopy in the past decade, varies considerably by county, with no clear pattern – many counties with high utilization are adjacent to similar counties with low utilization (Figure 12b). There is a weak association between higher screening and lower rates. Interpretation of this finding should consider other risk factors for colorectal cancer which may vary geographically, including diet, exercise, smoking, alcohol consumption, and diabetes prevalence.



*Age-adjusted to the U.S. standard million population.

Figure 12a. Age-adjusted colorectal cancer incidence rate, by county, NYS, 2006-2010

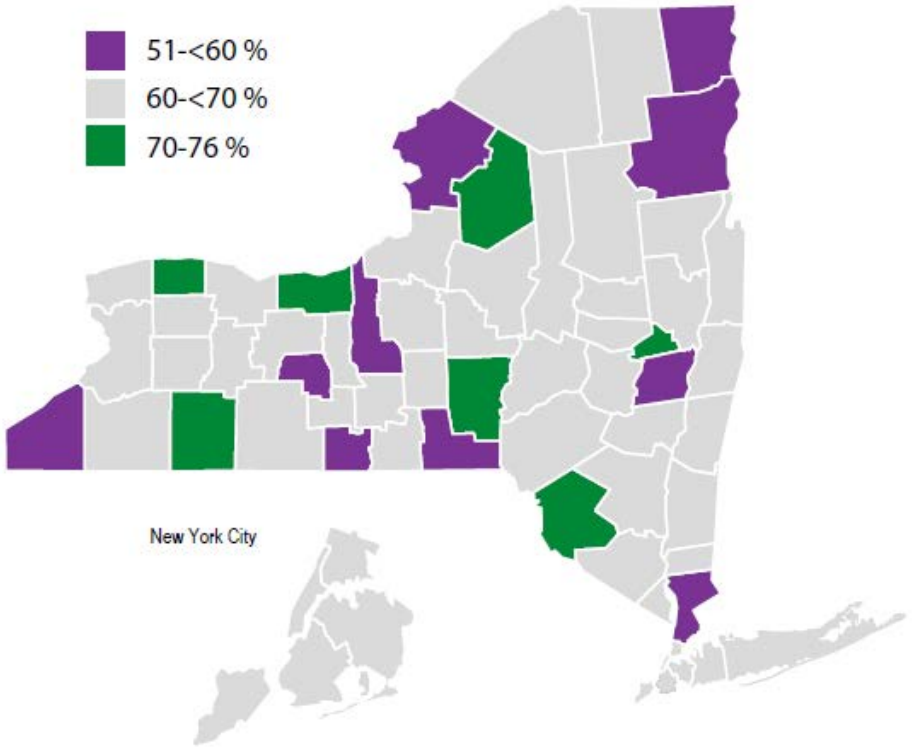




Numbers on map correspond to counties listed on the bar graph to the left. Counties are shaded by quintiles across all years

New York State Cancer Registry
Rates are age-adjusted to the 2000 US population

Figure 12b. Percentage of adults aged 50 and older who had a sigmoidoscopy or colonoscopy in the past ten years, by county, NYS, 2008-2009



Conclusions

- For colorectal and cervical cancer, patterns and trends in cancer incidence in NYS are consistent with what is known about screening patterns and trends. In the case of breast cancer, the data do not allow for a clear interpretation. Given the complexity of factors that influence breast cancer incidence, one would not expect a direct correlation between screening and incidence.

- Breast cancer incidence rates are higher in white women as compared to other race/ethnicities; however mortality rates are higher in black women. Rates of breast cancer screening across the state, however, do not differ greatly between non-Hispanic white and non-Hispanic black women. The source of this disparity has been the subject of much research, and may relate to breast cancer actually representing multiple distinct diseases.[14] In particular, black women are much more likely to have a type of breast cancer that has the poorest prognosis.[15] Issues related to access to care may also explain some of this variation, such as black women tending to have longer intervals to diagnosis after an abnormal mammogram.[16]

- Racial/ethnic disparities are seen in cervical and colorectal cancer incidence and mortality rates, with higher cervical cancer incidence and mortality rates in black and Hispanic women and higher colorectal cancer incidence and mortality rates in blacks. Screening rates for both cancers are lower in Hispanic men and women, although other factors (e.g. annual household income, insurance status and educational attainment) likely contribute to the variation.

- Breast cancer screening rates as well as overall breast cancer incidence have changed little over the last decade. There is a slight tendency for counties with higher regional and distant stage breast cancer rates to have lower breast cancer screening rates, but other risk factors for breast cancer must be taken into consideration when interpreting geographic variation in breast cancer incidence.

- Overall rates of cervical cancer screening have consistently been above 85% since 2000. To further reduce overall cervical cancer incidence as well as distant stage disease, an emphasis should be made on reaching disparate, harder to reach populations with screening efforts and increasing uptake of the HPV vaccine in male and female adolescents.

- Overall incidence rates of colorectal cancer have declined in the last decade, corresponding to the increasing rates of colorectal cancer screening. As compared to cases diagnosed at regional stages, however, the decline in cases diagnosed at distant stage has been more modest. Future screening efforts should focus on populations least likely to be screened including those with low annual household income, those with a high school education or less and those without health insurance.

The purpose of cancer screening is to detect cancer before it becomes symptomatic and ultimately to reduce cancer-related mortality. Rates of screening for breast, cervical and colorectal cancer have either stabilized or have been increasing; however they are not equal across populations in NYS. Most notably,

people without health insurance are least likely to be screened. Beginning in 2014, a large number of NYS residents will gain access to recommended preventive health services, including cancer screening, as a result of the Affordable Care Act. It is hoped that this will result in higher screening rates and reduce disparities in cancer-related mortality. However, screening rates are suboptimal even among individuals who are currently insured. Continued efforts in prevention and early detection are needed, with a particular emphasis on reaching those least likely to be engaged with the health care system. (See Appendix for current State plans related to early detection).

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Appendix

New York State Comprehensive Cancer Control Plan

The NYS Cancer Consortium, a statewide network of individuals and organizations dedicated to addressing the cancer burden in NYS (www.nyscancerconsortium.org), developed the 2012-2017 NYS Comprehensive Cancer Control Plan. The Consortium identified six priority areas for action, one of which focuses on early detection. The following is an excerpt from the plan.

Goal: All New Yorkers will receive age-appropriate, evidence-based, guideline-driven screening services for the early detection of cancer.

Measurable Objectives

Breast Cancer:

1. By 2017, increase the proportion of women who receive breast cancer screening based on the most recent guidelines by at least 5 percent. (Baseline, 2010: 77.7 percent women aged 40 to 74 years who have received a mammogram in the past two years. Source: BRFSS)
2. By 2017, reduce the rate of female breast cancer identified at late stages to 41.7 cases per 100,000 females (Baseline, 2005-2009: 44.4 cases per 100,000. Source: NYSCR)

Cervical Cancer:

1. By 2017, increase the proportion of women who receive a cervical cancer screening based on the most recent guidelines by at least 5 percent (Baseline, 2010: 88.6 percent women aged 21-65 years with a Pap test within the past three years. Source: BRFSS)
2. By 2017, reduce the rate of invasive uterine cervical cancer to 8.1 cases per 100,000 females. (Baseline, 2005-2009: 8.5 cases per 100,000. Source: NYSCR)

Colorectal Cancer:

1. By 2017, increase the proportion of adults who receive a colorectal cancer screening based on the most recent guidelines by at least 5 percent. (Baseline, 2010: 68.0 percent of adults aged 50 to 75 years who received either a blood stool test in the past year, or a sigmoidoscopy in the past 5 years and a blood stool test in the past 3 years, or a colonoscopy in the past 10 years. Source: BRFSS)
2. By 2017, reduce the rate of invasive colorectal cancer to 46.4 cases per 100,000 population. (NYS Baseline, 2005-2009: 47.8 cases per 100,000 population. Source: NYSCR)

Disparities:

- By 2017, reduce barriers to screenings and diagnostic services for disparate populations so that there are no significant differences in screening rates and rates of invasive or late stage diagnosis by race, ethnicity, income level, education level, insurance status or geographic location. (Data Sources: BRFSS and NYSCR)

Prevention Agenda 2013-2017: New York State's Health Improvement Plan

The NYS Prevention Agenda 2013-2017 was developed by the Public Health and Health Planning Council in conjunction with a large group of stakeholders, at the request of the Department. The goal of the Prevention Agenda is to improve the health of all New Yorkers and reduce health disparities through increased emphasis on prevention. The Prevention Agenda is meant to serve as a call for action urging a broad range of stakeholders to collaborate at the community level to assess health status and needs, identify local health priorities and plan, implement and evaluate strategies to improve local health. Chronic disease prevention is one of the five priority areas identified in the Prevention Agenda; it

includes a goal related to early detection and objectives related to breast, cervical and colorectal cancer screening with an emphasis on the economically disadvantaged.

Goal #3.1: Increase screening rates for cardiovascular disease, diabetes and breast, cervical and colorectal cancers, especially among disparate populations.

Objective 3.1.1:

By December 31, 2017, increase the percentage of women aged 50-74 years with an income of < $25,000 who receive breast cancer screening, based on the most recent clinical guidelines (mammography within the past two years), by 5% from 76.7% (2010) to 80.5%.

Objective 3.1.2:

By December 31, 2017, increase the percentage of women aged 21-65 years with an income of < $25,000 who receive a cervical cancer screening, based on the most recent clinical guidelines (Pap test within the past three years), by 5% from 83.8% (2010) to 88.0%.

Objective 3.1.3:

By December 31, 2017, increase the percentage of adults (50-75 years) who receive a colorectal cancer screening based on the most recent guidelines (blood stool test in the past year or sigmoidoscopy in the past 5 years and a blood stool test in the past years or a colonoscopy in the past 10 years):

- By 5% from 68.0% (2010) to 71.4% for all adults.
- By 10% from 59.4% to 65.4% for adults with an income <$25,000.