CANCER AMONG HISPANICS IN NEW JERSEY 1990-1996

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EXECUTIVE SUMMARY

Introduction

This report, **Cancer Among Hispanics in New Jersey 1990-1996**, presents cancer incidence and mortality data among Hispanics in New Jersey from 1990 through 1996. Recent improvements in technology and in the availability of population data have made calculation of Hispanic cancer incidence and mortality rates, and this report, feasible for the first time in New Jersey.

In this report, cancer incidence and mortality data for Hispanics are compared to corresponding data for non-Hispanic whites and all blacks. Note that because Hispanics may be of any race, there is some overlap in the Hispanic and black populations. In past reports, we have presented and compared data on cancer for white and black residents, and in the current report, while we present such data, we do not discuss comparisons of cancer incidence and mortality in those two groups.

Summary

In general, Hispanic cancer incidence and mortality rates in the United States and New Jersey are lower than corresponding rates among non-Hispanic whites and among blacks. However, there are certain cancers for which incidence rates in Hispanics are higher than in the overall population, particularly cancers of the cervix, liver, gallbladder, stomach and multiple myeloma. During the years 1990-1996, the cancer incidence rate among New Jersey Hispanics increased 2.0 percent and the mortality rate due to cancer declined by 8.2 percent, similar to trends among New Jersey blacks and non-Hispanic whites.

The data in this report on stage at diagnosis suggest that, among the Hispanic population of New Jersey, significant improvement in cancer survival could be accomplished through widespread earlier screening for colon cancer, breast cancer, and cervical cancer. Since the incidence rate of cervical cancer among Hispanic women is 86 percent higher than for non-Hispanic white women, and the cervical cancer mortality rate among Hispanic women is 78 percent higher than for non-Hispanic white women, it is particularly important that routine screening for cervical cancers be increased among Hispanic women.

Data Limitations

Health data specific to the Hispanic population have historically been difficult to collect. Hispanics are a diverse group with different cultures, ethnic subgroups, national origins, customs, and socioeconomic status. In addition, no standard definition exists for Hispanic ethnicity and there is no consistent instrument or method for collecting Hispanic ethnicity information for federal and state statistics. Designations of individuals as Hispanic in this report are based on both self reports and observations by health providers and other professionals, an approach taken by most other state cancer registries.

Data on Hispanic ethnicity in the New Jersey State Cancer Registry is collected during hospital admission, but that information is not always asked by hospital staff. On New Jersey death

certificates, ethnicity is an underreported item. In this report, a method of evaluating surnames (maiden names, in the case of ever married women) has been used to make more complete the number of Hispanic incident cases and deceased persons already identified as Hispanic by self report and by health professionals. This method, based on an algorithm developed by the Illinois State Cancer Registry[1,2] makes use of United States census data on Hispanic surnames, as well as marital status, birthplace and race information, and is described in detail in a technical note at the end of the report.

Therefore, since this report brings together data collected by several different methods (self-report, observation, and inferences from a complex algorithm), there are also several potential sources of error in the estimation of Hispanic ethnicity. Despite these limitations, this report has been generated to begin the process of assessing cancer status and health care needs among persons of Hispanic origin. Hispanics are an important part of our population and are frequently undercounted in health data. There is increased interest in Hispanic health data at the state and federal level, and, as discussed above, there are new methodological tools for generating the data presented and discussed in the following pages.

BACKGROUND INFORMATION ON CANCER

What Is Cancer?[3,4]

Cancer is a group of more than 100 diseases caused by the uncontrolled growth and spread of abnormal cells. Tumors, or abnormal growth of tissue, may be benign or malignant. Benign tumors are usually slow-growing and not life-threatening, whereas malignant tumors (or cancers) are made up of cells with abnormal genetic material (or DNA) and usually grow more rapidly. Malignant tumors (cancers) have a tendency to invade neighboring tissues or organs and to travel and grow in other areas of the body (i.e., to metastasize). If the spread of the cancer is not stopped, cancer cells invade vital organs which can result in death. Cancer cells may remain at their original site (local stage), spread to an adjacent area of the body (regional stage), or spread throughout the body (distant stage). Cancers at the local, regional or distant stage are considered invasive. A very early cancer found in only a few layers of cells, called *in situ* cancer, is considered non-invasive.

What Causes Cancer?[3,4]

Cancers are caused by a variety of factors working alone or in combination. Some cancers are caused by external factors such as tobacco, diet, certain chemicals, radiation, and viruses. Other cancers are caused by internal factors such as hormones, immune conditions, and inherited genetic mutations. Usually ten or more years pass between exposure to a factor that causes cancer and detectable disease.

Cancer Incidence and Mortality in the United States

Cancer is the second leading cause of death in the U.S., with 1,220,100 new cases and 552,200 deaths estimated for 2000 by the American Cancer Society. Cancer occurs in people of all ages, but its occurrence increases greatly in people over 45 years of age. However, it is also the leading cause of non-accidental death among U.S. children under age 15. In the U.S., men have about a 1 in 2 lifetime risk of developing cancer and women have about a 1 in 3 lifetime risk. (These figures do not include basal and squamous cell skin cancers or *in situ* cancer except for the bladder.)

Over the past 50 years, the death rate from cancer has increased steadily, due mainly to a large rise in lung cancer death rates resulting from smoking. During the past few years cancer incidence and death rates have begun to decrease, possibly as a result of healthier lifestyles, particularly decreases in smoking. Men have a higher mortality rate from cancer than women, and blacks have the highest cancer mortality rate of any major racial group. Compared with earlier years, a much higher percentage of people diagnosed with cancer now are surviving. Now, about six out of every ten people diagnosed with cancer will survive for at least five years.

Sources of Information About Cancer

For additional information on cancer these organizations may be contacted:

American Cancer Society - phone 1-800-ACS-2345 (or 1-800-227-2345) or access the Internet website at http://www.cancer.org. The American Cancer Society is a nationwide, community-based, voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives and diminishing suffering from cancer, through research, education, advocacy, and service.

Cancer Epidemiology Services, New Jersey Department of Health and Senior Services - phone 609-588-3500 or access the Internet website at http://www.state.nj.us/health. Cancer Epidemiology Services has incidence data on cancer among New Jersey residents from the New Jersey State Cancer Registry, as well as informational materials from various organizations.

Centers for Disease Control and Prevention - voice information system 888-842-6355 or access the Internet website at http://www.cdc.gov/. The mission of the CDC is to promote health and quality of life by preventing and controlling disease, injury, and disability. The CDC's website includes a link devoted to cancer in English (http://www.cdc.gov/cancer/) and in Spanish (http://www.cdc.gov/spanish/enfermedades/cancer.htm).

National Cancer Institute - phone 1-800-4-CANCER (or 1-800-422-6237) or access the Internet website at http://www.nci.nih.gov. The Cancer Information Service (CIS) of the National Cancer Institute provides a nationwide telephone service for the public, cancer patients, and their families. Their health care professionals can answer questions in English and Spanish and send printed materials. People with TTY equipment for the hearing impaired may call 1-800-332-8615.

Special Population Networks for Cancer Awareness, Research, and Training – phone 1-301-496-8589. This program makes educational materials available to the public, and research and training programs available to minority researchers. It is a program of the National Cancer Institute.

BACKGROUND INFORMATION ON HISPANICS[5-10]

Demography of the Hispanic Population in the United States and New Jersey

In the United States, Hispanics comprise a large and rapidly growing segment of the population. In 1996, there were an estimated 28 million Hispanics in the United States, comprising approximately 11 percent of the United States population. The Hispanic population grew by 53 percent between 1980 and 1990 and by nearly 24 percent between 1990 and 1996. By comparison, the non-Hispanic population grew by 9.1 percent between 1980 and 1990 and 4.5 percent between 1990 and 1996.

In New Jersey, there were an estimated 925,000 Hispanics in 1996, comprising about 12 percent of the population. New Jersey had the seventh highest number of Hispanics in the nation following California, Texas, New York, Florida, Illinois, and Arizona. The Hispanic population in New Jersey grew by 50 percent between 1980 and 1990 and by 24 percent between 1990 and 1996.

The Age Distribution of the Hispanic Population in New Jersey

The Hispanic population is younger on average than the non-Hispanic population in both New Jersey and the nation as a whole. In 1996, the median age of the Hispanic population in New Jersey was approximately 26, compared to 36 for the total population in the state. Thirty four percent of Hispanics were under age 20 in 1996 compared to 27 percent of non-Hispanics. While 14 percent of non-Hispanics were 65 and older, only 6 percent of Hispanics were in that age group.

Composition of the Hispanic Population in New Jersey and the United States

The most common places of origin of Hispanics in the United States are Mexico, Puerto Rico, and Cuba. Based on the 1990 Census, the Hispanic population in the United States was about 61 percent Mexican, 12 percent Puerto Rican, and five percent Cuban. The fourth most common Hispanic subgroup was Dominican, comprising approximately three percent of United States Hispanics. Nineteen percent are of other Hispanic origin.

However, the distribution of Hispanic subgroups in New Jersey differs from that of the total U.S. The most common Hispanic subgroup in New Jersey is Puerto Rican comprising about 42 percent of the state's Hispanic population, according to the 1990 Census. Twelve percent of New Jersey's Hispanic population was Cuban, seven percent was Dominican and only four percent was Mexican. Eighteen percent were Central American and six percent were South American. Eleven percent are of other Hispanic origin.

Hispanic Population in New Jersey Counties

In 1997, almost half of the state's Hispanic population and 22 percent of the state's total population resided in Hudson, Passaic and Essex counties. Hudson County has over

200,000 Hispanic residents and Passaic and Essex counties each have over 100,000 Hispanic residents. In addition to these three counties, Union, Middlesex, Bergen and Camden counties rank among the nation's top 100 counties in the number of Hispanics.

Economic Status of Hispanics in the United States and New Jersey

In the United States, approximately 22 percent of Hispanic families were living in poverty in 1990 compared with less than 10 percent of non-Hispanic families. The median family income for Hispanics in 1990 was $25,064 compared with $35,225 for all Americans combined. Hispanics are overrepresented in blue-collar jobs, such as the service occupations, farming, machine operators and laborers, and underrepresented in the white-collar managerial, administrative and professional jobs.

In New Jersey, 19 percent of Hispanic families were living in poverty in 1990 compared with eight percent of non-Hispanic families. In 1998, 31 percent of New Jersey Hispanic residents lacked health insurance coverage compared with 18 percent of all New Jersey residents.

Behavioral Risk Factors in the Hispanic Population of New Jersey

According to the 1996-97 NJ Behavioral Risk Factor Surveillance Survey (NJ BRFSS), the rate of chronic alcohol consumption was the same for NJ Hispanics compared with non-Hispanics in the State. However, in 1998 this survey showed that the percentage of current smokers is higher among Hispanic men than non-Hispanic men, but lower among Hispanic women compared with non-Hispanic women. (Questions on alcohol abuse were not asked in 1998.)

Approximately 77 percent of Hispanic women aged fifty and over had a mammogram to screen for breast cancer within the past two years, slightly more than the same percent for non-Hispanic white (73 percent) and non-Hispanic black (75 percent) women according to the 1997-98 NJ BRFSS. The same survey indicates that approximately 60 percent of Hispanic women had a pap test to screen for cervical cancer within the past two years compared with 67 percent of non-Hispanic white women and 66 percent of non-Hispanic black women. Unfortunately, sample sizes are too small to obtain reliable estimates of use of screening procedures for prostate and colorectal cancer among Hispanics.

HISPANIC CANCER INCIDENCE AND MORTALITY RATES, NEW JERSEY, 1990-1996

Table 1 and Table 3 present the age-adjusted incidence rates and mortality rates, respectively, in New Jersey by gender and race/ethnicity for the combined years 1990 through 1996. Annual trends in these rates are presented graphically in Figures 1-4 and are discussed in a separate section below. Because Hispanics can be of any race, there is overlap between Hispanics and blacks. At the time this report was being planned, accurate age- and year-specific data was not available for non-Hispanic blacks. The tables show age-adjusted rates per 100,000 population for over 60 major types of cancer and for all cancer sites combined for Hispanics, non-Hispanic whites, and all blacks. In the following paragraphs, we review major patterns by gender, race, and ethnicity.

Overall Incidence Rates

The incidence rates for all sites combined show that, overall, Hispanic males and females have lower incidence rates than either non-Hispanic whites or blacks. Among males, blacks have the highest rates, whereas among females, non-Hispanic whites have the highest rates. For each race and ethnic group, males have higher incidence rates than females. This table also shows that cervical, stomach, gallbladder and liver cancer are higher in Hispanics than non-Hispanic whites in NJ. This pattern has been seen elsewhere in the US and is discussed in more detail in a later section.

The Five Most Frequently Diagnosed Cancers

Table 2 shows that the five most common cancers are very consistent across race and ethnic group. Among males, prostate, lung and colon cancer are ranked first, second and third in each group. Bladder cancer is one of the top five cancers diagnosed among Hispanic and non-Hispanic white males.

Among females, breast cancer is the most commonly diagnosed cancer across all race and ethnic groups (see Table 2). Colon cancer surpasses lung cancer for Hispanic females, while the order is reversed for non-Hispanic whites and blacks. Cancer of the cervix is the next most common cancer in the two minority populations.

In Appendix I we discuss the major risk factors and preventive measures available for the most commonly diagnosed cancers for men and women (colorectal, lung, breast and prostate cancers).

Cancers with Disproportionately High Incidence among Hispanics

There are some cancer sites for which Hispanic incidence rates are higher than other racial and ethnic subgroups. Cervical, stomach, gallbladder and liver cancer have been most consistently identified in international, national and state publications as being higher among Hispanics compared with non-Hispanic whites. For these sites and a few others mentioned below, the NJSCR data are consistent with national and other states' data, as well as data presented in the literature on Hispanic cancer incidence.[15-20]

In New Jersey, Hispanic males and females have higher incidence rates for stomach, liver, gallbladder, and certain skin cancers (primarily Kaposi's sarcoma) than non-Hispanic whites. For Hispanic males, rates are higher for cancer of the nasopharynx and penis than non-Hispanic whites. Hispanic females have higher incidence rates for cancer of the nasopharynx, cervix, multiple myeloma, lymphocytic leukemias, and myeloid leukemias than non-Hispanic white females. Blacks also have higher incidence rates than Hispanics for most of the above cancers. In Appendix II, we discuss the major risk factors and preventive measures for cervical, stomach, gallbladder, and liver cancers.

Cancer Mortality Rates By Race and Ethnicity in New Jersey, 1990-1996

Information on deaths from all causes is processed by the Center for Health Statistics in the New Jersey Department of Health and Senior Services. Cancer mortality data are not reviewed by the same procedures as the cancer incidence data and the smaller numbers of deaths (compared with total cancer cases) result in relatively less stable rates.

Table 3 presents the numbers of deaths and the age-adjusted mortality rates by gender, race and ethnicity among New Jersey residents, 1990-1996. This table presents the same cancer sites shown for the cancer incidence rates in Table 1.

Total Cancer Mortality Rates

For total cancer mortality and for most sites, rates were lowest for Hispanic males and females. The overall ratio of Hispanic to non-Hispanic mortality rates was lower than the corresponding ratio of incidence rates, i.e. there are relatively fewer Hispanic deaths compared with non-Hispanic deaths than for the incidence data. One possible explanation for this pattern is that Hispanic cancer patients may migrate out of New Jersey (possibly to the country of origin) after diagnosis but prior to death.

The Five Most Common Types of Cancer Deaths

As seen in Table 4, lung cancer is the leading cause of cancer death among males in every race and ethnic group followed by prostate and colon cancers. For Hispanic and black males, stomach cancer is among the five most common causes of cancer death.

For Hispanic females (Table 4), breast cancer is the leading cause of cancer mortality, while for non-Hispanic white and black females lung cancer is the leading cause of cancer mortality. Breast, lung, colon and pancreatic cancers appear among the five leading causes of cancer death for females in all race and ethnic groups.

Cancer Types with Disproportionately High Mortality among Hispanics

There are some cancer sites for which Hispanic mortality rates differ from the general pattern of rates for blacks and non-Hispanic whites. The NJSCR data are generally consistent with other states' data and with the published literature on Hispanic cancer mortality for these sites.[18,23,24]

Specifically, for Hispanic males and females, cancer mortality rates are higher for stomach, liver, and gallbladder cancer than for non-Hispanic whites. For Hispanic males, mortality rates are higher for cancer of the buccal cavity and pharynx (particularly cancers of the tongue and floor of mouth), nasal cavity, and bones/joints. Hispanic females have higher cancer mortality rates for cancer of the cervix and Hodgkin's disease.

AGE-SPECIFIC RATES OF TOTAL CANCER AND MORTALITY

Tables 5 and 6 present age-specific incidence rates and mortality rates, respectively, by gender, race and ethnic group for New Jersey 1990-1996. Cancer incidence and mortality rates are considerably lower among Hispanics age 30 and over compared with non-Hispanic whites. However, Hispanic children and young adults (under age 30) have incidence and mortality rates relatively close to the corresponding rates for non-Hispanic whites.

TRENDS IN CANCER INCIDENCE AND MORTALITY, 1990-1996

In viewing the trends in this report, it should be noted that annual rates in relatively small populations tend to vary markedly from year to year. Annual rates in minority populations are, therefore, less stable than in larger populations, and genuine trends may not be easy to distinguish from year to year fluctuations.

Cancer Incidence Trends—Males

Figure 1 shows the statewide trends in the total cancer incidence rate for males by race and ethnicity. While no clear trend is evident in the total cancer incidence rates for Hispanic males, annual incidence rates among Hispanic males were consistently lower than for non-Hispanic whites and blacks. The rate among Hispanic males was nearly the same in 1990 as in 1996, highest in 1991, and lowest in 1993. In contrast, among non-Hispanic white males, the total cancer incidence rate was highest in 1992, but was higher in 1996 than in 1990. The total cancer incidence rate for black males was highest in 1993 and, like non-Hispanic white males, was higher in 1996 than in 1990.

Cancer Incidence Trends—Females

Figure 2 shows the statewide trends in total cancer incidence rates for females by race and ethnicity. For Hispanic women, the total cancer incidence rate was almost the same in 1990 as in 1996, but was consistently lower compared with non-Hispanic white and black women. Among non-Hispanic white females, the total cancer incidence rate increased by about four percent during the period 1990-1996. Total cancer incidence rates among black women changed little between 1990 and 1996.

Cancer Mortality Trends—Males

Figure 3 shows the statewide trends in total cancer mortality rates for males by race and ethnicity. As with the incidence rates for males, Hispanics had the lowest mortality rates and blacks had the highest mortality rates. Total mortality rates among all three groups were slightly lower in 1996 compared with 1990. For Hispanic males only, the year with the lowest overall cancer mortality rate was 1995.

Cancer Mortality Trends—Females

Figure 4 shows the statewide trends in total cancer mortality rates for females by race and ethnicity. The total cancer mortality rate among Hispanic females was consistently lower than the corresponding non-Hispanic white and black rate, and it varied little between 1990 and 1996. Total cancer mortality was slightly lower in 1996 than in 1990, but the highest rate occurred in 1991 and the lowest rate in 1993. The total cancer mortality rates were slightly higher among black than non-Hispanic white females.

COMPARISON WITH NATIONAL RATES

Table 7 shows the comparable rates for some of the most common sites of cancer for Hispanic men and women as well as for all cancer sites combined. (Previous reports from this Department have included a similar comparison for all whites and blacks and is not repeated here.) Historically, New Jersey rates have been representative of the Northeast region, which tend to have higher cancer incidence rates than the United States.

The incidence rates among Hispanics were higher in New Jersey than for the United States during 1990-1996. Incidence of breast, colorectal, lung, and prostate cancers among NJ Hispanics were higher than for Hispanics in the nation as a whole. The same pattern can be seen for mortality rates among Hispanics in New Jersey compared with the United States.

STAGE AT DIAGNOSIS FOR SELECTED SITES BY GENDER, RACE AND ETHNICITY

Figures 5-9 show the percent distribution of cases by stage at diagnosis for Hispanics, non-Hispanic whites and blacks for cancers of the colon, breast, cervix, and prostate. Stage is a measure of the extent of disease or the spread of cancer from the site of origin. Early stage at diagnosis is an important predictor of successful treatment and for survival. The cancer sites included in this section are among the most common ones for which screening is available and recommended. Please see the glossary for a description of the various stages and Appendix III for screening guidelines.

Colon Cancer—Males

Figure 5 presents the percent distribution of colon cancer in males by stage at diagnosis and by race and ethnicity in New Jersey residents during 1990-1996. Hispanics had a slightly lower proportion of cases diagnosed at the earliest stages, i.e., the *in situ* and local stages combined, compared with non-Hispanics.

Colon Cancer—Females

Figure 6 presents the percent distribution of female colon cancer by stage at diagnosis and by race and ethnicity in New Jersey residents during 1990-1996. A lower proportion of cases among Hispanic and black women were diagnosed in the earliest two stages (*in situ* and local) combined, than among non-Hispanic whites. A higher proportion of Hispanic women were diagnosed with unknown stage.

Breast Cancer

Figure 7 presents the percent distribution of female breast cancer by stage at diagnosis and by race and ethnicity in New Jersey women during 1990-1996. A lower proportion of Hispanic and black women were diagnosed in the earlier stages (*in situ* and local stage) of breast cancer than were non-Hispanic white women.

Cervical Cancer

Figure 8 presents the percent distribution of cervical cancer by stage at diagnosis and by race and ethnicity in New Jersey women. Since *in situ* cases were not collected after 1994, this figure only presents data for the years 1990 through 1994. Hispanics had a slightly higher proportion of cases diagnosed at the regional stage, but were otherwise similar to non-Hispanic whites.

Prostate Cancer

Figure 9 presents the percent distribution of prostate cancer by stage at diagnosis and by race and ethnicity in New Jersey men during 1990-1996. Hispanics have the highest proportion of cases diagnosed with localized disease.

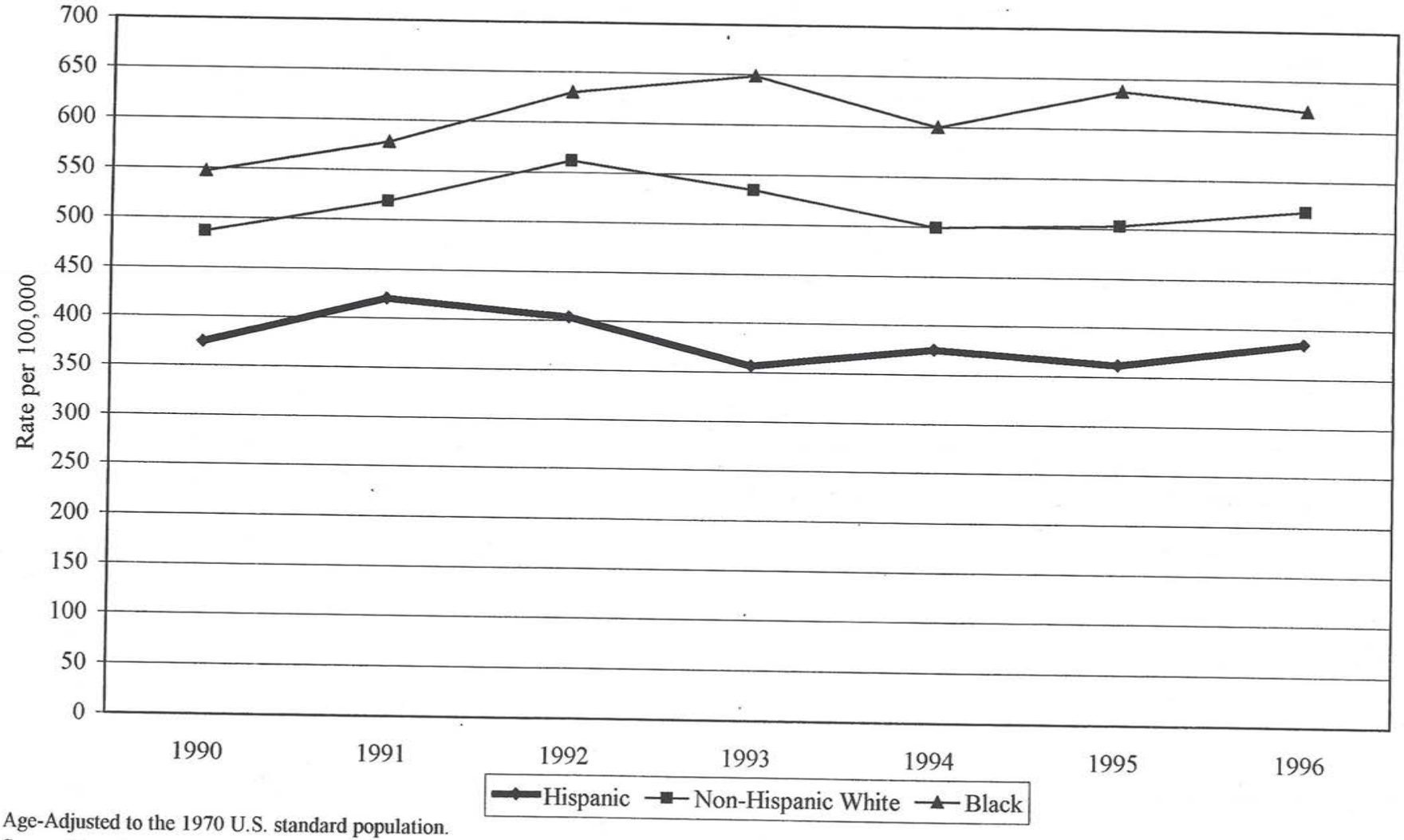
SUMMARY

In sum, Hispanic cancer incidence rates are lower for most types of cancer than for blacks and non-Hispanic whites in New Jersey. This is also true of cancer mortality rates. The most frequently diagnosed cancers and the most common causes of cancer death are similar for Hispanics, blacks and non-Hispanic whites.

Incidence and mortality are disproportionately high among Hispanics for stomach, liver, gallbladder, other non-epithelial skin cancers (primarily Kaposi's sarcoma), and cervical cancers.

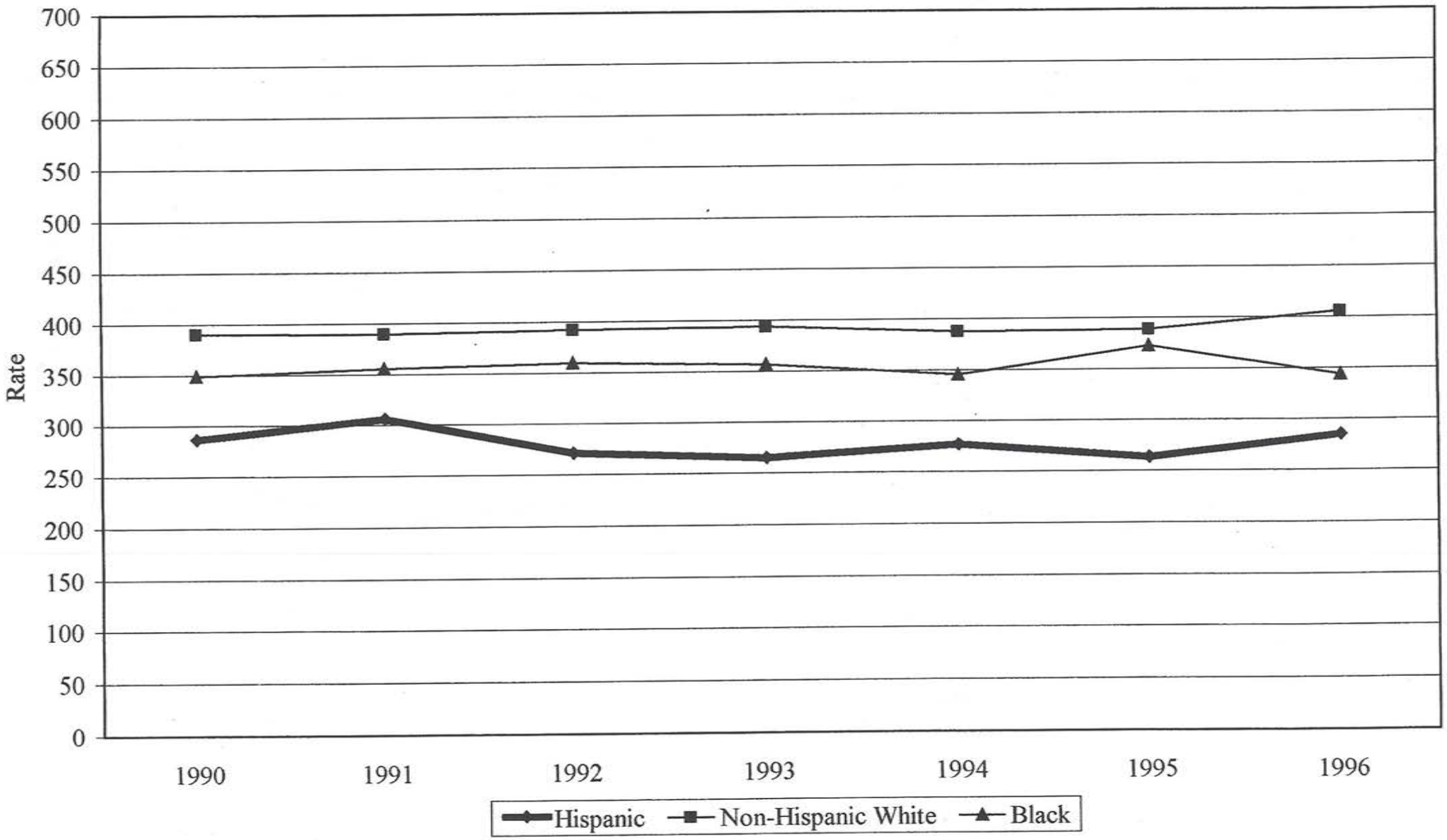
Hispanics tended to be diagnosed at later stages of colon, breast and cervical cancer than non-Hispanic whites during 1990-1996 (1990-1994 for cervical cancer). Regular screening according to the recommended guidelines in Appendix III can detect these cancers at earlier stages, thereby increasing survival.

Figure 1. Age-Adjusted Total Cancer Incidence Rates among Males by Race and Ethnicity, New Jersey, 1990-1996



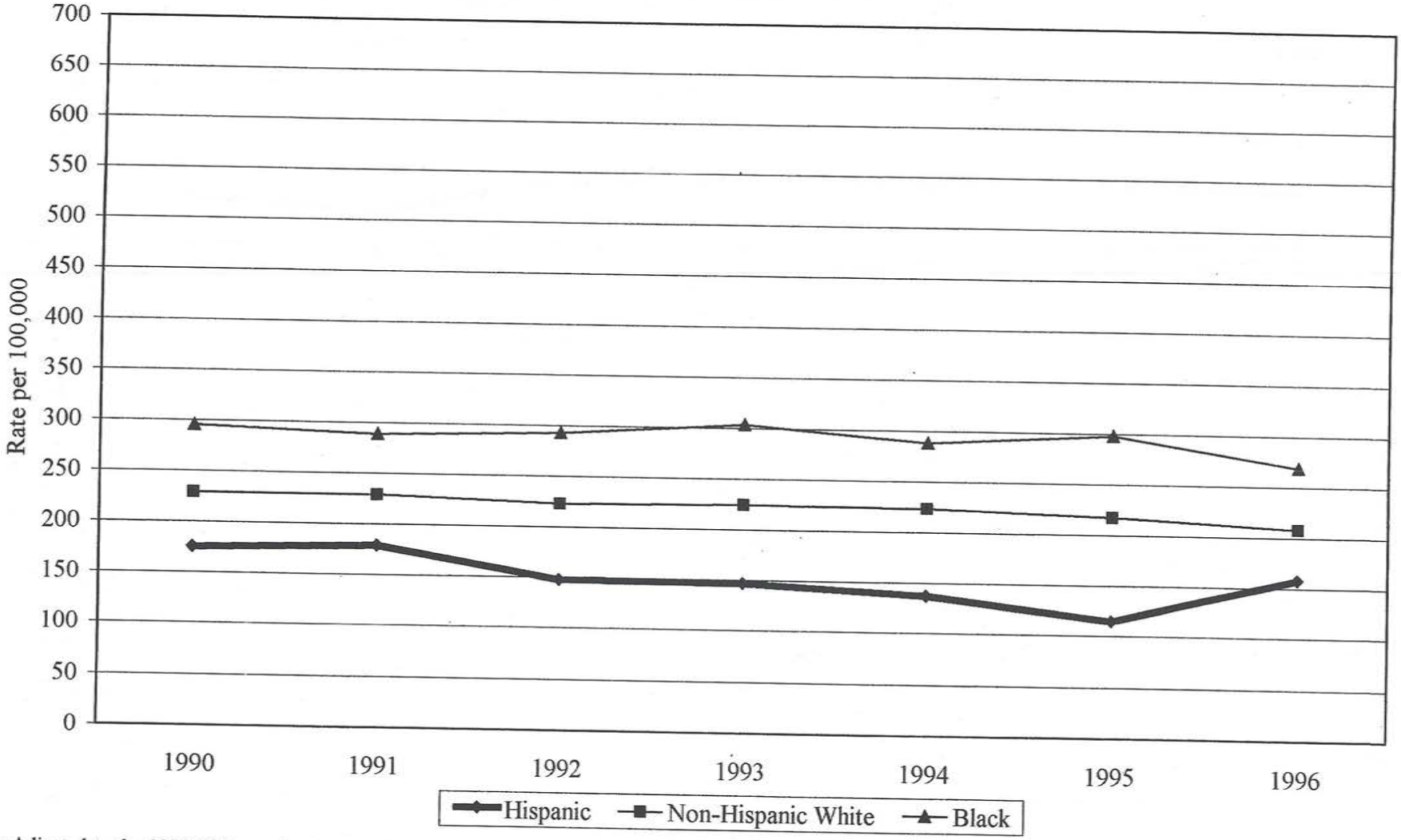
Age-Adjusted to the 1970 U.S. standard population.
Source: New Jersey State Cancer Registry.

Figure 2. Age-Adjusted Total Cancer Incidence Rates among Females by Race and Ethnicity, New Jersey, 1990-1996



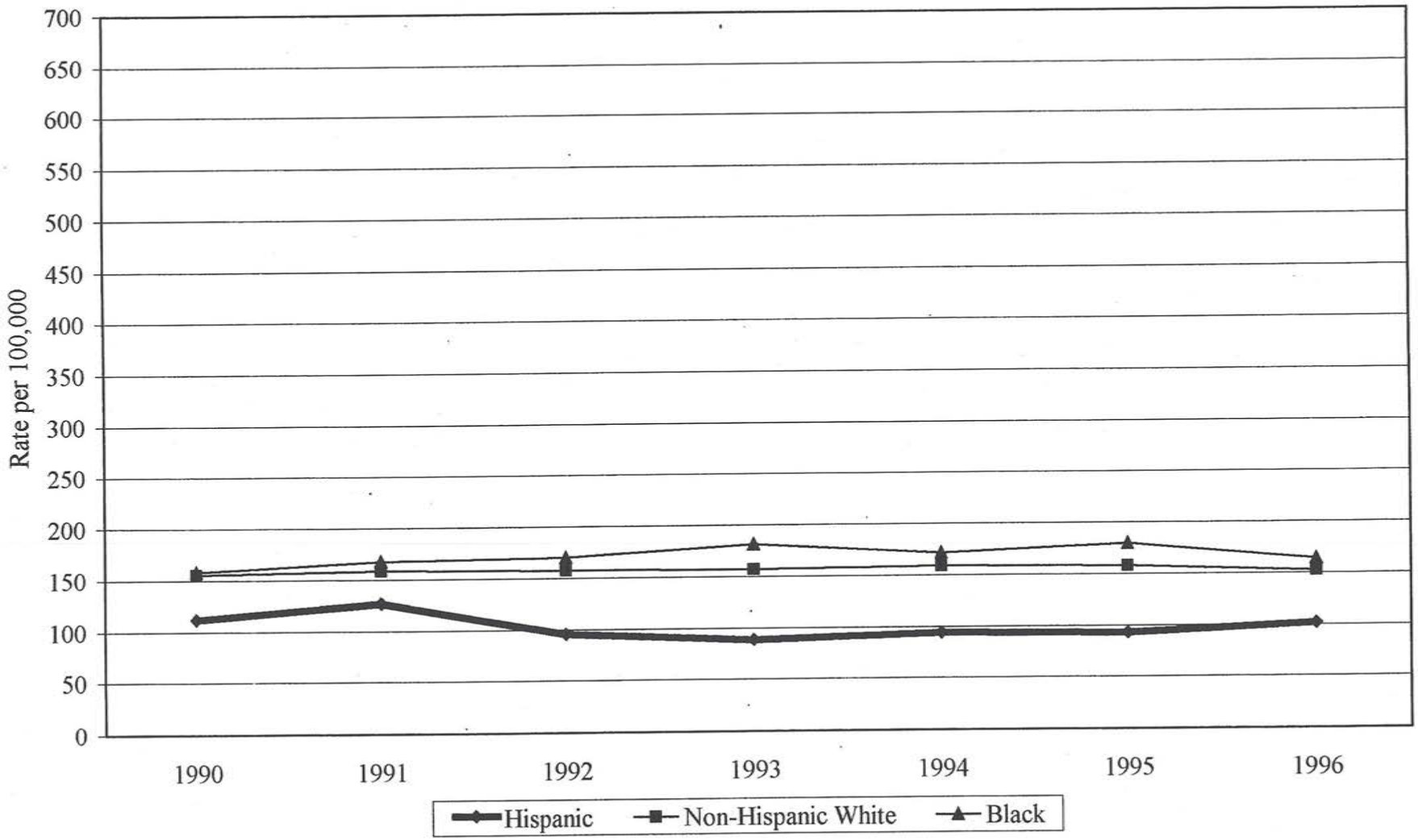
Age-Adjusted to the 1970 U.S. Standard population.
Source: New Jersey State Cancer Registry.

Figure 3. Age-Adjusted Total Cancer Mortality Rates among Males by Race and Ethnicity, New Jersey, 1990-1996



Age-Adjusted to the 1970 U.S. standard population.
Source: New Jersey State Cancer Registry.

Figure 4. Age-Adjusted Total Cancer Mortality Rates among Females by Race and Ethnicity, New Jersey, 1990-1996



Age-Adjusted to the 1970 U.S. standard population.
Source: New Jersey State Cancer Registry.

Figure 5. Percent of Colon (excluding Rectum) Cancer Diagosed by Stage, by Race and Ethnicity, Males, New Jersey, 1990-1996

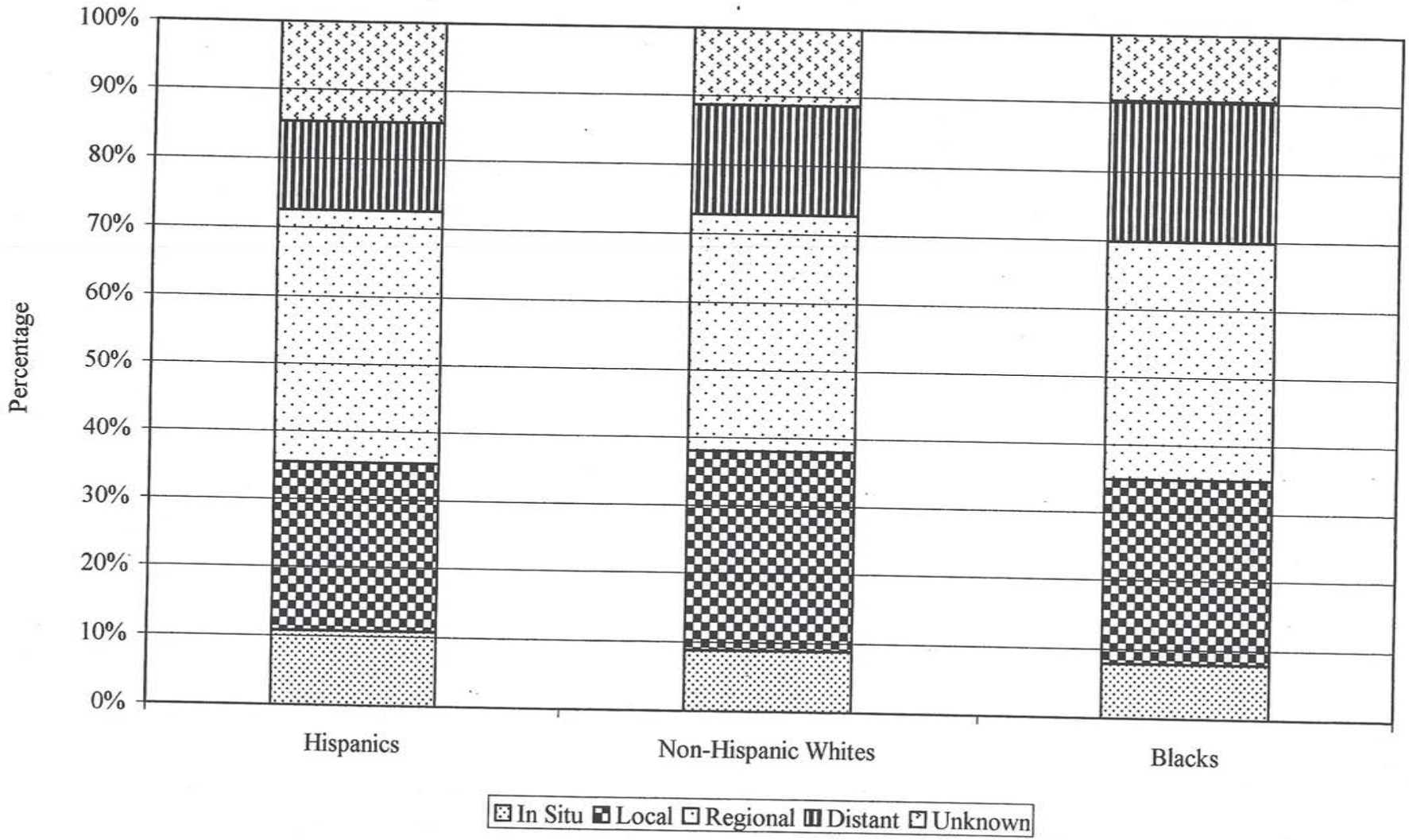


Figure 6. Percent of Colon (excluding Rectum) Cancer Diagnosed by Stage, by Race and Ethnicity, Females, New Jersey, 1990-1996

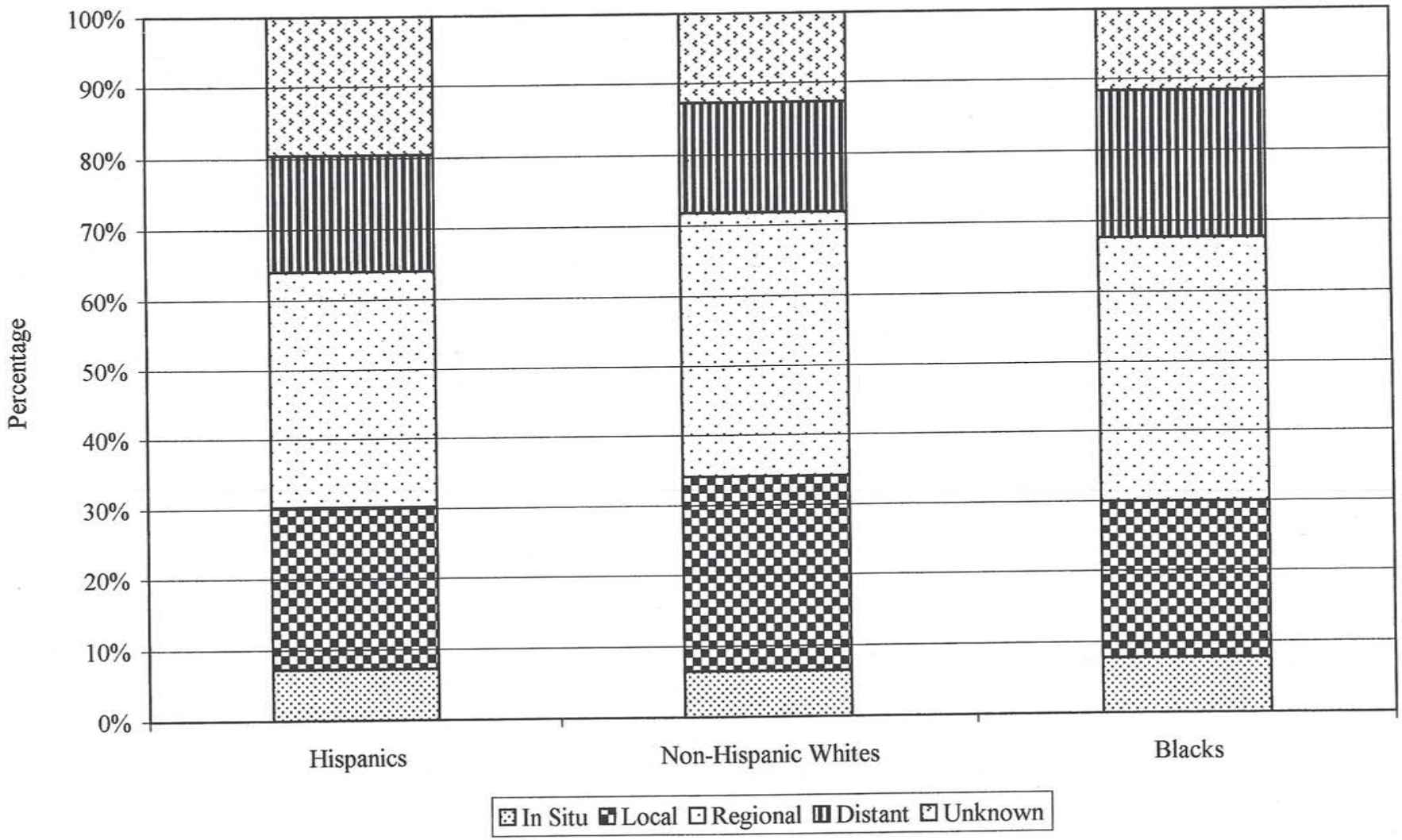


Figure 7. Percent of Breast Cancer Diagnosed by Stage, by Race and Ethnicity, Females, New Jersey, 1990-1996

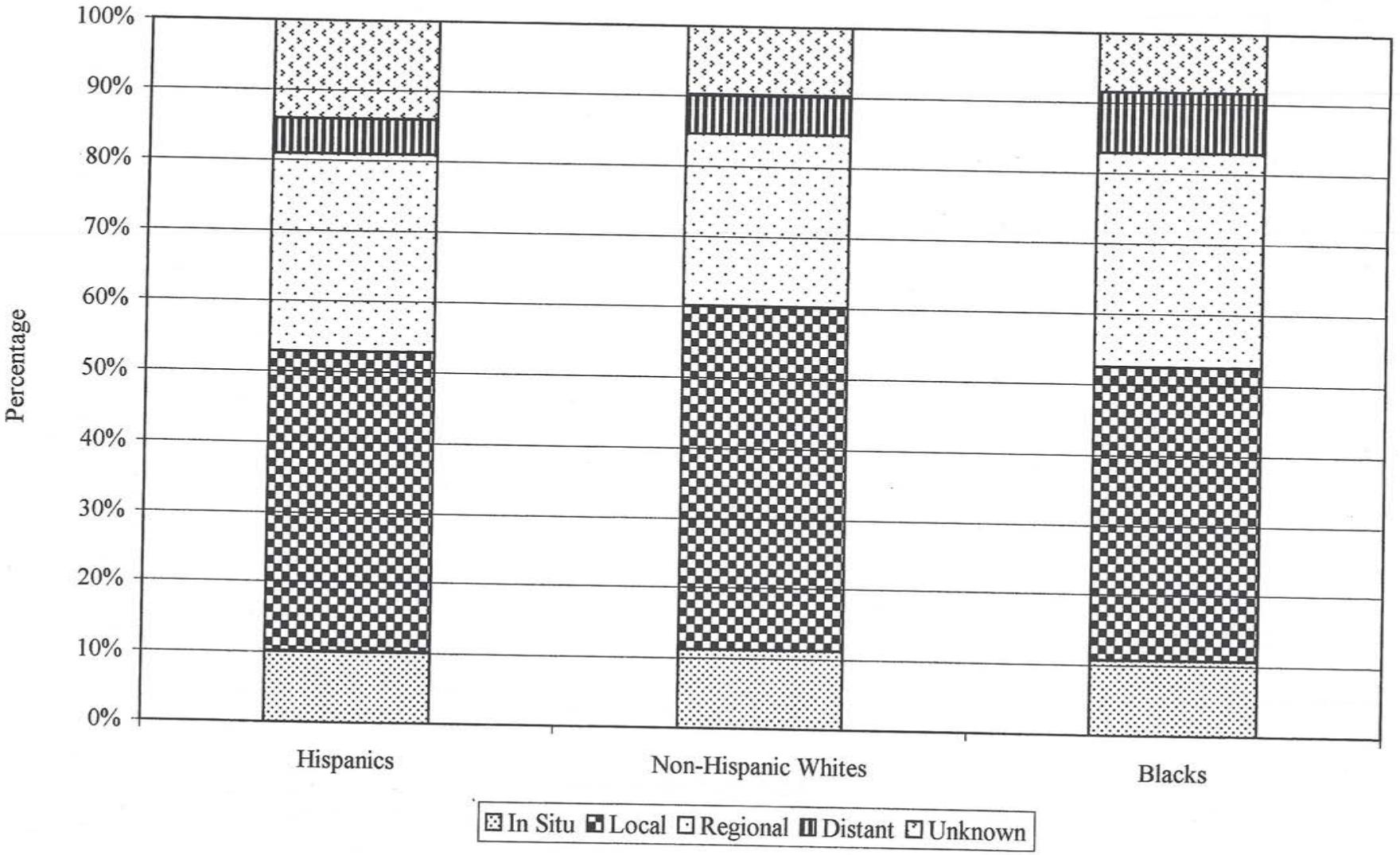


Figure 8. Percent of Cervical Cancer Diagnosed by Stage, by Race and Ethnicity, New Jersey, 1990-1994

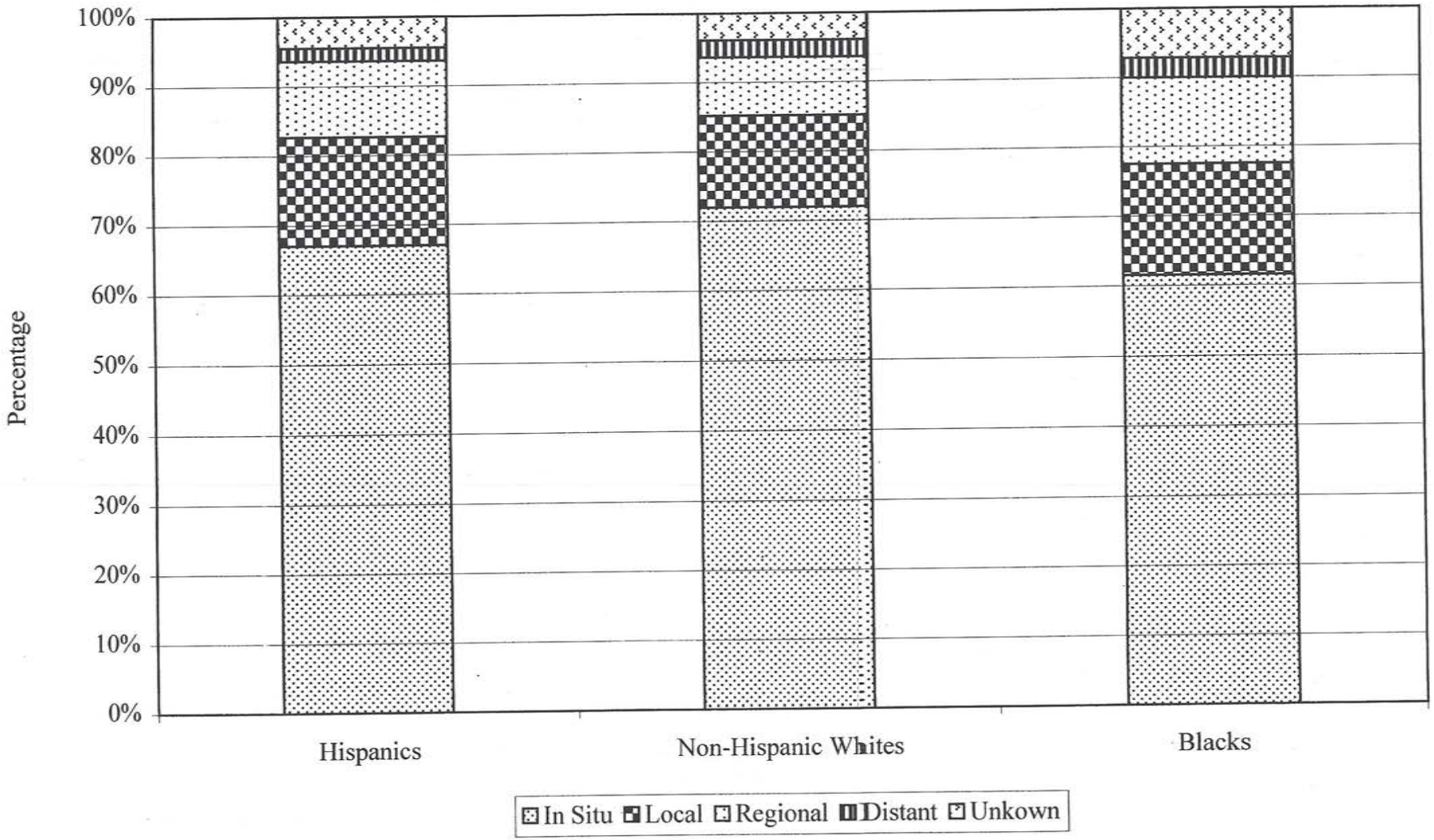


Figure 9. Percent of Prostate Cancer Diagnosed by Stage, by Race and Ethnicity, Males, New Jersey, 1990-1996

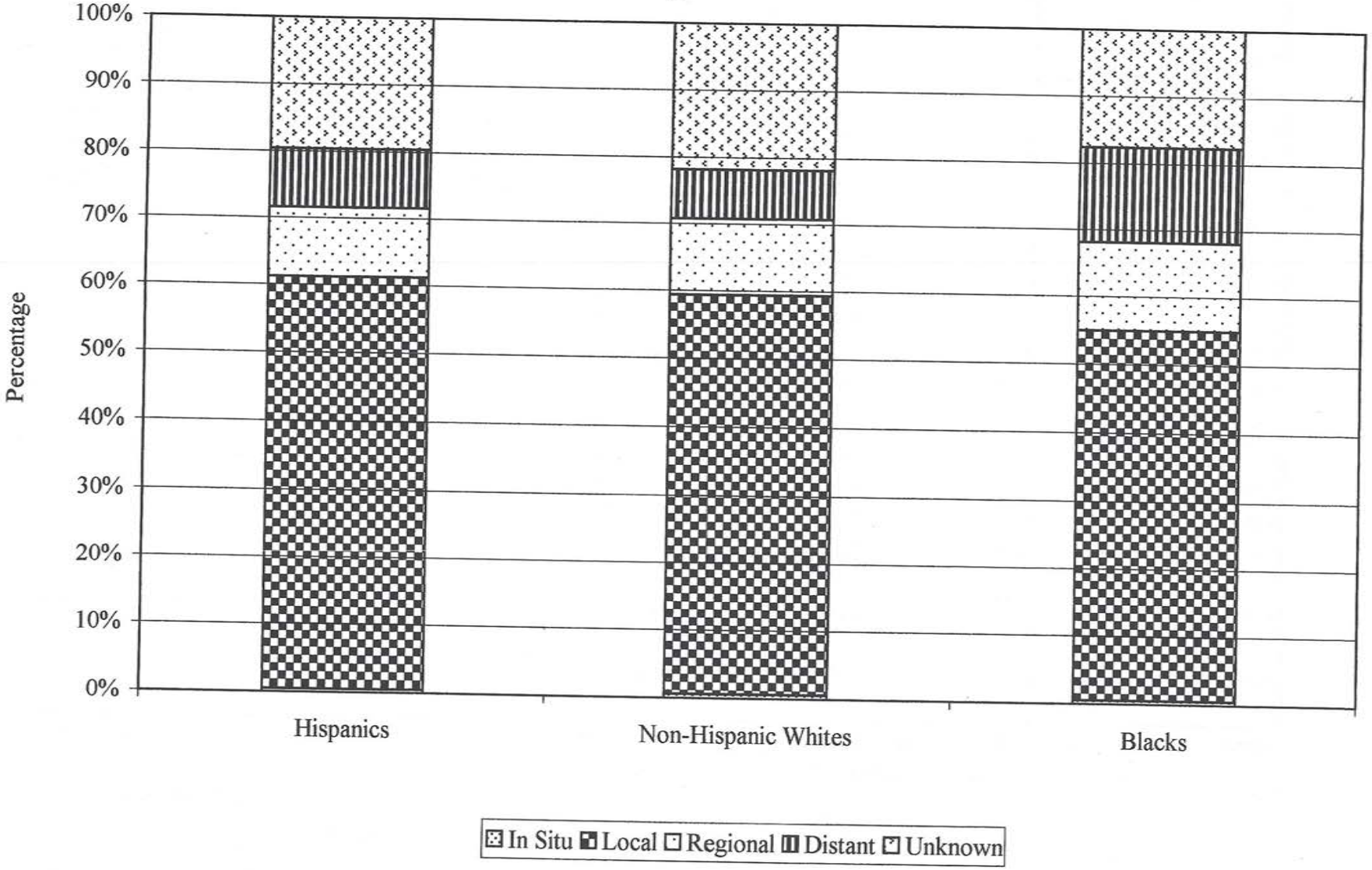


Table 1. Cancer Incidence by Race and Ethnicity, New Jersey, 1990-1996									
Age Adjusted Rates per 100,000 (US 1970 population)									
	Hispanics			Non-Hispanic Whites			Blacks		
Cancer Sites	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
All Sites	13,338	380.7	278.1	246,275	516.7	392.0	29,698	609.4	354.4
Buccal Cavity and Pharynx	319	11.1	4.5	4,944	13.5	5.9	909	22.2	6.8
Lip	10	0.5	-	274	0.8	0.2	7	-	-
Tongue	82	3.3	1.2	1,174	3.2	1.4	185	4.5	1.5
Salivary Glands	37	0.7	0.8	577	1.4	0.8	75	1.5	0.8
Floor of Mouth	24	0.9	0.4	500	1.5	0.6	109	2.8	0.7
Gum & Other Mouth	48	1.5	0.7	876	2.0	1.2	147	3.3	1.3
Nasopharynx	36	1.1	0.5	255	0.7	0.3	47	1.1	0.3
Tonsil	27	1.0	0.2	445	1.3	0.5	133	3.4	0.9
Oropharynx	9	0.3	-	175	0.5	0.2	50	1.2	0.4
Hypopharynx	28	1.1	0.3	458	1.5	0.4	111	3.1	0.7
Other Buccal Cavity and Pharynx	18	0.7	-	210	0.6	0.2	45	1.3	0.2
Digestive System	2,734	86.9	58.0	51,509	109.9	68.9	6,311	125.6	80.8
Esophagus	134	6.6	1.1	2,307	7.1	1.8	655	18.2	4.6
Stomach	440	15.8	7.6	4,710	11.6	5.0	809	17.9	9.2
Small Intestine	23	0.9	0.4	678	1.5	0.9	105	2.0	1.4
Colon excluding Rectum	1,090	30.4	26.9	24,227	48.1	33.8	2,595	46.8	37.3
Rectum and Rectosigmoid	425	14.6	7.9	9,390	21.3	12.4	827	16.3	10.6
Anus, Anal Canal, and Anorectum	36	0.6	0.9	460	0.8	0.9	90	1.4	1.2
Liver	171	6.1	2.7	1,823	4.9	1.9	269	6.6	2.3

Table 1. Cancer Incidence by Race and Ethnicity, New Jersey, 1990-1996									
Age Adjusted Rates per 100,000 (US 1970 population)									
	Hispanics			Non-Hispanic Whites			Blacks		
Cancer Sites	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
Gallbladder	66	1.2	2.3	754	0.8	1.5	88	0.9	1.7
Other Biliary	33	1.1	0.6	737	1.5	1.0	60	0.9	1.0
Pancreas	289	9.1	7.0	5,923	11.3	8.9	759	13.8	10.9
Retroperitoneum	14	0.3	0.3	237	0.5	0.5	26	0.2	0.5
Peritoneum, Omentum, and Mesentery	5	-	-	135	0.2	0.2	9	0.1	0.1
Other Digestive Organs	8	0.3	-	128	0.3	0.2	19	0.6	-
Respiratory System	1,512	63.4	21.8	38,997	95.5	51.1	5,118	128.3	48.3
Nasal Cavity, Middle Ear, & Accessory Sinuses	37	1.4	0.5	354	0.8	0.5	53	1.1	0.5
Larynx	146	6.9	1.0	2,467	8.2	1.8	472	14.0	2.6
Lung and Bronchus	1,298	53.5	20.1	35,333	83.7	48.3	4,528	111.5	44.6
Pleura	19	1.1	-	721	2.4	0.4	42	1.2	0.3
Trachea, Mediastinum & Other Respiratory Organs	12	0.4	-	122	0.3	0.2	23	0.4	0.2
Bones & Joints	53	1.2	0.9	494	1.4	1.0	64	1.2	0.5
Soft Tissue (Including Heart)	110	2.3	1.8	1,424	3.7	2.3	231	3.7	2.5
Skin (Excluding Basal & Squamous)	323	8.4	2.9	7,136	17.7	10.2	373	6.8	2.1
Melanomas	110	3.1	1.8	6,124	14.8	9.3	75	1.4	0.8
Other non-Epithelial Skin	213	5.3	1.1	1,012	2.9	0.9	298	5.3	1.3

Table 1. Cancer Incidence by Race and Ethnicity, New Jersey, 1990-1996

Age Adjusted Rates per 100,000 (US 1970 population)

	Hispanics			Non-Hispanic Whites			Blacks		
Cancer Sites	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
Breast	2,044	1.0	82.7	36,994	1.4	125.4	4,011	1.2	100.9
Female Genital System	1,216	-	46.7	16,099	-	56.1	2,072	-	51.4
Cervix Uteri	486	-	16.7	2,434	-	9.0	821	-	19.1
Corpus Uteri	338	-	14.6	7,013	-	24.5	553	-	14.7
Uterus, NOS	41	-	1.8	384	-	1.3	71	-	1.8
Ovary	295	-	11.3	5,300	-	18.4	487	-	12.3
Vagina	12	-	0.5	163	-	0.5	40	-	1.0
Vulva	31	-	1.4	620	-	1.8	65	-	1.6
Other Female Genital System	13	-	0.5	185	-	0.7	35	-	0.8
Male Genital System	1,808	118.5	-	38,368	155.0	-	5,389	221.6	-
Prostate	1,701	115.0	-	36,835	148.4	-	5,298	219.1	-
Testis	79	2.3	-	1,313	5.7	-	48	1.1	-
Penis	23	1.0	-	154	0.6	-	39	1.3	-
Other Male Genital Organs	5	0.2	-	66	0.3	-	4	0.1	-
Urinary System	719	29.2	10.7	16,892	47.9	16.1	1,221	30.2	11.7
Bladder	385	18.7	4.4	10,545	31.6	8.2	558	15.5	4.8
Kidney & Renal Pelvis	311	9.5	5.9	5,801	14.9	7.3	626	14.0	6.4
Ureter	12	0.6	-	406	1.0	0.4	13	0.3	0.2
Other Urinary Organs	11	0.4	0.2	140	0.4	0.1	24	0.4	0.4

Table 1. Cancer Incidence by Race and Ethnicity, New Jersey, 1990-1996									
Age Adjusted Rates per 100,000 (US 1970 population)									
	Hispanics			Non-Hispanic Whites			Blacks		
Cancer Sites	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
Eye & Orbit	22	0.2	0.6	536	1.2	0.9	31	0.6	0.2
Brain and Other Nervous System	286	6.6	4.8	3,439	8.2	6.1	318	5.0	3.8
Brain	257	6.1	4.3	3,204	7.8	5.6	272	4.5	3.1
Other Nervous System	29	0.5	0.5	235	0.4	0.5	46	0.5	0.7
Endocrine System	277	2.9	7.0	2,640	3.7	7.3	289	2.4	5.1
Thyroid	243	2.0	6.5	2,306	2.8	6.6	245	1.7	4.5
Other Endocrine (Including Thymus)	34	0.8	0.5	334	0.9	0.7	44	0.6	0.6
Lymphomas	891	22.4	14.5	10,794	24.3	17.2	1,183	20.0	12.4
Hodgkin's Disease	167	3.8	2.2	1,650	4.2	3.5	206	3.4	1.9
Non-Hodgkin's Lymphoma	724	18.6	12.3	9,144	20.1	13.7	977	16.7	10.5
Multiple Myeloma	176	4.8	4.3	2,380	5.0	3.4	576	10.5	8.1
Leukemias	461	11.4	8.6	5,922	14.2	8.7	567	10.8	6.7
Lymphocytic Leukemias	192	4.6	3.9	2,576	6.7	3.8	237	4.7	2.8
Granulocytic (Myeloid) Leukemias	220	5.3	3.9	2,373	5.3	3.6	241	4.2	3.0
Monocytic Leukemias	7	0.3	-	130	0.3	0.2	14	0.3	0.1
Other Leukemias	42	1.1	0.8	843	1.9	1.1	75	1.6	0.8
Ill-Defined and Unspecified Sites	375	10.6	8.3	7,475	13.9	11.2	1,024	19.3	13.0

Table 2

A. The Five Most Frequently Diagnosed Cancers by Race/Ethnicity Among New Jersey Males 1990-1996*

Hispanic	Non-Hispanic White	Black
Prostate	Prostate	Prostate
Lung	Lung	Lung
Colon	Colon	Colon
Bladder	Bladder	Esophagus
Non-Hodgkin's Lymphoma	Rectum	Stomach

B. Five Most Frequently Diagnosed Cancers by Race/Ethnicity Among New Jersey Females 1990-1996*

Hispanic	Non-Hispanic White	Black
Breast	Breast	Breast
Colon	Lung	Lung
Lung	Colon	Colon
Cervix	Uterus	Cervix
Uterus	Ovary	Uterus

*The ranking is based on incidence rates.

Table 3. Cancer Mortality by Race and Ethnicity, New Jersey, 1990-1996									
Age Adjusted Rates per 100,000 (US 1970 population)									
	Hispanics*			Non-Hispanic Whites			Blacks		
Cancer Sites	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
All Sites	4,667	149.6	100.8	108,167	222.1	156.8	13,806	290.9	170.7
Buccal Cavity and Pharynx	98	4.2	1.1	1,504	3.9	1.7	323	8.3	2.2
Lip	-	-	-	16	0.0	0.0	-	-	-
Tongue	31	1.6	0.2	417	1.1	0.5	83	2.1	0.7
Salivary Glands	8	0.3	-	148	0.4	0.2	17	0.3	0.2
Floor of Mouth	6	0.4	-	64	0.2	0.1	21	0.5	0.1
Gum & Other Mouth	15	0.5	0.3	258	0.6	0.3	46	1.2	0.2
Nasopharynx	11	0.3	0.2	132	0.3	0.2	25	0.6	0.2
Tonsil	-	-	-	46	0.1	0.0	19	0.5	-
Oropharynx	6	0.2	-	77	0.2	0.1	23	0.5	0.2
Hypopharynx	-	-	-	73	0.3	0.0	21	0.6	-
Other Buccal Cavity & Pharynx	14	0.6	-	273	0.8	0.3	67	1.9	0.3
Digestive System	1,262	41.5	27.6	27,419	58.1	34.4	3,522	73.8	43.5
Esophagus	90	4.3	1.0	1,940	6.1	1.3	536	14.8	4.0
Stomach	261	9.0	4.9	3,094	7.3	3.3	534	12.7	5.6
Small Intestine	6	-	-	218	0.5	0.3	29	0.6	0.3
Colon Excluding Rectum	408	12.5	9.8	11,704	23.2	15.3	1,231	23.0	17.3
Rectum & Rectosigmoid	50	1.6	1.0	1,820	4.0	2.2	176	3.9	2.1
Anus, Anal Canal, and Anorectum	-	-	-	78	0.1	0.1	15	0.3	0.2
Liver	138	4.9	2.6	1,807	4.5	1.9	219	5.1	2.2

Table 3. Cancer Mortality by Race and Ethnicity, New Jersey, 1990-1996									
Age Adjusted Rates per 100,000 (US 1970 population)									
	Hispanics			Non-Hispanic Whites			Blacks		
Cancer Sites	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
Gallbladder	39	0.8	1.2	481	0.5	0.9	48	0.5	1.0
Other Biliary	19	0.4	0.5	443	0.8	0.6	36	0.6	0.6
Pancreas	231	7.8	5.5	5,589	10.6	8.1	664	12.0	9.7
Retroperitoneum	-	-	-	53	0.1	0.1	8	-	0.1
Peritoneum, Omentum, and Mesentery	7	-	0.3	113	0.2	0.2	10	-	0.2
Other Digestive Organs	5	-	-	79	0.1	0.1	16	0.2	0.3
Respiratory System	990	42.8	15.2	29,620	72.0	37.3	3,886	99.6	36.7
Nasal Cavity, Middle Ear, and Accessory Sinuses	7	0.4	-	91	0.2	0.1	18	0.4	0.1
Larynx	28	1.4	-	730	2.3	0.5	171	5.1	0.9
Lung & Bronchus	947	40.7	14.8	28,514	68.6	36.4	3,672	93.4	35.4
Pleura	5	-	-	223	0.7	0.1	11	0.3	-
Trachea, Mediastinum & Other Respiratory Organs	-	-	-	62	0.2	0.1	14	0.3	0.1
Bones & Joints	13	0.5	-	112	0.3	0.2	13	0.3	-
Soft Tissue (Including Heart)	32	0.9	0.5	661	1.3	1.2	103	1.5	1.4
Skin (Excluding Basal and Squamous)	61	1.9	0.9	2,128	5.5	2.4	114	2.9	0.9
Melanomas	30	1.0	0.4	1,563	4.0	1.9	26	0.5	0.3
Other non-Epithelial Skin	31	0.9	0.5	565	1.5	0.5	88	2.4	0.6

Table 3. Cancer Mortality by Race and Ethnicity, New Jersey, 1990-1996

Age Adjusted Rates per 100,000 (US 1970 population)

Cancer Sites	Hispanics			Non-Hispanic Whites			Blacks		
	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
Breast	430	-	18.1	9,780	0.3	30.3	1,265	0.3	32.6
Female Genital System	317	-	13.5	5,377	-	16.5	821	-	21.3
Cervix Uteri	107	-	4.1	656	-	2.3	259	-	6.3
Corpus Uteri	30	-	1.4	613	-	1.8	93	-	2.5
Uterus, NOS	45	-	2.1	774	-	2.2	135	-	3.6
Ovary	117	-	5.1	3,072	-	9.5	300	-	8.0
Vagina	5	-	0.2	59	-	0.2	15	-	0.4
Vulva	8	-	0.4	156	-	0.4	12	-	0.3
Other Female Genital System	5	-	0.2	47	-	0.2	7	-	0.2
Male Genital System	271	20.3	-	6,588	25.8	-	1,184	53.3	-
Prostate	262	20.0	-	6,485	25.4	-	1,172	53.0	-
Testis	5	0.1	-	63	0.3	-	9	0.2	-
Penis	-	-	-	31	0.1	-	-	-	-
Other Male Genital Organs	-	-	-	9	0.0	-	-	-	-
Urinary System	175	7.5	3.0	4,876	12.9	4.6	391	8.7	4.6
Bladder	94	4.4	1.6	2,736	7.4	2.2	184	3.9	2.4
Kidney & Renal Pelvis	79	3.0	1.4	2,033	5.2	2.3	194	4.5	2.0
Ureter	-	-	-	59	0.2	0.0	-	-	-
Other Urinary Organs	-	-	-	48	0.1	0.1	11	0.2	0.1

Table 3. Cancer Mortality by Race and Ethnicity, New Jersey, 1990-1996

Age Adjusted Rates per 100,000 (US 1970 population)

	Hispanics			Non-Hispanic Whites			Blacks		
Cancer Sites	Counts	Male	Female	Counts	Male	Female	Counts	Male	Female
Eye & Orbit	-	-	-	41	0.1	0.1	-	-	-
Brain and Other Nervous System	139	3.6	2.9	2,456	5.7	3.9	164	2.8	2.0
Brain	139	3.6	2.9	2,406	5.5	3.8	159	2.8	1.9
Other Nervous System				50	0.1	0.1	5	-	-
Endocrine System	16	-	0.5	398	0.7	0.7	53	0.7	0.9
Thyroid	8	-	0.3	253	0.4	0.4	23	0.3	0.4
Other Endocrine (Including Thymus)	8	-	0.2	145	0.3	0.3	30	0.4	0.4
Lymphomas	256	7.4	5.4	4,424	9.2	6.1	367	6.4	4.6
Hodgkin's Disease	24	0.5	0.5	310	0.8	0.4	41	0.7	0.4
Non-Hodgkin's Lymphoma	232	6.8	4.9	4,114	8.5	5.7	326	5.7	4.2
Multiple Myeloma	91	3.1	2.0	1,685	3.4	2.3	333	6.1	4.9
Leukemias	221	6.0	4.3	3,772	8.2	5.1	351	6.9	4.1
Lymphocytic Leukemias	51	1.6	0.9	1,070	2.4	1.4	102	2.2	1.2
Granulocytic (Myeloid) Leukemias	104	2.7	1.9	1,396	3.0	2.0	132	2.6	1.4
Monocytic Leukemias	-	-	-	53	0.1	0.1	-	-	-
Other Leukemias	62	1.6	1.4	1,253	2.7	1.6	113	2.0	1.5
Ill-Defined and Unspecified Sites	290	9.4	5.7	7,293	14.6	10.1	913	19.0	10.9

Table 4

A. The Five Most Common Causes of Cancer Death by Race/Ethnicity Among New Jersey Males 1990-1996*

Hispanic	Non-Hispanic White	Black
Lung	Lung	Lung
Prostate	Prostate	Prostate
Colon	Colon	Colon
Stomach	Pancreas	Esophagus
Non-Hodgkins Lymphoma	Non-Hodgkins Lymphoma	Stomach

B. The Five Most Common Causes of Cancer Death by Race/Ethnicity Among New Jersey Females 1990-1996*

Hispanic	Non-Hispanic White	Black
Breast	Lung	Lung
Colon	Breast	Breast
Lung	Colon	Colon
Stomach	Ovary	Pancreas
Pancreas	Pancreas	Ovary

*The ranking is based on mortality rates.

Table 5. Age Specific Cancer Incidence Rates Among Hispanics, Non-Hispanic Whites, and Blacks, New Jersey, 1990-1996

	Hispanics		Non-Hispanic Whites		Blacks	
Age group	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
0-14	17.7	15.0	18.3	15.0	14.1	13.5
15-29	37.8	41.4	41.5	46.0	30.0	32.5
30-49	111.4	193.9	141.6	249.9	173.9	240.2
50-69	855.0	664.3	1,351.0	1,079.6	1,620.0	921.4
70+	2,673.8	1,449.4	3,690.6	2,079.3	3,952.8	1,817.5

Note: Rate per 100,000

Table 6. Age Specific Cancer Mortality Rates Among Hispanics, Non-Hispanic Whites, and Blacks, New Jersey, 1990-1996

	Hispanics		Non-Hispanic Whites		Blacks	
Age group	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
0-14	2.7	2.8	3.0	3.0	3.1	2.7
15-29	7.4	5.0	7.4	6.1	6.5	6.0
30-49	28.2	40.3	43.4	52.5	64.7	71.8
50-69	294.6	225.4	516.4	412.5	716.5	442.3
70+	1,259.3	735.1	1,855.0	1,176.5	2,124.3	1,105.6

Note: Rate per 100,000

Table 7. Comparison of Hispanic Cancer Incidence and Mortality Rates, U.S. and New Jersey, 1990-1996

Incidence Rates		
	US[1] 1990-1996	NJ 1990-1996
All Sites		
Male	326.9	381.0
Female	243.2	278.4
Total	275.4	318.3
Breast (female)	69.4	82.7
Colorectal		
Male	35.7	45.0
Female	24.0	34.8
Total	29.0	39.1
Lung & Bronchus		
Male	38.8	53.5
Female	19.6	20.1
Total	27.6	34.3
Prostate	102.8	115.0

Mortality Rates		
	US[2] 1990-1996	NJ 1990-1996
All Sites		
Male	131.8	149.6
Female	86.3	100.8
Total	104.9	120.1
Breast (female)	15.3	18.1
Colorectal		
Male	13.2	14.1
Female	8.4	10.8
Total	10.4	12.2
Lung & Bronchus		
Male	32.0	40.7
Female	11.0	14.8
Total	19.9	25.6
Prostate	16.7	20.0

[1] 1990-1996 SEER Incidence data published in American Cancer Society, *Facts and Figures—2000*

[2] 1990-1996 US Mortality data published in American Cancer Society, *Facts and Figures—2000*

TECHNICAL NOTES

The New Jersey State Cancer Registry

The objectives of the New Jersey State Cancer Registry (NJSCR) are to:

* monitor cancer trends in New Jersey;
* promote scientific research;
* respond to New Jersey residents about cancer concerns;
* educate the public and health professionals;
* provide information for planning and evaluating cancer prevention and control activities; and
* share and compare cancer data with other states and the nation.

The New Jersey State Cancer Registry is a population-based incidence registry that serves the entire State of New Jersey, with a population of approximately eight million people. The NJSCR was established by legislation (NJSA 26:2-104 et. seq.) and includes all cases of cancer diagnosed in New Jersey residents since October 1, 1978. New Jersey regulations (NJAC 8:57A) require the reporting of all newly diagnosed cancer cases to the NJSCR within three months of hospital discharge or six months of diagnosis, whichever is sooner. Reports are filed by hospitals, diagnosing physicians, dentists, and independent clinical laboratories. Every hospital in New Jersey is now reporting cancer cases electronically. In addition, reporting agreements are maintained with New York, Pennsylvania, Delaware, Florida, Maryland, and other states so that New Jersey residents diagnosed with cancer outside New Jersey can be identified.

NJSCR has collected data on Hispanic origin since 1979. The definition of this variable has been revised several times, most recently in 1987. The current Hispanic origin data element has nine categories including non-Spanish/non-Hispanic (0), Mexican (1), Puerto Rican (2), Cuban (3), South or Central American (4), Other Spanish (includes European), 5), Spanish, not otherwise specified (6), Spanish surname only (7), and Unknown whether Spanish or not (9).

All primary invasive and *in situ* neoplasms, except certain carcinomas of the skin and cervical cancer *in situ* diagnosed after 1994, are reportable to the NJSCR. The information collected by the NJSCR includes basic patient identification, demographic characteristics of the patient, medical information on each cancer diagnosis (such as the anatomic site, histologic type and summary stage of disease), and vital status (alive or deceased) determined annually. For deceased cases, the underlying cause of death is also included. The primary site, behavior, grade, and histology of each cancer are coded according to the *International Classification of Disease for Oncology, 2nd edition.*[27] The NJSCR follows the data standards set by the North American Association of Central Cancer Registries (NAACCR), including the use of the Surveillance Epidemiology and End Results (SEER) multiple primary rules.[28-32]

The NJSCR is a member of NAACCR, an organization that sets standards for cancer registries, facilitates data exchange, and publishes cancer data. The NJSCR also has been a participant of the National Program of Cancer Registries sponsored by the Centers for Disease Control and

Prevention since it began in 1994. In 2000, the NJSCR attained the NAACCR Gold Medal for high quality data for the third consecutive year.

Description of Algorithm for Designating Hispanic Ethnicity

The NJSCR used data on birthplace, marital status, race and surname to augment the number of reported cases and decedents with Hispanic ethnicity in the registry during 1990-1996. These years were selected because, beginning in 1990, reliable estimates of the Hispanic population by gender and age became available. At the time work on this report began, the most recent complete year of data available from the NJSCR was 1996.

The method used to assign Hispanic ethnicity to cases was adapted from algorithms developed by the Illinois State Cancer Registry (ISCR)[1,2] and by the NJSCR. The ISCR used the 1990 Census surname list to classify surnames according to the percent of persons with that surname in the U.S. Census who identified themselves as Hispanic.

The ISCR evaluation of their algorithm concluded that 1) surnames and their relationships to Hispanic status presented in the 1990 Census surname list were very similar to those observed for Illinois cancer patients and decedents during years 1986-1996, 2) Hispanic non-U.S. birthplaces were demonstrated to be valid indirect identifiers of Hispanic status, and 3) exclusion of patients and decedents based on race, birthplace and/or surname status from indirect identification was shown to increase positive predictive values for Hispanic status.

The ISCR used the 1990 U.S. Census surname list to assign Hispanic ethnicity. The Census list includes 25,276 Spanish surnames, which were classified into 28 categories based upon the proportion of householders who identified themselves as Hispanic in the 1990 census. These categories were then collapsed into six broad categories: "heavily Hispanic", "generally Hispanic", "moderately Hispanic", "occasionally Hispanic", "rarely Hispanic", and "no match." These categories are defined as follows:

Spanish Surname Classification	Proportion of Householders who identified themselves as Hispanic
Heavily Hispanic	> 75%
Generally Hispanic	51% - 75%
Moderately Hispanic	26% - 50%
Occasionally Hispanic	6% - 25%
Rarely Hispanic	<= 5%
no match	No matching surname on the census list

Birthplace also plays a role in assigning Hispanic ethnicity. There were two groups of birthplaces pertaining to Hispanic ethnicity: (a) birthplaces associated with a high probability of Hispanic ethnicity, and (b) birthplaces associated with a high prevalence of Spanish surnames but low probability of Hispanic ethnicity. The groups are as follows:

High Probability of Hispanic Ethnicity	High Prevalence of Spanish Surnames but Low Probability of Hispanic Ethnicity
Puerto Rico, Mexico, Cuba, Central America (Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica, Panama), South America (Colombia, Venezuela, Ecuador, Peru, Bolivia, Chile, Argentina, Paraguay, and Uruguay), Spain including Canary Islands, Balearic Island, and Andorra.	Atlantic/Caribbean Area (except Cuba and Puerto Rico); Panama Canal Zone, Brazil, Guyana, Surinam, Hawaii, French Guyana, Europe (except Spain) including Portugal; and Asia including the Philippines.

The procedures of the algorithm are summarized as follows.

A. If the information received from the cancer reporting source has already identified the patient as Hispanic, then the case retains the classification of Hispanic ethnicity.

B. If individuals have heavily Hispanic surnames (maiden names for ever-married women, last names for males, and last names for never-married women or ever-married women without maiden names), they are assigned Hispanic ethnicity with the following exceptions: 1) those who were born in a birthplace associated with high Spanish surname prevalence but low probability of Hispanic ethnicity are non-Hispanic, and 2) those who were American Indian, Filipino or Hawaiian are non-Hispanic.

C. The algorithm assigns those whose birthplace is associated with a high probability of Hispanic ethnicity as Hispanic, except for cases whose surname appears in the rarely Hispanic or no match census Spanish surname categories.

As a result of using the above algorithm, the NJSCR was able to assign an additional 33% of cases as Hispanic to the incidence data and 29% to the mortality data for the period 1990-1996. This enhancement is consistent with that reported by the ISCR.

Data Sources

The cancer incidence data contained in this report are from the New Jersey State Cancer Registry (NJSCR), New Jersey Department of Health and Senior Services. For this report, incident cancer cases diagnosed only in the invasive cases are included (except for bladder cancer and for figures and tables involving stage at diagnosis); the *in situ* cases are excluded. The reason for excluding the *in situ* cases is that data on cancer incidence for the U.S. and other cancer registries published by the federal government do not include *in situ* cases or include *in situ* cases separately from the invasive cases. Following the SEER multiple primary rules, individuals could be counted more than once if they were diagnosed with two or more primary cancers.

The mortality data in this report originate in Vital Statistics, NJ Department of Health and Senior Services, and is subsequently processed by the Center for Health Statistics, NJ Department of Health and Senior Services.

Annual population estimates for New Jersey, used to calculate the incidence rates, for the years 1990 through 1996 are from the National Cancer Institute's Surveillance Epidemiology and End Results (SEER) program.

Data Quality

In 1998,1999, and 2000, NAACCR awarded the NJSCR its Gold Standard, the highest standard possible, for the quality of the 1995,1996, and 1997 data, respectively. The measures used to judge the quality of data are nationally based criteria assessing completeness, timeliness, quality and accuracy. These same quality indicators applied to earlier NJSCR data also have demonstrated a high degree of accuracy and reliability of the data presented in this report.

While our estimates of completeness are very high, some cases of cancer among New Jersey residents who were diagnosed and/or treated in other states may not yet have been reported to us by other state registries. This fact should be considered in interpreting the data for the more recent years. However, these relatively few cases would not significantly affect the cancer rates in these years, or alter the overall trends presented in this report.

Calculation of Rates

All the incidence rates were age-adjusted using the 1970 U.S. Standard Population. This allows comparisons among the rates by year, race, and geographic area. An explanation of why and how the incidence rates were age-adjusted follows.

Cancer occurs at different rates in different age groups, making age a very important risk factor for cancer. Therefore, incidence rates are frequently calculated separately for specific age groups. These rates are referred to as age-specific rates. The age-specific rate for a time period of length t is calculated as follows:

$$r_a = \frac{n_a}{t \times P_a}$$

where r_a = the age-specific rate for age-group a,
n_a = the number of events (cancer diagnoses, for example) in age-group a during the time period,
t = the length of time in years, and
P_a = average size of the population in age-group a during time t (mid-year population or average of the mid-year populations).

Multiplying r_a by 100,000 expresses the rate as the number of cases per 100,000 persons.

When comparing rates across different population subgroups, e.g. by race, or across different years, it is important to account for differences in age distributions. We calculate an age-adjusted rate using a weighted-average of the age-specific rates. This method of age adjustment is known as direct age-standardization. The age-adjusted rate is obtained by using the age distribution of a standard population as the weights:

$$R = \frac{\sum_{a=1}^{n} r_a \times Std.P_a}{\sum_{a=1}^{n} Std.P_a}$$

where R = the age-adjusted rate,
r_a = the age-specific rate for age-group a, and
$Std.P_a$ = the number of people in age group a of the standard population.

Multiplying the age-adjusted rate by 100,000 expresses it as the number of cases per 100,000 persons.

The standard population used for age adjustment throughout this report is the 1970 U.S. Standard Population. This is the traditional standard population used in much of the published cancer incidence data.

Also, rates based on low counts are very unstable and may fluctuate greatly from year to year due to chance and other factors. For this reason, rates based on low counts should be interpreted cautiously.

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GLOSSARY

CANCER

Tumor or Neoplasm - an abnormal growth of tissue; tumors can be benign (not cancer) or malignant (cancer).

Cancer - a group of more than 100 diseases characterized by uncontrolled growth and spread of abnormal cells.

Carcinogen - any substance that causes cancer or helps cancer develop.

Risk factor - anything that increases a person's chance of getting a disease such as cancer.

Diagnosis - identifying a disease by its signs, symptoms, and laboratory findings; usually the earlier a diagnosis of cancer is made, the better the chance for cure.

Stage at diagnosis - describes how far cancer has spread by the time it is diagnosed:

> ***in situ*** - a very early cancer found in only a few layers of cells and called non-invasive because it has not invaded nearby tissue, highly curable
>
> **local** - an invasive cancer confined entirely to the organ of origin
>
> **regional** - an invasive cancer that has extended beyond the limits of the organ of origin into surrounding organs or tissues and/or into regional lymph nodes
>
> **distant** - an invasive cancer that has spread to parts of the body remote from the primary tumor either by direct extension or by discontinuous metastasis.

Metastasis - the spread of cancer cells to distant areas of the body through the lymph system or the bloodstream.

Primary Site - the site in the body where the cancer began; usually cancer is named after the organ in which it started, e.g. breast cancer. It is possible to have more than one primary cancer or multiple primaries at the same site.

Histologic classification of cancer - there are many types of cancer even within the same organ of origin; the pathologist classifies cancers based on microscopic examination:

> **carcinomas** - cancers of the epithelium (cells that cover the external surface of the body, line the internal cavities, or are derived from the linings that form glands); at least 80 percent of cancers are carcinomas and nearly all breast cancers are a form of carcinoma.

lymphomas - cancers of the lymph nodes, bone marrow, and occasionally other organs; about 5 percent of cancers are lymphomas.

sarcomas - cancers of the connective tissue (fat, cartilage, vessels, nerves, and muscles).

primitive or mixed cell - rare types of cancers in different organs.

International Classification of Diseases - Oncology (IDC-O) - the cancer classification system generally accepted for use in cancer registries; published by the World Health Organization.

EPIDEMIOLOGY

Epidemiology - the study of the patterns of the occurrence of disease in human populations and the factors that influence these patterns.

Incidence - the number of newly diagnosed cases of a disease occurring in a specific population during a specific time period.

Incidence rate (or crude incidence rate) - the number of newly diagnosed cases of a disease in a specific population during a specific time period per "x" number of people; usually the time period is one year and "x" number of people is 100,000.

Age-specific incidence rate - the number of newly diagnosed cases of a disease in a specific age group in a specific population over a specific time period per "x" number of people in the specific age group; usually five-year age groups (0-4, 5-9, 10-14, etc.), usually the time period is one year and "x" number of people in the specific age group is 100,000.

Age standardization (or age-adjustment) - the statistical adjustment of crude rates for differences in age distributions in order to compare rates in different populations; there are two types of standardization, direct and indirect.

Age-adjusted incidence rate - a summary incidence rate that takes into account the age distribution of the population. This is routinely done so that comparisons can be made from year to year. Age-adjustment also enables comparisons among geographic areas. There are several methods to age-adjust; direct standardization is the method most commonly used. With this method the age-specific incidence rates of the population of interest (e.g. New Jersey) are applied to a standard population (e.g. 1970 U.S. population).

Mortality - the number of deaths due to a disease in a specific population over a specific time period.

Mortality rate, age-specific mortality rate, age-adjusted mortality rate - analogous to the incidence rate, age-specific incidence rate, and age-adjusted incidence rate, except deaths rather than newly diagnosed cases are the numerator.

APPENDICES

Appendix I: Major Risk Factors and Preventive Measures for the Most Commonly Diagnosed Cancers

Colorectal Cancer[3, 4, 11]— A direct association has been found between high fat intake, especially animal fat or red meat, and colorectal cancer. Similarly, a diet low in fiber, vegetables and fruit has been found to increase the risk of this disease. Up to half the cases of colorectal cancer may be due to dietary factors. Recent studies have found a possible protective effect of calcium and vitamin D in the diet. Studies have also found that low physical activity is associated with colorectal cancer.

A family history of colorectal cancer, specifically in a parent or sibling, increases the risk of colorectal cancer, as does familial adenomatous polyposis (FAP), a rare inherited condition of intestinal polyps. Inflammatory bowel disease such as ulcerative colitis or Crohn's disease has also been associated with an increased risk of colorectal cancer. Some studies have found that alcohol use increases the risk of this cancer, but other studies did not find this. Some recent studies suggest that estrogen replacement therapy and non-steroidal anti-inflammatory drugs such as aspirin may reduce colorectal cancer risk.

Early detection of colorectal cancer increases the chances of survival. The American Cancer Society recommendations for screening tests are in Appendix III.

Lung Cancer[3, 4, 11, 12]—Cigarette smoking is the major cause of lung cancer and is estimated to cause 87 percent of lung cancer cases. Environmental tobacco smoke (or second-hand smoking) also increases the risk of lung cancer among non-smokers and is estimated to account for about two percent of the lung cancer cases. Smokers of cigars and pipes also have an increased risk of lung cancer, although to a lesser extent than cigarette smokers. Long-term exposure to high levels of radon gas indoors is also a risk factor, particularly among smokers.

Occupational exposure to asbestos, radon, inorganic arsenic, polycyclic hydrocarbons (soots, tars, mineral oils, coke oven emissions), chromium, chloromethyl methyl ethers (chemical plants, laboratories, polymer production), and vinyl chloride are associated with lung cancer, and smoking combined with exposure to most of these materials compounds the risk. Such occupational exposures are estimated to contribute to13 percent of lung cancers.

Exposure to high levels of ionizing radiation such as from radiation therapy and atomic bomb fallout in Japan increases the risk. Increased vitamins A, C, and E and other micro-nutrients from eating fresh fruits and vegetables may be protective.

Nearly all lung cancer could be prevented by avoiding tobacco. Ten years after quitting, the ex-smoker's initial risk of lung cancer is reduced to half that of a person who continues to smoke. There are no screening tests recommended currently among smokers. It is especially important to prevent tobacco use among young people. Workers' exposure to carcinogenic substances should be minimized and homes with elevated levels of radon should be remediated. Diets high in vegetables and fruits also may decrease the chances of lung cancer. Early detection of lung cancer is difficult because the symptoms do not appear until late in the disease process.

Breast Cancer[3, 4, 11, 13, 14]—The risk of breast cancer is increased when close relatives have had breast cancer, particularly a mother or sister. The risk is even higher if the first degree relative with breast cancer was premenopausal and had cancer in both breasts. Some breast cancers in

women with a family history may be the result of a specific inherited gene, i.e. BRCA-1 or BRCA-2. Women who have had cancer in one breast have a higher risk of developing a second breast cancer and women with ovarian or endometrial and with benign fibrocystic breast disease confirmed by biopsy also are at higher risk. Early age at the onset of menstruation and late age at menopause are risk factors. Never having children or having the first live birth at a late age are associated with an increased risk of breast cancer. Breast cancer rates are higher among women of higher income, probably largely related to reproductive risk factors.

Large doses of radiation have been associated with breast cancer, but low doses of radiation used today for chest x-rays or mammograms are considered to be of little or no risk. (The benefits of mammography at intervals recommended by the American Cancer Society far outweigh any risk. See Appendix III.) Recent studies have found an increase in breast cancer risk among women who have three or more alcoholic drinks a day. Breast cancer risk also increases with weight and body mass among postmenstrual women. Studies on the relationship of breast cancer risk to dietary fat are inconsistent. Some research relates breast cancer risk to lack of exercise. Long-term exposure to postmenopausal estrogen replacement therapy and oral contraceptive use may increase the risk of breast cancer. Pesticides and other chemicals that mimic or modify the action of estrogens are currently under study by various research organizations.

Given the known risk factors for breast cancer, opportunities for primary prevention are limited. Tamoxifen has been shown to prevent breast cancer in high risk women, and other medications that may have similar benefits but with less serious side effects are under study. For now, early detection (screening) and treatment are the best means to increase breast cancer survival and reduce mortality. Mammography, breast examination by a nurse or physician, and breast self-examination are all methods to detect breast cancer early. Mammography can detect early breast cancers that even very skilled health practitioners may miss. Appendix III contains recommendations from the American Cancer Society for women about using these methods of early detection. Appendix IV has information on the New Jersey Breast and Cervical Cancer Control Initiative which provides for free screening for eligible women in New Jersey. The report, Breast Cancer in New Jersey 1979-1995, provides additional information and is available from Cancer Epidemiology Services, NJ Department of Health and Senior Services.

Prostate Cancer[3, 4, 11]—The causes of prostate cancer are mostly unknown. Family history of prostate cancer in a first-degree relative (father or brother) appears to double the risk of prostate cancer. A history of some benign prostatic diseases such as prostatitis and some types of hyperplasia also may increase the risk. Male sex hormone levels such as testosterone may be related to prostate cancer. Various epidemiologic studies suggest that a diet high in animal fat leads to an increased risk, perhaps through influencing hormone levels. Certain occupational exposures such as cadmium and work in farming, rubber manufacturing, and iron and steel foundries have also been associated with prostate cancer in some studies.

It is difficult to prevent prostate cancer because the causes are not well understood. Every man 50 or older should have a digital rectal examination as part of his annual physical checkup. A blood test for prostate-specific-antigen (PSA) may be advisable for many men (See Appendix III.). All men considering or having the screening tests should be fully informed about the implications of a positive test and the benefits and risks of treatment. The report, Prostate Cancer in New Jersey 1979-1996, provides additional information and is available from Cancer Epidemiology Services, NJ Department of Health and Senior Services.

Appendix II: Major Risk Factors and Preventive Measures for Cancers with Disproportionately High Incidence among Hispanics

Cervical Cancer[11, 21]—Human papillomavirus (HPV) infection is the primary risk factor for cervical cancer. Sexual activity before age 16 and a higher number of partners increase the risk of cervical cancer. Cigarette smoking has been found to increase the risk of cervical cancer independent of other risk factors. HIV infection is associated with HPV infection, but it is not clear whether HIV infection plays a role in progression of HPV to invasive cervical cancer. The use of Pap tests to detect early stages of cervical cancer has been shown to greatly reduce its mortality. Condoms can help to prevent HPV infection. Appendix III contains recommendation from the American Cancer Society for women about early detection.

Stomach Cancer[16, 22]—Dietary nitrates have been linked to stomach cancer. Some foods high in nitrates include smoked and salt-dried fish, bacon, sausages, other cured meats, beer, mushrooms and pickled vegetables. Diets high in salted foods also increase stomach cancer risk. Stomach cancer rates are lower in populations who eat large quantities of fruits and vegetables and higher in populations with lower economic status.

Gallbladder Cancer[23]—The major risk factor for gallbladder cancer is gallstones and one of the primary risk factors for gallstones is obesity. Women who have been pregnant many times are at higher risk for this disease, possibly due to increased estrogen and progesterone levels. Higher levels of these hormones are also caused by obesity. However, there is no clear association between oral contraceptives or hormone replacement therapy and gallbladder cancer. No clear role has been identified for tobacco smoking and alcohol consumption. Genetic factors may play a role but data are limited at this time.

Liver Cancer[24]—Chronic infection with hepatitis B and C virus are the major risk factors for liver cancer. Chronic hepatitis B virus and heavy alcohol consumption can cause cirrhosis of the liver, which also causes liver cancer. Occupational exposure to vinyl chloride causes one form of liver cancer, angiosarcoma. Aflatoxin, a chemical produced by a common mold in peanuts, corn and cassava, may increase the cancer-causing effects of hepatitis B virus.

Appendix III: Recommendations Regarding Cancer Screening By The American Cancer Society[3]

Breast Cancer:

Women Ages 20-39 -

* clinical breast examination by a doctor or nurse every three years and
* monthly breast self-examination.

Women Ages 40 and older -

* annual mammography and
* annual clinical breast examination by a doctor or nurse and
* monthly breast self-examination.

If you have a history of breast cancer in your family, discuss mammography screening guidelines and scheduling with your health care provider. Contact the American Cancer Society at 1-800-ACS-2345 or ask your doctor or nurse if you have questions about how to perform breast self-examination.

Colon & Rectal Cancer:

Women and Men ages 50 and older - follow *one* of the examination schedules below -

* a fecal occult blood test every year and a flexible sigmoidoscopy every 5 years
* a colonoscopy every 10 years
* a double-contrast barium enema every 5 to 10 years.

A digital rectal exam should be done at the same time as a sigmoidoscopy, colonoscopy, or double-contrast barium enema.

If you are at moderate or high risk for colorectal cancer, talk with a doctor about a different testing schedule.

Prostate Cancer

Because there is currently debate about the appropriate screening recommendations, several agency recommendations are presented below.

The American Cancer Society

Recommends that patients seek the advice of their physician in making a decision whether to be screened. The following are the screening guidelines.

Age 50 and older

* annual prostate-specific antigen (PSA) blood test
* annual digital rectal exam (DRE)

For men at high risk including African-American men and men with a family history of prostate cancer (age to be determined by the physician)

* annual prostate-specific antigen (PSA) blood test
* annual digital rectal exam (DRE)

New Jersey Prostate Cancer Summit

Age 50 and older who have at least a 10-year life expectancy

* annual prostate-specific antigen (PSA) blood test
* annual digital rectal exam (DRE)

Men at high risk (including African American men and men with a family history of prostate cancer) should begin screening at a younger age to be decided on with their physician.

The U.S. Preventive Services Task Force and The Centers for Disease Control and Prevention

Both agencies do not recommend routine screening, but stress that patients who request screening be given objective information about early detection and the potential benefits and risks of screening.

The New Jersey Department of Health and Senior Services

* **All men over 50 years of age should have annual screening for prostate cancer.**
* **Men over 40 who are black or who are at high risk because of family history should also be screened annually.**

The screening tests should include DRE at a minimum and may include PSA. All men considering or having the screening tests should be fully informed about the benefits and risks of screening.

Cervical Cancer:

Women sexually active or ages 18 and older -

* Pap test every year and
* pelvic examination every year.

If three or more consecutive examinations are normal, the Pap test may be done less frequently; discuss this with a physician.

Endometrial Cancer:

Women at high risk for cancer of the uterus should have a sample of endometrial tissue examined when menopause begins.

Cancer-Related Checkup:

A cancer-related checkup is recommended every 3 years for people ages 20-40 and every year for people age 40 and older. This exam should include health counseling and, depending on the person's age, might include examinations for cancers of the thyroid, oral cavity, skin, lymph nodes, testes, and ovaries, as well as for some nonmalignant diseases.

Appendix IV: New Jersey Breast and Cervical Cancer Control Initiative (NJBCCCI)

The National Breast and Cervical Cancer Mortality Prevention Act of 1990 authorized the federal Centers for Disease Control (CDC) to implement a national program to ensure that all women who need them receive regular screenings for breast and cervical cancer with prompt follow-up if necessary. Accordingly, the CDC funds the New Jersey Department of Health and Senior Services to bring breast and cervical cancer screening services to underserved women, including older women, women with limited income, uninsured or underinsured women, and women of race and ethnic minority groups.

The NJBCCCI, of the New Jersey Department of Health and Senior Services, has been screening women since January 1, 1996. The program began in 5 counties: Burlington, Camden, Mercer, Middlesex, and Morris. As of September 1, 1997, every county in the State had funded screening projects. The screening projects provide mammograms, clinical breast exams, instructions in breast self-exam, pelvic exams, and pap smears to eligible women. The NJBCCCI contracts with an agency in each of New Jersey's twenty-one counties to provide these services. The phone number of the program office in each county are listed below.

If you are 50 years of age or older, call one of the numbers below to see if you are eligible for free screening services. If you are age 65 years or older and receive Medicare, screening mammograms performed at a Medicare-approved facility will be covered. Ask the facility if it is approved by Medicare to do a screening mammogram. If you receive Medicaid, a screening mammogram based on the American Cancer Society screening guidelines is covered.

Education and early detection services for prostate and colorectal cancer were added to this program in 2000. The target populations for prostate cancer education, screening and outreach are men age 50 and older who have limited incomes, black men age 40 and older, and other men at high risk for prostate cancer. Prostate cancer screening includes a Digital Rectal Examination (DRE) at a minimum and may include the Prostate Specific Antigen (PSA) blood test.

The target population for colorectal cancer education, screening and outreach is persons age 50 and older who have limited income, with a special emphasis on racial and ethnic minority populations. Colorectal cancer screening includes a Fecal Occult Blood Test (FOBT), DRE and either a flexible sigmoidoscopy or colonoscopy, as directed by a physician.

Atlantic County	(609) 653-4624	Middlesex County	(732) 521-1402
Bergen County	(201) 599-6114	Monmouth County	(732) 933-3989
Burlington County	(609) 267-1950	Morris County	1-800-447-3337
Camden County	(609) 968-7324	Ocean County	1-800-621-0096
Cape May County	(609) 465-1200	Passaic County	(973) 754-2778
Cumberland County	(609) 825-3344	Salem County	(609) 825-3344
Essex County	(973) 972-2777	Somerset County	(908) 526-9001
Glouster County	(609) 853-2057	Sussex County	(201) 625-6176
Hudson County	(201) 946-6430	Union County	(908) 753-3579
Hunterdon County	(908) 788-6514	Warren County	(908) 859-6777
Mercer County	(609) 394-4045		

Appendix V: Population Counts by Gender, Race/Ethnicity, and Year, New Jersey 1990-1996

	Hispanics		Non-Hispanic Whites		Blacks	
Year	Male	Female	Male	Female	Male	Female
1990	377,707	375,273	2,763,413	2,962,477	512,093	567,475
1991	389,967	389,517	2,750,237	2,947,576	519,148	575,156
1992	403,721	404,591	2,742,924	2,935,456	527,688	583,513
1993	418,228	422,179	2,736,988	2,925,532	534,531	590,776
1994	432,018	437,577	2,731,932	2,915,535	541,150	597,732
1995	447,251	453,031	2,728,443	2,906,944	546,813	603,510
1996	461,754	470,559	2,722,853	2,896,996	551,807	609,801

Appendix VI: Numbers of Major Cancer Cases by Stage at Diagnosis, Gender and Race/Ethnicity, New Jersey 1990-1996

		In-situ	Local	Regional	Distant	Unknown	Total
Colon, Male	Hispanics	59	136	204	71	81	551
	Non-Hispanic Whites	1,130	3,786	4,495	2,059	1,475	12,945
	Blacks	102	348	453	264	126	1,293
Colon, Female	Hispanics	46	147	216	105	125	639
	Non-Hispanic Whites	846	3,658	4,979	2,058	1,683	13,224
	Blacks	117	337	573	314	177	1,518
Breast, Female	Hispanics	228	960	633	114	316	2,251
	Non-Hispanic Whites	4,616	20,192	10,076	2,329	4,015	41,228
	Blacks	477	1,858	1,357	386	375	4,453
Cervix*, Female	Hispanics	661	155	108	19	44	987
	Non-Hispanic Whites	4,534	835	532	156	245	6,301
	Blacks	948	247	247	44	111	1,542
Prostate, Male	Hispanics	7	1,037	177	149	336	1,706
	Non-Hispanic Whites	220	21,765	4,216	2,721	8,112	37,034
	Blacks	26	2,896	701	757	939	5,319

* 1990-1994 cases only.