Hawai'i

Cancer Facts & Figures 2010

A sourcebook for planning & implementing programs for cancer prevention & control

Acknowledgements

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Cancer Research Center of Hawai'i
UNIVERSITY OF HAWAI'I
Working Towards a Cure

HAWAII STATE DEPARTMENT OF HEALTH

Mission Statement

The American Cancer Society is the nationwide, community-based, voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer through research, education, advocacy, and service.

American Cancer Society,
Hawai'i Pacific, Inc.
2370 Nu'uanu Avenue
Honolulu, Hawai'i 96817
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Mission Statement

The mission of the Cancer Research Center, the only National Cancer Institute (NCI) designated cancer center in Hawai'i and the Pacific, is to reduce the burden of cancer through research, education, and service with an emphasis on the unique ethnic, cultural, and environmental characteristics of Hawai'i and the Pacific.

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Mission Statement

The mission of the Department of Health is to protect and improve the health and environment for all people in Hawai'i.

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Data for portions of this report have been provided through the organizations and individuals listed below. This document would not have been possible without their invaluable assistance. *Hawai'i Cancer Facts & Figures* is designed to provide an overview of cancer in Hawai'i and in no way replaces the relevance or need for reports of these individual organizations.

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Sunset over the Island of Ni'ihau.

Aloha kākou,

The challenge of cancer is clear.

Each year, more than 6,000 Hawai'i residents are diagnosed with an invasive cancer and more than 2,000 will die from the disease. While Hawai'i's citizens boast the longest life span of any state in the nation, the number of those impacted by cancer will grow as our population ages in the years ahead. In fact, nearly every person in Hawai'i will face a diagnosis of cancer, either personally or within their family, at some point in their lifetime.

The challenge of our work is clear.

This partnership publication is intended to inform and assist health care organizations, health professionals, community groups, and others who are working to reduce the burden of cancer in Hawai'i. This publication is also of importance to policy-makers, advocates, and news organizations seeking detailed, easy-to-read information about the impact of cancer on the people of our state.

We hope you find this edition of ***Hawai'i Cancer Facts & Figures 2010*** a useful tool in promoting education and implementing collaborative programs aimed at reducing the burden of cancer in our communities. We extend our appreciation to all of you working to support the mission of eliminating cancer as a major health problem in Hawai'i.

Mahalo,

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Table of Contents

Tables

Figures

CANCER FACT:
There are more than 100 types of cancer and any part of the body can be affected.

What Is Cancer?

Cancer is a large group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer can be caused by external (chemicals, radiation, viruses), internal (hormones, immune conditions, genetics), and lifestyle (tobacco use, alcohol use, unprotected sun exposure, poor nutrition, physical inactivity) factors (Table 1). Many cancers can be cured if detected and treated promptly, and many others can be prevented by lifestyle changes. Of the more than 12,000 cancer deaths in Hawai'i between 2000 and 2005, it is estimated that nearly 30 percent could have been prevented by avoiding tobacco use and up to one-third (35 percent) could have been averted by improving nutrition and maintaining a normal body weight.

Who Gets Cancer?

Cancer may strike at any age. However, most cancers affect adults beginning in middle age and occur more frequently with advancing age. There are differences in the incidence of cancer by sex as well as race/ethnicity. Disparities in cancer occurrence by race/ethnicity may reflect differences in risk due to lifestyle factors, genes, and/or access to and utilization of medical services.

How Many New Cases Are Expected to Occur?

Each year in Hawai'i, approximately 6,000 individuals are diagnosed with invasive cancer. This means that in a typical week, more than 100 Hawai'i residents learn that they have invasive cancer. Comparing the two latest time periods, 1995-1999 and 2000-2005, the overall incidence (new cases) of cancer remained relatively stable in both men and women (Figure 1). In 2000-2005, the average annual incidence of all cancers was 486 per 100,000 in men and 382 per 100,000 in women.

How Many Lives Will Be Lost to Cancer?

The challenge of cancer is clear. Cancer accounts for roughly one of every five deaths in the state each year. It is second only to heart disease as the leading cause of all deaths in Hawai'i. Each year, more than 2,000 Hawai'i residents die of cancer. During a six-year period (2000-2005), cancer was responsible for over 12,000 deaths (Figure 2).

Cancer is Many Diseases

There are more than 100 different types of cancers. In Hawai'i, four cancer sites account for more than half of the cancer burden. These include cancers of the lung and bronchus, colon and rectum, breast, and prostate (Figures 3 and 4). Each year, these sites together account for approximately 3,000 newly diagnosed cases of cancer and 900 cancer deaths in Hawai'i residents. The most common types of cancer for men in Hawai'i include prostate (27 percent), lung (14 percent), and colon and rectum (13 percent). In women, breast cancer (32 percent) occurs most frequently, followed by colon and rectum (11 percent) and lung (10 percent).

Recent Trends

From 1995-1999 and 2000-2005, decreases in incidence were observed for colorectal and stomach cancers in both males and females, lung cancer in males, and female breast cancer. There were notable increases in the incidence of certain cancers including leukemia in males and females, kidney and other biliary cancers in males, melanoma in males and females, and thyroid cancer in females. An overview of the average annual number of new cancer cases and deaths from 2000-2005 is provided (Table 2).

Progress & Hope

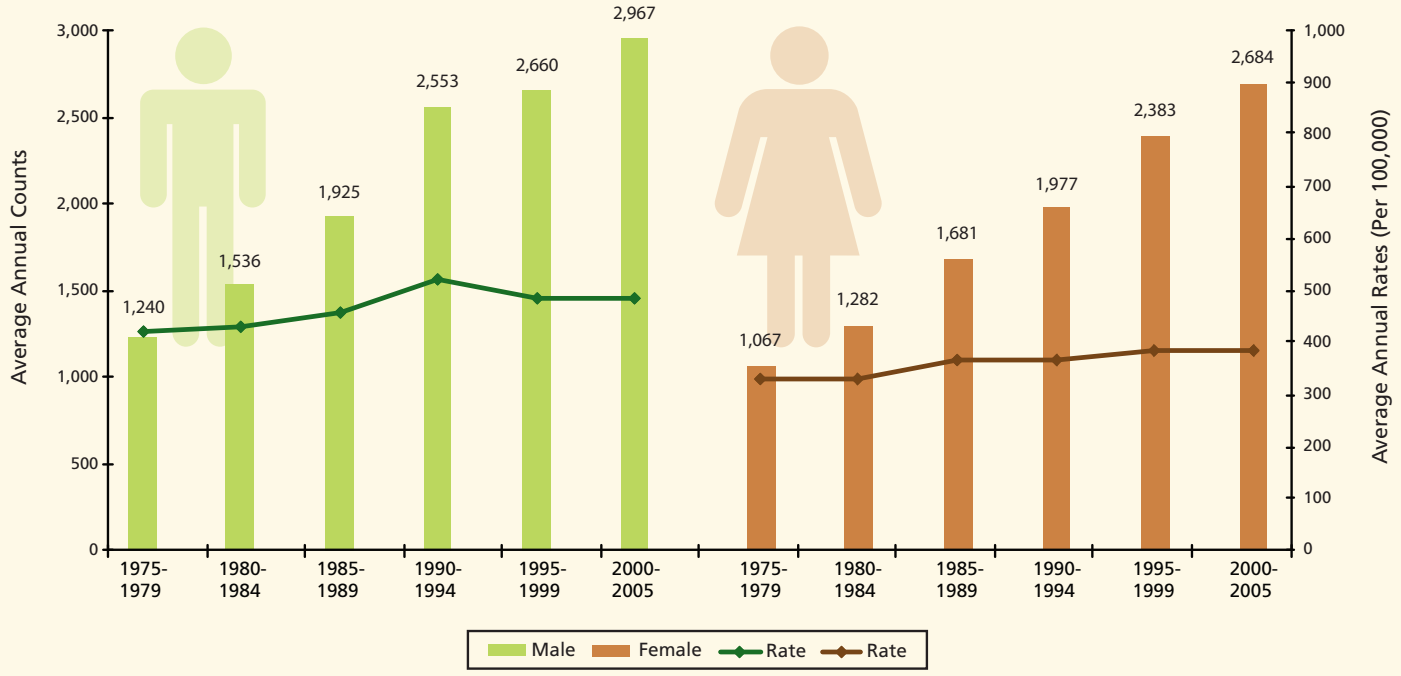
Overall, age-adjusted cancer mortality rates in Hawai'i have continued to decline over the last 30 years. During the period 2000-2005, the average annual cancer death rate was 192 per 100,000 in men and 125 per 100,000 in women. Much can still be accomplished to improve cancer prevention, early detection, access to treatment, as well as the quality of life of cancer survivors.

Table 1. Proportion of Cancer Deaths Attributed to Various Factors

Factor	Estimate (%)
Tobacco	30
Diet	35
Alcohol	3
Occupation	4
Family History	-
Reproductive & Sexual	7
Geophysical	3
Pollution	2
Medical Procedures	1
Industrial & Consumer	1
Infections	10

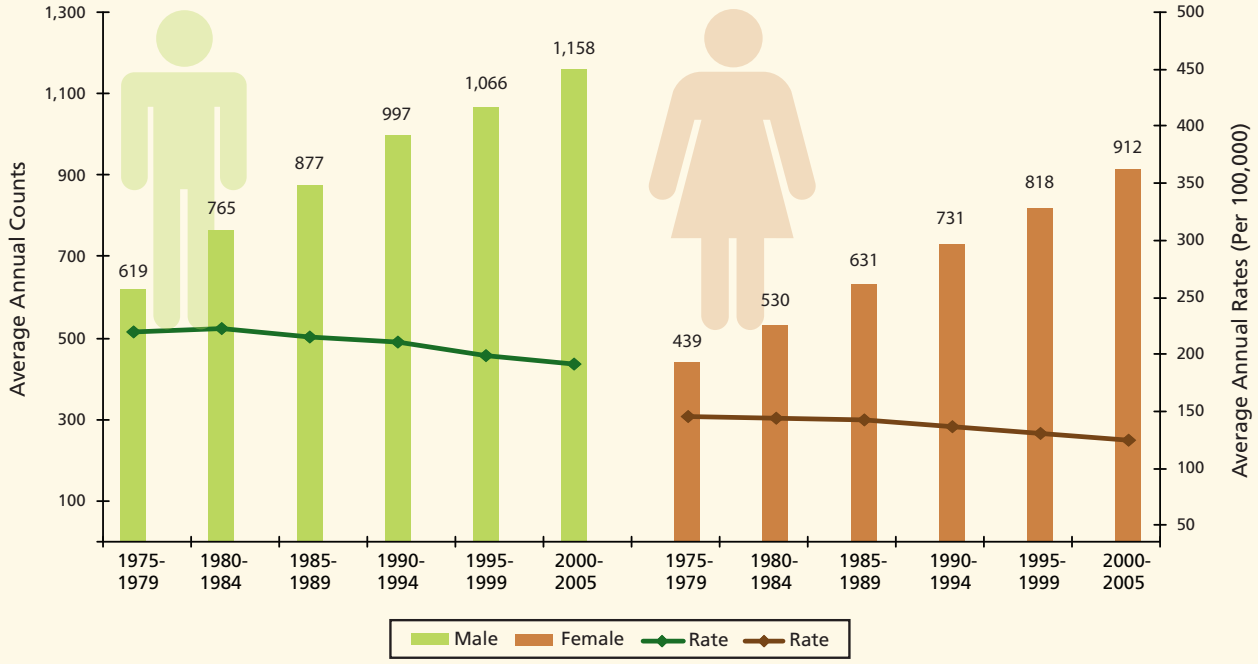
Source: Doll, R. and Peto, R. (1981). The Causes of Cancer: Quantitative Estimates of Avoidable Risks of Cancer in the United States Today. Journal of the National Cancer Institute, 66:1193-1308

Figure 1. Trends in Cancer Incidence Counts & Rates, All Cancers, Hawai'i, 1975-2005



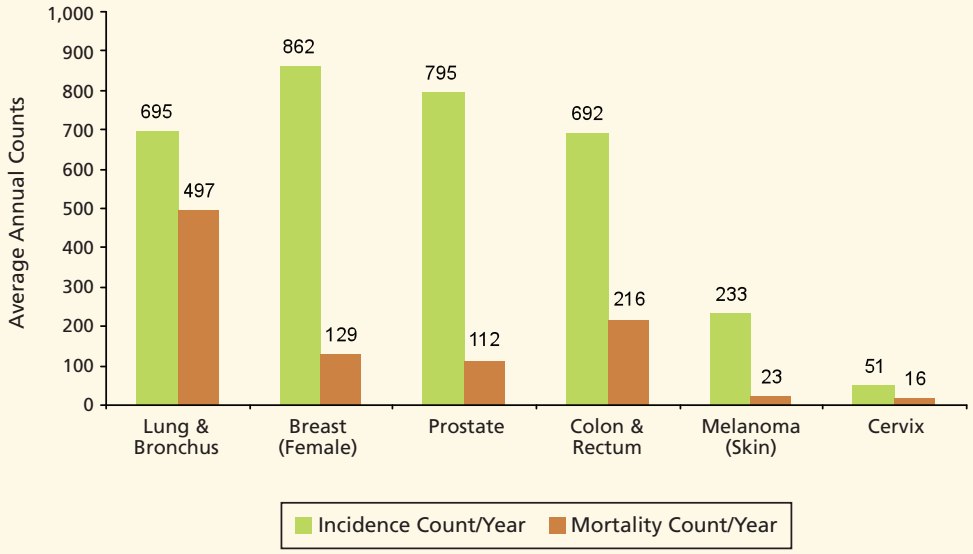
Invasive cases only; Counts are average annual per time period, rounded to the nearest whole.
Rates are average annual per 100,000 population, age-adjusted to 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 2. Trends in Cancer Mortality Counts & Rates, All Cancers, Hawai'i, 1975-2005



Invasive cases only; Counts are average annual per time period, rounded to the nearest whole.
Rates are average annual per 100,000 populations and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 3. Average Annual Incidence & Mortality Counts for Selected Cancers, Hawai'i, 2000-2005



Invasive cases only; Counts are 6 year average annual, rounded to the nearest whole.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Waimea Bay Shorebreak, O'ahu

Table 2. Average Annual Incidence & Mortality Counts & Rates, All Races/Ethnicities Combined, Hawai'i, 2000-2005

Sites	INCIDENCE					MORTALITY				
	Male Cases Avg./Year	Male Rate	Female Cases Avg./Year	Female Rate	Total Cases Avg./Year	Male Deaths Avg./Year	Male Rate	Female Deaths Avg./Year	Female Rate	Total Deaths Avg./Year
All Sites	2,967	485.7	2,684	382.2	5,651	1,158	192.0	912	124.7	2,070
Anus	6	1.0	7	0.9	13	^ ^	0.1	^ ^	0.1	^ ^
Bones & Joints	5	0.8	4	0.6	9	^ ^	0.5	^ ^	0.4	5
Brain & Other Nervous System	30	4.9	26	3.9	56	23	3.7	16	2.3	39
Breast	7	1.1	862	125.0	869	^ ^	0.1	129	18.2	129
Cervix	---	---	51	7.8	51	---	---	16	2.4	16
Colon & Rectum	387	63.2	305	42.0	692	126	20.9	90	12.0	216
Corpus Uteri, NOS*	---	---	181	26.3	181	---	---	28	3.9	28
Esophagus	38	6.2	9	1.2	47	30	4.9	7	0.9	37
Eye & Orbit	3	0.5	^ ^	^ ^	5	^ ^	0.1	^ ^	0	^ ^
Gallbladder	6	1.0	8	1.1	14	4	0.6	5	0.7	9
Hodgkin Disease	14	2.3	9	1.3	23	3	0.4	3	0.4	6
Kidney & Renal Pelvis	100	16.2	49	7.0	149	23	3.7	14	1.9	37
Larynx	33	5.4	5	0.6	38	9	1.4	^ ^	0.2	10
Leukemia	142	23.3	108	15.3	250	45	7.4	31	4.3	76
Liver	85	13.7	41	5.6	126	65	10.6	34	4.6	99
Lung & Bronchus	412	67.7	283	38.8	695	306	50.4	191	25.9	497
Melanoma of the Skin	144	23.1	89	13.2	233	15	2.4	8	1.1	23
Multiple Myeloma	33	5.4	23	3.1	56	18	3.0	15	2.0	33
Non-Hodgkin Lymphoma	132	21.5	106	14.7	238	45	7.4	33	4.4	78
Oral Cavity	100	15.9	47	6.7	147	29	4.6	13	1.7	42
Other Biliary	17	1.2	11	0.5	28	6	0.9	^ ^	0.3	8
Ovary	---	---	74	10.7	74	---	---	48	6.6	48
Pancreas	80	13.2	81	10.9	161	73	12.1	72	9.6	145
Penis	4	0.6	---	---	4	^ ^	0	---	---	^ ^
Pleura	9	1.5	^ ^	0.2	11	^ ^	0.2	^ ^	0	^ ^
Prostate	795	131.0	---	---	795	112	19.2	---	---	112
Small Intestine	13	2.1	8	1.0	21	^ ^	0.3	^ ^	0.2	4
Soft Tissue including Heart	26	4.2	20	3.0	46	11	1.9	9	1.3	20
Stomach	106	17.8	71	9.5	177	63	10.6	41	5.4	104
Testis	29	4.6	---	---	29	^ ^	0.3	---	---	^ ^
Thyroid	29	4.7	99	15.4	128	3	0.5	4	0.5	7
Urinary Bladder	147	24.5	45	6.0	192	25	4.2	11	1.5	36
Vagina	---	---	4	0.5	4	---	---	^ ^	0.1	^ ^
Vulva	---	---	13	1.8	13	---	---	^ ^	0.1	^ ^
Ill-defined & unspecified	76	12.4	71	9.7	147	101	16.8	75	10.1	176

*NOS= Not otherwise specified. Liver includes hepatic bile duct.
^ ^ Data not presented for fewer than 5 cases in the 6 year time period. --- No cases.
Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.
Invasive cases only; Counts are 6 year average annual, rounded to the nearest whole and rates based on small numbers (< 20 per time period) are suppressed.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

What are Cancer Incidence & Mortality Rates?

Cancer incidence rates are measures of the risk of being diagnosed with cancer among the state's general population, while mortality rates are measures of the risk of dying among the state's general population. Cancer rates in this document represent the number of new cases of cancer per 100,000 population (incidence) or the number of cancer deaths per 100,000 population (mortality) during a specific time period.

For example, if the state's average annual lung and bronchus cancer incidence rate among males is 70.0, that means for every 100,000 men in Hawai'i, approximately 70 new cases of lung and bronchus cancer are diagnosed each year. If the state's adult male population numbers 500,000, then approximately 350 new cases of lung and bronchus cancer are diagnosed among men in Hawai'i each year (five times the number of cases diagnosed in a 100,000 population):

70 new cases diagnosed in one year = 350 new cases diagnosed in one year
100,000 population 500,000 population

A similar example can be used for an area smaller than the state or for specific race/ethnic groups. For example, if a county's adult male population numbers 50,000, then approximately 35 new cases of lung and bronchus cancer are diagnosed among men in the county each year (one-half the number of cases diagnosed in 100,000 population):

70 new cases diagnosed in one year = 35 new cases diagnosed in one year
100,000 population 50,000 population

Rates provide a useful way to compare the cancer burden irrespective of the actual population size. Rates can be used to compare demographic groups (males have higher lung cancer rates than females), racial/ethnic groups (Native Hawaiian females have higher breast cancer rates than other racial/ethnic groups), or geographic areas (Hawai'i has lower lung cancer mortality rates than California).

Mortality rates depend on the incidence of the cancer, as well as the stage at diagnosis, survival, and treatment for the cancer type. Survival estimates reflect the risk of death among newly diagnosed cancer cases, while mortality rates reflect the risk of death among the general population. New screening programs, aimed at early detection and increased survival, tend to result in a greater number of new cancers being diagnosed (i.e., higher incidence rates) with little delay. However, as most people dying of cancer today were diagnosed several years ago, mortality rates and survival estimates take time to show the influence of new programs.

What are Age-adjusted Rates?

The cancer risk of people at older ages is generally higher than people at younger ages. For example, about 3 of every 4 cancer cases diagnosed in Hawai'i occur in people ages 55 and older. As a result, if one geographic area's cancer incidence rate is higher than another, the first question asked is whether the area with a higher rate has an older population.

To address this issue, all mortality and incidence rates presented in this booklet have been ***"age-adjusted."*** This removes the impact of different age distributions between populations and allows for a direct comparison of those populations. Age-adjustment also allows for a comparison of rates within a single population over time. An age-adjusted rate is not a real measure of the burden of the disease on a population, but rather an artificial measure that is used for comparison purposes.

Age-adjusting to the 2000 United States Standard Population

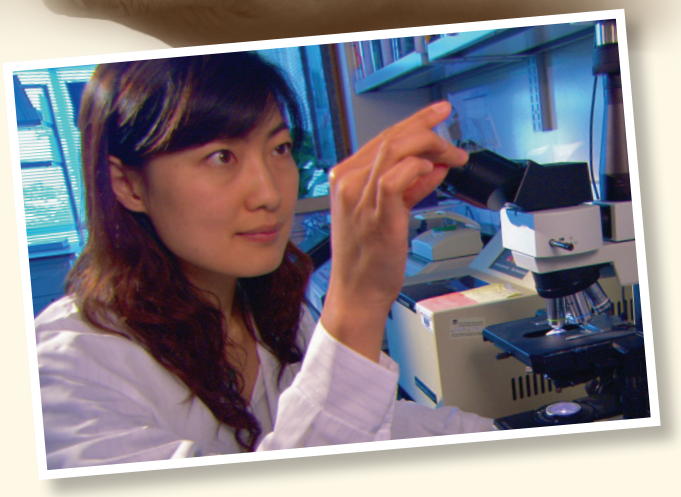
All mortality and incidence rates in this publication, provided by the Hawai'i Tumor Registry, were age-adjusted using the direct method. The direct standardization method weights the age-specific rates for a given sex, race, or geographic area by the age distribution of the standard population.

Hawai'i Cancer Facts & Figures 2010 uses the 2000 United States standard population (2000 U.S. standard population) for age-adjusting data. The purpose of shifting to the 2000 U.S. standard population is to more accurately reflect contemporary incidence and mortality rates, given the aging of the U.S. population. On average, Americans are living longer because of the decline in infectious and cardiovascular diseases. Our longer life span is allowing us to reach the age where cancer and other chronic diseases become more common. Using the 2000 U.S. standard for age adjustment instead of the 1970 or 1940 U.S. standards allows age-adjusted rates to be closer to the actual, unadjusted rate in the population. Rates adjusted to the 2000 U.S. standard population will be higher than those adjusted to the 1970 U.S. standard or the world standard population because weighting is higher for older ages with the new standard.

Data comparisons should be limited to data adjusted to the same standard populations. Comparisons to publications that used the 1970 U.S. standard population should also be avoided. In addition, comparisons to publications using the world standard population should be avoided. Comparisons of data age-adjusted according to different standards would lead to erroneous conclusions.

Cancer Facts & Figures 2009, released in January 2009 by the National Home Office of the American Cancer Society, and the previous ***Hawai'i Cancer Facts & Figures 2003-04*** uses the 2000 U.S. standard population for age-adjustment, so age-adjusted incidence and mortality rates from those publications can be compared to this publication, published in September 2010, which includes data for the years 1975-2005.

Survival by Stage of Disease at Diagnosis



In the early 1900s, few cancer patients had any hope of long-term survival. In the 1930s, fewer than one in five was alive at least five years after treatment. In the 1940s it was one in four, and in the 1960s it was one in three. Today, when normal life expectancy is taken into consideration (factors such as dying of heart disease, accidents, and diseases of old age), a ***"relative five-year survival"*** of 66 percent is seen for all cancers combined.

One of the strongest predictors of survival is how far the cancer has spread when discovered, referred to as the stage of disease at diagnosis. Cancer staging, based on a summary classification system developed by the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) Program, refers to the extent of disease categorized as ***in situ***, localized, regional, and distant (see definitions on next page). Among Hawai'i residents, the number of invasive cancers diagnosed at early stage (localized) differs between racial/ethnic groups (Table 3). Generally, the earlier the stage, the better the chance of survival (Table 4). We have made significant progress in helping individuals survive cancer through prevention, early detection, and treatment. However, we still have a long way to go. Following the American Cancer Society's guidelines for cancer prevention and early detection could help save many lives lost to cancer.

Table 3. Total Number of Cases & Percent of Total by Stage at Diagnosis by Race/Ethnicity, Invasive Cancers, Selected Sites, Hawai'i, 2000-2005

	NATIVE HAWAIIAN				WHITE				CHINESE			
SITES	Total Cases	Early Staged (%)	Late Staged (%)	Un-Staged (%)	Total Cases	Early Staged (%)	Late Staged (%)	Un-Staged (%)	Total Cases	Early Staged (%)	Late Staged (%)	Un-Staged (%)
Breast (Female)	938	61.9	37.3	0.7	1,440	68.5	30.3	1.1	296	71.6	28.0	0.3
Cervix	60	45.0	53.3	1.7	74	62.2	37.8	0.0	10	50.0	50.0	0.0
Colon & Rectum	484	41.7	55.2	3.1	1,019	46.8	50.5	2.6	277	47.7	49.5	2.9
Lung & Bronchus	761	14.7	81.6	3.7	1,260	20.0	75.0	5.0	240	24.6	72.5	2.9
Melanoma (Skin)	45	64.4	35.6	0.0	1,231	88.4	11.0	0.6	9	66.7	33.3	0.0
Prostate	444	88.1	9.5	2.5	1,443	91.1	5.9	3.0	359	95.0	3.3	1.7

Number of cases is a six year total.
Early = localized; Late = regional and distant. Localized, regional and distant cancers are invasive. In situ cases (non-invasive) are not included.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 4. Five-Year Relative Survival (%) by Stage at Diagnosis, United States, 1999-2005

	All Stages	Localized	Regional	Distant
Breast (Female)	89	98	84	23
Cervix	71	92	58	17
Colon & Rectum	65	91	70	11
Corpus & Uterus	83	96	67	17
Esophagus	17	37	19	3
Kidney	68	90	62	10
Larynx	62	78	42	32
Liver	13	26	9	2
Lung & Bronchus	16	53	24	4
Melanoma (Skin)	91	98	62	15
Oral Cavity	61	83	54	32
Ovary	46	94	73	28
Pancreas	6	22	9	2
Prostate **	100	100	100	31
Stomach	26	63	27	3
Testis	95	99	96	71
Thyroid	97	100	97	59
Urinary Bladder	80	74	36	6

Note: Rates are adjusted for normal life expectancy and are based on cases diagnosed from 1999-2005, followed through 2006.
Percentages are from U.S. survival estimates based on NCI data and are not specific to Hawai'i. These rates provide some indication about the average survival experience of cancer patients in a given population. They are less useful in predicting individual progress and should be applied with caution.
** The rate for localized stage for prostate cancer represents localized and regional stages combined.
Source: National Surveillance, Epidemiology, and End Results (SEER) Program, 1973-2006, Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD 2009

FILIPINO				JAPANESE			
Total Cases	Early Staged (%)	Late Staged (%)	Un-Staged (%)	Total Cases	Early Staged (%)	Late Staged (%)	Un-Staged (%)
576	61.6	37.5	0.9	1,616	72.8	26.5	0.7
61	52.5	45.9	1.6	50	56.0	44.0	0.0
533	42.8	54.0	3.2	1,598	43.6	54.2	2.3
629	17.0	78.4	4.6	1,016	17.6	77.6	4.8
22	72.7	27.3	0.0	55	67.3	30.9	1.8
757	90.0	7.5	2.5	1,492	91.9	4.7	3.4

Understanding the Cancer Stage of Disease at Diagnosis

A cancer's stage is based on the primary site (site of origin), tumor's size, and whether it has spread to other areas of the body.

What is staging?

Staging describes the extent or severity of an individual's cancer based on the extent of the original (primary) tumor and the extent of spread in the body.

Staging is important:

- Staging helps the doctor plan a person's treatment. The stage can be used to estimate the person's prognosis (likely outcome or course of the disease).
- Knowing the stage is important in identifying clinical trials (research studies) that may be suitable for a particular patient.
- Staging helps researchers and health care providers exchange information about patients. It also gives them a common language for evaluating the results of clinical trials and comparing the results of different trials.

Definitions:

In situ indicates a tumor that is early or "non-invasive" cancer that is present only in the layer of cells in which it began. An ***in situ*** lesion can only be diagnosed by microscopic examination.

Localized indicates a cancer that is limited to the organ in which it began, without evidence of spread. It can still be considered "localized" as long as there is no extension beyond the outer limits of the primary organ with no evidence of metastasis elsewhere within the body.

Regional indicates a cancer that has spread beyond the original (primary) site to nearby lymph nodes or organs and tissues.

Distant indicates a cancer that has spread from the primary site to distant organs or distant lymph nodes or by implantation metastasis.

Unstaged or Unknown indicates there is a cancer, but insufficient information exists to determine the stage or extent of the disease at diagnosis.

The Impact of Sex, Age & Race/Ethnicity

Cancer strikes men, women, and children of all ages and races. Although four cancer sites account for the majority of cancer burden among adults in Hawai'i and the U.S., variations in the leading sites are seen due to sex, age, and race/ethnicity differences.

When comparing the overall cancer burden between males and females, Hawai'i men account for approximately 52 percent of all newly diagnosed cancers, and have higher overall cancer rates. Women account for approximately 48 percent of new cases of the disease. Prostate cancer is the most frequently diagnosed cancer among all males in Hawai'i, followed by lung and bronchus cancer and colon and rectum (colorectal) cancers. Breast cancer is the most commonly diagnosed cancer among all females in Hawai'i, followed by colorectal cancers and lung and bronchus cancer (Figure 4). Lung and bronchus cancer is the leading cause of cancer deaths for both men and women in the state and all races combined. The second and third leading causes of cancer deaths among men, all races combined, are colorectal and prostate cancers. For women, all races combined, the second leading cause of cancer deaths is breast cancer, followed third by colorectal cancers. Although the number of breast, prostate, and colorectal cancers diagnosed each year is greater than the number of lung and bronchus cancer cases diagnosed, the total number of lung and bronchus cancer deaths each year exceeds deaths from the other three sites combined.

Incidence and mortality rates (the number per 100,000 population adjusted by age) vary widely by race/ethnicity. When considering all cancer sites combined, the lowest incidence rates are seen among Filipino and Chinese females. Among males, Whites, followed by Native Hawaiians and Japanese, have the highest incidence rates. Among females, Native Hawaiians have the highest incidence rate, followed by Whites. In terms of cancer deaths, Chinese, Filipino, and Japanese females have the lowest mortality rates. Among both males and females, Native Hawaiians and Whites have the highest mortality rates for all cancer sites combined (Table 5). Differences by race/ethnicity are also seen for specific cancer sites and will be discussed in subsequent sections.

Age is another factor in the occurrence and type of cancer diagnosed. Among adults, cancer occurs more frequently with advancing age, and the risk of dying from cancer increases significantly.

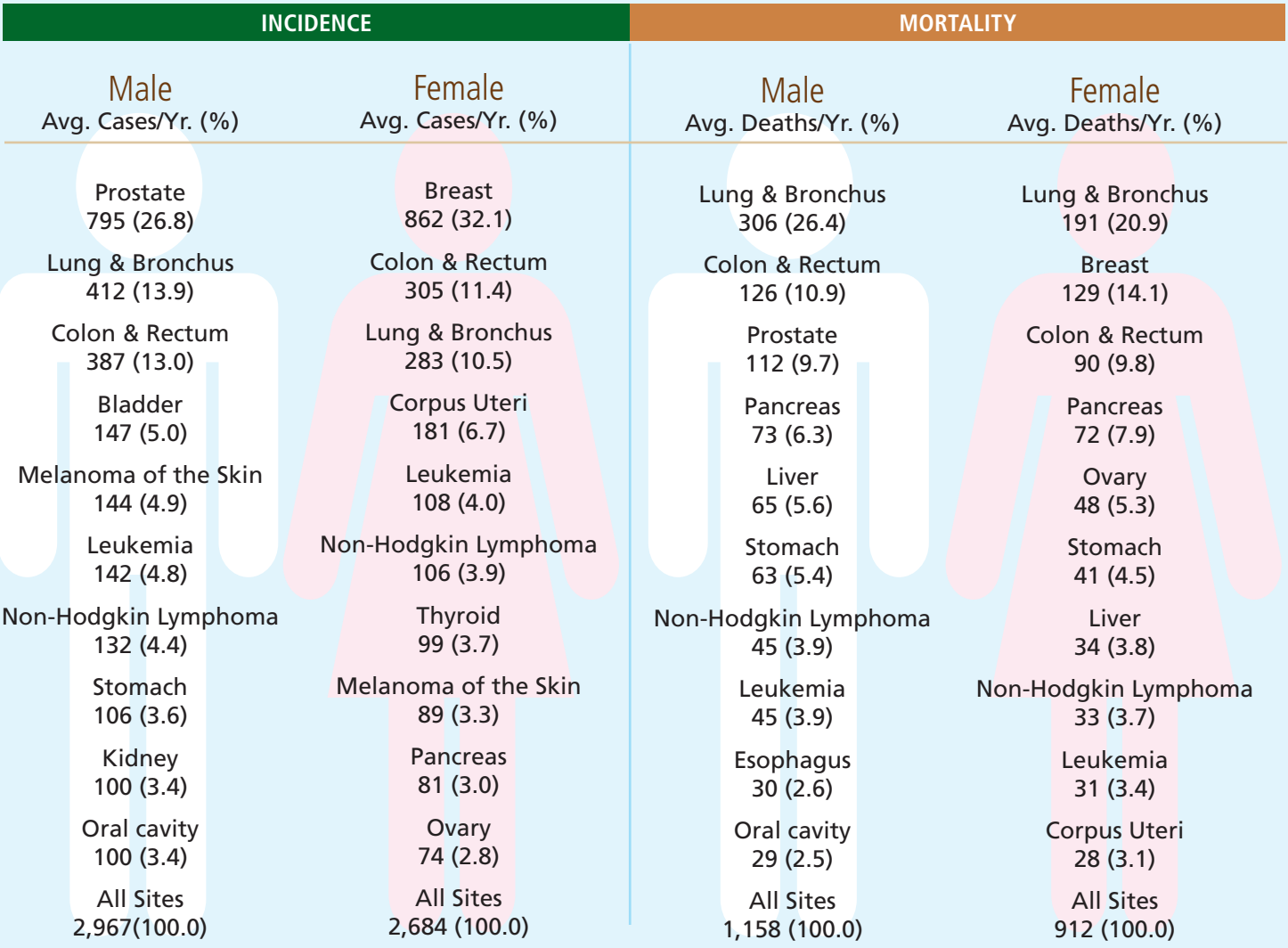
Childhood cancers (ages 0-14) are grouped according to a different classification scheme and are discussed in the following section.

Definition of Race & Ethnicity

For the purposes of this publication, "race/ethnicity" is used to indicate the combined presentation of race and ethnicity data. The recommendations from the Hawai'i Department of Health (DOH) for collecting, defining, measuring, and reporting race and ethnicity data in the state uses the race categories established by the federal Office of Management and Budget (OMB): American Indian/Alaskan Native, Asian, Black/African American, Native Hawaiian/Pacific Islander, and White. The DOH uses the term ethnicity to refer to discrete population groups associated by geography, culture, or language (e.g., Native Hawaiians, Chinese, Filipinos, Japanese).

Sorensen, Catherine (2003). Public Health Race and Ethnicity Data: Developing a Common Language, Unpublished manuscript, Hawai'i Department of Health

Figure 4. Ten Leading Cancer Sites in Cases, Percentages & Deaths, Hawai'i, 2000-2005



Note: Invasive cases only; Cases (Incidence) and Deaths (Mortality) are 6 year average annual, rounded to the nearest whole; Excludes deaths from unspecified cancers.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 5. Average Annual Incidence & Mortality Counts & Rates for All Cancer Sites by Sex & Race/Ethnicities Combined, Hawai'i, 2000-2005

	INCIDENCE				MORTALITY			
	Male Incidence Count	Male Incidence Rate	Female Incidence Count	Female Incidence Rate	Male Mortality Count	Male Mortality Rate	Female Mortality Count	Female Mortality Rate
Native Hawaiian	369	479.6	441	447.8	173	231.7	162	171.0
White	980	542.4	767	413.6	336	198.2	252	133.6
Chinese	186	423.5	166	317.3	68	154.4	61	107.2
Filipino	403	466.8	336	341.4	158	178.7	95	98.3
Japanese	842	476.3	776	363.9	337	187.1	273	109.9
Total, All Races	2,967	485.7	2,684	382.2	1,158	192.0	912	124.7

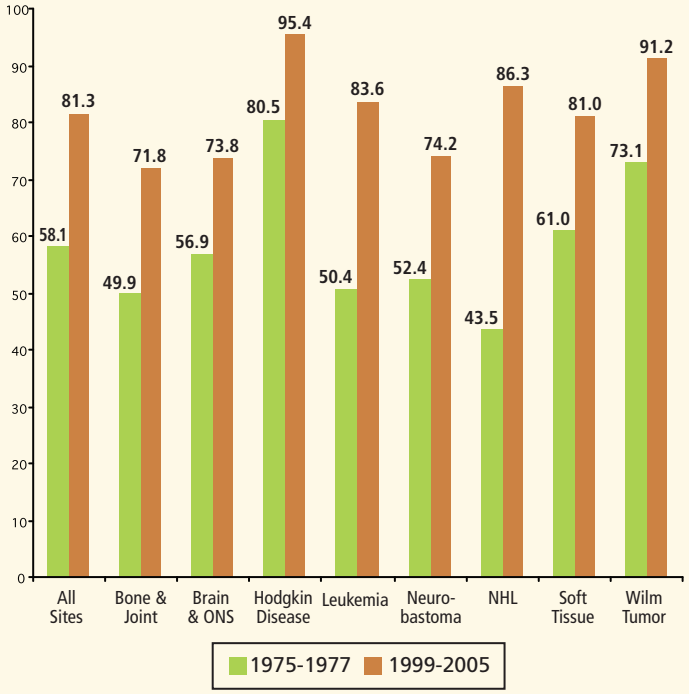
Note: Invasive cases only, in-situ cases are excluded. Counts are 6 year average annual, rounded to the nearest whole. All Races include race/ethnic groups listed plus all other race/ethnic groups combined.
Rates are average annual and are per 100,000 population, age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

When considering the occurrence of cancer across all age groups, childhood cancer is rare, with less than one percent of all cancers occurring before the age of 15. Although the absolute number of deaths due to cancer in children and adolescents is low relative to adults, the toll in terms of potential years lost is high, and cancer remains the second leading cause of death among children in Hawai'i, ages 1 to 14 years. In 1985-2005, cancer was diagnosed in more than 1000 children and young adults under the age of 20 in Hawai'i (Table 6). During that same time period, approximately 192 cancer deaths were reported among children in Hawai'i, ages 0-14, with another 69 cancer deaths reported in adolescents, ages 15 to 19.

While cancers among adults are categorized by the anatomical site of the primary tumor, childhood cancers are classified primarily by histology into 12 major categories using the International Classification of Childhood Cancers (ICCC). For both males and females, lymphoid leukemia was the leading type of cancer diagnosed in children under age 15. Gonadal germ cell tumors and carcinomas were the most common cancers diagnosed among males and females, respectfully, ages 15 to 19.

Great strides have been made in the treatment of children with cancer, resulting in vastly improved survival and reduced mortality (Figure 5). Nationwide, deaths from all childhood cancers combined decreased steadily from 1975-77 and 1999-2005. The overall 5-year relative survival for most childhood cancers diagnosed before age 15 has risen to nearly 81 percent. The greatest impact in these positive trends has been from dramatic improvement in survival from leukemia, which in Hawai'i accounts for 35 percent of all cancers in children under age 15, and 29 percent of all cancers under age 20. Clinical trials have played a significant role in the dramatic improvement in childhood cancer treatment and cure rates in the last 30 years (See page 54 for additional information on clinical trials).

Figure 5. National Trends in 5-Year Relative Survival Among Children, 0-14 Years Old



NHL = Non-Hodgkin lymphoma; ONS = Other nervous system.
Source: National SEER Program, 1975-2005 Division of Cancer Control and Population Sciences, NCI; American Cancer Society Surveillance Research, National Home Office

Table 6. Childhood Cancers, Ages 19 Years & Under, Hawai'i, 1985-2005

Age Group	Sex	All	Leukemia	Lymphoma	Brain/ CNS	Symp. Nerv.	Retino-blastoma	Renal	Hepatic	Bone	Soft Tissue	Germ cell	Carci-nomas
≤4	Male	199	77	9	37	29	6	14	10	^ ^	6	10	
	Female	154	68	^ ^	25	26	15	^ ^	^ ^		5	^ ^	^ ^
5-9	Male	100	36	12	27	^ ^		5		8	5	^ ^	^ ^
	Female	87	36	8	21	^ ^		^ ^		7	6	^ ^	^ ^
10-14	Male	116	30	23	28	^ ^		^ ^	^ ^	9	8	8	6
	Female	94	19	12	24	^ ^				9	10	6	13
15-19	Male	182	24	28	16	^ ^		^ ^	^ ^	18	21	40	31
	Female	145	20	20	11	^ ^		^ ^		11	19	25	37
All	Male	597	167	72	108	35	6	21	13	36	40	61	38
	Female	480	143	41	81	30	15	6	^ ^	27	40	37	56

Note: Number of cases represent 16 year totals. ^ ^ Data not presented for fewer than 5 cases in the 16 year time period. CNS=Central Nervous System
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Meeting the Needs of Hawai'i's Diverse Populations

Hawai'i is the 50th state of the United States and comprises a group of eight main islands in the Pacific Ocean. Native Hawaiians are the indigenous Polynesian population of the islands and are thought to have first arrived from other areas of Polynesia between 200 BCE to 700 CE. It is estimated that there were 300,000 Native Hawaiians in 1778, when Captain Cook first visited the islands. However, the population was ravaged by disease, and by 1900, only 30,000 full-blooded Native Hawaiians remained. Native Hawaiians have traditionally intermarried with persons of other races, and today most Native Hawaiians are part-Hawaiians.[1]

Since 1778, other racial groups began migrating to Hawai'i. Europeans were one of the first groups to arrive and their numbers in Hawai'i have steadily increased through the 1900s, spurred by the designation of Hawai'i as a U.S. Territory in 1900 and as a U.S. state in 1959. Chinese were the first Asians to migrate to Hawai'i, with as many as 56,000 migrating as contract workers between 1852-1899. From 1884 to 1924, more than 200,000 Japanese men, women and children immigrated to Hawai'i. The most recent large immigrant group has come from the Philippines. Between 1906 and 1946, labor recruitment efforts in Hawai'i brought about 100,000 Filipino migrants, mostly males from rural provinces, to work on sugar plantations. A second wave of immigration began in 1965, when many families moved to reunite.[2]

Hawai'i's unique population has no racial or ethnic majority. Native Hawaiians, Pacific Islanders, Asians and Whites are the major racial groups in Hawai'i. Among Asians, the largest groups are Chinese, Filipinos and Japanese. Native Hawaiians are the largest group among Polynesians and Pacific Islanders.

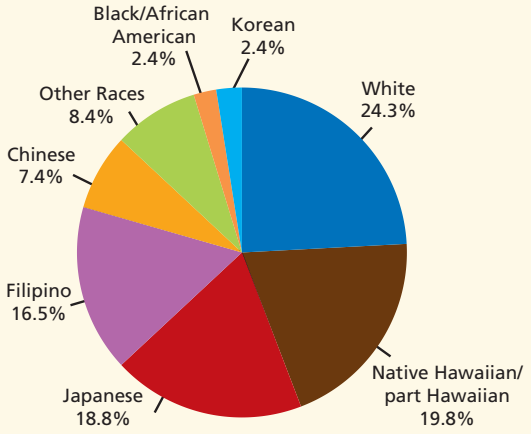
Hawai'i has the highest proportion of individuals of mixed race/ethnicity in the United States, with two of every ten residents describing themselves as more than one race (2000 U.S. Census). This diversity is likely to be an increasing trend in this state. Of the babies born in Hawai'i in the year 2000, nearly 60 percent were listed as having at least two races, and close to half of the marriages among Hawai'i residents for that year were between individuals of different races.[3] In general, however, at the advanced ages at which most cancers occur, racial/ethnic groups are much more homogeneous.

Today, five racial/ethnic groups – Native Hawaiians, Chinese, Filipinos, Japanese, and Whites – make up 87 percent of the state's more than 1.2 million population (Figure 6). Whites comprise 24.3 percent of Hawai'i's 2000 population. Native Hawaiians/part-Hawaiians made up 19.8 percent of the state's population, followed by 18.8 percent Japanese, 16.5 percent Filipino, and 7.4 percent Chinese. The remainder of Hawai'i's population is made up of other Asians (5.8 percent), of which Koreans (2.4 percent) and Vietnamese (0.8 percent) are the largest groups; other Pacific Islanders (2.1 percent), of which Sāmoans (0.8 percent) are the largest group; Blacks/African Americans (2.4 percent); and Other Races (2.9 percent). Such diversity in population demographics is seen throughout the state (Table 7).

References:

1. Eleanor C. Nordyke, The Peopling of Hawai'i, Honolulu, HI: The University of Hawai'i Press, 1989.
2. Ibid.
3. Department of Business, Economic Development and Tourism, State of Hawai'i Data Book, 2001, www.hawaii.gov/dbedt/db01/sec02.html.

Figure 6. Population by Race/Ethnicity, Hawai'i, 2000



Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 7. Population by Race/Ethnicity & County, Hawai'i, 2000

	Total	Native Hawaiian (%)	Black/African American (%)	White (%)	Chinese (%)	Filipino (%)	Japanese (%)	Korean (%)	Other Races (%)
State	1,211,537	19.8	2.4	24.3	7.4	16.5	18.9	2.4	8.4
Hawai'i	148,678	28.9	0.9	31.6	3.5	11.8	15.4	0.9	7.1
Honolulu	876,157	17.5	3.0	21.3	9.0	16.5	20.8	3.0	9.0
Kaua'i	58,461	23.1	0.7	29.5	3.1	22.6	15.1	0.5	5.4
Maui	128,094	23.4	0.8	33.9	2.9	19.4	11.7	0.9	7.0

Note: An additional 147 individuals live in Kalawao County.
Source: U.S. Census 2000, provided by Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Across all races/ethnicities in Hawai'i, prostate cancer is the most commonly diagnosed cancer among males, while breast cancer is the most commonly diagnosed cancer among females. Cancers of the lung and bronchus are the leading cause of cancer death among males and females in all racial/ethnic groups.

However, variations in incidence and mortality rates for the leading cancer sites are seen among the major racial/ethnic groups in Hawai'i (Table 8). As summarized below, disparities were observed for all major groups in 2000-2005.

- Overall cancer incidence rates in men were highest for Whites and, in women, highest for Native Hawaiians.
- Overall cancer mortality rates were highest among Native Hawaiian men and women.
- Breast cancer incidence and mortality was highest among Native Hawaiian women.
- Prostate cancer incidence was highest among Filipinos and lowest among Native Hawaiians while mortality was highest for Whites.
- Colorectal cancer incidence and mortality was highest among Japanese men and women.
- Lung cancer incidence and mortality was highest among Native Hawaiian men and women.
- Melanoma incidence and mortality was highest among White men and women.
- Thyroid cancer incidence was highest among Filipino men and women, although the disparity was more pronounced among Filipino women.
- Liver cancer incidence was highest among Chinese men.

The five major racial/ethnic groups in Hawai'i – Native Hawaiian, Japanese, Filipino, Chinese, and White – are the only groups large enough to allow stable estimation of cancer incidence and mortality rates. For this reason, comparisons by race/ethnicity are limited to these groups. The number of cancer cases in other groups, including Blacks/African Americans, American Indians, Koreans, Micronesians, Sāmoans, and Vietnamese are given in Table 9.

'Imi Hale – Native Hawaiian Cancer Network

'Imi Hale - Native Hawaiian Cancer Network ('Imi Hale) is a program of Papa Ola Lōkahi, a non-profit community-based agency dedicated to improving the health and well-being of Native Hawaiians. Established in 2000, 'Imi Hale is one of 25 Community Networks Programs funded by the National Cancer Institute's Center to Reduce Cancer Health Disparities (U01 CA114630). The overall goal of 'Imi Hale is to reduce cancer incidence and mortality among Native Hawaiians by maintaining and expanding an infrastructure that: 1) promotes cancer awareness within Native Hawaiian communities, 2) provides education and training to develop Native Hawaiian researchers, and 3) facilitates research that aims to reduce cancer health disparities experienced by Native Hawaiians. 'Imi Hale's work focuses on strengthening the capacity of Native Hawaiian individuals and communities to identify their own problems and to investigate, propose, test, and advocate for their own solutions. Clinical, programmatic, education, and research partnerships include the five Native Hawaiian Health Care Systems (NHHCS, providing access and prevention services to Native Hawaiians statewide), the Queen's Medical Center, Hawai'i DOH Breast and Cervical Cancer Early Detection Program, Cancer Information Service, American Cancer Society, Susan G. Komen Foundation, the University of Hawai'i, Oregon Health & Sciences University, the NHHCS Institutional Review Board, and others. Since 2000, Native Hawaiian researchers have successfully completed more than 36 cancer research projects, developed more than 40 new educational curricula and products, and published more than 90 manuscripts in peer reviewed journals. For more information, contact: JoAnn Umilani Tsark or LorrieAnn Santos, Co-Project Directors of 'Imi Hale - Native Hawaiian Cancer Network at 808-526-1700 or visit **www.imihale.org.**

Table 8. Five Leading Cancer Sites in Cases & Deaths by Sex & Race/Ethnicity, Hawai'i, 2000-2005

INCIDENCE	NATIVE HAWAIIAN		WHITE		CHINESE		FILIPINO		JAPANESE	
	Cases	Total (%)	Cases	Total (%)	Cases	Total (%)	Cases	Total (%)	Cases	Total (%)
MALE										
Bladder (Urinary)			372	6.3	52	4.7			279	5.5
Colon & Rectum	278	12.6	587	10.0	150	13.4	336	13.9	853	16.9
Kidney & Renal Pelvis	92	4.2								
Leukemia	124	5.6					126	5.2		
Lung & Bronchus	412	18.6	720	12.2	132	11.8	426	17.6	628	12.4
Melanoma (Skin)			781	13.3						
NHL					71	6.4	101	4.2		
Prostate	444	20.0	1,443	24.5	359	32.1	757	31.3	1,492	29.5
Stomach									331	6.6
Total, All Sites	2,212	100.0	5,880	100.0	1,117	100.0	2,420	100.0	5,053	100.0
FEMALE										
Breast	938	35.4	1,440	31.3	296	29.7	576	28.6	1,616	34.7
Colon & Rectum	206	7.8	432	9.4	127	12.8	197	9.8	745	16.0
Corpus Uteri	232	8.8	267	5.8	64	6.4	154	7.6	279	6.0
Leukemia	121	4.6								
Lung & Bronchus	349	13.2	540	11.7	108	10.8	203	10.1	388	8.3
Melanoma (Skin)			450	9.8						
Stomach									205	4.4
Thyroid					48	4.8	178	8.8		
Total, All Sites	2,646	100.0	4,600	100.0	996	100.0	2,015	100.0	4,657	100.0
MORTALITY	**NATIVE HAWAIIAN**		**WHITE**		**CHINESE**		**FILIPINO**		**JAPANESE**	
	Cases	Total (%)	Cases	Total (%)	Cases	Total (%)	Cases	Total (%)	Cases	Total (%)
MALE										
Colon & Rectum	105	10.1	180	8.9	46	11.2	111	11.7	271	13.4
Leukemia			89	4.4						
Liver	55	5.3			30	7.3	62	6.6		
Lung & Bronchus	325	31.3	528	26.2	116	28.4	276	29.2	463	22.9
Pancreas	58	5.6	120	6.0	31	7.6	51	5.4	146	7.2
Prostate	63	6.1	244	12.1	36	8.8	106	11.2	187	9.3
Stomach									189	9.4
Total, All Sites	1,038	100.0	2,015	100.0	409	100.0	946	100.0	2,020	100.0
FEMALE										
Breast	163	16.8	243	16.1	39	10.6	83	14.6	189	11.5
Colon & Rectum	63	6.5	137	9.1	37	10.1	57	10.0	219	13.4
Liver					23	6.3				
Lung & Bronchus	241	24.8	365	24.2	81	22.1	109	19.2	271	16.5
Ovary	44	4.5	94	6.2			31	5.4		
Pancreas	79	8.1	91	6.0	33	9.0	32	5.6	178	10.9
Stomach									115	7.0
Total, All Sites	972	100.0	1,510	100.0	367	100.0	569	100.0	1,639	100.0

■ Most frequently diagnosed or leading cause of cancer death
■ Second most frequently diagnosed or second leading cause of cancer death
■ Third most frequently diagnosed or third leading cause of cancer death

Note: Invasive cases only. Counts are 6 year totals. NHL = Non-Hodgkin lymphoma. Liver includes hepatic bile duct.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

The racial/ethnic mixture in Hawai'i's population complicates the classification of individuals by the racial/ethnic groups used in grouped cancer rates. As described on page 8, cancer rates represent the number of individuals who were newly diagnosed or who died of cancer (numerator) in a given time period, within a specific population (denominator). Rules have been developed and implemented for assigning race/ethnicity in Hawai'i population estimates that are intended to best match the race/ethnicity from the numerator sources of the Hawai'i Tumor Registry and the Hawai'i state death records, while retaining precision in the estimates by including as many individuals as possible in a group. In calculating rate estimates, if the race/ethnicity does not match between the numerator (number of individuals who were diagnosed or who died of cancer) and the denominator (total number of individuals within the specific group), incorrect conclusions may be drawn.

Hawai'i Tumor Registry (HTR) data collection and reporting guidelines requires that persons who are any-part Hawaiian be classified as "Native Hawaiian/part Hawaiian." In this publication, the designation "Native Hawaiian" is used for this group in all corresponding figures and tables. The White classification does not include mixtures. Persons who are White and another race were assigned the other race.

Population size is also an issue when presenting cancer data for areas smaller than the state level. At the county level, numbers are too small to provide stable rates, and are confounded by racial/ethnic differences. Therefore, at the county level, total counts only, all races combined, are provided for select cancer sites (Table 10).

The number of cases and deaths are primarily a reflection of the county's population size and age. Actual counts are useful in planning local programs, but should not be used for comparisons between counties. For population comparisons, only age-adjusted rates should be used (See text box page 9).

The population estimates for the year 2000 are provided by the U.S. Bureau of the Census. However, for other years (1975-1999 and 2001-2005), population estimates developed by the HTR were used. Estimates are based on sex-age group census counts, apportioned to ethnic groups based on the distribution found in a statewide health survey conducted by the Hawai'i Department of Health. These state derived race/ethnic distributions are used as a "bridge" for intercensal years to allow for changes in the ethnic distribution between censuses. Census counts were not used directly for earlier years (1975-1999) because Native Hawaiians were vastly undercounted in the 1970, 1980, and 1990 censuses due to the wording pertaining to race on these earlier census forms.

Hawai'i AANCART

The **Asian American Network for Cancer Awareness, Research and Training (AANCART)** is a cooperative agreement between the National Cancer Institute (NCI) and the University of California, Davis. It is the first-ever national cancer awareness research and training infrastructure intended to address Asian American cancer disparities.

The overall mission of the Asian American Network for Cancer Awareness, Research and Training (AANCART) is to reduce cancer health disparities by conducting community-based participatory education, training, and research by, for, and with Asian Americans. AANCART serves Asian Americans in the following regions of the United States: Sacramento, CA (which also serves as the National AANCART Headquarters); San Francisco, CA; Los Angeles, CA; Seattle, WA; and Honolulu, HI. This national Network is associated with four NCI cancer centers and their associated universities, the California Department of Public Health, Chinese Community Health Care Association, and the Hmong Women's Heritage Association. Cumulatively, this Network serves approximately 40% of all Asian Americans.

Consistent with RFA-CA-05-012, AANCART's deliverables are: (1) Sustenance of a highly interactive Network among AANCART regions to catalyze cancer education for Asian Americans; (2) Establishment of research training programs that address Asian American cancer health disparities; and (3) Process and impact data to document the extent to which specific cancer health disparities are reduced among Cambodians, Chinese, Filipino, Hmong, Korean, and Vietnamese.

Due to its sizeable population, available data, and disproportionate cancer burden, Filipinos were selected as the focus of study for Hawai'i AANCART. This program is administered by the University of Hawai'i at Mānoa, through the Office of Student Equity, Excellence and Diversity. Capacity building for minority cancer research addressed breast cancer disparities among Filipino women forty years and over, and high smoking rates among Filipino adolescent girls.

Hulopoe Bay Beach Park, Lāna'i

Table 9. Top Five Cancers in Other Ethnic Groups, by Site, Number of Cases & Percentage (%), Hawai'i, 2000-2005

Black/African American	American Indian	Korean	Micronesian	Sāmoan	Vietnamese
Prostate 78 (25.7%)	Breast (female) 27 (20.8%)	Breast (female) 136 (17.6%)	Lung & Bronchus 22 (17.2%)	Lung & Bronchus 51 (12.9%)	Breast (female) 22 (19.3%)
Breast (female) 38 (12.5%)	Melanoma 11 (8.5%)	Colon & Rectum 107 (13.8%)	Breast (female) 16 (12.5%)	Breast (female) 50 (12.7%)	Liver 18 (15.8%)
Colon & Rectum 35 (11.6%)	Prostate 10 (7.7%)	Lung & Bronchus 90 (11.6%)	Liver 15 (11.7%)	Prostate 36 (9.1%)	Colon & Rectum 14 (12.3%)
Lung & Bronchus 26 (8.6%)	Colon & Rectum 10 (7.7%)	Prostate 59 (7.6%)	Cervix 10 (7.8%)	Colon & Rectum 34 (8.6%)	Lung & Bronchus 12 (10.5%)
Kidney & Renal Pelvis 16 (5.3)%	Lung & Bronchus 23 (17.7%)	Stomach 55 (7.1%)	Corpus Uteri; Thyroid (tie) 8 (6.2%)	Corpus Uteri 32 (8.1%)	Cervix; Corpus Uteri; Prostate (tie) 5 (4.4%)
Other 110 (36.3%)	Other 49 (37.7%)	Other 326 (42.2%)	Other 49 (38.3%)	Other 192 (48.6%)	Other 33 (28.9%)
All cancers 303 (100%)	All cancers 130 (100%)	All cancers 773 (100%)	All cancers 128 (100%)	All cancers 395 (100%)	All cancers 114 (100%)

Invasive cases only; Counts are 6 year totals; Total percents may be slightly greater or less than 100.
Note: Includes ethnic groups (other than the five major groups) with more than 100 total cases during the 6-year period.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 10. Average Annual Cancer Cases & Cancer Deaths by County, State of Hawai'i, 2000-2005

	TOTAL ALL SITES		BREAST (FEMALE)		COLON & RECTUM		LUNG & BRONCHUS		PROSTATE	
	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality
Hawai'i	756	282	116	19	86	26	97	69	93	18
Honolulu	4,065	1,411	626	83	504	154	495	335	598	75
Kaua'i	275	113	37	8	38	12	35	26	33	8
Maui	554	207	88	15	65	20	68	52	71	11

Note: Invasive cases only. Counts are average annual count for the 6 year period. The average (or total) number of cases and deaths are primarily a reflection of the county's population size and age. Counts are useful in planning local programs, but should not be used for comparisons between counties. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

The five major racial/ethnic groups – Native Hawaiian, Chinese, Filipino, Japanese & White – are the only groups large enough to allow stable estimation of cancer incidence & mortality rates.

Variations in cancer rates among different groups can be described as ***"health disparities are differences, and may in fact be due to health inequities."***

Health Disparities & Health Inequities

According to the National Institutes of Health definition, health disparities are "***differences in the incidence, prevalence, mortality, and burden of cancer and related adverse health conditions that exist among specific population groups in the United States. Population groups may be characterized by sex, age, race/ethnicity, education, income, social class, disability, geographic location, and sexual orientation."***

The National Association of Chronic Disease Directors Health Equity Council (NACDD-HEC) developed a more encompassing definition of health disparities, based on a compilation which states that ***"health disparities are differences in the incidence, prevalence, mortality, burden of diseases, and other adverse health conditions or outcomes that exist among specific population groups in the United States. Health disparities can affect populations groups based on sex, age, ethnicity, socioeconomic status, geography, sexual orientation, disability, or special health care needs and occur among groups who have persistently experienced historical trauma, social disadvantage or discrimination, and systematically experience worse health or greater health risks than more advantaged social groups.[3] (NACDD, 2006)"***

Further, since "disparity" in the context of public health and social science has begun to take on the implication of injustice, the NACDD-HEC followed the conceptualization of health inequities for the World Health Organization (WHO) and the Pan American Health Organization (PAHO)[5], whereby health inequities are "…differences in health which are not only unnecessary and avoidable, but considered unfair and unjust." [1]

A health disparity specifically should be viewed as a chain of events signified by a difference in: (1) environment; (2) access to, utilization of, and quality of care; (3) health status; or (4) a particular health outcome that deserves scrutiny. It can also reflect genetic factors and family history, as well as personal health choices and behaviors.

According to WHO/PAHO, there are seven major determinants of health disparities:

a. Natural, biological variation;
b. Freely chosen health damaging behavior;
c. Transient health advantage of one over another (first adopters of health promoting behavior);
d. Health damaging behavior where the degree of lifestyle choices is severely restricted;
e. Exposure to unhealthy, stressful living and working conditions;
f. Inadequate access to essential health and other basic services;
g. Natural selection (health-related mobility). Sick people tend to move down the social scale.

The first three are most likely to be considered unavoidable or fair. The last four are considered avoidable and unfair. An inequity is said to exist when ***"a health disparity is determined to be avoidable and unfair."*** As reflected in this and other definitions, the differences in cancer incidence and mortality among diverse population groups may be influenced by variations in several social determinants or factors.

Social Determinants of Health

The *social determinants of health (SDOH)* are what Raphael (2006) refers to as ***"the non-medical and non-behavioral precursors of health and illness."***[4] The 1986 Ottawa Charter for Health Promotion listed the prerequisites for health as peace, shelter, education, food, income, a stable ecosystem, sustainable resources, social justice, and equity. Another model by Dahlgren and Whitehead (1992) listed specific living and working conditions that contribute to health, including agriculture and food production, education, the work environment, unemployment, water and sanitation, health care services, and housing. Wilkinson and Marmot (2003), part of British working group tasked with identifying the social determinants of health, listed the social (class health) gradient, stress, early life, social exclusion, work, unemployment, social support, addiction, food, and transport. The U.S. Centers for Disease Control and Prevention (CDC) in 2005 identified socio-economic status, transportation, and housing, access to services, discrimination by social grouping (e.g., race, sex or class), and social or environmental stressors. A recent synthesis (See Raphael, 2006) identified 11 key social determinants of health: aboriginal status, early life, education, employment and working conditions, food security, health care services, housing, income and its distribution, the social safety net, social exclusion, and unemployment and employment security.

Additional information on racial and ethnic disparities in health care can be found in publications of the Intercultural Cancer Council (www.iccnetwork.org).

The following are some of the social determinants[6] found to be associated with differential cancer rates:

Socioeconomic Status: Socioeconomic status (SES) in particular appears to play a major role in cancer-related disparities seen among different racial/ethnic groups due to adopted behaviors that cause cancer, such as smoking and poor screening behaviors. The American Cancer Society estimates that cancer survival rates of poor individuals are 10 to 15 percent lower than those of other Americans (American Cancer Society, 2009). Some of the proposed reasons for such disparities in survival rates include the relationship between lower SES status with delayed diagnosis and treatment at a later stage of disease.

Transportation difficulties and/or lack of health insurance: Fully 6 percent of adult residents of Hawai'i under age 65 do not have health insurance, and there are higher proportions without health insurance on the Neighbor islands (Table 11). Access may also be limited due to inadequate numbers of facilities and providers in certain areas of the state. Hawai'i's unique geographical characteristics (multiple islands with a mix of urban and rural areas) may hinder individuals' access to cancer diagnosis and treatment facilities.

Culture & Language: Ethnic minorities are poorly represented among physicians and other health professionals. In what are called "discordant" relationships, patients from ethnic groups frequently are treated by professionals from a different ethnic background. Inability to communicate with health care providers is a barrier to accessing health care, undermines trust in the quality of medical care, and decreases the likelihood of appropriate follow-up. Current research documents that ongoing racial and ethnic disparities in health care are linked to patient–physician race and ethnic discordance.[7]

Racism, Exclusion & Historical Trauma: Certain barriers to optimal cancer screening, diagnosis, and treatment may exist regardless of SES, health insurance status, or provider base. According to a recent Institutes of Medicine (IOM) report,[2] such disparities ***"are complex and rooted in historic and contemporary inequities and involve many participants at several levels, including health systems, their administrative and bureaucratic processes, utilization managers, health care professionals, and patients."*** Disparities may be compounded by the institutional environment (legal, financial, and policy) and by the under-representation of racial and ethnic minorities among health professionals. Other barriers suggested in the IOM report may be related to health seeking behaviors of patients and health provider behavior in the clinical encounter. Awareness of such factors can assist in developing programs and services to best meet needs.

Chronic Stress: There is evidence that cumulative exposure to chronic stress over a lifetime is strongly associated with worse health outcomes.

Table 11. Percentage of Adults, Ages 18 & Older, Who Do Not Have Health Insurance, Hawai'i, 2007

Demographic Characteristics	Do Not Have Health Insurance (%)
TOTAL	6.0
SEX	
Male	7.3
Female	4.6
RACE/ETHNICITY	
Native Hawaiian	6.6
White	7.3
Filipino	5.0
Japanese	3.3
Others	7.6
EDUCATION	
< High School	6.7
HOUSEHOLD INCOME	
<$15,000	10.5
$15,000-24,999	13.5
$25,000-49,999	5.8
$50,000-74,999	5.3
≥$75,000	2.3
Unknown/Refused	8.0
COUNTY	
Hawai'i	7.8
Honolulu	5.2
Kaua'i	7.3
Maui	8.0

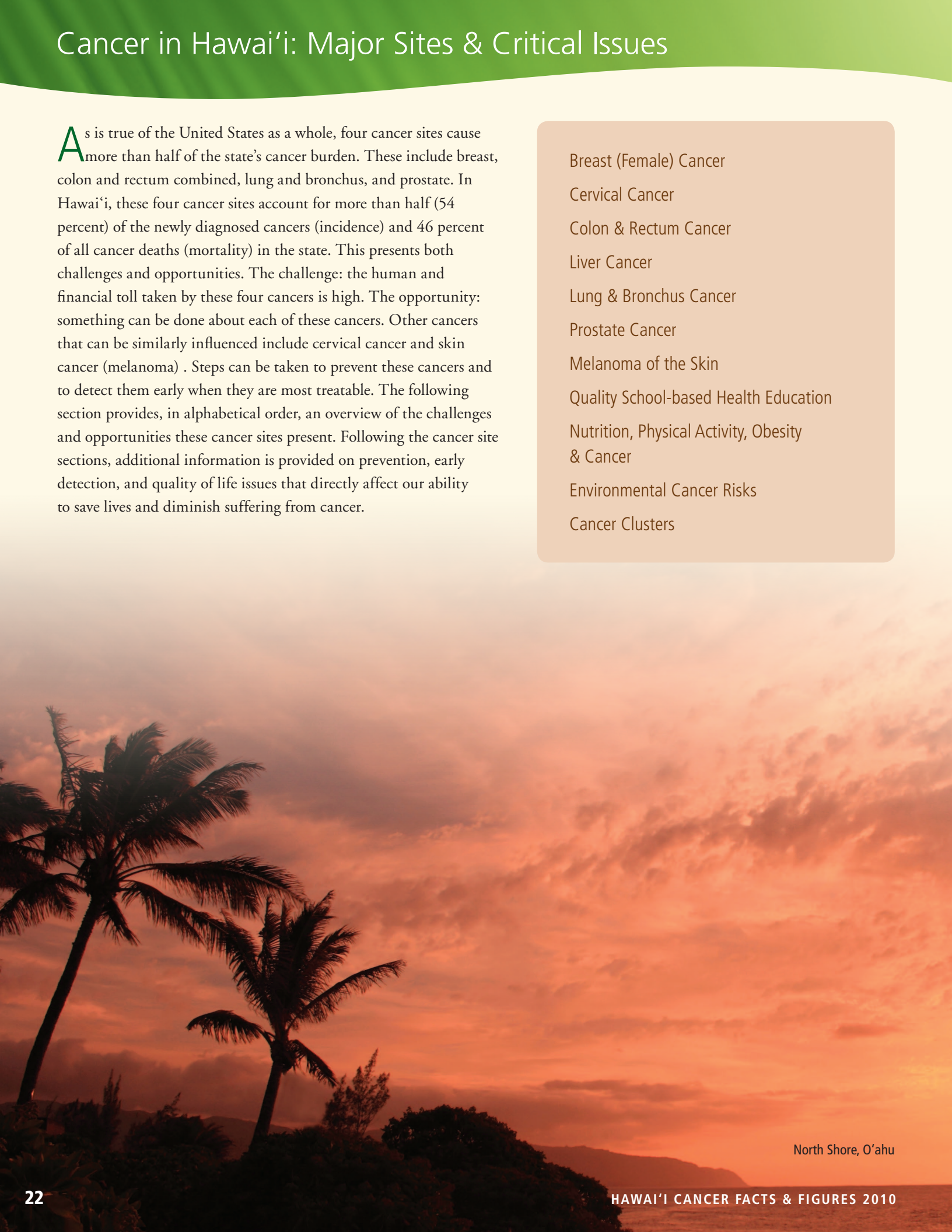
For a complete report, including confidence interval ranges at 95 percent probability, visit the Hawai'i Department of Health website, www.hawaii.gov/health/statistics/brfss/index.html. Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2007)

References:

1. Available at: www.publichealthreports.org/userfiles/117_5/117426.pdf.
2. Carter-Pokras, O. and Baquet, C. (2002) What is Health Disparity? Public Health Reports, Vol. 117, September-October.
3. National Association of Chronic Disease Directors. Health Equity Council, Definition of Health Disparities (2006). Available at www.chronicdisease.org/i4a/pages/Index.cfm?pageID=3447.
4. Institutes of Medicine, Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care, Washington, DC: The National Academy Press, 2002 www.nap.edu/books.
5. Pan American Health Organization and the World Health Organization (1999) Principles and Basic Concepts of Equity and Health, October. Available at www.paho.org/English/hdp/hdd/pahowho.pdf.
6. Citation on various formulations of the Social Determinants of Health (SDOH) are from: Raphael, D. (2006). Social determinants of health: Present status, unanswered questions and further directions. International Journal of Health Services, Vol. 36. No. 4, pp. 651-657.
7. Cooper, L. and Powe, N. (2004). Disparities in Patient Experiences, Health Care Processes, and Outcomes: The Role of Patient-Provider Racial, Ethnic, and Language Concordance: The Commonwealth Fund.

Cancer in Hawai'i: Major Sites & Critical Issues

As is true of the United States as a whole, four cancer sites cause more than half of the state's cancer burden. These include breast, colon and rectum combined, lung and bronchus, and prostate. In Hawai'i, these four cancer sites account for more than half (54 percent) of the newly diagnosed cancers (incidence) and 46 percent of all cancer deaths (mortality) in the state. This presents both challenges and opportunities. The challenge: the human and financial toll taken by these four cancers is high. The opportunity: something can be done about each of these cancers. Other cancers that can be similarly influenced include cervical cancer and skin cancer (melanoma) . Steps can be taken to prevent these cancers and to detect them early when they are most treatable. The following section provides, in alphabetical order, an overview of the challenges and opportunities these cancer sites present. Following the cancer site sections, additional information is provided on prevention, early detection, and quality of life issues that directly affect our ability to save lives and diminish suffering from cancer.



North Shore, O'ahu

Breast (Female) Cancer

Approximately 860 cases of female invasive breast cancer are diagnosed in Hawai'i each year, and there are about 120 deaths caused by the disease each year. This does not include ***in situ*** breast cancers that have not invaded or penetrated surrounding tissues. Breast cancer is the most common cancer among women in Hawai'i, regardless of race/ethnicity. Among Hawai'i's females, it accounts for about one-third of all cancer cases, but just over 14 percent of the cancer deaths. Most female breast cancer incidence (more than 60 percent) occurs in women age 55 and older (Figure 7). On average, one man dies from breast cancer each year in Hawai'i.

Native Hawaiian females have the highest breast cancer incidence and mortality rates compared to Hawai'i's major racial/ethnic groups (Figure 8). Japanese females have the second highest incidence rates, followed by Whites, who have the second highest mortality rates. Native Hawaiian females have an incidence 1.24 times that of Filipino females, who display the lowest female breast cancer incidence rates in Hawai'i. The death rate for Native Hawaiian females is 1.2 times that of Filipino females, more than 1.5 times the mortality rate for Chinese, 1.5 times that of Japanese females, and 1.04 times that of White females in Hawai'i (Figure 8). This finding may suggest major differences in early diagnosis, treatment, and other risk factors influencing this disease.

The risk of breast cancer is higher in women who have never had children or had the first child after age 30, who consume alcoholic beverages, or who have a personal or family history of breast cancer, biopsy-confirmed atypical hyperplasia, increased breast density, a long menstrual history, obesity after menopause, and recent use of oral contraceptives or post-menopausal estrogen and progestin. Vigorous physical activity and maintenance of a healthy body weight are associated with lower risk.

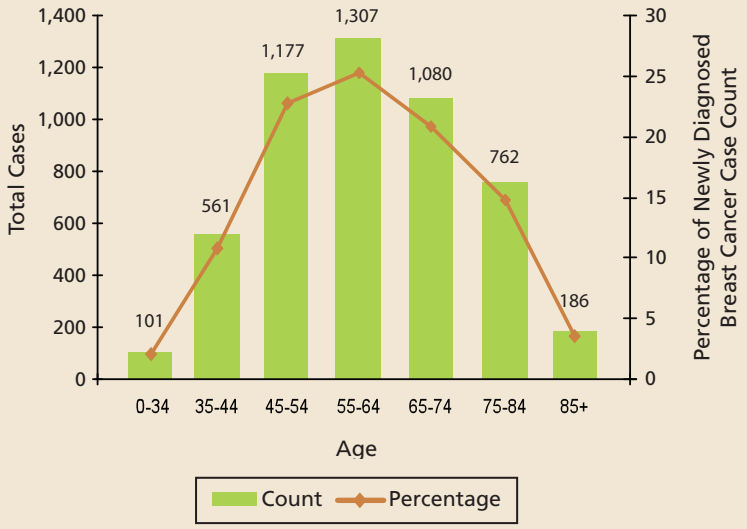
Similar to national trends, the incidence of breast cancer in Hawai'i has increased during the last two decades, more than doubling among Filipino and Japanese women. Rates roughly doubled for all groups over the years of observation by the Hawai'i Tumor Registry, but recently show reduced incidence rates for Native Hawaiian, Chinese, and White women for 2000-2005 (Figure 9, Table 12). The rise in breast cancer incidence and decrease among some groups is not clearly understood, but could be due in part to increased screening efforts. Mortality rates have declined across all race/ethnic groups (Table 12), except for Filipino and Japanese females in the most recent years (2000-2005).

Female Breast Cancer, U.S. & Hawai'i

Female, All Race/ Ethnicities	Incidence Rate	Mortality Rate
U.S.	123.6	25.0
Hawai'i	125.0	18.2

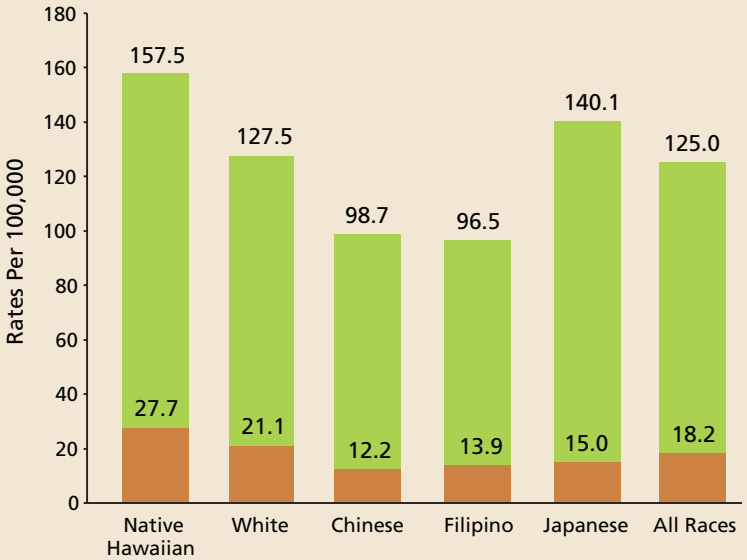
Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i data (2000-2005); Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. data (2001-2005); Cancer in North America, NAACCR

Figure 7. Female Breast Cancer Incidence by Age at Diagnosis, Hawai'i, 2000-2005



Invasive cases only are included for incidence rates. Cases are 6 year totals.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 8. Female Breast Cancer Incidence & Mortality Rates by Race/Ethnicity, Hawai'i, 2000-2005



	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Cases/yr	156	240	49	96	269	862
Deaths/yr	27	41	7	14	32	129

Invasive cases only are included for incidence rates. Cases are 6 year totals.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai''i, University of Hawai'i

When breast cancer is diagnosed at its earliest stage, survival is excellent. When detected at a localized stage, the 5-year relative survival is 98 percent. That rate falls to 84 percent when the cancer is detected at a regional stage, and 23 percent when detected at a distant stage. Approximately seven of every ten cases of female invasive breast cancer in Hawai'i are detected at early stage (localized). Stage of diagnosis varies among different racial/ethnic groups in Hawai'i, with Chinese, Japanese, and Whites more likely to be diagnosed when the disease is at its earliest stage, compared to Native Hawaiian and Filipino females (Table 3).

A breast health program of regular mammograms starting at age 40 and clinical breast examinations as part of a periodic health exam are the most important actions a woman can take to detect breast cancer at its earliest stage. Breast self exam is an option for women starting in their 20s. Women at increased risk (e.g., family history, genetic tendency, past breast cancer) should speak with their doctors about benefits and limitations of more frequent and/or additional tests. In 2007, more than 92 percent of women in Hawai'i age 40 and older reported ever having a mammogram. Of those 92 percent, three-quarters reported having the mammogram within the past two years (Table 13). This means approximately 2/3 of all women interviewed (those who have and have not ever had a mammogram) reported following the American Cancer Society guidelines for mammography screening.

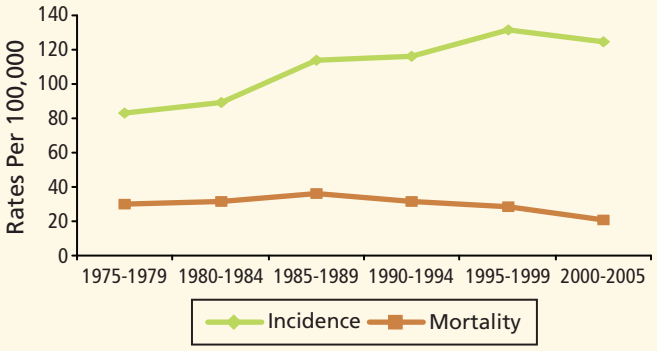
Of women who had ever had a mammogram, Filipino and "Other" females were least likely to report having been screened within the past two years (Table 13). Screening rates are lower on O'ahu's neighboring island counties compared to O'ahu (Honolulu County).

Table 12. Trends in Female Breast Cancer Incidence Rates by Race/Ethnicity, Hawai'i, 1975-2005

	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Incidence						
1975-1979	119.9	122.7	80.8	44.8	60.2	82.9
1980-1984	133.8	126.0	77.7	48.3	72.0	89.2
1985-1989	147.4	155.4	96.1	74.6	96.2	113.5
1990-1994	150.4	144.1	103.6	84.0	109.6	116.1
1995-1999	183.2	151.1	127.6	98.3	133.2	131.4
2000-2005	157.5	127.5	98.7	96.5	140.1	125.0
Mortality						
1975-1979	36.7	30.3	19.5	11.4	13.1	20.6
1980-1984	43.2	31.4	19.7	14.5	11.2	22.0
1985-1989	40.7	35.9	17.9	15.0	13.9	23.1
1990-1994	31.8	31.8	16.6	19.0	17.0	22.6
1995-1999	36.8	28.3	18.8	17.0	14.4	20.7
2000-2005	27.7	21.1	12.2	13.9	15.0	18.2

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 9. Trends in Female Breast Cancer Incidence & Mortality Rates, All Races/Ethnicities Combined, Hawai'i, 1975-2005



Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 13. Percentage of Women, Ages 40 & Older, Who Have Had a Recent Mamogram, Hawai'i, 2007

Demographic Characteristics	Ever Had a Mammogram (%)	Less Than 2 Years* (%)
TOTAL	92.6	75.9
AGE GROUP		
40-44 Years	74.1	58.7
45-54 Years	94.5	76.3
55-64 Years	95.3	83.1
65+ Years	96.9	77.9
RACE/ETHNICITY		
Native Hawaiian	91.8	76.1
White	93.1	76.0
Filipino	90.9	74.0
Japanese	94.5	78.6
Others	90.0	72.5
COUNTY		
Hawai'i	90.9	72.1
Honolulu	93.0	77.3
Kaua'i	92.7	73.6
Maui	92.0	72.8

*Denominator = Those women who responded "yes" to ever having a mammogram with 92.6% of the 2,906 women surveyed stated the had "ever had" a mammogram. Of this 92.6%, 75.9% stated it was within the past 2 years. For a complete report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website, 2001 State of Hawai'i Behavioral Risk Factor Surveillance Report at: www.hawaii.gov/health/statistics/brfss/index.html.
Source: Hawai'i State Department of Health, Behavioral Risk Factor Surveillance System (2007)

Cervical Cancer

Approximately 50 women in Hawai'i are diagnosed with invasive cervical cancer and another 6 women die from the disease each year. As cervical cancer screening has become more prevalent, pre-invasive lesions of the cervix are detected far more frequently than invasive cancer. Invasive cervical cancer represents less than 2 percent of all female cancer incidence and 2 percent of all female cancer mortality in Hawai'i. Approximately 66 percent of new cases of invasive cervical cancer are diagnosed in women below the age of 55 (Figure 10). Approximately 53 percent of cervical cancer deaths occur among women younger than age 55.

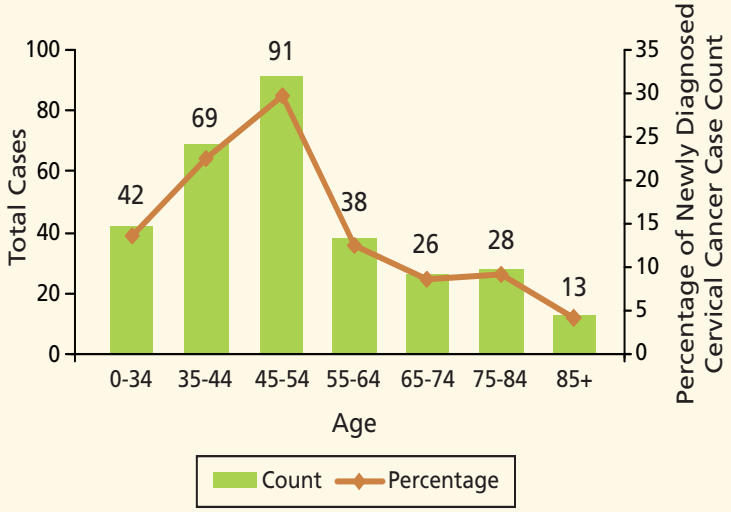
When considering all racial/ethnic groups in Hawai'i, cervical cancer ranked twelfth in diagnosed female cancers. Filipino and Native Hawaiian females have the highest incidence and mortality rates for cervical cancer, followed by Whites and Japanese (Figure 11). Rates for both incidence and mortality due to cervical cancer have declined over the past 30 years (Figure 12). There were fewer than 20 cervical cancer deaths per racial/ethnic group in the six year time period between 2000-2005 except among Native Hawaiians with 27 deaths.

Invasive Cervical Cancer, U.S. & Hawai'i

Female, All Race/ Ethnicities	Incidence Rate	Mortality Rate
U.S.	8.5	2.5
Hawai'i	7.8	2.3

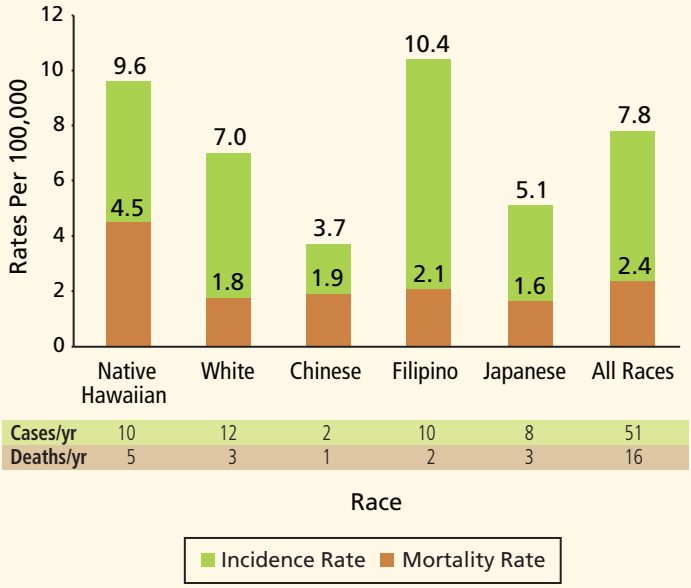
Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i data (2000-2005); Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. data (2001-2005); Cancer in North America, NAACCR

Figure 10. Cervical Cancer Incidence by Age at Diagnosis, Hawai'i, 2000-2005



Invasive cases only are included for incidence rates. Cases are 6 year totals. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 11. Cervical Cancer Incidence & Mortality Rates by Race/Ethnicity, Hawai'i, 2000-2005



Rates are per 100,000 populations and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Waimea Canyon, Kaua'i

Cervical Cancer Prevention, Human Papillomavirus (HPV), Early Detection & Screening

Of all cancers, cervical cancer is among the most amenable to prevention and early detection through screening.

Cervical cancers are caused by certain types of ***Human papillomaviruses (HPV)***. HPVs are a group of more than 100 related viruses. Approximately 40 HPV types can be transmitted to the genitals through sexual contact. Cervical HPV infections are very common and most infections go away on their own after a short time. However, in some women, HPV can develop into a longer lasting infection. Persistent infection with certain types of HPV increases the risk of cervical cancer. HPV is the primary cause of cervical cancer and also contributes to the development of cancers of the anus, vulva, vagina, penis, oral cavity, and pharynx. HPV also causes genital warts.

In recent years, major advances have been made toward the prevention of cervical cancer with the availability of HPV vaccines. Since 2006, two vaccines against HPV have been approved by the U.S. Food and Drug Administration. Gardasil® protects against cervical, vaginal, and vulvar cancers caused by HPV 16 and 18. It also protects against genital warts caused by HPV 6 and 11. Gardasil® is approved for use in females and males aged 9 to 26.

Cervarix® protects against cervical cancers caused by HPV 16 and 18 and is approved for use in females aged 10 to 25. Both vaccines are given as a series of three shots administered over a 6-month period.

Cervical cancer can also be prevented or found early through regular screening. Pap smears can detect precancers (cell changes on the cervix that might become cervical cancer). Even women who have been vaccinated against HPV need to have regular Pap smears in order to detect precancers caused by HPV types not covered in the vaccine.

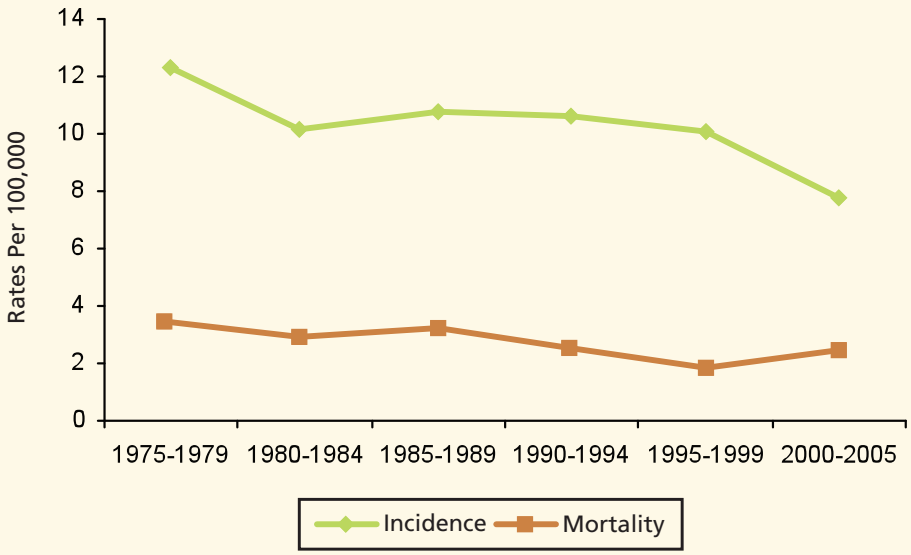
Over the past 30 years, the high prevalence of Pap screening has led to a significant reduction in the incidence of invasive cervical cancer. In 2007, data from an annual survey of women age 18 and older in Hawai‘i showed that close to 95 percent of the respondents indicated ever having a Pap test (Table 15). Of those women, about 82 percent stated having the exam less than 3 years ago. This means approximately 9 out every 10 women interviewed (those who have and have not ever had a Pap test) reported following the American Cancer Society guidelines for cervical cancer screening. Screening rates are highest among women ages 25 to 44 and across ethnic groups, but lower on O‘ahu’s neighboring islands.

Table 14. Trends in Cervical Cancer Incidence Rates by Race/Ethnicity, Hawai‘i, 1975-2005

	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Incidence						
1975-1979	20.6	11.7	10.6	10.2	9.6	12.3
1980-1984	14.7	10.5	8.0	11.7	6.0	10.2
1985-1989	13.3	13.6	8.2	13.0	6.5	10.8
1990-1994	13.6	11.7	6.7	10.4	9.5	10.6
1995-1999	13.1	9.1	8.4	12.0	7.0	10.1
2000-2005	9.6	7.0	3.7	10.4	5.1	7.8
Mortality						
1975-1979	9.9	1.7	4.2	2.9	2.5	3.4
1980-1984	5.3	4.0	2.5	0.2	1.9	3.0
1985-1989	4.7	3.8	3.4	4.9	1.5	3.2
1990-1994	4.3	3.0	1.0	2.9	1.1	2.5
1995-1999	2.2	1.7	1.5	2.8	1.2	1.8
2000-2005	4.5	1.8	1.9	2.1	1.6	2.4

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Trends in mortality not presented due to small numbers (<20 per time period) in all race/ethnic groups.
Source: Hawai‘i Tumor Registry, Cancer Research Center of Hawai‘i, University of Hawai‘i

Figure 12. Trends in Cervical Cancer Incidence & Mortality Rates, All Races/Ethnicities Combined, Hawai'i, 1975-2005



Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 15. Percentage of Women, Ages 18 & Older, Who Have Had a Recent Pap Test, Hawai'i, 2007

Demographic Characteristics	Ever Had a Pap Smear (%)	Less Than 3 Years Ago* (%)
TOTAL	94.6	82.0
AGE GROUP		
18-24 Years	80.1	79.5
25-34 Years	97.3	92.4
35-44 Years	96.1	87.8
45-54 Years	98.1	84.8
55-64 Years	98.0	83.0
65+ Years	93.5	67.9
RACE/ETHNICITY		
Native Hawaiian	94.5	81.9
White	96.9	83.1
Filipino	93.6	82.7
Japanese	94.3	81.3
Others	91.4	80.3
COUNTY		
Hawai'i	95.6	81.1
Honolulu	94.4	83.0
Kaua'i	93.0	77.2
Maui	95.3	79.0

*Denominator = Those women who responded "yes" to ever having a Pap smear test. Statewide 94.6% of the 3,797 women surveyed stated they had "ever had" a Pap test. Of this 94.6%, 82.0% stated it was within the past three years. For a complete report, including confidence interval ranges at 95% probability, visit the State of Hawai'i Behavioral Risk Factor Surveillance Report Hawai'i Department of Health website at: www.hawaii.gov/health/statistics/brfss/index.html.
Source: Hawai'i State Department of Health, Behavioral Risk Factor Surveillance System (2007)

CANCER FACT: In Hawai'i, the five most common types of cancer women die of are: lung, breast, colorectal, pancreas, and ovary.

Colon & Rectum Cancer

Approximately 474 new cases of colon cancer and 219 cases of rectum cancer are diagnosed in Hawai'i each year. Colon cancer causes 172 deaths per year, while rectum cancer leads to approximately 44 deaths each year. Combined, colon and rectum cancers (also known as colorectal cancer) account for approximately 12 percent of all cancer incidence and 10 percent of all cancer mortality in Hawai'i, males and females combined. When considering the total number of newly diagnosed cancer cases, colorectal cancer is the third most common cancer among males (following prostate and lung) and second among females (following breast). For men and women combined, colorectal cancer is second (following lung) in the number of total cancer deaths in the state (Figure 3). The risk of colorectal cancer increases significantly with age. More than 80 percent of Hawai'i residents who develop colorectal cancer are age 55 or older at the time of diagnosis (Figure 13).

When considering differences among race/ethnicities, the highest incidence rates for colon cancer are among Japanese males in Hawai'i, followed by Chinese, Whites, and Native Hawaiians. Both Japanese males and females have the highest colon cancer incidence and mortality rates, respectively, by sex (Figures 14 and 15). Filipino females have the lowest colon cancer incidence rates (Figure 15). Filipino males have the highest incidence of rectum cancer, followed by Japanese males. Japanese females have the highest incidence rates for rectum cancers, although this is lower than the lowest rate among males. Differences in incidence rates among different racial/ethnic groups may be due, in part, to dietary and physical activity patterns. In terms of mortality, studies suggest a number of reasons for the disparity, including diagnosis at late stages, when cancer is less likely to be successfully treated.

Trends in colorectal cancer incidence and mortality reveal that, overall, for all races combined; rates have dropped over the last 30 years (Figure 16). However, when looking at colon and rectum cancers individually by race/ethnicity, Native Hawaiian males show an increase in colorectal cancer incidence rates, but a decline in mortality rates (Table 16). Such increases in incidence could represent a "catch up" of Native Hawaiian males being screened for colorectal cancer. This can be good news as screening can lead to cancers being diagnosed at a very early stage when the disease is most curable.

Colorectal Cancer, U.S. & Hawai'i

	MALE		FEMALE	
	Incidence Rate	Mortality Rate	Incidence Rate	Mortality Rate
U.S.	61.2	22.7	44.8	15.9
Hawai'i	63.2	20.9	42.0	12.0

Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i data (2000-2005); Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. data (2001-2005); Cancer in North America, NAACCR

CANCER FACT: For men and women combined, colorectal cancer is the second leading cause of cancer deaths in Hawai'i.

A third of cancers could be cured if detected early and treated adequately.

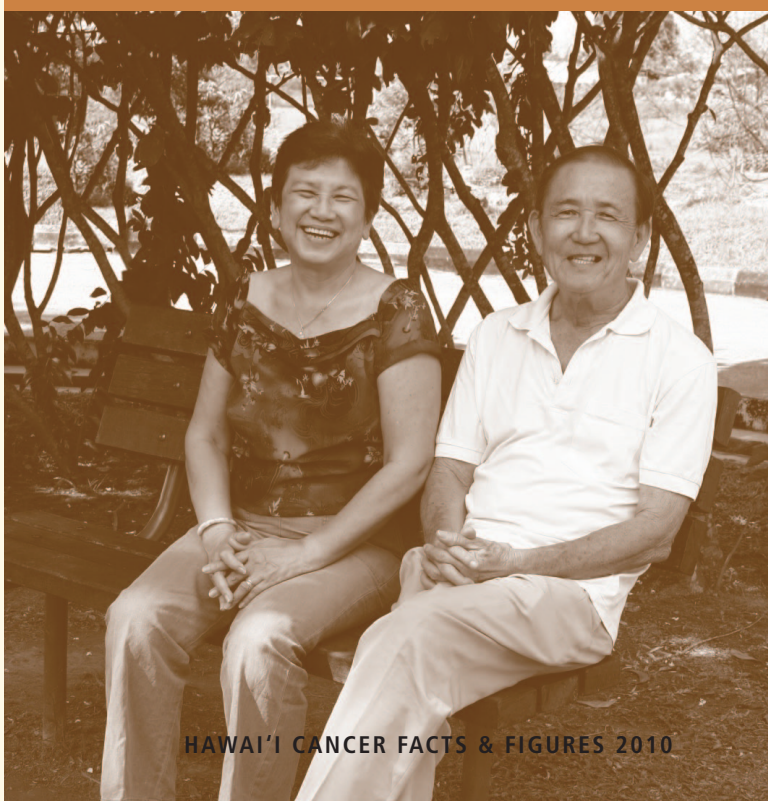
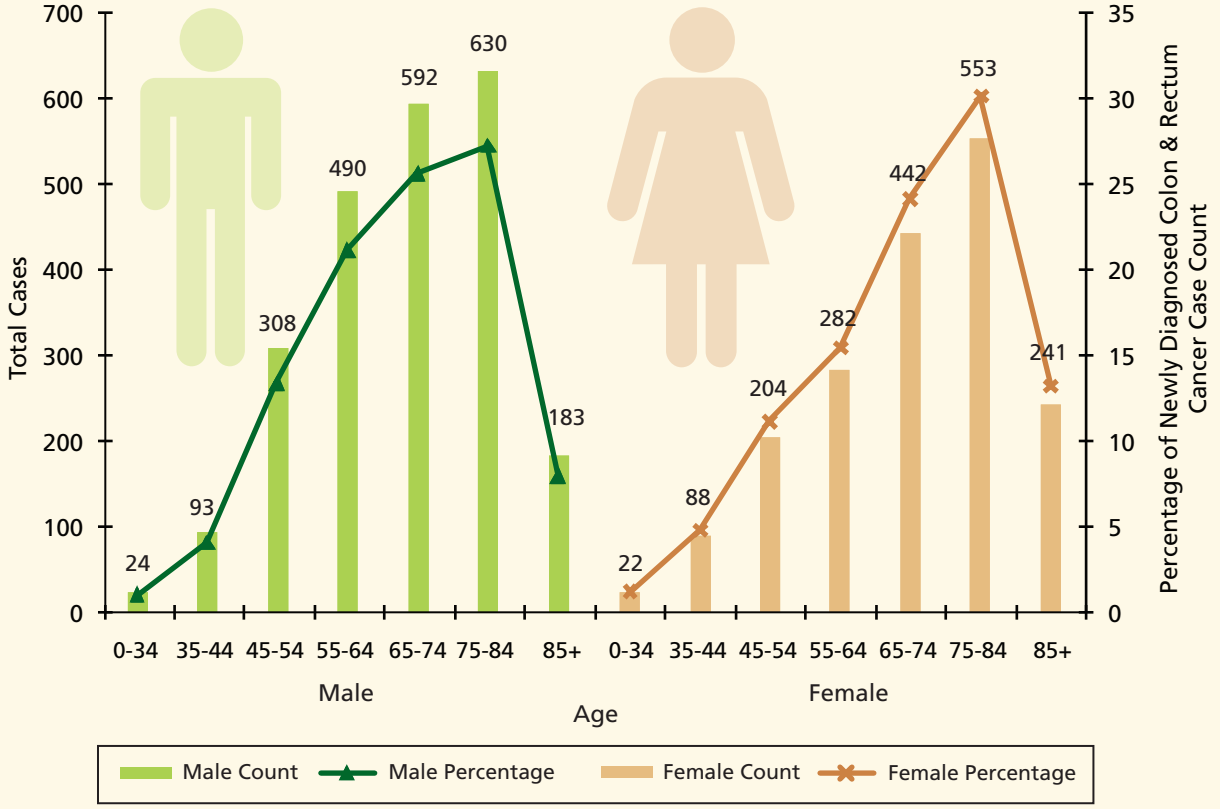
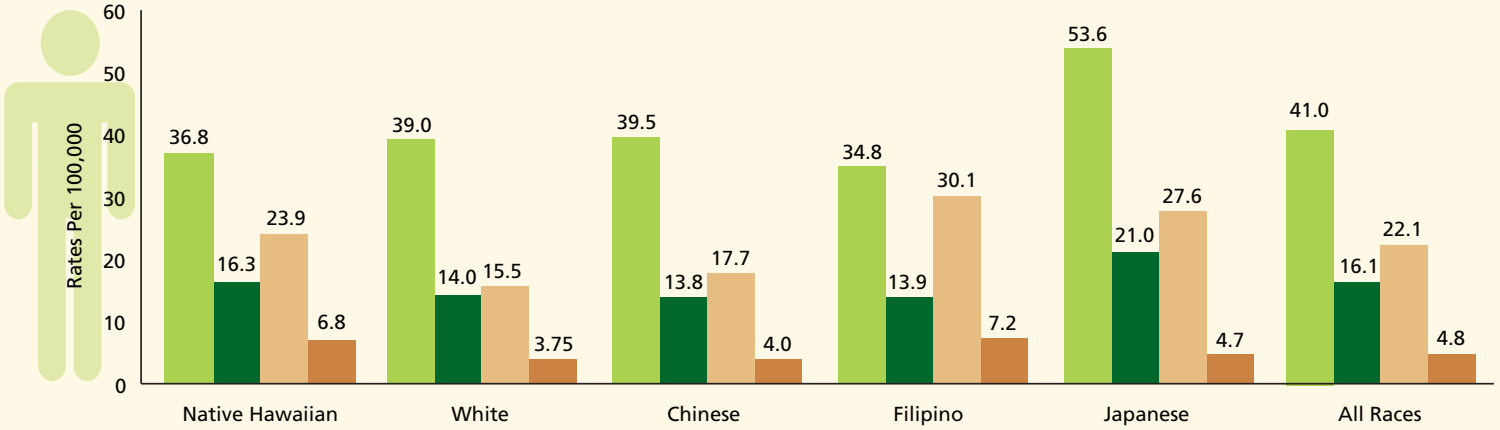


Figure 13. Colon & Rectum Cancer Incidence by Age at Diagnosis, Hawai'i, 2000-2005



Invasive cases only are included for incidence rates. Cases are 6 year totals.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

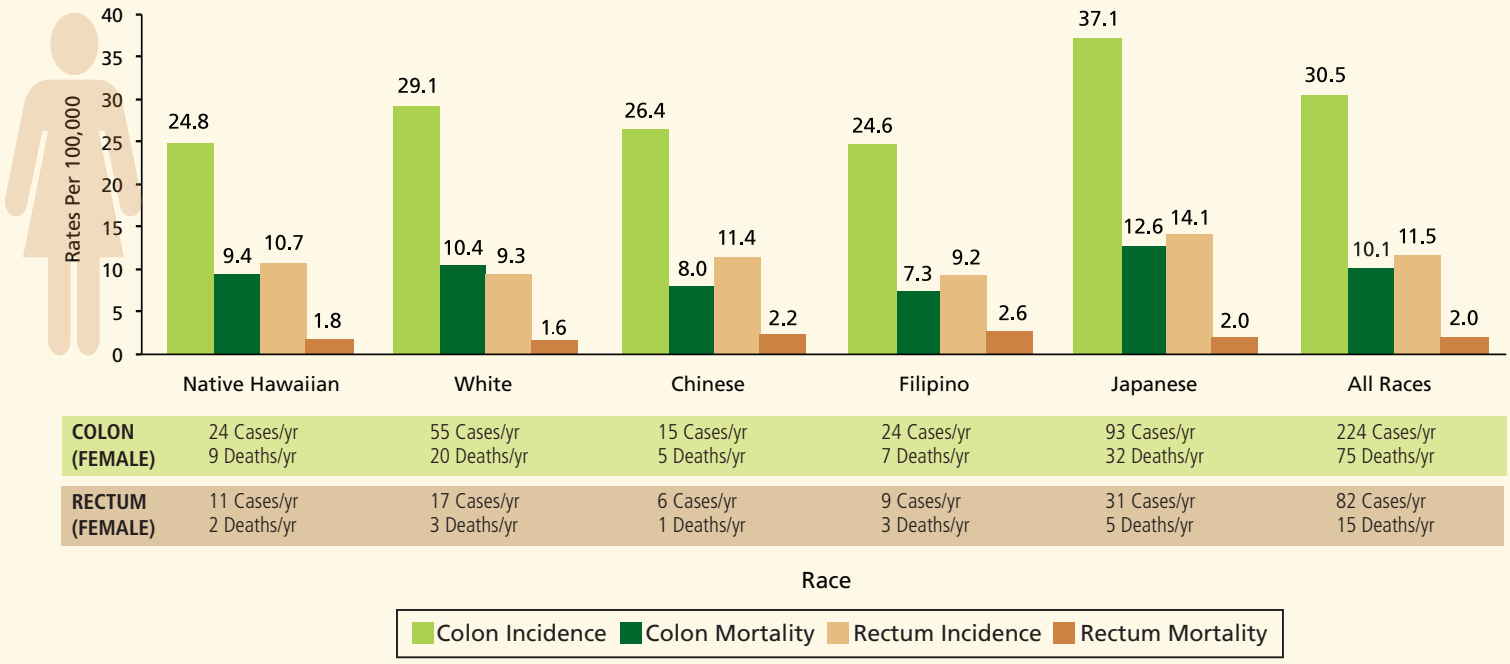
Figure 14. Colon & Rectum Cancer Incidence & Mortality Rates by Race/Ethnicity, Hawai'i Males, 2000-2005



	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
COLON (MALE)	27 Cases/yr 12 Deaths/yr	69 Cases/yr 24 Deaths/yr	17 Cases/yr 6 Deaths/yr	30 Cases/yr 12 Deaths/yr	95 Cases/yr 37 Deaths/yr	250 Cases/yr 97 Deaths/yr
RECTUM (MALE)	19 Cases/yr 5 Deaths/yr	29 Cases/yr 7 Deaths/yr	8 Cases/yr 2 Deaths/yr	26 Cases/yr 6 Deaths/yr	47 Cases/yr 8 Deaths/yr	137 Cases/yr 29 Deaths/yr

Note: Colon and rectum cancer excluding anus.
Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 15. Colon & Rectum Cancer Incidence & Mortality Rates by Race/Ethnicity, Hawai'i Females, 2000-2005



	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
COLON (FEMALE)	24 Cases/yr 9 Deaths/yr	55 Cases/yr 20 Deaths/yr	15 Cases/yr 5 Deaths/yr	24 Cases/yr 7 Deaths/yr	93 Cases/yr 32 Deaths/yr	224 Cases/yr 75 Deaths/yr
RECTUM (FEMALE)	11 Cases/yr 2 Deaths/yr	17 Cases/yr 3 Deaths/yr	6 Cases/yr 1 Deaths/yr	9 Cases/yr 3 Deaths/yr	31 Cases/yr 5 Deaths/yr	82 Cases/yr 15 Deaths/yr

Race

Colon Incidence | Colon Mortality | Rectum Incidence | Rectum Mortality

Note: Colon and rectum cancer excluding anus.
Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 16. Trends in Colon & Rectum Cancer Incidence & Mortality Rates by Sex & Race/Ethnicity, Hawai'i, 1975-2005

	MALE						FEMALE					
	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Incidence												
1975-1979	42.9	69.9	72.8	58.4	82.7	68.5	32.3	52.6	49.6	31.4	43.1	42.7
1980-1984	59.4	69.7	61.3	59.2	85.4	71.1	30.0	54.8	47.6	34.4	49.8	46.9
1985-1989	61.5	78.3	66.3	65.5	90.3	77.7	35.4	60.8	50.0	33.9	50.8	49.3
1990-1994	58.4	76.9	66.3	56.6	81.2	71.2	47.4	50.8	43.2	40.0	46.1	45.8
1995-1999	58.9	65.0	51.4	72.3	82.0	67.9	45.5	43.5	45.8	34.5	53.7	45.0
2000-2005	60.7	54.4	57.2	64.9	81.3	63.2	35.4	38.4	37.9	33.8	51.3	42.0
Mortality												
1975-1979	20.6	22.4	15.9	31.1	35.3	27.2	14.6	25.3	21.7	11.8	16.5	18.1
1980-1984	23.4	28.7	29.5	21.6	27.7	26.6	15.8	20.7	13.6	8.1	16.8	16.2
1985-1989	28.4	24.9	18.9	28.2	28.7	26.9	17.1	24.4	14.4	9.9	18.4	18.1
1990-1994	25.6	28.6	19.4	18.8	27.1	24.9	15.9	17.5	17.0	12.0	13.6	15.1
1995-1999	24.0	19.9	13.2	16.8	22.4	19.8	16.3	13.6	12.3	9.7	13.4	12.9
2000-2005	23.1	17.7	17.8	21.0	25.6	20.9	11.2	12.0	10.2	10.0	14.6	12.0

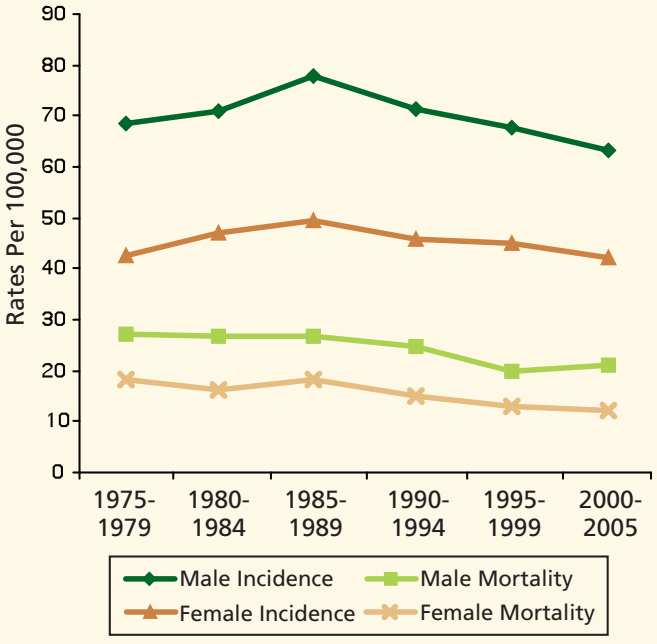
Note: Colon and rectum cancer excluding anus.
Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Approximately 90 percent of all colorectal cancer cases and deaths are thought to be preventable. Screening tests that detect occult blood in the stool or identify adenomatous polyps can prevent the occurrence of colorectal cancers by allowing the detection and removal of pre-cancerous lesions. Potentially modifiable risk factors include healthy dietary patterns, regular physical activity, and avoidance of obesity and smoking. Non-modifiable risk factors include a strong family history of colon cancer or adenomatous polyps. However, almost 75 percent of all colon cancers occur in people with no known predisposing factors.

Survival from colorectal cancer is more than 90 percent when the cancer is diagnosed before it has extended beyond the intestinal wall. On average, only about 44 percent of the 4,152 cases of colon and rectum cancers diagnosed in Hawai'i between 2000 and 2005 were diagnosed at an early stage (Table 3).

About one-half of adults aged 50 and older reported ever having a fecal occult blood test (FOBT). Of those, over 20 percent report having a FOBT in the past year (Table 17). Screening rates are higher as people age, and higher among those in Honolulu County. Rates are similar across ethnic groups, but Japanese reported the highest rates having a FOBT in the past year. More than 50 percent also reported ever having the recommended colorectal screening exams (sigmoidoscopy/colonoscopy). Reported colorectal screening rates increase with age, and rates are lower on the island of Hawai'i followed by Maui. Rates are lowest among Filipinos and Native Hawaiians. Of those reporting a sigmoidoscopy, approximately 30 percent had one in the past 2 years. Again, like the FOBT screening, rates increase in older ages.

Figure 16. Trends in Colorectal Cancer Incidence & Mortality Rates, All Races/Ethnicities Combined, Hawai'i, 1975-2005



Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 17. Percentage of Adults, Ages 50 & Older, Who Have Ever Had or Recently Had Fecal Occult Blood Test & Colon/Rectum Exam, Hawai'i, 2007

Demographic Characteristics	Ever Had a Fecal Occult Blood Test (%)	Fecal Occult Blood Test Within the Past Year* (%)	Ever Had a Sigmoidoscopy/ Colonoscopy (%)	Sigmoidoscopy/ Colonoscopy Within the Past 2 Years** (%)
TOTAL	49.5	21.2	57.5	27.6
AGE GROUP				
50-54 Years	37.0	15.1	36.0	15.6
55-64 Years	51.2	21.7	56.1	29.4
65+ Years	55.0	24.1	70.2	36.8
SEX				
Male	47.0	21.5	58.8	27.9
Female	51.7	20.9	56.4	30.6
RACE/ETHNICITY				
Native Hawaiian	47.4	20.4	48.4	22.3
White	51.8	21.5	63.1	33.0
Filipino	41.1	21.6	35.9	18.0
Japanese	53.6	23.0	66.4	34.5
Others	45.5	16.4	52.8	26.4
COUNTY				
Hawai'i	45.9	17.8	56.1	29.3
Honolulu	50.9	22.1	58.8	29.2
Kaua'i	44.5	17.9	59.0	29.8
Maui	47.8	21.2	50.0	30.4

*Denominator = Those individuals who responded "yes" to ever having a FOBT. Statewide 49.5 percent of the 3,643 adults age 50 and older who were surveyed stated the had "ever had" a FOBT. Of this 49.5 percent, 21.2 percent stated it was within the past year.

**Denominator = Those adults aged 50 and older who responded "yes" to ever having a sigmoidoscopy or colonoscopy; Statewide, 57.5 percent of the 3,641 adults aged 50 and older who were surveyed stated they had "ever had" a sigmoidoscopy/ colonoscopy; of this 57.5 percent, 27.6 percent stated it was with the past 2 years.

For a complete report, including confidence interval ranges at 95 percent probability, visit the Hawai'i Department of Health website at: www.hawaii.gov/health/statistics/brfss/index.html.
Source: Hawai'i State Department of Health, Behavioral Risk Factor Surveillance System (2007)

Liver (Hepatocellular) Cancer

Primary liver cancer, of which ***hepatocellular carcinoma (HCC)*** is the predominant form, is the only cancer for which increases in both incidence and mortality have been observed in the United States over the past several decades. Hawai'i has the highest rate of liver cancer in the U.S. From 2002-2006, the incidence of liver cancer in Hawai'i was 9.6 per 100,000 compared to 6.3 per 100,000 in the U.S. overall.

In the U.S., the major risk factors for liver cancer include chronic infection with Hepatitis B (HBV) and Hepatitis C (HCV) viruses as well as heavy alcohol consumption. Obesity, diabetes mellitus, and high cholesterol/lipid levels are also increasingly recognized as risk factors.

Hepatitis B is a contagious liver disease caused by the Hepatitis B virus. The CDC estimated 46,000 new infections in the U.S. in 2006. It is spread through the blood, semen and other body fluids primarily through birth to an infected mother, sexual contact with an infected person, or sharing contaminated needles, syringes or other injection drug equipment.

Hepatitis B can either be acute or chronic. Acute Hepatitis B is a short-term illness that occurs within the first 6 months after someone is exposed to the virus. Most infected people will recover with no lasting liver damage even if treated only by supportive measures. However, acute infection can – but does not always – lead to chronic infection. Chronic Hepatitis B infection is a long-term and serious disease that may lead to liver damage or cirrhosis and which may eventually lead to liver cancer (HCC). Tested through the years, the best preventive measure for Hepatitis B infection is the Hepatitis B vaccination.

The Hepatitis B vaccine has helped in the control of the Hepatitis B infection in the U.S. and other parts of the world. However, many of Hawai'i's immigrant populations come from areas where Hepatitis B is endemic and vaccination may not be widely used.[1-3]

Liver Cancer, U.S. & Hawai'i

	Incidence Rate	Mortality Rate
U.S.	6.3	5.1
Hawai'i	9.6	7.3

Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i data (2000-2005); Hawai'i Tumor registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. data (2001-2005); Cancer in North America, NAACCR

Hepatitis C is a contagious liver disease caused by the Hepatitis C virus. The CDC estimated 19,000 new infections in the U.S. in 2006. It is spread through the blood primarily from sharing of contaminated needles, syringes or other injection drug equipment and less commonly through sexual contact or birth to an infected mother.

Hepatitis C can be either acute or chronic. Acute illness is uncommon and infected persons will recover without any lasting liver damage. For most people, however, acute infection leads to chronic infection. Sixty to seventy percent of people with chronic Hepatitis C will develop chronic liver disease and 1%-5% will die from cirrhosis or liver cancer. Unlike Hepatitis B, there is no vaccine for Hepatitis C. The best way to prevent this infection is by avoiding behaviors that may spread the disease, especially injection drug use.

References:

1. www.hawaii.gov/dbedt/info/census/Folder.2005-10-13.2927/.
2. www.census.gov/population/www/socdemo/foreign/fbpHI.html.
3. Margolis, H.S., et al. Sem Liv Dis 1991; 11:84-92.
4. Tsai, C.S.N., et al. Seroepidemiology of Hepatitis B virus infection: analysis of mass screening in Hawai'i. Hepatol Int (2008) 2:478-485.

CANCER FACT: One fifth of all cancers worldwide are caused by chronic infections; for example, Human papillomavirus (HPV) causes cervical cancer and Hepatitis B virus (HBV) causes liver cancer.

Kepuhi Beach, Moloka'i

Lung & Bronchus Cancer

Approximately 700 new cases of lung and bronchus cancer (hereafter referred to as lung cancer) are diagnosed in Hawai'i each year. About 500 residents die from the disease. Lung cancer is the second most common cancer diagnosed among men and third most common among women in Hawai'i. It is first, however, in the number of cancer-related deaths among both men and women, all racial/ethnic groups combined. Lung cancer, caused primarily from smoking, leads to more deaths every year in Hawai'i than do breast, prostate, and colorectal cancers combined (Figure 3). This is due in part to lung cancer most often being diagnosed at a later stage (Table 3). The risk of lung cancer increases significantly with age. Close to 90 percent of Hawai'i residents who develop lung cancer are age 55 or older at the time of diagnosis (Figure 17).

Sex and race/ethnicity also are factors in lung cancer incidence and mortality rates. Lung cancer incidence and mortality rates among males in Hawai'i are approximately twice that of Hawai'i's females. This is similar to national trends. Of special note is the disproportionate cancer borne by Native Hawaiian males. Lung cancer mortality rates in Native Hawaiian males are 1.4 - 1.8 times higher than those of Filipino, Chinese, Japanese, and White males (Figure 18).

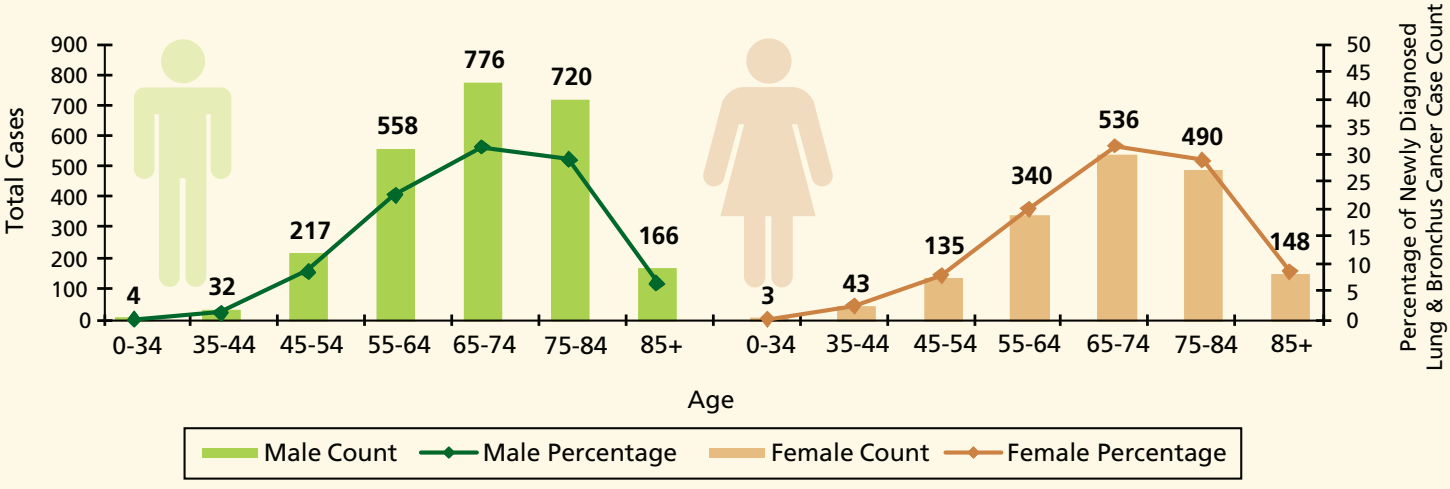
Native Hawaiian females, compared to other females in the state, also experience the highest lung cancer incidence and mortality rates, with mortality rates more than two times higher for Native Hawaiian females compared to Japanese females (Figure 19). For all race/ethnic groups combined, the lung cancer incidence and mortality rates decreased for males over the thirty-one year period from 1975 to 2005, while for females, the incidence rates increased over this period and the mortality rates increased up to year 1999 and decreased in the last 6-year time period (Figure 20). Race-specific trends reveal similar patterns, except that the incidence and mortality rates increased substantially for Filipino males over the time period.

Lung & Bronchus Cancer, U.S. & Hawai'i

	MALE		FEMALE	
	Incidence Rate	Mortality Rate	Incidence Rate	Mortality Rate
U.S.	87.3	72.0	55.4	41.0
Hawai'i	67.7	50.4	38.8	25.9

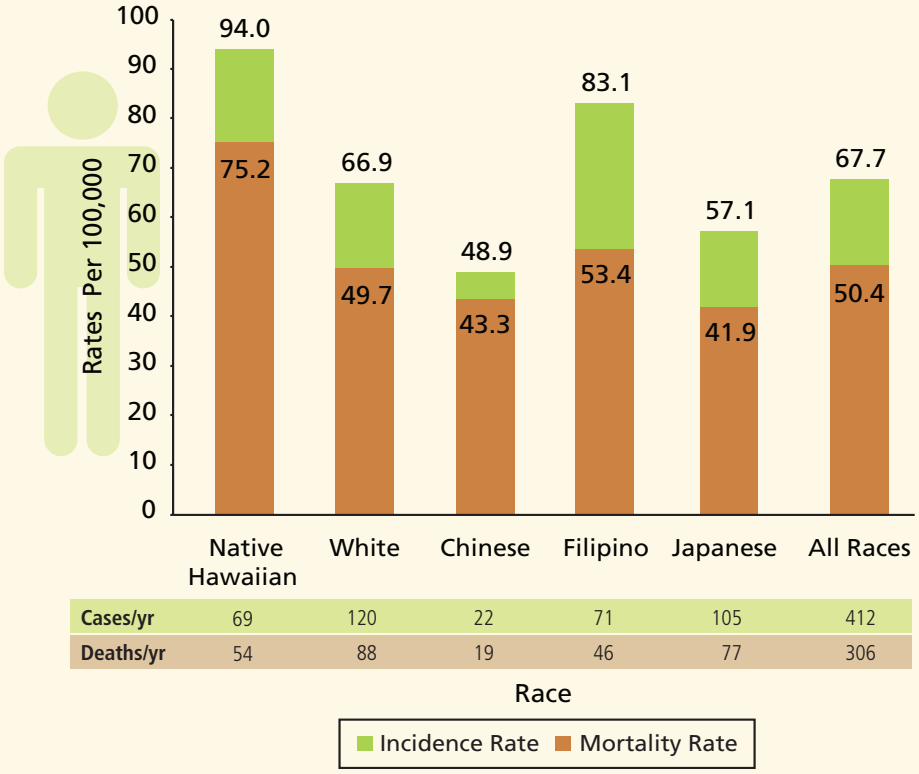
Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i data (2000-2005); Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. data (2001-2005); Cancer in North America, NAACCR

Figure 17. Lung & Bronchus Cancer Incidence by Age at Diagnosis, Hawai'i, 2000-2005



Invasive cases only are included for incidence rates. Cases are 6 year totals.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

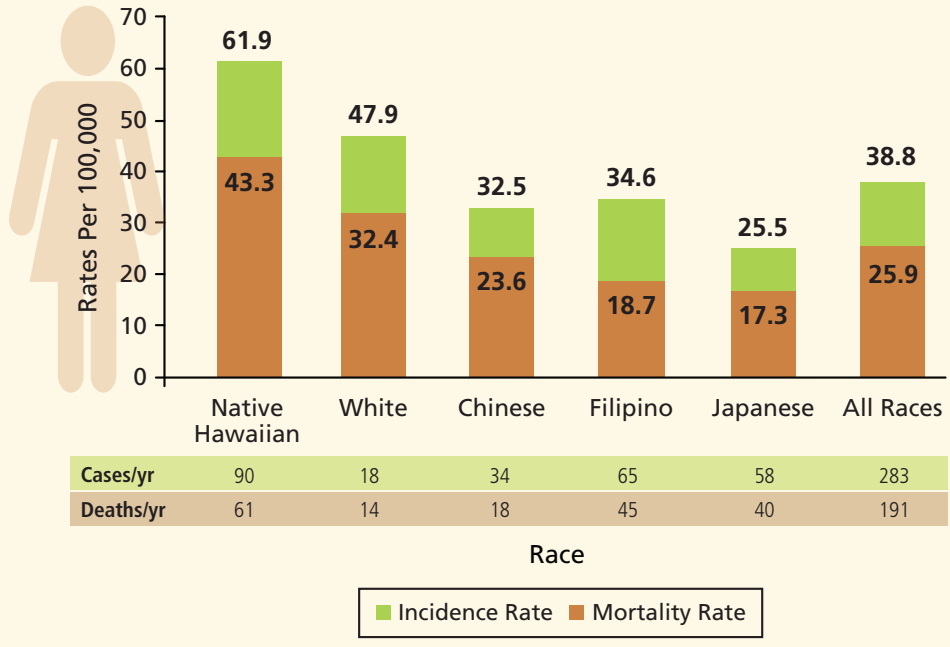
Figure 18. Lung & Bronchus Cancer Incidence & Mortality Rates by Race/Ethnicity, Hawai'i Males, 2000-2005



	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Cases/yr	69	120	22	71	105	412
Deaths/yr	54	88	19	46	77	306

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 19. Lung & Bronchus Cancer Incidence & Mortality Rates by Race/Ethnicity, Hawai'i Females, 2000-2005



	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Cases/yr	90	18	34	65	58	283
Deaths/yr	61	14	18	45	40	191

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

The National Lung Screening Trial in Hawai'i

Hawai'i is one of 30 sites in the U.S. where the National Cancer Institute is conducting a special research study. The National Lung Screening Trial (NLST) will compare two ways of detecting lung cancer: spiral computed tomography (CT) and standard chest X-ray. The trial began in 2003 and enrolled 50,000 current or former smokers nationwide. In Hawai'i 3,600 people are included. The American Cancer Society collaborated with the study researchers to ensure that the NLST reached full enrollment quickly by supporting promotional and outreach efforts in Hawai'i. The NLST is one of the most important preventative health trials to take place in our lifetime, in that it is attempting to determine whether or not screening for lung cancer can reduce deaths.

Lung cancer is the leading cause of cancer death in the world.

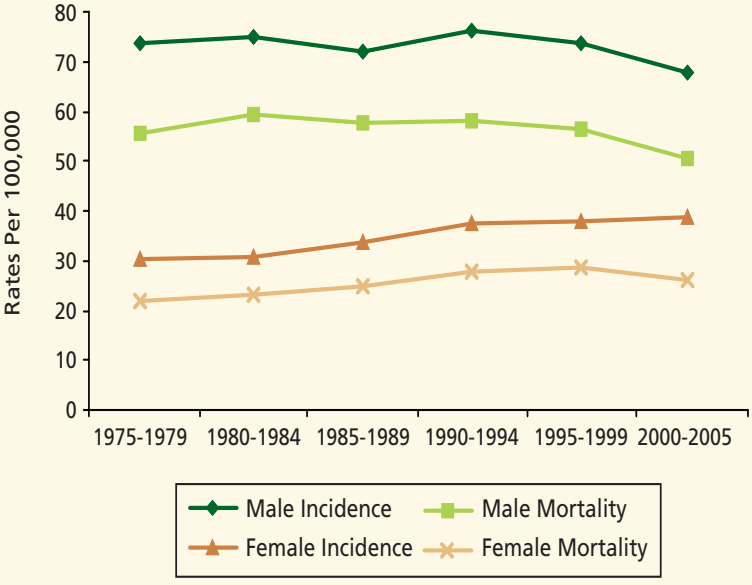
The Human & Economic Toll of Tobacco Use

Smoking is one of the most preventable causes of death in our society. Estimates from the Centers for Disease Control and Prevention (CDC) detail the human and economic toll tobacco continues to place on Hawai'i. Smoking is responsible for at least 30 percent of all cancer deaths and nearly 90 percent of lung cancers. Smoking is also associated with cancers of the mouth, pharynx, larynx, esophagus, pancreas, cervix, kidney, and bladder. Smoking is a major cause of heart disease, cerebrovascular disease, chronic bronchitis, and emphysema, and is associated with gastric ulcers. In addition, smoking during pregnancy causes about 1,000 infant deaths nationwide each year.

Secondhand smoke (SHS) also contains numerous carcinogens. Nationwide, secondhand smoke causes approximately 3,000 lung cancer deaths each year among nonsmokers. Each year, exposure to secondhand smoke causes 150,000 to 300,000 lower respiratory tract infections (such as pneumonia and bronchitis) in U.S. infants and children younger than 18 months of age. Secondhand smoke also increases the number of asthma attacks in 200,000 to 1 million asthmatic children. Environmental Protection Agency: **www.epa.gov/smokefree/healtheffects.html.**

Recent mortality data show a substantial decline in male incidence and mortality for lung and bronchus cancer in the years 2000-2005, yet there has not yet been as substantial decline among women.

Figure 20. Trends in Lung & Bronchus Cancer Incidence & Mortality Rates, All Races/Ethnicities Combined, Hawai'i, 1975-2005



Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

CANCER FACT: The world-wide burden of cancer is unequal; more than 70 percent of all cancer deaths occur in low and middle income countries.

Everyone pays for tobacco use...

The economic toll tobacco places on Hawai'i is staggering. Smoking-attributable expenditures for adults over 18 years in Hawai'i in 2004 were estimated at $367 million (a single year estimate).

Productivity losses among adults over 35 years were estimated at $320 million for the years 2001-2004 (CDC-SAMMEC, 2009). The total costs are estimated at more than half a billion dollars ($500 million) each year for Hawai'i. These estimates are attributable to cigarette smoking only, and do not take into account deaths from other causes such as cigar and pipe smoking, smokeless tobacco use, exposure to secondhand smoke, and fires. In essence, everyone pays for tobacco use, either with our health, our pocketbooks, or both. The good news is that the state of Hawai'i, using tobacco settlement funds, invests a significant amount of revenue in tobacco prevention and control programs (Centers for Disease Control and Prevention as provided by the Hawai'i Department of Health, Chronic Disease Management and Control Branch, Tobacco Prevention and Education Program).

Nationwide Trends

- Nationwide, cigarette smoking among adults aged 18 and over declined 40 percent between 1965 and 1990 – from 42 percent to 25 percent. Smoking prevalence among adults showed modest declines between 1993 and 2000, and has remained at about 21 percent from 2003-2006.
- Although cigarette smoking became prevalent among men before women, the sex gap narrowed in the mid-1980s and has remained constant.
- Between 1983 and 1999, smoking among college graduates decreased almost 50 percent from 21 percent to 11 percent, but among adults without a high school education the percentage decreased only 22 percent from 41 percent to 32 percent.
- Per capita consumption of cigarettes continues to decline. After peaking at 4,345 cigarettes per capita in 1963, consumption among Americans 18 years and older decreased 53 percent to an estimated 2,037 cigarettes per capita in 2001.

CANCER FACT: In 2007, 7.9 million people died of cancer – 14 percent of all deaths worldwide.

Hawai'i Trends

- In Hawai'i, cigarette smoking rates among adults age 18 and older have seen a slow and steady decrease statewide since 1994, ranging from 20.5 percent in 1994 to 17.4 percent in 2004, with a recent decrease down to 15.4 percent in 2008. Rates are higher among Native Hawaiian/part Hawaiian adults, individuals with less than a high school education, and among adults with household incomes less than $15,000 per year (Table 19). This parallels the nationwide trend in stability of smoking rates which reflects persistent smoking rates among people with low income, occupation, and educational levels.
- Among high school (HS) students, reported lifetime use of cigarettes (ever use) dropped from 63.3 percent in 2000 to 38.3 percent by 2007, while current smoking decreased from 24.5 percent in 2000 to 9.7 percent in 2007, and frequent smoking was reduced from 10.3 percent in 2000 to 3.0 percent in 2007. Among middle school (MS), students reported lifetime use of cigarettes plummeted from 38.4 percent in 2000 to 14.7 percent in 2007, while current smoking went from 12.9 percent in 2000 to 4.2 percent in 2007, and frequent smoking decreased from 2.1 percent to less than 1 percent. (Table 20).

Table 18. Trends in Lung & Bronchus Cancer Incidence & Mortality Rates by Sex & Race/Ethnicity, Hawai'i, 1975-2005

	MALE						FEMALE					
	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Incidence												
1975-1979	129.4	97.9	60.3	43.1	63.0	73.5	48.1	41.3	25.4	32.0	20.4	30.4
1980-1984	114.1	102.7	50.7	45.1	64.5	74.8	56.7	47.1	26.8	23.8	15.5	30.6
1985-1989	117.3	102.3	46.9	55.3	53.3	72.2	58.7	56.9	30.3	23.1	17.0	33.6
1990-1994	115.2	94.5	71.1	70.2	55.3	76.1	61.4	56.4	36.3	33.6	20.2	37.3
1995-1999	101.1	79.2	71.7	90.1	56.4	73.7	69.3	51.5	31.6	34.6	23.9	38.1
2000-2005	94.0	66.9	48.9	83.1	57.1	67.7	61.9	47.9	32.5	34.6	25.5	38.8
Mortality												
1975-1979	125.6	61.3	47.0	35.8	47.3	55.6	41.7	29.3	17.9	19.0	14.1	21.7
1980-1984	81.1	80.3	38.5	37.6	52.3	59.3	44.4	34.6	20.2	17.8	12.2	23.3
1985-1989	107.4	81.1	35.7	41.6	40.6	57.5	44.1	41.6	20.1	14.9	13.9	24.9
1990-1994	102.9	68.9	50.1	43.9	42.2	58.1	47.8	41.4	30.4	24.7	14.2	27.8
1995-1999	81.4	62.7	57.9	62.1	43.2	56.4	55.5	39.7	24.4	23.7	17.2	28.5
2000-2005	75.2	49.7	43.3	53.4	41.9	50.4	43.3	32.4	23.6	18.7	17.3	25.9

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 19. Percentages of Adults, Ages 18 & Older, Who Report Current Smoking, Hawai'i, 2007

Demographic Characteristics	Current Smoker (%)
TOTAL	17.0
AGE GROUP	
18-24 Years	21.7
25-34 Years	24.3
35-44 Years	17.1
45-54 Years	17.7
55-64 Years	15.2
65+Years	8.3
SEX	
Male	19.7
Female	14.3
RACE/ETHNICITY	
Native Hawaiian	24.3
White	15.4
Filipino	16.4
Japanese	13.6
Others	19.4
HOUSEHOLD INCOME	
<$15,000	26.2
$15,000-24,999	25.6
$25,000-45,999	18.9
$50,000-74,999	12.6
>=$75,000	12.2
Unknown/Refused	18.5
COUNTY	
Hawai'i	19.4
Honolulu	16.5
Kaua'i	17.5
Maui	17.2

For a complete 2007 report, including confidence interval ranges at 95 percent probability, visit the Hawai'i Department of Health website at: www.hawaii.gov/health/statistics/brfss/index.html.
Source: Hawai'i State Department of Health, Behavioral Risk Factor Surveillance System (2007)

Table 20. Prevalence of Selected Tobacco Indicators by School Type, Hawai'i, YTS 2000, 2003, 2005 & 2007

	Middle School				High School			
Tobacco Indicator	2000 (%)	2003 (%)	2005 (%)	2007 (%)	2000 (%)	2003 (%)	2005 (%)	2007 (%)
Prevalence								
Used tobacco in past month (current use):								
Cigarettes	12.9	5.3	4.9	4.2	24.5	14.9	12.6	9.7
Cigar use	2.9	2.1	1.8	2.5	4.9	5.1	3.4	5.7
Smokeless tobacco	2.7	1.7	1.8	2.4	3.4	2.8	2.1	3.7
Pipes	2.9	2.8	2.2	2.8	3.7	4.1	2.8	3.9
Bidis (hand-rolled India cigarettes)	3.3	2.2	2.8	2.4	5.2	3.9	2.3	3.3
Any of the above forms of tobacco	15.6	8.4	7.9	7.6	27.1	18.7	15.4	14.2

Source: Hawai'i Youth Tobacco Survey:
www.hawaii.gov/health/healthy-lifestyles/tobacco/tobacco/resources/youth/2007HYTS.pdf

CANCER FACT: Tobacco use is the single largest preventable cause of cancer in the world.

Tobacco Advertising & Marketing Expenditures Decrease for Cigarettes & Increase for Smokeless Tobacco

The Federal Trade Commission's annual report on tobacco advertising and promotional expenditures revealed that tobacco marketing reached record highs in 2005. Findings show that spending on the marketing of tobacco products:

- Reached a record $15.2 billion in 2003 and then decreased to 13.1 billion in 2005 for cigarettes.
- Increased from 231.1 million in 2004 and 250.8 in 2005 for smokeless tobacco products.
- Increased price discounts for cigarette retailers and wholesalers to reduce prices to consumers as a marketing strategy.

Prostate Cancer

Approximately 800 cases of invasive prostate cancer are diagnosed in Hawai'i each year. More than 100 men die from the disease. Among males in all racial/ethnic groups prostate cancer is the leading type of cancer diagnosed. It is the third leading cause of cancer deaths among Chinese, Filipino, and Native Hawaiian men in Hawai'i, but the second among White men (Table 8). Prostate cancer accounts for approximately 27 percent of the cancer incidence and 10 percent of the cancer deaths among males in Hawai'i. Age is the strongest risk factor for prostate cancer. After age 60, prostate cancer incidence and mortality rates rise dramatically in all racial/ethnic groups. About 94 percent of Hawai'i's males who develop prostate cancer are age 55 or older at the time of diagnosis, and more than 72 percent are age 65 or older at the time of diagnosis (Figure 21).

Prostate cancer incidence rates are highest among Filipino males and mortality rates are highest among White males. Incidence and mortality rates are lowest among Native Hawaiian males in the state (Figure 22).

The overall pattern in Hawai'i is an increase in incidence from 1975-1994 and then a decrease which has remained steady. Mortality remains steady and shows a slight decrease in recent years. Incidence has increased among all groups, but there have been decreases in mortality among Whites, Chinese, and Native Hawaiians in recent years, but increases for Filipinos and Japanese compared to 31 years ago (Table 21).

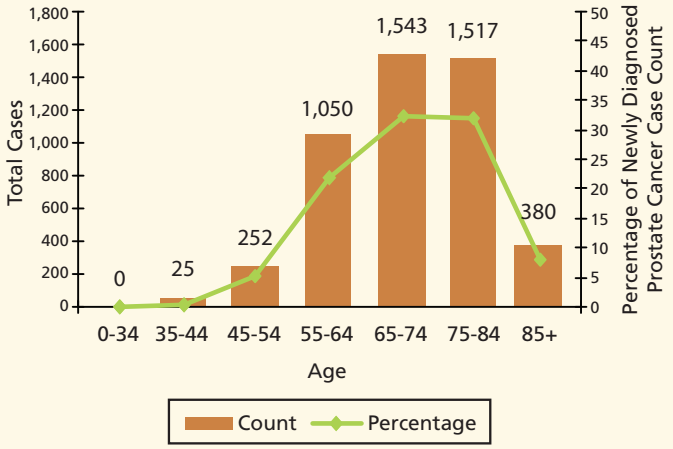
Five-year relative survival trends for prostate cancer have improved dramatically over the last several years. The 5-year relative survival for men diagnosed with prostate cancer in its earliest stages is nearly 100 percent. On average, 94 percent of the prostate cancer cases diagnosed in Hawai'i from 2000 to 2005 were done so at its earliest stage. State data indicate that Native Hawaiian males were least likely to have prostate cancer diagnosed at its earliest stage (Table 3).

Prostate Cancer, U.S. & Hawai'i

	Incidence Rate	Mortality Rate
U.S.	158.2	26.7
Hawai'i	131.0	19.2

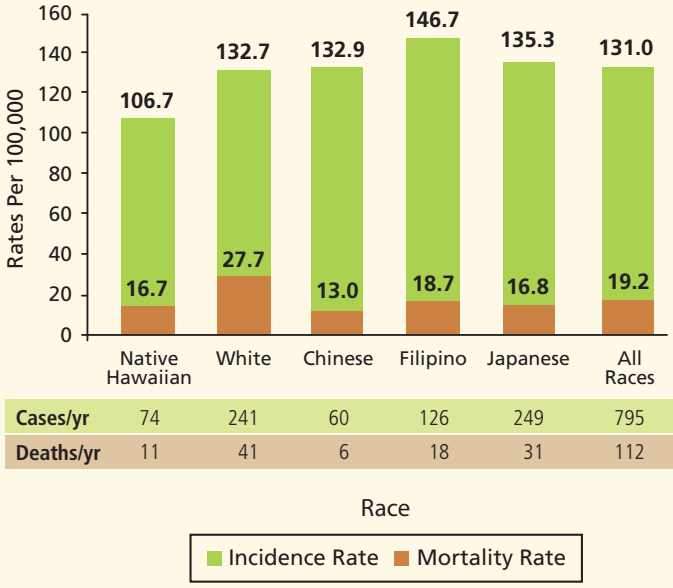
Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i data (2000-2005); Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. data (2001-2005); Cancer in North America, NAACCR

Figure 21. Prostate Cancer Incidence by Age at Diagnosis, Hawai'i, 2000-2005



Invasive cases only are included for incidence rates. Cases are 6 year totals. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 22. Prostate Cancer Incidence & Mortality Rates by Race/Ethnicity, Hawai'i, 2000-2005



	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Cases/yr	74	241	60	126	249	795
Deaths/yr	11	41	6	18	31	112

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

CANCER FACT: In Hawai'i, the five most common types of cancer men die of are: lung, colorectal, prostate, pancreas, and stomach.

According to the American Cancer Society's screening guidelines the prostate-specific antigen (PSA) test and the digital rectal examination (DRE) should be offered annually beginning at age 50 to men who have a life expectancy of at least 10 years. Men at high risk (Black/African American men and men who have a first-degree relative diagnosed with prostate cancer at a young age) should begin testing at age 45. Unlike many other cancers, prostate cancer often grows slowly. Information regarding potential risks and benefits of early detection and treatment should be discussed between physicians and patients, to assist men in making informed decisions about treatment.

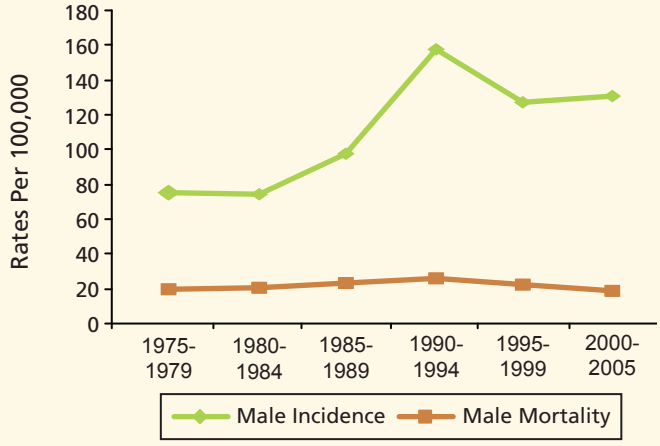
In Hawai'i, the 2007 Behavioral Risk Factor Surveillance Survey (BRFSS) revealed that of all men interviewed age 40 and older, fully 66 percent of all respondents reported ever having a DRE (Table 22). Of those who had ever had a DRE, nearly one-third reported having the test within the past year. Filipinos reported the lowest proportion having a DRE at 40.9 percent and the lowest proportion have a DRE within the past year (18 percent). Fully 56 percent of all male respondents reported ever having a PSA test and about 40 percent had this test within the past year. Like the DRE, the proportion reporting having this test is higher among older ages, and Filipinos are the least likely to report having a PSA test conducted.

Table 21. Prostate Cancer Incidence & Mortality Trends by Race/Ethnicity, Hawai'i, 1975-2005

	Native Hawaiian	White	Chinese	Filipino	Japanese	All Races
Incidence						
1975-1979	76.9	100.7	56.5	68.5	67.6	74.9
1980-1984	76.6	106.6	59.4	59.1	66.2	74.7
1985-1989	91.3	156.1	69.6	86.6	74.8	97.3
1990-1994	105.9	208.6	148.5	153.9	140.8	157.2
1995-1999	111.0	162.4	133.9	146.3	108.2	127.1
2000-2005	106.7	132.7	132.9	146.7	135.3	131.0
Mortality						
1975-1979	31.4	31.9	13.2	11.9	14.2	19.3
1980-1984	19.3	33.8	12.5	18.9	13.5	20.2
1985-1989	18.0	39.6	14.5	24.9	16.3	23.1
1990-1994	35.9	36.5	15.9	26.2	18.5	25.7
1995-1999	25.4	31.4	17.6	27.4	16.3	22.7
2000-2005	16.7	27.7	13.0	18.7	16.8	19.2

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 23. Trends in Prostate Cancer Incidence & Mortality Rates, All Races/Ethnicities Combined, Hawai'i, 1975-2005



Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Table 22. Percentage of Adult Males, Ages 40 & Older, Who Have Had a Recent Digital Rectal Exam (DRE) & Prostate Specific Antigen (PSA) Test, Hawai'i, 2007

Demographic Characteristics	Ever Had a DRE (%)	DRE Within the Past Year* (%)	Ever Had a PSA (%)	PSA Within the Past Year** (%)
TOTAL	66.3	31.5	55.5	39.4
AGE GROUP				
40-44 Years	45.0	15.0	25.2	14.8
45-54 Years	57.6	23.6	38.6	23.1
55-64 Years	74.3	36.7	69.3	50.5
65+ Years	81.7	45.4	80.8	62.8
RACE/ETHNICITY				
Native Hawaiian	65.2	28.5	46.1	27.6
White	79.0	37.0	64.7	44.0
Filipino	40.9	17.9	35.5	26.2
Japanese	65.5	33.2	58.2	45.7
Others	59.6	29.1	52.5	36.6

DRE = Digital Rectal Exam. PSA = Prostate Specific Antigen Test.
* Denominator = those who responded "yes" to ever having a DRE.
**Denominator = those who responded "yes" to ever having a PSA. For a complete report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website at: www.hawaii.gov/health/statistics/brfss/index.html.
Source: Hawai'i State Department of Health, Behavioral Risk Factor Surveillance System (2007)

Melanoma of the Skin

Approximately 233 new cases of melanoma of the skin are diagnosed in Hawai'i each year. On average, 23 Hawai'i residents will die from the disease. Skin cancer of all types is associated with exposure to the sun. Melanoma is much less common than basal cell and squamous cell skin cancers, but it is far more serious. Our state's intense year-round sunshine puts our citizens, especially those who have fair skin and/or who work or spend a great deal of recreational time in the sun, at greater risk of melanoma. Age is another factor associated with melanoma incidence and mortality rates. Although melanoma is rare in children, incidence increases beginning in the early teenage years and continues to increase with advancing age (Figure 24).

Race/ethnicity is the leading factor in all skin cancers, including melanoma. Melanoma is primarily a disease of Whites (Figure 25). White males have melanoma skin cancer incidence rates double those of White females and more than twenty times higher than incidence rates of Japanese, Native Hawaiian, and Filipino males. Deaths from melanoma of the skin also are higher for White males and females compared to all other racial/ethnic groups in the state. In the six-year period from 2000 to 2005, White males and females were the only race/ethnic group in Hawai'i to have more than 10 deaths due to melanoma.

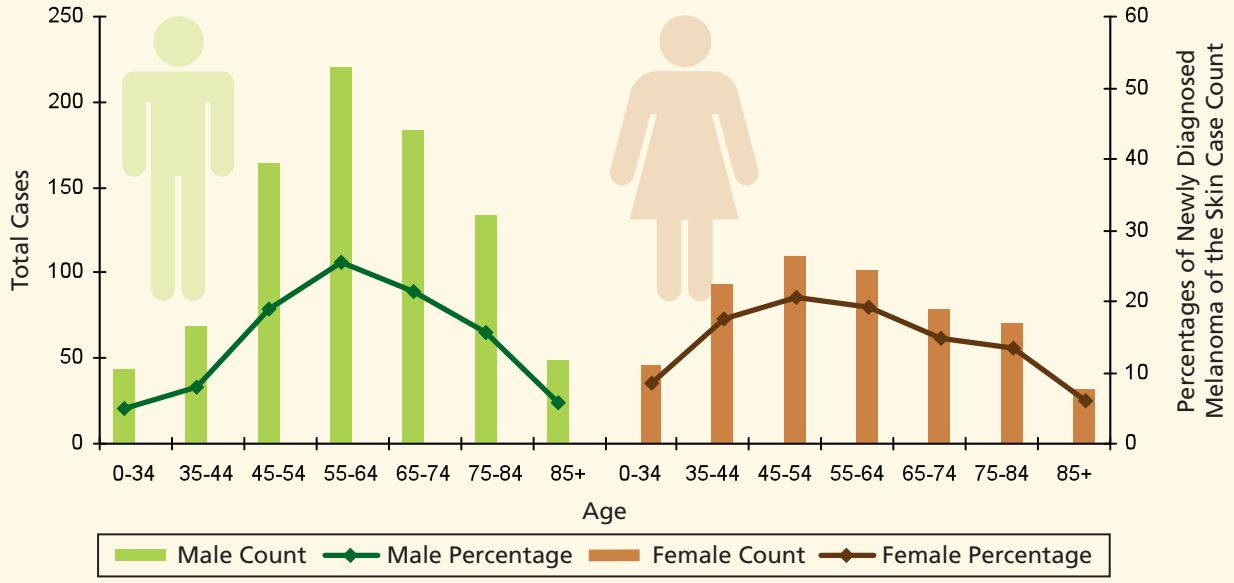
Melanoma of the Skin, U.S. & Hawai'i

	MALE		FEMALE	
	Incidence Rate	Mortality Rate	Incidence Rate	Mortality Rate
U.S.	22.1	3.9	14.3	1.7
Hawai'i	23.1	2.4	13.2	1.1

Invasive cases only are included for incidence rates. Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i data (2000-2005); Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. data (2001-2005); Cancer in North America, NAACCR

Although melanoma of the skin ranks fourth in the ten leading cancer sites among males (representing less than five percent of total cancer cases) and ranks eighth in the ten leading cancer sites among females in Hawai'i, it remains a significant concern because incidence of melanoma is rising faster than any other cancer in the U.S. In Hawai'i, melanoma cancer incidence rates have risen dramatically among Whites – especially White males, while remaining low in all other racial/ethnic groups (Figure 26).

Figure 24. Melanoma of the Skin by Age at Diagnosis, Hawai'i, 2000-2005



Invasive cases only are included for incidence rates. Cases are 6 year totals.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Blistering sunburn in childhood and adolescence is an almost universal risk factor for melanoma in White and lighter-skinned populations. Other risk factors that may contribute to the development of skin cancer include:

- Excessive exposure to sunlight/UV radiation.
- Fair to light skin complexion.
- Sex (men are more likely to develop skin cancer than women).
- Age (about 50 percent of melanomas occur in people over the age of 50).
- Race (risk of melanoma is more than 20 times higher for Whites than for Blacks/African Americans).
- Heredity (numerous moles, as well as certain types of high-risk moles, often run in families).
- Occupational exposure to coal tar, pitch, creosote, arsenic compounds, or radium.

Actions to take to help prevent skin cancers are:

- Limit or avoid sun exposure between 10:00 a.m. and 4:00 p.m.
- When outdoors, cover as much skin as possible.
- Wear a hat that shades the face, neck, and ears.
- Wear UV-coated sunglasses to protect the skin around the eyes.
- Use sunscreens with SPF 15 or greater.
- Protect children from sun exposure.

Melanoma, when detected early, is likely to be completely cured. Part of a routine cancer-related checkup should include a skin examination by a health care professional qualified to diagnose skin cancer. The five-year relative survival from melanoma is close to 96 percent when the cancer is diagnosed at an early stage. Between 2000 and 2005, more than 88 percent of the melanoma of the skin diagnosed among Whites in the state were at an early stage (Table 3).

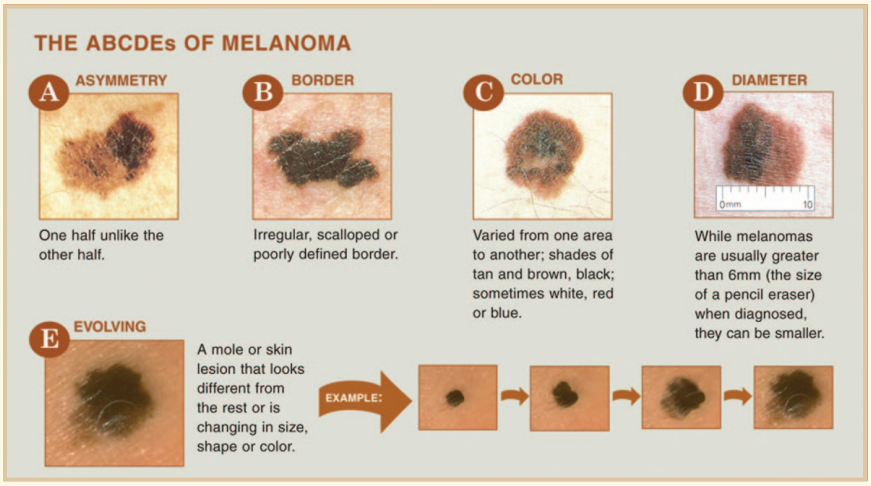
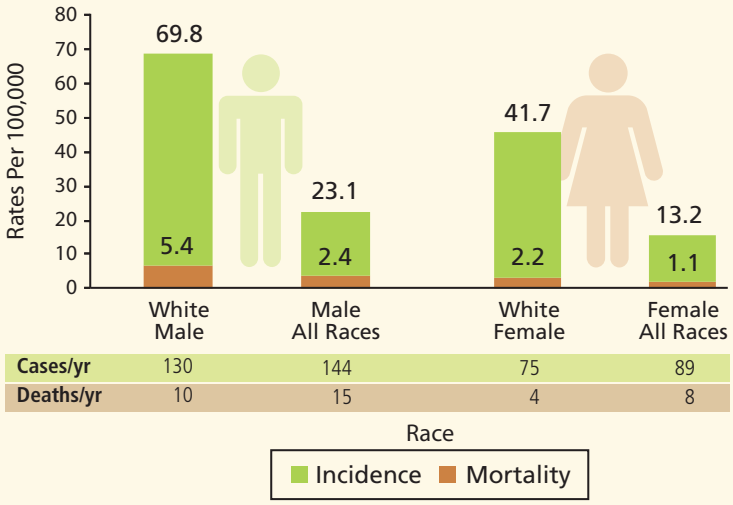


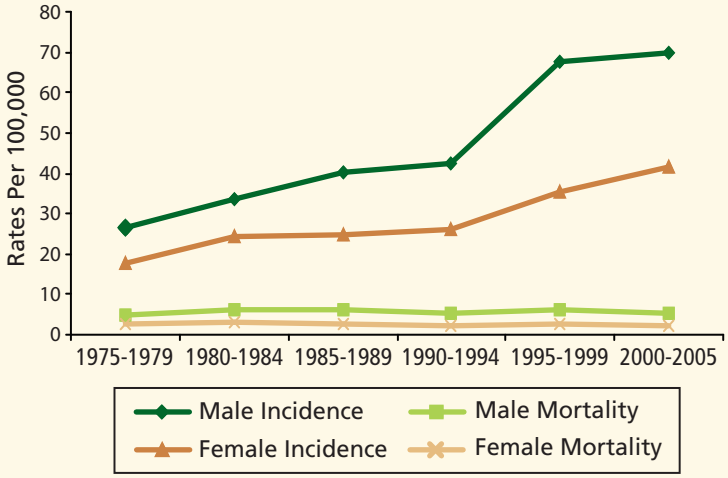
Figure 25. Melanoma of the Skin Incidence & Mortality Rates, Whites & All Races/Ethnicities Combined, Hawai'i, 2000-2005



	White Male	Male All Races	White Female	Female All Races
Cases/yr	130	144	75	89
Deaths/yr	10	15	4	8

Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Figure 26. Trends in Melanoma of the Skin Incidence & Mortality Rates, Whites, Hawai'i, 2000-2005



Invasive cases only are included for incidence rates. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

Approximately one-third of the cancer deaths that occur in the United States each year are due to nutrition and physical activity factors, including obesity. For the majority of Americans who do not use tobacco, dietary choices and physical activity are the most important modifiable cancer risk factors. Cancer risk can be reduced by an overall nutrition plan that includes mostly plant foods (fruits, vegetables, grains, and beans) and a balance between food intake and physical activity. Physical activity also promotes overall health and can help protect against some cancers, including colon cancer and breast cancer.

Evidence indicates that although inherited genes do influence cancer risk, the majority of the variation in cancer risk among populations and among individuals is due to behavioral factors such as cigarette smoking, certain dietary patterns, and physical inactivity. The introduction of a healthy diet and regular physical activity at any time from childhood to old age can promote health and impact cancer risk.

Unfortunately, Hawai'i adults are far from reaching the recommended guidelines for fruits and vegetable consumption, physical activity, and body weight (Table 23). A little more than one in four adults interviewed as part of the 2007 Hawai'i Behavioral Risk Factor Surveillance System reported eating an average of five or more servings of fruits and vegetables per day (28.7 percent). Fruit and vegetable consumption was lower among males (compared to females) and Japanese residents (compared to other major ethnic groups). In addition to concerns about proper nutrition, not all Hawai'i residents are meeting recommendations for daily physical activity or even participating in leisure time physical activity. The increasing number of overweight and obese individuals in the state may be related to poor nutritional habits and physical inactivity. Based on height to weight measures (known as body mass index or BMI), about 50 percent of Hawai'i's adults were considered overweight or obese (Table 23). Many high school age youth in Hawai'i are also at risk due to inadequate intake of fruits and vegetables, lower than recommended physical activity levels, and higher than recommended body weight for height, age, and sex (Table 24).

Eat a rainbow of colorful foods each day.

Health Promotion Guidelines

1. Eat a variety of healthful foods, with an emphasis on plant sources.

- Eat five or more servings of vegetables and fruit each day.
- Choose whole grains in preference to processed (refined) grains and sugar.
- Limit consumption of red meats, especially high fat and processed meats.
- Choose foods that help maintain a healthful weight.

2. Adopt a physically active lifestyle.

- Adults: Engage in at least moderate activity for 30 minutes or more on five or more days of the week.
- Children and adolescents: Engage in at least 60 minutes per day of moderate-to-vigorous physical activity at least five days per week.

3. Maintain a healthful weight throughout life.

4. Limit alcoholic beverage consumption.

Table 23. Nutrition, Physical Activity, & Overweight Status, Adults 18 & Older, Hawai'i, 2007

Demographic Characteristics	Eating 5 or More Fruits & Vegetables Per Day (%)	Participating in Moderate Physical* Activity (%)	Over-weight** (%)	Obese*** (%)
TOTAL	28.7	51.0	35.1	21.7
AGE GROUP				
18-24 Years	26.2	60.1	27.7	19.4
25-34 Years	25.6	53.9	36.7	25.7
35-44 Years	26.3	52.6	35.4	23.4
45-54 Years	25.7	46.9	37.6	21.7
55-64 Years	29.9	51.8	38.3	25.9
65+Years	37.0	44.5	33.1	14.8
SEX				
Male	25.2	54.6	43.6	24.1
Female	32.1	47.5	26.6	19.4
RACE/ETHNICITY				
Native Hawaiian	30.2	49.8	30.7	43.2
White	31.9	60.1	36.2	19.4
Filipino	27.1	44.2	34.3	17.9
Japanese	23.5	44.9	35.6	13.5
Others	29.8	50.0	36.7	23.7
Household Income				
<$15,000	29.4	41.2	25.6	32.0
$15,000-24,999	31.7	42.2	30.6	26.8
$25,000-45,999	29.6	49.4	34.4	24.2
$50,000-74,999	27.8	54.1	37.8	22.1
>=$75,000	27.9	56.1	37.9	17.6
Unknown/ Refused	25.9	50.8	34.5	13.2
COUNTY				
Hawai'i	32.3	52.5	35.6	23.1
Honolulu	27.1	50.1	35.0	21.1
Kaua'i	34.1	55.5	36.1	22.0
Maui	31.9	53.2	34.2	24.1

Percentages are weighted to population characteristics for the state of Hawai'i.
For a complete 2007 report, including confidence interval rages at 95% probability, visit the Hawai'i Department of Health website, 2007 State of Hawai'i Behavioral Risk Factor Surveillance Report.
*Moderate Physical Activity is defined as at least 30 minutes a day, 5 days a week of moderate intensity, or at least 20 minutes a day, 3 days a week.
**Overweight defined as body mass index (BMI) of 25-29 kg/m2.
***Obese defined as body mass index (BMI) of greater than 30 kg/m2.
Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, 2007, CDC

Obesity Linked to Increased Cancer Deaths

According to findings in a landmark study from the American Cancer Society,* excess body weight contributes to more than 90,000 cancer deaths in the U.S. each year. In the largest study ever done on the link between obesity and cancer, researchers followed more than 900,000 adults for 16 years. In the Cancer Prevention Study II, in both men and women, Body Mass Index (BMI) was found to be associated with higher rates of death due to cancer of the: esophagus, colon and rectum, liver, gallbladder, pancreas and kidney, non-Hodgkin lymphoma, and multiple myeloma. Significant trends were found with higher BMI, increasing risk for death from cancers of the stomach and prostate in men and breast, uterus, cervix, and ovary in women.

What is My Body Mass Index (BMI)?

Your Body Mass Index (BMI) is an estimate of your body fat content, based on your height and weight. The higher your BMI, the higher your risk of developing such conditions as cancer, heart disease, high blood pressure, sleep apnea, and Type 2 diabetes.

*Source: Calle, E.E., Rodriguez, C., Walker-Thurmond, K., Thun, M.J. Overweight, obesity, and mortality from cancer in a prospectively studied cohort of U.S. adults (2003). New England Journal of Medicine, April 24;348(17):1625-38

Table 24. Nutrition, Physical Activity, & Overweight Status, High School Students, Hawai'i, 2007

	Eating 5 or More Fruits & Vegetables Per Day (%)	Met Recommended Physical Activity Levels (%)	At Risk for Becoming Over-weight** (%)	At Risk for Becoming Obese*** (%)
Total	17.2	34.4	14.3	15.6
Male	18.5	40.6	13.3	19.4
Female	15.9	27.6	15.5	11.3

Moderate Physical Activity defined as activities that did not cause sweating and hard breathing (such as fast walking) for 30 minutes or more on 5 or more of the 7 days preceding the survey. Vigorous Physical Activity defined as activities causing sweating or hard breathing (such as running) for 20 minutes or more on 3 or more of the 7 days preceding the survey. At Risk for Becoming Overweight defined as students who were at or above the 85th percentile but below the 95th percentile for body mass index by age and sex based on reference data from the National Health and Nutrition Examination Survey. Obesity defined as students who were at or above the 95th percentile for body mass index by age and sex based on reference data from the National Health and Nutrition Examination Survey (NHANES).
Source: Youth Risk Behavior Surveillance System, 2007, CDC

Quality School-based Health Education

The American Cancer Society is dedicated to reducing the risk of cancer by encouraging the maintenance of health-promoting lifestyles. Researchers estimate that up to two-thirds of all cancers can be prevented. Research also tells us that healthy behavior is based not only on knowledge, but also on values, attitudes, and skills developed early in life. It is these formative years that offer parents, the community, and institutions, a valuable opportunity to influence the development of healthy behaviors in children. That's why the American Cancer Society advocates for community-supported school-based health education programs that are sequential in grades K-12, are age appropriate, have parental input, involve the community, and are supported by schools. Such quality health education programs for our youth are one of the most effective ways of instilling lifelong health habits that protect against cancer.

Opportunities in School Health Education

In 1999 the Hawai'i State Department of Education implemented the Hawai'i Content and Performance Standards in Health Education. The Department of Health has funded the implementation of standards-based health education, physical education, and the coordinated school health programs with tobacco settlement funds since 2000 as a strategy for reducing the burden of chronic disease. The new standards require that our children learn and practice behaviors for healthy lives today and for the future. Our schools provide the most efficient and effective means of reaching our children. The partnership that has been formed between the Department of Education; Department of Health, the University of Hawai'i College of Education; the American Cancer Society; and other organizations is providing professional development opportunities for classroom teachers, technical assistance, resources, and an evaluation component.[1]

In 2002, the School Health Education Profile Report (SHEP) indicated that more than 90 percent of lead health education teachers surveyed in Hawai'i's secondary schools are teaching to increase students' skills. These teachers are using new teaching methods to engage youth in an interactive learning process. The lead teachers also reported receiving professional development in the new standards.[2]

While these figures are encouraging, there is still much work to do. Health education after elementary school is only required again for one semester in high school. Only 9 percent of lead health education teachers surveyed had health education as their major area of professional preparation. Physical education has only a 1-credit requirement for high school graduation. Among Hawai'i's high school youth, while about 28 percent reported currently smoking cigarettes in 1999, the proportion has decreased to 13 percent in 2007. There was an increase in the percent who reported they did not consume the recommended five servings of fruits and vegetables per day from 79 percent in 1999 to 83 percent in 2007, and 34 percent reported not engaging in vigorous physical activity the week prior to the survey.[3, 4] Support for health education and physical education needs to continue. Children who are healthy and engaged in school are more likely to attain their educational objectives. The partners are working together for the future of our children.

LET'S MOVE!

AMERICA'S MOVE TO RAISE A HEALTHIER GENERATION OF KIDS

www.letsmove.gov/

Let's Move! has an ambitious but important goal: to solve the epidemic of childhood obesity within a generation.

Let's Move! will give parents the support they need, provide healthier food in schools, help our kids to be more physically active, and make healthy, affordable food available in every part of our country.

Accessing Health & Affordable Food
www.letsmove.gov/accessing/index.html

Physical Activity
www.letsmove.gov/activity/index.html

References:

1. Pateman, B., Irvin, L.H., Nakasato, S., Serna, K., Yahata, D. Got Health? The Hawai'i Partnership for Standards-Based Health Education. JOSH. 2000; 70:8; 311-317.
2. Pateman, B. 2002 School Health Education Profile Report. Honolulu, HI: HI Dept of Education; Spring 2003.
3. Youth Risk Behavior Surveillance System, 2007, Centers for Disease Control and Prevention. apps.nccd.cdc.gov/ybss/.
4. Youth Tobacco Survey, 2007, Centers for Disease Control and Prevention.

Environmental Cancer Risks

Environmental factors, defined broadly to include smoking, diet, and infectious diseases as well as chemicals and radiation, cause an estimated three-quarters of all cancer deaths in the United States. Among these factors, tobacco use, unhealthy diet, and physical inactivity have a greater effect on individual cancer risk than do trace levels of pollutants in food, drinking water, and air. However, the degree of risk from pollutants depends on the concentration, intensity, and duration of exposure. Even low-dose exposures that pose only small risk to individuals can still cause substantial ill health across an entire population if the exposures are widespread. For example, secondhand tobacco smoke increases risk in large numbers of people who do not smoke but are exposed to others' smoke.

Risk Assessment

The risk assessment process evaluates the cancer-causing potential of a substance, the levels of the substance in the environment, and the extent to which people are actually exposed. For cancer safety standards, acceptable risks are usually limited to those that increase risk by no more than one case per million persons over a lifetime.

Chemicals

Various chemicals (for example, benzene, asbestos, vinyl chloride, arsenic, aflatoxin) show definite evidence of causing cancer in humans; others are considered probable human carcinogens based on evidence from animal experiments (for example, chloroform, dichlorodiphenyl-trichloroethane [DDT], formaldehyde, polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons). For some exposures (asbestos and radon), the risks are greatly increased when combined with tobacco smoking.

CANCER FACT: More than 30 percent of cancer could be prevented, mainly by not using tobacco, having a healthy diet, being physically active, and preventing infections that may cause cancer.

Radiation

The only types of radiation proven to cause human cancer are high-frequency ionizing radiation (IR) and ultraviolet (UV) radiation. Exposure to sunlight (UV radiation) causes almost all cases of basal and squamous cell skin cancer and is a major cause of melanoma of the skin. Disruption of the earth's ozone layer by pollution (the "ozone hole") may cause rising levels of UV radiation.

Radon exposures in homes can increase lung cancer risk, and cigarette smoking greatly increases the effect of radon exposure in lung cancer risk.

Unproven & Rare Risks

Public concern about cancer risks in the environment often focuses on unproven risks or on situations in which known carcinogen exposures are at such low levels that risks are negligible, for example:

Pesticides. High doses of some pesticides (insecticides, herbicides, etc.) have been shown to cause cancer in animals, but the very low concentrations found in some foods have not been associated with increased cancer risk. Continued research regarding pesticide use is essential for maximum food safety, improved food production through alternative pest control methods, and reduced pollution of the environment.

Non-ionizing radiation. Electromagnetic radiation at frequencies below ionizing and ultraviolet levels has not been proven to cause cancer. Low-frequency radiation includes radio waves, microwaves, radar, and power frequency radiation arising from the electric and magnetic fields associated with electric currents, cellular phones, and household appliances.

Toxic wastes. Toxic wastes in dump sites can threaten human health through air, water, and soil pollution. Clean-up of existing dump sites and close control of toxic materials in the future are essential to ensure healthy living conditions.

Nuclear power plants. Ionizing radiation emissions from nuclear facilities are closely controlled and involve negligible levels of exposure for communities near the plants. Reports about cancer case clusters in such communities have raised public concern, but studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere.

Additional information on environmental factors associated with cancer risks can be found at several websites, including **www.atsdr.cdc.gov**, **www.epa.gov, www.niehs.nih.gov**, **www.osha.gov**, and **www.who.int/en/.**

Cancer Clusters

A cancer cluster is the occurrence of a greater than expected number of cancer cases in a group of people, geographic area, or period of time. A cancer cluster is generally believed to involve one type of cancer, whether a rare type of cancer or a type of cancer observed in a group not usually affected by that cancer, such as a cancer in children that is normally seen in adults. When cancer clusters are suspected, they are often thought to be caused by exposures or risk factors shared by affected individuals.

It is difficult to identify a true cancer cluster. Most reports of suspected cancer clusters are not shown to be real cancer clusters.

Cancer is a common disease. One in four individuals is diagnosed with cancer during their lifetimes. Most cancers take decades to develop and are caused by multiple exposures occurring throughout an individual's life. Furthermore, each type of cancer has a different set of causes and the importance of these causes can differ by individual.

Factors influencing cancer risk include tobacco, diet, physical activity, chemicals, radiation, and infectious agents. In addition to lifestyle and environmental exposures, cancer is also caused by genetic factors.

A typical approach to determine if a cancer cluster is real is to compare the number of people expected to be diagnosed with cancer to the number actually observed in the population, geographic area, or time period. The expected number of cases may be derived from cancer incidence rates applied to the population of interest. If the number of observed cases is significantly greater than the expected number of cases, this is evidence of a true cancer cluster. However, even when such evidence of a cancer cluster exists, follow-up studies must be carried out to confirm the observations.

This information has been adapted from the following websites where more information can also be found: **www.cancer.gov/cancertopics/factsheet/Risk/clusters** and **www.cdc.gov/nceh/clusters/.**

ʻIao Needle, Maui

American Cancer Society Guidelines for the Early Detection of Cancer

CANCER SITE	POPULATION	TEST/PROCEDURE	FREQUENCY
Breast	Women aged ≥20 years	BSE	Beginning in their early 20s, women should be told about the benefits and limitations of BSE. The importance of prompt reporting of any new breast symptoms to a health professional should be emphasized. Women who choose to perform BSE should receive instruction and have their technique reviewed on the occasion of a periodic health examination. It is acceptable for women to choose not to perform BSE or to perform BSE irregularly.
		CBE	For women in their 20s and 30s, it is recommended that CBE be part of a periodic health examination, preferably at least every 3 years. Asymptomatic women aged ≥40 years should continue to receive a CBE as part of a periodic health examination, preferably annually.
		Mammography	Begin annual mammography at age 40 years.[a]
Colorectal	Men and women aged ≥50 years	FOBT[b] with at least 50 percent test sensitivity for cancer, or FIT with at least 50 percent test sensitivity for cancer, or	Annual, starting at age 50 years.
		Stool DNA test, or	Interval uncertain, starting at age 50 years.
		Flexible sigmoidoscopy, or	Every 5 years, starting at age 50 years.
		FOBT[b] and flexible sigmoidoscopy, or	Annual FOBT (or FIT) and flexible sigmoidoscopy every 5 years, starting at age 50 years with at least 50 percent test sensitivity.
		DCBE, or	Every 5 years, starting at age 50 years.
		Colonoscopy	Every 10 years, starting at age 50 years.
		CTC	Every 5 years, starting at age 50 years.
Prostate	Men aged ≥50 years	DRE and PSA	Men who have at least a 10-year life expectancy should have an opportunity to make an informed decision with their health care provider about whether to be screened for prostate cancer, after receiving information about the benefits, risks, and uncertainties associated with prostate cancer screening. Prostate cancer screening should not occur without an informed decision-making process.[c]
Cervix	Women aged ≥18 years	Pap test	Cervical cancer screening should begin approximately 3 years after a woman begins having vaginal intercourse, but no later than 21 years of age. Screening should be done every year with conventional Pap tests or every 2 years using liquid-based Pap tests. At or after age 30 years, women who have had 3 normal test results in a row may get screened every 2 to 3 years with cervical cytology (either conventional or liquidbased Pap test) alone, or every 3 years with an HPV DNA test plus cervical cytology. Women ≥70 years of age who have had ≥3 normal Pap tests and no abnormal Pap tests in the last 10 years and women who have had a total hysterectomy may choose to stop cervical cancer screening.
Endometrial	Women at menopause	At the time of menopause, women at average risk should be informed about risks and symptoms of endometrial cancer and strongly encouraged to report any unexpected bleeding or spotting to their physicians.	
Cancer-related checkup	Men and women aged ≥20 years	On the occasion of a periodic health examination, the cancer-related checkup should include examination for cancers of the thyroid, testicles, ovaries, lymph nodes, oral cavity, and skin, as well as health counseling about tobacco, sun exposure, diet and nutrition, risk factors, sexual practices, and environmental and occupational exposures.	

BSE, breast self-examination; CBE, clinical breast examination; FOBT, fecal occult blood test; FIT, fecal immunochemical test; DCBE, double contrast barium enema; CTC, computed tomography colonography; DRE, digital rectal examination; PSA, prostate-specific antigen test; Pap, Papanicolau (Pap smear); HPV, Human papillomavirus.

[a] Beginning at age 40 years, annual clinical breast examination should be performed before mammography.

[b] FOBT as it is sometimes done in physicians' offices, with the single stool sample collected on a fingertip during a digital rectal examination, is not an adequate substitute for the recommended at-home procedure of collecting 2 samples from 3 consecutive specimens. Toilet bowl FOBT tests also are not recommended. In comparison with guaiac-based tests for the detection of occult blood, immunochemical tests are more patient-friendly, and are likely to be equal or better in sensitivity and specificity. There is no justification for repeating FOBT in response to an initial positive finding.

[c] Information should be provided to men about the benefits and limitations of testing so that an informed decision about testing can be made with the clinician's assistance.

Major Cancer Sites

SITE	NON-MODIFIABLE RISK FACTORS	MODIFIABLE RISK FACTORS	RISK REDUCTION
Brain and other nervous system	Impaired immune system that may be present at birth, a side effect of treatment from other cancers, a side effect of treatment to prevent transplanted organ rejection, or from acquired immunodeficiency syndrome (AIDS); Family history	Exposure to radiation	Prevention strategies are not available since most brain and other nervous system tumors are not associated with known risk factors and occur for no apparent reason
Breast (Female)	Age (risk increases as one gets older); Gender (risk higher in women); Race (risk slightly higher in Whites); Genetic risk factors; Family history; Personal history of breast cancer; Previous breast biopsy; Dense breast tissue; Previous breast radiation; Diethylstilbestrol (DES) usage; Early menstruation; Late menopause	First child born after age 30; Not breastfeeding; Oral contraceptive use; Hormone replacement therapy use; Alcohol consumption; Obesity; Physical activity	Having first child before age 30; Breastfeeding child; Limit alcohol consumption; Maintain a healthy weight; Be physically active; Chemoprevention if women are considered high risk (Tamoxifen and Raloxifene); Preventative surgery
Cervix	Age (average age at diagnosis is 50 to 55); Family history	Human papillomavirus (HPV) infection from intercourse at an early age, unprotected sex, and many sexual partners; Cigarette smoking; Human immunodeficiency virus (HIV) infection; Chlamydia infection; Diet; DES usage; Long-term use of birth control; Having 3 or more pregnancies; Young age (<17) at first full-term pregnancy	Avoid early onset of sexual activity; Limit number of sexual partners; Avoid sexual intercourse with individuals who have had multiple partners; Avoid cigarette smoking; Use condoms (to prevent HIV and chlamydia infection; Condom use does not reliably prevent HPV infection); Get the HPV vaccine
Colon & Rectum	Age (risk increases as one gets older); Family history; Ethnicity, namely Ashkenazi Jews; Race (highest incidence in Blacks/African Americans); Personal history of colon cancer, intestinal polyps, or chronic inflammatory bowel disease	Diet from animal sources; Physical inactivity; Obesity; Smoking; Alcohol consumption; Vegetable and fruit consumption; Hyper-insulinemia/Type II Diabetes	Follow American Cancer Society guidelines on nutrition and physical activity; Maintain ideal body weight; Multivitamin with folate intake; Calcium supplement intake; Nonsteroidal anti-inflammatory drugs, like aspirin (NSAIDS); Hormone replacement therapy (but side effects may outweigh benefit) – the American Cancer Society does not recommend that people at average risk use NSAIDS or HRT for the purpose of lowering CRC risk. D6+D9
Endometrium (Corpus Uteri)	Age (risk increase as one gets older); Total length of menstrual span; Early menstruation; Late menopause; History of infertility; Ovarian disease; Diabetes; Family history; Presence or personal history of breast or ovarian cancer; Endometrial hyperplasia	History of having never given birth; Obesity; Tamoxifen use; Estrogen (but not combined hormone) replacement therapy; Diet high in animal fat	Having one or more children; Use of oral contraceptives; Maintain healthy weight; Control diabetes
Hodgkin Disease	Family history; Age (early and late adulthood); Geography (more common in U.S., Canada, and Europe)	None known at present	None known at present
Kidney (Renal Cell)	Age (risk increases as one gets older); Gender (risk higher in men); Race (Blacks/African Americans risk is slightly higher than Whites); Family history; Inherited conditions such as von Hippel-Lindau disease, hereditary papillary renal cell carcinoma, or hereditary renal oncocytoma; Chronic kidney disease; High blood pressure	Cigarette smoking; Obesity; Diet; Occupational exposure to asbestos	Avoid cigarette smoking; Maintain a healthy weight; Follow American Cancer Society guidelines on nutrition and physical activity; Avoid occupational exposures by using workplace safety precautions; Maintenance of normal blood pressure by good treatment compliance
Lymphoma (Non-Hodgkin lymphoma)	Age (risk increases as one gets older); Gender (risk higher in men); Race; Ethnicity; Geography; Congenital immune deficiency diseases; Immune deficiency from organ transplantation and/or immunosuppression therapy; Infection with certain bacteria and viruses; Exposure to radiation	Body weight; Diet; Exposure to certain chemicals; Immune deficiency from HIV infection	Use condoms to prevent HIV infection
Leukemia	Infection with HTLV-1 virus; Family history	Cigarette smoking; Exposure to benzene; High-dose radiation exposure; Inherited rare genetic disease	Avoid cigarete smoking; Reduce exposure to benzene and radiation

EARLY DETECTION	SYMPTOMS	TREATMENTS
No screening examinations available other than to report signs or symptoms to health care professional	Headache; Nausea; Vomiting; Blurred vision; Epileptic seizures; Weakness of body part; Loss of hearing; Numbness; Impaired coordination; Difficulty in speech or walking; Personality changes	Surgery, radiation therapy, and/or chemotherapy depending on tumor location; Other drugs are available to alleviate symptoms related to brain or other nervous system tumors; Targeted therapies
Mammograms; Clinical breast examinations; Breast self-examinations (optional); See American Cancer Society guidelines for more detailed information	New lump or mass; Swelling; Skin irritation or dimpling; Nipple pain or nipple turning inward; Redness or scaliness of the nipple or breast skin; Breast discharge; Lump in the underarm area	Surgery (breast conserving therapy with radiation, or mastectomy with or without radiation); Plus chemotherapy and/or hormone therapy, depending on tumor size, spread to lymph nodes, and/or prognostic features; Targeted therapies
Pap test (smear) and pelvic examination; See American Cancer Society guidelines for more detailed information; HPV testing based on age (now approved by FDA - See American Cancer Society guidelines)	Unusual discharge from vagina other than monthly menstrual period; Bleeding after intercourse; Pain during intercourse	Surgery and/or radiation therapy; Plus chemotherapy for later stages.
Tests That Detect Adenomatous Polyps and Cancer • Flexible sigmoidoscopy every 5 years, or • Colonoscopy every 10 years, or • Double contrast barium enema (DCBE) every 5 years, or • CT colonography (CTC) every 5 years Tests That Primarily Detect Cancer • Annual guaiac-based fecal occult blood test (gFOBT) with high test sensitivity for cancer, or • Annual fecal immunochemical test (FIT) with high test sensitivity for cancer, or • Stool DNA test (sDNA), with high sensitivity for cancer, interval uncertain.	Change in bowel habits; Feeling that bowel movement is necessary but no relief after doing so; Rectal bleeding or blood in stool; Cramping or abdominal pain; Weakness or fatigue	Surgery; Plus radiation therapy and/or chemotherapy for later stages
No screening examinations available for women without symptoms who are at average risk for endometrial cancer; Women should report warning signs to health care professional	Unusual bleeding, spotting, or abnormal discharge, especially if after menopause; Pelvic pain or mass; Unexplained weight loss	Surgery; Plus radiation therapy, chemotherapy, or hormone therapy for later stages
No screening examinations available other than reporting signs and symptoms of disease to health care professional	Enlarged lymph nodes that have not gone away; Fever; Night sweats; Weight loss; Itching; Tiredness; Unexplained weight loss	Chemotherapy and/or radiation therapy; Bone marrow transplant for recurrent disease
No screening examinations recommended but routine urinalysis may find small amounts of blood in some people with early stages of cancer	Blood in the urine; Low back pain on one side; Abdominal mass or lump; Fatigue; Unintentional weight loss; Fever not associated with other infection; Edema	Surgery; Plus radiation therapy, chemotherapy, or immunotherapy, for later stages
No screening examinations available other than reporting signs and symptoms of disease to health care professional	Enlarged lymph nodes; Pain in stomach; Nausea; Reduced appetite if lymphoma of stomach; Swelling of head and arms if lymphoma of thymus or chest; Headache, trouble thinking, personality changes, and epileptic seizures if lymphoma of the brain; Unexplained weight loss; Fever; Profuse sweating particularly at night; Severe itchiness	Chemotherapy and/or radiation therapy; Plus stem cell transplant for advanced disease
No screening examinations available other than reporting signs and symptoms of disease to health care professional	Weakness; Fatigue; Reduced exercise tolerance; Weight loss; Fever; Bone pain; Sense of fullness in abdomen	Chemotheraphy; Plus stem cell transplant depending on prognostic factors; Gleevec® (Imatinib mesylate) for treatment of chronic myeloid leukemia

Major Cancer Sites

SITE	NON-MODIFIABLE RISK FACTORS	MODIFIABLE RISK FACTORS	RISK REDUCTION
Lung and Bronchus	Personal and family history	Cigarette smoking; Secondhand smoke from cigarette smoking; Radon and asbestos exposure; Occupational exposure to some chemicals; Arsenic in drinking water; Certain dietary supplements; Air pollution	Avoid cigarette smoking and exposure to secondhand smoke; Have home tested and treated for radon; Avoid exposure to cancer-causing chemicals; Eat a diet high in fruits and vegetebles
Melanoma of the Skin	Age (risk increases as one gets older); Gender (men have higher rates than women); Fair-skinned; Freckling; Light hair; Family history; Immune suppression; Inherited condition known as xeroderma pigmentosum	Ultraviolet light exposure through sunlight or tanning lamps; Frequent sunburns, especially in childhood	Seek shade; Protect skin with long sleeves and long pants, and a hat with a broad brim; Use sunscreen with high SPF; Wear sunglasses; Avoid tanning lamps; Protect children from excessive sun exposure
Oral Cavity & Oropharyngeal	Age (risk increases with age); Gender (twice as common in men); Human papillomavirus (HPV) infection	Tobacco use (smoking and smokeless tobacco products); Alcohol consumption; UV exposure for cancer of the lip; Poor nutrition	Avoid tobacco use; Limit drinking; Limit exposure to UV light; Wear properly fitted dentures; Eat a healthy diet; Avoid HPV infection; Treat precancerous growths
Ovary	Age (risk is greatest in post-menopausal women); Family history	Not giving birth; Obesity; Use of fertility drugs; Estrogen therapy or hormone therapy	Use of oral contraceptives; Tubal ligation; Hysterectomy; Genetic counseling for women with family history; Eating a healthy diet
Pancreas	Age (most cases occur in people over age 45); Gender (men slightly more likely to develop than women); Black/African American; Diabetes mellitus; Chronic pancreatitis; Family history of the disease	Cigarette smoking; Obesity and physical inactivity; Heavy exposure to pesticides, dyes, and chemicals related to gasoline	Avoid tobacco use; Eat a healthy diet; Physical activity; There are currently no guidelines for preventing pancreatic cancer.
Prostate	Age (risk is greatest after age 50); Race (risk is higher in Black/African Americans); Nationality (occurs more frequently in North America and northwest Europe); Family history	Diet high in saturated fat and red meat; Not eating enough servings of fruits and vegetables	Eating a healthy diet based on the American Cancer Society guidelines on nutrition
Stomach	Age (risk is greatest after age 50); Heliobacter pylori infection leading to chronic atrophic gastritis; Previous stomach surgery; Pernicious anemia; Hypertrophic gastropathy (Menetrier disease); Type A blood; Family history; Stomach polyps; Ethnicity Asian/Pacific Islanders are at higher risk)	Diets which are high in smoked foods and salted fish, and contain pickled vegetables, and low in other vegetables; Cigarette smoking	Avoid diets high in smoked and pickled foods and salted meats and fish; Eat a diet high in fresh fruits and vegetables as recommended in the American Cancer Society guidelines on nutrition and physical activity; Avoid cigarette smoking
Testis	Age (most occur between ages of 20 and 54, but all men are at risk); Race and ethnicity (Risk is higher in Whites); Cryptorchidism (undescended testicle); Family history; Personal history of testicular cancer or history of HIV/AIDS	None known at present	It is wise to correct cryptorchidism before puberty
Urinary Bladder	Age (risk increases as one gets older); Gender (more common in men); Race (risk higher in Whites); Personal history of bladder cancer; Birth defects involving the bladder; Smoking	Cigarette smoking; Industrial chemicals known as aromatic amines used by dye, rubber, leather, textile, paint, and printing companies; Chronic bladder inflammation such as urinary infections, kidney and bladder stones; Use of herb, *Aristolochia fangchi*	Avoid cigarette smoking; Avoid occupational exposure to aromatic amines by using workplace safety precautions

EARLY DETECTION	SYMPTOMS	TREATMENTS
No lung cancer screening test has been shown to prevent people from dying from this disease, but the National Lung Screening Trial (NLST) is underway to test the utility of spiral CT (computed tomography) scanning	A cough that does not go away; Chest pain often aggravated by deep breathing; Hoarseness; Weight loss and loss of appetite; Bloody or rust-colored sputum; Shortness of breath; Recurring infections such as bronchitis and pneumonia; New onset of wheezing	Non-small cell: Surgery, radiation therapy, other local treatments, chemotherapy, targeted therapy Small-cell: Surgery, radiation therapy, chemotherapy
Self examinations of skin; Skin examination conducted by health care professional	Changes in the appearance of moles, asymmetry, border irregularity (edges are ragged or notched), color is not uniform, and diameter	Surgery, chemotherapy, immunotherapy, radiaton therapy
Regular dental checkups that include examination of the entire mouth; A cancer-related checkup where physicians examine mouth and throat; Self-examinations	A sore in the mouth that does not heal; Pain in the mouth that does not go away; A persistent lump or thickening in the cheek; Persistent white or red patches in mouth, a sore throat or a feeling that something is caught in the throat that does not go away; Trouble chewing or swallowing; Trouble moving the jaw or tongue; Numbness of the tongue or other area of the mouth; Swelling of the jaw that causes dentures to fit poorly; Loose teeth or pain around the teeth or jaw; Voice changes; A lump or mass in the neck; Weight loss; Persistent bad breath	Surgery, radiation therapy, chemotherapy, and newer targeted therapies. These may be used either alone or in combination, depending on the stage and location of the tumor
Annual pelvic exams; For women at a higher risk, transvaginal sonography and blood tests for CA-125 may be conducted	Prolonged swelling of abdomen; Pelvic or abdominal pain; Trouble eating or feeling full quickly; Urinary symptoms such as urgency or frequency	Surgery, chemotherapy, radiation therapy, or a combination
There are no early detection exams that have been proven to save lives. Symptoms should be reported to a health care professional.	Jaundice; Abdominal pain; Weight loss; Digestive problems; Blood clots; Fatty tissue abnormalities; Diabetes mellitus	Surgery, radiation therapy, and/or chemotherapy depending on stage
Screening tests are available – prostate-specific antigen blood test (PSA) or digital rectal examination (DRE). Patients should speak with their doctor to make an informed decision about the benefits of screening. See American Cancer Society guidelines for more information.	Usually no symptoms with early stage disease. Advanced stage symptoms: Difficulty urinating; Frequent urination; Blood in urine; Impotence; Pain in pelvic bone, spine, hips, or ribs	Surgery, radiation therapy, hormone manipulation, or watchful waiting, depending on stage
Widespread screening not conducted in the United States due to low incidence rates; Consult medical professional about screening if at high risk for stomach cancer and report signs and symptoms to medical professional	Unintended weight loss and lack of appetite; Abdominal pain; Vague discomfort in the abdomen, usually above the navel; Sense of fullness in the upper abdomen after eating a small meal; Heartburn, indigestion, or ulcer-type symptoms; Nausea; Vomiting with or without blood; Swelling of the abdomen	Surgery; Plus chemotherapy and radiation therapy for later stages.
No screening examinations routinely recommended other than reporting signs and symptoms of disease to health care professional	Lump on testicle; Testicular enlargement or swelling; Sensation of heaviness or aching in the lower abdomen or scrotum; Lower back pain	Surgery; Plus radiation therapy and chemotherapy for later stages
No screening examinations routinely recommended other than reporting signs and symptoms of disease to health care professional	Blood in the urine; Changes in bladder habits	Surgery; Plus radiation therapy, immunotherapy, and/or chemotherapy for later stages

American Cancer Society, Hawai'i Pacific, Inc.

The American Cancer Society combines an unyielding passion with nearly a century of experience to save lives and end suffering from cancer. As a global grassroots force of more than three million volunteers, we fight for every birthday threatened by every cancer in every community. We save lives by helping people stay well by educating people about how to prevent cancer or detect it early; helping people get well by being there for them with information and services during and after a cancer diagnosis; by finding cures through investment in groundbreaking research; and by fighting back by rallying lawmakers to pass laws to defeat cancer and by rallying communities worldwide to join the fight. In Hawai'i Pacific, six American Cancer Society field offices provide a wide range of programs and services to help cancer patients and their caregivers.

Stay Well

We save lives by helping people everywhere take steps to prevent cancer or detect it early, when it's most treatable. Whether it's helping you quit smoking, providing information on what cancer screening tests are right for you, or through simple tips to live a healthier lifestyle, the Society turns what we know about cancer into what we do about it.

Get Well

Whether it's the middle of the day or the middle of the night, the American Cancer Society is in your corner around the clock to guide you through every step of your cancer experience. The Society helps people get well by providing cancer patients with information, day-to-day help, and emotional support.

24-hour Information

The first thing most cancer patients want is more information. Cancer information is available 24-hours a day, seven days a week at 1.800.227.2345. If you speak Chinese, Ilocano, Japanese, Marshallese, Spanish, Tagalog, Vietnamese, or any other language, we can help. Our website, www.cancer.org, is also an invaluable information resource.

Day-to-Day Help

Telephone-Based Patient Navigators:

- Our telephone-based patient navigators can help guide you on your cancer journey. They can help you find transportation, a place to stay near your treatment center, and other resources to meet your needs.

Transportation to Treatment:

- If you need help getting to treatment and back home again, volunteer drivers may be able to give you a ride. ***Road to Recovery℠***

American Cancer Society®

THE OFFICIAL SPONSOR OF BIRTHDAYS.™

- We can help with air transportation to your treatment. We may also be able to help you with ground transportation resources such as gas cards, The Handi-Van coupons, bus passes and taxi vouchers.

Lodging During Treatment:

- If you need travel to treatment, we can help you find accommodations at hotels that offer reduced-rate guestrooms for cancer patients. ***Reduced-Rate Lodging***
- If you need to travel to the mainland for treatment, we may be able to help you with free, overnight housing while being treated for cancer. ***Hope Lodge®***

Appearance-related Side Effects of Treatment:

- ***Look Good…Feel Better®*** is a free program that teaches women in active cancer treatment ways to cope with appearance-related side effects of treatment.

"tlc"™ magalog:

- The ***"tlc"™, Tender Loving Care magalog,*** is the American Cancer Society's catalog/magazine for women fighting cancer. It offers helpful articles and a line of products that include wigs, hairpieces, breast forms, bras, hats, turbans, swimwear, and accessories.

Other Resources:

- Cancer patients sometimes need temporary help with other issues related to their treatment, including financial, legal, and insurance questions. For those experiencing severe weight loss, resources are available for nutritional support. For those not covered by insurance, breast prostheses and wigs are available. We can also help you find other resources specific to your needs.

Emotional Support

Online Support Community:

- Created by and for cancer survivors and their families, this online community is a welcoming, safe place for people to find hope and inspiration from others who have "been there." Services include discussion boards, chat rooms, private and secure e-mail, personal web pages, and Expression Gallery, and more. You can find the ***Cancer Survivor Network℠*** at **www.cancer.org**.

Breast Cancer Support:

- Breast cancer survivors volunteer to meet face to face or over the phone to give you the support and information you need to cope with a breast cancer diagnosis. ***Reach to Recovery®***

Childhood Cancer Programs:

- ***Hoʻoulu Me Ka Ikaika "Grow with Strength"***, is a retreat that helps teenagers and young adults ages 14 to 21 years old who have or have had cancer to not only survive their cancer, but also succeed and thrive in life.
- ***Camp Ānuenue*** is all about fun and friendship, strength and hope. This camp held in the beginning of summer is for children ages 7 to 17.
- ***Families Can*Sur*vive*** is a weekend conference held in the fall for families of children with cancer. This conference brings together the entire family – parents, brothers, and sisters – to regroup, refocus, and renew the power of ʻohana.

Cancer Education Classes:

- Our free ***I Can Cope*** program may be able to help you understand what you and your loved ones are facing. These classes are given by doctors, nurses, and other experts and cover topics such as fatigue, pain, nutrition, talking to your doctor, and managing side effects. Classes are offered in many communities, or you may choose to take our online versions in the comfort of your home. Online classes include videos, quizzes with feedback, and links to other information. Visit **www.cancer.org.**

Find Cures

We have a long history of saving lives by helping find cancer's causes and cures. Whether it's discovering medications that help people live longer and better than ever, or pioneering and promoting the most promising cancer prevention or screening tests, we've been involved in nearly every major cancer breakthrough in the last century. As the world's largest private funder of cancer research, contributing more than $3.4 billion, we support the best ideas of the brightest cancer researchers, who with each discovery are getting us closer to a world with more birthdays. Through research, we turn what we know about cancer into what we do, and as a result, more than 11 million people in America who have had cancer and countless more who have avoided it will be celebrating birthdays this year.

Fight Back

At its core, the American Cancer Society is a grassroots force of citizen-soldiers – passionate volunteers who tirelessly seek to save lives from cancer.

There are six American Cancer Society field offices located in Hawaiʻi and Guam. To contact any of the offices in your community, call **1.800.227.2345**.

Oʻahu:
Oʻahu Field Office
2370 Nuʻuanu Avenue
Honolulu, Hawaiʻi 96817

Kauaʻi:
Kauaʻi Field Office
P.O. Box 28
(4371 Puaole Street, Unit C)
Līhuʻe, Kauaʻi 96766

Maui:
Maui/Molokaʻi/Lānaʻi Field Office
Cameron Center
95 Mahalani Street
Wailuku, Maui 96793

Hawaiʻi:
West Hawaiʻi Field Office
75-5995 Kuakini Highway, Suite 443
Kailua-Kona, Hawaiʻi 96740

East Hawaiʻi Field Office
120 Pauahi Street, Suite 302
Hilo, Hawaiʻi 96720

Guam/Guåhan:
Guam Field Office
479 West O'Brien Drive, Suite 102
Bank of Guam, Santa Cruz Branch
Hagåtña, Guam 96910

We work with lawmakers everywhere to make this world a healthier place to live and we rally communities around the globe to join our fight.

Whether it's passing smoke-free laws, increasing funding for cancer research, improving access to quality health care, or inspiring communities to take up the fight, we fight on all fronts, because the lessons we learn from one battlefield can mean victory on another.

Through community events like ***Relay For Life®*** and ***Making Strides Against Breast Cancer®***, we mobilize the world's largest movement to defeat cancer once and for all.

The American Cancer Society, we save lives and create more birthdays.

Cancer Research Center of Hawai'i, University of Hawai'i

The Cancer Research Center of Hawai'i (CRCH) at the University of Hawai'i, is the only National Cancer Institute designated cancer research center serving Hawai'i and the Pacific. Research and education programs at the Center are conducted in a a multidisciplinary environment spanning developmental therapeutics, molecular biology, epidemiology, behavioral sciences, and clinical investigations. Established by the University's Board of Regents as a free-standing independent institute in 1981, the Center received its NCI designation in 1996 when it was awarded the Cancer Center Support Grant.

Today, the Cancer Research Center offers researchers the unique opportunity to study cancer in relation to Hawai'i's diverse and multiethnic populations with their disparate rates of cancer morbidity and mortality. Programs target understanding the etiology of cancer and reducing its impact on the people of Hawai'i. The Center provides leadership and focus in the following areas:

Research Programs & Support

Center faculty explore the causes, prevention, and treatment of cancer across a broad array of disciplines. Areas of focus include epidemiology, molecular carcinogenesis, prevention methods, and quality of life in cancer survivors, new therapeutic approaches to cancer treatment, and community-based interventions to promote cancer preventive lifestyles in the state's multiethnic population.

Clinical Trials & Studies

New clinical trials and therapeutic, screening, diagnostic, or preventive options are offered prevalently and at times exclusively through NCI-designated Cancer Centers. The remote geographical location of Hawai'i makes it imperative that the Center offer these trials locally, so that residents of Hawai'i and the Pacific Islands may access the most modern therapies close to home. Currently, the Center is involved in more than 200 clinical trials, each with the tremendous lifesaving potential for citizens locally, nationally, and globally.

The year 2010 brought great news to cancer patients and their families. After years of planning, the University of Hawai'i's Cancer Research Center announced efforts to build a state-of-the-art research facility in Kaka'ako to better serve the people of Hawai'i and the Pacific.

Cancer Research Center of Hawai'i
UNIVERSITY OF HAWAI'I
Working Towards a Cure

Research Training & Education

Training opportunities related to a broad array of cancer research are provided by Center faculty to trainees at a variety of educational levels ranging from high school students to practicing clinical oncologists. Additionally, faculty and staff routinely conduct public education and outreach activities to share the latest research and information promoting cancer awareness and prevention.

Public Information & Services

The Center serves as the key resource to the State of Hawai'i for information on the latest developments in cancer research and treatments. It also provides state residents access to the most current treatment therapies through its clinical trial program; and it operates the Hawai'i Tumor Registry which collects and maintains information on cancer incidence and outcomes. This invaluable resource provides physicians and researchers local data for conducting research and treating cancers, unique to Hawai'i's population.

What are Clinical Trials & Why Are They Important?

In cancer research, a clinical trial is a study conducted to evaluate new treatment or prevention methods. Each study is designed to answer scientific questions and to find new and safer ways to treat cancer patients. The search for good cancer treatment begins with basic research in laboratory and animal studies and, if successful, leads to research with patients.

Advances in medicine and science result from new ideas and approaches developed through research. Patients participating in clinical trials provide valuable information concerning the safety and effectiveness of new treatments or preventive strategies. New treatments are carefully studied first in the laboratory. If proven to be safe and effective, they are then made available to all patients.

Information about specific trials can be obtained by calling the Center's Clinical Trials Unit at 808-586-2979 or on the Center's website at **www.crch.org.**

The American Cancer Society at 1-800-227-2345 or the National Cancer Institute's Cancer Information Service at 1-800-4-CANCER can also provide information about clinical trials. Both organizations can also be reached through their websites at **www.cancer.org** or **www.cancer.gov.**

The Hawai'i Tumor Registry (HTR) has several goals, chief among are the following:

- Determine cancer incidence and monitor cancer trends with respect to demographic and social characteristics of the population;
- Determine survival experience for cancer patients and monitor cancer survival trends with respect to form of cancer, extent of disease, therapy, and parameters of other prognostic importance;
- Identify cancer risk factors by conducting special studies which disclose groups with higher or lower cancer risks; and
- Identify factors related to patient survival through special studies of referral patterns, diagnostic procedures, treatment methods and other aspects of medical care.

The National Cancer Institute's National Outreach Network (NON)

The National Cancer Institute's (NCI) Cancer Information Service (CIS) Partnership Program at the University of Hawai'i, Cancer Research Center of Hawai'i, with an office based at the University of Guam, officially closed its doors on January 14, 2010.

Cancer patients and their families, health care providers, and the general public can still obtain the latest information about cancer at: **www.cancer.gov/aboutnci/cis** (1-800-422-6237), or by using the NCI's LiveHelp instant-messaging service at: **https://cissecure.nci.nih.gov/livehelp/welcome.asp**

In 2010, the National Cancer Institute will be building a National Outreach Network through its support of five different community-based research mechanisms. NCI's outreach network will be comprised of community health educators funded through NCI-sponsored community-based research programs. Three of the four programs already established in the Hawai'i-Pacific region (as of January 2010) are based right here at the CRCH, including our own Minority-Based Community Clinical Oncology Program (MBC-COP), our Minority Institutions/Cancer Center Partnership (MI/CCP) which supports research collaboration between the CRCH and the University of Guam, and as an NCI-designated cancer center the CRCH will also be eligible for NCI outreach funding as it comes available in 2010.

Individuals with questions or seeking more information about our community education and outreach efforts may call the main center number at 808-586-3010.

Cancer Research Center of Hawai'i
Hawai'i Tumor Registry
UNIVERSITY OF HAWAI'I

Central Statewide Collection of All Cancer Data

As one of the eighteen NCI/SEER regions nationwide, the HTR provides detailed information on almost 6,700 new Hawai'i cases of cancer (including ***in situ***) each year, while also collecting annual follow-up data on more than 40,000 diagnosed Hawai'i patients. Patient follow-up continues throughout each individual's lifetime. Currently, the HTR database contains more than 136,000 cases diagnosed among Hawai'i's residents from 1960-2005, and serves as the basis for local and national presentations, publications, and hundreds of information disseminations annually. Detailed data can be secured by contacting the HTR. Names of patients, physicians, and treatment facilities are not released. To ensure accuracy, strict quality control/assurance procedures have been established. These include review of collaborating hospital abstracts for accuracy and completeness by HTR and medical personnel. The HTR also participates in two SEER quality control audits each year, along with special NCI/SEER research studies.

The Cancer Center & UOG Partnership

University of Hawai'i
Cancer Research Center of Hawai'i
and University of Guam
Partnership

The CRCH, an NCI-designated cancer center, and the University of Guam (UOG), the only four year university in the U.S.-Affiliated Pacific Islands (USAPI), have been engaged in a unique and successful partnership over the past six years, currently supported by a U-54 grant through the Minority Institution/Cancer Center Partnership program of the Center to Reduce Cancer Health Disparities (CRCHD) at the National Cancer Institute. Both institutions intend to build on the remarkable acheivements of the past six years, and to sustain the unique partnership between UOG and CRCH with the following aims: a) to increase the cancer research activities and the number of faculty enaged in cancer research at UOG, b) to increase the number of minority scientists of Pacific Islander ancestry engaged in cancer research, c) to further strengthen the research focus at CRCH on cancer health disparities with particular emphasis on aspects of relevance for the people of Hawai'i and the Pacific, and d) to enhance the awareness of cancer and cancer prevention and, ultimately, to reduce the impact of cancer on the population in the Terittory of Guam, and the other U.S.-Affiliated Pacific Islands and Hawai'i.

Hawai'i Comprehensive Cancer Control Program

The Hawai'i Comprehensive Cancer Control Program (HCCCP) is an ***"integrated and coordinated approach to reducing cancer incidence, morbidity, and mortality through prevention, early detection, treatment, rehabilitation, and palliation".*** This approach is essential to the creation of an effective statewide cancer control plan. The Hawai'i State Cancer Plan (Revised 2010), developed by the Hawai'i Comprehensive Cancer Control Coalition, outlines goals and strategies that will assist in making further progress toward reducing the burden of cancer in the present and future. Stakeholders work together to identify gaps in cancer control areas and identify ways to improve cancer care in the state adhering to the long-term vision of ***"No More Cancer,"*** which will not only be a message of hope, but a measurable reality. Cancer affects the individual, ***'ohana*** (family), and community, and does not discriminate.

The Hawai'i Breast & Cervical Cancer Control Program

The Hawai'i Breast and Cervical Cancer Control Program (HBCCCP) is funded via a cooperative agreement with the CDC as part of the National Breast and Cervical Cancer Early Detection Program (NBCCEDP). Elements of the program include screening, tracking, follow-up, quality assurance and improvement, surveillance, public and professional education, case management, and program evaluation. HBCCCP provides breast and cervical cancer screening and diagnostic services to low-income, underinsured, or uninsured women aged 40-64. Twelve providers throughout the state provide breast and cervical screening and diagnostic services to medically hard to reach women residing in each of Hawai'i's counties. More than 10,000 women have received breast and cervical screening and/or diagnostic exams through the HBCCCP and through this effort, 136 cases of invasive breast cancer, 38 pre-cancerous breast conditions, 4 invasive cervical cancers, and 117 pre-cancerous cervical lesions have been detected. Hawai'i BCCCP has established a centralized data system using Cancer Screening and Tracking (CaST) software to collect, edit, and manage the data needed to track a woman's screening and diagnostic services as well as document initiation of treatment in the program.

Hawaii Comprehensive Cancer Control

Hawai'i Tobacco Prevention & Education Program

The Hawai'i Tobacco Prevention & Education Program (TPEP) is the official state government program addressing tobacco control in Hawai'i. It is funded under a cooperative agreement with the CDC through the Comprehensive National Tobacco Control Program. The Program's activities are based on four overall goals: 1) Prevent tobacco use initiation among youth and young adults; 2) Promote quitting among adults and youth; 3) Eliminate exposure to secondhand smoke; and 4) Identify and eliminate tobacco-related disparities among population groups. The purpose of the TPEP is to reduce tobacco consumption through a comprehensive multi-strategy approach that reflects prevention and education strategies. This approach focuses on an integrated structure for implementing best practices for comprehensive tobacco control programs that are proven to be effective. Those approaches include state and community interventions, health communication interventions, cessation interventions, surveillance and evaluation, and effective administration and management.

Cancer-Related Data & Surveillance

The Office of Health Status Monitoring (OHSM) collects and analyzes data to assess the health status of Hawai‘i’s multi-ethnic population. State mortality data is compiled and provided to the Hawai‘i Tumor Registry.

The Behavioral Risk Factor Surveillance System (BRFSS) collects information on health risk behaviors of adult residents and monitors the prevalence of these behaviors over time. The survey includes data on cancer screening, nutrition, and physical activity behaviors. The Youth Tobacco Survey (YTS) and the Youth Risk Behavior Survey (YRBS) are conducted in middle and high schools to monitor youth behavioral risk factors. Surveillance data is available as community profiles to inform state and communities on program planning.

Healthy Hawai‘i Initiative

The Healthy Hawai‘i Initiative (HHI) is funded by tobacco settlement dollars through legislative mandate and is a major, statewide effort to promote and support healthy lifestyles and environments to ultimately reduce the burden of chronic disease. The primary risk and protective factors of the initiative are nutrition, physical activity, and tobacco. To change community norms and supportive environments for healthy lifestyles, the initiative has four major component areas: school based programs, community programs, public and professional education, and program evaluation. The goal of the initiative is to increase years of healthy life for all and to reduce existing health disparities among ethnic groups in Hawai‘i.

Makapu‘u Lighthouse, O‘ahu

Environmental Health

The Environmental Health Administration (EHA) of the State Department of Health responds to emergency events and investigates, assesses, and advises on health risks of exposures to environmental hazards and chemicals. Noise/Radiation Branch monitors all mammography and x-ray facilities.

The Genetics Program

The Genetics Program administers grants, provides education, develops legislation, and provides coordination and oversight for genetics activities in the state. The Program develops and conducts education about general genetics and the genetics of common diseases including cancer, diabetes, and heart disease to health care providers, public health workers, consumers, and policy makers.

The Genetics Program is also involved in many research activities such as expanded newborn screening for metabolic disorders, breast, ovarian and colon cancer risk assessment counseling, and genetic counseling and evaluation for newborns and young children detected with hearing loss. The Program is expanding its activities to incorporate more education and model projects to demonstrate the benefit of incorporating genetics into routine clinical care.

(Listed in Alphabetical Order)

American Cancer Society

The American Cancer Society (ACS) combines an unyielding passion with nearly a century of experience to save lives and end suffering from cancer. As a global grassroots force of more than three million volunteers, we fight for every birthday threatened by every cancer in every community. We save lives by helping people stay well by educating people about how to prevent cancer or detect it early; helping people get well by being there for them with information and services during and after a cancer diagnosis; by finding cures through investment in groundbreaking research; and by fighting back by rallying lawmakers to pass laws to defeat cancer and by rallying communities worldwide to join the fight. In Hawai'i Pacific, six American Cancer Society field offices provide a wide range of programs and services to help cancer patients and their caregivers.

Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is a survey of the Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) and the U.S. states and territories. In Hawai'i, the BRFSS is administered by the Hawai'i Department of Health, Community Health Division. The survey is designed to provide state prevalence estimates on behavioral risk factors such as cigarette smoking, physical activity and cancer screening. Data are gathered through monthly, computer-assisted telephone interviews on adults aged 18 years or older living in households in a state or U.S. territory. The BRFSS is an annual survey, and all 50 states, the District of Columbia and Puerto Rico have participated since 1996. The methods are generally comparable from state to state and from year to year, which allows states to monitor the effects in interventions over time. Prevalence estimates from BRFSS are subject to several limitations. The prevalence estimates are only applicable to adults living in households with a residential telephone line. Although 95 percent of U.S. households have telephones, the coverage varies throughout the U.S., ranging from 87 to 98 percent in the states.

Census 2000/Hawai'i State Data Center

The Census Bureau collects information on population and housing characteristics at the state level, as well as population and housing unit counts for cities, counties, and American Indian and Alaska Native areas. Community leaders use the census for everything from planning schools and building roads to providing recreational opportunities and managing health care services. The mandate for conducting a census every 10 years comes from the U. S. Constitution. Detailed information is available that summarizes characteristics from every person and household in the United States by age, race, and family composition. Samples from households also provide user information such as income, education and occupation, as well as broader issues such as demographic trends and economic opportunities. The Hawai'i State Data Center is the coordinating agency between the U.S. Census Bureau and the state of Hawai'i. To assist in dissemination of information, the Hawai'i State Data Center, under the Department of Business, Economic Development and Tourism (DBEDT), publishes the Hawai'i State Data Book.

Centers for Disease Control & Prevention

The Centers for Disease Control and Prevention (CDC) is recognized as the lead federal agency for protecting the health and safety of people – at home and abroad, providing credible information to enhance health decisions, and promoting health through strong partnerships. CDC serves as the national focus for developing and applying disease prevention and control, environmental health, and health promotion and education activities designed to improve the health of the people of the United States. By working with public health and grassroots partners, and by leveraging the voices of the internet, and communication media, the CDC ensures the best health and safety information is accessible to the communities and people who need it every day. CDC, located in Atlanta, Georgia, U.S.A., is an agency of the Department of Health and Human Services. Data sources used for this report include Chronic Disease Notes and Reports.

Hawai'i Tumor Registry, Cancer Research Center of Hawai'i

The Hawai'i Tumor Registry (HTR) maintains a confidential database of information on all cases of cancer and benign brain tumors and many blood disorders diagnosed in the State of Hawai'i. It provides complete cancer reporting for the entire state and serves as a resource for all population-based epidemiologic cancer research and cancer control activities in Hawai'i. In its years of operation, HTR has been the sole and authoritative source of cancer data and information for residents of Hawai'i. Its data are published and used for local, national, and international research efforts. HTR was established in 1960 by the Hawai'i Medical Association (HMA), the Hawai'i State Department of Health (DOH), and the Hawai'i Pacific Division of the

American Cancer Society. Presently, HTR is jointly operated by the Cancer Research Center of Hawai'i and DOH. Since 1973, HTR has received its primary financial support from the National Cancer Institute and is a member of the Surveillance, Epidemiology, and End Results (NCI/SEER) Program, with additional funding from DOH.

Surveillance, Epidemiology & End Results Program

The Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute is the most authoritative source of information on cancer incidence and survival in the United States. According to a review by Hankey, Ries, and Edwards*, the primary objectives of the SEER Program include: (1) developing and reporting estimates of cancer incidence and mortality; (2) monitoring cancer incidence trends to identify atypical changes in population subgroups; (3) reporting changes over time in diagnosis, treatment, and survival; and (4) encouraging studies focused on factors and determinants of length and quality of survival such as lifestyle choices, socioeconomic status, environment, early detection practices, and patterns of care that are amenable to cancer control efforts. Case ascertainment for SEER began on January 1, 1973. The SEER Program currently collects and publishes cancer incidence and survival data from 11 population-based cancer registries and three supplemental registries covering approximately 14 percent of the U.S. population. Expansion registries increase the coverage to approximately 26 percent. Information on more than 3 million ***in situ*** and invasive cancer cases is included in the SEER database, and approximately 170,000 new cases are accessioned each year within the SEER catchment areas. The SEER Registries routinely collect data on patient demographics, primary tumor site, morphology, and stage at diagnosis, first course of treatment, and follow-up for vital status. The annual SEER publication, Cancer Statistics Review, includes cancer incidence, mortality, patient survival rates, and other data by anatomical site. The SEER Program is the only comprehensive source of population-based information in the United States that includes stage of cancer at the time of diagnosis and survival rates within each stage. The mortality data reported by SEER are provided by the National Center for Health Statistics.

* Hankey, BF, Ries, LA, and Edwards, BK (1999). The Surveillance, Epidemiology, and End Results Program: A National Resource. Cancer Epidemiology Biomarkers & Prevention Vol. 8, 1117-1121, December 1999

Youth Risk Behavior Survey

The Youth Risk Behavior Survey (YRBS) is a survey of the Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). In Hawai'i the YRBS is administered by the University of Hawai'i on behalf of the Hawai'i Department of Health. The survey is designed to provide national, state, and local prevalence estimates on health risk behaviors, such as tobacco use, unhealthy dietary behaviors, physical inactivity, and others, among youth and young adults who attend public and private high schools. Different statistical methods are used to choose the representative sample for the national, state, and local prevalence estimates. Data are gathered through a self-administered questionnaire, which was completed during a required subject or class period. The YRBS is a biennial survey, which began in 1991. The state and local surveys are of variable data quality and caution should be used in comparing data between them. Data from states and local areas with an overall response rate of 60 percent and appropriate documentation are considered weighted and are generalized to all public and private high school students in grades 9 to 12 in the respective jurisdiction. However, data from states and local areas without an overall response rate of 60 percent and inappropriate documentation are considered unweighted and are only applicable to students participating in the survey.

Youth Tobacco Survey

The Youth Tobacco Survey (YTS) is a survey of the Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). It was designed to assist states in developing and maintaining their state-based comprehensive tobacco prevention and control programs. The Youth Tobacco Surveillance and Evaluation System includes international, national, and state school based surveys of middle school and high school students. The YTS is a biennial survey that complements the YRBS by providing more comprehensive data regarding tobacco and by providing information on knowledge, attitude, and beliefs regarding both middle school and high school students. The YTS and YRBS use identical sampling methodologies and the same wording for questions about tobacco use to enable states to use the high school data regarding tobacco use collected by both surveys. In Hawai'i, the YTS is administered by the University of Hawai'i on behalf of the Hawai'i Department of Health. The state YTS employs a two-stage cluster sample design to produce representative samples of students in middle schools (grades 6–8) and high schools (grades 9–12). Data are gathered through a self administered questionnaire, which is completed during a required subject or class period. Data from Hawai'i high schools and middle schools had an overall response rate of 60 percent, had appropriate documentation, and was considered weighted. Therefore responses are generalized to all public and private high school students in grades 9 to 12 in the respective jurisdiction.

Where do reports of cancer cases come from?

Each time a person is diagnosed with a new tumor, the hospital(s) where that person is diagnosed and/or treated reports information about the person and tumor to the Hawai'i Tumor Registry (HTR) at the Cancer Research Center of Hawai'i, as required by law. The information required by the HTR is obtained from each patient's medical record. Data about patients with cancer are also collected from radiation treatment centers, pathology laboratories, managed care organizations, death certificates and cancer registries in other states. It takes almost two years for all this information to be reported to the Hawai'i Tumor Registry and processed.

In terms of the cancer burden, what do incidence, mortality & staging data tell us?

Incidence (or cases of new cancer) is used to study the risk of disease and is related to the prevalence of risk factors. Behaviors such as tobacco use, poor diet and physical inactivity, excess exposure to sun, family history, exposure to certain chemicals, etc., can increase a person's risk of getting cancer. Mortality (or cancer death) is used to study the risk of dying of a disease and is related to use of early detection tests, stage of diagnosis, screening rates, and access to treatment. In general, the earlier cancer is diagnosed, the greater likelihood of successful treatment and survival. Following the American Cancer Society early detection guidelines facilitates early diagnosis. Treatment, in turn, must be readily accessible. Barriers to quality treatment contribute to higher mortality.

What is the difference between cancer counts & cancer rates?

The count is the actual number of new cases (incidence) or deaths (mortality). These actual numbers are used in a formula to determine rates. Rates express the number of new cases (incidence) or deaths (mortality) that would occur in a population of a specific size during a given time period. For adults, rates are usually expressed as per 100,000 populations.

How do you decide whether to use cancer counts or cancer rates?

Rates measure the risk of likelihood of an event, such as diagnosis of a cancer or a death caused by a cancer. Rates are used when you want to make comparisons between groups of differing sizes, such as states, counties, sexes, or racial/ethnic groups. Rates can also be used to look at trends over time. In Hawai'i, rates are not calculated when the number of new cases (incidence) or deaths (mortality) is equal to 20 or fewer in a given time period. Counts or estimates can be used when planning programs within a specific area. For example, looking at the actual number of new cases (incidence) and deaths (mortality) due to lung and bronchus, breast, prostate, colon and rectum, and other cancers can help prioritize allocation of time and resources. Counts cannot be used to make comparisons between different sized populations such as states, counties, racial/ethnic groups, etc.

If a patient lives in one county, but is treated for cancer in another county, for what county is the case reported?

It is reported for the patient's county of residence, regardless of where he/she is treated.

Are cancer data available at the local level?

It depends on the population size. In areas with a small population, local data are not always available because either the number of cases is too few to report annual rates and/or patient confidentiality may be compromised if cases can be tracked to specific individuals. To overcome the limitation of small population size, multiple years/averages can be reported for a small area (i.e., 2000-2005 average) or small areas can be combined to report data regionally.

Mānana Island (Rabbit Island) & Kāohikaipu Island (Turtle Island), Windward O'ahu

Cancer Patient Resources & Websites

American Cancer Society (ACS)
www.cancer.org

American College of Surgeons (ACoS)
Commission on Cancer (CoC)
www.facs.org

American Medical Association (AMA)
www.ama-assn.org

Asian American Network for Cancer Awareness, Research & Training (AANCART)
www.aancart.org

Behavioral Risk Factor Surveillance System (BRFSS/CDC)
www.cdc.gov/brfss/

Cancer Control Planet, National Cancer Institute (NCI)
http://cancercontrolplanet.cancer.gov/

Cancer Research Center of Hawai'i (CRCH)
www.crch.org

Center for Disease Control & Prevention (CDC)
www.cdc.gov

Fedstats (Gateway to statistics from over 100 U.S. Federal agencies)
www.fedstats.gov/

Hawai'i Department of Business, Economic Development & Tourism (DBEDT)
www.hawaii.gov/dbedt/

Hawai'i Department of Education (DOE)
www.doe.k12.hi.us/index.php

Hawai'i Department of Health (DOH)
www.hawaii.gov/health/

Hawai'i Health Information Corporation (HHIC)
www.hhic.org

Hawai'i Tumor Registry (HTR)
www.crch.org/htr.htm

Healthy Hawai'i Initiative, Hawai'i Department of Health
www.healthyhawaii.com

Inter-Cultural Cancer Council (ICCC)
www.iccnetwork.org/

Let's Move
www.letsmove.gov/

Minority-Based Community Clinical Oncology Program (MB/CCOP)
www.crch.org/clinicaltrials.htm

Minority Institutions Cancer Center Partnership (MI/CCP), National Center for Health Disparities (NCHD/NCI)
www.cancer.gov/nchd/

National Cancer Institute (NCI)
www.cancer.gov

National Center for Health Statistics (NCHS/CDC)
www.cdc.gov/nchs/

National Center to Reduce Health Disparities (CRDHD)
http://crchd.cancer.gov/

National Program of Cancer Registries (NPCR)
www.cdc.gov/cancer/npcr/

North American Association of Central Cancer Registries (NAACCR)
www.naaccr.org

PubMed, National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health
www.ncbi.nlm.nih.gov

Surveillance, Epidemiology and End Results Group (SEER) Program
www.seer.cancer.gov/

The Smoking Quitline (NCI)
www.smokefree.gov

Mauna Kea,
Island of Hawai'i

This edition of Hawai'i Cancer Facts & Figures 2010 is dedicated to all the courageous people who face the challenges of cancer in their lives – past, present, and future.

This publication is also lovingly dedicated to all those who have died of cancer – our mothers, fathers, husbands, wives, partners, aunts, uncles, cousins, grandmothers, grandfathers, friends, and neighbors.

Their presence and eternal spirit remain in the hearts of their loved ones, caregivers, and of all people who work as cancer advocates.

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Hawaii Comprehensive Cancer Control

Hawaii State Department of Health