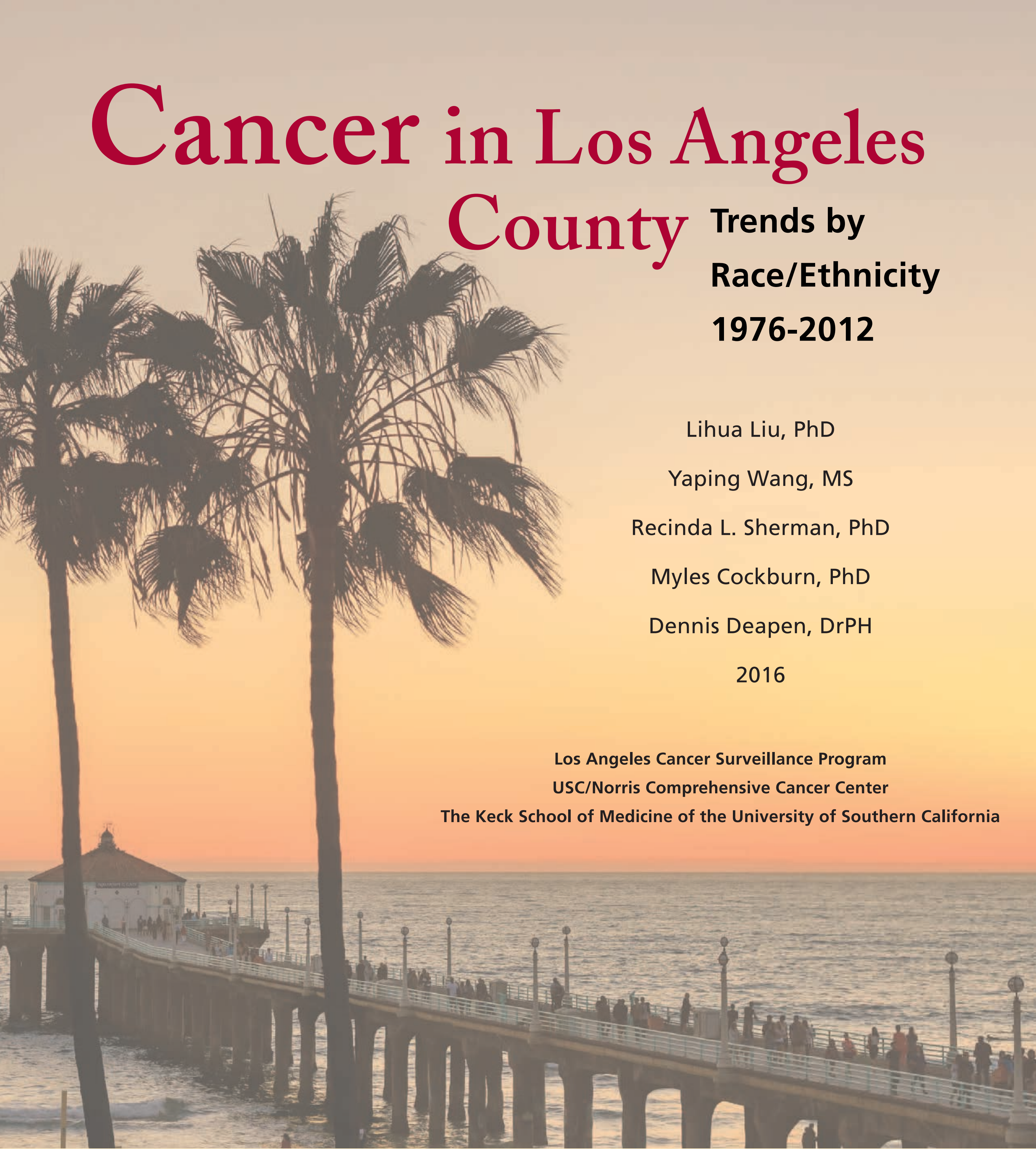

Cancer in Los Angeles County

Trends by Race/Ethnicity 1976-2012

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2016

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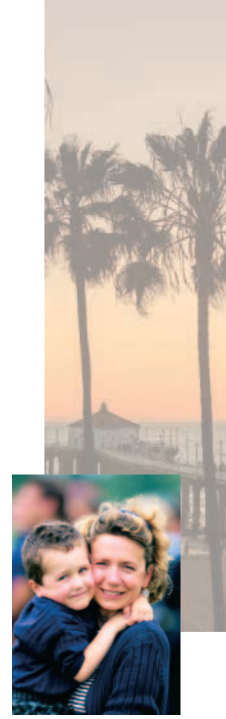

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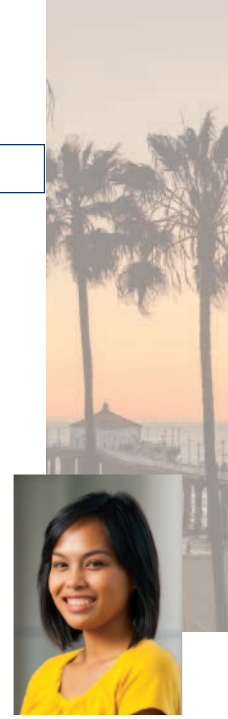


EXECUTIVE SUMMARY

Los Angeles County is the most populous county in the U.S. with large and racially/ethnically diverse populations. It allows monitoring cancer incidence patterns and trends by detailed race/ethnicity to provide clues to better understand cancer causes and cancer control efforts. During 1976-2012, a total of 1,339,898 cancer cases were diagnosed among Los Angeles County residents, of whom 47% were men and 53% women. The risk of being diagnosed with cancer varies greatly by age, sex, race/ethnicity and cancer type. Ethnic minority populations, most of whom are immigrants, generally experience more dramatic changes in cancer incidence trends than non-immigrants. These observations, coupled with other reported research findings, suggest the importance of non-genetic, lifestyle and behavioral factors in the development of cancer. By making healthy choices, we can reduce the risk of many cancers.

Highlights of cancer incidence patterns and trends in various racial/ethnic groups in Los Angeles County from 1976-2012 include the following:

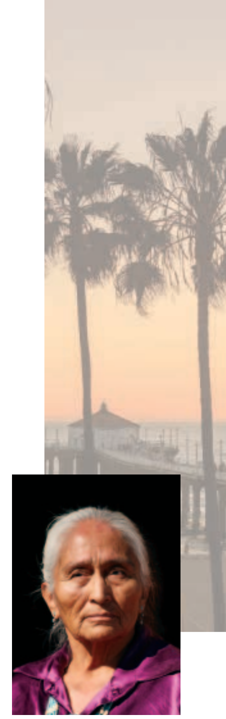
- For all cancers combined, blacks have the highest incidence rate among men, and the 3rd highest among women. Blacks have the highest risk for developing cancers of prostate (men), pancreas, kidney, multiple myeloma, esophagus, and larynx. Their risk has been consistently declining over time for prostate, esophageal and laryngeal cancers, but rapidly rising for kidney cancer, and largely unchanged in recent years for pancreatic cancer and multiple myeloma.

- Hawaiians/Samoans together as a group have the highest overall cancer risk among women, and the 2nd highest among men. In recent years, Hawaiian/Samoan women experience the highest risk for cancers of breast, lung, and uterus. They experience higher and faster-increasing uterine cancer rates than all other racial/ethnic groups since 1996-2000. However, it is important to note that the much higher proportion of multiracial individuals among Pacific Islanders may cause less accurate classifications in both cancer patients and in population estimates of this group.

- Non-Latino whites rank 3rd for men and 2nd for women in incidence rates for all cancers combined. Throughout the years they consistently have the highest risk for of melanoma, Hodgkin and non-Hodgkin lymphomas, leukemia, urinary bladder, ovary, testis, and brain cancers. Of these cancers, their recent incidence trends continue to increase for melanoma, decrease for ovarian cancer, and are rather stable for the rest.

- Vietnamese rank 4th for cancer incidence of all cancers combined in both men and women. They have the highest incidence rates for liver and cervical cancers. Although Vietnamese women have achieved a dramatic reduction in cervical and liver cancer risk, Vietnamese men show no sign of decrease in their risk for liver cancer.

EXAMINING CANCER DISPARITIES HELPS TO GENERATE RESEARCH QUESTIONS AND IMPROVE CANCER CONTROL EFFORTS.



- Latino whites have the 5th highest cancer incidence for all cancers combined for men, and the 7th for women. Their risk is steadily increasing for Hodgkin lymphoma and cancers of the kidney, liver, testis and thyroid. Latina white women have had consistently high incidence rates of cervical cancer, but the trend is declining. Latino white men also experience decreasing lung and prostate cancer rates in recent years.

- Japanese have the 6th highest cancer incidence for all cancers combined in both men and women. Breast cancer incidence rates skyrocketed during the 1980s and 1990s in Japanese women but began to decline in recent years. Cancers of the brain in Japanese women, prostate and stomach cancers in Japanese men, and colorectal cancer in both men and women have declined in recent years. However, rates are increasing for oral and brain cancers in men, uterine and thyroid cancers in women, and pancreatic cancer in both men and women.

- Filipinos rank 7th for all cancers combined in men and the 5th in women. Thyroid cancer rates are the highest and rising in Filipinos, especially Filipinas. Breast cancer risk has escalated substantially for Filipinas but shows a slight drop in recent years. Incidence trends are on the rise for cancers of the kidney and pancreas among Filipino men, and for uterine cancer among Filipinas.

- Koreans have the 8th highest cancer incidence for all cancers combined for men and 10th for women. In both men and women, Koreans have the highest stomach cancer incidence rates. These rates have been declining consistently for men since the mid 1990s, and only recently for women. Koreans also experience dramatic increases in cancer risk for breast cancer in women, prostate cancer in men, and colorectal cancer in both men and women. While the risk for prostate and colorectal cancers have stabilized, the risk for breast cancer in women continues to climb.

- As a group, Thai/Hmong/Cambodian/Laotian rank 9th in men and 8th in women of highest risk for all cancers combined. Lung cancer is their most common cancer among men but the incidence has substantially declined since mid 1990s. For women, breast cancer is the most common and the incidence trends did not show signs of decline until recently. This group also has the 2nd highest risk for liver cancer, behind the highest risk group of Vietnamese.

- Chinese rank 10th highest risk for all cancers combined in men and 9th in women. Although Chinese have relatively lower cancer risk as compared to other racial/ethnic groups, they experience increasing incidence for many cancers, including breast and uterine cancers in women, brain and testicular cancers in men, and thyroid cancer in both men and women.

- South Asians, represented by the group of Asian Indian/Pakistani/Sri Lankan/Bangladeshi, have the lowest overall cancer incidence rates in both men and women among all the racial/ethnic populations examined. They have the lowest risk for colorectal, lung, and stomach cancers consistently over the years. Their incidence trends continue to decline for prostate and uterine cancers, although their risk for leukemia and thyroid cancer appear to increase slightly among women in recent years.

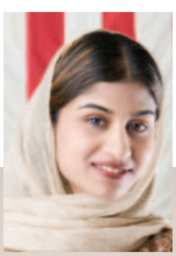
PREFACE

Most Californians have been touched by the effect of illness, disability or death because of cancer either personally or among family and friends. Medical science continues to battle this scourge with research on causes, treatment and outcomes. High quality cancer registries are central to those efforts. In each U.S. state, cancer registries identify newly diagnosed cancer patients to track trends and create opportunities for research.

The Los Angeles Cancer Surveillance Program (CSP) is the population-based cancer registry for Los Angeles County, California. Since 1972, the CSP has collected and analyzed information on all new cancers diagnosed among residents of the County. Over the past 43 years, with the participation of physicians, hospitals and cancer patients, this information has produced major contributions to the knowledge and understanding of cancer - its causes, its treatment and its effects on the lives of cancer patients and their families. Health-care providers and researchers in Los Angeles County, as well as nationally and internationally, use the information daily to help control cancer.

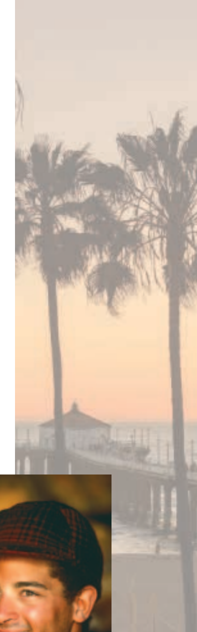
The CSP is a member of the statewide population-based cancer surveillance system, the California Cancer Registry (CCR). It is also part of the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program and is supported by the Centers for Disease Control and Prevention's National Program of Cancer Registries (NPCR). The CSP is administered by the Keck School of Medicine of the University of Southern California (USC) and the USC/Norris Comprehensive Cancer Center. With the large and diverse population of Los Angeles County, the CSP has served as a resource for many epidemiological studies of cancer.

This volume provides physicians, researchers, public health officials and the public with high quality data documenting the trends of many different types of cancer in Los Angeles County over 37 years. These data illustrate considerable differences in cancer incidence between men and women and among various racial/ethnic groups. These differences not only identify the types of persons at greater and lesser risk of each cancer but also offer intriguing clues that may lead to better understanding and prevention of cancer.



This report was prepared by the following CSP researchers: Lihua Liu, PhD, Assistant Professor; Yaping Wang, MS, Programmer; Recinda Sherman, PhD, Project Coordinator; Myles Cockburn, PhD, Scientific Director and Professor; Dennis Deapen, DrPH, Director and Professor; and the contributing authors listed on page 1. As with all reports produced by the CSP, sincere appreciation goes to the hospital cancer registrars, the CSP field technicians and all other CSP staff, whose dedication and hard work provide the foundation for this report.

CANCER REGISTRY DATA HAVE PRODUCED MAJOR CONTRIBUTIONS TO THE UNDERSTANDING OF CANCER



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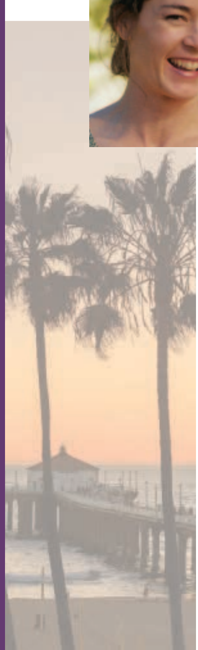
INTRODUCTION

HISTORICAL BACKGROUND OF THE CSP

The Los Angeles Cancer Surveillance Program (CSP) is the population-based cancer registry for Los Angeles County. It identifies and obtains information on all new cancer diagnoses made in Los Angeles County. The CSP was organized in 1970 and operates within the administrative structure of the Keck School of Medicine and the Norris Comprehensive Cancer Center of the University of Southern California (USC). The CSP was initially a component of a laboratory-based viral oncology program and, as such, was part of the National Viral Cancer Program. It was developed with the voluntary cooperation of hospitals and other institutions, clinics and medical laboratories equipped to diagnose cancer in Los Angeles County. By 1972, the registry reflected cancer occurrence for the entire county, and complete incidence data are available from that year onward. To date, the CSP database contains more than 1.7 million records and about 41,000 incident cancers are added annually.

Since 1981, the CSP has been the state-designated legal agent for Los Angeles County for collecting information on all new cancer cases among county residents for monitoring cancer incidence patterns and trends. In 1987, it became the regional registry for Los Angeles County for the then new California Cancer Registry. The CSP is one of 10 such regional registries providing, as a group, statewide coverage. In September 1992, the CSP joined the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program. This consortium of 18 population-based SEER registries provides the federal government with ongoing surveillance of cancer incidence and survival in the U.S.

The CSP is one of the most productive cancer registries in the world in terms of scientific contributions toward understanding the demographic patterns and the etiology of specific cancers. The CSP has a bibliography of more than 4,600 publications in scientific journals. The registry supports a large ongoing body of research funded mainly by the National Cancer Institute, other cancer research organizations and the State of California.



THE DIVERSE POPULATION OF LOS ANGELES COUNTY

Los Angeles County is the most populous county in the United States (US). The number of residents living in Los Angeles County exceeds 10 million, according to the 2014 American Community Survey estimates.[1] Hispanic or Latino individuals account for 48.4% of the County's total population, in contrast to 38.2% of California and 16.9% of the US.[1] The proportion of non-Latino white in Los Angeles County is 26.8%, as compared to 38.5% in California and 62.1% in the US.[1] About 8.9% of the country's Latinos, 9.0% of total Asian Americans, and 5.0% of US Pacific Islanders live in Los Angeles County.[2] People of multi-race count for 4.5% of the County's total population, much higher than the national average of 2.9%.[2]

Among the 4.9 million self-reported Hispanics or Latinos in the County, 76.6% identified as Mexican, 8.7% Salvadoran, 5.2% Guatemalan, 1.1% Honduran, 0.9% Puerto Rican, 0.9% Nicaraguan, 0.8% Cuban, and 2.5% South Americans.[1] The 1.4 million Asian Americans in Los Angeles County include 0.4 million Chinese, 0.3 million Filipino, 0.2 million Korean, 0.1 million Japanese, over 90,000 Vietnamese, and about 80,000 Asian Indian.[3] Los Angeles County is also home to over 26,000 Native Hawaiians and Other Pacific Islanders.[3] About 3.5 million

Los Angeles County residents are foreign-born. More than half (56.8%) of the population five years of age or older in Los Angeles County speak a language other than English.[3]

LOS ANGELES COUNTY IS AN EXCELLENT PLACE TO PERFORM CANCER SURVEILLANCE, BECAUSE OF ITS LARGE AND RACIALLY/ETHNICALLY DIVERSE POPULATION.

The 2.7 million non-Latino white population also has highly diverse origins. The population of European origin includes large numbers of persons from Britain, Germany, Ireland, Italy, Russia, France, and other parts of Europe. In recent decades the County has experienced a substantial influx of immigrants from Iran, Lebanon and the former Soviet Union. The Armenian community is estimated to number nearly 200,000. Close to 80,000 individuals of Arabic descent live in Los Angeles County.[3] Every numerically important religious group in the United States is represented with sizeable populations, including Seventh-day Adventists and Mormons whose cancer patterns are of particular interest to cancer epidemiologists. The county also has the largest Jewish community in the world outside of Israel, numbering more than 500,000.

Demographic diversity is only one aspect of a spectrum of differences that make Los Angeles County a unique location for a population-based cancer registry. It is characterized by marked geographic diversity that affects ambient air pollution patterns. Ambient air pollution is an important public health problem throughout the county but, nonetheless, pollution indices vary considerably from season to season and by geographic regions of the county. The county includes many beach communities, as well as those in the San Fernando and San Gabriel valleys, communities that lie inland of mountain ranges. Also, the population of Los Angeles County varies widely in socioeconomic and sociocultural characteristics. Occupation and industry data reflect the diversity one would expect of a large urban metropolis. According to the 2010 census, there were around 59,000 individuals classified as rural population in Los Angeles County.[2]

THE CHANGING POPULATION OF LOS ANGELES COUNTY

Los Angeles County is an excellent place to perform cancer surveillance, because of its large and racially/ethnically diverse population. In the 37 years covered by this monograph, the size and composition of the County's population have changed dramatically. The total population of Los Angeles County grew from 7.0 million in 1970 census to 9.8 million in 2010 census. The proportion of the Latino white population has increased so rapidly that in the 2000 Census, Latino whites were the largest minority in Los Angeles, which for the first time ever, had no majority racial/ethnic group. The next largest racial/ethnic group is non-Latino whites, previously the majority in Los Angeles. The black population has remained fairly constant over the past 37 years, accounting for just under one million persons in 2014. The Asian populations have rapidly increased since the late 1970s, particularly the Koreans, Filipinos and Chinese, while the Japanese have had a slower growth rate by comparison

HOW CANCER IS REGISTERED

Under the California model of reporting, a passive cancer surveillance system has been implemented statewide in which hospitals and other facilities where cancer is diagnosed or treated bear the responsibility for identifying and reporting cancer cases to the local registry within six months after the patient's diagnosis or treatment.

To provide complete demographic and treatment information on each new cancer occurring among the residents of Los Angeles County and to guarantee compliance with reporting requirements, the CSP combines elements of an active and a passive surveillance system. For active surveillance, each of the medical facilities in which microscopic verification of cancer occurs is monitored by a CSP field technician who systematically screens all hematology and pathology reports to identify all previously unreported cancer diagnoses. In recent years, the majority of the reporting hospitals and labs in Los Angeles County adopted the e-path program that allows electronic screening of cancer related pathology reports for case-finding purposes. The State-mandated passive surveillance system requires each hospital or other reporting facility to complete a full report known as an abstract, including stage and treatment information, on every cancer case seen at the facility. All completed abstracts are linked by the CSP to the pathology reports obtained under active surveillance to assure that one abstract is completed for each histologically verified cancer diagnosis. In addition, any previously unrecognized cancer diagnoses among Los Angeles County residents, identified as a result of searching computerized death records, are traced back to patient records in hospitals or other facilities so that data can be abstracted, when possible, in a similar way to data found using pathology reports.

USE OF CSP DATA FOR RESEARCH

The CSP data serve as a descriptive epidemiological resource to generate new hypotheses regarding specific cancer sites or histologic subtypes, monitor descriptive trends and patterns of cancer incidence, and identify demographic subgroups at high risk of cancer. A high priority is always placed on exploring demographic patterns and trends in cancer incidence among the racially and ethnically diverse population of Los Angeles County.

As a service to the community, the CSP provides data on cancer occurrence specific to sub-areas of Los Angeles County. The CSP receives occasional requests from community physicians or from the county and state health departments seeking assistance in investigating perceived cancer risks from environmental exposures.

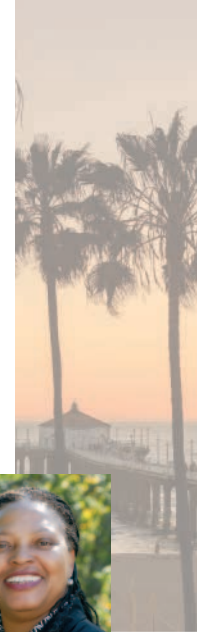
The CSP can generate rosters of cancer patients to be invited to actively participate in research. In such studies, additional information about each patient is gathered by personal interview, record abstraction or by the collection and analysis of biological specimens. The data are then compared with similar information gathered from people without cancer (controls) who have been chosen to represent the general population.

MONITORING CANCER RATES PROVIDES CLUES ABOUT WHAT CAUSES CANCER.

THE IMPORTANCE OF INVESTIGATING TIME TRENDS

To keep an eye on cancer rates

Monitoring cancer rates provides clues about what causes cancer. When we observe a change in the rate of cancer that seems to follow a change in some environmental exposure, we consider the possibility of a link between the exposure and cancer. For example, increasing lung cancer rates followed the introduction and increasing popularity of cigarettes and smoking early last century.



To know whether cancer control efforts are working

We also monitor rates of cancer to provide a "report card" on how well cancer prevention programs work. We generally expect that a successful intervention program, such as the introduction of smoke-free dining and advertising campaigns aimed at preventing teenagers from starting to smoke, should be followed by a decline in lung and other smoking related cancer rates. In fact, from the early 1990s onward we have seen such a decline in lung and other smoking-related cancers in Los Angeles County.

To decide what resources are required to fight cancer

Because cancer is such an important health problem and is costly in terms of treatment and social costs such as loss of work time and quality of life, it is important to have a clear idea of the changing burden of cancer on society. Government officials and policymakers use trends in cancer rates to determine funding for treatment and related social services, and to establish priorities for supporting effective research into the causes and prevention of cancer and the development of treatments.

To see the effect of changes in cancer screening and detection methods

Many things can cause a change in cancer rates, including changes in the distribution of the factors that cause the disease, changes in our ability to prevent or detect cancer early, changes in the population mix, changes in diagnostic criteria to define a type of cancer, and even simple random variation. Prostate cancer rates increased rapidly after the introduction of the prostate-specific antigen (PSA) test which provided better diagnostic ability than previous tests. This was not because prostate cancer was truly becoming more common, but it was simply because PSA test detected more prostate cancer cases that previously would not have been diagnosed.

To make cancer a disease of the past

Keeping an eye on cancer rates provides clues about the causes of cancer, how successful we are at preventing cancer, and where we should focus our efforts in the future to make cancer a disease of the past.

PROTECTION OF CONFIDENTIALITY

Confidentiality procedures at the CSP are rigidly formulated and maintained. All employees of the CSP sign a confidentiality pledge after being advised of the necessity for maintaining strict confidentiality of patient information and instructed in routines to assure this. Any records containing identifying information are transported to the CSP in locked carrying cases and are stored in locked filing cabinets at the CSP. Confidentiality of computerized data is assured by highly restricted access. All reports and summaries produced for distribution by the CSP, such as those presented here are in statistical form without any personal identifiers. All individual studies using confidential information obtained from the registry are individually reviewed by the USC Institutional Review Board (IRB) as is the registry itself on a regular basis. For studies from outside investigators, review and approval by a federally approved institutional review board is required, as well as the approval by the State IRB overseeing research using data in the CCR systems.

REFERENCES

1. Census Bureau, 2014 1-Year American Community Survey.
2. Census Bureau, 2010 Census Summary File 1.
3. Census Bureau, 2009-2013 5-Year American Community Survey.

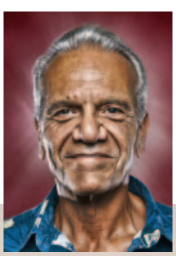
MATERIALS AND METHODS

INCIDENCE DATA

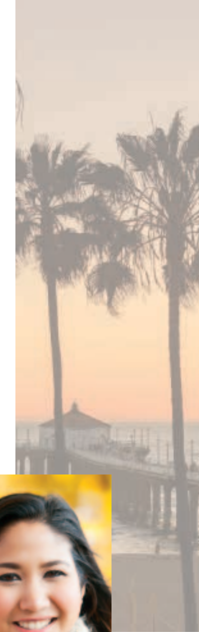
Cancer incidence data contained in this report are based on new cases of cancer that were diagnosed among Los Angeles County residents from January 1, 1976 to December 31, 2012 and were reported to the CSP as of November 2014. Cancers are distinguished by whether they are invasive (those that have spread beyond the layer of cells where it first developed and is growing into surrounding healthy tissue) or *in situ* (early cancer that has not invaded surrounding cells or tissue). In this report we only consider invasive cancers, with the following exceptions. Because of the difficulty in interpreting the language used by pathologists to describe the extent of invasion of bladder cancers, *in situ* bladder cancers are combined with invasive bladder cancers, and are included in the data for all invasive cancers combined. For breast cancer, we provide a separate trend graph showing in situ cancers, as they reflect the effect of mammogram screening on incidence trends.

We present cancer incidence rates separately for racial/ethnic groups defined as follows: the white population of Los Angeles County is divided into Latino and non-Latino whites, determined by their Latino identity as described in Appendix A. The remaining population is separated into blacks (African-Americans), Chinese, Japanese, Filipinos, Koreans, South Asian (Asian Indian/Pakistani/Sri Lankan/Bangladeshi/Other South Asian,) Thai/Hmong/Cambodian/Laotian, and Hawaiian/Samoan. We describe how race/ethnicity is defined and obtained for cancer patients and the annual population estimates for Los Angeles County in Appendix A.

A total of 1,339,898 cancer cases diagnosed among Los Angeles County residents between January 1, 1976 and December 31, 2012 were reported to the CSP as of November, 2014. Excluding 3,193 cases (0.2%) of unknown age, 1,199,880 (89.8%) were invasive malignancies (including bladder *in situ* cases), 101,052 (7.6%) were *in situ* malignancies, and 35,773 (2.7%) were of uncertain or unknown behavior. Cases of unknown, ill-defined or rare sites, a total of 13,296 (1.0%) patients, were included in the counts and rates for all sites combined but excluded from any of the site-specific analyses. The exclusion of cancers classified as unknown or ill defined could result in a slight underestimation of the incidence rates of the specific cancers that were the true sites.



RACE/ETHNICITY OF A CANCER PATIENT IS BASED PRIMARILY ON INFORMATION CONTAINED IN THE PATIENT'S MEDICAL RECORDS.



CAUTIONS IN INTERPRETATION

Cancer incidence data in this report are based on cases of primary cancer which were reported to the CSP as of November 2014. Case reporting for 2012 was estimated to be at least 95 percent complete as of then. A small number of additional cases will continue to be reported for 2012 and earlier years. This may have a minor effect on the incidence rate estimates for these years.

The reliability of race/ethnicity-specific rates depends on the accuracy of racial/ethnic classification of the cancer patients and of the Los Angeles County population estimates. Some small part of the variations in race/ethnicity-specific rates may reflect misclassification rather than a true difference in cancer risk. The county-level population estimates are based on self-identification at the time of the censuses. Race/ethnicity of a cancer patient is based primarily on information contained in the patient's medical records. This information may be collected via self-identification by the patient, on assumptions made by an admission clerk or other medical personnel, or on an inference made using race/ethnicity of parents, birthplace, maiden name or last name. The reporting of race/ethnicity in any system may be influenced by the racial/ethnic distribution of the local population, local interpretation of data collection guidelines, and other factors. The use of surname lists partially compensates for under identification of some racial/ethnic groups.

Finally, special caution should be used when interpreting the meaning of the rates that are based on only a few cases. Rates based on small numbers are statistically unstable. For that reason, we have adopted the convention set by the California Cancer Registry to present in the graphs the incidence rates that are based on at least 8 cases. In the tables of case counts provided in Appendix B, we do not provide any count that is less than eight cases, denoting these with an asterisk, to avoid the possibility of identifying an individual.

DISTRIBUTION OF ALL CANCERS COMBINED BY RACE/ETHNICITY AND SEX

When considering the overall rate of cancer by race/ethnicity, it is important to remember that cancers occurring in different parts of the body are, in fact, different diseases. Therefore, little practical information about the causes of cancers can be obtained from comparing the rate of all cancers combined among groups. We provide the comparison of average annual age-adjusted incidence rates for all cancer sites combined simply to demonstrate the importance of the cancer burden as a whole in each racial/ethnic group compared to others and to provide overall counts of cancer cases for each racial/ethnic group.

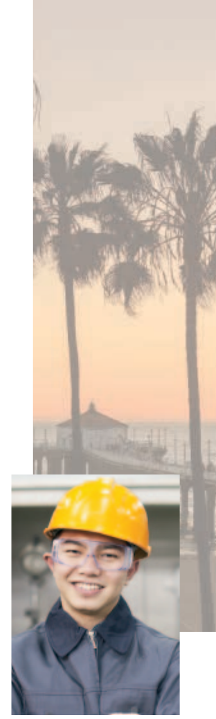
Black men had the highest overall rates of cancer between 1976 and 2012, approximately twice the rates of cancer among most of the Asian subgroups presented. Non-Latino white men also had very high rates of cancer compared to the Asian subgroups. Among the Asian groups, Vietnamese and Hawaiian/Samoan men had the highest overall rates of cancer. Latino white men had slightly higher rates of all cancers combined than most Asian groups, but substantially lower than black and non Latino white men.

In contrast, non-Latina white and Hawaiian/Samoan women had the highest rates of all cancers combined, and rates among black women were intermediate between non Latina white women and Latina white women. Korean and South Asian women had the lowest overall rates of cancer.

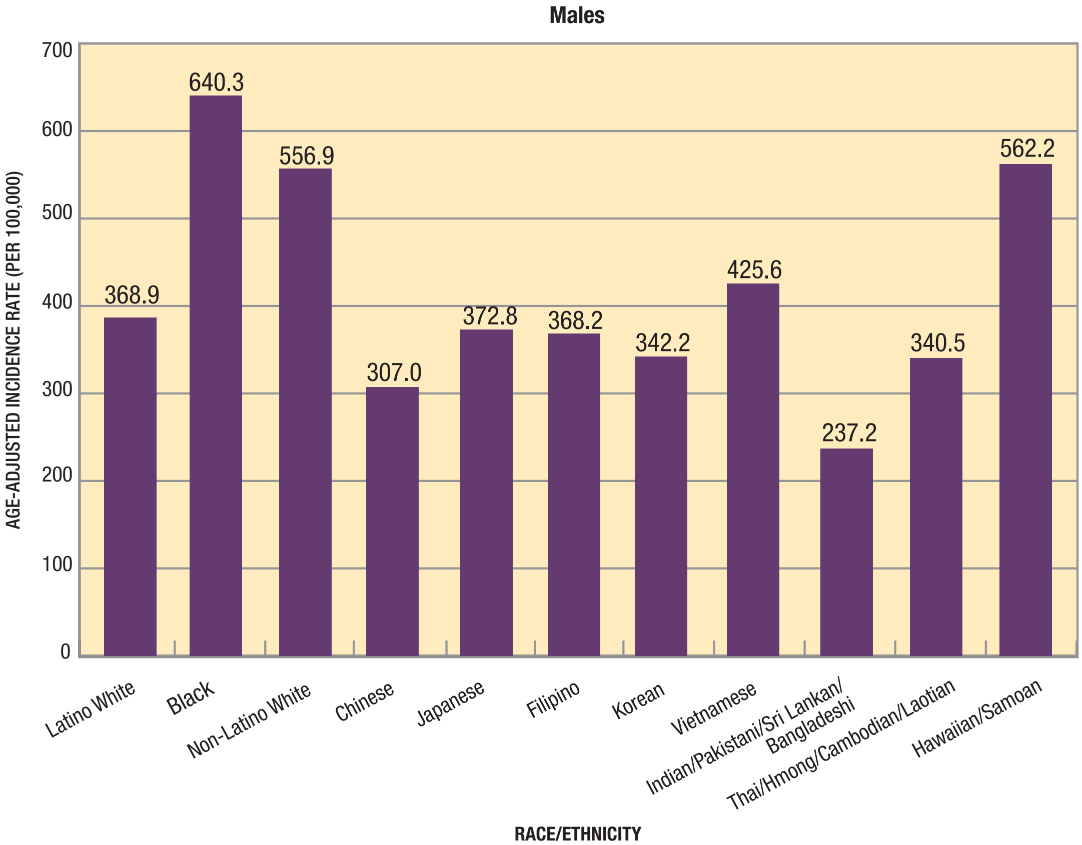
NUMBER OF CANCER CASES OCCURRING BETWEEN 1976 AND 2012 FOR EACH RACIAL/ETHNIC GROUP BY SEX

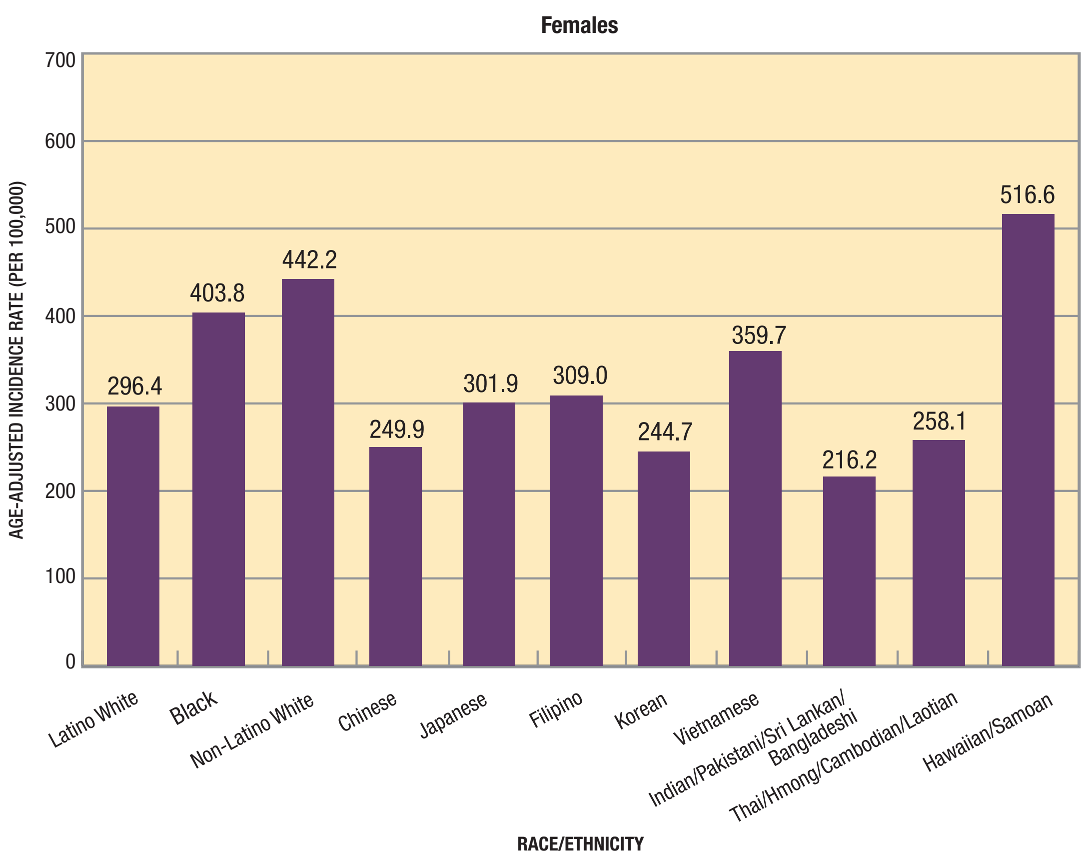
Race/Ethnicity	Males	Females
Latino White	97,129	106,620
Black	71,668	63,771
Non-Latino White	372,584	370,506
Chinese	12,544	12,481
Japanese	12,544	8,966
Filipino	11,166	13,808
Korean	6,687	6,753
Vietnamese	2,748	2,882
Indian/Pakistani/Sri Lankan/Bangladeshi	1,470	1,503
Thai/Hmong/Cambodian/ Laotian	1,203	1,473
Hawaiian/Samoan	680	818

SOUTH ASIAN MEN AND WOMEN HAVE THE LOWEST OVERALL CANCER RISK AMONG ALL RACIAL/ETHNIC POPULATIONS, AS EXAMINED.



AGE-ADJUSTED INCIDENCE RATES OF ALL CANCERS COMBINED BY RACE/ETHNICITY AND SEX, LOS ANGELES COUNTY, 1976-2012





DISTRIBUTION OF CANCERS BY ANATOMIC SITE, RACE/ETHNICITY AND SEX

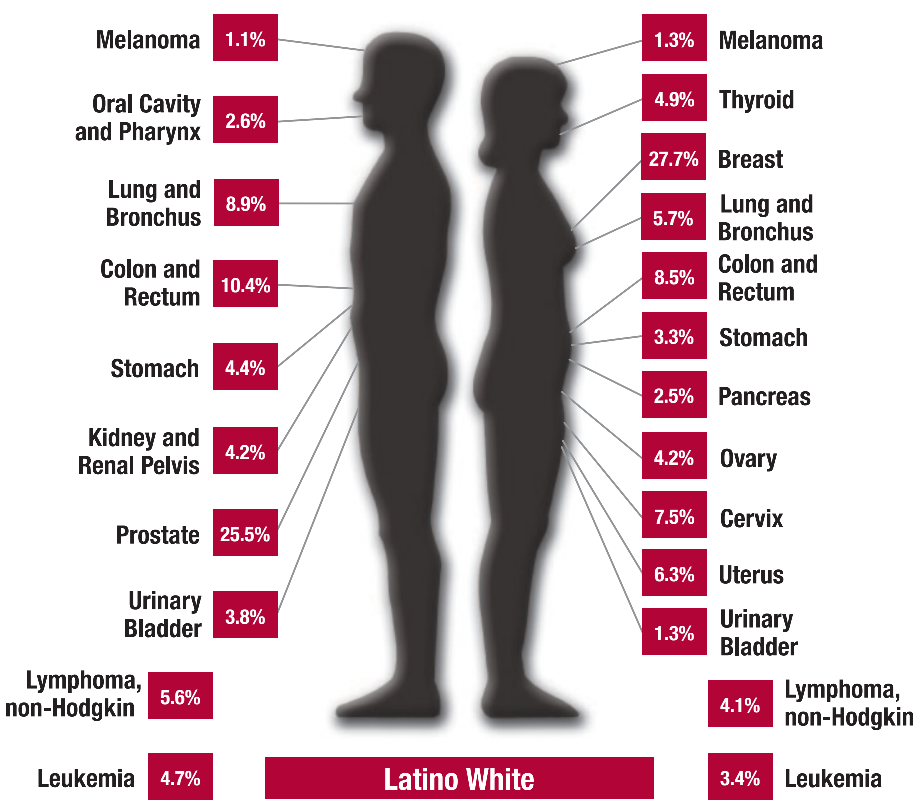
In this section we provide an overview of the distribution of cancers from 1976 to 2012 in Los Angeles County according to the location on the body where they occur (anatomic site). In the following pages we present figures for men and women for all racial/ethnic groups separately.

The numbers presented are percentages of all cancers combined. They do not sum to 100%, because only the most common anatomic sites are included in the figures.

THE MOST COMMON CANCER SITES AMONG MEN

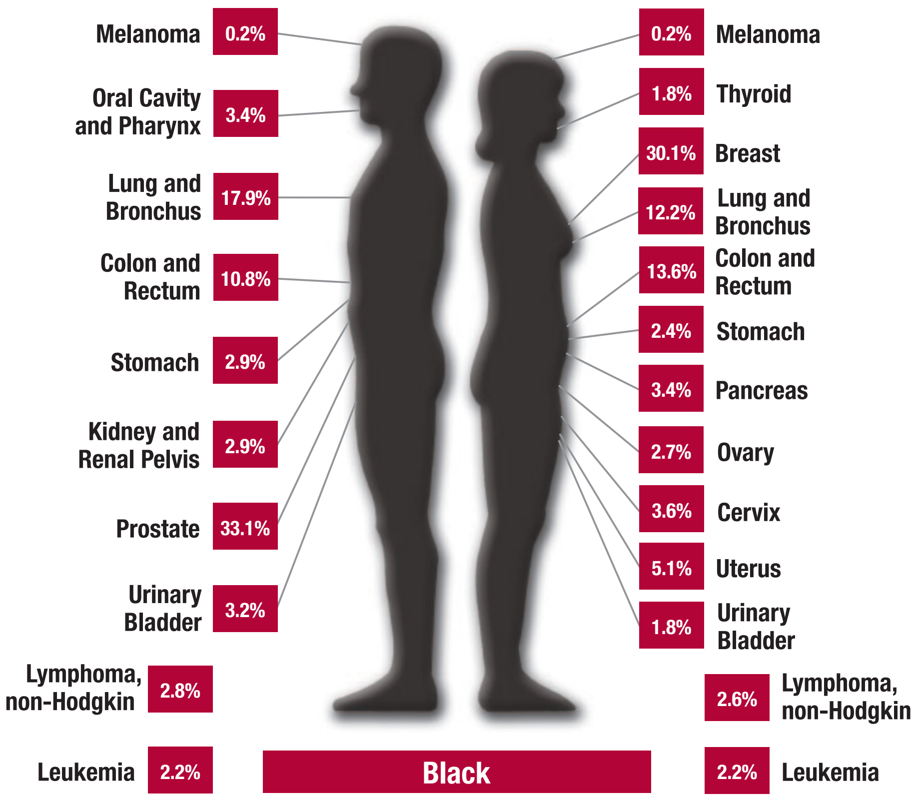
Based on data from the 2001-2012 period, among men in most racial/ethnic groups, prostate cancer was the most common cancer, but it ranged in frequency from 11.0% of all cancers among Korean men, to 33.1% of all male cancers among black men. Prostate cancer was the 4th most common cancer among Korean men, after stomach, lung, and colorectal cancers. Among Thai/Hmong/Cambodian/Laotian males prostate cancer ranked 3rd; and among Vietnamese prostate cancer was 3rd following lung and colorectal cancer.

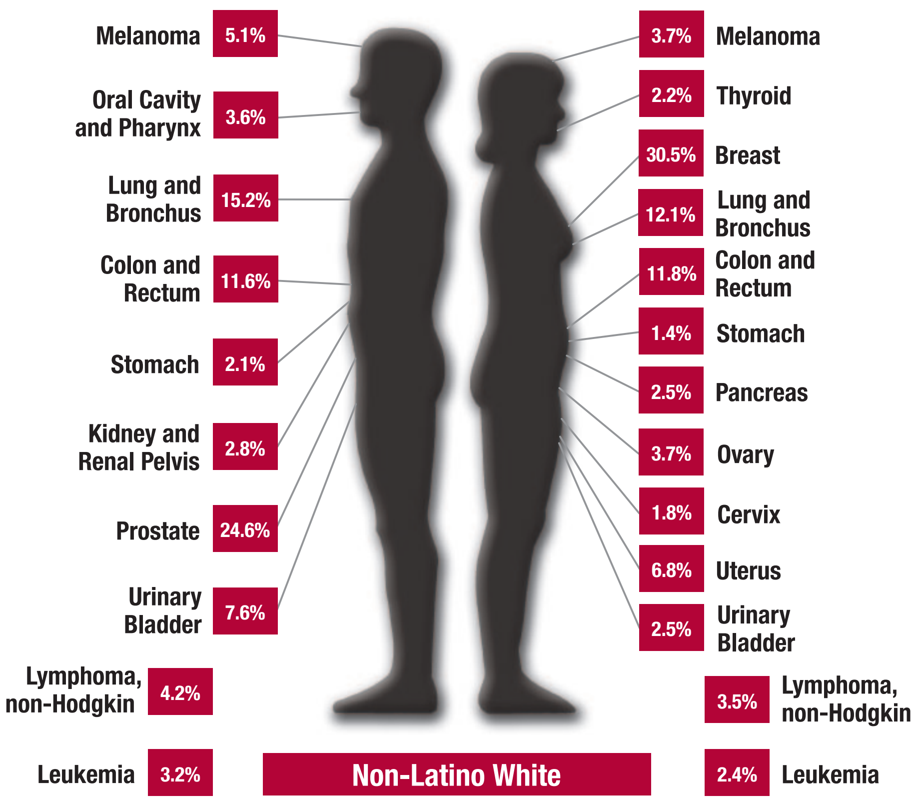
Lung cancer was the second or third most common cancer among men of most racial/ethnic groups, except among Vietnamese men, where it was the most common. Among men, regardless of race/ethnicity, cancers of the stomach, lung, colon and rectum and prostate accounted for about 50% of all cancers. Leukemia and lymphomas (including non-Hodgkin lymphoma (NHL)) accounted for less than 10% of all cancers. Melanoma was about 5.1% of cancers among non-Latino white men, 1.5% among Hawaiian/Samoan men, 1.1% among Latino men, and less than 1.0% among all other racial/ethnic groups.

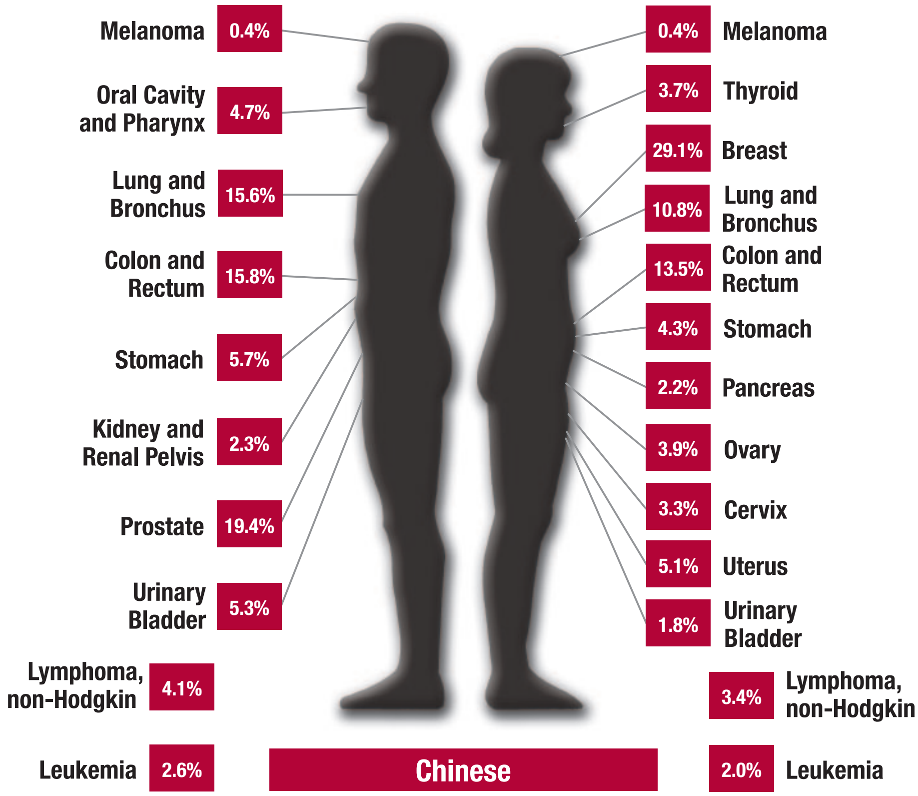


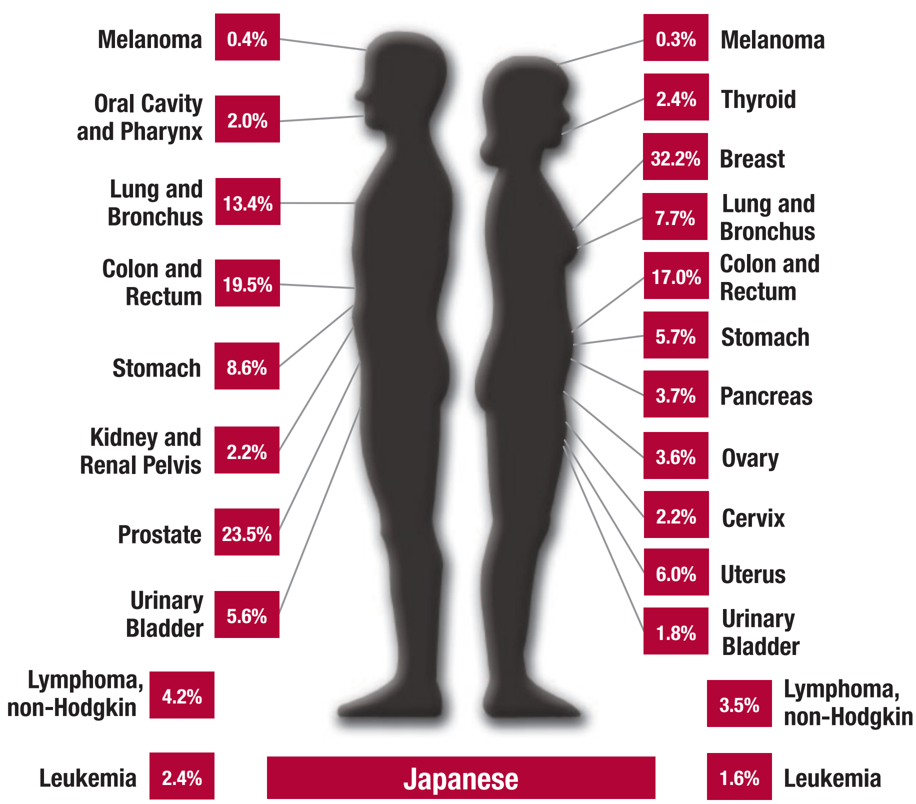
THE MOST COMMON CANCER SITES AMONG WOMEN

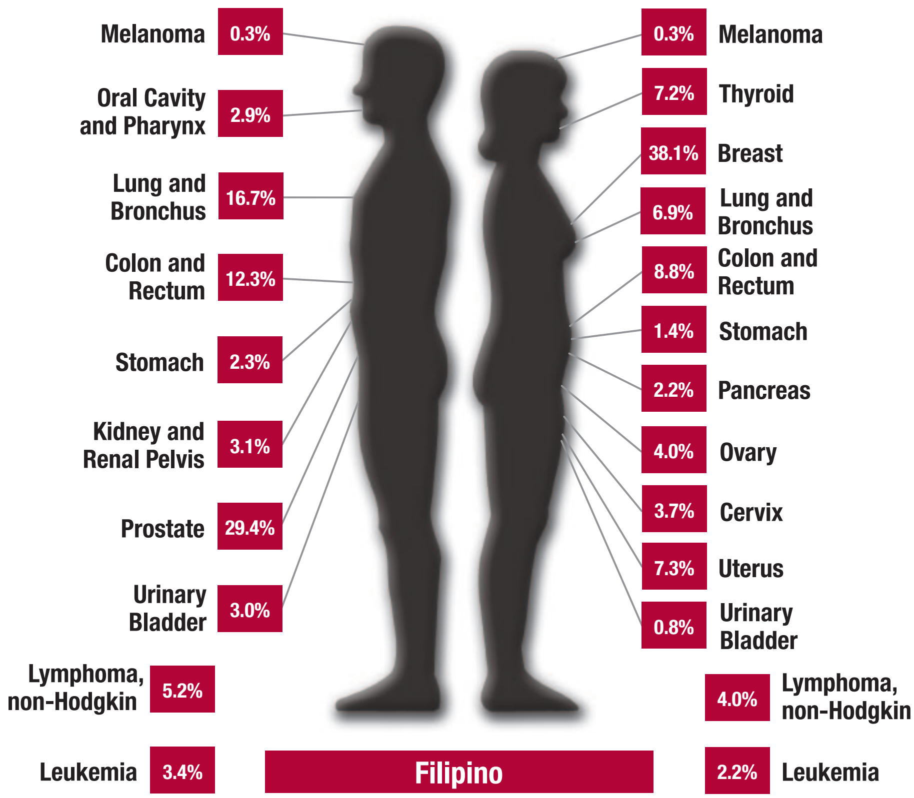
Breast cancer was the most common cancer among women of all racial/ethnic groups, ranging from 23.3% of all cancers among Koreans, to 40.5% of all cancers among Indian/Pakistani/Sri Lankan/Bangladeshi women. In contrast to men, colorectal cancer, not lung cancer, was the second most common cancer among almost all groups of women. Exceptions were Hawaiian/Samoan women who had more uterine cancers than colorectal cancer, and among non-Latina white women who had more lung cancer than colorectal cancer. Melanoma was a more common cancer among non-Latina white women than other racial/ethnic groups, but still accounted for only 3.7% of their total cancers.

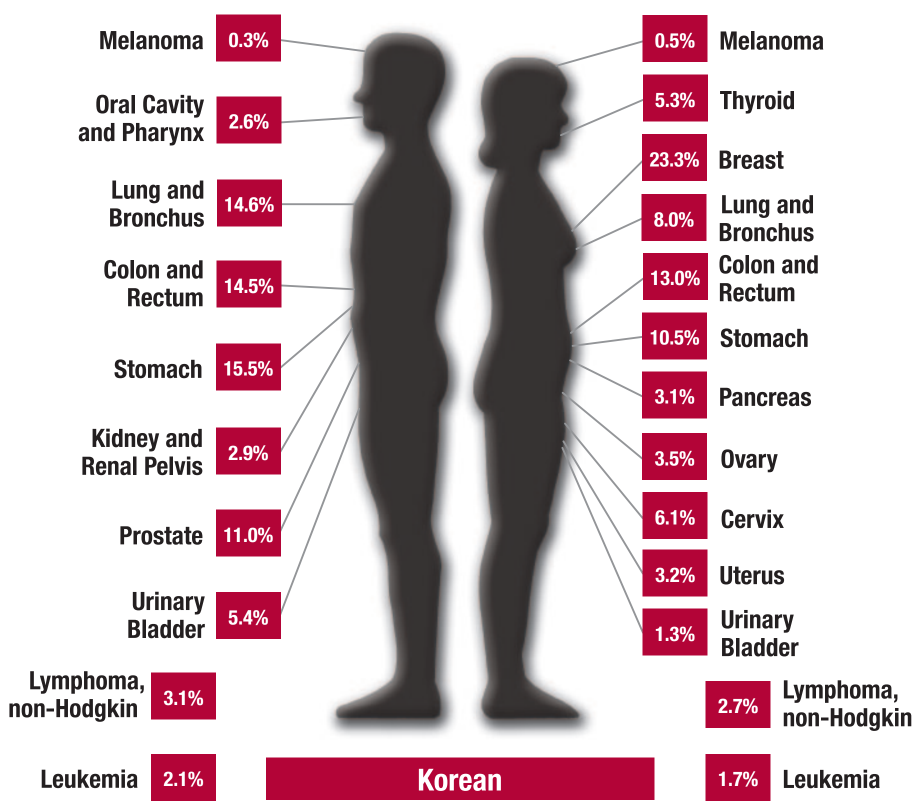


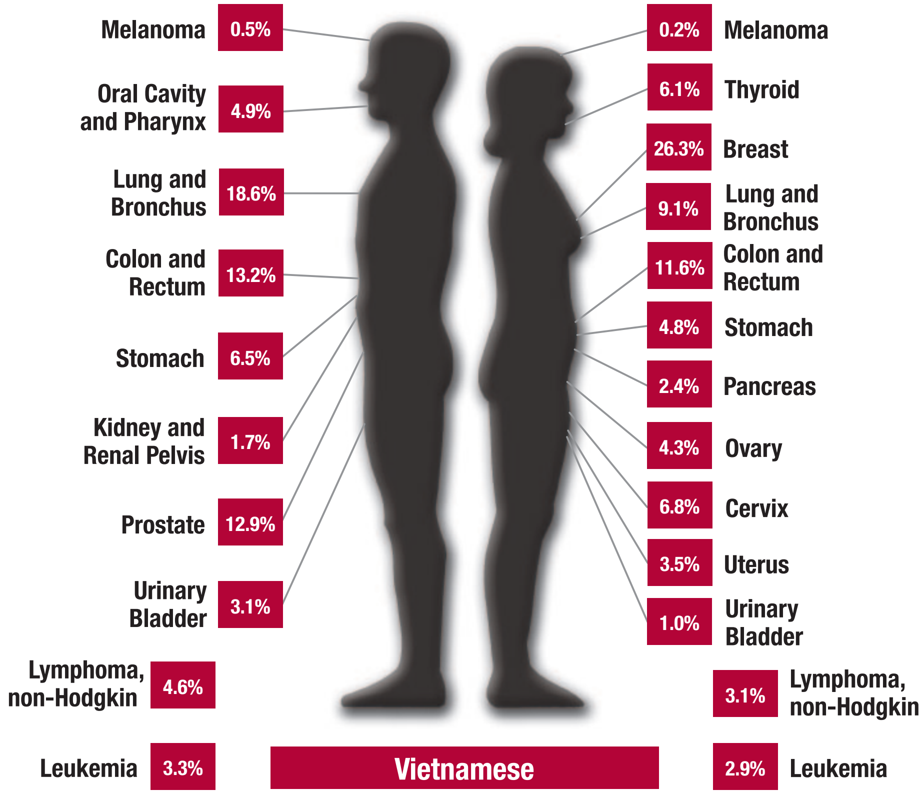


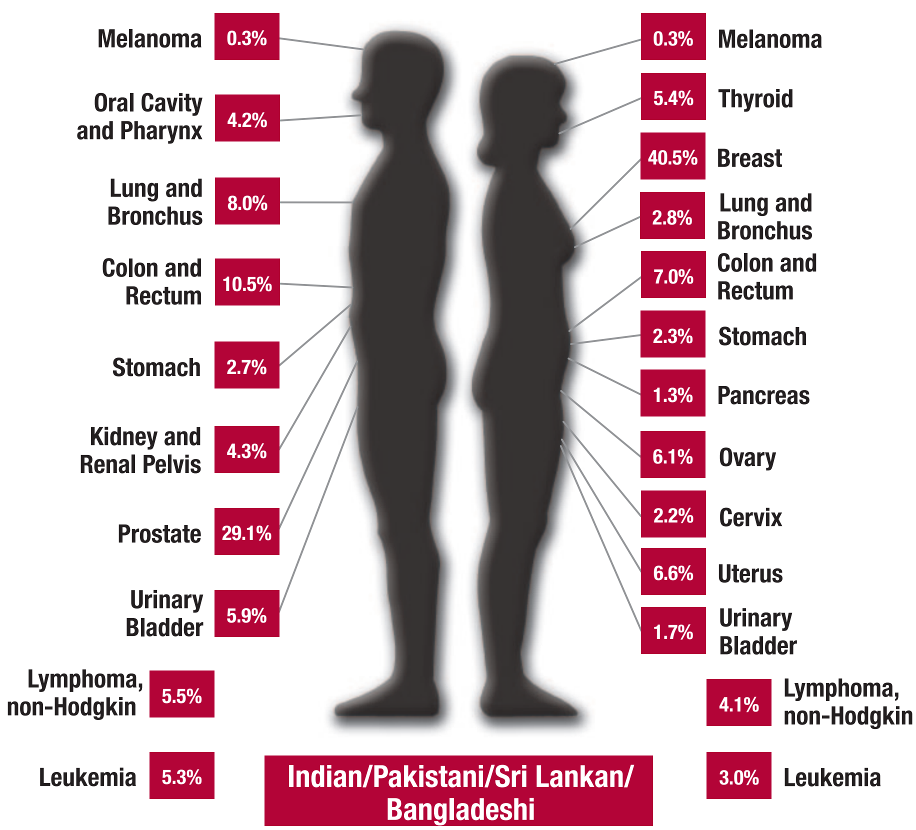

Melanoma 0.4%
Oral Cavity and Pharynx 4.7%
Lung and Bronchus 15.6%
Colon and Rectum 15.8%
Stomach 5.7%
Kidney and Renal Pelvis 2.3%
Prostate 19.4%
Urinary Bladder 5.3%
Lymphoma, non-Hodgkin 4.1%
Leukemia 2.6%
0.4% Melanoma
3.7% Thyroid
29.1% Breast
10.8% Lung and Bronchus
13.5% Colon and Rectum
4.3% Stomach
2.2% Pancreas
3.9% Ovary
3.3% Cervix
5.1% Uterus
1.8% Urinary Bladder
3.4% Lymphoma, non-Hodgkin
2.0% Leukemia
Chinese

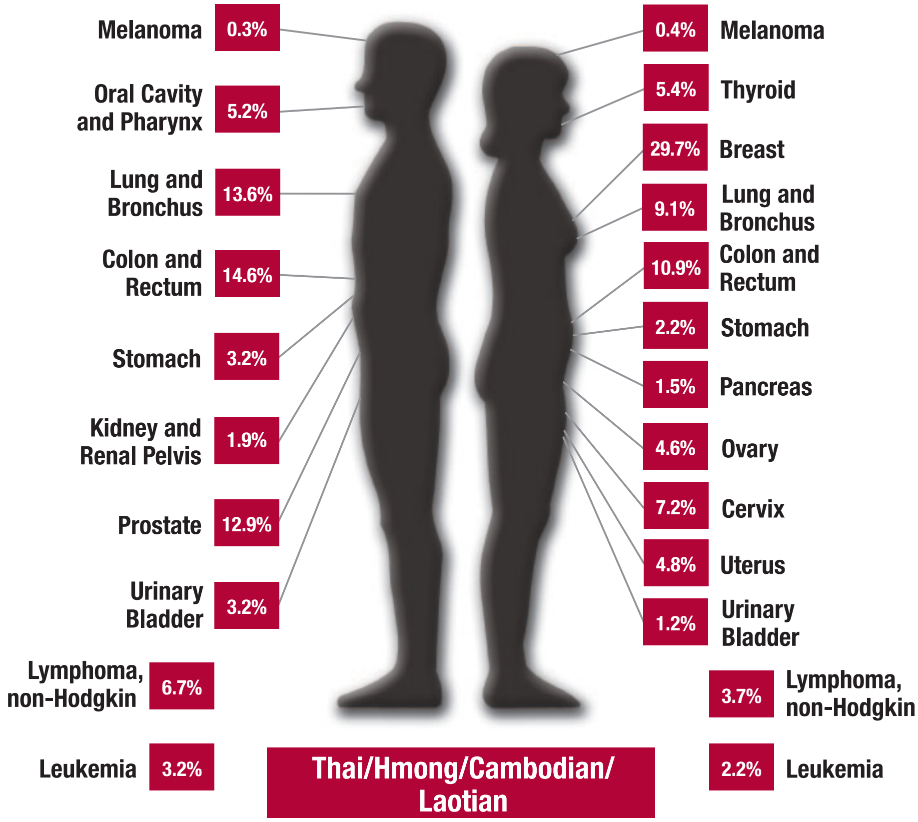

Melanoma 0.4%
Oral Cavity and Pharynx 2.0%
Lung and Bronchus 13.4%
Colon and Rectum 19.5%
Stomach 8.6%
Kidney and Renal Pelvis 2.2%
Prostate 23.5%
Urinary Bladder 5.6%
Lymphoma, non-Hodgkin 4.2%
Leukemia 2.4%
0.3% Melanoma
2.4% Thyroid
32.2% Breast
7.7% Lung and Bronchus
17.0% Colon and Rectum
5.7% Stomach
3.7% Pancreas
3.6% Ovary
2.2% Cervix
6.0% Uterus
1.8% Urinary Bladder
3.5% Lymphoma, non-Hodgkin
1.6% Leukemia
Japanese

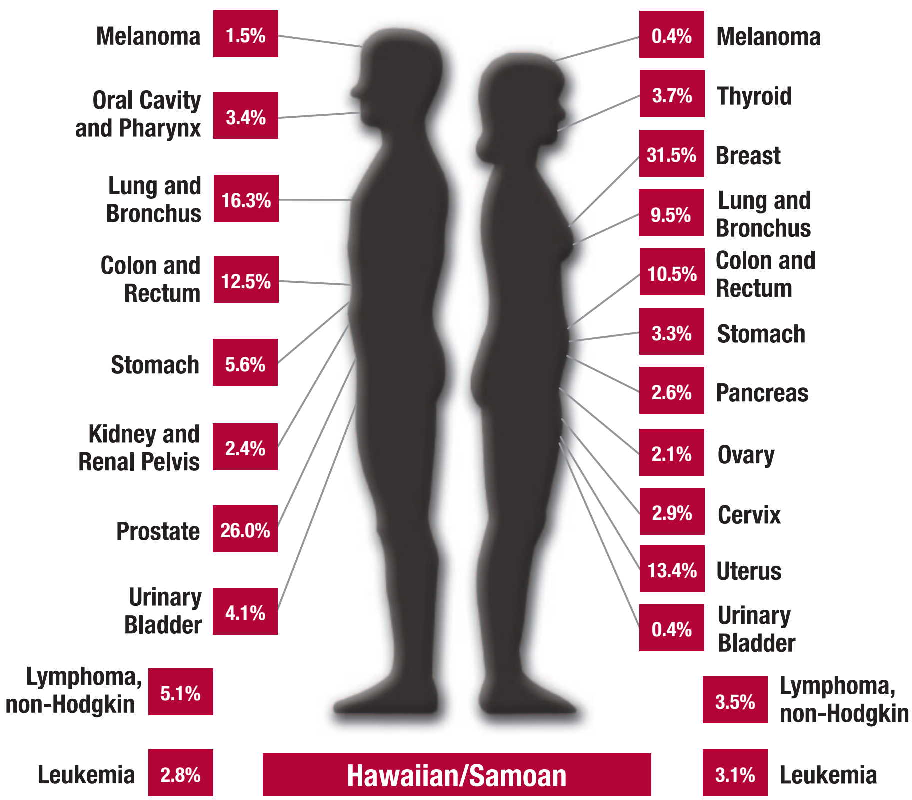

Melanoma 0.3%
Oral Cavity and Pharynx 2.9%
Lung and Bronchus 16.7%
Colon and Rectum 12.3%
Stomach 2.3%
Kidney and Renal Pelvis 3.1%
Prostate 29.4%
Urinary Bladder 3.0%
Lymphoma, non-Hodgkin 5.2%
Leukemia 3.4%
Filipino
0.3% Melanoma
7.2% Thyroid
38.1% Breast
6.9% Lung and Bronchus
8.8% Colon and Rectum
1.4% Stomach
2.2% Pancreas
4.0% Ovary
3.7% Cervix
7.3% Uterus
0.8% Urinary Bladder
4.0% Lymphoma, non-Hodgkin
2.2% Leukemia


Melanoma 0.3%
Oral Cavity and Pharynx 2.6%
Lung and Bronchus 14.6%
Colon and Rectum 14.5%
Stomach 15.5%
Kidney and Renal Pelvis 2.9%
Prostate 11.0%
Urinary Bladder 5.4%
Lymphoma, non-Hodgkin 3.1%
Leukemia 2.1%
Korean
0.5% Melanoma
5.3% Thyroid
23.3% Breast
8.0% Lung and Bronchus
13.0% Colon and Rectum
10.5% Stomach
3.1% Pancreas
3.5% Ovary
6.1% Cervix
3.2% Uterus
1.3% Urinary Bladder
2.7% Lymphoma, non-Hodgkin
1.7% Leukemia


Melanoma 0.5%
Oral Cavity and Pharynx 4.9%
Lung and Bronchus 18.6%
Colon and Rectum 13.2%
Stomach 6.5%
Kidney and Renal Pelvis 1.7%
Prostate 12.9%
Urinary Bladder 3.1%
Lymphoma, non-Hodgkin 4.6%
Leukemia 3.3%
0.2% Melanoma
6.1% Thyroid
26.3% Breast
9.1% Lung and Bronchus
11.6% Colon and Rectum
4.8% Stomach
2.4% Pancreas
4.3% Ovary
6.8% Cervix
3.5% Uterus
1.0% Urinary Bladder
3.1% Lymphoma, non-Hodgkin
2.9% Leukemia
Vietnamese


Melanoma 0.3%
Oral Cavity and Pharynx 4.2%
Lung and Bronchus 8.0%
Colon and Rectum 10.5%
Stomach 2.7%
Kidney and Renal Pelvis 4.3%
Prostate 29.1%
Urinary Bladder 5.9%
Lymphoma, non-Hodgkin 5.5%
Leukemia 5.3%
0.3% Melanoma
5.4% Thyroid
40.5% Breast
2.8% Lung and Bronchus
7.0% Colon and Rectum
2.3% Stomach
1.3% Pancreas
6.1% Ovary
2.2% Cervix
6.6% Uterus
1.7% Urinary Bladder
4.1% Lymphoma, non-Hodgkin
3.0% Leukemia
Indian/Pakistani/Sri Lankan/ Bangladeshi


Melanoma 0.3%
Oral Cavity and Pharynx 5.2%
Lung and Bronchus 13.6%
Colon and Rectum 14.6%
Stomach 3.2%
Kidney and Renal Pelvis 1.9%
Prostate 12.9%
Urinary Bladder 3.2%
Lymphoma, non-Hodgkin 6.7%
Leukemia 3.2%
Thai/Hmong/Cambodian/ Laotian
0.4% Melanoma
5.4% Thyroid
29.7% Breast
9.1% Lung and Bronchus
10.9% Colon and Rectum
2.2% Stomach
1.5% Pancreas
4.6% Ovary
7.2% Cervix
4.8% Uterus
1.2% Urinary Bladder
3.7% Lymphoma, non-Hodgkin
2.2% Leukemia


Melanoma 1.5%
Oral Cavity and Pharynx 3.4%
Lung and Bronchus 16.3%
Colon and Rectum 12.5%
Stomach 5.6%
Kidney and Renal Pelvis 2.4%
Prostate 26.0%
Urinary Bladder 4.1%
Lymphoma, non-Hodgkin 5.1%
Leukemia 2.8%
Hawaiian/Samoan
0.4% Melanoma
3.7% Thyroid
31.5% Breast
9.5% Lung and Bronchus
10.5% Colon and Rectum
3.3% Stomach
2.6% Pancreas
2.1% Ovary
2.9% Cervix
13.4% Uterus
0.4% Urinary Bladder
3.5% Lymphoma, non-Hodgkin
3.1% Leukemia

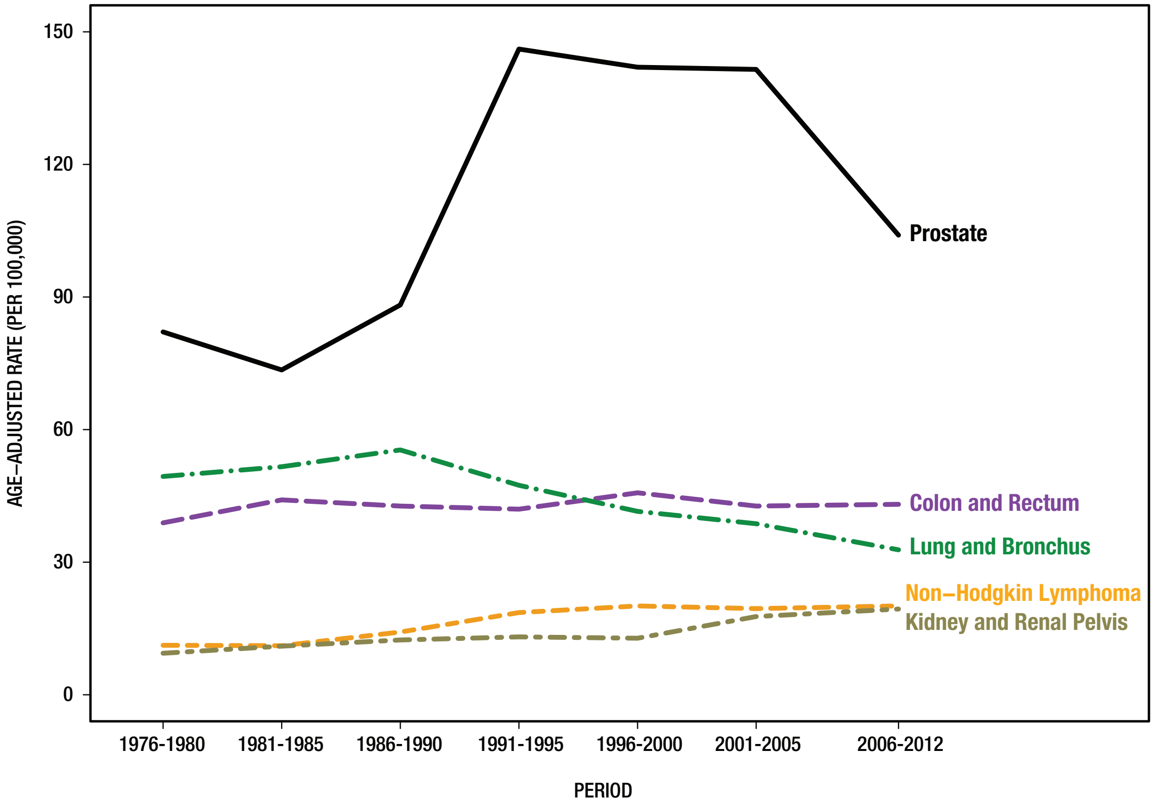
TRENDS IN THE MOST COMMON CANCERS BY RACE/ETHNICITY AND SEX

In this section we present trends for the most common cancer sites from 1976 to 2012. In the previous section, we looked at the percentage of cancers by each anatomic site over the entire 37-year period. Here we look at age-adjusted incidence rates to take into consideration size of the population and account for the different age distributions of the racial/ethnic groups so that rates can be appropriately compared to one another and over time. Details on the calculation of age-adjusted rates, and more on the importance of comparing age-adjusted rates, are provided in Appendix A. All rates are calculated using the same standard population (the U.S. 2000 Standard Population). There have been significant changes in population size and age distribution by race/ethnicity in Los Angeles County since 1976. Some groups grew larger in size faster than others and some had more older persons than others, which makes it important to age-adjust the rates for cross-group as well as over time comparability. Here we present only the top five cancer sites for each racial/ethnic group by sex. The "top five" ranking is based on the cancer site-specific incidence rates of 2001-2012.

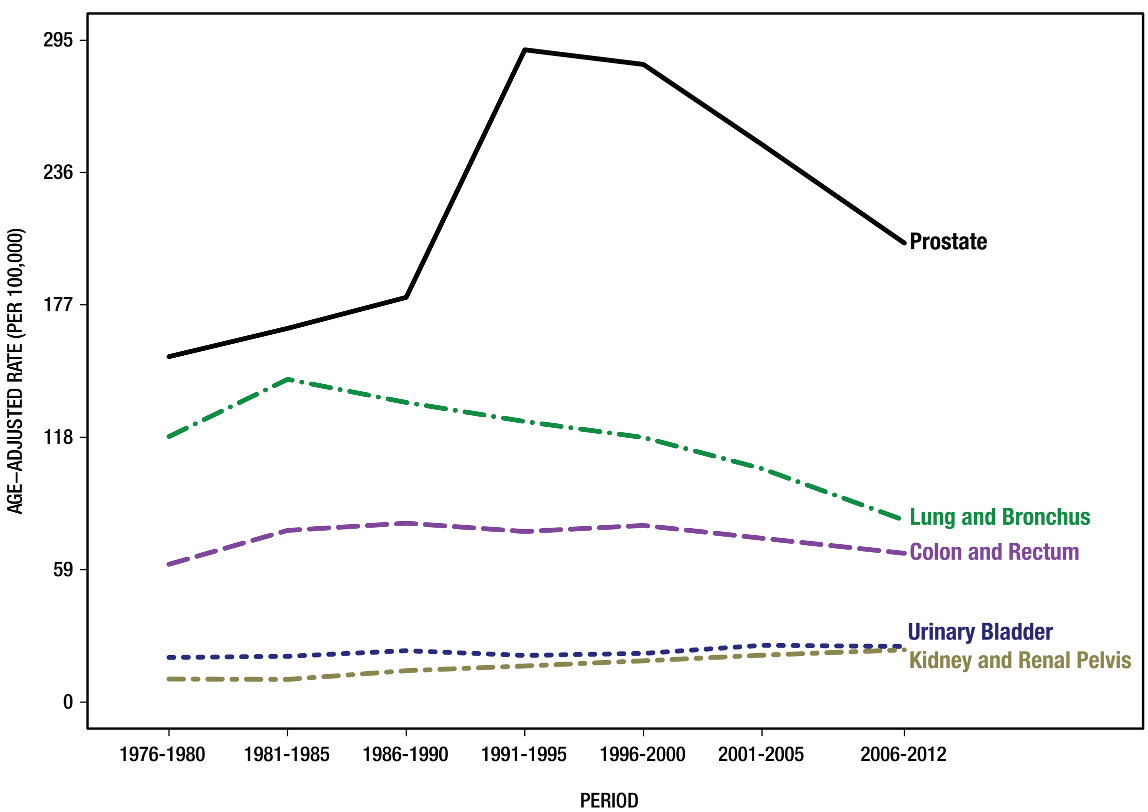
The notable trends in each of the cancer sites presented in these graphs are outlined in more detail in the following sections. Here we are simply contrasting the differences in the trends of the most common cancers across the racial/ethnic groups, to highlight which cancers are most common for each of the different racial/ethnic groups and how those most common cancers have changed over time.

Most of the top five cancers in Latino white, black and non-Latino white men are declining or unchanged, with the only continued increase seen in melanoma among non-Latino whites. Lung cancer is declining at a faster pace than colorectal cancer in these groups, which will likely make colorectal cancer the second most common cancer, after prostate cancer, in the near future. Prostate cancer continues to be the most common cancer among most Asian men. However, for Korean men and Vietnamese men, the most common cancer is colorectal and lung, respectively. While many of the top cancers show declining trends, a few rising trends deserve attention. Hawaiian/Samoan men experience increasing risk of colorectal cancer. Thai/Hmong/Cambodian/Laotian men show rising incidence rates for colorectal and prostate cancers in recent time periods. Increasing risk for colorectal cancer is also found in Indian/Pakistani/Sri Lankan/Bangladeshi and Vietnamese men. While inidence rates are generally decreasing for Chinese, Filipino, Korean and Vietnamese men, liver cancer is among the top five cancers for these populations, but it is not a frequent cancer for other racial/ethnic groups. Stomach cancer incidence has been declining and is included in the top five most common cancers for only Japanese, Korean, Vietnamese, and Hawaiian/Samoan men during 2001-2012.

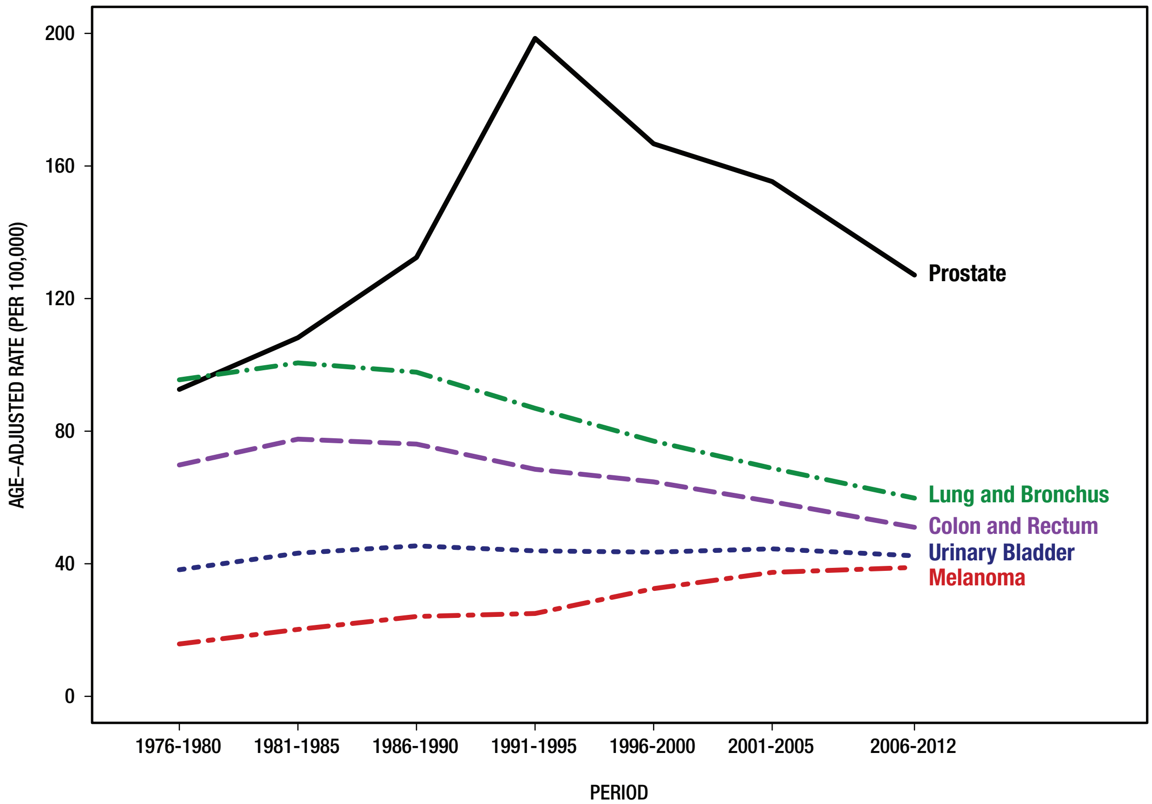
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG LATINO WHITE MALES IN LOS ANGELES COUNTY, 1976-2012



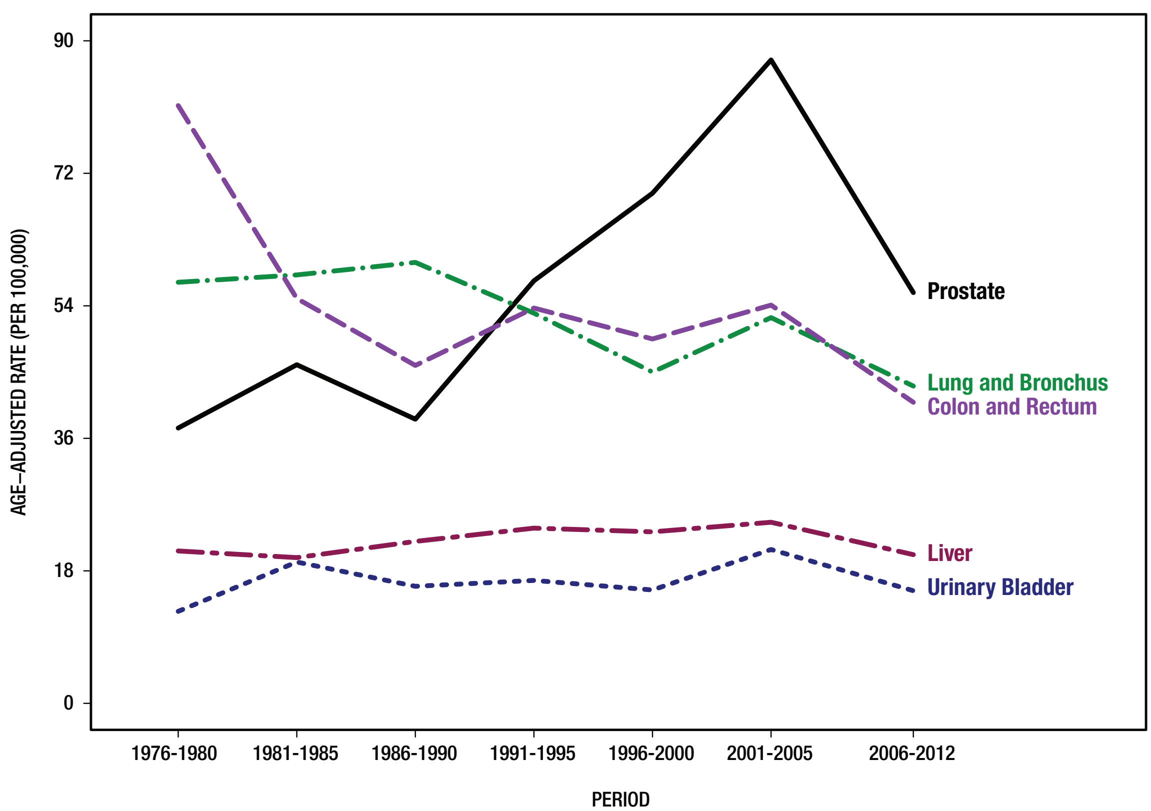
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG BLACK MALES IN LOS ANGELES COUNTY, 1976-2012



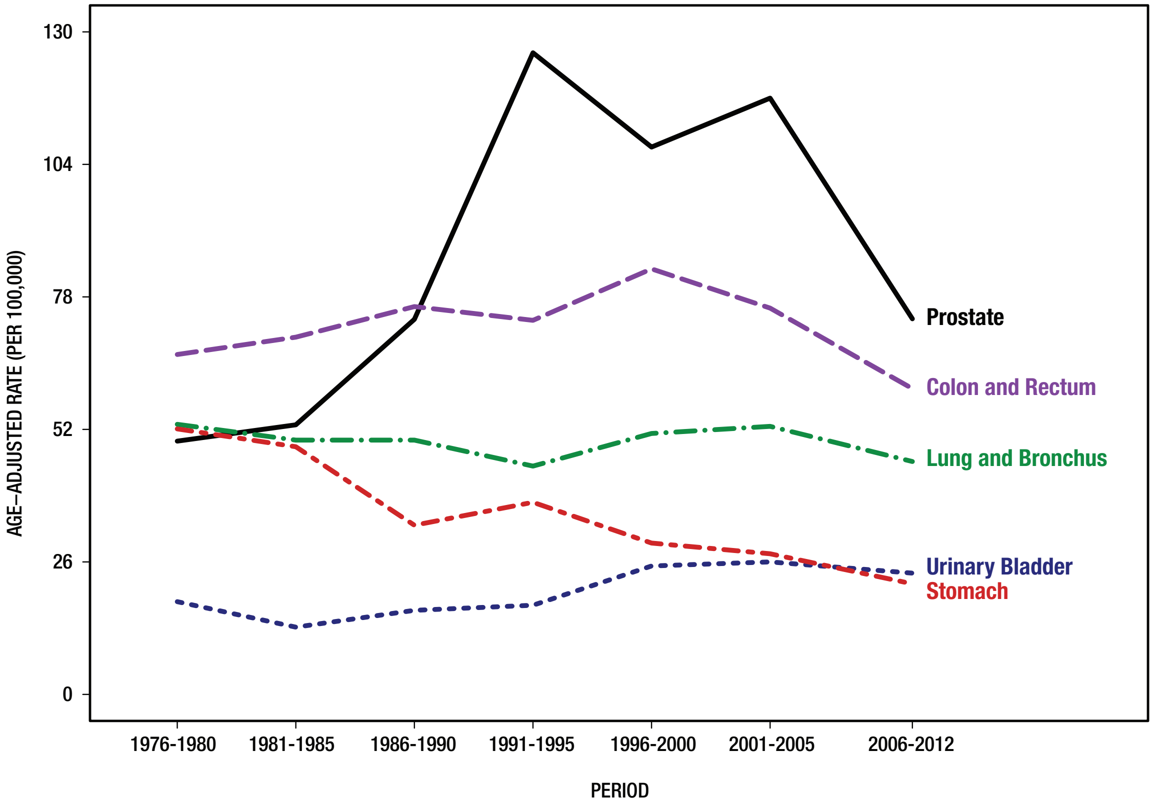
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG NON-LATINO WHITE MALES IN LOS ANGELES COUNTY, 1976-2012



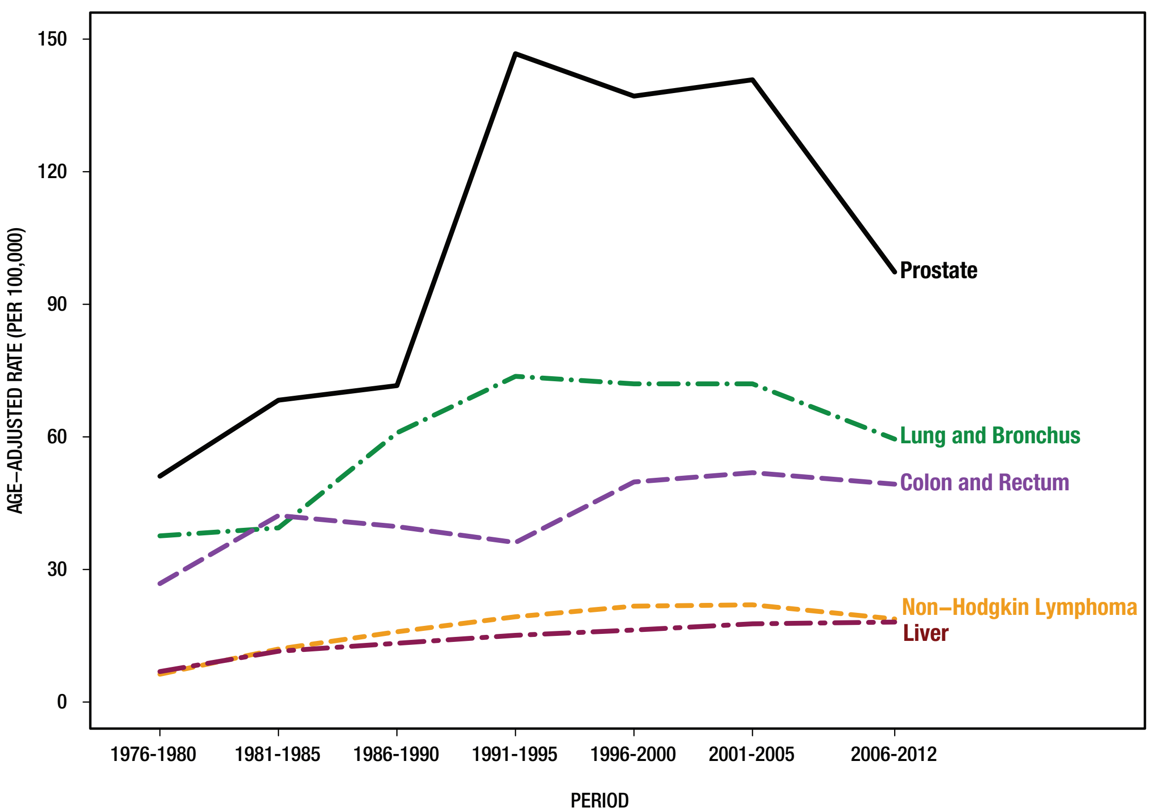
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG CHINESE MALES IN LOS ANGELES COUNTY, 1976-2012



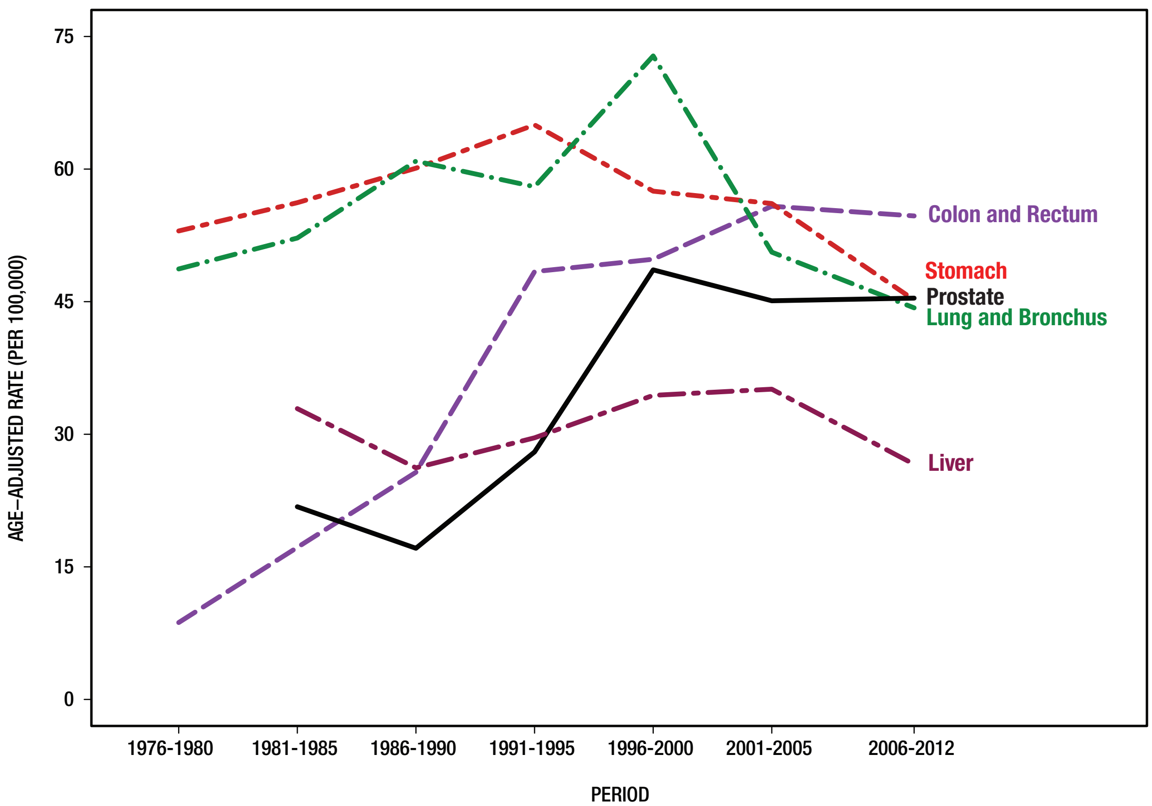
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG JAPANESE MALES IN LOS ANGELES COUNTY, 1976-2012



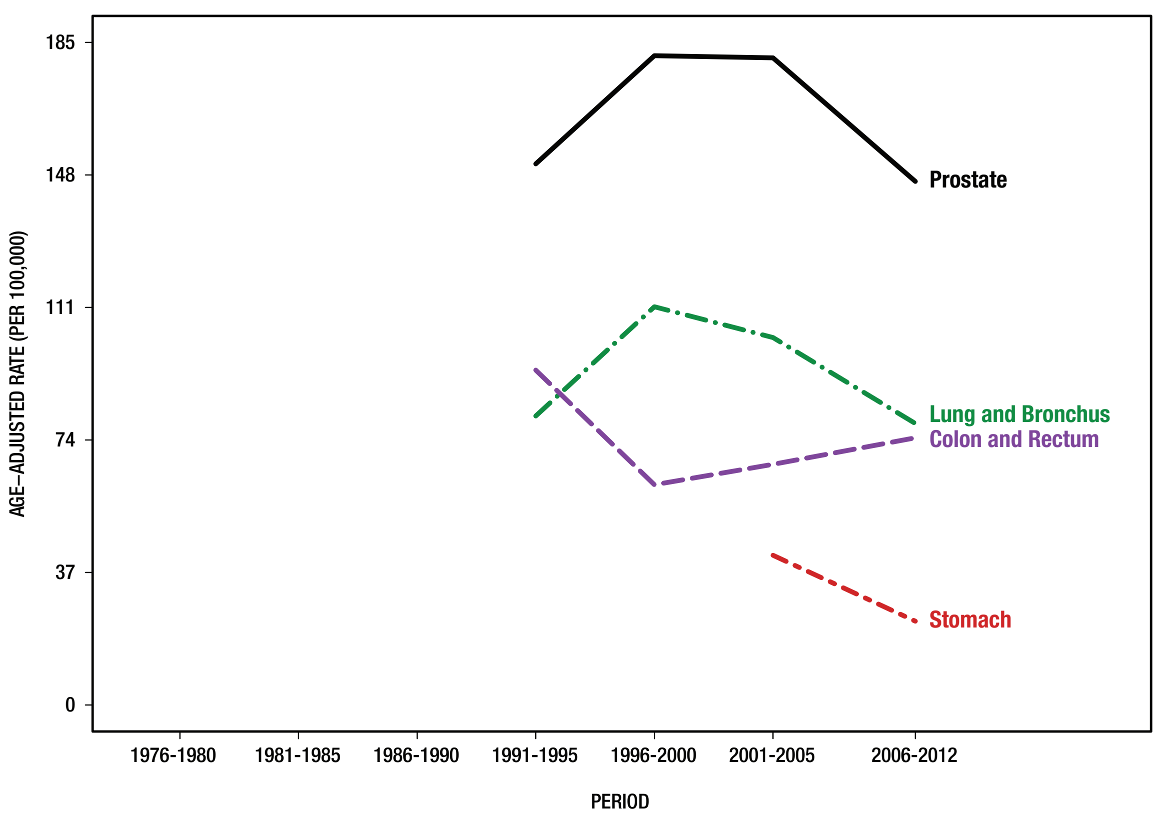
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG FILIPINO MALES IN LOS ANGELES COUNTY, 1976-2012



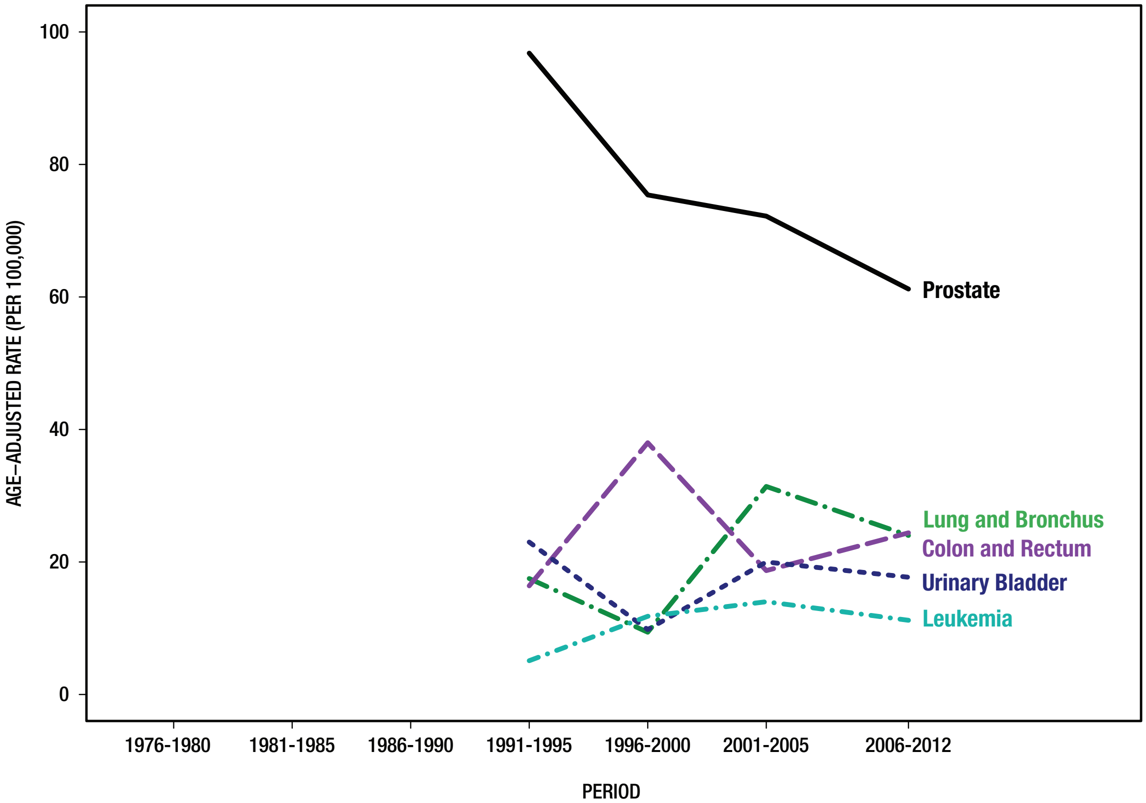
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG KOREAN MALES IN LOS ANGELES COUNTY, 1976-2012



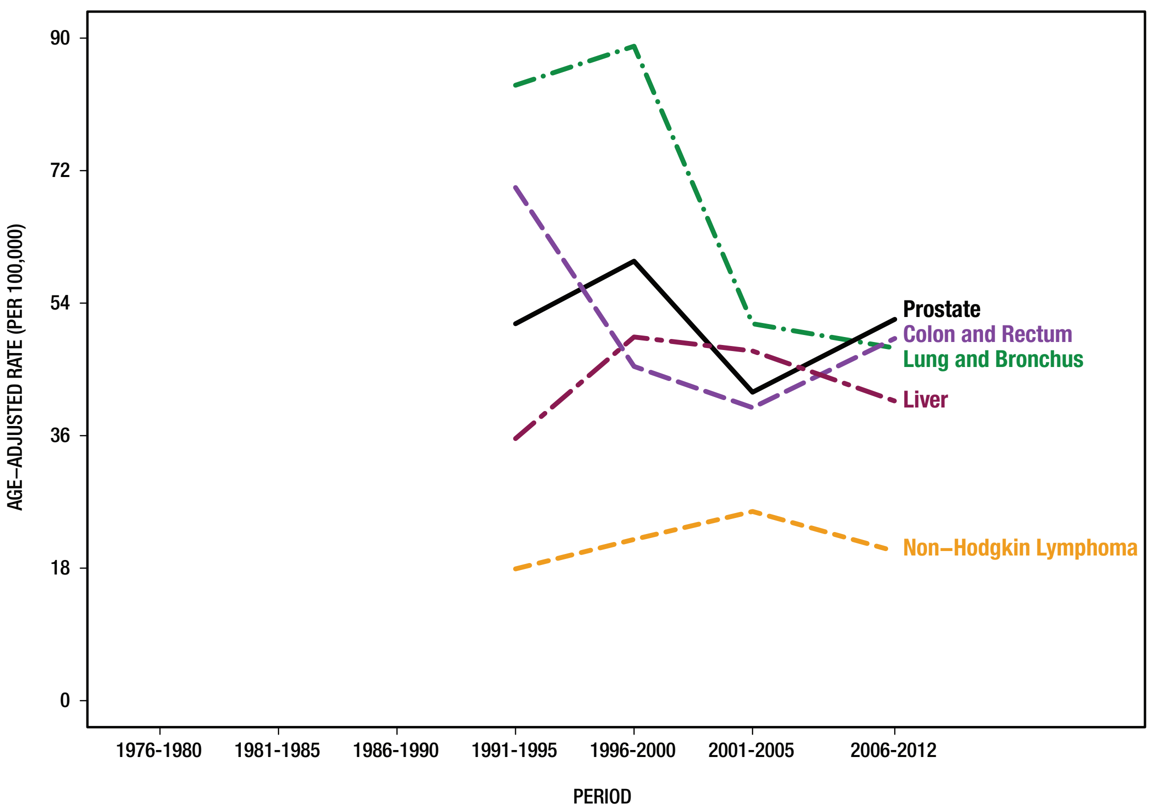
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG HAWAIIAN/SAMOAN MALES IN LOS ANGELES COUNTY, 1976-2012



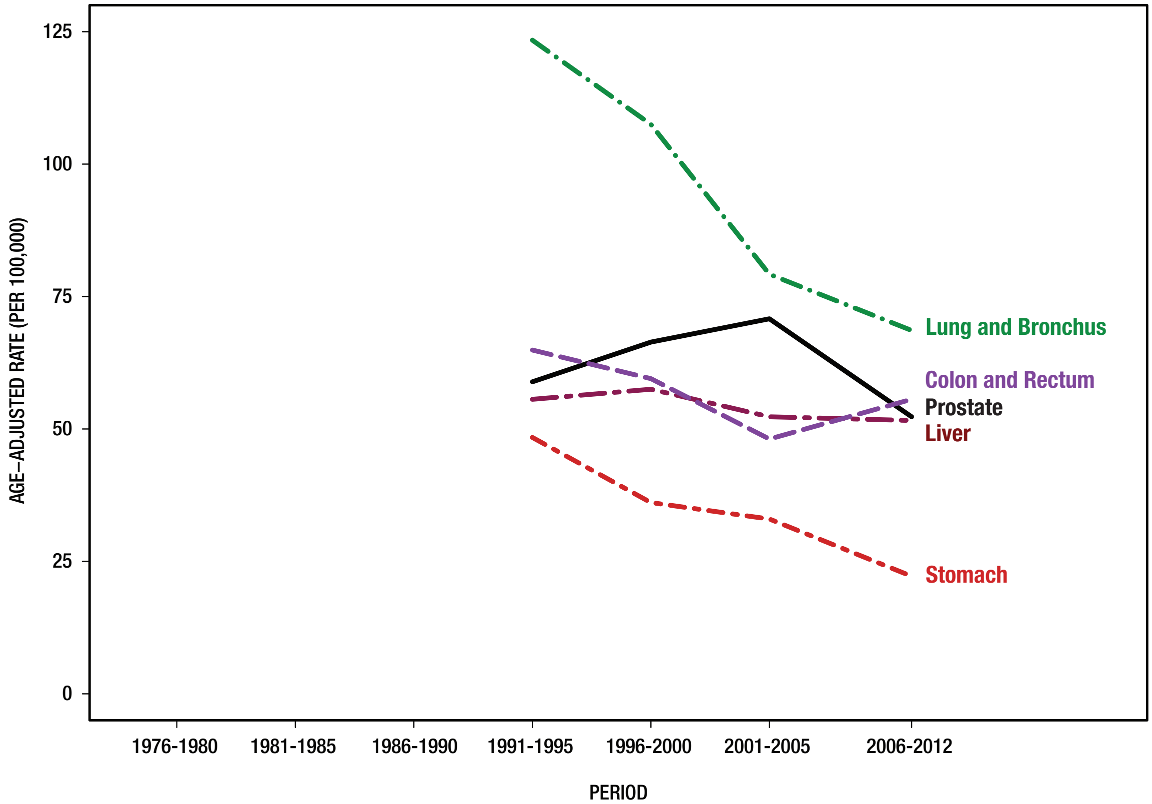
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG INDIAN/PAKISTANI/SRI LANKAN/BANGLADESHI MALES IN LOS ANGELES COUNTY, 1976-2012



TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG THAI/HMONG/CAMBODIAN/LAOTIAN MALES IN LOS ANGELES COUNTY, 1976-2012

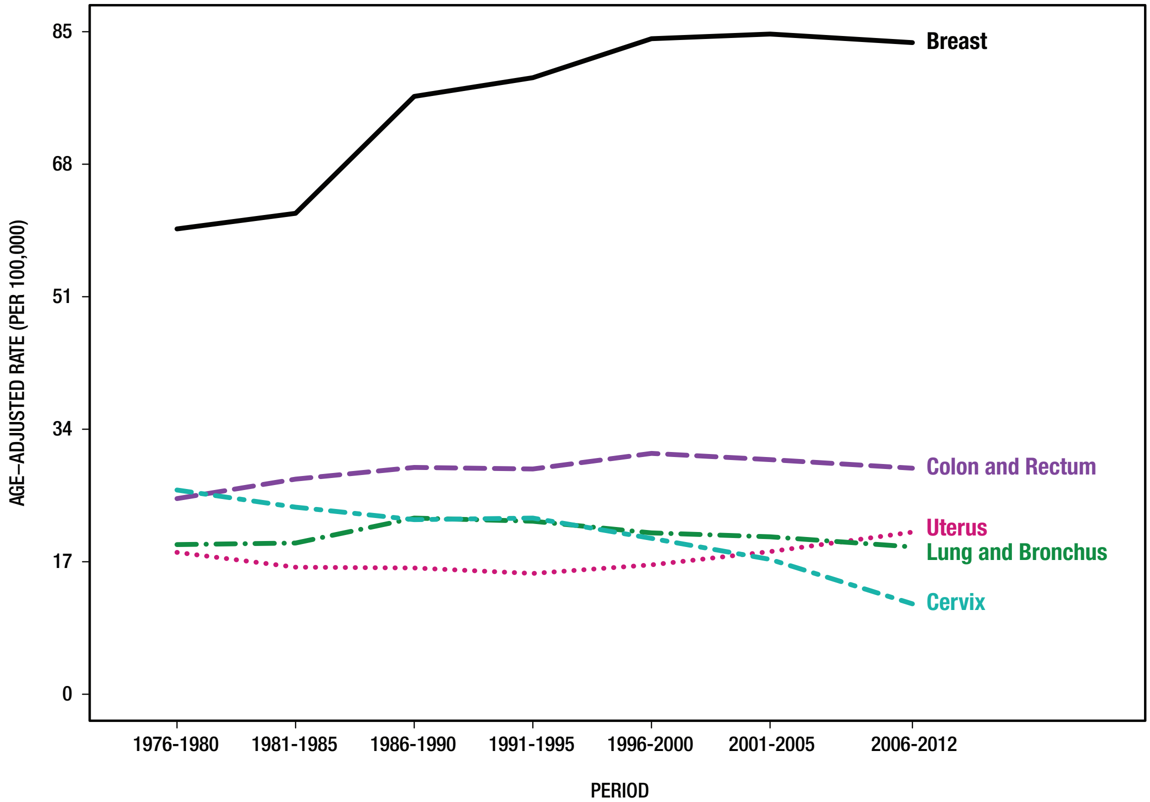


TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG VIETNAMESE MALES IN LOS ANGELES COUNTY, 1976-2012

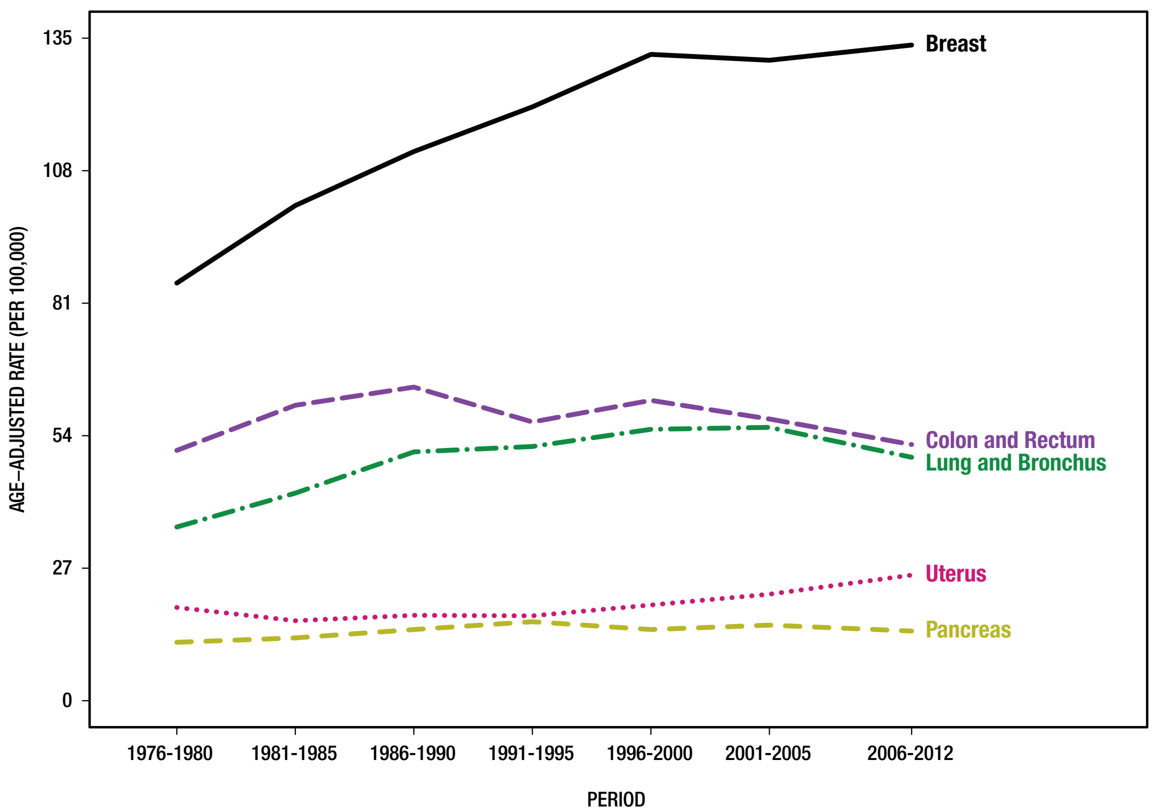


Breast cancer is the most common cancer among all women. In recent years, female breast cancer trends are declining or stable among women of almost all races/ethnicities, except for Korean women whose breast cancer risk continues to increase. Since 2001, colorectal cancer has shown declining trends in women across all racial/ethnic groups. Lung cancer rates are also declining or unchanged among women in most of the population groups. Indian/Pakistani/Sri Lankan/Bangladeshi are the only women for whom lung cancer is not among the top five. As a result of sustained decline in incidence rates, liver cancer remains in the top five most common cancers only in Vietnamese women, while stomach cancer continues to be included in the top five among Japanese, Korean, and Hawaiian/Samoan women. However, incidence is rising for uterine cancer in Latina, black, Chinese, Japanese, and Hawaiian/Samoan women; and for thyroid cancer among Chinese, Filipina, Korean, Indian/Pakistani/Sri Lankan/Bangladeshi, and Thai/Hmong/Cambodian/Laotian women.

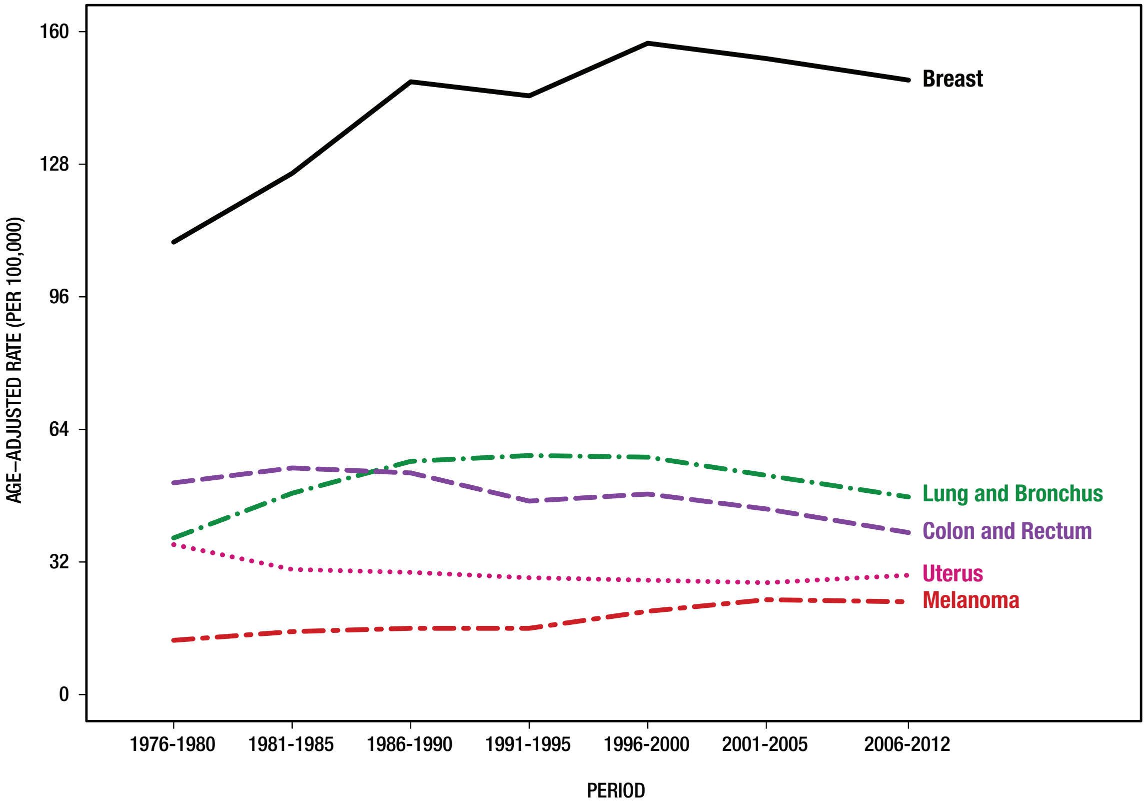
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG LATINO WHITE FEMALES IN LOS ANGELES COUNTY, 1976-2012



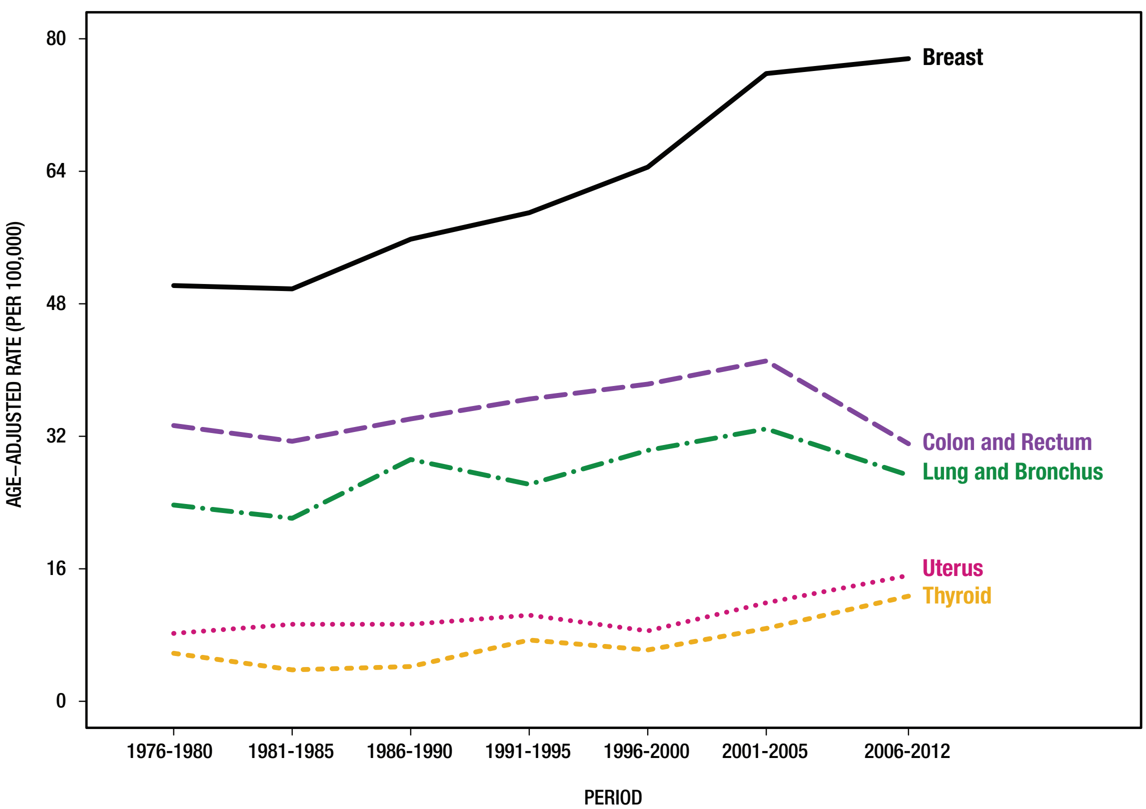
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG BLACK FEMALES IN LOS ANGELES COUNTY, 1976-2012



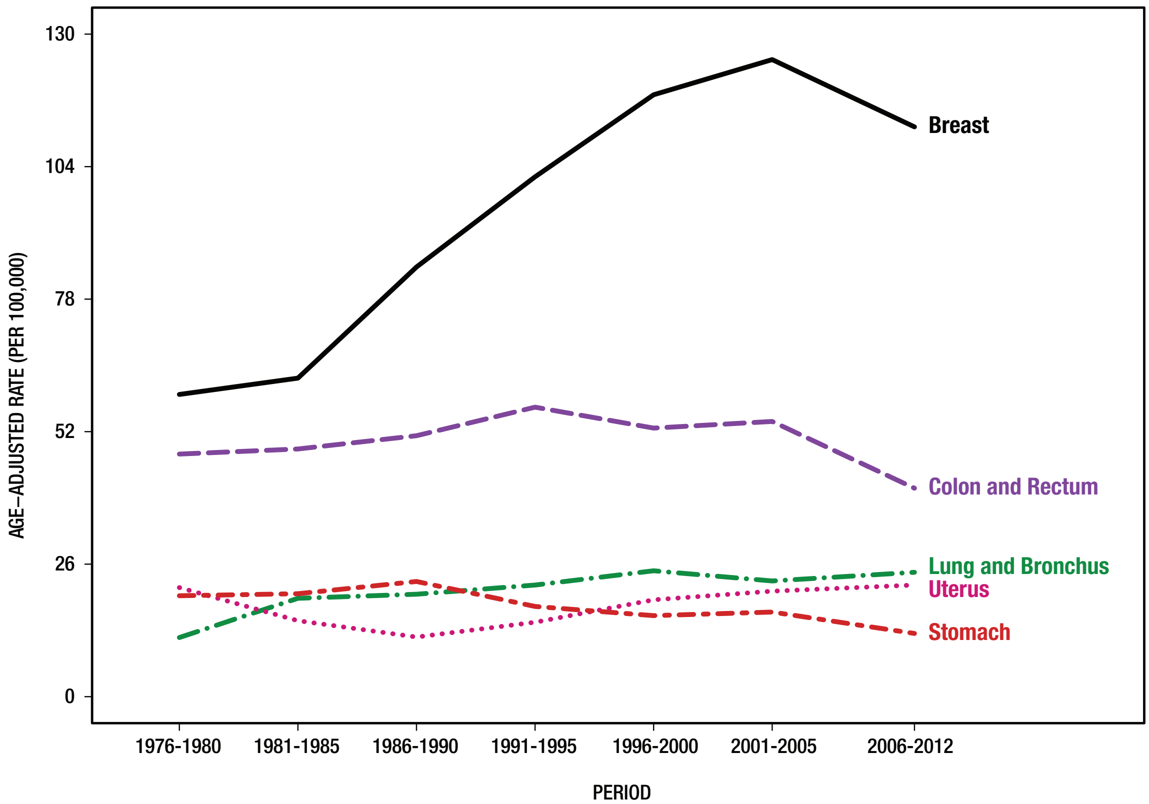
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG NON-LATINO WHITE FEMALES IN LOS ANGELES COUNTY, 1976-2012



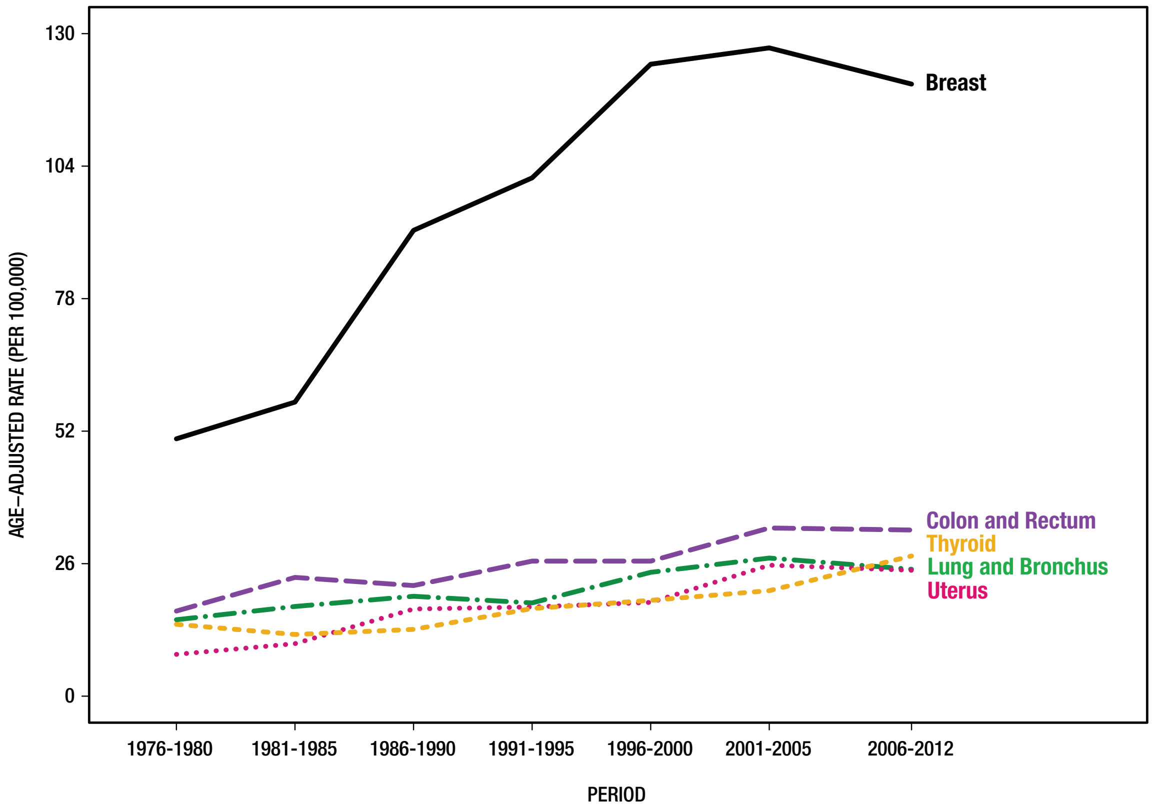
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG CHINESE FEMALES IN LOS ANGELES COUNTY, 1976-2012



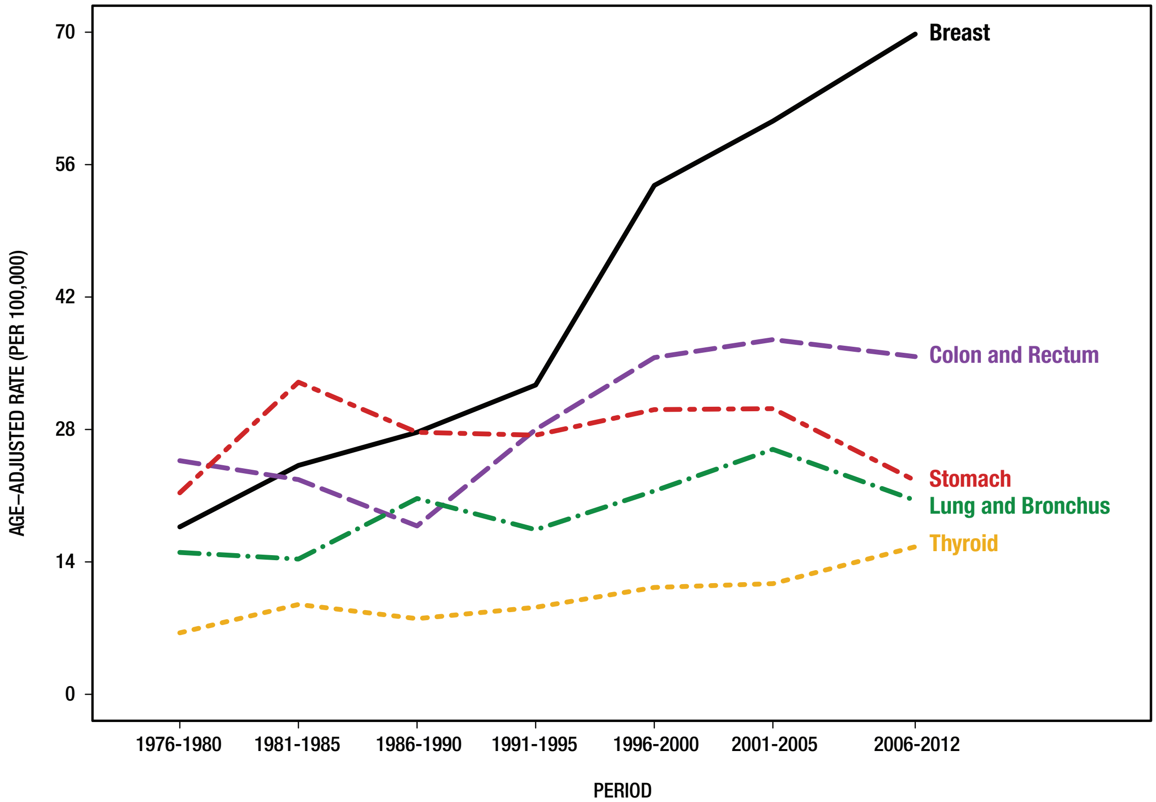
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG JAPANESE FEMALES IN LOS ANGELES COUNTY, 1976-2012



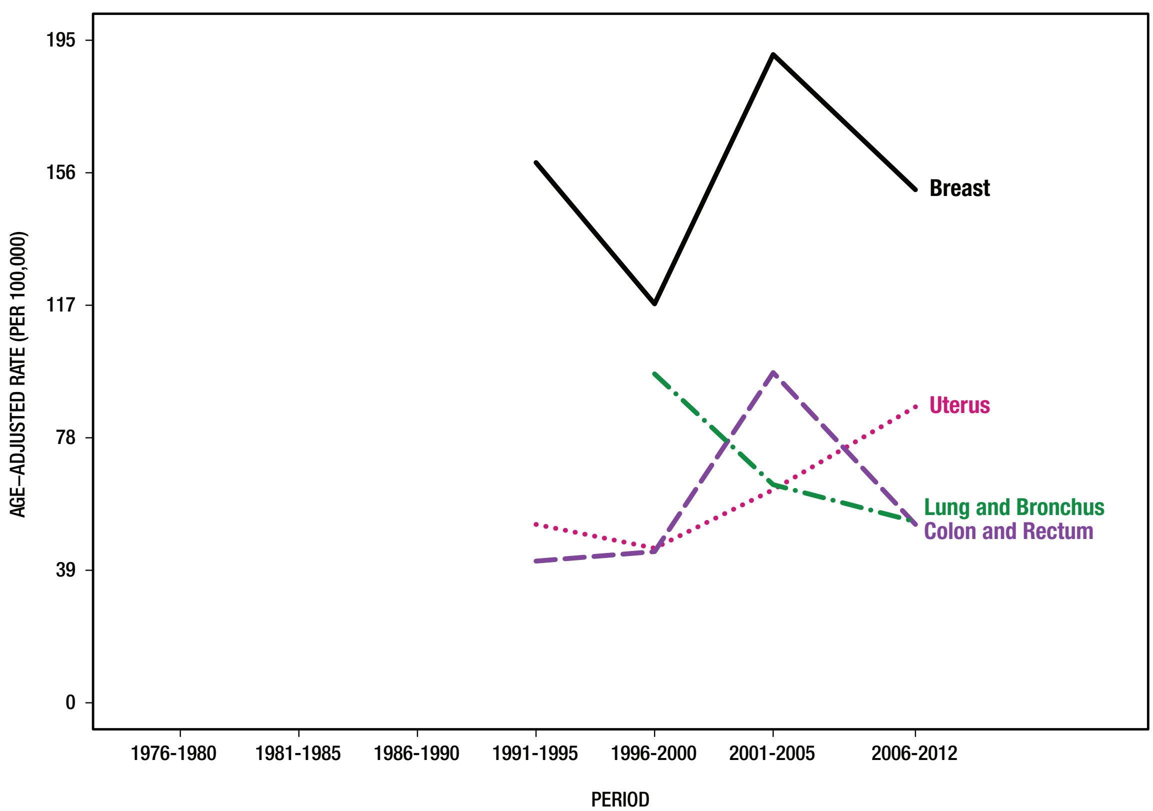
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG FILIPINO FEMALES IN LOS ANGELES COUNTY, 1976-2012



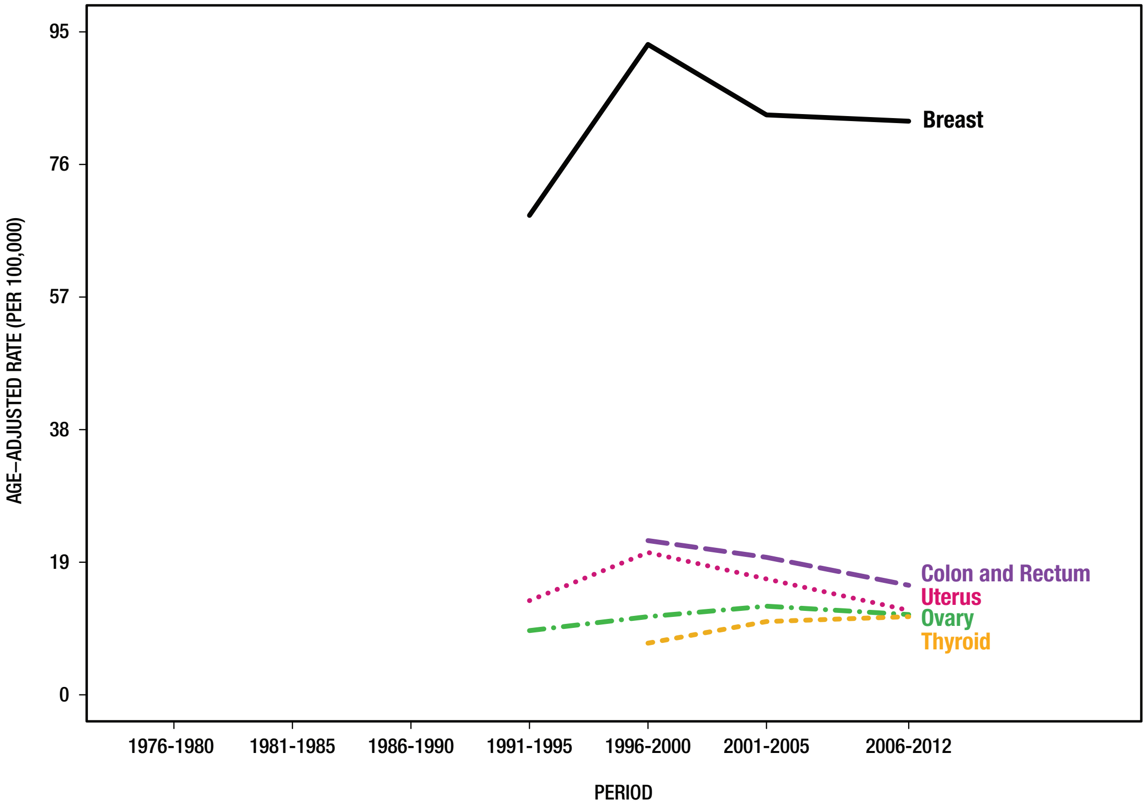
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG KOREAN FEMALES IN LOS ANGELES COUNTY, 1976-2012



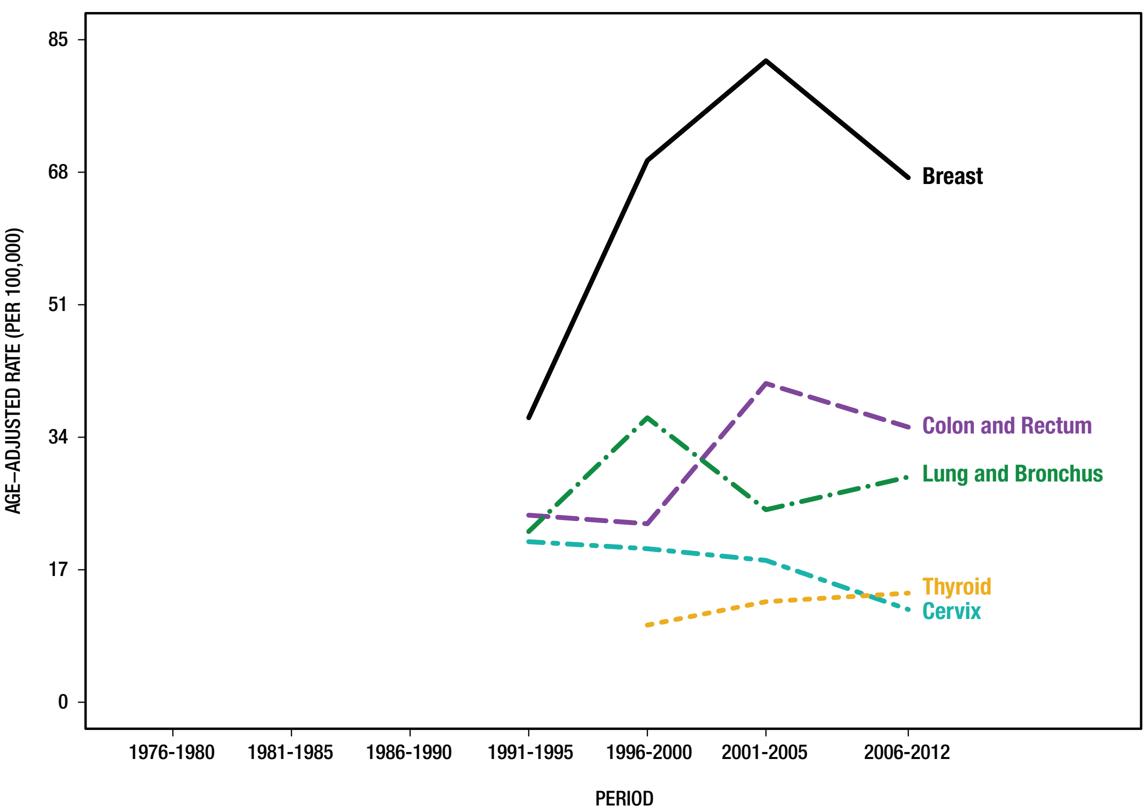
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG HAWAIIAN/SAMOAN FEMALES IN LOS ANGELES COUNTY, 1976-2012



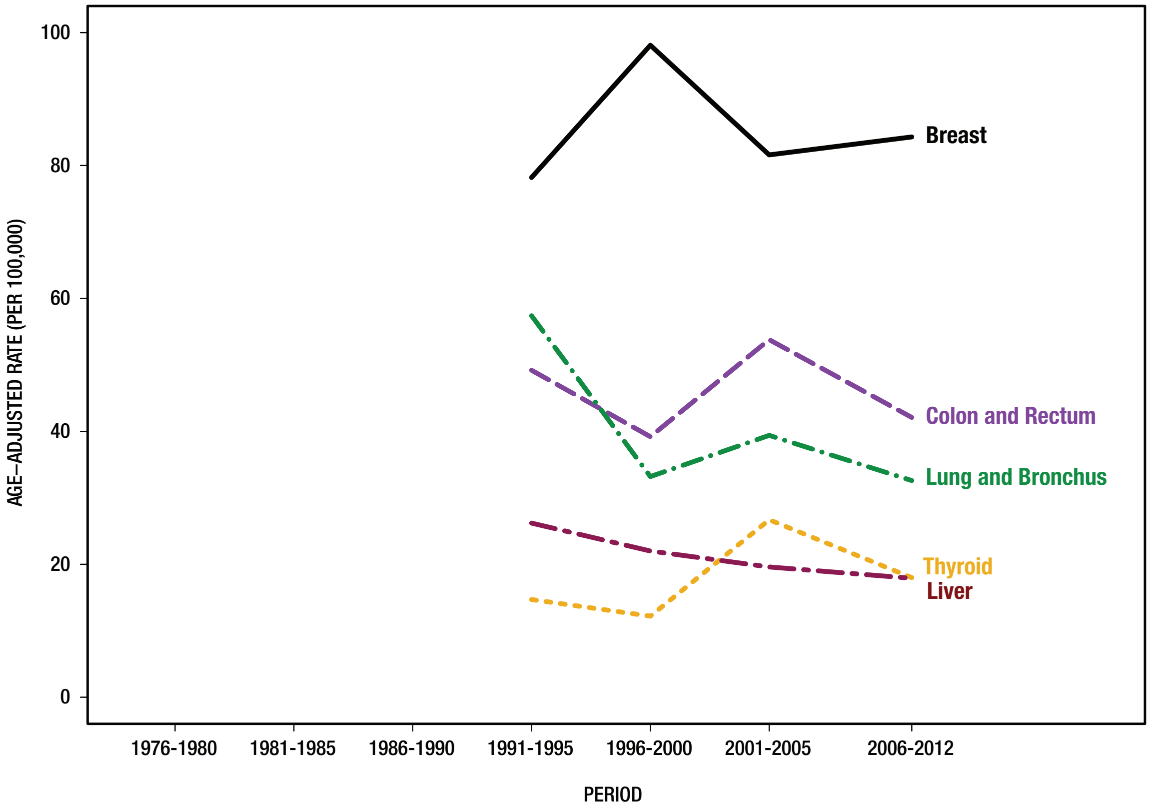
TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG INDIAN/PAKISTANI/SRI LANKAN/BANGLADESHI FEMALES IN LOS ANGELES COUNTY, 1976-2012



TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG THAI/HMONG/CAMBODIAN/LAOTIAN FEMALES IN LOS ANGELES COUNTY, 1976-2012



TRENDS IN AGE-ADJUSTED INCIDENCE RATES OF THE 5 MOST COMMON CANCERS AMONG VIETNAMESE FEMALES IN LOS ANGELES COUNTY, 1976-2012



SITE-SPECIFIC TRENDS BY RACE/ETHNICITY AND SEX

In this section we present trends in cancer incidence rates in Los Angeles County between 1976 and 2012, for major locations of the body (groupings of anatomic sites) and for Kaposi sarcoma, a cancer that is found at many anatomic sites, but is of interest in its own right (see page 44 for details). Each of these cancers is described in one set of facing pages.

For each cancer site we provide a description of worldwide trends in the cancer of interest, along with a brief description of what is known about causes of the cancer. A short description of the trends in Los Angeles County between 1976 and 2012 is presented for that cancer site, along with a summary of the reasons, where they are known, for the observed trends.

For each cancer site, we provide two graphs, one for males and one for females (except for gender-specific cancers, such as cervix and prostate). Each graph contains one line describing the trend in cancer incidence for each of the 11 major racial/ethnic groups: Latino whites, blacks, non-Latino whites, Chinese, Japanese, Filipinos, Koreans, Vietnamese, South Asian (including Asian Indian/Pakistani/Sri Lankan/Bangladeshi); Southeast Asian (including Thai/Hmong/Cambodian/Laotian); and Hawaiian/Samoan. However, where a point on the graph would be based on fewer than 8 cases, the point and the line joining it to other points are omitted. We use this approach so that the lines we plot are based on sufficient numbers of cases about which we can draw firm conclusions.

The numbers of cases graphed in each time period, and statistical measures of the significance of any apparent trends in rates are provided in Appendix B. Where special graphs are presented that focus on a subtype of the cancer site (for example, lung cancer by histology), the distinctions used to arrive at those special groupings can be found in Appendix C.

BRAIN AND OTHER NERVOUS SYSTEM

Roberta McKean-Cowdin, PhD

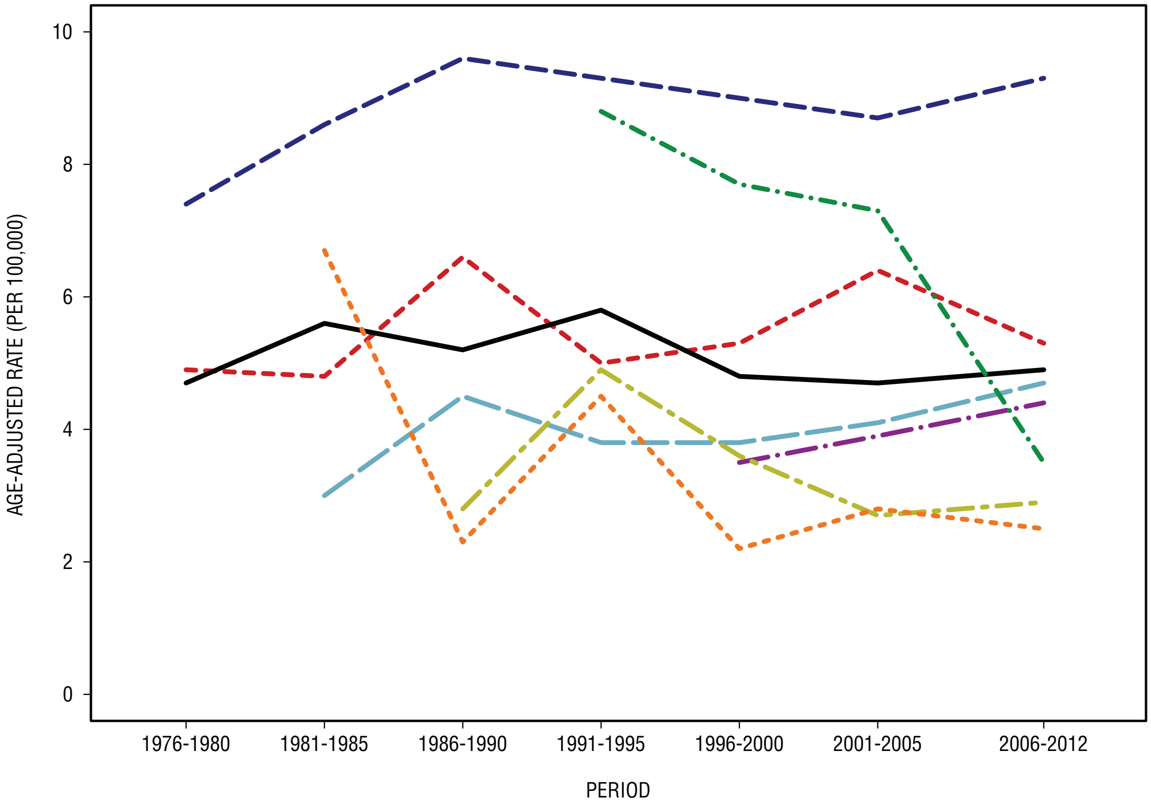
CAUSES AND WORLDWIDE TRENDS

Cancers of the brain and other nervous systems are relatively rare cancers that account for approximately 1.4% of all newly diagnosed cancers in the U.S. These cases include both benign and malignant tumors of the central nervous system. The central nervous system includes the brain, the brain stem, and the spinal cord. The brain stem is located at the base of the brain and contains nerve bundles which control bodily functions like breathing and beating of the heart. The spinal cord is connected to the brain stem and contains bundles of nerves that control muscles, bodily functions, and sensations like touch or pain. Approximately 90% of tumors arise in the brain and 10% arise in the in the brain stem or spinal cord. Even though benign tumors do not invade into surrounding tissue, they can press against important areas in the brain or central nervous system and cause symptoms and outcomes similar to malignant tumors. The most common type of brain and nervous system tumor is meningioma (36%), which is usually benign and is more common in women than men. The second most common type of brain tumor is glioma (28%), which is malignant and more common in men than women. Most types of brain tumors are related to high-dose ionizing radiation, such as that which occurs in radiation treatment for medical conditions. Knowledge of other causes of brain tumors is less certain, but growing evidence suggests a role of genetic susceptibility and ongoing research continues to explore the role of a person's immune system, environmental exposures and lifestyle. Much controversy surrounded the question of whether the incidence of brain tumors which increased in the decades before 1990 was due to increased risk of cancer, particularly among those over the age of 65 years, who showed the greatest increase in rates or was due to improved brain imaging techniques, allowing for more complete diagnosis.

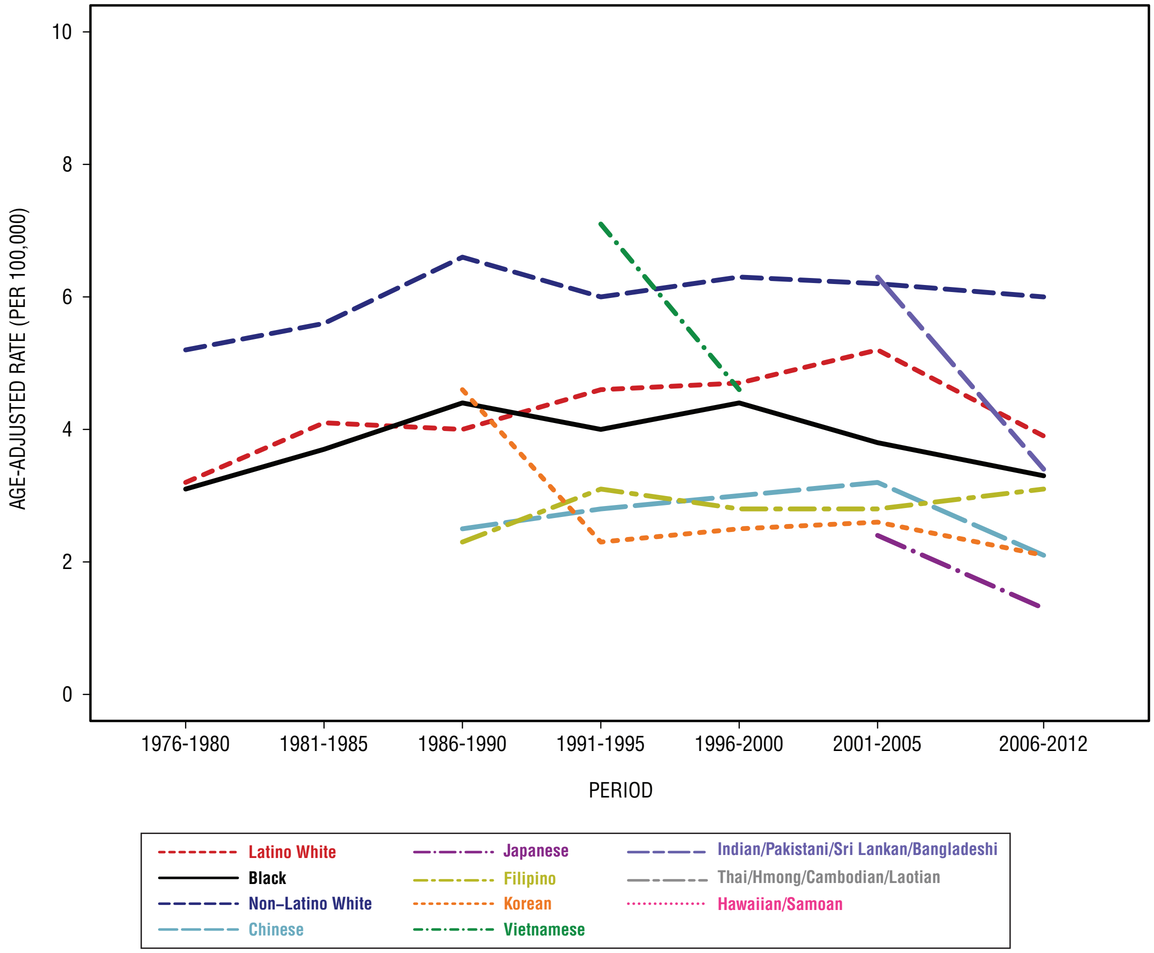
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Brain and nervous system tumors are rare events, therefore some variability in incidence rates over short time periods is expected due to small numbers of cases. Rates of malignant brain and nervous system cancers are generally higher among men than women. The highest rates among men during 2006-2012 were found among non-Latino white men, followed by Latino white, black, and Chinese men. Among women during the same time period, the highest rates were found among non-Latina white women, followed by Latina white, Indian/Pakistani/Sri Lankan/Bangladeshi, and black women. In non-Latino white men there was an increase in incidence rate through 1990, however from 2001-2012 incidence has been relatively stable. In Latino white men, incidence rate decreased during 2001-2012. Similar trends were also found in non-Latina white and Latina white women. Chinese and Japanese men showed small increases in incidence trends, so did Filipinas.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (BRAIN AND OTHER NERVOUS SYSTEM)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (BRAIN AND OTHER NERVOUS SYSTEM)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

BREAST

Carrie Nagy, PhD

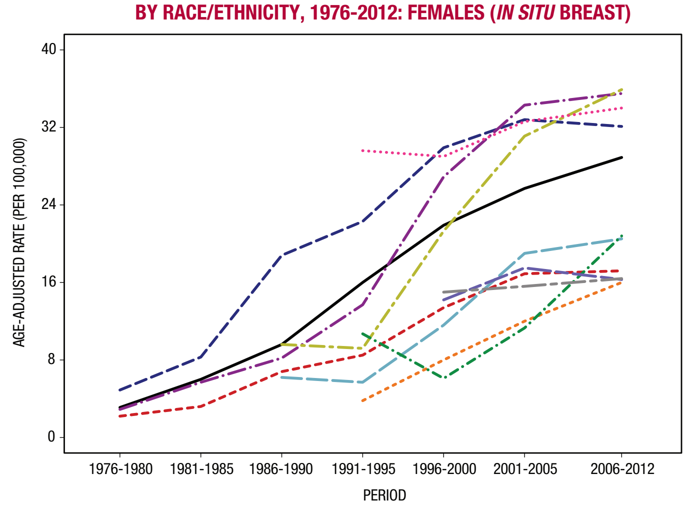
CAUSES AND WORLDWIDE TRENDS

Some breast cancers are diagnosed before they have invaded surrounding tissues and are called *in situ*; others have already spread to other parts of the breast or body and are called invasive. Most of the factors associated with breast cancer suggest that female hormones such as estrogen and progesterone play an important role. Breast cancer risk is linked to beginning menstrual periods at a young age, having regular menstrual periods at a younger age, few or no pregnancies, older age at first full-term pregnancy, shorter periods of breast feeding, and older age at menopause. A small but important increase in breast cancer risk may result from the use of hormonal replacement therapy for treating menopausal symptoms. Alcohol, which may cause liver damage and can increase hormone levels, appears to increase risk, as does height, which may be related to young age at first menstrual period. Older women who are obese are at higher risk, presumably because fat cells are the most important source of estrogen hormones after menopause. Breast cancer risk is higher among women with a family history of the disease, suggesting that genetic factors are important for some women. In humans, radiation treatment to the chest area as a child or young adult increases risk of breast cancer, but in general, exposure to environmental chemicals has been identified as an important role in breast cancer risk. Regular physical activity, which may delay puberty and regular periods and reduce obesity, reduces breast cancer risk. In most countries breast cancer rates are gradually increasing, as increasing wealth results in earlier puberty, later pregnancy, less physical activity, and fewer children. Although it is presumed that hormonal factors are also responsible for male breast cancer, this is not well understood.

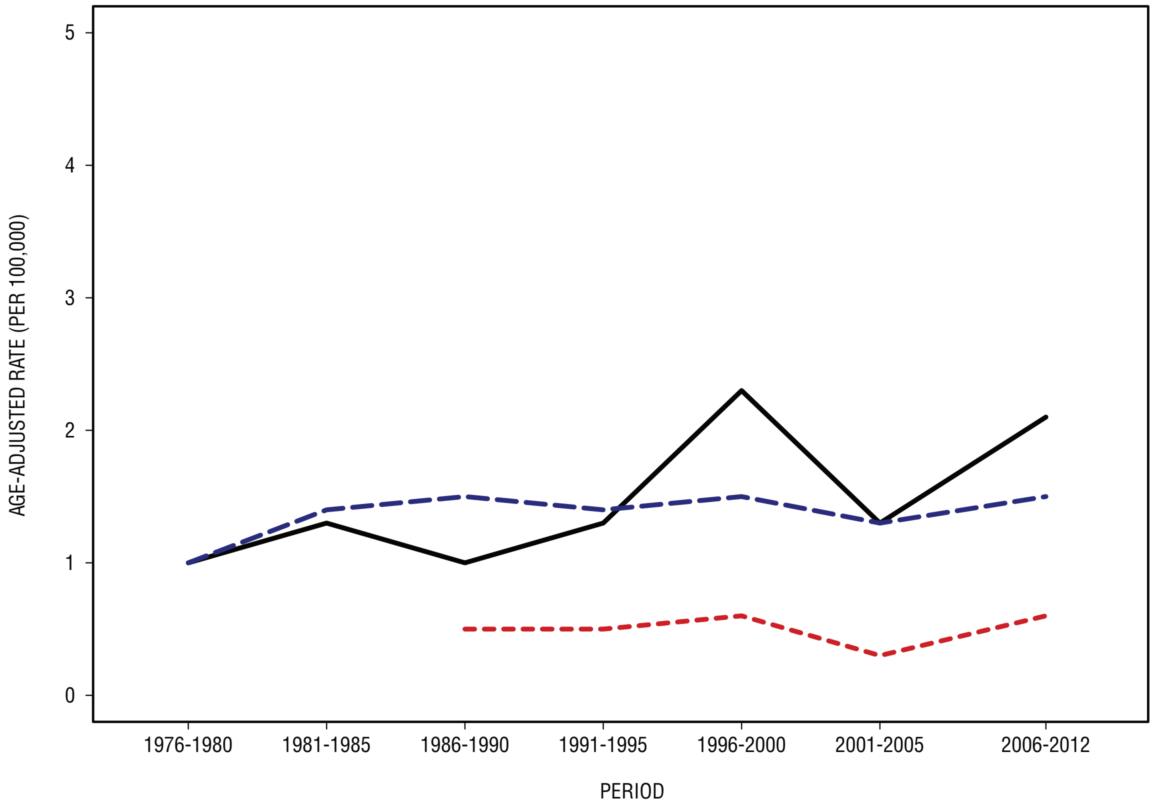
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Among non-Latino white and black women, rates of breast cancer increased substantially before leveling out in the past decade. The incidence of breast carcinoma *in situ*, diagnosed only by mammogram, has been increasing in both non-Latina white and black women and appears to be leveling off for non-Latina white women in recent years. Latinas often have less access to mammograms, which may be driving the lower rates of *in situ* breast cancer among Latinas. The rise in invasive breast cancer is also smaller among Latinas than among non-Latina white or black women. Part of the difference may be explained by the large proportion of immigrant Latinas who have maintained their traditional lifestyle which results in reduced breast cancer risk. Among the other groups, trends in incidence of invasive breast cancer among Japanese and Filipinas, who have adopted more of a U.S. lifestyle, are parallel to those among non-Latina whites, although at a lower overall rate. Rates among Chinese women have increased more gradually, similar to Latina women, although at a slightly lower level. The rates among Korean women have increased more dramatically during this time and are now similar to rates seen in Chinese and South Asian women. Breast cancer among men is so rare it can only be tracked with confidence among non-Latino whites and has changed little over time.

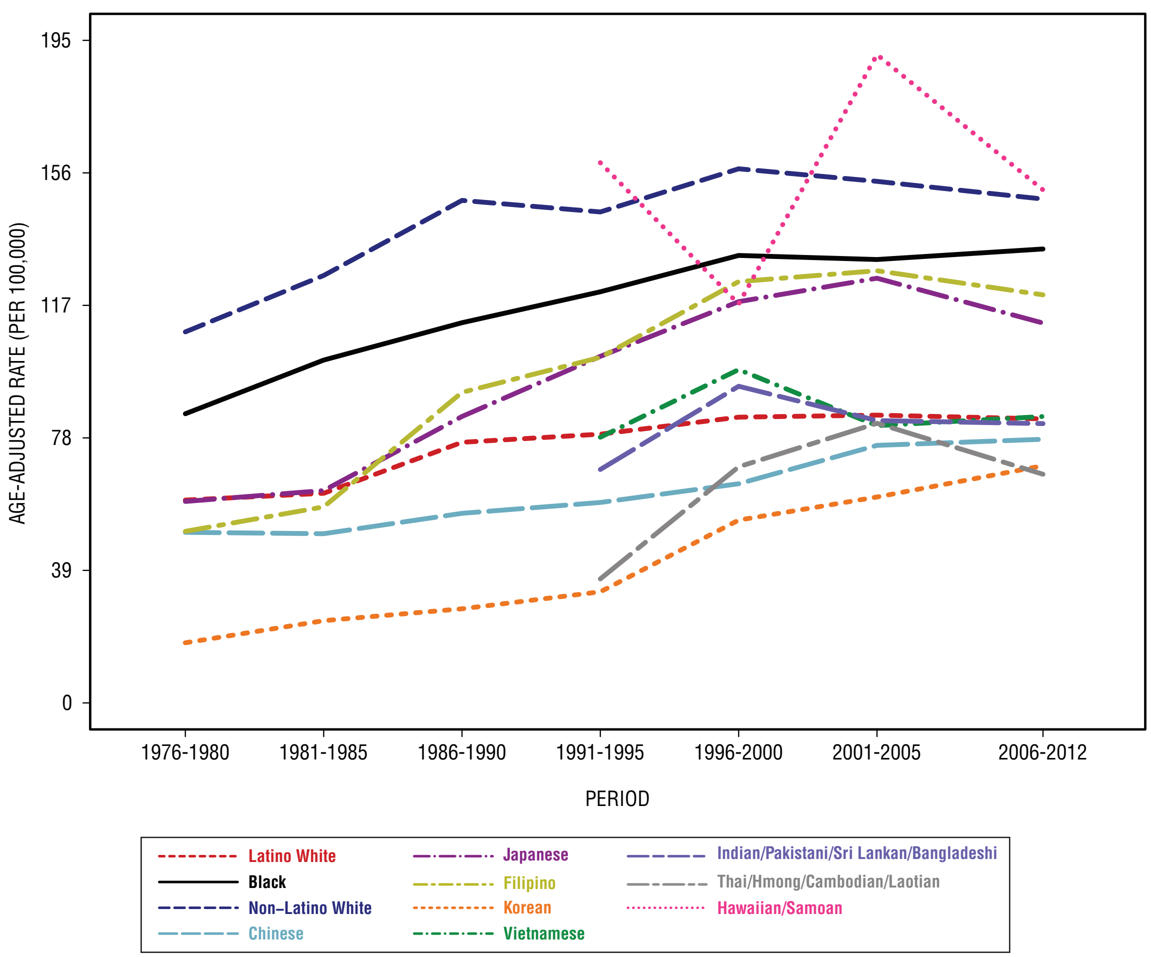
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (*IN SITU* BREAST)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (BREAST)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (BREAST)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

CERVIX

Loraine A. Escobedo, PhD

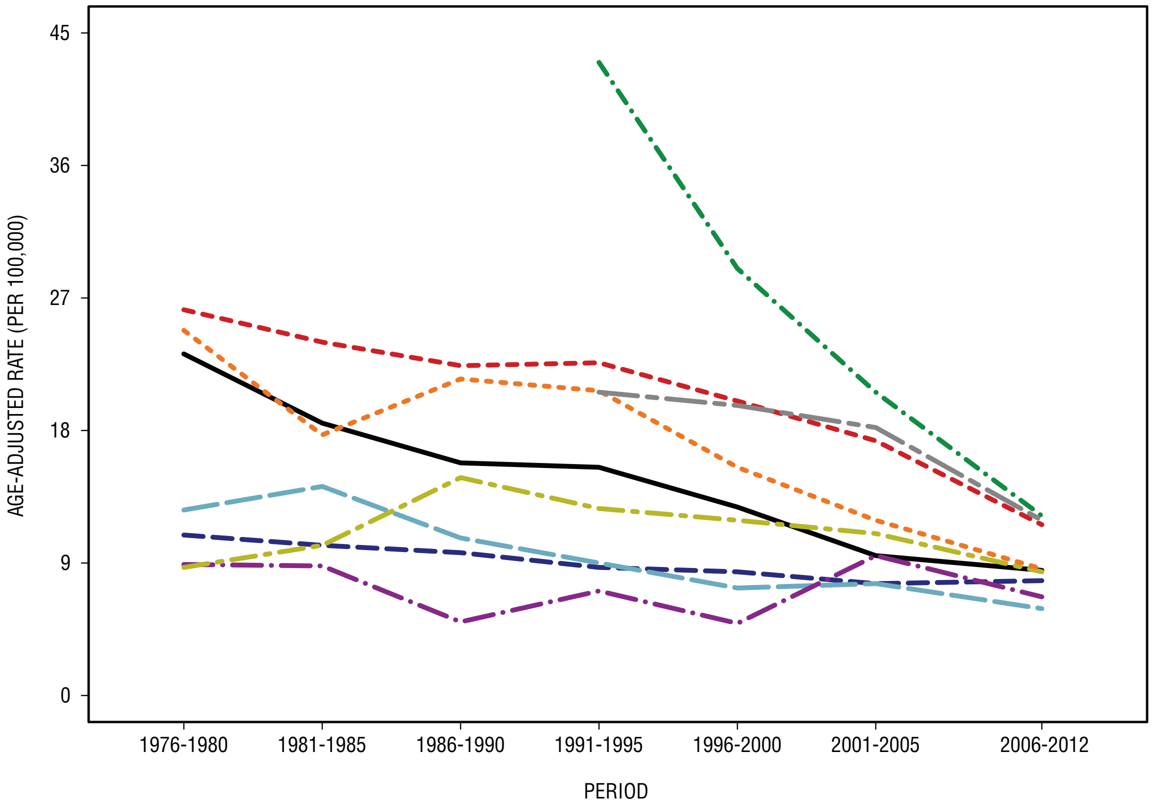
CAUSES AND WORLDWIDE TRENDS

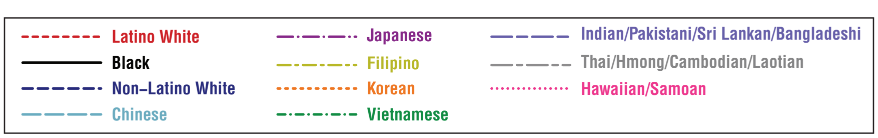
Cervical cancer starts in the cervix located at the lower end of a woman's uterus or womb. It is the sixth most common cancer in women worldwide. In the U.S. and many developed countries, cervical cancer is declining. However, this is not true in developing countries and medically underserved populations such as parts of Africa, Central Asia, Central Europe and Eastern Europe. Although the reasons for this alarming trend are not completely known, increasing risk of infection from the Human papillomavirus (HPV) due to changes in family structures and social customs may be contributing. Most cervical cancers are caused by sexually transmitted infection with HPV and can be prevented by HPV vaccination. In addition, screening (such as a Pap test) and treatment of early changes in the cervix tissue that may lead to cancer have been shown to reduce both cervical cancer incidence and mortality. Special methods that are cost-effective and promote compliance are being used in developing countries to both prevent and treat cervical cancer.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Cervical cancer incidence rates have decreased overall between 1976 and 2012. Incidence rates for Latinas were more than two times higher than for non Latina white women for almost 30 years, however, this difference has become much smaller between 2006 and 2012. Rates for black, Chinese, Filipino and Korean women also fell over the time period. The most dramatic decline occurred among Vietnamese women but these rates are based on only a few cases. Rates among Indian/Pakistani/Sri Lankan/Bangladeshi and Hawaiian/Samoan women are not shown because the numbers of cases are too small to calculate accurately.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (CERVIX)





Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

COLON AND RECTUM

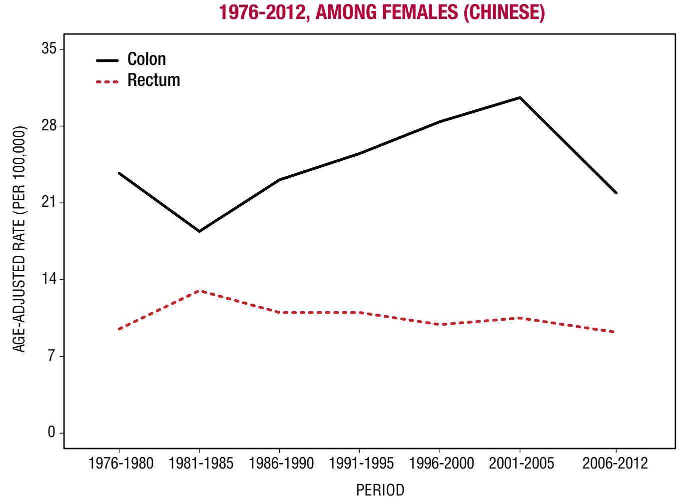
Anna Wu, PhD

CAUSES AND WORLDWIDE TRENDS

There is good evidence that risk for colon and rectum cancer is increased with an inactive lifestyle, large body size, smoking, and a history of diabetes. A diet high in calories, fat, red meat and alcohol also may increase risk, as can too little intake of calcium and plant foods rich in vitamin B and fiber. There is some evidence that risk of colorectal cancer is lower among regular users of aspirin and other similar drugs such as ibuprofen. Women who use certain hormones including oral contraceptives and hormone therapy for menopause also may have a lower risk of colorectal cancer. Colon cancer is at least two times more common than rectal cancer but the two cancers are typically grouped together because of their structure and function of the organs. Colorectal cancer is more common in Western countries and less common in Japan, China and other Asian countries. While rates of colorectal cancer remain high in Western countries including the U.S., Canada, Northern and Western Europe, Australia and New Zealand, colorectal cancer has become more common in Japan, Singapore, China, and many parts of Eastern Europe in the last 20 years. This may be due to the spread of a more westernized lifestyle, increase in body weight, diabetes, and physical inactivity. In most countries and racial/ethnic groups, incidence rates are at least 20-30% higher in men than in women. In the U.S., colorectal cancer was more common in the 1980s among whites and in the early 1990s among blacks. A decline occurred in men and women but may be more apparent in women. Increased colorectal cancer screening, using special instruments to inspect the colon and rectum (sigmoidoscope and colonoscope), and subsequent removal of benign growths called polyps is the likely explanation. Use of hormone therapy and oral contraceptives among women has been suggested to explain the larger declines in women than in men, but this is unproven.

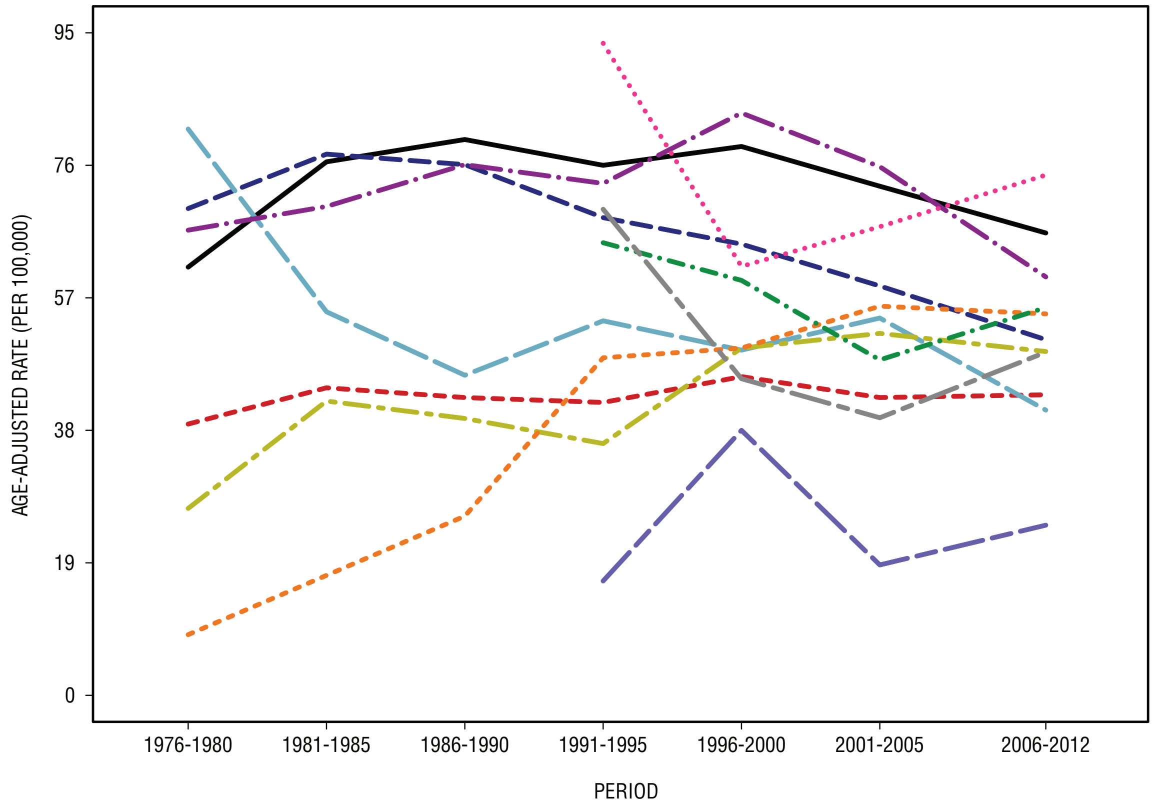
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY, 1976-2012, AMONG FEMALES (CHINESE)

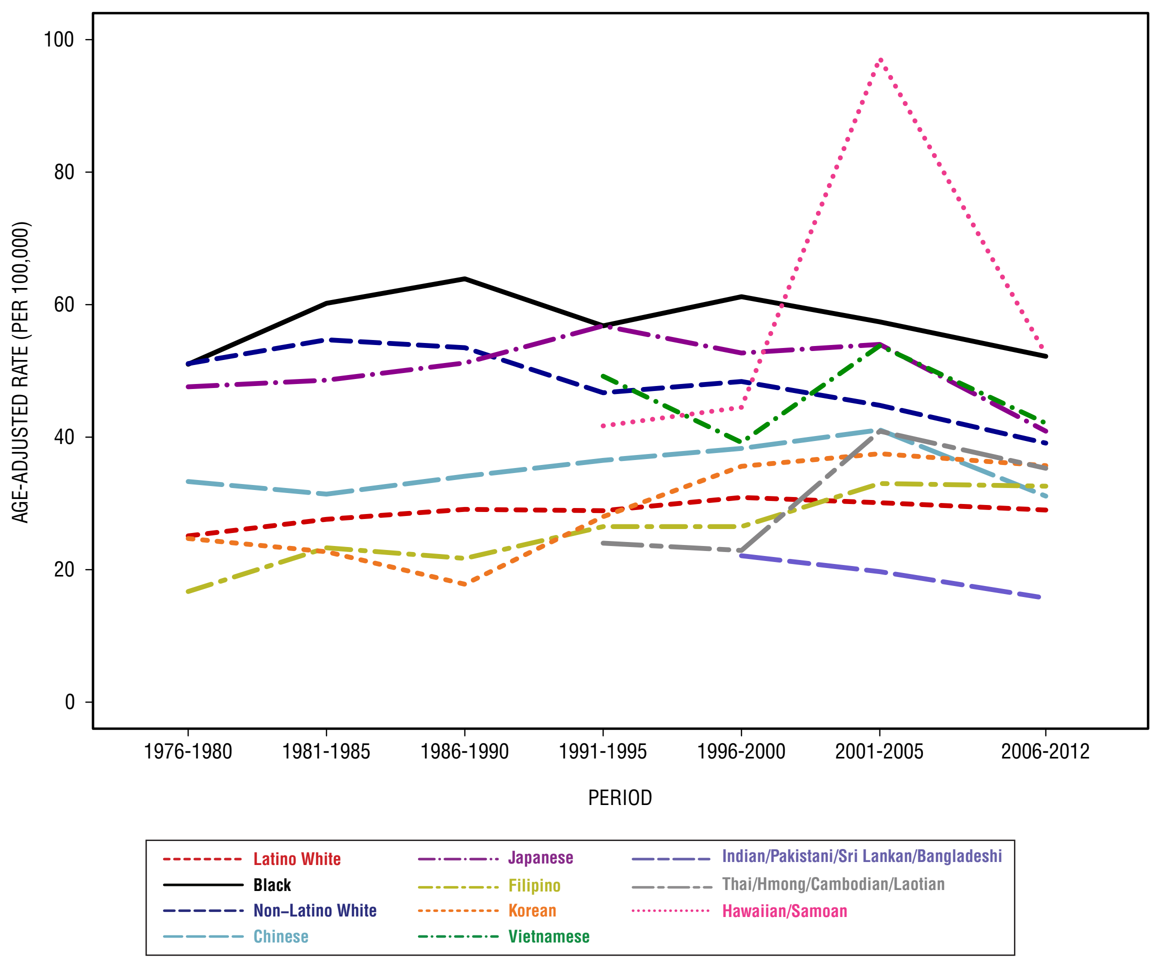


Cancers of the colon and rectum combined are the third most commonly diagnosed cancers among both men and women in Los Angeles County. Incidence rates of this cancer have declined recently among non-Latino whites, blacks, Japanese, and Chinese. Colorectal cancer rates have not varied much among Latino whites and Filipinos, but continues to rise among Koreans, Vietnamese, and South Asians, particularly in men. During 2006-2012 in Los Angeles County, incidence rates were highest in blacks (66.3 per 100,000) followed by rates in Japanese men (60.0 per 100,000). It is notable that the rates in Vietnamese (55.6 per 100,000) and Korean (54.7 per 100,000) men have now surpassed non-Latino white men (51.0 per 100,000). The continued increase of this cancer, particularly in traditionally lower risk Asian groups, has occurred mostly in colon but not rectum cancers (shown above) and indicates a need for better education and screening for all racial/ethnic groups.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (COLON AND RECTUM)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (COLON AND RECTUM)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

ESOPHAGUS

Myles Cockburn, PhD

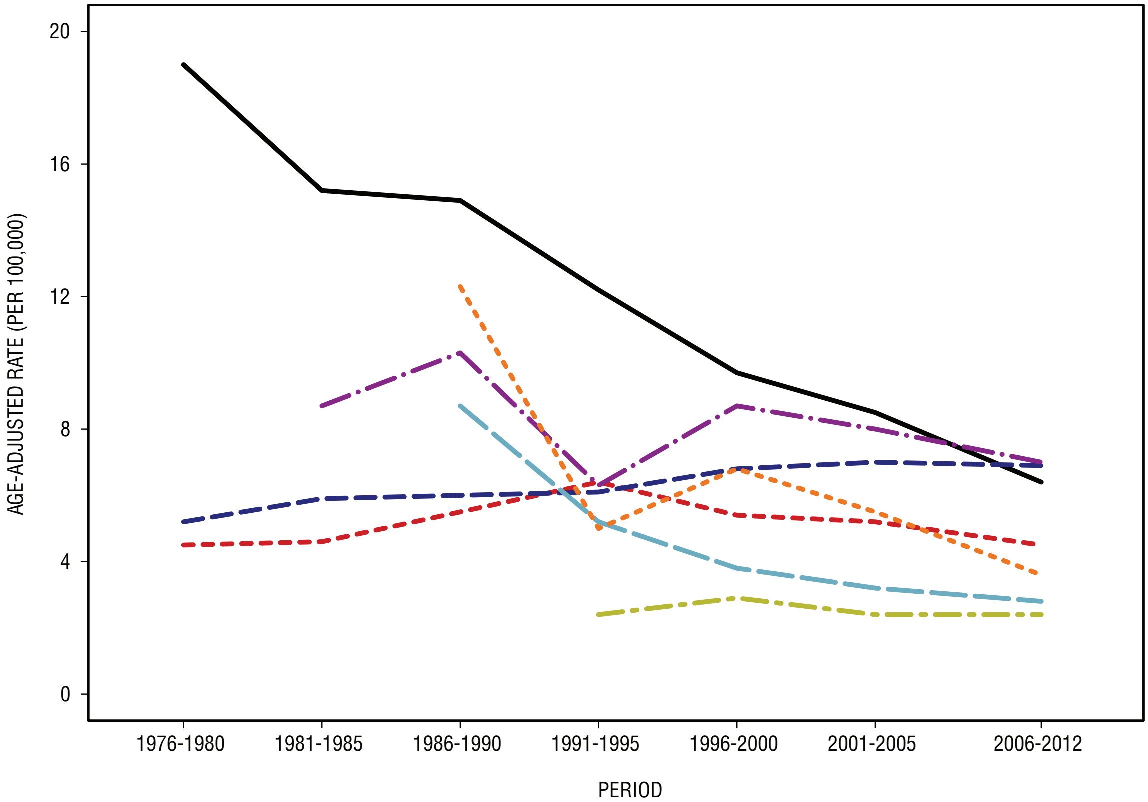
CAUSES AND WORLDWIDE TRENDS

Trends in overall esophageal cancer incidence rates reflect two competing trends: a decrease in incidence rates of squamous cell carcinoma of the esophagus and an increase in incidence of adenocarcinoma of the esophagus. These trends also affect racial/ethnic groups differently. For example, adenocarcinoma of the esophagus affects primarily white populations (both non-Latino and Latino whites), whereas the highest rates of squamous cell carcinomas of the esophagus have been observed in parts of Asia (particularly China), Africa and Latin America as well as among blacks in the U.S. Major risk factors for squamous cell carcinomas of the esophagus are heavy consumption of tobacco and alcohol which likely accounts for at least 90% of these cancers in Western Europe and North America. Local habits such as chewing betel nut (India) or tobacco (Central Asia), nutritional deficiencies, particularly of fruit and vegetables, and drinking extremely hot beverages also contribute to the risk in certain parts of the world. Smoking also contributes to the risk of adenocarcinoma of the esophagus, but its effect is less than for squamous cell tumors; alcohol does not play a role in adenocarcinoma of the esophagus. Obesity and gastroesophageal reflux are likely the key risk factors for adenocarcinoma of the esophagus. The incidence of squamous cell carcinoma of the esophagus is declining in areas where smoking cessation efforts have been successful and alcohol intake is declining. Incidence rates of adenocarcinoma of the esophagus are increasing substantially in westernized countries, particularly among white men; rates also appear to be increasing among white women, although they are substantially lower than those for men.

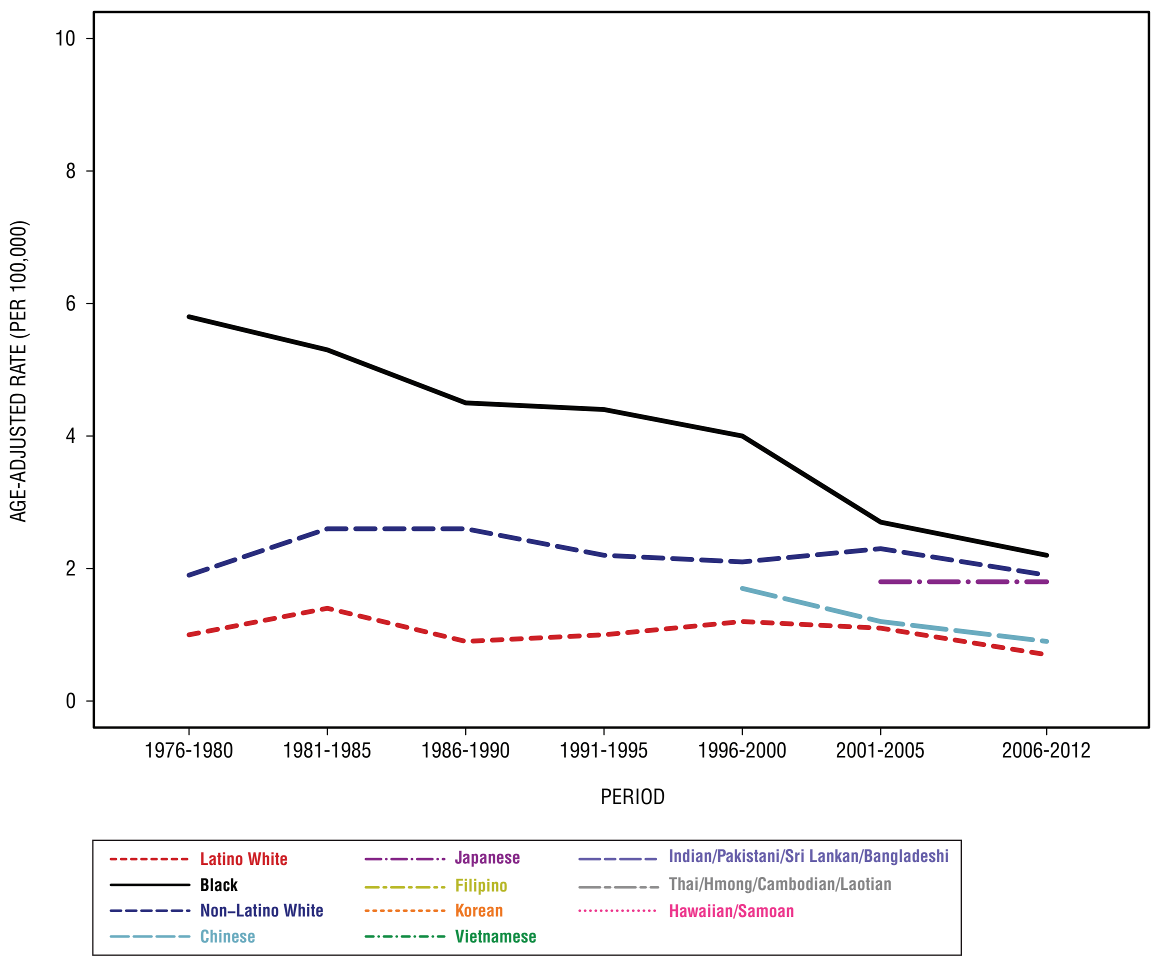
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Rates of esophageal cancer in Los Angeles County show a decline in incidence for black men and women, likely reflecting changes in smoking and drinking habits and the fact that blacks do not appear to experience high risk of adenocarcinoma of the esophagus. Rates for Latino white men appear to be declining slightly, likely reflecting a decline in squamous cell carcinomas of the esophagus because of changing habits of smoking and alcohol intake coupled with a dramatic increase in adenocarcinoma. Rates for non-Latino white men appear to be increasing, and in the most recent time period exceeded rates among blacks for the first time. Increasing rates among non-Latino white men are most likely a result of increasing incidence of adenocarcinoma of the esophagus. Rates of esophageal cancer for women are lower than for men and appear to be decreasing for all race groups among women.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (ESOPHAGUS)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (ESOPHAGUS)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

KAPOSI SARCOMA

Ann Hamilton, PhD

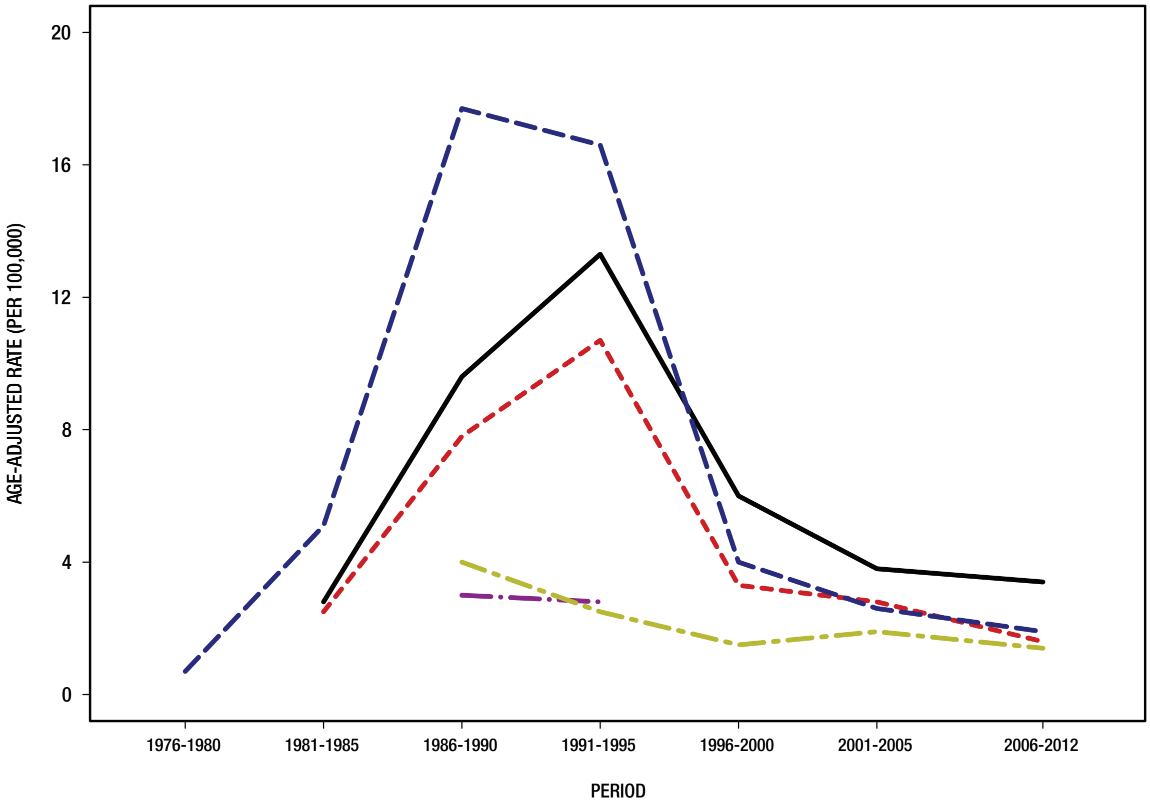
CAUSES AND WORLDWIDE TRENDS

Kaposi's sarcoma (KS) is a type of cancer in which the effected cells are similar to those that make up blood vessels. It occurs in people with suppressed immune systems, including the elderly (commonly referred to as classic KS), transplant recipients who have been taking drugs to prevent rejection of organs, and people infected with the HIV virus (known as AIDS-KS). The hallmarks of classic KS were first described nearly a century ago as a slow-growing skin tumor seen predominantly in older men of Italian and Jewish Eastern European ancestry. This profile changed markedly in the early 1980s with the occurrence of the AIDS epidemic when KS was initially the most common cancer seen in patients with HIV infection. Initially, about 20% to 40% of HIV patients acquired it during the course of their illness. Because KS occurred in people with and without HIV, and more often in selected subgroups (gay men) than others (transfusion recipients), it was logical to assume that another virus or co-factor was necessary for the development of the disease. In 1995, another virus, the HHV8 or KSHV virus, was discovered to be associated with the development of KS. It was shown that the combination of HHV8 with the immunosuppression caused by HIV was related to the development of AIDS-KS. After highly active antiretroviral therapy (HAART) was developed to treat HIV/AIDS beginning in 1995, the incidence of AIDS-associated KS dropped dramatically.

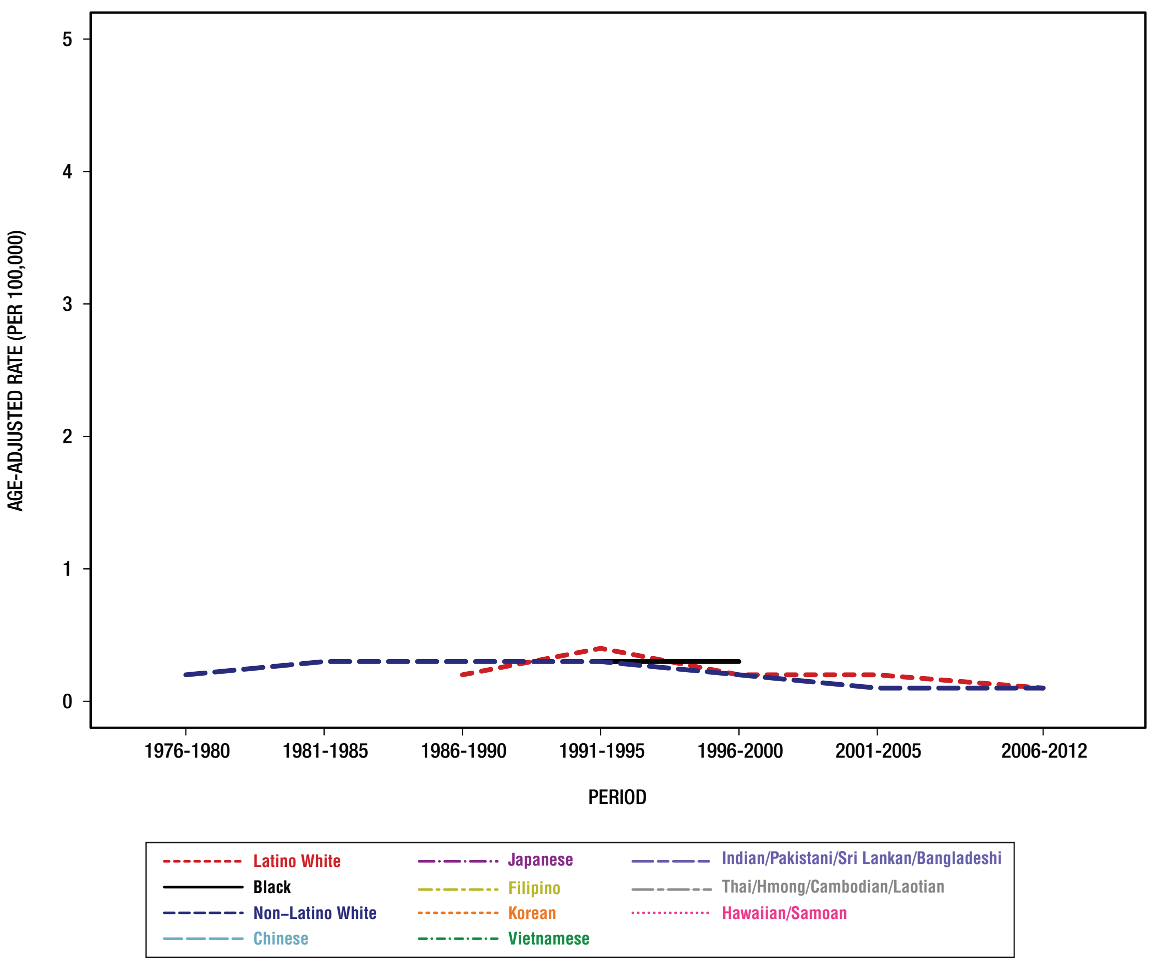
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Paralleling the trends of the AIDS epidemic, the rates of KS in non-Latino white men increased nearly tenfold from 1976-1980 to 1981-1985 and then nearly quadrupled from 1981-1985 to 1986-1990 when it reached its peak. The rates among black and Latino white men peaked five years later in 1991-1995. By 1996-2000 the rates declined dramatically in all racial/ethnic groups and have shown a steady, but much more modest decline between 2001-2005 and then continued to decline slightly from 2006-2012. However, rates among black men have still not declined as much as those for non-Latino and Latino whites. Rates have been consistently low among Filipino men, the only other racial/ethnic group with sufficient numbers to provide rates in the most recent time period. Compared to men, rates have remained very low among non-Latina and Latina white women throughout the period. The low rates among women reflect the greater association of AIDS-associated KS with gay men (who were more likely to be infected with the HHV8 virus).

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (KAPOSI SARCOMA)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (KAPOSI SARCOMA)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

KIDNEY AND RENAL PELVIS

Recinda L. Sherman, PhD

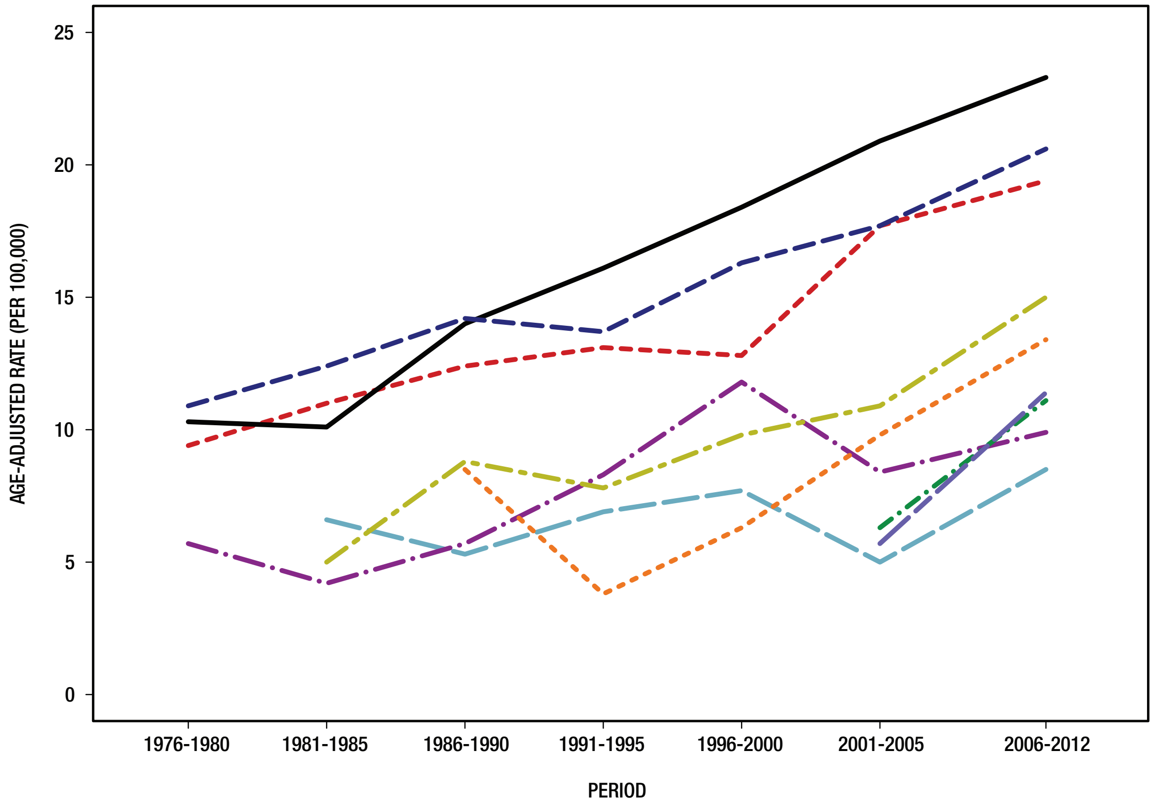
CAUSES AND WORLDWIDE TRENDS

Cancers of the kidney and renal pelvis are among the top 10 cancers in incidence in the U.S. and account for 4% of all newly diagnosed cancers in the U.S. Rates vary worldwide with higher incidence rates of kidney cancers found among men in developed countries. The risk of developing kidney cancers is high in Europe and North Americana and low in Asia and South America. The most common histologic type of kidney cancers for adults is renal cell carcinoma which comprises about 90% of kidney cases, of which clear cell renal cell carcinoma being the most common subtype. Wilms tumors are the most common in children. Cigarette smoking is an important cause of kidney cancers, and smokers who quit tobacco will decrease their risk of kidney cancers. Other risk factors are obesity, hypertension, and having certain inherited conditions, including von Hippel-Lindau disease, Birt-Hogg-Dube syndrome, tuberous sclerosis, and familial papillary renal cell carcinoma. Taking some types of pain medication in high-doses over an extended time may also increase risk of kidney cancer. However, using over-the-counter pain medications at a recommended dosage convey other health benefits, such as reducing the risk of breast, prostate, and colorectal cancers. After increasing for decades, incidence trends for kidney cancers worldwide have plateaued or decreased since the 1990's. U.S. rates, however, have continued to rise but the increase in rates are mostly seen in early stage cancers indicating increased detection through abdominal imaging plays a role. Increasing rates of obesity may also be a contributing factor to the rising incidence.

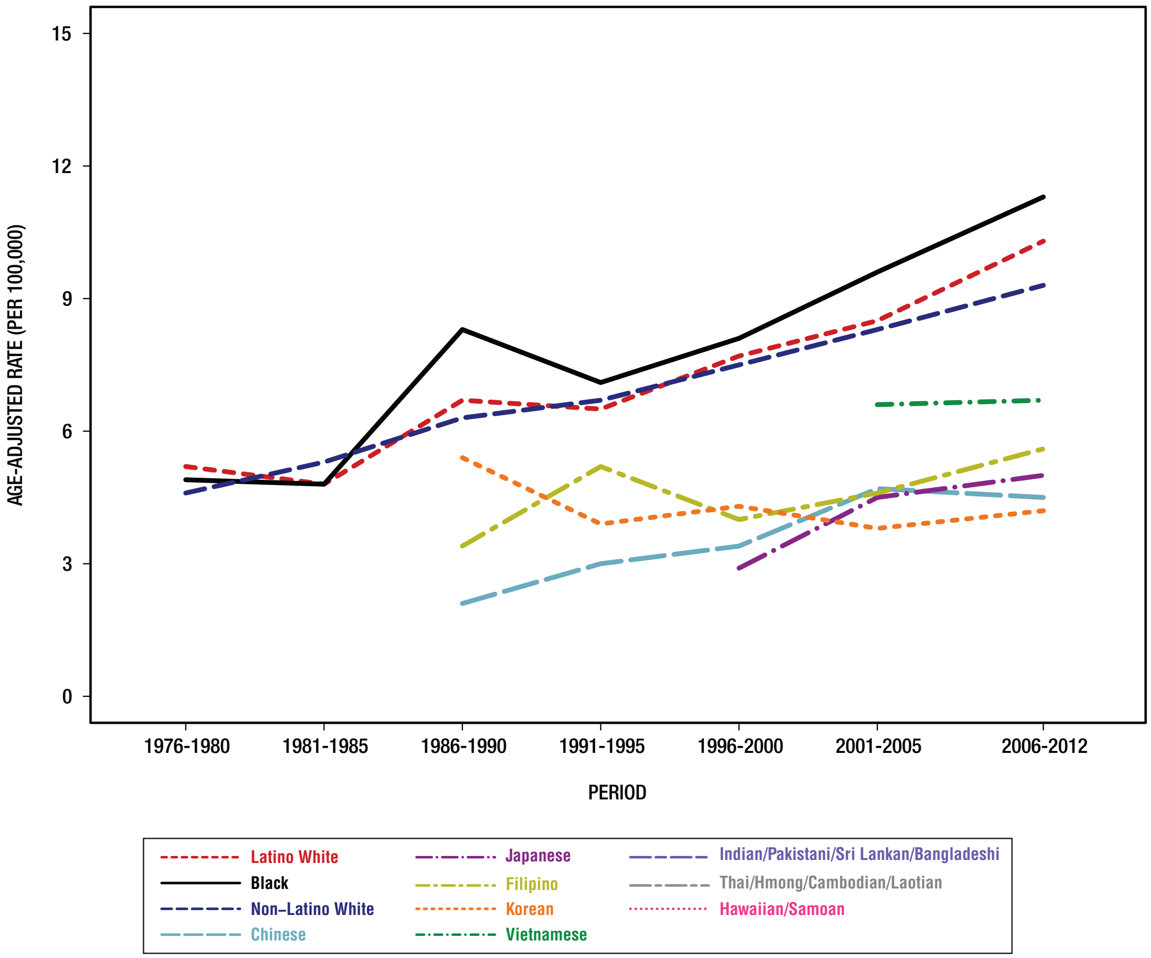
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Similar to national trends, rates of kidney cancers have clearly increased among blacks, Latino whites, and non-Latino whites of both sexes over the past 4 decades. Black men have the highest incidence rates which are nearly twice the rates for black women. Clear conclusions based on examination of trends in kidney cancer incidence are limited by the small numbers of cases for some groups, but this pattern is seen for most racial/ethnic groups with increases for all groups in the last decade. Increasing adult obesity rates in the County may be driving these higher kidney cancer rates. However, incidence rates of late stage kidney cancers in Los Angeles, like the rest of the U.S., are fairly stable suggesting this observed increase in incidence rates may not be a true increase in cancer risk and is at least partially attributable to improved diagnosis.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (KIDNEY AND RENAL PELVIS)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (KIDNEY AND RENAL PELVIS)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

LARYNX

Lihua Liu, PhD

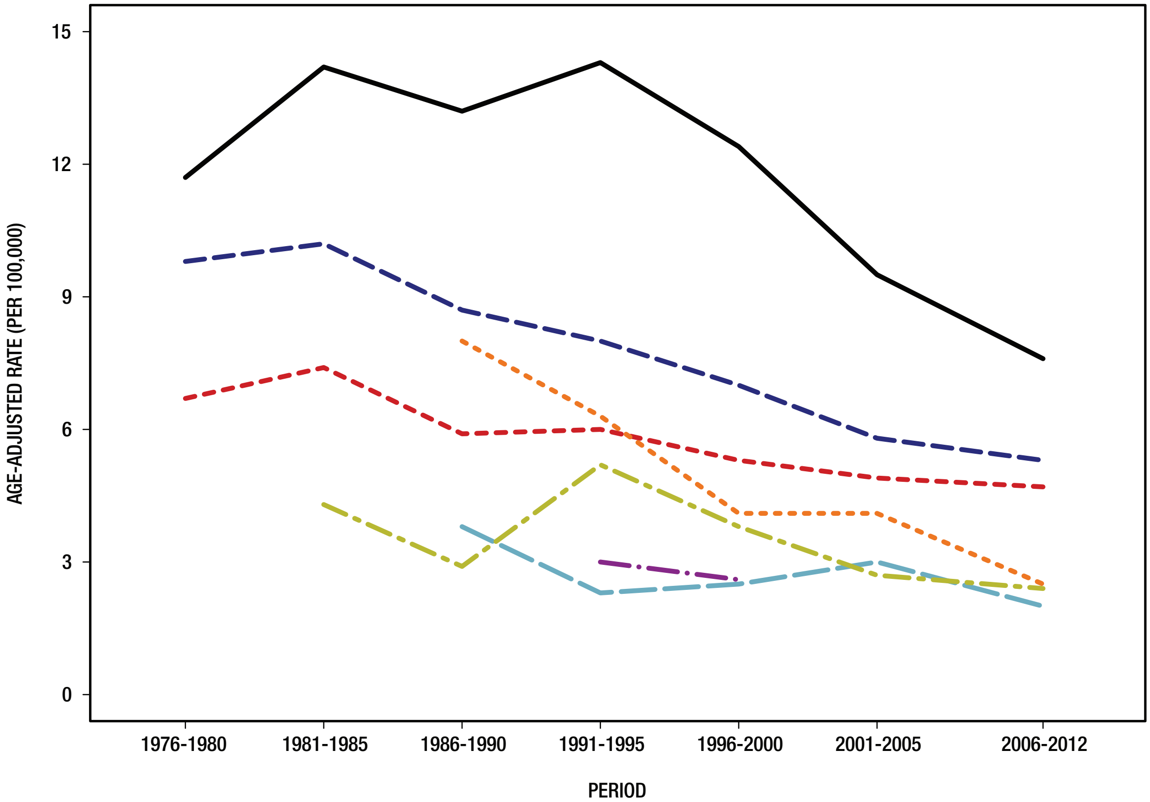
CAUSES AND WORLDWIDE TRENDS

Cancer of the larynx may arise in any of the three anatomic regions of the larynx: the upper (supraglottic), middle (glottic) and lower (subglottic) portions. While the middle and upper region tumors account for the overwhelming majority of laryngeal cancers, each subsite represents different characteristics, different treatment options, and differences in survival. Most laryngeal cancer is squamous cell carcinoma. The incidence rate of laryngeal cancer varies considerably around the world. Men are about 6 times more likely to be diagnosed than women. Tobacco and alcohol are the two best-known risk factors, both separately and in combination. Avoidance of tobacco and alcohol offers primary prevention of this disease. In the U.S., blacks have higher incidence rates than whites. The overall incidence of laryngeal cancer has increased worldwide in the past several decades, which may be partially because of improved diagnosis. However, in the U.S., significant declines in incidence rates among white and black men, and white women were observed, following anti-smoking campaigns and decreases in smoking prevalence.

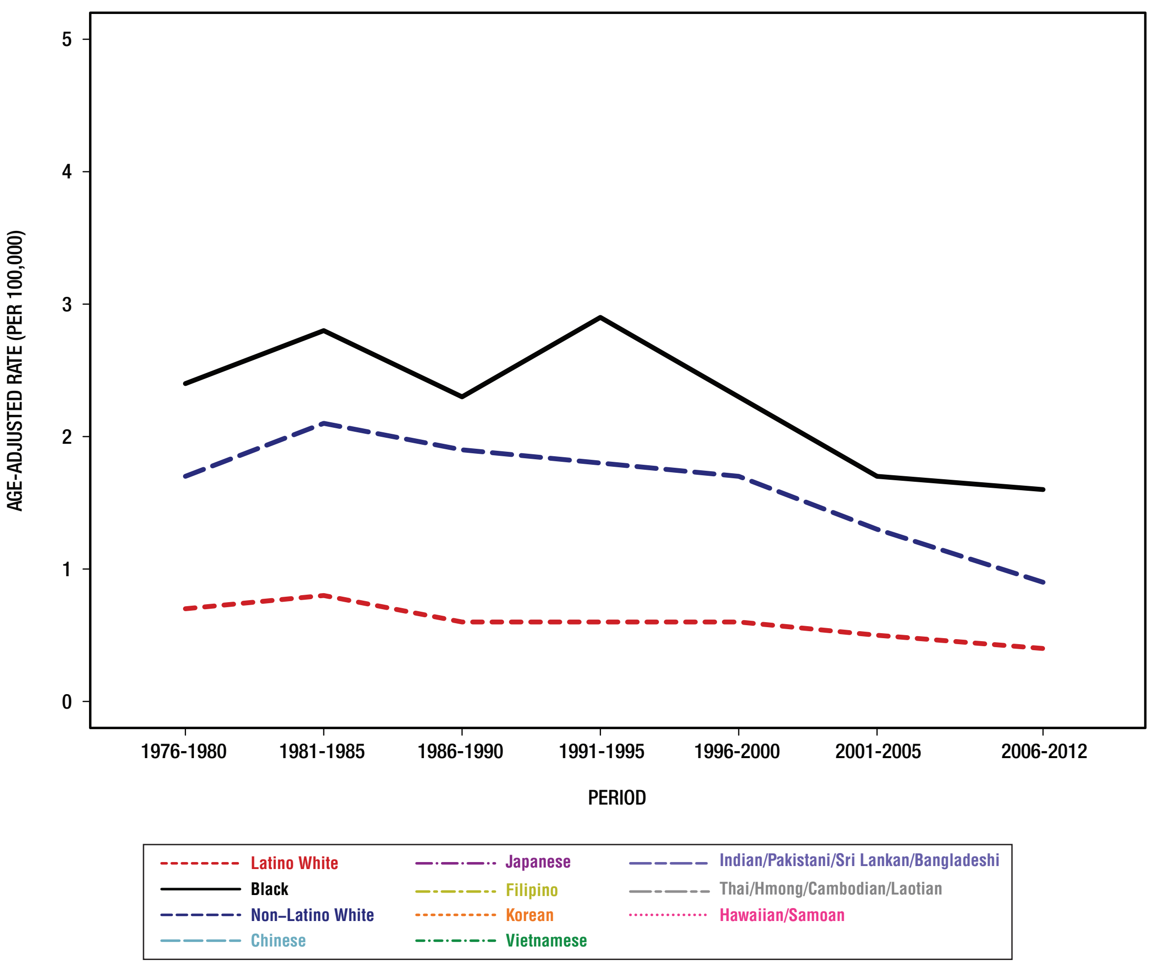
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

In Los Angeles County, the incidence rates of laryngeal cancer have shown decreasing trends in both men and women in all racial/ethnic groups examined. Blacks have the highest incidence rates followed by non-Latino whites and Latino whites, in both men and women. For black men and women, consistent decrease in laryngeal cancer incidence rates did not occur until the early 1990s, while the decline in incidence rates among non-Latino whites and Latino whites has been consistent since the early 1980s. The risk of developing laryngeal cancer is more than five times higher in men than in women. Korean men had higher rates than other Asian men, but their risk declined rapidly and steadily, while the rates among Chinese and Japanese men remained low and stable. By 2006-2012, the laryngeal cancer incidence rates among Asian men were similar to each other and well below the rates of their black, non-Latino white, and Latino white counterparts.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY
BY RACE/ETHNICITY, 1976-2012: MALES (LARYNX)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY
BY RACE/ETHNICITY, 1976-2012: FEMALES (LARYNX)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

LEUKEMIA

Jessica Barrington-Trimis, PhD, MS, MA

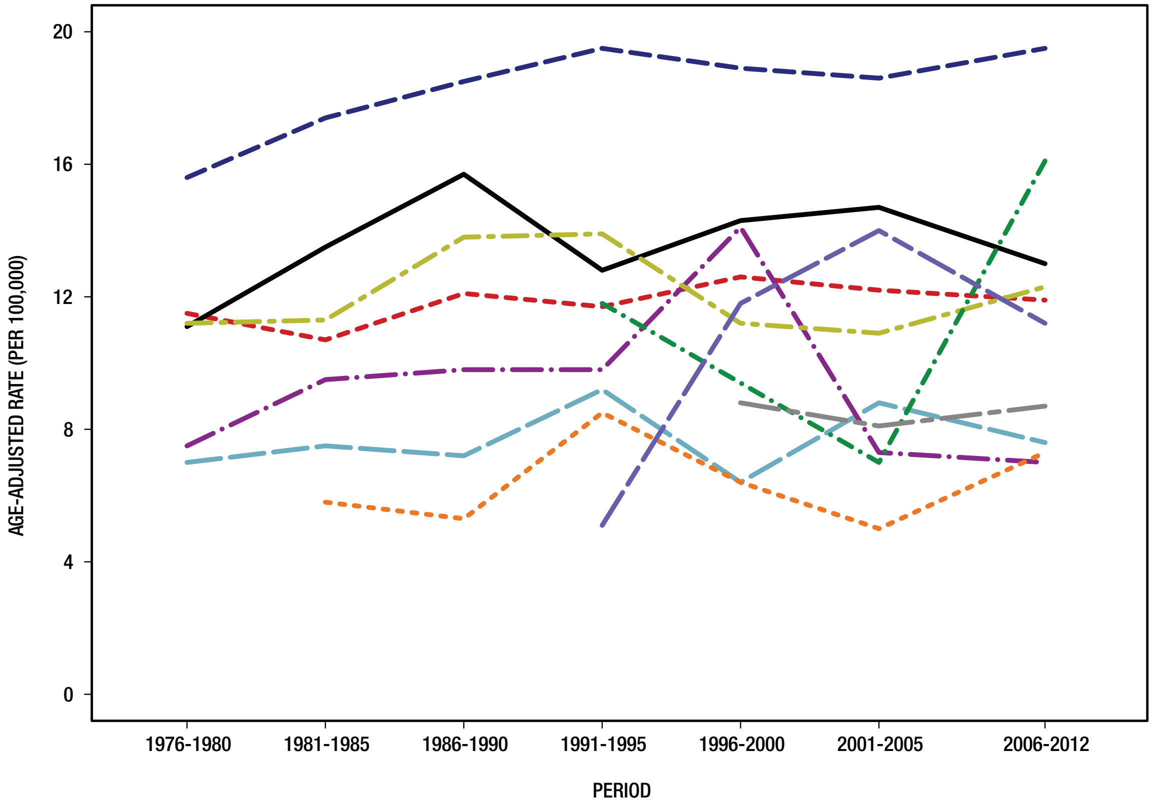
CAUSES AND WORLDWIDE TRENDS

Among adults, leukemia is a relatively rare form of cancer, accounting for less than 5% of all cancer diagnoses in most countries. However, in children, under 20 years of age, leukemia is the most common type of cancer. Leukemias are classified into four major groups, related to the rate of disease development (acute or chronic) and the type of white blood cell affected (lymphocytic or myeloid). The four major classifications include: acute lymphocytic leukemia (ALL), acute myeloid leukemia (AML), chronic myeloid leukemia (CML), and chronic lymphocytic leukemia (CLL). In adults, the most common types of leukemia are CLL and AML, while almost all children are diagnosed with an acute leukemia. ALL is the most common subtype in children, accounting for approximately 80% of all childhood leukemias, and about 16% of childhood leukemias are AML. Subtypes of leukemia can be further classified by the affected cell type (e.g., b-cell precursor, t-cell precursor) or type of chromosomal error involved. In both children and adults, leukemia is more common in men than in women. Ionizing radiation remains the only established causal environmental risk factor for leukemia (for all subtypes except CLL), though other lifestyle or environmental factors (such as smoking or pesticide exposure) have been suggested as potential risk factors. In the United States, the incidence of leukemia has increased since 1975 by about 0.2% per year (for all subtypes combined), with greater increases in incidence rates observed in children over this time period (0.7% per year).

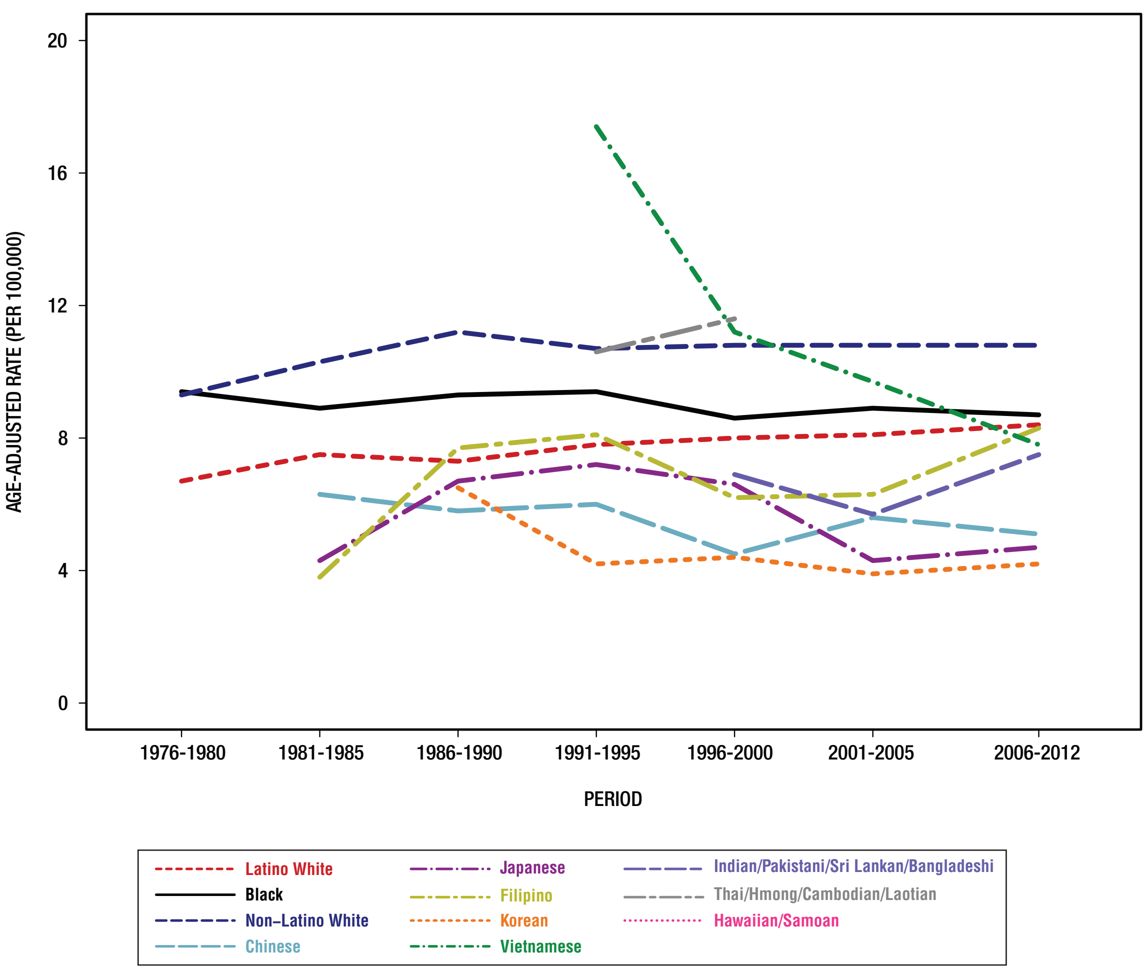
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

The age-adjusted incidence of leukemia (all subtypes combined) in Los Angeles is slightly higher in men than in women. Among men, it is most common in non-Latino Whites. An increase in incidence was observed in this group from 1976-1995, followed by a small decline through 2005 and a slight increase in recent years, from 2006-2012. Incidence rates among other racial/ethnic groups have remained relatively stable, or decreased, from 1976-2012. Among women, non-Latina white women have generally had the highest rates of leukemia (all subtypes combined). Increases in incidence rates have been observed both in non-Latina white women and Latina white women from 1976-2012. Evaluation of secular trends in other racial/ethnic groups, like Vietnamese women, is limited by the relatively low frequency of cases in Los Angeles County.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (LEUKEMIA)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (LEUKEMIA)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

LIVER

Dennis Deapen, DrPH

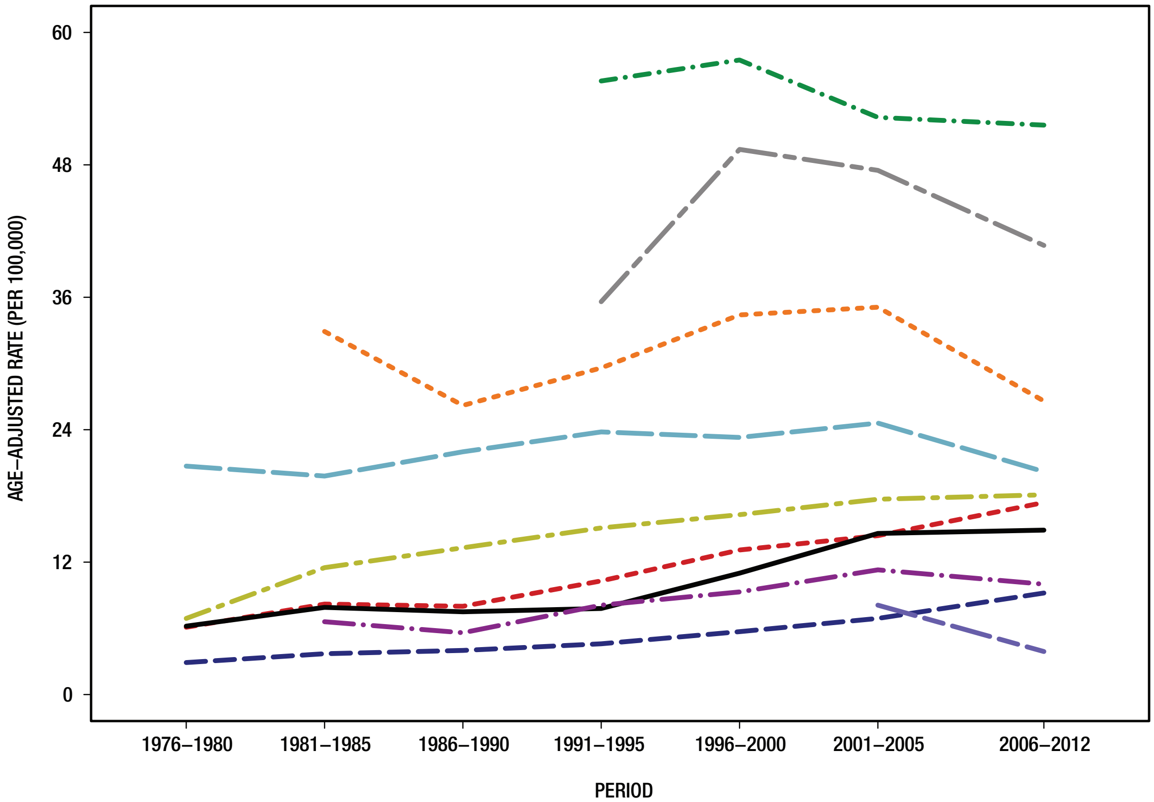
CAUSES AND WORLDWIDE TRENDS

Liver cancer rates vary one hundred fold worldwide. High-risk regions are in East Asia (China, Taiwan, Korea), Southeast Asia (Malaysia, Singapore, Thailand, Vietnam), and Africa. Low-risk regions include the U.S., Canada and Northwestern Europe. Chronic infection by the hepatitis B virus is the most important cause of liver cancer, estimated to account for roughly 80% of all cases worldwide. Chronic infection by the hepatitis C virus is another important viral cause of liver cancer. Known non-viral risk factors of liver cancer include exposure to consumption of carcinogenic molds called aflatoxins and excessive alcohol drinking. Recent data suggest that people with diabetes may be at high risk for liver cancer. During the past 20 years, liver cancer rates have been declining in several high-risk populations including Chinese in Singapore and Shanghai. Reduced exposure to dietary aflatoxins in these newly affluent Asian populations is a likely explanation, along with hepatitis B vaccination programs for newborns. By comparison, during the last 25 years rates of liver cancer have been increasing in the U.S. The increasing prevalence of obesity and diabetes in the general population are likely contributing factors. Another possible explanation is the probable increase in prevalence of hepatitis C infection during the 1960s and 1970s, resulting from increased high-risk behaviors during that time period.

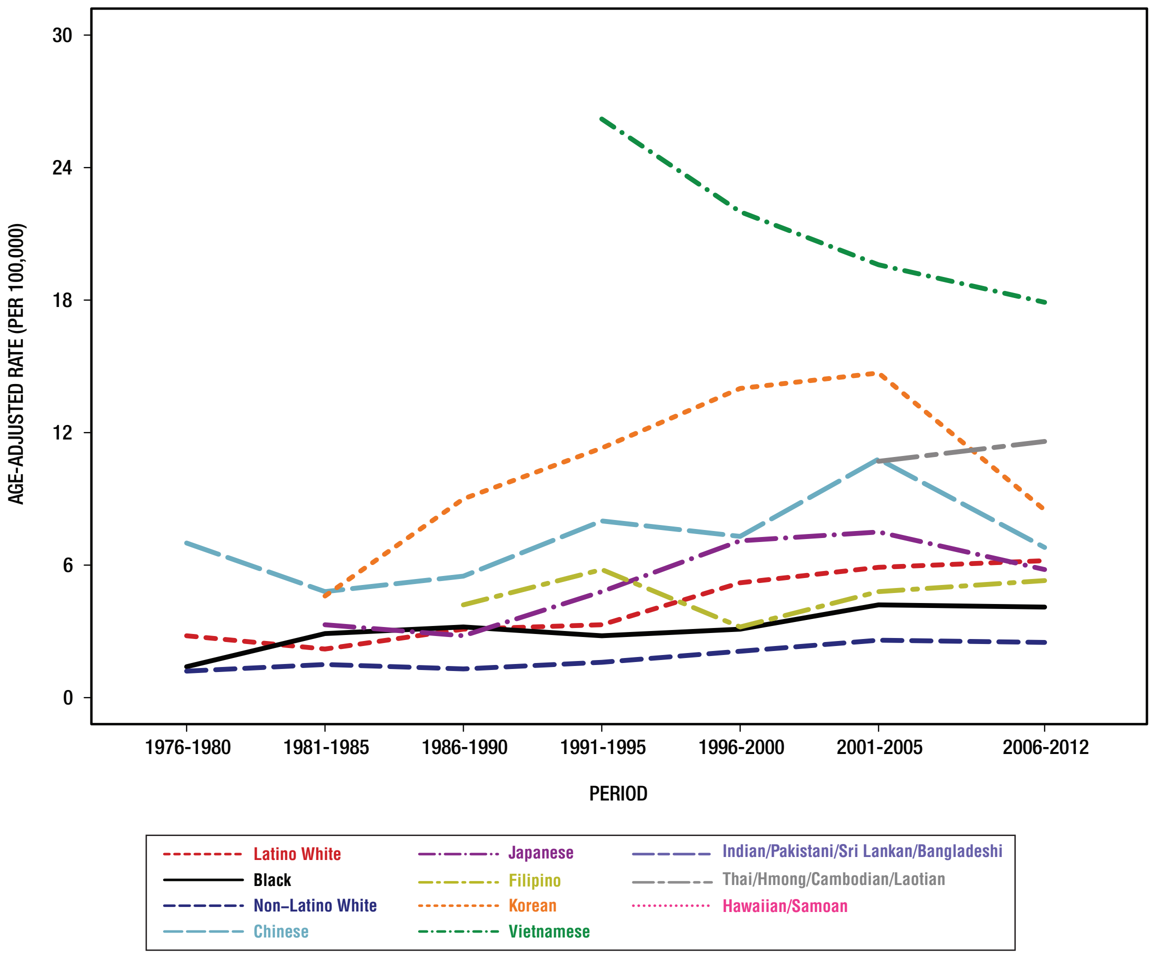
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Except for Japanese and South Asians, Asians tend to have the highest age-adjusted incidence rates in Los Angeles County, with Vietnamese men and women having, by far, the highest rates among all racial/ethnic groups. Very high rates are also seen among other Southeast Asian men (Thai/Hmong/Cambodian/Laotian). Men have much higher rates than women in all racial/ethnic groups. Liver cancer rates have more than doubled among non Asians of both sexes and have tended to increase in Asian American populations as well. Only Chinese rates have been relatively stable. The increasing prevalence of obesity and diabetes in Los Angeles County and an increase in hepatitis C infection acquired during the 1960s and 1970s are possible causes of these trends.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (LIVER)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (LIVER)



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LUNG AND BRONCHUS *Frank Gilliland, MD, PhD*

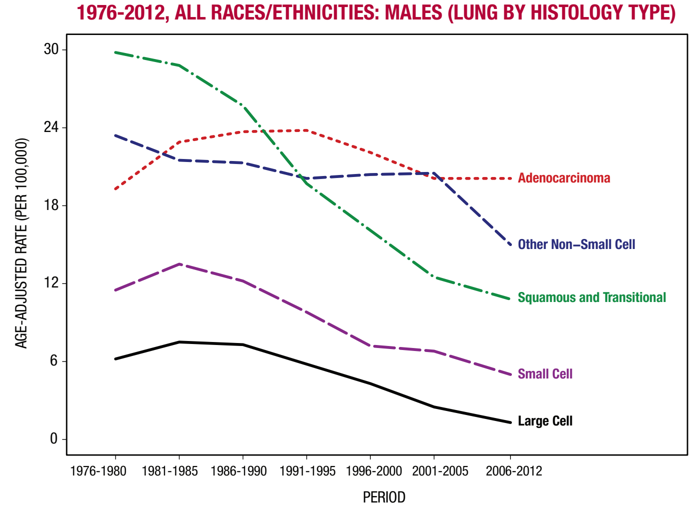
CAUSES AND WORLDWIDE TRENDS

Lung cancer remains the leading cause of cancer death in the US. Lung cancer survival is poor, so death rates are approximately equal to incidence rates. Most cases of lung cancer are caused by cigarette smoking. Because smoking habits vary by region, time period, sex and race/ethnicity, the incidence rates of lung cancer vary worldwide among men and women from different racial/ethnic groups. Stopping smoking reduces lung cancer incidence and deaths. Time trends in incidence rates reflect changes in smoking habits over time. In many regions of the developed world, lung cancer incidence rates have decreased in men as smoking has become less common. In contrast, rates are projected to increase dramatically in developing countries and have increased in women as more women smoke cigarettes.

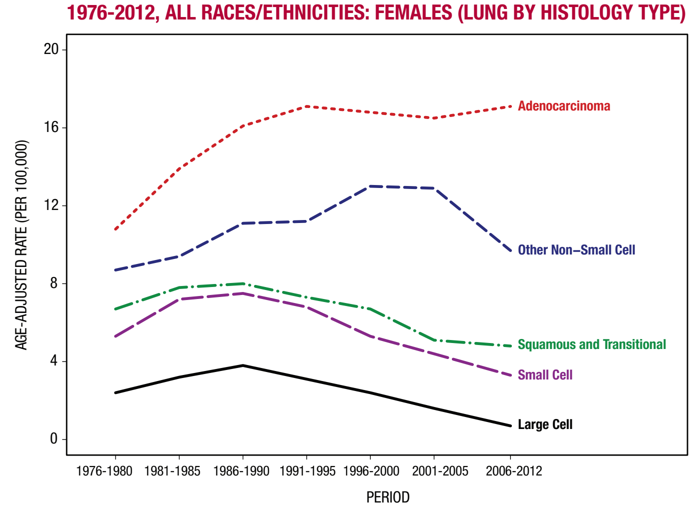
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Lung cancer incidence rates among men were highest among blacks and lowest among South Asians in the most recent period and have decreased in the 2001-2012 period among most ethnic groups. Among women, rates were higher in blacks and non-Latina whites than other groups with large populations and have decreased in all groups, except for Southeast Asians (Thai/Hmong/Cambodian/Laotian), for the 2001-2012 period. Important trends in lung cancer incidence include decreasing rates for lung cancers of squamous cell and both the small and large cell types and the emergence of adenocarcinoma as the most common histologic type of tumor in women and men (see insert). Rates of adenocarcinoma had been rising in women and men but recent data from 2001-2012 show that rates of adenocarcinoma have stabilized among both men and women. Rates of squamous cell lung cancer have declined from the early 1980s and continued to decrease during the 2001-2012 period among men but showed little change in women. Adenocarcinomas are caused by smoking, however, the trends in rates among women are counter to the trends for other histologic types. Although the explanation for the contrasting trends is unknown, it has been hypothesized to be related to changes in cigarette composition and filtering as well as obesity.

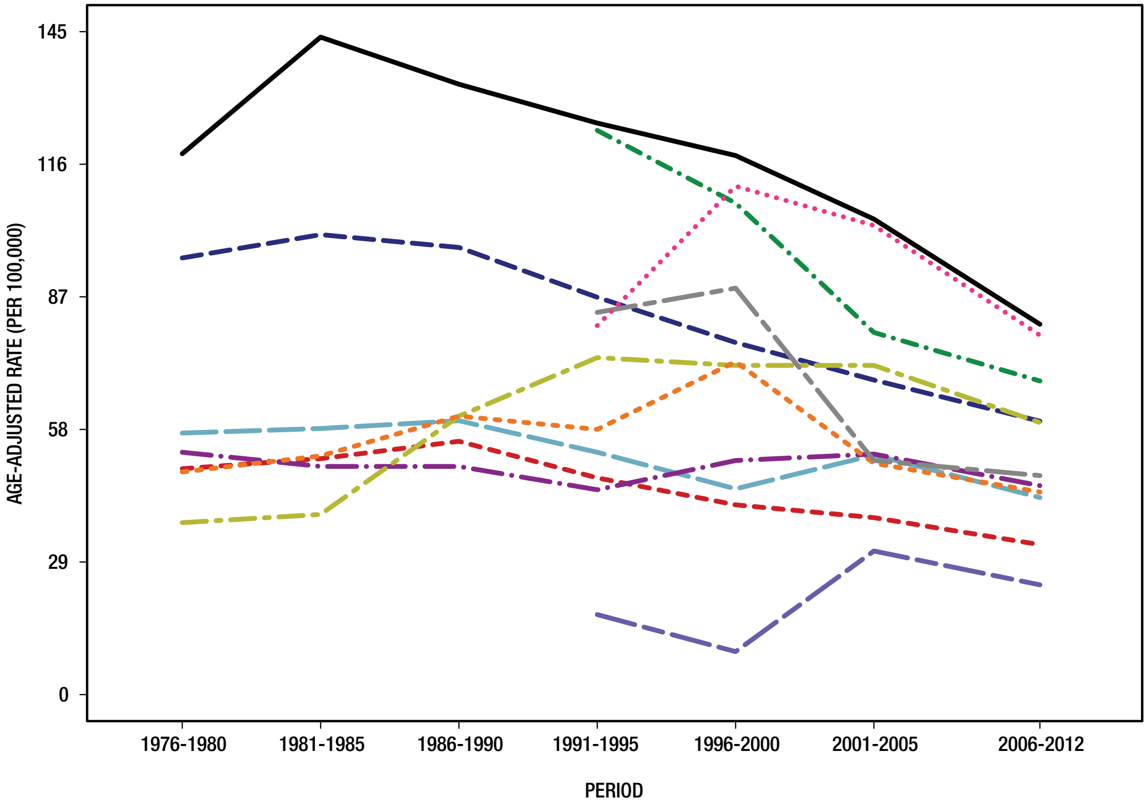
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY, 1976-2012, ALL RACES/ETHNICITIES: MALES (LUNG BY HISTOLOGY TYPE)



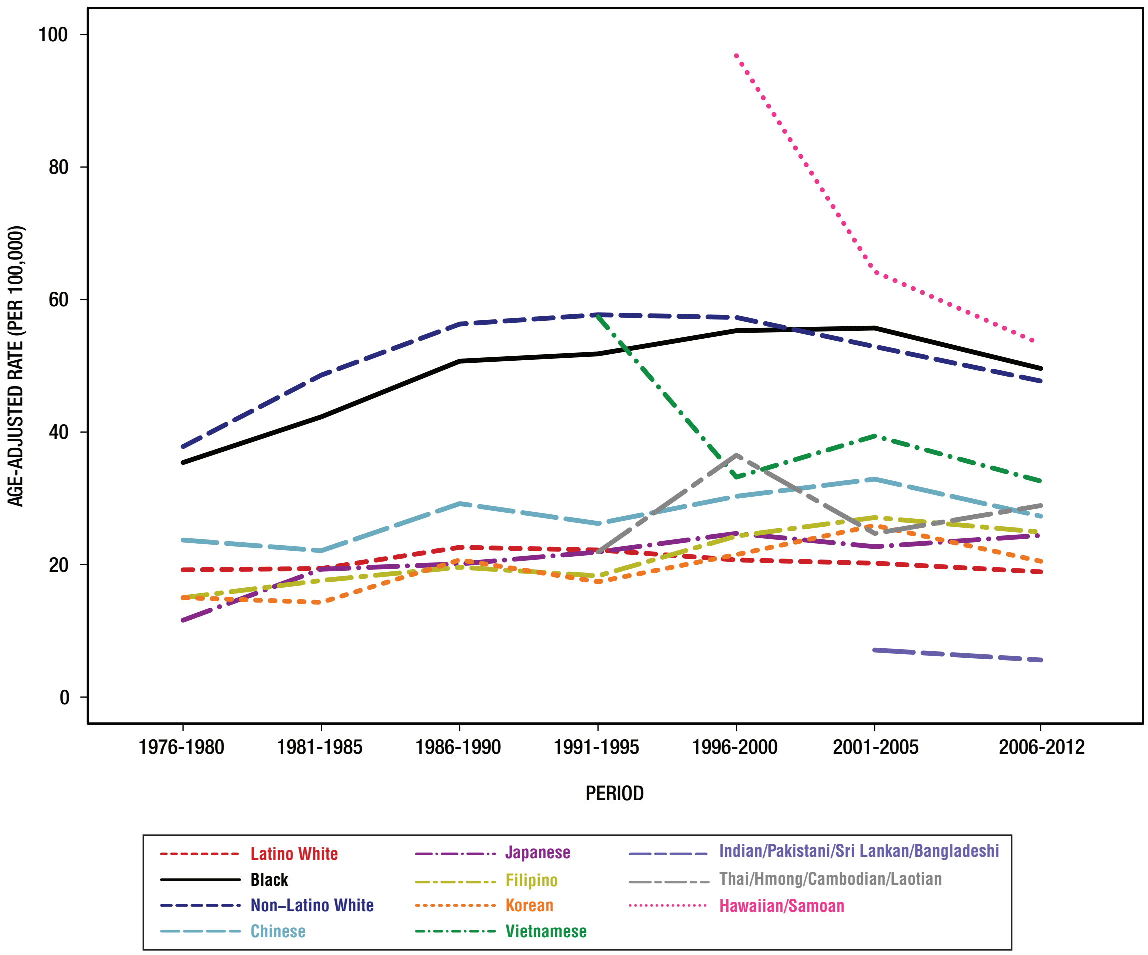
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY, 1976-2012, ALL RACES/ETHNICITIES: FEMALES (LUNG BY HISTOLOGY TYPE)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (LUNG AND BRONCHUS)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (LUNG AND BRONCHUS)



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HODGKIN LYMPHOMA

Wendy Cozen, DO, MPH

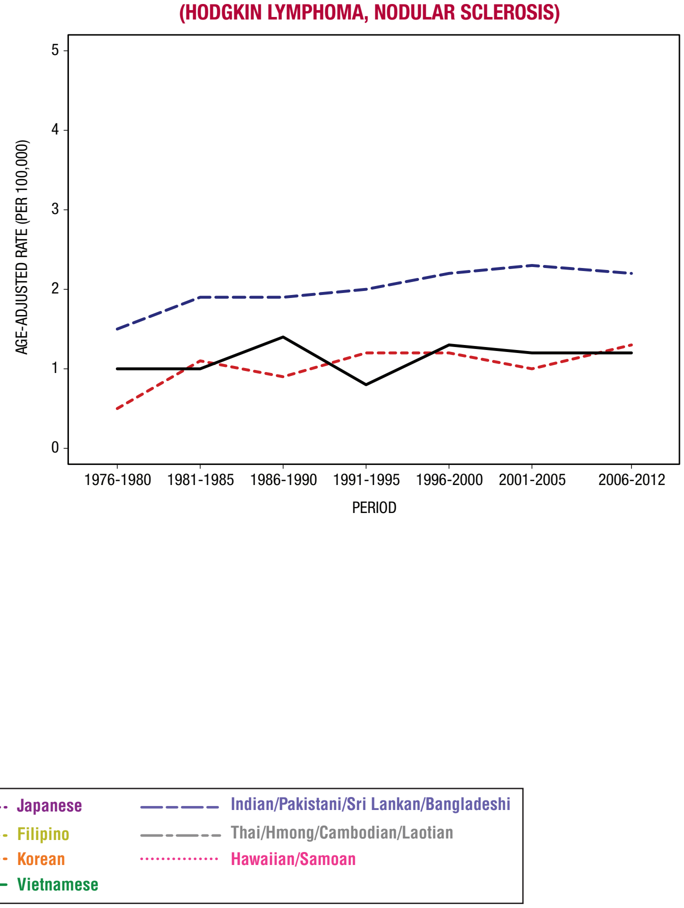
CAUSES AND WORLDWIDE TRENDS

Hodgkin lymphoma is a rare cancer that starts in the white blood cells, occurring at a rate of about 2 per 100,000 people per year in the U.S. It is unique as the only cancer in which the malignant cells make up less than 1% of the tumor, with the majority of the tumor comprising non-malignant lymphocytes and other immune cells. Hodgkin lymphoma consists of several subtypes defined by age at diagnosis, how the cells look under the microscope, and presence of Epstein-Barr virus (EBV) in the tumor cells. EBV is seen in tumor cells in about 40% of the cases, especially when diagnosed in early childhood and older ages. It is more common in the subtype called mixed cellularity and in patients in developing compared to developed countries. In contrast, in developed countries, Hodgkin lymphoma occurrence peaks in young adulthood at age 22, rarely contains EBV in the tumors, and is primarily composed of the nodular sclerosis subtype. Increases in this young adult subtype are seen in populations transitioning to higher socioeconomic status. There is also a strong genetic contribution to risk, with a much higher risk in siblings and twins of patients. Genetic variants associated with increased risk occur mainly in genes associated with immune function, including those from the HLA gene family, and explain up to 8% of the risk. Because Hodgkin lymphoma often occurs in the lymph nodes of the chest, especially in young women, patients may be at a much higher risk of breast and other cancers later in life due to the radiotherapy and chemotherapy they receive as treatment.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Similar to other areas, Hodgkin lymphoma in Los Angeles County is more common among non-Latino whites and least common among East Asians. Since 1976, overall Hodgkin lymphoma incidence has remained mostly stable among men with the exception of a slight increase in the last 5 years among blacks and Filipinos. There was a gradual increase in incidence rates of the nodular sclerosis subtype (associated with young adult disease) in all men, but especially in Latino white

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (HODGKIN LYMPHOMA, NODULAR SCLEROSIS)



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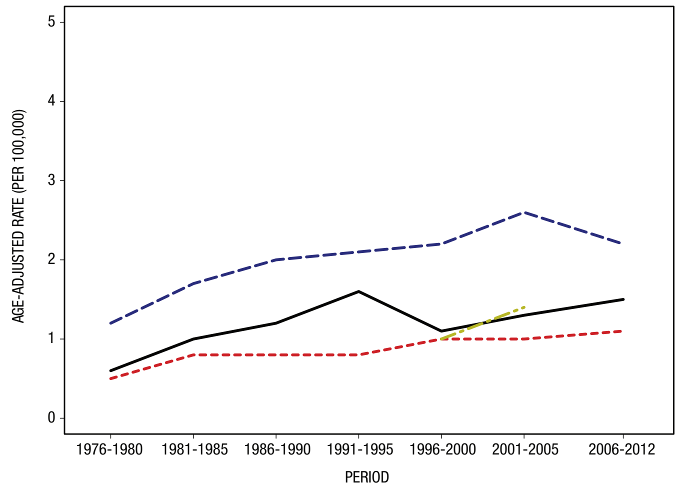
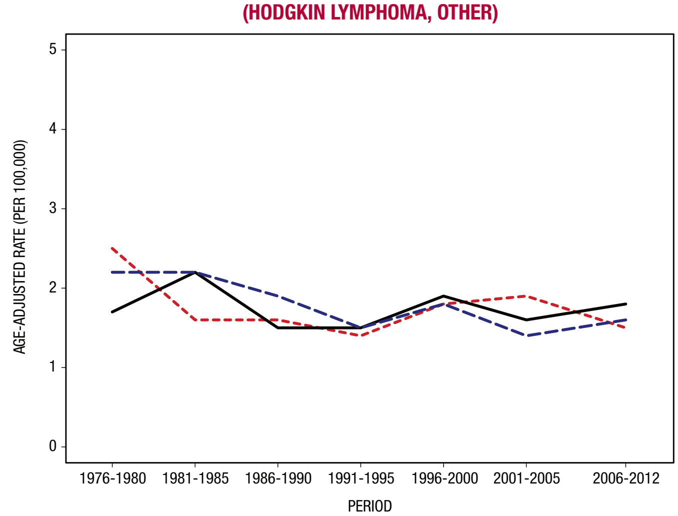
men. An inverse trend was observed for all other subtypes of Hodgkin lymphoma through 2005, with the largest decrease observed in non-Latino white men, followed by Latino whites and blacks. During 2006-2012, incidence of other subtypes continued to decrease among Latino white men but reversed and slightly increased among non-Latino white and black men.

A slightly different incidence trend pattern emerged among Los Angeles County women. An increasing incidence of all Hodgkin lymphoma was observed among non-Latina white, black and Latina whites to varying degrees over the time period, with a minor decrease in the last period of 2006-2012 among non-Latina and Latina whites. When examined by subtype, nodular sclerosis incidence rates more than doubled among black and Latina white women. In non-Latina white women, incidence rates also more than doubled through 2005, but decreased slightly over 2006-2012. In contrast, incidence rates of all other Hodgkin lymphoma subtypes were constant among non-Latina white, black and Latina white women since 1976, with the exception of a very slight decrease among Latina whites in 2006-2012. Incidence rates for most Asians cannot be evaluated due to very small numbers of cases in these ethnic groups.

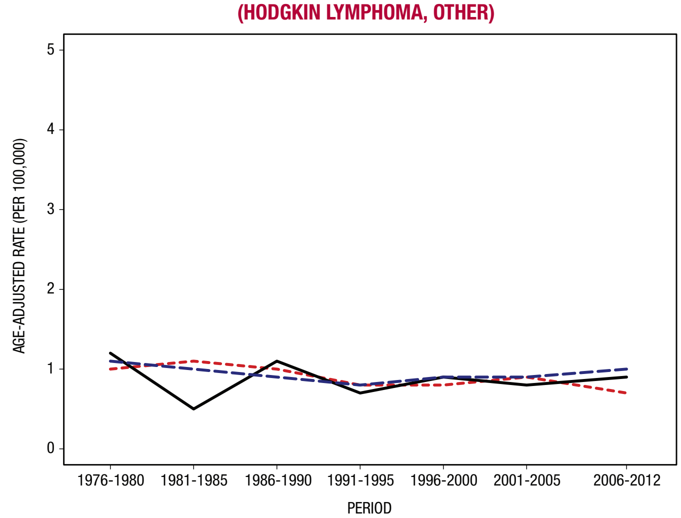
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (HODGKIN LYMPHOMA, NODULAR SCLEROSIS)



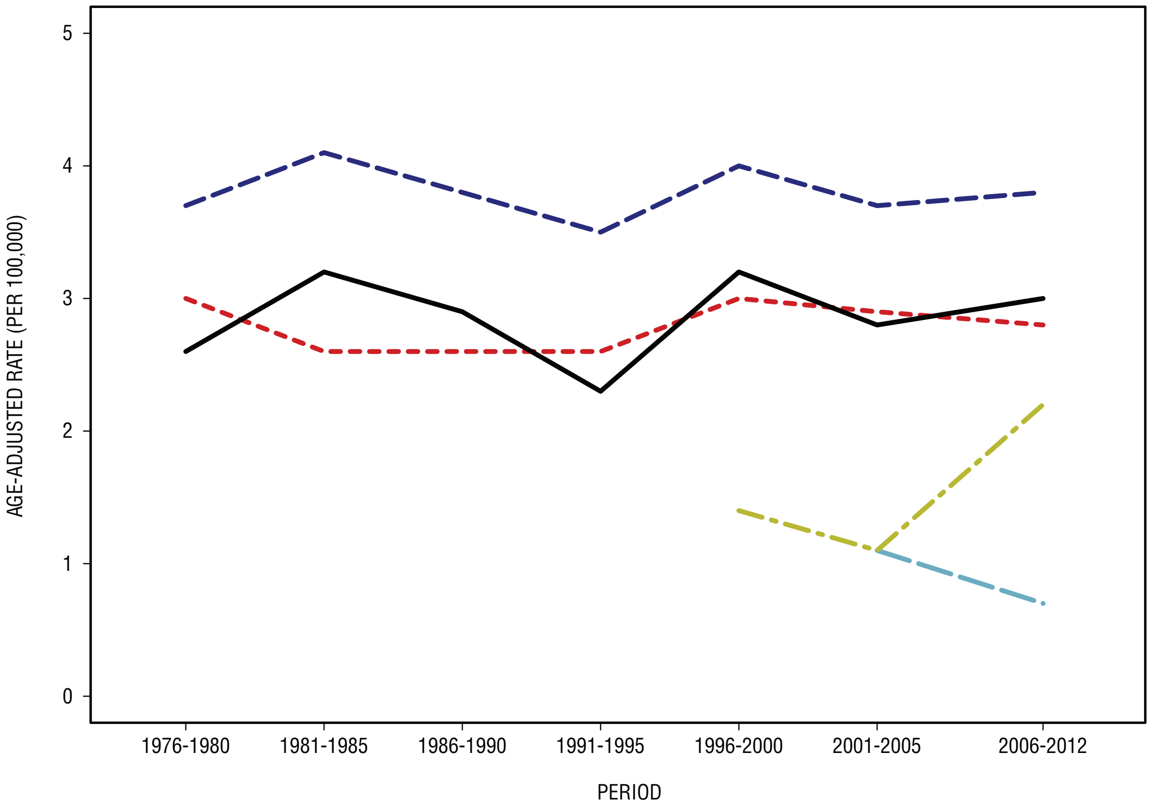
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (HODGKIN LYMPHOMA, OTHER)



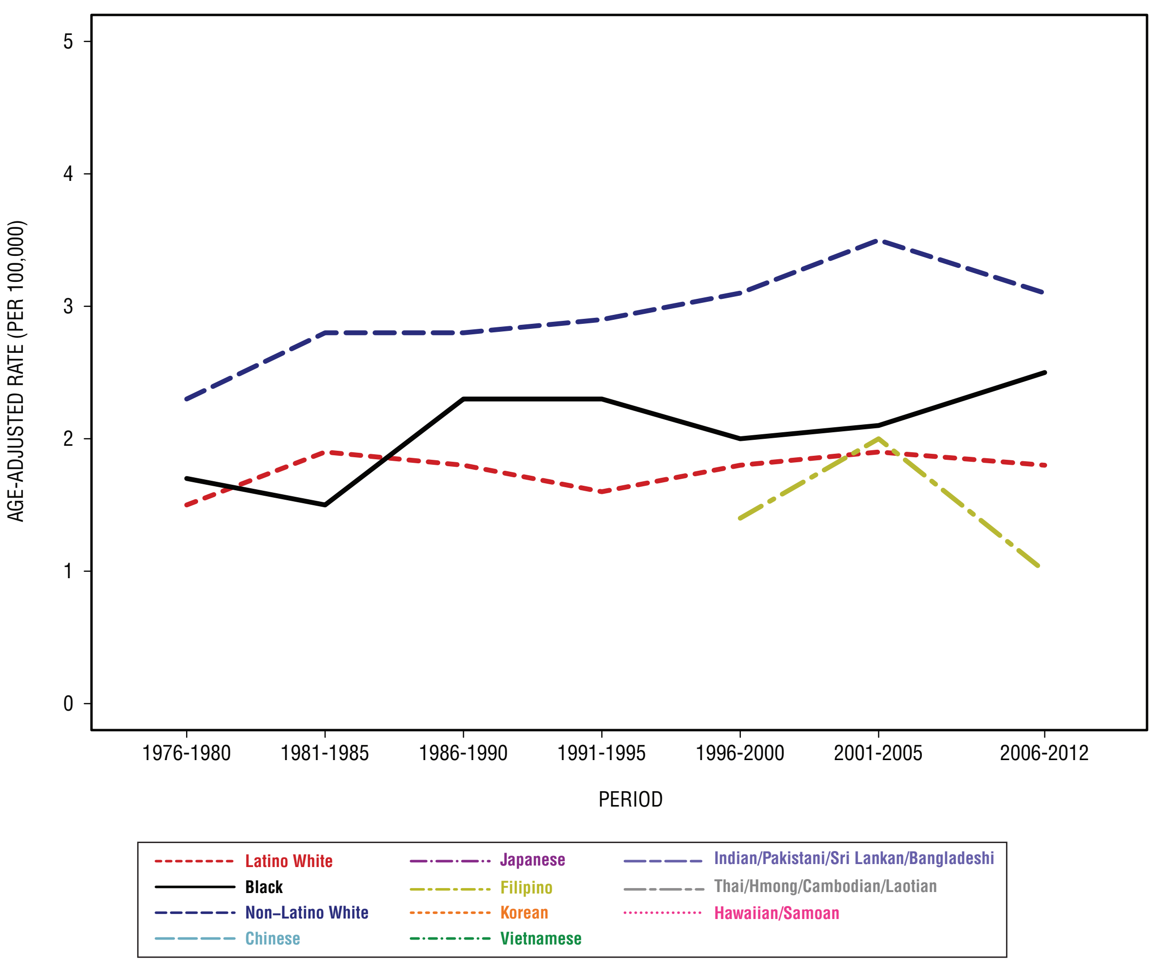
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (HODGKIN LYMPHOMA, OTHER)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (HODGKIN LYMPHOMA)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (HODGKIN LYMPHOMA)



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NON-HODGKIN'S LYMPHOMA

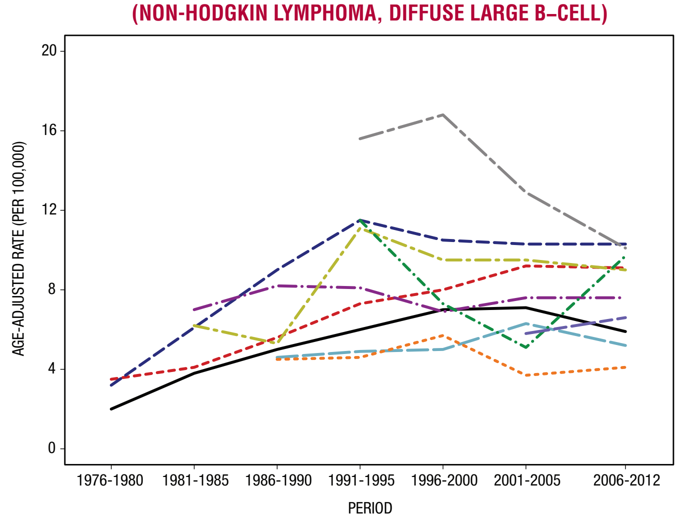
Wendy Cozen, DO, MPH

CAUSES AND WORLDWIDE TRENDS

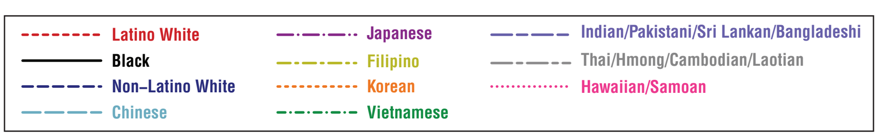
Non-Hodgkin's lymphomas (NHL) represent a group of diseases originating in lymph nodes and lymphoid tissues throughout the body, originating from B or T lymphocytes (white blood cells). The classification systems for NHL have changed several times, making this set of cancers difficult to study. Most types of lymphoma increase with age, are more common among men, most common among whites and least common among Asians. Overall NHL incidence rates in women have risen steadily since the end of World War II, probably due in part to better diagnosis methods and longer life span. Among men, incidence rates increased sharply in the early 1980's due mostly to the HIV/AIDS epidemic, and continued to rise until the introduction of highly active antiretroviral therapy (HAART) in the mid-1990's, and then eventually leveled off. The strongest risk factor for NHL as a group is suppression of the immune system, either inherited or through some exposure such as chemotherapy, organ transplantation or HIV/AIDS. For all subtypes combined, a family history of blood cancers, autoimmune disease and Hepatitis C infection were associated with increased risk while allergy, alcohol use and recreational sun exposure were associated with decreased NHL risk. The two most common types of NHL are diffuse large B-cell lymphoma (DLBCL) an aggressive form which accounts for about 27% and follicular lymphoma, a less aggressive form which accounts for about 20% of all NHL. DLBCL is associated with all general NHL risk factors , but follicular lymphoma associated with smoking but not autoimmune disease or Hepatitis C infection.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976–2012: MALES (NON-HODGKIN LYMPHOMA, DIFFUSE LARGE B–CELL)



In Los Angeles County, non-Latino whites, both men and women, have the highest and Koreans have the lowest overall NHL incidence rates. Among non-Latino white men, incidence increased until the early to mid-1990's, then leveled off. Incidence rates among men in other racial/ethnic groups showed a similar pattern with a peak occurring in the late 1990's because the HIV/AIDS epidemic occurred later in non-whites. Among women, incidence rates of all NHL combined rose steadily among all racial/ethnic groups. Non-Latina white women had the highest incidence rates, followed by Filipinas and Latina whites. Black, Chinese and Japanese women had similar incidence trends but lower rates. Latino white



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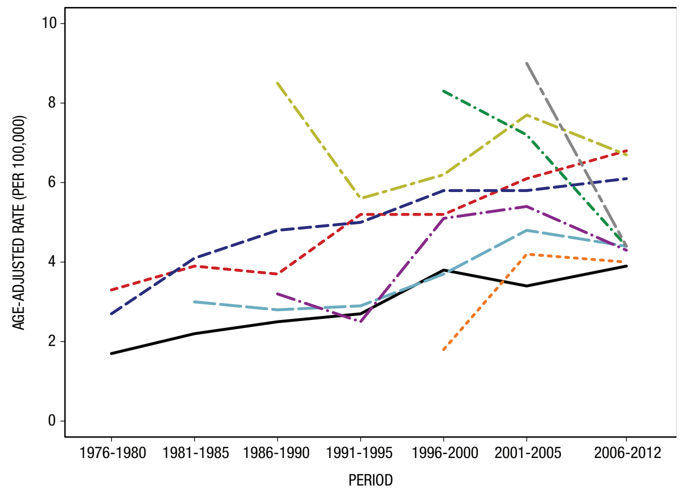
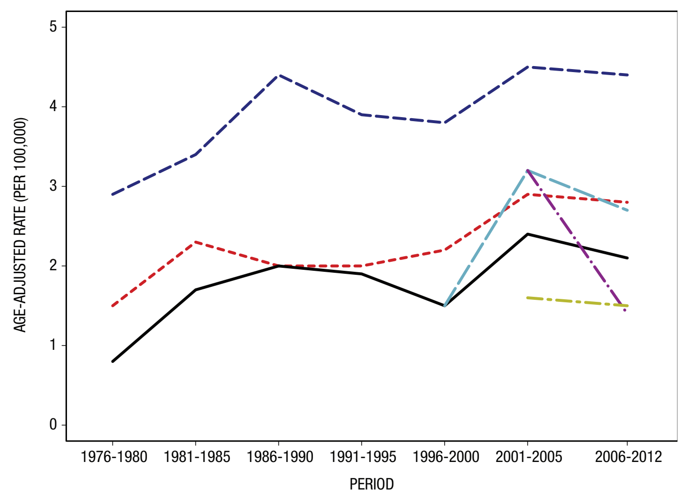
men experienced steadily increasing incidence rates of DLBCL until the early 2000’s, when rates leveled off. DLBCL incidence rates rose modestly in black men until the late 1990’s and then declined, while incidence rates in Japanese men declined until the late 1990’s and then leveled off. Filipino women had the highest incidence rates of DLBCL, generally declining since 1976 until the early 2000’s when they modestly increased. Incidence rates of DLBCL among non-Latina white, Latina white, black, Chinese and Japanese women generally rose since 1976. Non-Latina and Latina white women had similar incidence rates and black women had incidence rates more similar to those of Chinese women. Non-Latino white men had the highest incidence rates of follicular NHL, followed by Latino whites and black men. Incidence rates of follicular lymphoma rose modestly among all men, except Japanese and Filipinos, until the early 2000’s and then leveled off. Follicular lymphoma incidence rates and trends in women of all racial/ethnic groups were similar to those in men except for declining incidence rates among Chinese women over the last 10-15 years. Rates for some racial/ethnic groups were highly variable suggesting uncertainty due to small numbers of cases.

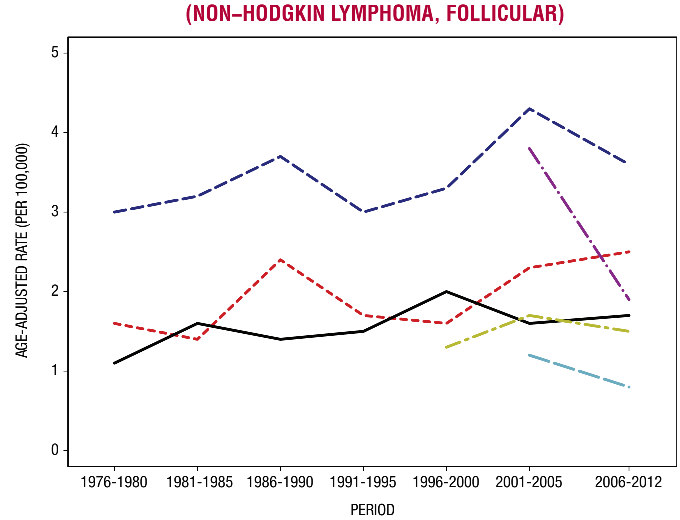
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976–2012: FEMALES (NON-HODGKIN LYMPHOMA, DIFFUSE LARGE B–CELL)



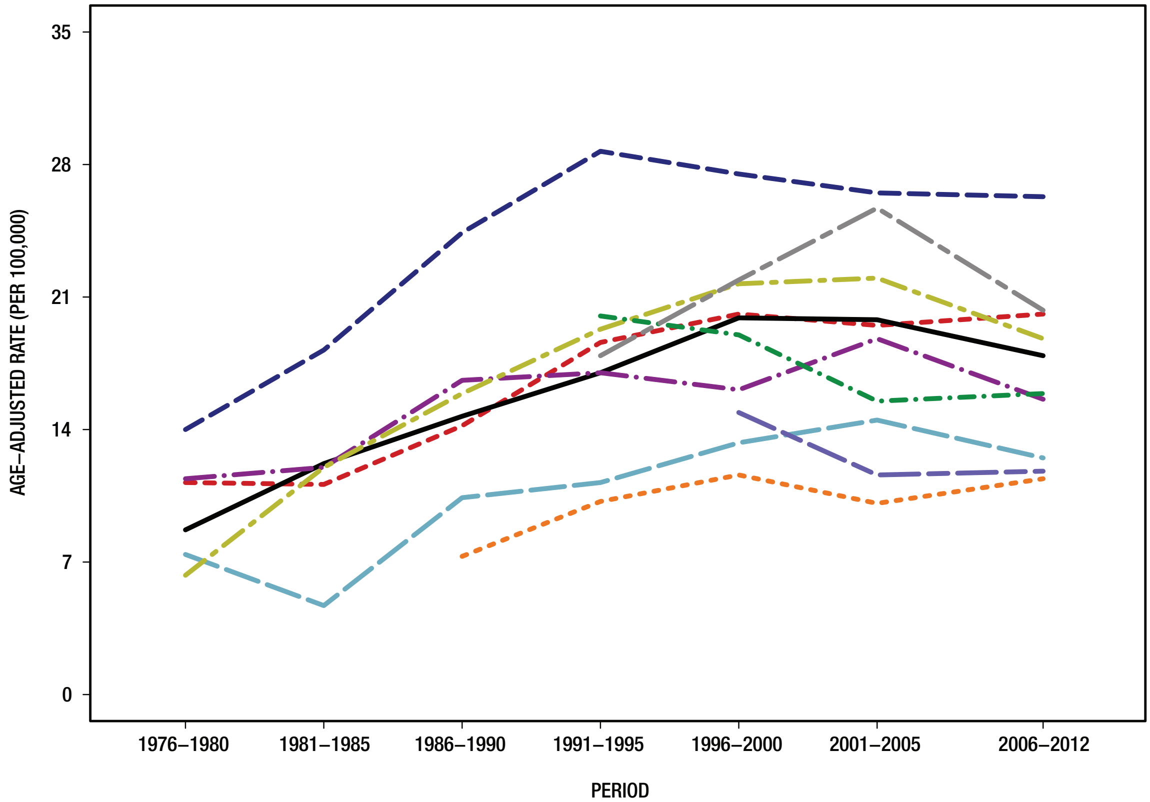
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNT BY RACE/ETHNICITY, 1976-2012: MALES (NON–HODGKIN LYMPHOMA, FOLLICULAR)



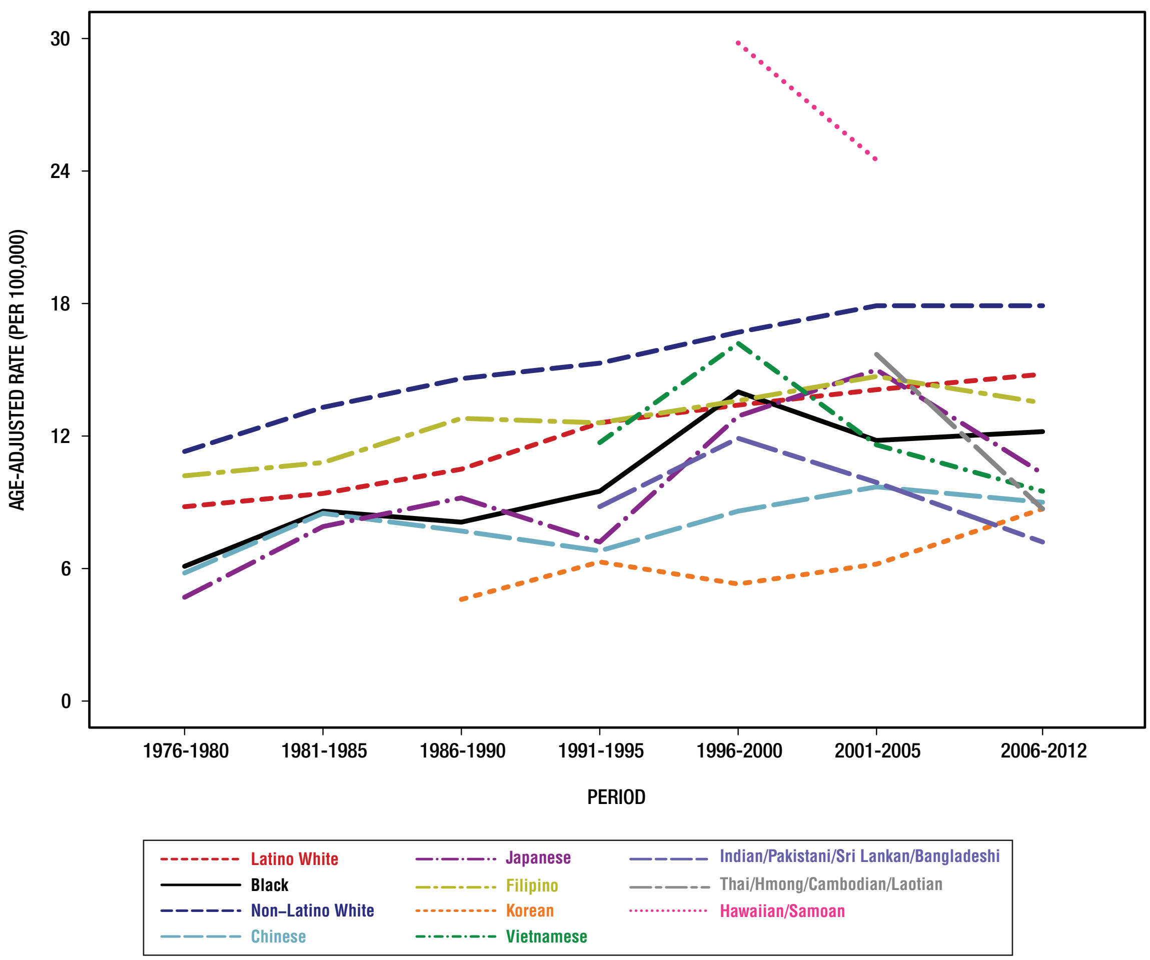
TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNT BY RACE/ETHNICITY, 1976-2012: FEMALES (NON–HODGKIN LYMPHOMA, FOLLICULAR)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976–2012: MALES (NON-HODGKIN LYMPHOMA)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (NON–HODGKIN LYMPHOMA)



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MELANOMA

Ashley Crew, MD

CAUSES AND WORLDWIDE TRENDS

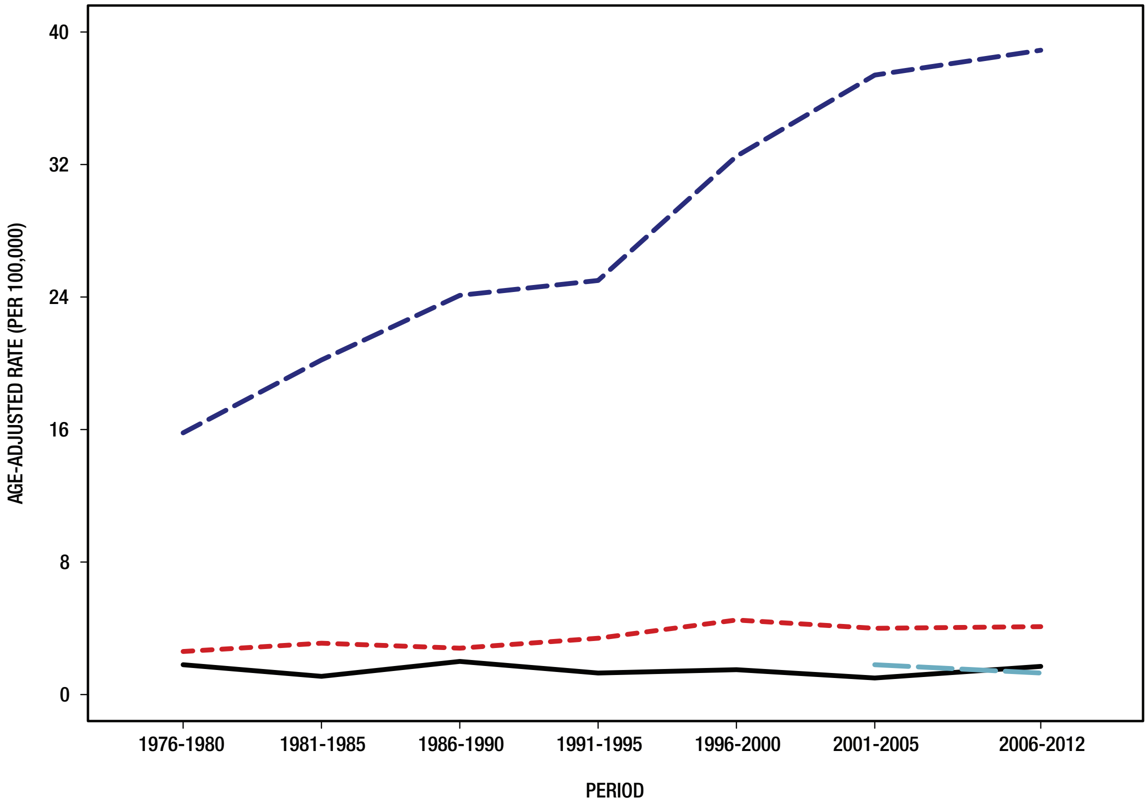
Genetic predisposition and ultraviolet (UV) light exposure are both thought to contribute to the development of melanoma. Specifically, intense intermittent exposure to UV is thought to contribute to risk, although exposure to tanning beds is also a known risk factor, and chronic work related exposure may also be a risk factor in some patients. Multiple genetic variants and mutations have been identified in patients with melanoma. Increased risk related to genetic polymorphisms can also be seen in phenotypic expression in the form of fair skinned individuals who burn easily, or individuals with large numbers of nevi (moles) or history of histologically atypical nevi.

Incidence of melanoma has steadily increased over the past 30 years. Currently, the lifetime risk is approximately 2% (1 in 50) in Whites, 0.5% (1 in 200) for Hispanics and 0.1% (1 in 1,000) for Blacks. The average age at diagnosis is 61, but melanoma is also commonly seen in individuals under 30 years old. While melanoma rates have continued to steadily increase overall, an encouraging trend in some high-risk countries, including the US, Australia and New Zealand, have been observed in the past few years. A leveling of incidence rates has been observed, especially in younger cohorts. This is suggestive of a possible impact of primary and secondary prevention campaigns regarding sun exposure and a move towards generational changes in UV exposure patterns.

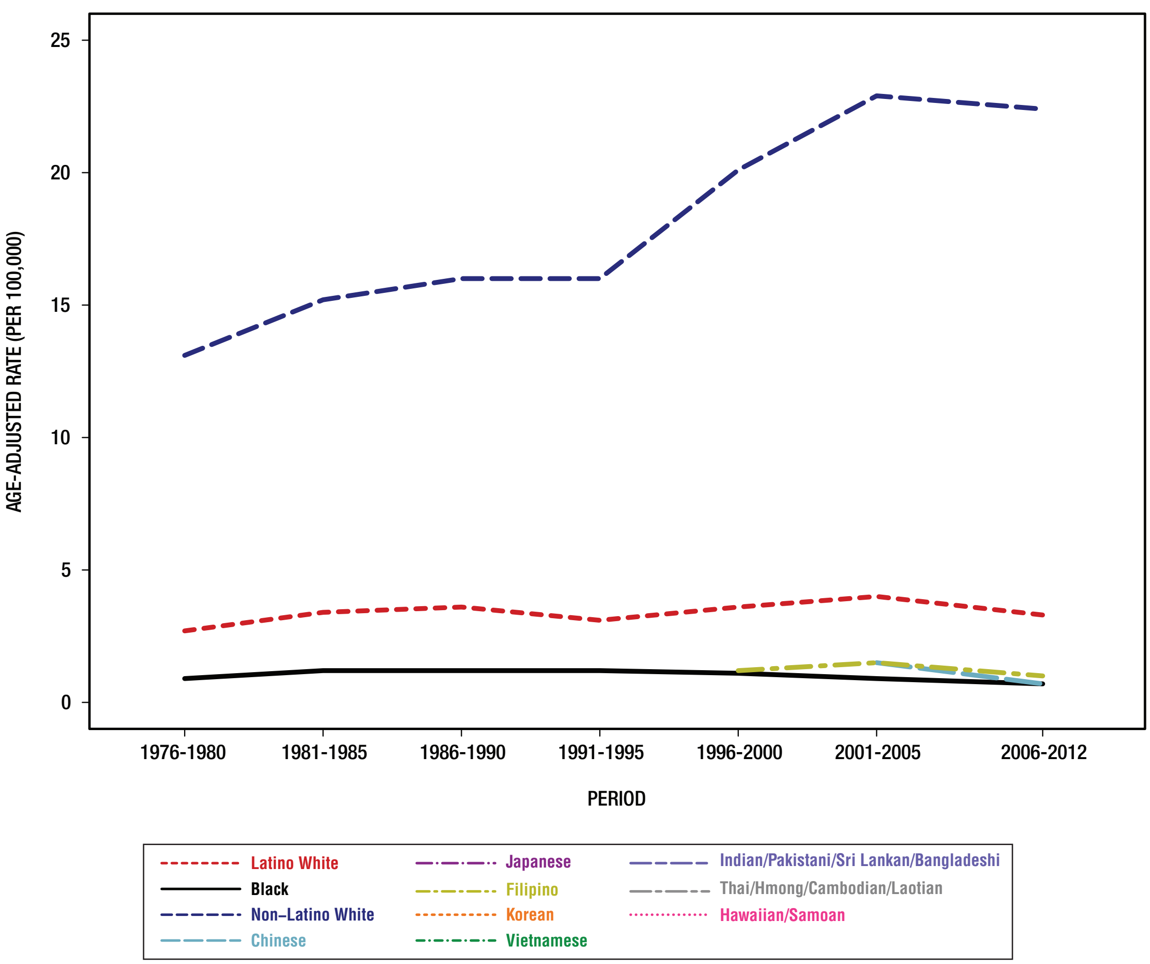
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Rates of melanoma in white men have steadily risen from 1976 to 2012, with a slight leveling off from 2001-2005 to 2006-2011. In contrast, rates of melanoma in white women have, for the first time since 1976, shown a decrease in the time period 2006-2012 when compared to 2001-2005 rates. Similar slight decreases in rate have been seen in Latina, Filipina and Chinese women. Rates of melanoma in Chinese men have slightly dipped and rates in Latino men have remained stable. The slight decrease in rates in women, compared to continued increased rates in men in recent years, may reflect improved targeting of prevention programs towards women, or a continued (and possibly delayed in comparison to women) success of screening efforts in men. Melanoma is a rare disease in all other non-white populations, and there do not appear to have been any significant changes in melanoma rates among blacks since 1976.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (MELANOMA)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (MELANOMA)



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MULTIPLE MYELOMA

Ann Hamilton, PhD

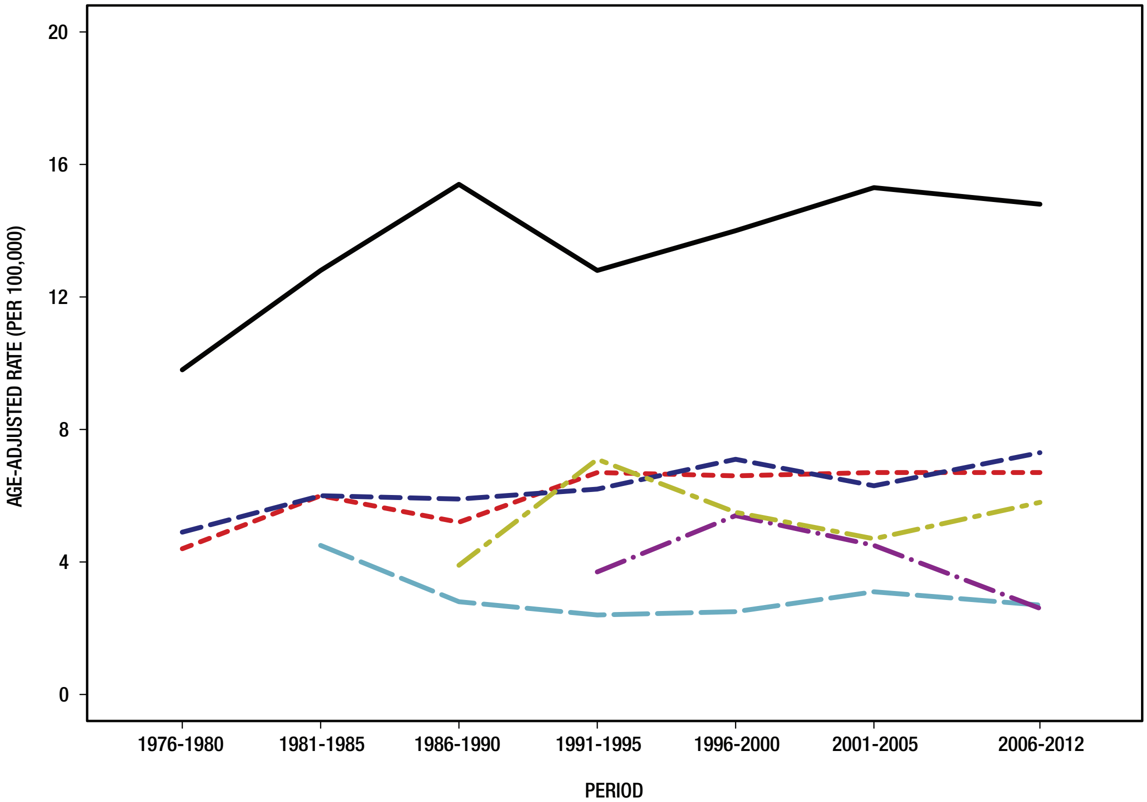
CAUSES AND WORLDWIDE TRENDS

Multiple myeloma is a malignancy of the blood plasma cells – cells in the immune system that make antibodies, which help the body fight infection and disease. Multiple myeloma is difficult to diagnose, which may be a factor in the variability of rates seen internationally because the techniques required for diagnosis may not be available in all locations. It is the second most common blood cancer in the United States. Rates are consistently somewhat higher among men than women worldwide. Rates among blacks are twice as high as those for whites in the U.S. Studies of trends of the disease have shown mixed results; however in areas with consistent ascertainment and surveillance over time it appears that rates have been stable since the 1970s. Although incurable, new treatment options in the past 10 years including the use of the novel agents thalidomide, lenalidomide, and bortezomib as well as transplantation have improved survival. While the cause of the disease is unknown, suspected risk factors include autoimmune disorders, chronic immune stimulation, exposure to ionizing radiation, occupational exposures, exposures to hair dyes, and family history of myeloma. Epidemiologic studies have found that obesity may increase risk and alcohol consumption may reduce risk. In addition, people with a condition called monoclonal gammopathy of unknown significance (MGUS), which involves non-malignant proliferation of plasma cells, are at higher risk.

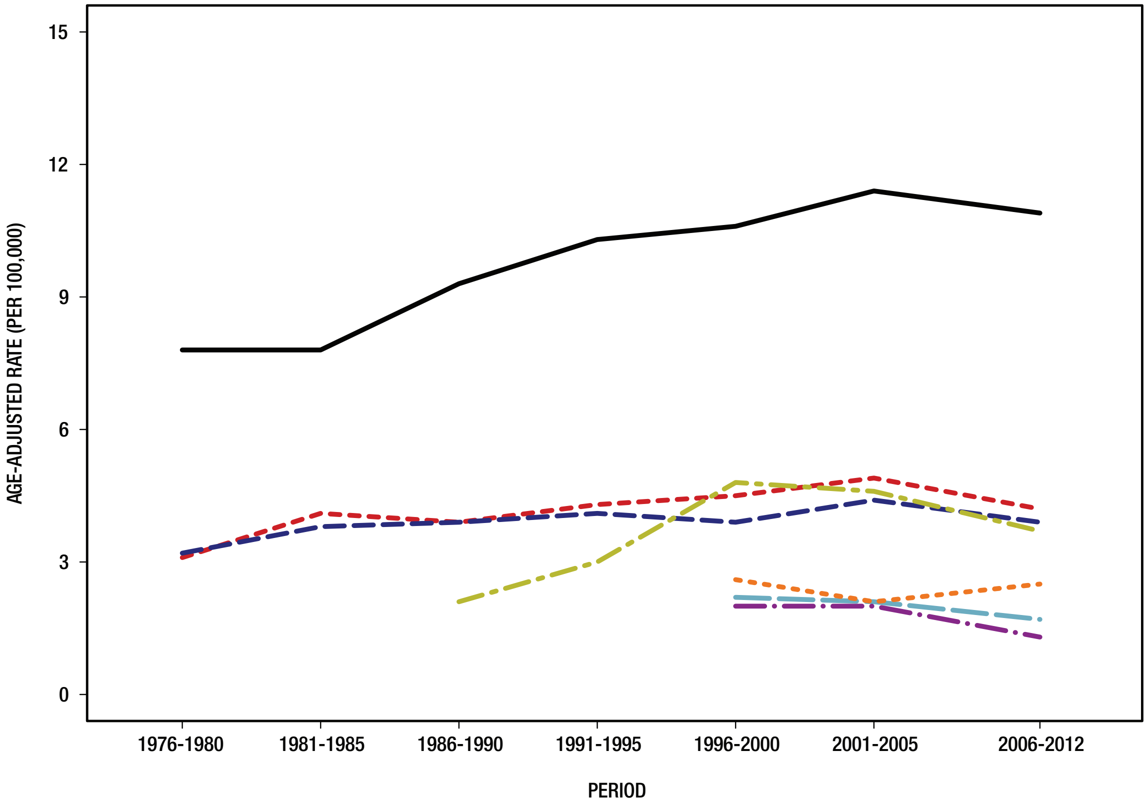
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Trends in incidence of multiple myeloma in Los Angeles County largely reflect the trends in the nation as a whole. Within the period from 2001-2012 little change was seen in the overall rate for women of all races combined or for any specific racial/ethnic subgroup. Among men during this recent period, there was a significant increase in the rate among non Latino white men, but not in any other subgroup. Rates among black men were about double those seen for non-Latino white, Latino white, and Filipino men, with lower rates for Chinese, Korean and Japanese men. The same relative differences between racial ethnic groups were seen for women as well during 2006-2012 with black women well above non-Latina white, Latina white, Filipina, Japanese, and Chinese women.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (MULTIPLE MYELOMA)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (MULTIPLE MYELOMA)



Latino White
Black
Non–Latino White
Chinese
Japanese
Filipino
Korean
Vietnamese
Indian/Pakistani/Sri Lankan/Bangladeshi
Thai/Hmong/Cambodian/Laotian
Hawaiian/Samoan

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ORAL CAVITY AND PHARYNX

Lihua Liu, PhD

CAUSES AND WORLDWIDE TRENDS

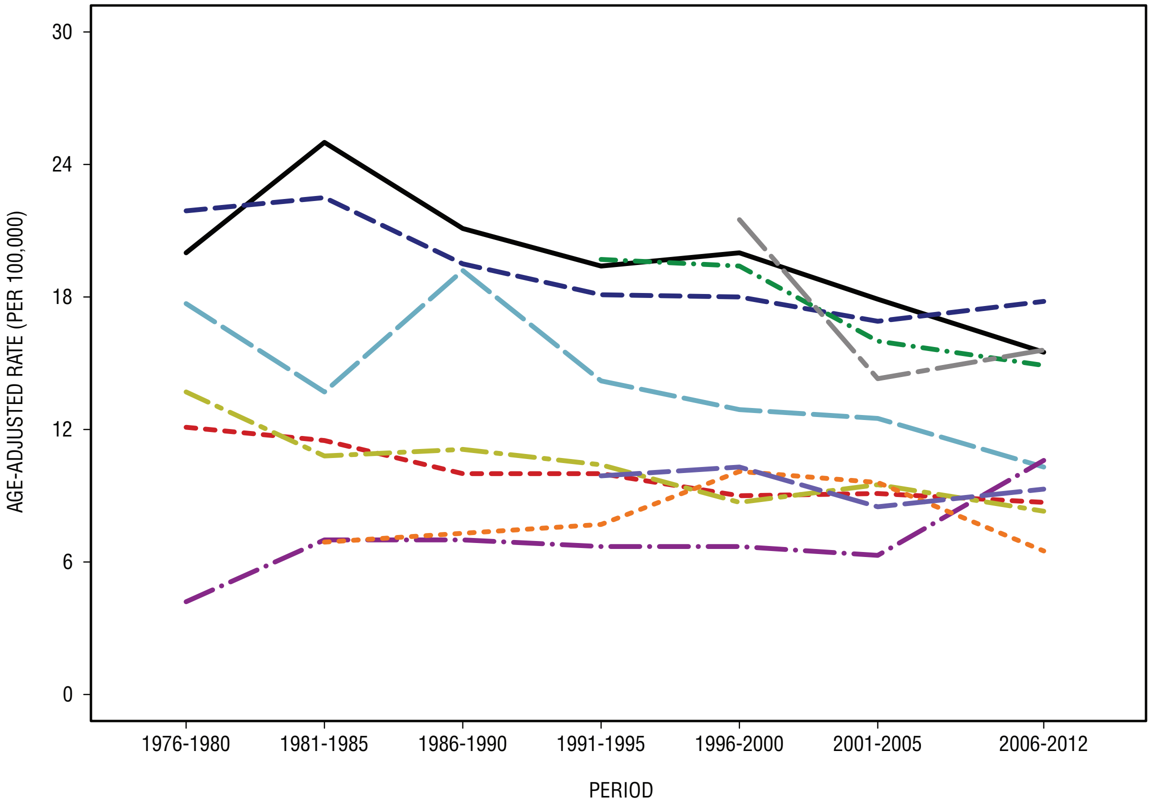
Cancer of the oral cavity and pharynx refers to all cancers occurring in the mouth and throat. Rates of these cancers vary widely around the world. Differences can also be found within countries. The geographic variations in oral and pharyngeal cancer incidence suggest strong environmental and behavioral influences on the development of the disease. The disease is generally more common among men than women, although this difference has been narrowing in recent decades resulting from faster decline in incidence among men in most parts of the world. There are many anatomic locations within the oral cavity and pharynx, including lip, tongue, gum, floor of mouth, buccal cavity, palate, salivary gland, tonsil, oral pharynx, and hypopharynx. Each location has unique physical characteristics and is associated with different risk factors. The major risk factors for oral and pharyngeal cancers are tobacco and alcohol consumptions. Smoking and drinking multiply the effects of each other in the development of these cancers. A weakened immune system, poor oral hygiene, and a diet low in fruits and vegetables are associated with cancers of the oral cavity and pharynx. Infection with human papilloma virus (HPV), particularly type 16, the same one that is responsible for causing cervical cancer in women, is increasingly common among oropharyngeal cancer patients. In the U.S., the rates of oral and pharyngeal cancers have declined since the 1980s, as a result of the anti-smoking campaign, more substantially among black and white men than in other demographic groups. However, there is evidence that among young Americans the risk for cancers of the oral cavity and pharynx is on the rise.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

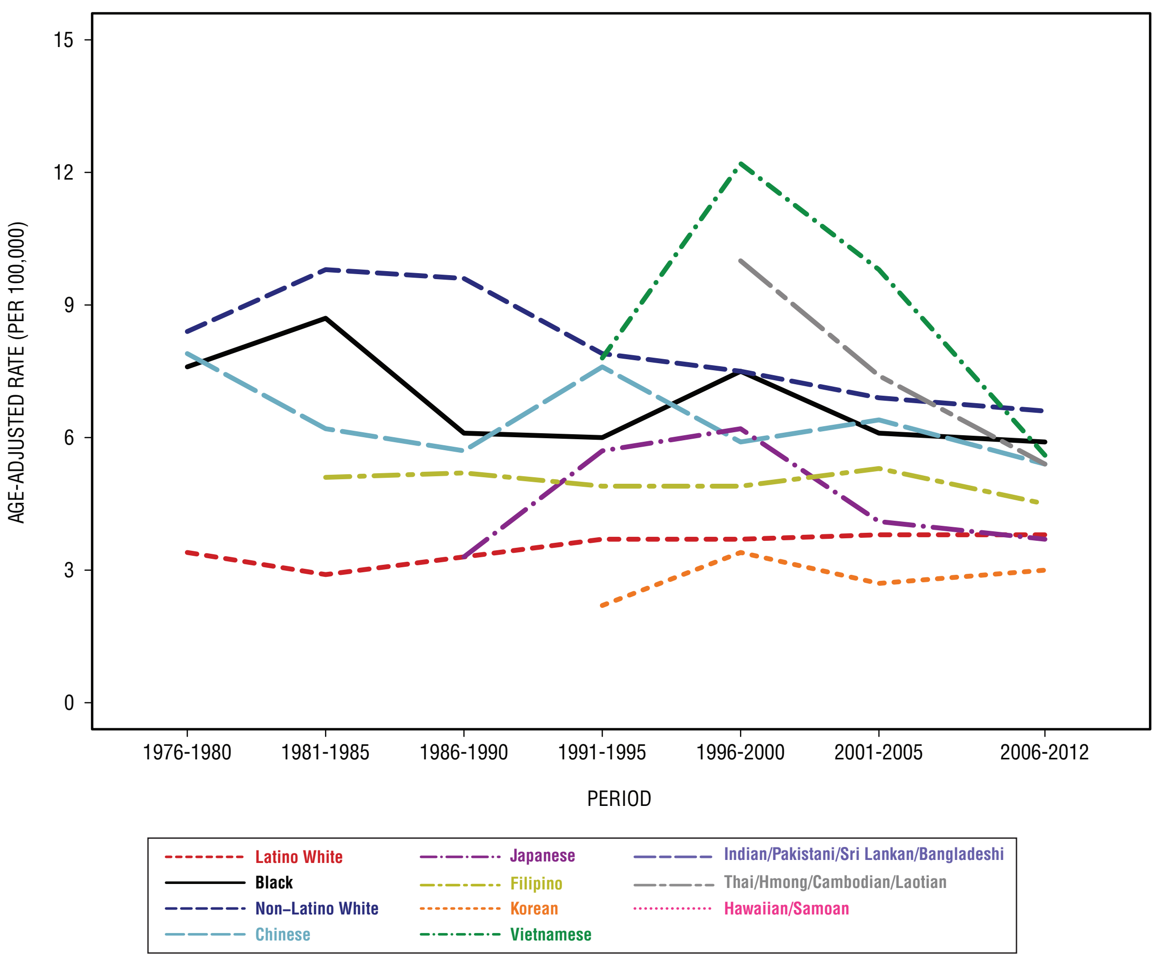
In Los Angeles County, the incidence rates for oral and pharyngeal cancers have been decreasing more obviously in men than in women. Among men, the long-term decline is evident for blacks, non-Latino whites, Chinese, Filipinos, Latinos, and even in Vietnamese and the group of Thai/Hmong/Cambodians/Laotians in recent years. During 2006-2012, non-Latino white men had the highest rate, closely followed by backs, Vietnamese, and Thai/Hmong/Cambodian/Laotian, while the lowest rate among men was among Koreans.

Women experience about half of the risk for developing oral and pharyngeal cancers as compared to men. Among women, the highest risk groups during the mid 1990s and early 2000s were Vietnamese and Thai/Hmong/Cambodian/Laotian. These groups also showed dramatic reductions in risk over time. Compared to men, the decline in rates was less among non-Latina whites, blacks, Chinese, and Filipinas. The rates were rather stable among Latinas and Korean women.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (ORAL CAVITY AND PHARYNX)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (ORAL CAVITY AND PHARYNX)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

OVARY

Nisha Opper, MPH

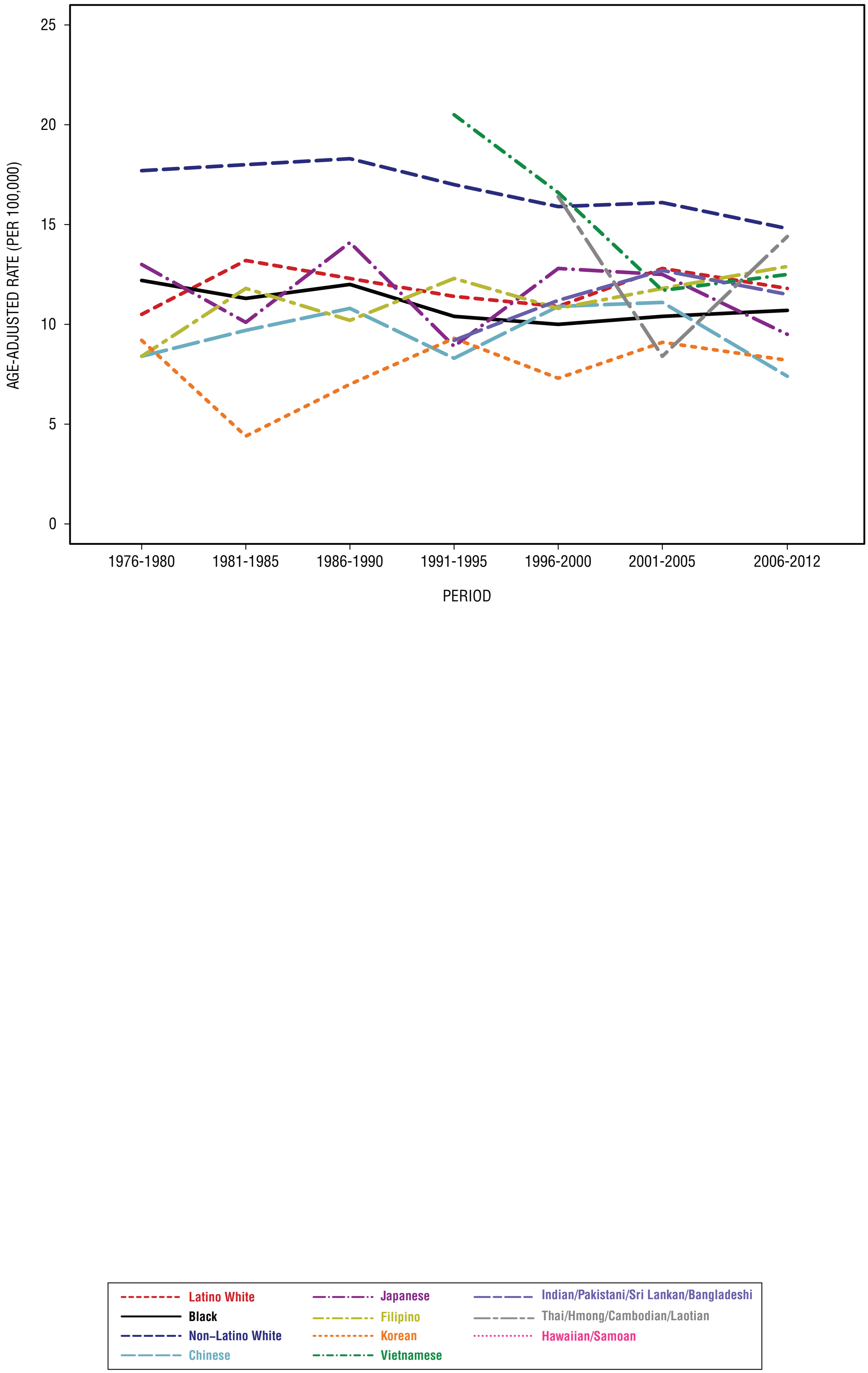
CAUSES AND WORLDWIDE TRENDS

Ovarian cancer is the seventh most common cancer among women and the second most common gynecologic cancer worldwide. Epithelial ovarian cancer accounts for approximately 85-90% of all ovarian cancers; the rest are either germ (reproductive) cell or stromal (connective tissue) cell tumors. In the US, approximately 1 in 70 women will be diagnosed with ovarian cancer over her lifetime. Localized ovarian cancer has a 92% 5-year survival rate, but only about 19% of ovarian cancers are diagnosed at this stage. The 5-year survival rate for advanced ovarian cancer is approximately 30%, giving this disease the dubious distinction of the lowest survival rate of all gynecologic cancers. Global incidence estimates are stable or decreasing, particularly in high incidence countries. Incidence is generally highest in industrialized countries and among non-Latina whites, particularly those of Ashkenazi Jewish decent. Genetic predisposition, predominantly in the form of BRCA mutation, contributes to about 10% of cases. Risk of epithelial ovarian cancer increases with age and the vast majority of women are diagnosed after 50. Germ cell tumors are most likely to be diagnosed before 35 and stromal cell tumors vary by age at diagnosis depending on subtype. Disease risk also appears to increase with number of lifetime menstrual cycles. Therefore, late onset of mensturation, menopause at a younger age, child bearing, and potentially, lactation may be protective. Use of oral contraceptive pills, tubal ligation, hysterectomy and removal of the ovaries all appear to be protective. Certain medical conditions, such as endometriosis or Lynch II Syndrome, use of hormone replacement therapy, high body mass and high adult height are also thought to confer additional risk. However, because this is a relatively rare disease, information is limited. It is likely that many of these associations differ by tumor type, timing of disease onset, and stage of disease.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Overall, incidence of ovarian cancer in Los Angeles County has been gradually decreasing over the reporting period. This largely remains true when racial/ethnic groups are examined individually, though low incidence groups tend to experience more variability between reporting years due to the smaller numbers of cases. Thai/Hmong/Cambodian/Laotian women experienced a sharp increase since 2006 and should be observed carefully to determine if this is due to the instability of small numbers or increased disease frequency in this population. From 2006-2012, incidence rates continued to be highest among non-Latina white women and were nearly twice those of Chinese women, who have the lowest rates.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (OVARY)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

PANCREAS

Thomas Mack, MD, MPH

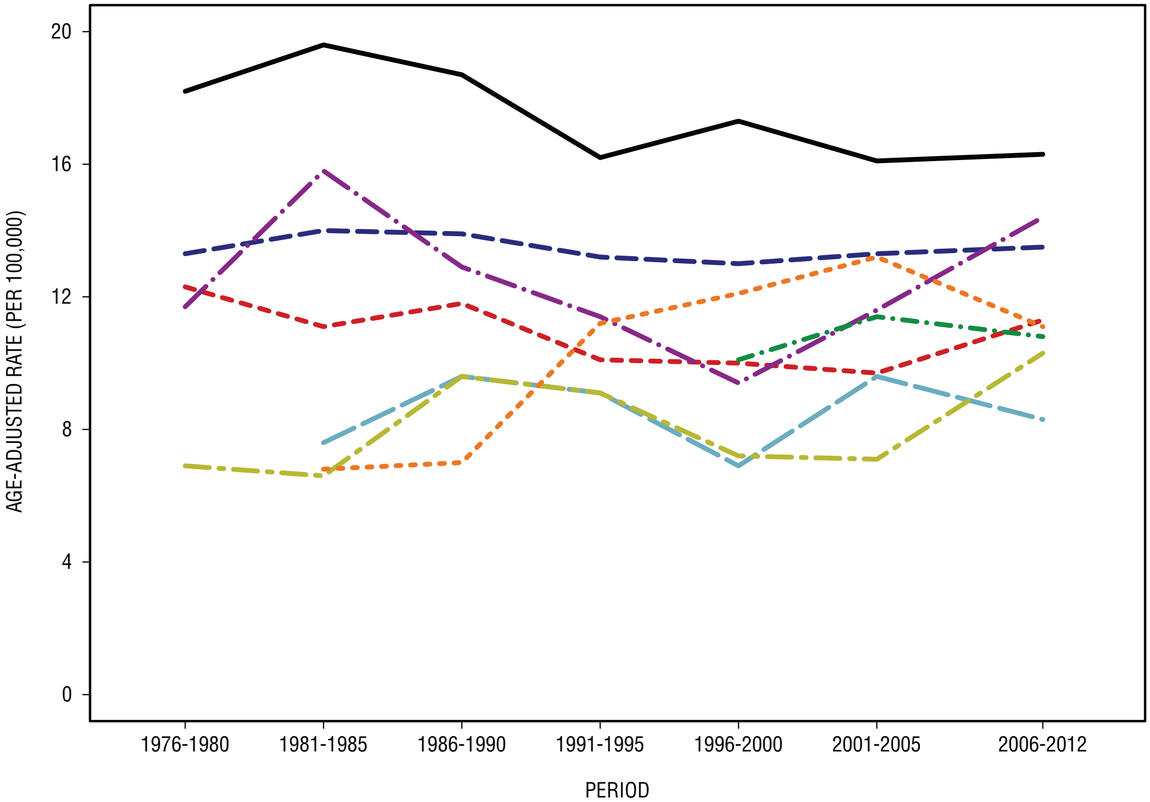
CAUSES AND WORLDWIDE TRENDS

Pancreas cancer usually refers to adenocarcinomas of the ductal cells (which release enzymes to aid in food digestion), not the islet cells (which release hormones, like insulin, to control blood sugar). With the exception of the relatively small contribution of chronic pancreatitis, the most important known cause of pancreas cancer is cigarette smoking. Unlike lung cancer, rates of pancreas cancer appear to be dampened a decade or so after smoking is stopped. Pre-existing diabetes mellitus seems to increase risk, but this is difficult to assess because as a pancreas cancer grows it appears to destroy the insulin-producing islets of Langerhans and cause diabetes. Many studies of diet have been performed, but results are generally inconsistent. Most studies have not shown any effect of alcohol consumption. Frequent consumption of vegetables has usually been found related to a small reduction in risk, and excess carbohydrates have sometimes been found to slightly increase risk. One of the stronger potential dietary determinants is the polycyclic aromatic hydrocarbons present in barbecued or well-done meat. Prolonged occupational exposure to high levels of chlorinated or poly-aromatic hydrocarbons have been suspected, but the evidence is also inconsistent. Rates of pancreas cancer have varied greatly worldwide over the decades, but the significance of these differences may be due to important variations in methods of verifying the tissue of origin. With few exceptions, symptoms of pancreatic tumors are not apparent early in the course of disease. When patients seek care, they often already have untreatable, widespread carcinoma. The diagnosis of pancreas cancer has historically been a clinical exercise dependent upon arbitrary judgement, and the completeness of ascertainment has often depended on the quality of medical practice, medical records, and death certificates. For example, the apparent increase in incidence in Japan over the last decades may reflect changes in medical practice more than an actual change in risk of cancer. Examination of trends from populations served by relatively constant clinical and registry practices does not suggest that dramatic changes in incidence are occurring. As sophisticated imaging methodology comes into widespread use, comparisons over time and by geography will be more reliable.

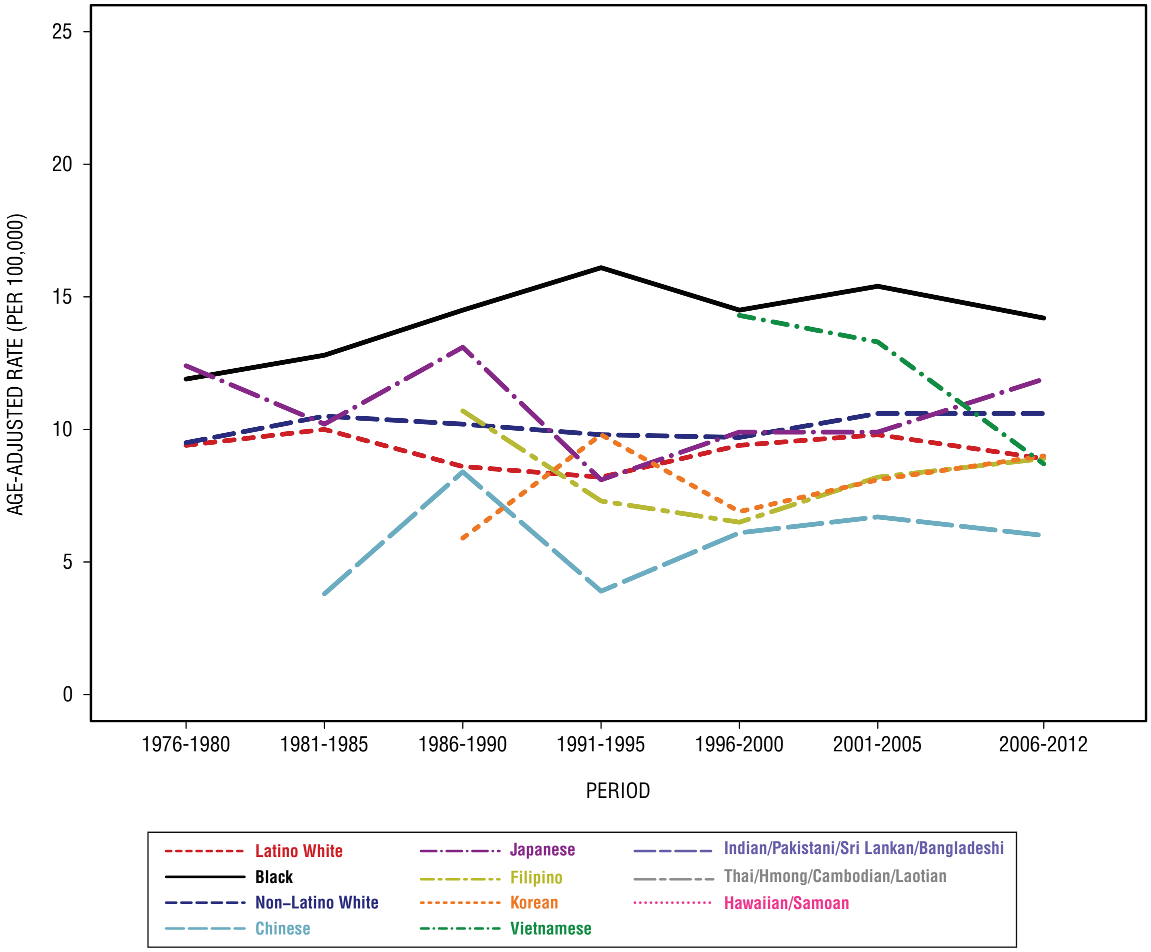
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Over the first 25 of the 40 years that pancreas cancer incidence has been monitored in Los Angeles County, inconsistent trends probably reflected the changes in methods of diagnosis. Rates among men are about one and a half times higher than for women, and some decrease in rates, particularly among men, may have resulted from the reduction in smoking. Rates among blacks are similarly higher than those for members of the other prevalent ethnic groups (Latino white and Chinese, Filipino, Japanese, Korean and non-Latino whites). From about 2000 to the present, however, rates among women of each ethnic group have not varied statistically. Among men, the same has been largely true of each group, in spite of some variations over the last period. For example, among Latino men, since the rate at the beginning of that period was the lowest on record, and the rate at the end of the period was not in excess of what was observed before 2000. It is notable that the most variability of rates is expected for race/ethnic groups with small numbers. Overall, pancreas cancer rates in Los Angeles County have been fairly stable.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (PANCREAS)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (PANCREAS)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

PROSTATE

Mariana C. Stern, PhD

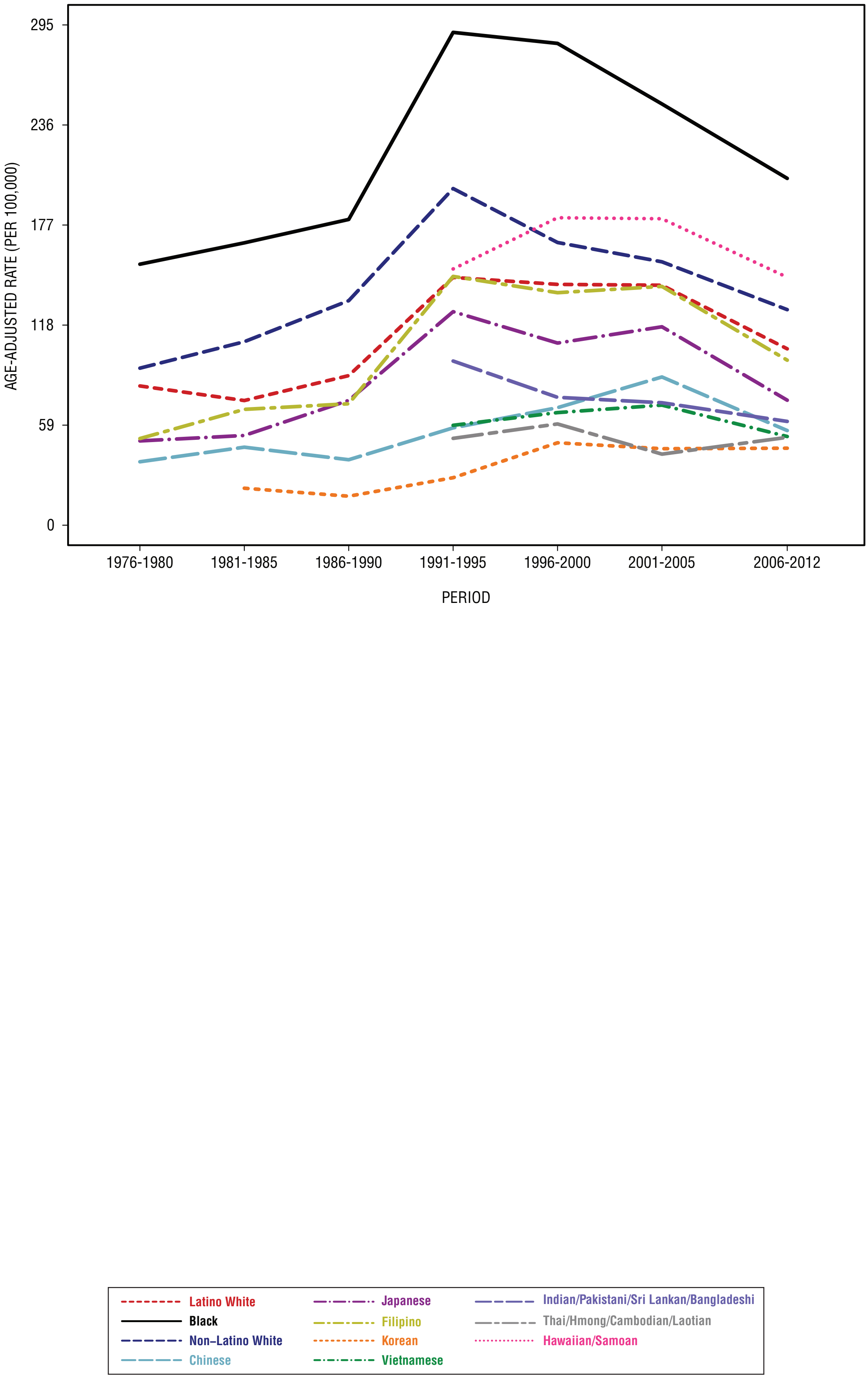
CAUSES AND WORLDWIDE TRENDS

Prostate cancer is the most common cancer among men in the US accounting for 26% of all cancers, and it is the second cause of cancer death among men. The main identified risk factors to date are age, race/ethnicity, family history of prostate cancer, and low-penetrance genetic variants. Migrant studies and comparative studies of ethnically similar populations across different countries suggest that environmental and/or lifestyle factors may play a role in the risk of prostate cancer including physical activity level, body mass index, sun exposure, and various dietary factors. More studies are needed to confirm their roles in prostate cancer development. Prostate cancer incidence rates vary greatly worldwide, with a ~20-fold difference between countries in South-East and South-Central Asia, where incidence rates are lowest, to countries like Australia, US, Canada, some countries in the Caribbean, and North and West Europe, where incidence rates are the highest. In most countries, except many Asian countries, prostate cancer incidence sharply increased in the early 1990, due to the introduction of the prostate specific antigen (PSA) test, which allowed the detection of asymptomatic early stage disease, leading to the identification of both new and latent cancers. As this screening strategy became routine, and most previously undetectable cancers were diagnosed, cancer incidences rates decreased. Currently, most men are diagnosed with localized disease, and the majority will have slow-growing disease that will never become aggressive during their lifetime.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Incidence rates of prostate cancer changed dramatically across all racial/ethnic groups during 1976-2012. Among blacks, non-Latino whites, Latinos, Filipinos, and Japanese, incidence rates showed a marked increase from the early years and peaked in 1990-1995. These sharp increases are likely due to the widespread adoption of PSA testing. A much smaller and delayed peak (between 1996-2005) was observed for Chinese, Koreans, Vietnamese and Thai/Hmong/Cambodian/Laotian men, suggesting later adoption of PSA screening. All racial/ethnic groups showed declining rates after these peaks; however, most are still higher than those before the PSA introduction. The only exceptions are Hawaiians/Samoans and Thai/Hmong/Cambodian/Laotian, for whom data is only available since 1991; their rates for 2006-2012 are comparable to those in 1991-1995. Overall, prostate cancer rates continue to decrease for most racial/ethnic groups, and by 2006-2012, the highest incidence rates were observed among blacks, followed by Hawaiians/Samoans, non-Latino whites, Latino whites, Filipino, and Japanese, who experience much higher prostate cancer risk than the remaining Asian ethnic groups.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (PROSTATE)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

STOMACH

Eunjung Lee, PhD

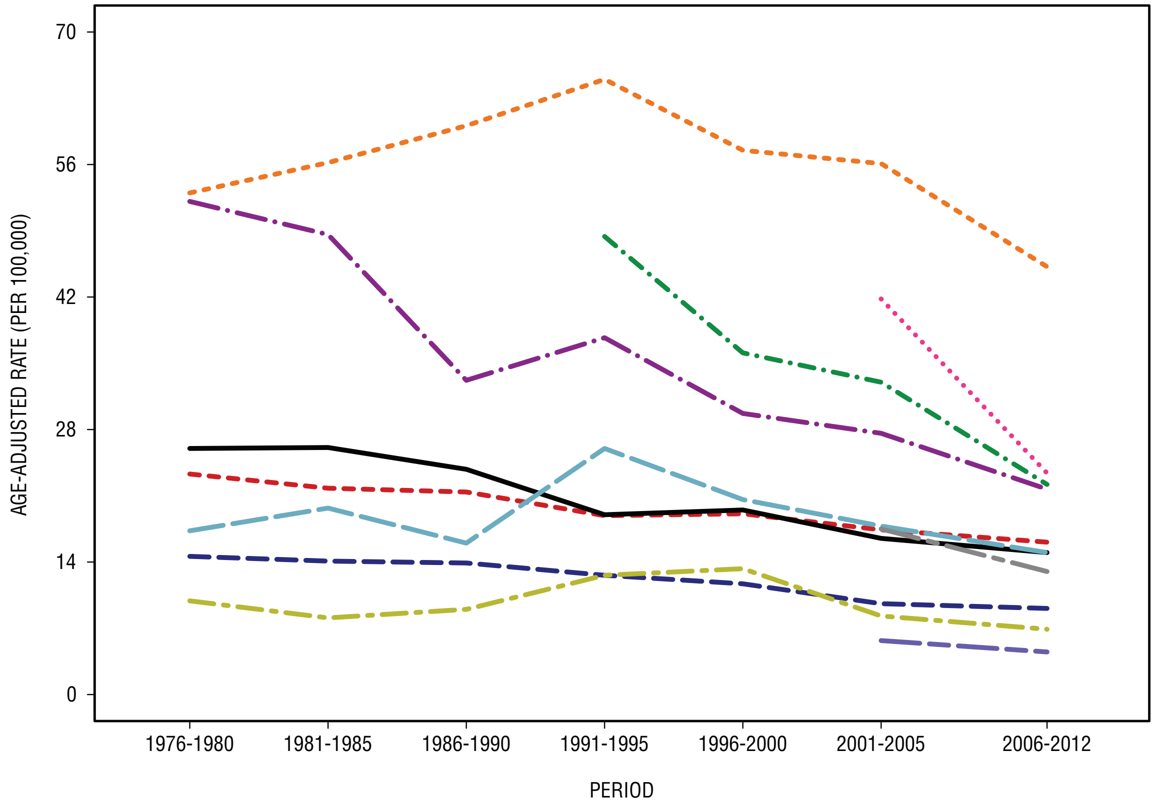
CAUSES AND WORLDWIDE TRENDS

The incidence and mortality rates of stomach cancer have been declining steadily since the 1940s, but this cancer remains the second leading cause of cancer death worldwide. Stomach cancer incidence is highest in South Korea and Japan, intermediate in China and parts of Eastern Europe and Latin America, and lowest in Western Europe and the US Incidence of this cancer is at least twice as high among men as women. Reasons for the worldwide declining rates are not fully understood, but are likely due to better food preservation and storage techniques, primarily less salting and pickling of food, and also a parallel increase in the consumption of fresh fruits and vegetables. The declining prevalence of infection with the bacterium *Helicobacter pylori*, an established risk factor for chronic active gastritis and stomach cancer, is believed to have played an important role as well. Smoking has been consistently linked with an increased risk of stomach cancer and may have also contributed to the declining incidence patterns. However, not all types of stomach cancer are on the decline. Cancer originating in the cardia (the part of the stomach closest to the esophagus) was on the rise, in some countries including the US, but more recent US data suggest that the rate in the US has stabilized since 1990's. Gastric cardia cancers appear to have similar risk factors to adenocarcinoma of the esophagus. Stomach cancer remains the 12th most common cause of cancer death in US men and the 13th in US women. In the US, rates are highest among Koreans, Japanese, Vietnamese, and Samoans, intermediate among Latino whites, Chinese, blacks, Hawaiians, and lowest among non Latino whites and Filipinos.

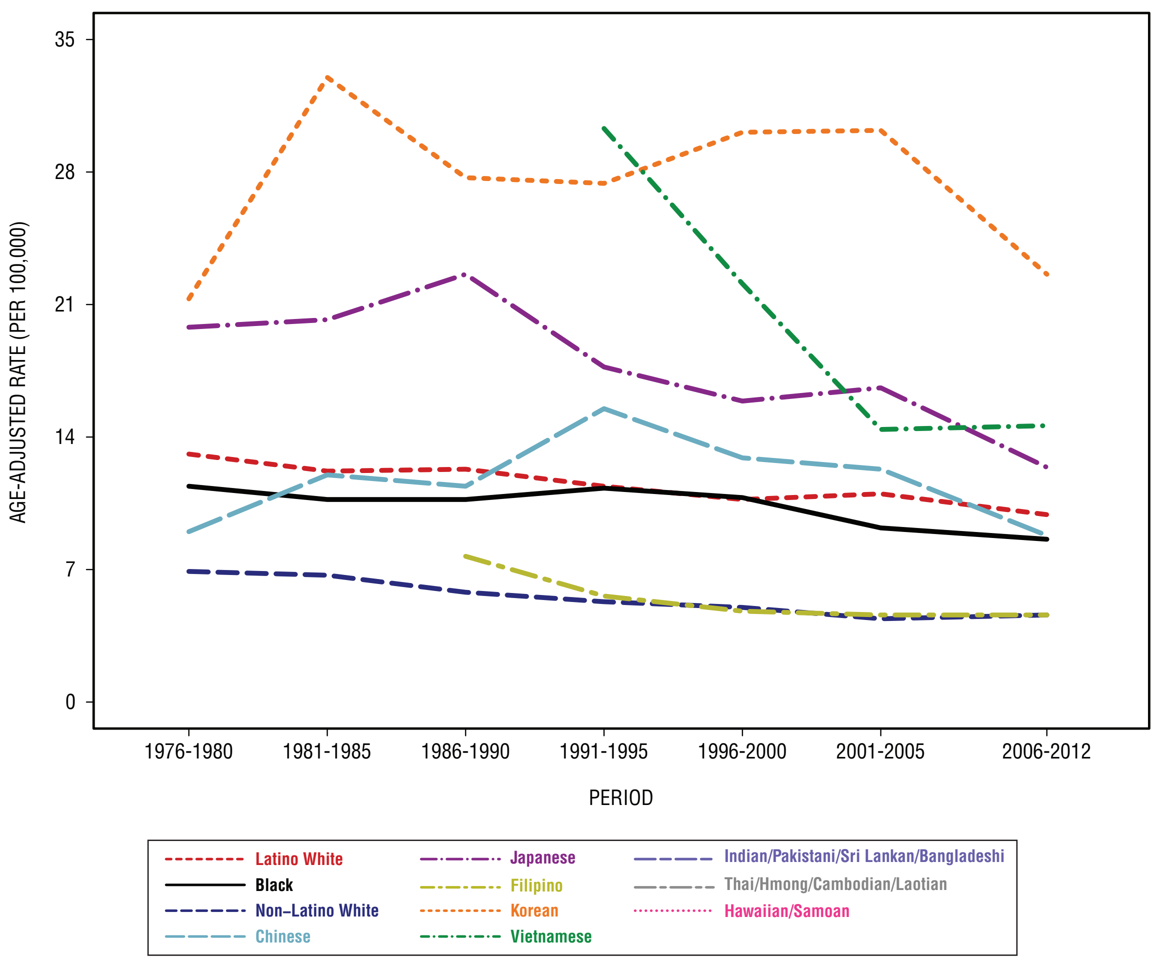
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Incidence patterns in Los Angeles are similar to those observed across the U.S. Rates of stomach cancer among Korean men are particularly high, whereas rates are intermediate for Japanese, Vietnamese, Chinese, Latino whites and blacks, and lowest among non-Latino whites, Filipinos, and Indian/Pakistani/Sri Lankan/Bangladeshi. While rates among men have declined for non-Latino whites, Latino whites, blacks, and Japanese, increases in stomach cancer rates were observed until mid-1990's for most Asian American subgroups including Korean, Chinese, Filipino, and Vietnamese; since then the rates in these Asian American groups have also decreased. Among women, the rates have declined in nearly all racial/ethnic groups since 1991.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (STOMACH)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (STOMACH)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

TESTIS

Victoria K. Cortessis, PhD

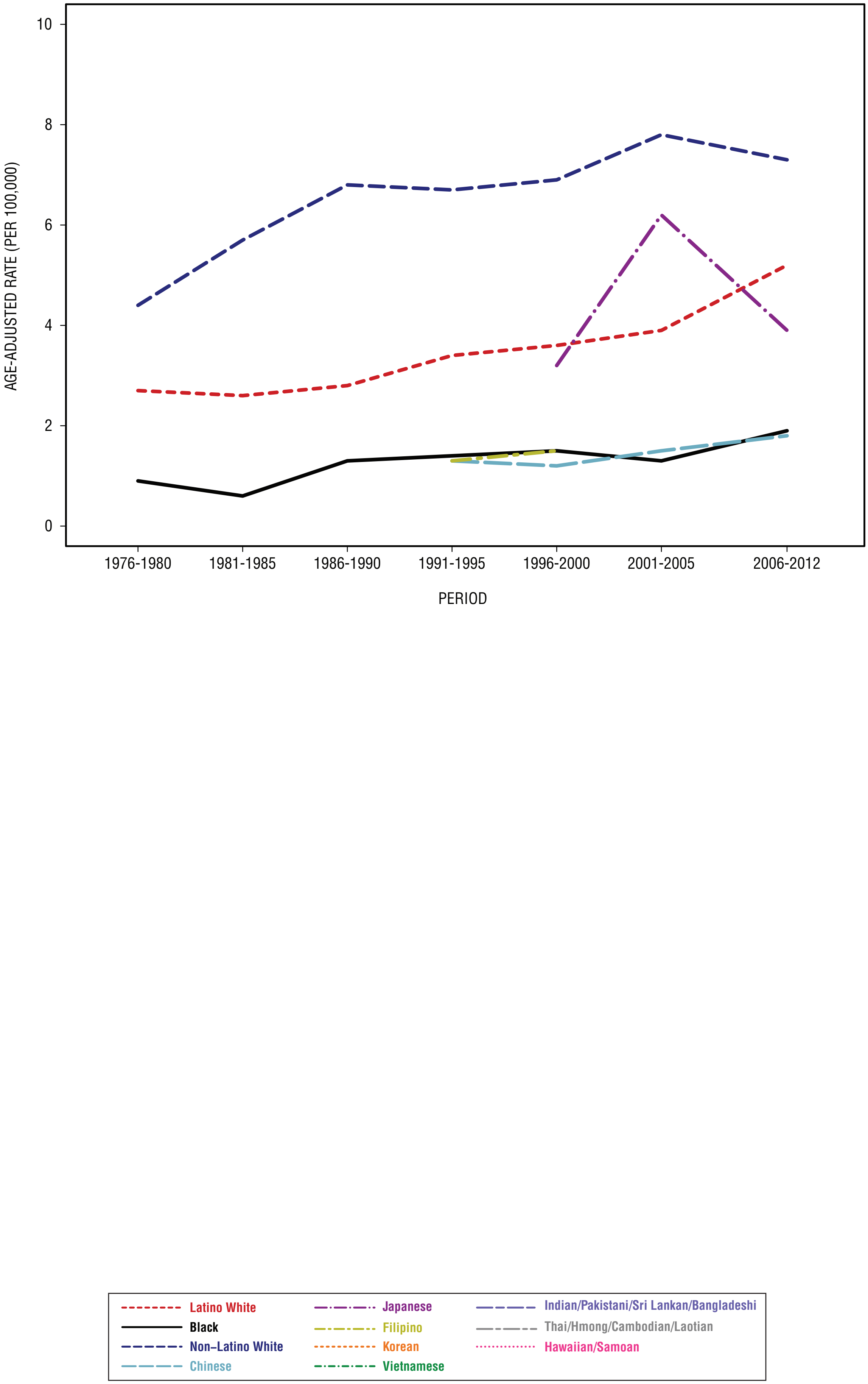
CAUSES AND WORLDWIDE TRENDS

Most cancers of the testis arise from the sperm-producing germ cells. Testicular germ cell tumors occur predominantly in young men, and in industrialized nations these tumors are the most common malignancy of males 15 to 30 years of age. Testis cancer has historically been far more common among non-Latino whites than other racial/ethnic groups. The first testis cancer risk factor to be recognized was a personal history of cryptorchidism (testicles outside the scrotum at birth), interpreted by some scientists as indicating that events occurring before a man's birth may influence testis cancer risk. In the genomic era specific forms of numerous genes have been shown to be associated with risk. However, these gene variants do not fully explain the tendency of testis cancer to occur in families. Testis cancer incidence rates have increased steadily for over a century, indicating that exposure to one or more environmental cause of testis cancer has become more common over time. Identifying environmental causes that could be abated in order to prevent testis cancer is a central goal of testis cancer research.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

Testis cancer incidence remains highest in non-Latino whites, but rates have increased in even those racial/ethnic groups traditionally regarded as having low risk. Most notably, rates among Latino whites rose sharply in recent years, and in 2006-2012 exceeded rates among non-Latino whites in 1976-1980. Together with a growing proportion of Latinos within the population of Los Angeles County, these increased rates led for the first time in 2006-2012 to more testis cancer diagnoses among Latino whites than among non-Latino whites. Incidence among men of Japanese ancestry is similar to that among Latino white men, and has also risen steeply. Understanding specific habits adopted as part of the acculturation of these two groups many provide new insight into environmental influences on testis cancer risk. Incidence has increased, although to a lesser extent, among traditionally lowest risk groups: black men and those of other Asian ancestry. Based on these patterns, testis cancer can no longer be regarded as a malignancy that predominantly affects non-Latino white men.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (TESTIS)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

THYROID

Recinda L. Sherman, PhD

CAUSES AND WORLDWIDE TRENDS

Cancer of the thyroid is among the top five most common cancers in women and accounts for approximately 3% of all newly diagnosed cancers in the US and 2% worldwide. Particularly high rates are found in Iceland, the Philippines, and Hawai'i, as well as in Filipino immigrant populations in the U.S. such as Los Angeles and Hawai'i. The incidence of thyroid cancer is about three times higher among women than men. There are four primary types of thyroid cancer. Papillary (approximately 75% to 80% of all thyroid cancers) and follicular (about 15% of all thyroid cancers) make up the vast majority of thyroid cancers. The remaining types, anaplastic and medullary, account for less than 5% of all diagnosed thyroid cancers. Survival is good for most thyroid cancers with a 5-year survival rate of 98%.

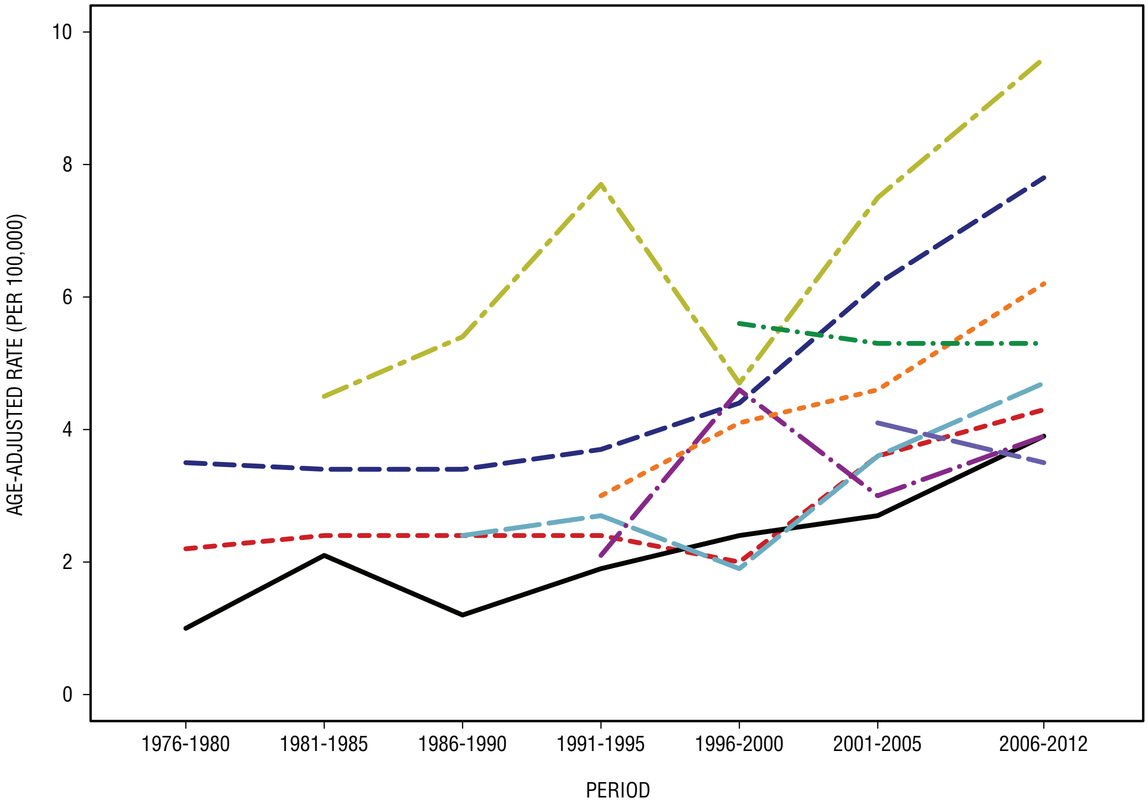
Thyroid cancer has a genetic component with about 5% of follicular thyroid cancers occurring in families and 25% of medullary thyroid cancer caused by genetic syndromes. Genetic syndromes also cause some papillary and follicular thyroid cancers. Thyroid cancers are strongly related to exposure to high-dose ionizing radiation, such as that which occurs in radiation treatment for medical conditions. It is not known whether lower doses of radiation such as those associated with diagnostic radiography increase the risk of thyroid cancer. Other than ionizing radiation, the current knowledge of other risk factors for thyroid cancer is limited. Risk of thyroid cancer is much higher among those who have a past history of certain thyroid conditions, including goiter, benign thyroid nodules or adenomas, thyroid enlargement, and thyroiditis.

In the past few decades, thyroid cancer incidence has been increasing worldwide, particularly for papillary thyroid cancers. There are unique epidemiologic patterns by cell type, sex, and age which suggest the increasing trends may be due to a combination of enhanced diagnostic procedures as well as an actual increase in etiologic risk. Part of the increase in incidence is because of technological improvements in imaging and diagnosing thyroid tumors. In addition, the methods used to classify thyroid tumors changed in the 1970s, resulting in a greater number of tumors being classified as papillary thyroid cancer. It has also been suggested, but not clearly proven, that the increase is also due to the use of high dose radiation treatment for certain childhood medical conditions.

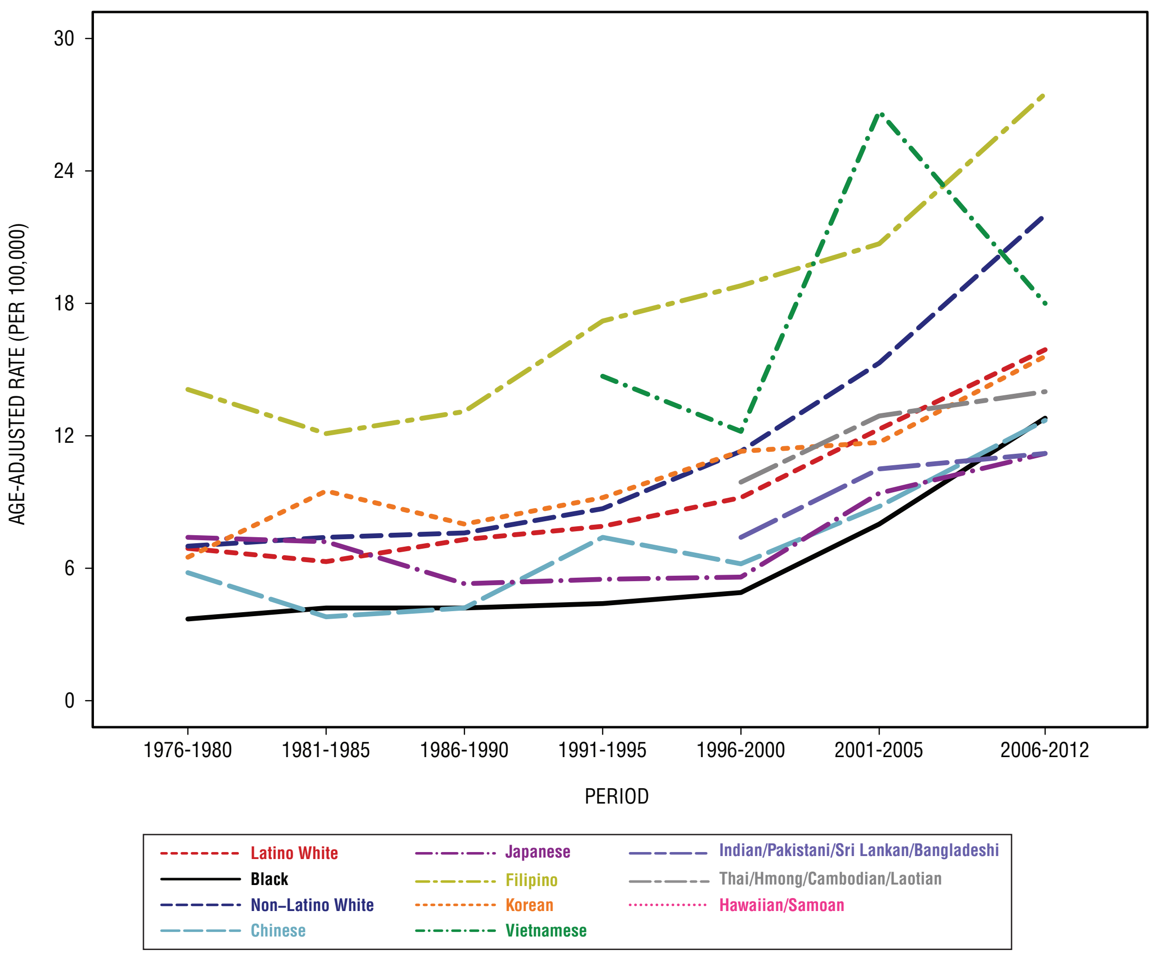
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

For both men and women, incidence rates of thyroid cancers were relatively stable in Los Angeles County from 1976-1995 with Filipinos having the highest rates. Clear conclusions based on examination of trends in thyroid cancer incidence are limited by the small number of cases of the disease for some groups, but a general increase is seen for most racial/ethnic groups with significant increases in the last decade. If the increase was solely because of changes in methods of identifying and diagnosing these tumors, the subsequent increase in rates would eventually level off. However, the latest data show a sustained increase in thyroid cancer rates. Analyses by cell type (not shown) indicates the increase in incidence is observed for papillary, particularly for women, but not other types of thyroid cancers.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (THYROID)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (THYROID)



Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

URINARY BLADDER

Victoria K. Cortessis, PhD

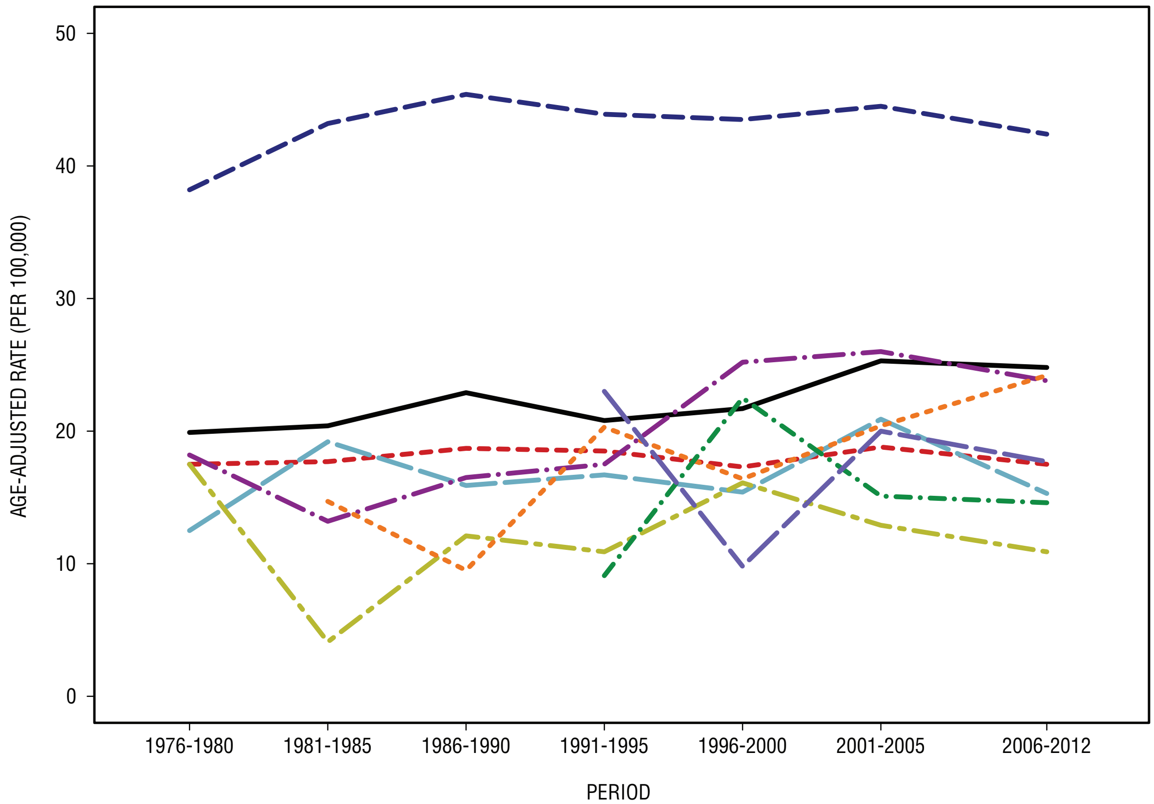
CAUSES AND WORLDWIDE TRENDS

Worldwide, over 3% of primary cancers are urinary bladder tumors, but incidence varies an estimated 18-fold between regions. Bladder cancer is relatively rare in much of the developing world; the exception is tropical areas where people are infected with the parasitic worm *Schistosoma*, which is associated with squamous cell carcinoma in humans. It is suggested that this is related to chronic inflammation and high urinary concentration of nitrosamine compounds produced by bacterial infection. The incidence of *Schistosoma*-associated bladder cancer customarily peaks between ages 40 and 49 and is more common in men. This gender difference is probably due to men who work in water containing *Schistosoma* larva. In industrialized nations, bladder cancer is far more common, and approximately 90% of incident disease is urothelial carcinoma, which affects the innermost lining of the bladder. The first urothelial carcinoma risk factors to be identified were a group of chemicals called arylamines that were once common in some occupations such as painters, leatherworkers, machinists, metalworkers, and rubber and textile workers and were subsequently established as carcinogens. Exposure to these compounds is now well regulated in the Unites States and Europe, where approximately half of all bladder cancer is now attributed to active exposure to tobacco smoke, which also contains arylamines. Related risk factors include passive exposure to tobacco smoke, hair dyes which can contain arylamine impurities, and carcinogenic arylamines from unknown sources. Incidence is far higher in whites than other racial groups. In all groups incidence increases steadily with age, and is much higher in men than in women. This gender difference is not fully explained by differing patterns of smoking or occupational exposure, so may be related to differences between men and women in anatomy or hormones. The fact that risk is lower among women who have given birth compared with those who have not is one such example. Surprisingly, incidence has changed little even though frequency of smoking has declined, perhaps due to changing composition of cigarettes or increased exposure to unrecognized causes.

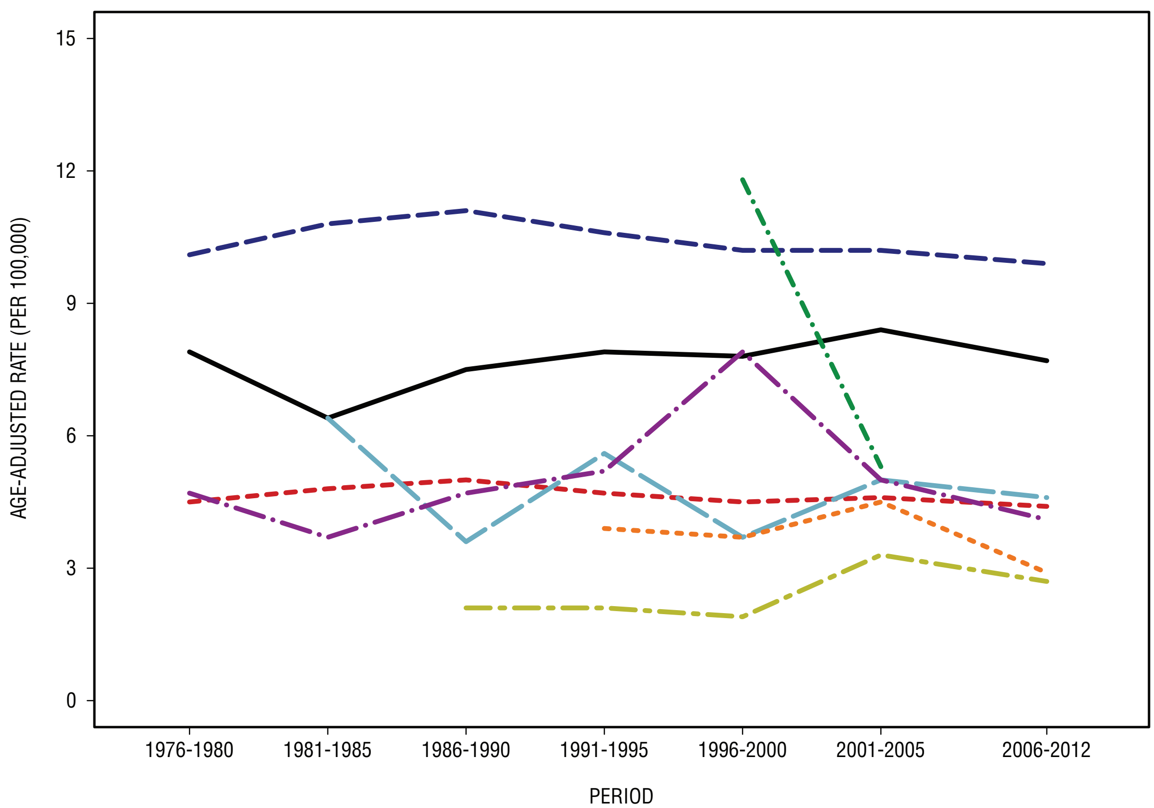
TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

In both men and women, age-adjusted incidence was far higher among non Latino whites than all other groups. Age-adjusted incidence in most groups was largely unchanged throughout 1976-2012.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: MALES (URINARY BLADDER)



TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (URINARY BLADDER)



Latino White	Japanese	Indian/Pakistani/Sri Lankan/Bangladeshi
Black	Filipino	Thai/Hmong/Cambodian/Laotian
Non–Latino White	Korean	Hawaiian/Samoan
Chinese	Vietnamese	

Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

UTERUS

V. Wendy Setiawan, PhD

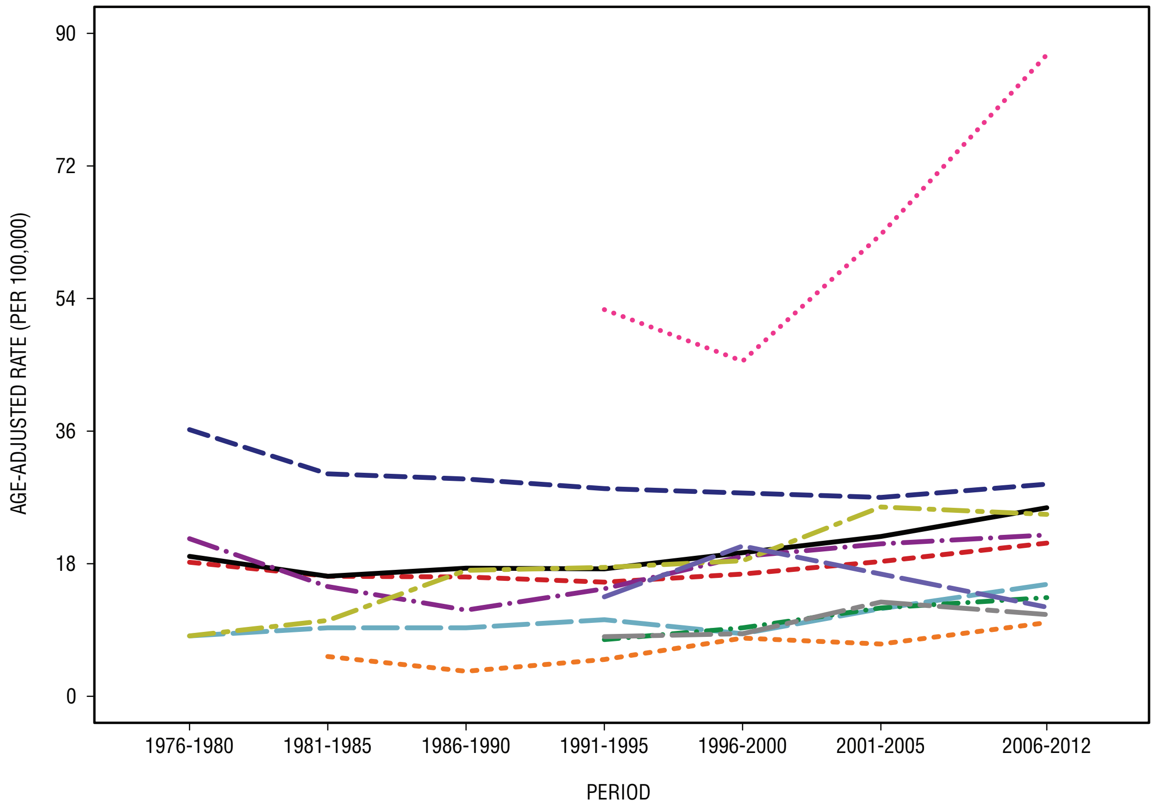
CAUSES AND WORLDWIDE TRENDS

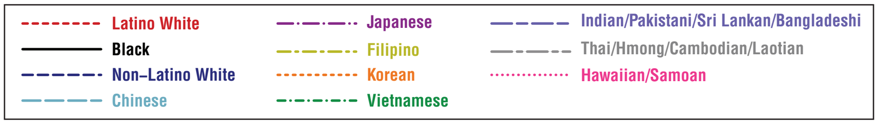
Endometrial cancer is a type of cancer that starts in the cells that line the uterus (womb). Nearly all cancers of the uterus are this type which is why endometrial cancer is often called uterine cancer. Factors that cause fluctuations in the balance of female hormones (estrogen and progesterone) in the body influence the risk of endometrial cancer. Endometrial cancer is caused by estrogen stimulation without the moderating effects of progesterone. Taking hormonal therapies that contain estrogen but not progesterone to treat manopausal symptoms increases the risk of endometrial cancer. Obesity is an important risk factor for endometrial cancer because, after menopause, fat cells are major sources of estrogen. Pregnancy and increasing number of births protect against endometrial cancer because they reduce the number of menstrual cycles in a woman's lifetime and thus, her total exposure to estrogens. Oral contraceptives (birth control pills) contain estrogen and progesterone which protects against endometrial cancer. Endometrial cancer is the sixth most common cancer in women worldwide. The incidence is high in North America and Northern Europe, intermediate in Latin and Southern Europe, and low in Asia and Africa.

TRENDS IN INCIDENCE IN LOS ANGELES COUNTY

After having relatively stable rates since the early 1980s, the rates in Los Angeles County in most ethnic groups started to increase in the 1990s. Endometrial cancer is predominantly found among non-Latina whites, however, blacks, Latinas, and some Asian subgroups (Chinese and Korean) have experienced notable increases in incidence rates in recent years. Of particular interest is the substantial increase in rate among Filipinas which is now approaching that of non-Latina whites. Korean women have the lowest rate in Los Angeles County. While data are still limited, a rapid increase in incidence rates in Hawaiian/Samoan women was also seen. Changes in the prevalence of endometrial cancer risk factors, especially the obesity epidemic, may explain these observed increases.

TRENDS IN AGE-ADJUSTED INCIDENCE RATES IN LOS ANGELES COUNTY BY RACE/ETHNICITY, 1976-2012: FEMALES (UTERUS)





Where a rate is based on fewer than 8 cases, that rate, and the lines joining it to adjacent rates are omitted.

APPENDIX A: DETAILED METHODS

DETERMINATION OF RACE/ETHNICITY OF CANCER PATIENTS

Since its beginning, the CSP has emphasized monitoring the racial/ethnic patterns in cancer incidence. Race/ethnicity and Spanish/Hispanic origin of cancer patients are reported to the CSP by reporting hospitals based on information in the medical records. The Hispanic/Latino Identification Algorithm developed by the North American Association of Central Cancer Registries (NHIA) was used to further identify Latino patients using birthplace and Spanish/Hispanic surname information. Based on the available information, the CSP recodes the race/ethnicity into mutually exclusive groups to facilitate research and surveillance activities. The CSP has maintained the analytical capability of estimating cancer incidence rates for the following population groups in Los Angeles County since the early 1970s: non-Latino white, Latino white, black, Chinese, Japanese, Filipino, and Korean. As the County's population grew in number and racial/ethnic diversity, four more ethnic groups were added for cases diagnosed in 1988 and later: Vietnamese, Indian/Pakistani/Sri Lankan/Bangladeshi, Thai/Hmong/Cambodian/Laotian, and Hawaiian/Samoan.

POPULATION DENOMINATORS

Because of the racially and ethnically diverse populations in Los Angeles County, the CSP maintains strong interest and emphasis on studying the racial/ethnic differences in cancer risk. To calculate cancer incidence rates, annual population estimates of the County by age, sex, and race/ethnicity are needed as denominators. Because of the lack of such detailed data from governmental sources, the CSP develops its own annual population estimates based on decennial census results. The CSP annual population estimates for 1976-2012 by age, sex and detailed race/ethnicity were used for calculating all incidence rates presented in this monograph.

Eleven mutually exclusive groups were included in the CSP population estimates to match with cancer incidence data: non-Latino white, Latino white, black, Chinese, Japanese, Filipino, Korean, Vietnamese, Indian/Pakistani/Sri Lankan/Bangladeshi, Thai/Hmong/Cambodian/Laotian, and Hawaiian/Samoan. These denominators were based on data from the 1970, 1980, 1990, 2000, and 2010 U.S. population censuses, with linear interpolation for the intercensal years estimates. For the postcensal years of 2011-2012, the age-sex-race/ethnic-specific linear trends from 2000-2010 were continued.

TECHNICAL TERMS

Age-adjusted rate: Age-adjusted rate: The age-adjusted rate is a weighted average of the age-specific rates, where the weights represent the age distribution of a standard population. Rates in this report are age-adjusted by the direct method to the 2000 U.S. Standard Population and are calculated per 100,000 persons. Age-adjustment allows meaningful comparisons of cancer rates over time by controlling for differences in the age distribution of two populations, which can profoundly affect cancer rates. The age-adjusted rate is calculated as:

$$A.A.R. = \sum_{i=0-4}^{85+} (w_i r_i)$$

where A.A.R. represents the age-adjusted rate, w_i is the proportion of age group i in the standard population, and r_i is the Los Angeles County age-specific rate for age group i.

Age-specific rate: The age-specific rate is calculated by dividing the total number of cases in a specific age group by the total population in that age group. This rate is then multiplied by 100,000 to yield an age-specific rate per 100,000 population. Age at cancer diagnosis is categorized into five-year age categories, starting with birth to 4 years old and ending with age 85 and older. The age-specific rate is calculated as:

$$r_i = \left(\frac{c_i}{n_i}\right)$$

where r_i is the age-specific rate for age group i, c_i is the count of cases for that age group, and n_i is the count of persons at risk (i.e., the population) for age group i.

CALCULATION OF RATES AND TRENDS IN RATES

We grouped cancer incidence data into six 5-year and one 7-year time periods (1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000, 2001-2005, 2006-2012) to obtain meaningful estimates for rare cancers and calculated age-adjusted rates using the 2000 U.S. Standard Population for age adjustment.

We calculated the overall statistical significance of trends in rates using the Mantel-Haenszel method, which provides a Chi-square statistic tested on one degree of freedom to obtain a probability value (p-value). This p-value represents the probability that the observed trend in age-adjusted rates occurred because of chance alone. A small p-value (e.g., 0.01) indicates a smaller likelihood that the trend occurred due to chance alone, while a large p-value (e.g., 0.75) indicates that chance is a reasonable explanation for the observed time trends. Traditionally, a p-value below 0.05 is considered "statistically significant" — that is, any p-value below 0.05 indicates that we are at least 95% certain that the observed trends did not occur by chance alone. The main determinant of this measure of certainty is the sample size (i.e., number of cases), so that when trends are based on a large number of cases, we are more certain that observed trends are not due to chance alone. However, for cancers such as prostate or breast cancer for which there are a large number of cases, almost any perceivable trend will turn out to be "statistically significant," especially among the large racial/ethnic populations. When that occurs, we need to then ask ourselves whether the trend is of sufficient magnitude to be of interest. A very small change in rates that is statistically significant because it was based on a large number of cases may not be as meaningful as a large change in rates that has a lesser degree of certainty based on fewer cases.

Appendix B provides the number of cases in each time period upon which rates are based, and the Chi-square and p-values for the trend test described above, so that the reader can make up his or her own mind about the importance of observed trends. Authors of each section describing trends have taken these numbers and trend tests into account in their descriptions of the most important trends in cancer incidence.

APPENDIX B: NUMBER OF CANCER CASES BY RACE/ETHNICITY, SEX, AND CANCER SITE, WITH STATISTICAL TEST OF LINEAR TRENDS

BRAIN AND OTHER NERVOUS SYSTEM

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	127	159	271	286	343	449	633	0.20	0.65	101	157	193	276	327	417	498	0.05	0.82
Black	76	97	99	112	94	89	135	0.06	0.81	60	75	99	91	106	91	114	0.00	0.99
Non-Latino White	783	845	896	820	758	716	1,071	0.40	0.53	655	659	713	617	608	564	762	0.62	0.43
Chinese	*	8	21	20	27	34	66	0.09	0.76	*	*	12	17	24	30	36	0.00	0.96
Japanese	10	*	8	*	12	11	16	0.01	0.91	*	*	*	9	*	10	8	0.00	0.99
Filipino	*	*	10	24	21	16	31	0.01	0.94	*	*	12	18	19	22	40	0.01	0.94
Korean	*	10	8	13	9	14	19	0.10	0.76	*	*	10	9	11	15	19	0.00	0.99
Vietnamese	0	0	*	12	10	13	10	0.39	0.53	0	0	*	10	8	*	11	0.26	0.61
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	8	*	11	0.00	0.97	0	0	*	*	*	11	11	0.01	0.93
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	*	*	*	1.04	0.31	0	0	*	*	*	*	*	0.06	0.81
Hawaiian/Samoan	0	0	0	*	*	*	*	0.13	0.72	0	0	0	*	*	*	*	0.01	0.90

BREAST

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	*	*	9	16	19	17	45	0.15	0.70	1,238	1,724	2,771	3,626	4,698	5,752	9,756	16.33	<0.001
Black	10	17	13	19	36	23	51	0.77	0.38	1,421	1,886	2,293	2,660	3,012	3,137	4,774	24.66	<0.001
Non-Latino White	99	125	136	119	134	117	189	0.44	0.51	13,740	15,148	16,839	15,572	16,122	15,246	20,186	91.44	<0.001
Chinese	0	0	*	*	*	*	*	0.09	0.77	81	137	251	382	552	807	1,423	5.36	0.02
Japanese	*	*	*	*	0	0	*	0.01	0.92	182	201	315	410	501	545	732	9.45	0.00
Filipino	0	*	0	*	*	*	*	0.03	0.87	83	176	413	609	923	1,159	1,899	11.75	<0.001
Korean	0	0	0	0	*	*	8	0.82	0.37	20	47	82	131	265	355	672	13.54	<0.001
Vietnamese	0	0	0	0	*	*	*	0.02	0.88	0	0	29	94	158	175	303	0.09	0.76
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	0	0	0	0	*	1.08	0.30	0	0	30	72	126	135	246	0.00	1.00
Thai/Hmong/ Cambodian/Laotian	0	0	0	0	0	0	*	0.93	0.33	0	0	13	36	88	119	182	1.17	0.28
Hawaiian/Samoan	0	0	0	0	0	0	0	NaN	NaN	0	0	16	43	43	68	88	0.07	0.79

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

CERVIX

	FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	656	785	1,020	1,289	1,361	1,348	1,502	41.35	<0.001
Black	400	359	355	358	305	235	292	17.16	<0.001
Non-Latino White	1,297	1,143	1,022	850	765	653	858	10.84	<0.001
Chinese	20	39	46	59	61	81	106	2.18	0.14
Japanese	28	29	19	28	19	38	33	0.09	0.76
Filipino	17	31	67	77	89	98	128	0.58	0.45
Korean	23	30	61	79	71	66	81	4.15	0.04
Vietnamese	0	0	28	46	42	40	40	5.67	0.02
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	*	*	11	0.41	0.52
Thai/Hmong/ Cambodian/Laotian	0	0	8	17	26	25	30	0.28	0.60
Hawaiian/Samoan	0	0	*	*	*	*	9	0.00	0.96

COLON AND RECTUM

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	491	740	927	1,159	1,508	1,853	3,418	1.26	0.26	411	616	863	1,077	1,409	1,730	3,003	1.30	0.25
Black	640	896	1,042	1,081	1,180	1,197	1,691	0.01	0.94	772	1,010	1,217	1,173	1,342	1,339	1,851	0.32	0.57
Non-Latino White	6,325	6,941	6,663	5,966	5,588	5,153	6,422	59.39	<0.001	7,023	7,326	6,870	5,773	5,746	5,146	5,988	46.53	<0.001
Chinese	84	111	158	256	313	451	603	1.62	0.20	39	74	128	197	285	404	558	0.07	0.79
Japanese	136	174	211	248	292	289	340	0.25	0.62	115	144	179	235	249	276	325	0.42	0.52
Filipino	36	80	113	136	229	294	482	2.01	0.16	17	52	81	127	179	273	488	2.22	0.14
Korean	9	20	47	110	160	222	401	3.47	0.06	15	31	42	90	149	203	345	1.85	0.17
Vietnamese	0	0	18	53	60	71	160	0.01	0.93	0	0	14	43	53	92	131	0.00	0.99
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	10	13	36	33	62	0.06	0.81	0	0	9	*	23	25	41	0.04	0.84
Thai/Hmong/ Cambodian/Laotian	0	0	*	26	29	30	86	0.16	0.69	0	0	*	16	18	40	80	0.34	0.56
Hawaiian/Samoan	0	0	*	18	16	16	30	0.00	0.98	0	0	*	13	14	27	27	0.01	0.90

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

ESOPHAGUS

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	58	86	121	169	175	202	333	0.38	0.54	18	27	27	38	48	57	70	0.55	0.46
Black	239	221	222	187	155	143	160	22.34	<0.001	93	99	89	94	89	64	80	6.31	0.01
Non-Latino White	511	575	557	547	601	620	884	3.37	0.07	267	351	334	271	257	264	298	0.26	0.61
Chinese	*	*	23	27	25	25	41	1.31	0.25	*	*	*	*	12	12	16	0.47	0.49
Japanese	*	17	26	22	30	30	38	0.22	0.64	*	*	*	*	*	9	15	0.00	0.99
Filipino	*	*	*	9	12	14	22	0.17	0.68	0	*	*	*	*	11	*	0.07	0.79
Korean	*	*	13	10	17	22	29	0.06	0.80	0	0	*	0	*	*	*	0.08	0.78
Vietnamese	0	0	*	*	9	*	*	1.30	0.25	0	0	*	*	0	*	*	1.02	0.31
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	0	*	*	*	*	0.10	0.75	0	0	0	*	*	*	*	0.99	0.32
Thai/Hmong/ Cambodian/Laotian	0	0	0	*	*	*	*	0.00	1.00	0	0	0	0	*	0	*	0.48	0.49
Hawaiian/Samoan	0	0	0	0	*	0	*	0.10	0.76	0	0	0	*	0	*	0	0.36	0.55

KAPOSI SARCOMA

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	*	95	505	840	297	218	215	18.81	<0.001	*	*	8	18	11	10	10	0.24	0.62
Black	*	55	229	311	132	79	96	0.17	0.68	*	8	*	8	8	*	*	0.18	0.67
Non-Latino White	55	501	1,777	1,590	351	216	206	8.01	0.00	27	41	34	33	20	13	20	1.16	0.28
Chinese	0	*	*	*	*	*	*	0.05	0.82	0	*	0	0	0	*	0	0.72	0.40
Japanese	0	*	9	9	*	*	*	0.06	0.81	0	0	0	0	0	0	0	NaN	NaN
Filipino	*	*	19	14	9	13	15	0.04	0.84	0	0	0	0	*	*	0	0.00	0.95
Korean	0	*	*	*	0	*	*	0.37	0.54	0	0	0	0	0	0	0	NaN	NaN
Vietnamese	0	0	*	*	0	0	*	0.97	0.33	0	0	0	*	0	0	0	1.23	0.27
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	0	*	0	*	0.78	0.38	0	0	0	*	0	0	0	2.79	0.09
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	*	*	0	0.70	0.40	0	0	0	0	0	0	0	NaN	NaN
Hawaiian/Samoan	0	0	*	*	0	*	0	1.20	0.27	0	0	0	0	0	0	0	NaN	NaN

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

KIDNEY AND RENAL PELVIS

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	147	233	301	414	500	848	1,668	13.97	<0.001	112	127	235	289	401	531	1,137	8.99	0.00
Black	125	153	212	260	306	363	646	12.11	<0.001	84	91	170	150	183	226	407	6.12	0.01
Non-Latino White	1,087	1,181	1,305	1,217	1,425	1,568	2,602	37.00	<0.001	616	670	757	748	810	873	1,314	24.22	<0.001
Chinese	*	14	20	34	49	41	125	0.30	0.59	*	*	9	18	27	45	79	0.69	0.41
Japanese	12	10	15	27	41	32	55	1.09	0.30	8	*	12	*	14	20	36	0.42	0.52
Filipino	*	11	27	34	47	71	159	3.22	0.07	*	*	11	25	28	42	84	1.08	0.30
Korean	*	*	15	12	21	39	101	1.40	0.24	*	*	9	12	18	20	39	0.22	0.64
Vietnamese	0	0	*	*	*	11	31	1.08	0.30	0	0	*	*	*	11	22	0.09	0.76
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	9	*	12	31	0.00	0.95	0	0	*	*	*	*	9	0.00	0.98
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	*	*	9	0.12	0.73	0	0	0	0	*	*	*	0.48	0.49
Hawaiian/Samoan	0	0	*	0	*	*	8	0.30	0.58	0	0	0	*	*	*	*	0.00	0.97

LARYNX

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	92	130	146	175	186	203	350	3.60	0.06	12	18	21	26	33	32	41	0.50	0.48
Black	146	210	202	222	202	165	201	5.68	0.02	43	54	47	63	52	41	62	1.06	0.30
Non-Latino White	1,018	1,049	832	746	621	519	685	30.25	<0.001	231	277	234	202	179	131	133	4.80	0.03
Chinese	*	*	11	11	16	23	29	0.09	0.76	*	0	0	*	*	*	*	0.21	0.64
Japanese	*	*	*	11	9	*	15	0.08	0.78	*	*	*	0	*	*	*	0.00	0.96
Filipino	*	8	9	19	18	15	24	0.12	0.73	0	*	*	*	*	*	*	0.05	0.82
Korean	*	*	13	16	13	18	20	0.56	0.45	0	*	*	*	*	*	0	0.79	0.37
Vietnamese	0	0	*	*	*	*	*	0.91	0.34	0	0	*	*	0	*	*	0.23	0.63
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	*	*	*	0.77	0.38	0	0	0	0	*	*	*	0.00	0.98
Thai/Hmong/ Cambodian/Laotian	0	0	0	*	*	0	*	0.46	0.50	0	0	0	*	0	*	0	0.26	0.61
Hawaiian/Samoan	0	0	*	0	*	0	*	0.00	0.97	0	0	0	0	0	0	0	NaN	NaN

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

LEUKEMIA

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	260	322	472	617	729	813	1,336	1.15	0.28	186	266	366	478	576	644	1,072	1.01	0.32
Black	136	185	234	206	234	259	328	0.06	0.80	158	168	193	204	193	210	303	0.06	0.81
Non-Latino White	1,455	1,548	1,624	1,661	1,591	1,561	2,319	2.53	0.11	1,201	1,303	1,336	1,208	1,139	1,122	1,516	0.54	0.46
Chinese	11	19	31	48	44	73	105	0.00	0.95	*	16	26	35	34	53	84	0.02	0.89
Japanese	18	25	27	29	48	26	38	0.09	0.76	*	13	20	25	27	19	31	0.02	0.90
Filipino	15	29	47	60	55	61	114	0.02	0.90	*	13	31	44	42	50	115	0.15	0.70
Korean	*	10	14	21	19	21	48	0.01	0.91	*	*	16	16	19	20	38	0.00	0.96
Vietnamese	0	0	11	12	14	9	45	0.00	1.00	0	0	*	18	17	18	26	0.09	0.76
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	9	10	19	35	0.01	0.90	0	0	0	*	9	9	21	0.06	0.80
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	10	8	13	0.01	0.90	0	0	*	8	10	*	9	0.17	0.68
Hawaiian/Samoan	0	0	0	*	*	*	*	0.00	0.97	0	0	*	*	*	*	10	0.01	0.91

LIVER

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	89	144	203	318	477	701	1,481	24.79	<0.001	43	50	93	130	233	329	613	10.17	0.00
Black	77	109	112	125	176	259	433	11.26	<0.001	21	53	63	60	68	97	152	2.22	0.14
Non-Latino White	269	347	368	413	501	611	1,220	53.58	<0.001	158	192	158	190	232	267	375	9.72	0.00
Chinese	30	43	80	124	157	213	301	0.02	0.88	9	12	20	46	55	103	118	0.09	0.76
Japanese	*	19	15	25	33	41	55	1.71	0.19	*	10	10	22	34	40	48	1.39	0.24
Filipino	11	27	42	59	78	102	185	0.98	0.32	*	*	11	24	21	38	76	0.28	0.60
Korean	*	31	51	84	118	153	207	0.06	0.81	*	8	19	39	57	80	80	0.01	0.92
Vietnamese	0	0	18	45	66	82	148	0.02	0.88	0	0	*	22	25	30	52	0.02	0.89
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	0	*	*	12	14	0.00	0.99	0	0	0	*	*	*	*	0.03	0.87
Thai/Hmong/ Cambodian/Laotian	0	0	8	19	39	44	70	0.04	0.83	0	0	*	8	*	10	26	0.01	0.93
Hawaiian/Samoan	0	0	*	*	*	*	10	0.14	0.71	0	0	*	*	*	*	*	0.25	0.61

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

LUNG AND BRONCHUS

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	605	816	1,122	1,205	1,289	1,445	2,158	32.95	<0.001	318	440	675	819	934	1,091	1,789	1.39	0.24
Black	1,484	1,937	1,948	1,894	1,816	1,712	2,025	49.52	<0.001	578	793	1,021	1,106	1,219	1,300	1,765	3.63	0.06
Non-Latino White	9,519	9,672	9,055	7,832	6,780	6,067	7,538	195.15	<0.001	5,077	6,323	6,934	6,765	6,486	5,867	7,294	26.38	<0.001
Chinese	68	124	193	247	286	423	621	2.78	0.10	24	49	104	141	223	317	485	0.22	0.64
Japanese	103	112	141	145	188	206	269	0.12	0.73	27	56	73	96	120	121	199	1.22	0.27
Filipino	45	85	187	278	321	393	556	0.62	0.43	15	35	70	91	154	222	372	1.53	0.22
Korean	20	45	89	129	202	188	304	1.83	0.18	10	20	41	57	88	132	194	0.16	0.69
Vietnamese	0	0	31	82	107	109	183	2.00	0.16	0	0	14	45	43	64	96	0.39	0.53
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	8	13	12	35	50	0.01	0.90	0	0	*	10	*	9	13	0.53	0.46
Thai/Hmong/ Cambodian/Laotian	0	0	*	28	34	36	59	0.55	0.46	0	0	*	14	25	27	61	0.02	0.88
Hawaiian/Samoan	0	0	13	16	25	26	31	0.15	0.70	0	0	*	*	21	17	29	0.08	0.78

LYMPHOMA, HODGKIN

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	76	112	130	176	195	234	362	0.11	0.75	43	75	98	111	151	166	262	0.36	0.55
Black	53	60	62	49	70	61	91	0.05	0.83	42	41	59	61	50	53	84	0.27	0.61
Non-Latino White	412	419	381	327	331	293	400	0.00	0.95	287	318	294	272	253	270	323	1.27	0.26
Chinese	0	*	*	*	*	10	10	0.10	0.75	*	*	*	*	*	*	11	0.01	0.92
Japanese	*	*	*	*	*	*	*	0.00	0.99	*	*	*	*	*	*	*	0.06	0.81
Filipino	*	*	9	*	8	8	25	0.01	0.91	*	*	*	*	10	16	14	0.16	0.69
Korean	0	*	*	0	*	*	*	0.02	0.89	0	0	0	*	*	*	*	0.42	0.52
Vietnamese	0	0	*	*	*	*	*	0.20	0.66	0	0	*	*	0	*	*	0.03	0.89
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	*	*	10	0.03	0.87	0	0	0	*	*	*	*	0.07	0.79
Thai/Hmong/ Cambodian/Laotian	0	0	0	0	0	*	*	0.40	0.53	0	0	*	0	0	0	*	0.05	0.82
Hawaiian/Samoan	0	0	*	0	0	*	*	0.01	0.91	0	0	0	0	0	0	*	1.56	0.21

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

LYMPHOMA, NON-HODGKIN

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	180	277	478	828	922	1,031	1,768	4.99	0.03	159	235	359	537	687	863	1,573	6.58	0.01
Black	122	173	232	312	349	359	486	5.07	0.02	103	156	167	210	319	283	426	4.34	0.04
Non-Latino White	1,366	1,730	2,241	2,562	2,392	2,286	3,215	29.74	<0.001	1,498	1,707	1,781	1,771	1,828	1,916	2,615	23.64	<0.001
Chinese	9	13	37	61	87	122	181	0.60	0.44	10	23	31	42	67	95	159	0.12	0.73
Japanese	23	26	49	52	55	73	89	0.24	0.63	11	23	33	31	57	73	85	1.04	0.31
Filipino	11	27	46	78	102	131	187	0.82	0.36	16	21	46	64	89	120	201	0.14	0.70
Korean	*	*	17	26	35	41	81	0.32	0.57	*	*	12	19	23	34	83	0.42	0.51
Vietnamese	0	0	9	20	28	24	46	0.09	0.76	0	0	*	13	25	20	29	0.11	0.74
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	19	22	31	0.01	0.92	0	0	*	8	12	18	21	0.01	0.90
Thai/Hmong/ Cambodian/Laotian	0	0	*	11	13	26	29	0.06	0.31	0	0	*	8	*	20	18	0.02	0.89
Hawaiian/Samoan	0	0	*	*	8	*	12	0.00	0.95	0	0	*	*	9	8	*	0.21	0.65

MELANOMA

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	43	72	96	133	187	200	345	0.44	0.51	69	116	150	159	222	299	384	0.00	0.99
Black	23	14	32	17	25	18	41	0.04	0.83	18	21	25	24	25	21	23	0.26	0.61
Non-Latino White	1,638	1,987	2,266	2,253	2,837	3,253	4,825	111.01	<0.001	1,529	1,718	1,730	1,621	1,918	2,108	2,904	44.16	<0.001
Chinese	*	*	*	*	*	16	20	0.27	0.60	*	*	*	*	*	15	14	0.11	0.74
Japanese	*	*	*	*	*	*	11	0.08	0.78	*	*	*	*	*	*	*	0.04	0.85
Filipino	*	*	*	*	*	*	*	0.40	0.53	*	*	*	0	9	13	13	0.12	0.73
Korean	0	0	0	*	*	*	12	0.57	0.45	*	*	*	*	*	*	9	0.24	0.63
Vietnamese	0	0	0	*	*	*	*	0.72	0.39	0	0	*	*	*	*	0	1.34	0.25
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	*	0	*	1.29	0.26	0	0	*	*	*	0	0	2.07	0.15
Thai/Hmong/ Cambodian/Laotian	0	0	0	0	0	*	*	0.15	0.70	0	0	0	*	*	*	*	0.00	0.97
Hawaiian/Samoan	0	0	0	*	*	*	*	0.12	0.73	0	0	0	*	0	0	*	0.13	0.71

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

MULTIPLE MYELOMA

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	60	111	119	190	232	271	531	0.76	0.38	50	92	116	172	208	275	422	0.39	0.53
Black	114	158	203	184	210	247	373	0.76	0.38	122	133	180	214	231	264	385	1.84	0.17
Non-Latino White	467	541	515	550	613	552	923	4.32	0.04	444	513	496	498	447	484	598	1.06	0.30
Chinese	*	8	8	11	15	25	40	0.10	0.75	*	*	8	*	16	20	30	0.08	0.78
Japanese	*	8	*	12	19	17	14	0.00	0.98	*	*	*	*	10	10	13	0.02	0.89
Filipino	*	*	11	26	23	29	57	0.15	0.70	*	*	8	16	30	39	54	0.29	0.59
Korean	*	*	*	*	8	*	13	0.00	0.98	0	*	*	*	11	11	24	0.23	0.63
Vietnamese	0	0	*	*	*	*	*	1.96	0.16	0	0	*	*	11	*	11	0.03	0.86
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	*	*	21	0.09	0.76	0	0	0	*	*	10	*	0.00	0.95
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	*	*	*	0.28	0.60	0	0	0	*	*	*	*	0.01	0.90
Hawaiian/Samoan	0	0	0	*	*	*	*	0.00	0.96	0	0	0	*	*	*	*	0.48	0.49

ORAL CAVITY AND PHARYNX

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	184	216	255	309	362	445	753	1.19	0.28	69	83	116	160	184	240	416	0.18	0.67
Black	279	359	345	328	348	332	437	3.25	0.07	129	165	131	133	172	148	207	0.81	0.37
Non-Latino White	2,240	2,220	1,842	1,634	1,584	1,503	2,285	9.81	0.00	1,123	1,273	1,140	887	821	715	949	7.70	0.01
Chinese	26	37	84	82	97	112	154	1.43	0.23	13	22	25	44	49	65	94	0.19	0.66
Japanese	9	19	17	25	24	23	59	0.64	0.43	*	*	12	21	26	19	29	0.38	0.54
Filipino	21	22	39	44	49	59	89	0.23	0.63	*	17	22	27	35	45	67	0.06	0.81
Korean	*	8	15	24	34	43	49	0.01	0.93	*	*	*	8	16	15	29	0.22	0.64
Vietnamese	0	0	10	23	26	30	47	0.13	0.72	0	0	*	11	18	20	20	0.12	0.73
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	9	10	14	28	0.03	0.86	0	0	*	*	*	*	17	0.09	0.76
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	13	14	26	0.03	0.85	0	0	*	*	8	9	10	0.01	0.93
Hawaiian/Samoan	0	0	*	*	*	*	8	0.05	0.83	0	0	0	*	*	*	*	0.01	0.91

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OVARY

	FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	222	379	466	526	608	862	1,386	0.02	0.89
Black	207	213	246	224	227	247	383	0.30	0.58
Non-Latino White	2,288	2,205	2,119	1,848	1,648	1,613	2,040	4.11	0.04
Chinese	13	27	48	54	91	116	137	0.19	0.67
Japanese	38	32	51	39	53	53	60	0.08	0.78
Filipino	17	34	42	75	79	105	194	0.13	0.72
Korean	9	9	17	35	33	51	80	0.03	0.86
Vietnamese	0	0	*	24	26	23	45	0.08	0.78
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	10	17	23	35	0.00	0.95
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	15	12	32	0.17	0.68
Hawaiian/Samoan	0	0	0	0	*	*	8	0.79	0.37

PANCREAS

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	159	178	254	270	319	396	818	0.13	0.72	142	211	246	299	415	515	845	0.01	0.92
Black	200	245	244	226	254	268	416	0.64	0.43	174	214	271	328	312	356	500	0.40	0.53
Non-Latino White	1,239	1,292	1,237	1,148	1,127	1,173	1,723	0.08	0.78	1,328	1,404	1,301	1,209	1,161	1,230	1,677	0.49	0.48
Chinese	*	13	29	39	42	77	119	0.01	0.91	*	8	31	22	44	64	105	0.03	0.86
Japanese	19	37	38	34	32	45	83	0.00	0.99	27	29	42	32	47	55	103	0.00	0.98
Filipino	9	13	27	32	31	38	99	0.25	0.62	*	*	25	34	40	67	129	0.77	0.38
Korean	*	9	12	26	33	55	81	0.08	0.78	*	*	14	29	28	43	86	0.22	0.64
Vietnamese	0	0	*	*	9	16	31	0.00	0.97	0	0	*	*	15	19	26	0.00	0.96
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	0	*	*	*	17	0.31	0.58	0	0	*	*	*	*	10	0.00	0.95
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	*	*	11	0.06	0.81	0	0	*	*	*	*	13	0.13	0.72
Hawaiian/Samoan	0	0	*	*	*	*	*	0.00	1.00	0	0	0	*	*	*	10	0.15	0.70

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PROSTATE

	MALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	782	982	1,564	3,491	4,403	5,645	7,889	59.44	<0.001
Black	1,352	1,707	2,168	4,080	4,437	4,308	5,687	87.58	<0.001
Non-Latino White	7,802	9,188	11,574	17,930	14,838	13,906	16,594	244.33	<0.001
Chinese	33	72	97	258	441	712	817	6.76	0.01
Japanese	73	98	174	414	411	462	407	5.39	0.02
Filipino	69	125	190	498	615	787	1,004	8.43	0.00
Korean	*	13	17	56	131	176	338	6.73	0.01
Vietnamese	0	0	12	38	58	100	146	0.02	0.90
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	16	52	72	107	181	0.19	0.66
Thai/Hmong/ Cambodian/Laotian	0	0	0	10	25	29	91	1.43	0.23
Hawaiian/Samoan	0	0	*	25	39	45	61	0.20	0.65

STOMACH

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	300	369	452	523	612	727	1,261	3.32	0.07	206	270	370	440	500	650	1,042	0.68	0.41
Black	271	307	314	274	285	263	361	8.28	0.00	166	181	198	229	234	213	304	1.11	0.29
Non-Latino White	1,340	1,249	1,203	1,090	1,017	845	1,149	21.00	<0.001	951	886	742	653	603	496	711	14.07	<0.001
Chinese	22	40	58	112	128	142	214	1.16	0.28	9	29	45	83	97	118	159	0.57	0.45
Japanese	92	105	94	116	103	108	127	5.21	0.02	49	58	75	68	73	87	104	1.39	0.24
Filipino	10	17	24	45	58	42	66	0.17	0.68	*	*	25	24	30	38	66	0.04	0.84
Korean	26	57	96	143	176	215	322	1.26	0.26	17	44	66	89	121	159	213	0.43	0.51
Vietnamese	0	0	11	32	39	39	57	1.08	0.30	0	0	18	24	27	25	44	1.64	0.20
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	8	*	10	14	0.12	0.73	0	0	*	*	*	*	17	0.01	0.94
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	*	11	17	0.00	0.98	0	0	0	*	8	*	14	0.01	0.93
Hawaiian/Samoan	0	0	*	*	*	12	9	0.07	0.80	0	0	*	*	*	*	9	0.01	0.91

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TESTIS

	MALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	116	175	247	345	421	494	931	17.80	<0.001
Black	21	13	34	34	33	27	55	1.02	0.31
Non-Latino White	519	642	733	645	585	601	744	7.07	1.01
Chinese	*	*	*	10	10	15	24	0.49	0.48
Japanese	*	11	*	*	10	19	14	0.50	0.48
Filipino	0	*	*	8	10	*	16	0.60	0.44
Korean	0	*	*	*	*	*	8	0.28	0.59
Vietnamese	0	0	*	*	*	0	*	0.00	0.95
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	0	*	*	*	*	0.04	0.84
Thai/Hmong/ Cambodian/Laotian	0	0	0	*	0	*	*	0.05	0.83
Hawaiian/Samoan	0	0	0	0	*	*	*	0.36	0.55

THYROID

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	51	70	103	103	129	235	482	4.56	0.03	210	246	375	495	684	1,043	2,152	31.60	<0.001
Black	15	33	21	32	44	52	107	2.82	0.09	74	89	93	105	117	196	452	14.85	<0.001
Non-Latino White	367	337	318	345	387	533	922	22.57	<0.001	820	824	789	835	996	1,290	2,479	98.29	<0.001
Chinese	*	*	10	17	14	31	68	0.71	0.40	11	15	22	54	56	92	217	3.38	0.07
Japanese	9	*	*	8	16	10	20	0.22	0.64	23	24	22	22	21	37	64	0.48	0.49
Filipino	*	11	20	33	25	49	104	0.99	0.32	31	41	69	110	140	187	411	4.07	0.04
Korean	*	*	*	9	15	22	49	1.06	0.30	8	19	21	37	55	68	148	1.34	0.25
Vietnamese	0	0	*	*	10	10	17	0.00	0.99	0	0	*	22	22	59	66	0.31	0.58
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	*	*	8	13	0.13	0.72	0	0	*	*	12	22	38	0.44	0.51
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	*	*	11	0.27	0.60	0	0	*	*	12	20	37	0.38	0.54
Hawaiian/Samoan	0	0	*	*	*	*	*	0.06	0.81	0	0	*	*	*	*	11	0.02	0.89

* When less than 8 cases are reported, an asterisk was used to avoid identifying individuals with rare diseases.

URINARY BLADDER

	MALES									FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	200	289	381	459	530	693	1,145	0.38	0.54	75	104	147	168	199	244	409	0.32	0.57
Black	199	227	293	275	302	387	586	0.91	0.34	111	99	140	160	168	194	266	0.15	0.70
Non-Latino White	3,522	3,861	4,023	3,832	3,763	3,888	5,318	0.43	0.51	1,392	1,431	1,396	1,297	1,194	1,175	1,561	0.20	0.65
Chinese	12	36	51	81	99	163	217	0.04	0.85	*	12	13	31	27	47	84	0.01	0.90
Japanese	28	26	45	55	89	103	143	1.74	0.19	11	11	17	21	37	26	38	0.00	0.99
Filipino	18	10	35	36	69	69	99	0.04	0.84	*	*	9	9	13	25	40	0.01	0.94
Korean	*	9	17	39	47	78	165	1.02	0.31	*	*	*	14	15	22	26	0.00	0.94
Vietnamese	0	0	*	8	16	20	38	0.01	0.91	0	0	*	*	11	8	*	0.34	0.56
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	11	10	8	23	35	0.43	0.51	0	0	0	*	*	*	13	0.06	0.81
Thai/Hmong/ Cambodian/Laotian	0	0	*	*	11	*	19	0.00	1.00	0	0	*	0	*	*	*	0.04	0.84
Hawaiian/Samoan	0	0	0	*	*	*	16	0.85	0.36	0	0	0	0	0	0	*	1.02	0.31

UTERUS

	FEMALES								
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2012	Chi-square	p-value
Latino White	373	450	578	692	919	1,251	2,479	5.30	0.02
Black	306	298	351	371	440	524	941	6.76	0.01
Non-Latino White	4,939	3,916	3,559	3,167	2,909	2,741	4,077	14.42	<0.001
Chinese	13	26	42	66	71	127	290	1.85	0.17
Japanese	59	50	46	62	80	95	143	0.53	0.47
Filipino	13	32	70	103	138	241	406	4.80	0.03
Korean	*	8	10	18	38	41	99	1.69	0.19
Vietnamese	0	0	*	10	14	26	46	0.21	0.65
Indian/Pakistani/Sri Lankan/Bangladeshi	0	0	*	13	20	25	37	0.03	0.87
Thai/Hmong/ Cambodian/Laotian	0	0	*	9	11	19	30	0.13	0.71
Hawaiian/Samoan	0	0	*	15	16	23	53	0.98	0.32

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APPENDIX C: DATA SELECTION CRITERIA FOR SUPPLEMENTAL GRAPHS

PAGE	TITLE OF GRAPH	DESCRIPTION OF CASE SELECTION
36	Trends in age-adjusted incidence rates by race/ ethnicity in Los Angeles County, 1976–2012: females (*in situ* breast)	• Females • In situ behavior
40	Trends in age-adjusted incidence rates in Los Angeles County, 1976–2012, among females (Chinese)	• Chinese females • Colon (21040)[1] • Rectum (21050)[1]
54	Trends in age-adjusted incidence rates in Los Angeles County, 1976–2012, all races/ ethnicities: males (lung by histology type) Trends in age-adjusted incidence rates in Los Angeles County, 1976–2012, all races/ ethnicities: females (lung by histology type	• All races/ethnicities combined • Adenocarcinoma (8015, 8050, 8140, 8141, 8143-8145, 8147, 8190, 8201, 8211, 8250-8255, 8260, 8290, 8310, 8320, 8323, 8333, 8401, 8440, 8470, 8471, 8480, 8481, 8490, 8503, 8507, 8550, 8570-8572, 8574, 8576)[2] • Squamous and transitional (8051, 8052, 8070-8076, 8078, 8083, 8084, 8090, 8094, 8120, 8123)[2] • Small cell (8002, 8041-8045)[2] • Large cell(8012-8014, 8021, 8034, 8082)[2] • Other non-small cell (8046, 8003, 8004, 8022, 8030, 8031-8033, 8035, 8200, 8240, 8241, 8243-8246, 8249, 8430, 8525, 8560, 8562, 8575, 8000, 8001, 8010, 8011, 8020, 8230)[2]
57	Trends in age-adjusted incidence rates by race/ ethnicity in Los Angeles County, 1976–2012: (Hodgkin lymphoma by histology)	• By race/ethnicity • Nodular sclerosis (9663-9667)[2] • Other (all other histologies)
60	Trends in age-adjusted incidence rates by race/ ethnicity in Los Angeles County, 1976–2012: (Non-Hodgkin lymphoma by histology)	• By race/ethnicity • Follicular (9690-9698)[2] • Diffuse large B-cell lymphoma (9680-9687)[2]

[1] SEER Site Recode ICD-O-3 /WHO 2008 Definition.
[2] International Classification of Diseases for Oncology, 3rd Edition (ICD-O-3).

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