

Native Hawaiians mortality, morbidity, and lifestyle: comparing data from 1982, 1990, and 2000

Abstract: This paper shares 2000 data on Native Hawaiian health and compares the 2000 data with data from 1982 and 1990. The findings suggest that Native Hawaiians continue to die at younger ages than Hawai'i residents in other ethnic groups, have a higher prevalence of hypertension, diabetes, and asthma than other ethnic groups, and have higher rates of smoking, drinking, and being overweight. Compared to earlier years, however, smoking and drinking prevalence has decreased, and more Native Hawaiians are getting physical exams and other screening exams. These improvements may be related to increases in Native Hawaiian health professionals, supported by the Native Hawaiian Health Scholarship Program, and to increased access to health education and to care through outreach programs such as the Native Hawaiian Health Care Systems and the Breast and Cervical Cancer Control Program. If these programs are allowed to continue and to expand, we should see an improvement in overall health status of Native Hawaiians.

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Introduction

This paper presents 2000 data on Native Hawaiian health and compares the 2000 data with data from 1982 and 1990. It is a summary of a 64-page report prepared by the authors for Papa Ola Lōkahi¹. The last comprehensive report on Native Hawaiian health status presented data from 1989-1991, and a summary of that report appeared in this journal in September 1998²⁻³. In this article, 1999-2000 data are presented on mortality rates, years of life lost, morbidity rates, and prevalence of behavioral risk factors. These statistics are important because they tell us which health problems need to be addressed to improve the overall well being of the population. For example, by knowing that the Native Hawaiian population has a disparately high rate of diabetes and that diabetes is a leading cause of death and disability, we know that interventions are needed that can help Native Hawaiians prevent and control diabetes.

Method

To compute mortality rates, the Hawai'i Department of Health's (DOH) vital statistics data were used as the numerator and the 2000 Census data as the denominator. The

morbidity rates were computed from numerators and denominators provided by the Hawai'i Health Survey (HHS), formerly called the Health Surveillance Survey. This is appropriate, since ethnic classification differs for the HHS than for the Census data. Morbidity comparisons are much more focused in recent years, since the HHS, conducted by the Office of Health Status Monitoring (OHSM) at the Hawai'i DOH, now limits data collection to a few conditions, namely arthritis, asthma, diabetes, hypertension, and high cholesterol. Hypertension and high cholesterol have a relationship with heart and circulatory diseases. Heart conditions are followed intermittently and through special studies and will not be addressed in this report.

To compute cancer incidence and mortality, we used data from the Hawai'i Tumor Registry (HTR), which is operated by the Cancer Research Center of Hawai'i as the numerator and the 2000 Census data as the denominator. The HTR is a state-wide registry that has been a member of the Surveillance, Epidemiology and End Results (SEER) program of the National Cancer Institute since 1973. Biostatisticians at CRCH have updated the cancer incidence and mortality rates available for the main ethnic groups in the state using data from the HTR, the 2000 US Census, and Hawai'i DOH⁴.

Findings

Mortality

Death by Age Group. In 2000, Native Hawaiians comprised about 20% of Hawai'i's population, and they accounted for 16.5% of the 8,163 deaths in the state that year. If all things were equal, we would expect that Native Hawaiians would account for 16 to 20% of deaths in each age group. However, the data show that higher-than-expected percentages of Native Hawaiians are dying in the young age groups and lower-than-expected percentages of Native Hawaiians are dying in the older age groups. This is due, in part, to the fact that Hawaiians have a lower life expectancy than other ethnic groups in Hawai'i, meaning that fewer live into old age. Looking at causes of death by age group:

- 39% of all deaths of children under age 18 were Native Hawaiian. Perinatal conditions accounted for 38% of all

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Native Hawaiian deaths for this age group.

- 32% of all deaths for adults age 18–24 were Native Hawaiian. The two primary causes of Native Hawaiian deaths in this age group were motor vehicle injuries (30%) and intentional self-harm (suicide; 39%).
- 27% of all deaths for adults age 25-34 were Native Hawaiian. The two primary causes of Native Hawaiian death were intentional self-harm (28%) and cancer (19%).
- 33% of all deaths for adults age 35-44 were Native Hawaiian. Heart disease was the leading cause of death for Native Hawaiians, 21%, compared to 13% for all other ethnic groups; and cancer was the cause of death for 19% of Native Hawaiian deaths compared to 25% for all other ethnic groups.
- 22% of deaths in the 45-54 age group were Native Hawaiian. In this age group, 34% of Native Hawaiian deaths were from heart disease compared to 13% for all other groups, and 27% of all Native Hawaiian deaths were from cancer compared to 28% of all deaths for all other ethnic groups. In this age group, Native Hawaiians accounted for 31% of all deaths from cerebrovascular incidents (stroke), 47% of all deaths from motor vehicle crashes, and 50% of all the deaths caused by diabetes.
- 27% of deaths in the 55-64 age group were Native Hawaiian. The leading cause of death for Native Hawaiians in this age group was heart disease (38%), followed by cancer (31%). Native Hawaiians accounted for half of all deaths from kidney diseases, 28% of all deaths from chronic lower respiratory disease, and 45% of all deaths

from diabetes.

- 20% of deaths in the 65-74 age group were Native Hawaiian. Heart diseases accounted for 37% of these deaths, and cancer for 31% of all Native Hawaiian deaths in this age group.
- Only 13% of deaths in the 75-84 age group were Native Hawaiian; 43% died from heart disease and 21% from cancer.
- Only 7% of the deaths in people 85 and older were Native Hawaiian. Of the 151 Native Hawaiian deaths in this age group, 43% of them were due to heart disease.

Age-Adjusted Death Rates for Year 2000: Because Native Hawaiians die at younger ages than do other ethnic groups, the population has a younger life expectancy and a younger population distribution. Thus, to compare mortality rates among ethnic groups (all of which have different population distributions), a statistical method called age adjustment is applied. This procedure formulates appropriate comparisons to a “standard” population with a fixed age structure.

Examining the 2000 data, Hawaiians had the highest age-adjusted death rates for all causes of death and for heart disease, cancer, diabetes, other diseases of the circulatory system, and perinatal conditions. Within the category of cancer, Native Hawaiians had the highest age-adjusted death rates for breast cancer, lung cancer, colorectal cancer, and cancer of the pancreas. Filipinos had the highest age-adjusted death rates for stroke, kidney disease, and motor vehicle injury. Caucasians had the highest age-adjusted death rates for chronic lung disease, non-motor vehicle injury, self-inflicted harm, and assault. More detail

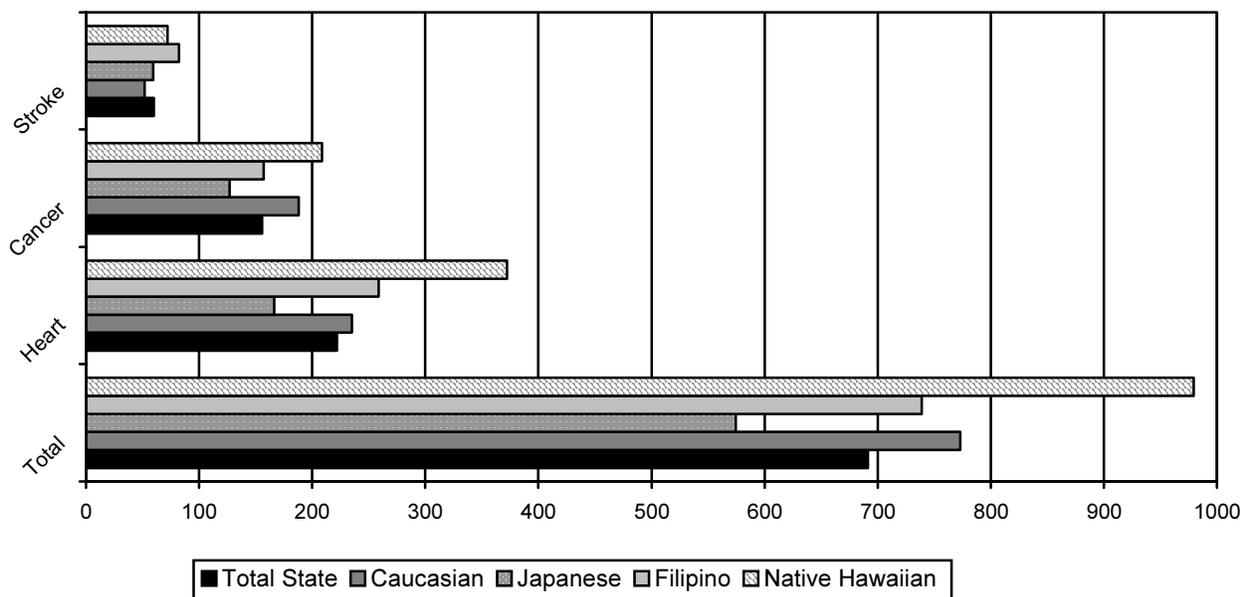
Table 1. Age-adjusted death rates, by ethnicity and cause of death, 2000

Causes of death	Total	Caucasian	Japanese	Filipino	Native Hawaiian
All Causes	691.4	773.0	574.6	738.6	979.5
Heart disease	221.9	235.1	166.5	258.8	372.3
Cancer	155.8	188.2	126.9	157.1	208.6
Stroke	60.0	51.9	59.5	82.3	72.0
Diabetes	16.3	12.5	12.0	20.7	38.8
Chronic respiratory diseases	22.2	33.3	15.7	21.0	29.3
Other circulatory diseases	13.6	10.1	11.7	18.1	26.7
Kidney disease	11.3	11.1	8.9	17.9	17.2
Injury (except by motor vehicle)	16.2	23.4	12.6	*	18.2
Intentional self-harm	12.3	17.8	7.9	*	15.6
Motor vehicle injury	11.3	11.6	*	15.8	13.8
Perinatal conditions	6.7	*	*	*	8.4
All other diseases	136.8	157.8	139.0	115.1	151.2
Assault, other external causes	7.0	14.4	*	*	*

* Totals were too small to age-adjust

Source: DOH, Vital Statistics. Rates were age-adjusted based on the 2000 U.S. Census Population. Causes of death were coded according to the International Classification of Diseases, Version 10. Rates by ethnicity were calculated using population estimates from the 2000 HHS.

Figure 1. Hawai'i age-adjusted deaths rates, by ethnicity and cause of death, 2000



for Hawai'i's major ethnic groups is presented in Table 1, and Figure 1 presents ethnic comparisons for the leading causes of death.

The top five causes of death among Native Hawaiian in 2000 were the same as those in 1990 (Table 2), even though some of mortality rates changed slightly during that time interval.

Years of Productive Life Lost: Calculating a statistic called "years of productive life lost" (YPLL) allows us to assess the effect of mortality. The technique assumes that the first 65 years of life are the most productive and that people who die prior to age 65 lose a number of years of productive life. YPLL is calculated for each person in the population and aggregated by cause of death and by ethnicity. YPLL figures for 2000 are shown in Table 3. These data suggest that for the year 2000, 39,645 years of potential life were lost, which equates to an average of 4.9 years per death.

Native Hawaiians lost significantly more years of productive life than any other group, 12,225 years with an average

of 9.0 YPLL per death. In comparison, Filipinos lost an average of 5.2 YPLL per death, Caucasians lost an average of 4.7 YPLL per death, and Japanese lost an average of 2.0 YPLL per death.

Morbidity

Age-Adjusted Morbidity Rates: Morbidity is the presence of acute or chronic conditions that are a cause or effect of illness or disease, and chronic morbidity refers to long-term illness and impairments. Data on chronic morbidity show that, over the past three decades, Native Hawaiians have experienced higher rates of chronic illness than have other groups. Going back to data from the mid-1970s⁵, Native Hawaiians had higher than expected age-sex standardized rates of heart disease, hypertension, and stroke than other ethnic groups in Hawai'i. In the period of 1989-91, age-adjusted morbidity for Native Hawaiians continued to be higher than for other groups for heart conditions, stroke, hypertension, asthma, and diabetes³. Year 2000 age-adjusted rates for the five chronic conditions currently being followed by the DOH suggest that Native Hawaiians continue to show higher rates than other ethnic groups on asthma, diabetes, and hypertension (Table 4). These data also suggest that, in 2000, Japanese had the highest rates of high cholesterol, and Filipinos had the highest rates of arthritis.

Compared to 1989-1991, however, more Native Hawaiians are reporting problems with arthritis in 2000. Native Hawaiian rates for asthma have almost doubled since 1989-1991 and are now 1.5-2.0

Table 2. Comparison of Hawai'i age-adjusted death rates per 100,000

Selected causes of death	Total State		Native Hawaiian	
	1989-91	2000	1989-91	2000
Heart Disease	201.1	221.9	333.4	372.3
Cancers	159.7	155.8	231.0	208.6
Stroke	51.8	60.0	58.3	72.0
Accidents	26.8	27.5	38.8	32.0
Diabetes	15.1	16.3	34.7	38.0

Source: See Table 1 for 2000 data. For 1989-91 data see Table 4 of PHD Vol.5. No 2, 1998

Table 3. 2000 resident deaths by “years of potential life lost” before age 65, by ethnicity

Causes of death	Total State	Caucasian	Japanese	Filipino	Native Hawaiian
Cancers	7,209	1,840	1,257	1,046	2,016
Heart disease	5,933	1,452	779	878	2,023
Perinatal conditions	5,265	845	390	1,170	1,755
Intentional self-harm	3,077	866	335	325	1,128
Non-motor vehicle injury	2,691	1,098	191	217	943
Motor vehicle injury	2,835	626	151	505	870
Assault & other external causes	2,155	867	117	317	586
Stroke	1,512	137	420	366	385
Diabetes	518	57	97	99	202
Chronic respiratory diseases	571	145	93	66	175
Kidney diseases	219	116	8	-	94
Other circulatory diseases	372	81	104	46	78
All Other Diseases	7,288	2,298	953	899	1,970
TOTAL	39,645	10,428	4,895	5,934	12,225

Source: DOH, Vital Statistics. Causes of death were coded according to the International Classification of Diseases, Version 10. The figures in this table are higher than the actual number of deaths due to the coding of multiple causes.

times higher for Native Hawaiians than for any other ethnic groups. Rates of diabetes have almost doubled as well in the past ten years, and the age-adjusted rate of diabetes in Native Hawaiians is now three times higher than in Caucasians (although rates of diabetes have increased in all ethnic groups since 1989-1991). Hypertension prevalence has increased rapidly during the previous decade for both the Native Hawaiian and statewide population; however, Native Hawaiians still have substantially higher rates of hypertension than do other ethnic groups.

Future morbidity: It is somewhat risky to predict the future. Yet, an “educated guess” about future morbidity can be made based on available data and the assumption that past and present conditions will continue into the future. We compared the age-adjusted rates of four morbidity conditions for which data were available back to the early 1980s—arthritis, asthma, diabetes and hypertension. The 1982 data were reported in the 1985 *E Ola Mau Study*, the 1990 data were reported in this journal in 1998, and the 2000 data were obtained from the Hawai’i DOH^{1,3,6}. Rates for all three time points were based on data from the HHS and, although the HHS method of data collection has

changed over the years, we feel that the data are comparable.

Figures 2-5 present the age-adjusted morbidity rates for these four conditions for these 3 data points, along with a forecast of the morbidity rate for the year 2010. We see increases in age-adjusted rates for each of these 4 chronic conditions since 1982, for both Native Hawaiians and for the total population of Hawai’i. Without interventions, we forecast that morbidity rates for Native Hawaiians for asthma (Figure 3), diabetes (Figure 4), and hypertension (Figure 5) will continue to be higher than for the state as a whole, while Native Hawaiian rates for arthritis (Figure 2) will remain lower than for the state as a whole in 2010.

A closer look at cancer incidence and mortality

Among the five main ethnic groups in Hawai’i, Native Hawaiian men had the third highest overall cancer incidence rate between 1995 and 2000, after Caucasian and Filipino men (Table 5). The incidence rates for Hawaiian and Caucasian men have leveled off, and possibly decreased in the most recent time-period, whereas the incidence rate for

Table 4. Age-adjusted morbidity rates (per 1,000) by ethnicity, 2000

	Total State	Caucasian	Japanese	Filipino	Native Hawaiian
Arthritis	71.6	83.1	59.7	93.2	60.7
Asthma	86.5	65.4	79.2	83.7	129.6
Diabetes	45.9	23.0	49.6	53.8	74.6
High Cholesterol	133.0	118.2	169.6	114.3	126.0
Hypertension	144.1	109.9	160.4	164.3	171.6

Source: HHS, OHSM, DOH

Figure 2. Arthritis trends 1982-2010

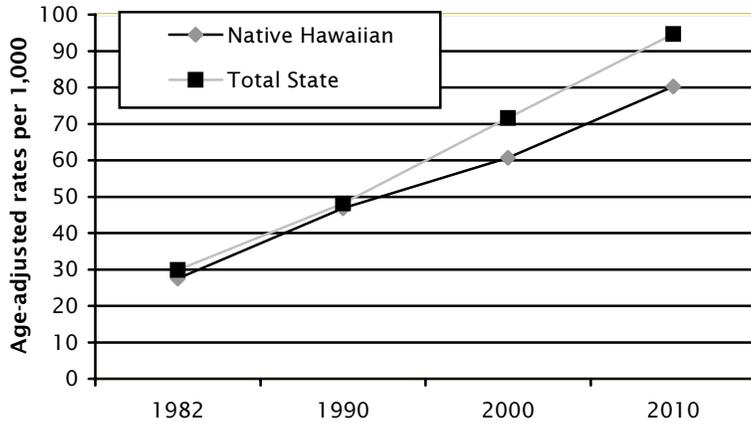


Figure 3. Asthma trends 1982-2010

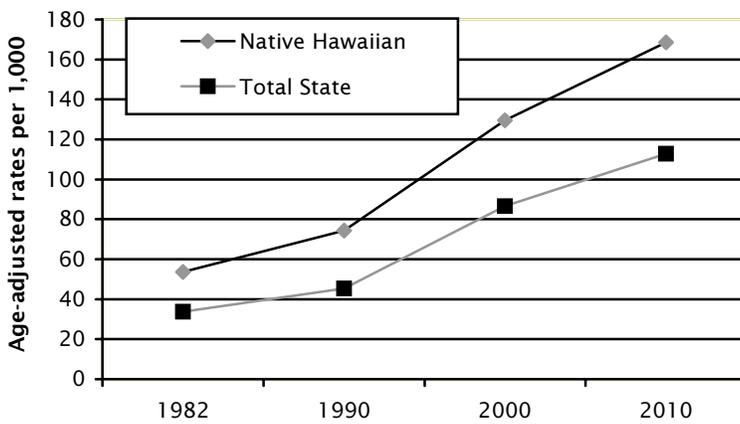
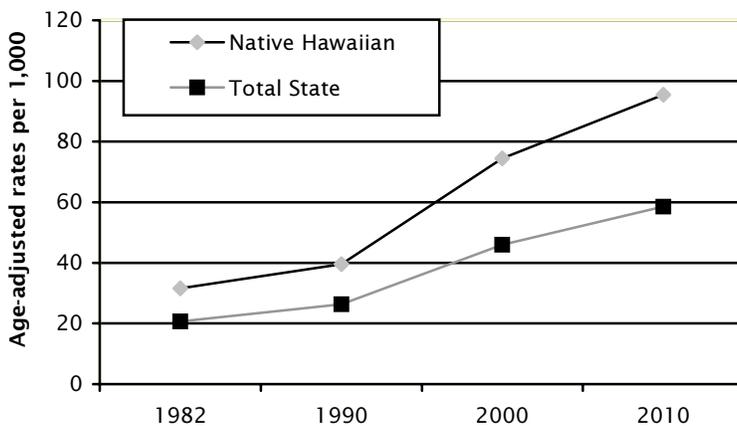


Figure 4. Diabetes Trends 1982-2010



Filipino men have continued to rise. In contrast, whereas the overall incidence rate for Caucasian women peaked in the late 1980s and decreased during the 1990s, the rate for Native Hawaiian women has continued to increase. Overall cancer incidence is now greater in Native Hawaiian women than in women in any other of Hawai'i's major ethnic groups.

With regard to temporal trends in incidence for specific cancers, the long-standing decrease in stomach cancer has

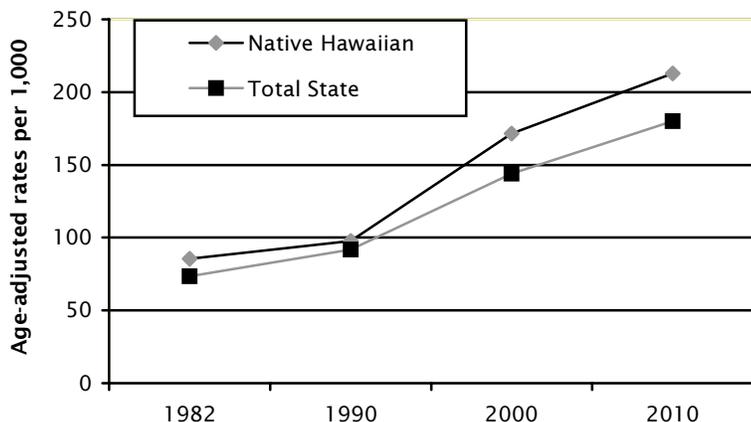
persisted through 1995-2000 for Native Hawaiians (not shown in table), as for all residents of Hawai'i. However, no further progress in reducing cervical cancer seems to have been made in Native Hawaiian women, whereas further reduction in incidence was observed for Caucasians and Japanese women. Native Hawaiians show an increased incidence of breast cancer, with a 39% rise in incidence rates between 1975-1979 and 1995-2000. This increase was observed for all stages of breast cancer, other than the most advanced. Lung and colon cancer rates have also continued to increase in Native Hawaiian women during 1975-2000, although with a less consistent pattern than for breast cancer.

For Native Hawaiian men, the incidence of prostate cancer has continued to increase, following the same slope as in the past 25 years. This increase was limited to early-stage cancers. It is noteworthy that the surge in prostate cancer incidence that was observed in Caucasian men during the early 1990s did not occur in Native Hawaiian men. This sharp increase, followed by a decrease in incidence rates, has been interpreted as resulting from the introduction of PSA testing. These data suggest that screening for prostate cancer was still not widespread among Native Hawaiian men in the early 1990s. However, colon cancer incidence has been relatively stable since the early 1980s, and lung cancer incidence appears to have decreased for the first time in 1995-2000. A similar trend has been observed in Caucasian men since the early 1990s, probably reflecting a decrease in smoking. However, lung cancer rates have remained markedly higher for Native Hawaiians than for the other ethnic groups in both sexes. Incidence rates for other cancer sites, such as endometrium, ovary, pancreas and rectum, have remained relatively stable for Native Hawaiians.

Table 6 shows that Native Hawaiians have ranked first in both sexes for overall cancer mortality since the 1980s. Moreover, the excess cancer mortality for Native Hawaiians compared to Caucasians has worsened due to a decrease in cancer mortality in Caucasians in the 1990s. This is particularly marked among women, and overall cancer mortality is now 64% higher in Native Hawaiians than Caucasians.

A graphic representation of cancer incidence and mortality for Native Hawaiians, Caucasian, and Japanese males over time is provided in Figure 6, and a graphic representation of the same data for Native Hawaiian, Caucasian, and Japanese females is provided in Figure 7. Figures 6 and 7

Figure 5. Hypertension Trends 1982-2010



clearly show that Native Hawaiian men and women have higher cancer mortality rates than their Caucasian and Japanese counterparts.

In summary, cancer remains a very significant source of morbidity and mortality among Native Hawaiians. This

group continues to have the highest overall cancer mortality among the five major ethnic groups in Hawai'i. Moreover, overall cancer incidence for Native Hawaiian women has now surpassed that of Caucasian women, due to further increases for breast, lung and colon cancers. Overall cancer incidence and mortality in Native Hawaiian men appear to have decreased in 1995-2000, due to a 13% drop in lung cancer incidence in the last decade. However, Native Hawaiian lung cancer rates remain significantly higher than those for other ethnic groups in Hawai'i.

Behavioral risks

Behavioral risks are behaviors that individuals engage in that place them at greater than average risk for chronic disease, disability and premature death. The U.S. Surgeon General has estimated that more than half of all deaths in the U.S. are a result of unhealthy behaviors or lifestyle⁷. People would live longer and stay healthier if they

Table 5. Overall cancer incidence rates for the four main ethnic groups, 1975-2000

Sex	Time-Period	Total	Caucasian	Japanese	Filipino	Native Hawaiian
Male	1975-1979	415	523	393	315	480
	1980-1984	425	543	408	317	444
	1985-1989	451	627	380	363	479
	1990-1994	516	669	446	452	463
	1995-2000	472	577	422	476	443
Female	1975-1979	327	432	268	247	420
	1980-1984	330	431	270	261	407
	1985-1989	368	500	304	290	405
	1990-1994	367	455	310	311	444
	1995-2000	379	443	350	318	464

Invasive cases, all sites combined. Age-adjusted to the 2000 US Standard Population. Rates are average annual rates per 100,000 population.

Table 6. Overall cancer mortality rates for the four ethnic groups, 1975-2000

Sex	Time-Period	Total	Caucasian	Japanese	Filipino	Native Hawaiian
Male	1975-1979	216	220	212	179	120
	1980-1984	222	228	206	167	273
	1985-1989	214	237	181	180	286
	1990-1994	209	207	173	178	291
	1995-2000	179	173	161	176	220
Female	1975-1979	145	176	118	103	56
	1980-1984	144	164	111	108	211
	1985-1989	142	173	106	103	202
	1990-1994	137	143	106	116	197
	1995-2000	117	118	93	96	193

Age-adjusted to the 2000 US Standard Population. Rates are average annual rates per 100,000 population. Deaths are categorized accordingly to the underlying cause.

Figure 6. Cancer incidence and mortality rates in Native Hawaiians, Caucasians, and Japanese males in Hawai`i

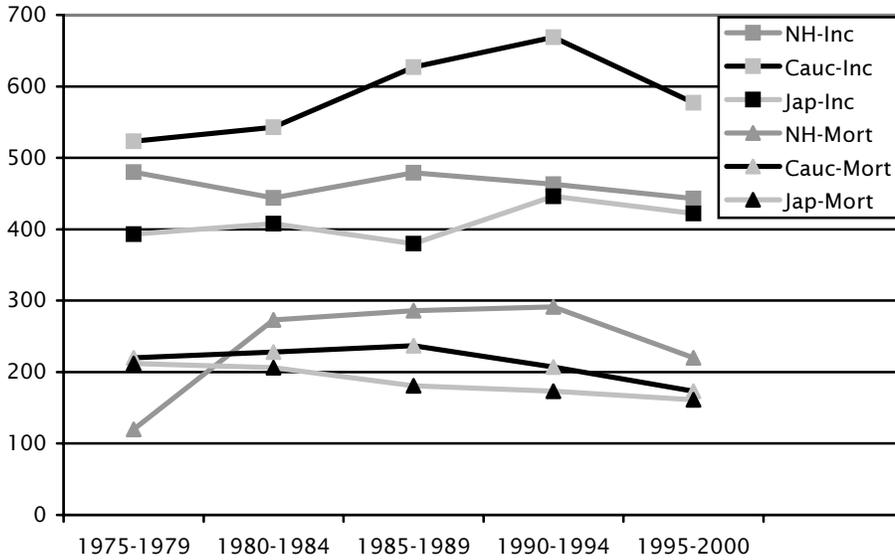
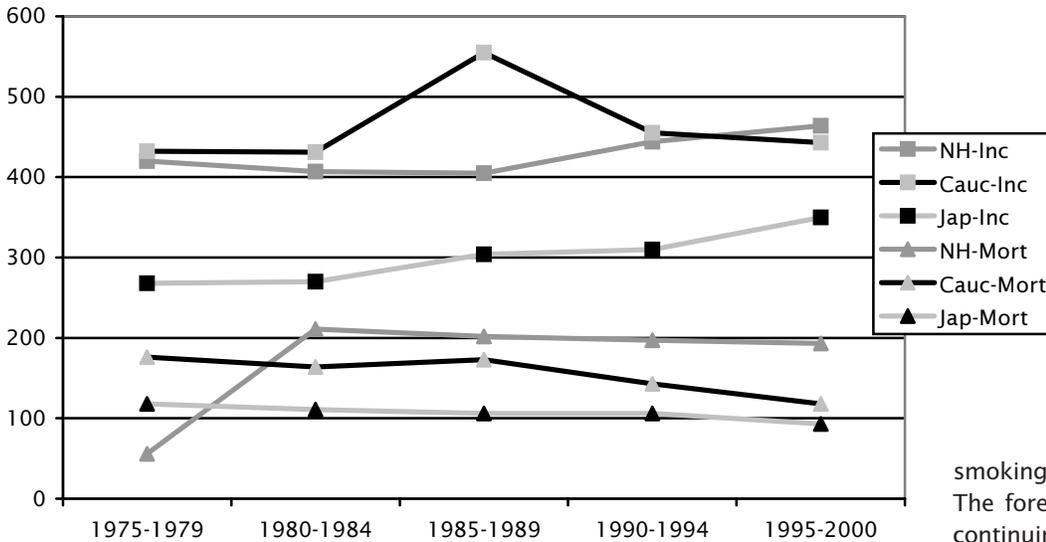


Figure 7. Cancer incidence and mortality rates in Native Hawaiians, Caucasians, and Japanese females in Hawai`i



ate healthy foods, controlled their weight, avoided tobacco and alcohol, engaged in more physical exercise, and participated in health screening. The extent to which people participate in these behaviors is tracked through the Hawai`i Behavioral Risk Factors Surveillance Survey (BRFSS) of the DOH^{8,9}. Tracking started in 1986. In the early years, the BRFSS sample was about 2,100 a year, but since 2000 the sample has been increased to 6,000 respondents a year. BRFSS data gathered in 1999-2000 are shown in Table 7, with rates for men and women in the total population and for Native Hawaiian men and women.

Smoking. Cigarette smoking is one of the most important and preventable causes of morbidity and death in the US¹⁰. Cigarette smoking is linked to various cancers and to bronchitis, emphysema, and heart attacks. Quitting smoking

can reduce the risks of these diseases.

The BRFSS respondents were asked if they were currently smoking cigarettes, and results are shown in Table 7. In 2000, about 31% of Native Hawaiian adults smoked, compared to only 20% of all adults in the state. More men smoked than women. Among Native Hawaiians about 34% of male adults smoked compared to about 28% of female adults.

Smoking trends with data from 1986, 1993, 2000, and 2010 projections were graphed, and these are shown in Figure 8. The data suggest that Native Hawaiian prevalence of smoking declined slightly between 1986 and 1993, but it has been climbing ever since. This contrasts with the steady decline in cigarette smoking in the overall state population. Projecting these trends into the future, by the year 2010 almost one in three Native Hawaiians will be smoking, compared to only 15% of adults in the general population. This, of course, assumes that the past and present trends in cigarette smoking continue into the future. The forecast indicates a need for continuing focus on smoking cessation among Native Hawaiians.

Drinking Alcoholic Beverages. Alcohol abuse is a factor in more than 10% of all deaths in the U.S. and is associated with half of all traffic deaths⁸. In addition, there is a connection between alcohol abuse and various forms of violence. BRFSS respondents were asked if they currently drink any alcoholic beverages, and the results are shown in Table 7. The findings suggest that about half (51.3%) of Native Hawaiians drink alcohol, and this figure is very close to the state average (48.6%). More men drink than women. Among females, 36% of Native Hawaiian women drink compared to about 38% of women in the total population. Among males, however, about 68% of Native Hawaiian males drink, compared to about 60% of men in the general population.

Acute Drinking. Acute (or binge) drinking is defined as

Table 7. Behavioral risk factors and screening tests by gender for Native Hawaiians and total population, 1999/2000

	Total Population			Native Hawaiian		
	M&F	Male	Female	M&F	Male	Female
Risk factors						
Currently smoke	19.7	22.9	16.5	31.0	34.1	27.7
Currently drink	48.6	59.4	37.6	51.3	67.7	36.1
Acute drinking	14.0	21.5	6.5	19.6	32.0	10.8
Chronic drinking	5.9	9.1	1.3	5.2	10.0	1.2
Obese	15.8	17.3	14.2	32.1	32.8	31.3
Physically inactive	23.2	18.3	28.2	24.3	19.6	29.3
Eat 5+ fruits and veggies a day	22.3	18.7	26.0	20.0	15.4	24.8
Screening tests						
Physical exam in past year	76.9	70.2	83.7	69.9	63.2	77.0
Blood stool test	32.0	30.6	33.4	30.2	21.3	37.2
Sigmoidoscopy	31.9	33.7	30.4	30.2	18.1	39.6
Breast physical exam	n/a	n/a	84.7	n/a	n/a	81.7
Mammogram	n/a	n/a	63.2	n/a	n/a	50.4
Pap smear	n/a	n/a	93.9	n/a	n/a	91.0

Source: BRFSS, DOH 1999

consuming five or more alcohol drinks in a row (for example at a party). BRFSS respondents were asked if they ever drank five or more drinks at the same event in the past month, and findings are shown in Table 7. About 20% of Native Hawaiians said they engaged in acute (or binge) drinking, compared to about 14% of the general population. Again, rates varied by gender. Among Native Hawaiians, 32% of men reported binge drinking, compared to about 11% of women. In the general population, about 22% of men engaged in binge drinking, compared to only 6.5% of women.

Looking at trends, acute drinking during the period of 1986 through 1999 has been higher for Native Hawaiians than for the overall statewide population (Figure 9). However, the rates of acute drinking for both groups have declined since 1986. If this decline continues to the year 2010, the level of acute drinking will be about half of what

it was in 1986. Native Hawaiian rates of acute drinking have declined more rapidly than for the state overall.

Chronic Drinking. Chronic drinking is defined as consuming 60 or more alcoholic beverages (two or more a day) in a month. There is evidence that chronic drinking is a risk factor for liver disease and some cancers⁹. As shown in Table 7, the prevalence of chronic drinking is much lower than the level of acute drinking in the state, and there is very little difference in chronic drinking rates in Native Hawaiians and in the general population. The data suggest, however, differences by gender. About one in ten males are chronic drinkers, compared to about one in one-hundred females.

Figure 10 shows the trends in chronic drinking between 1986 and 1999 for Native Hawaiians and for the total population of Hawai'i. There was a sharp decline in chronic drinking between 1986 and 1993, followed by a slight increase between 1993 and 2000. The trend for Native Hawaiians is similar and at about the same magnitude as for the total population. Projecting these trends to the year 2010, the statistics suggest that chronic drinking will decline to almost zero. This is probably unrealistic, but does reflect what would happen if past trends in chronic alcohol use continue into the future.

Obesity and Overweight. The definitions of obesity and overweight have changed over time. In the past, overweight was defined as being 20% heavier than the recommended weight for your gender and height, and obesity was defined as being 30% heavier than recommended⁹. Today, obesity and over-

Figure 8. Cigarette smoking trends 1986-2010

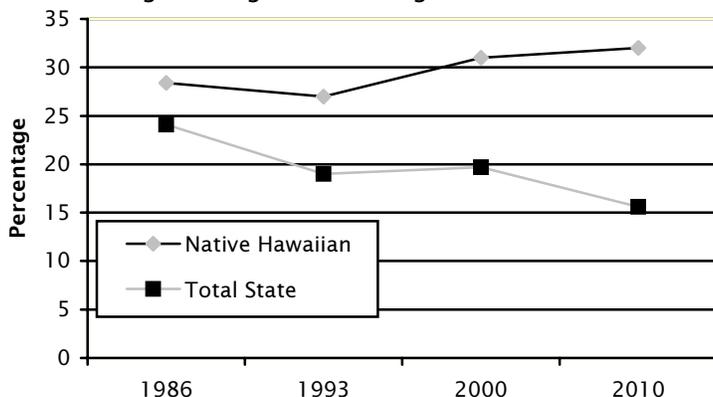
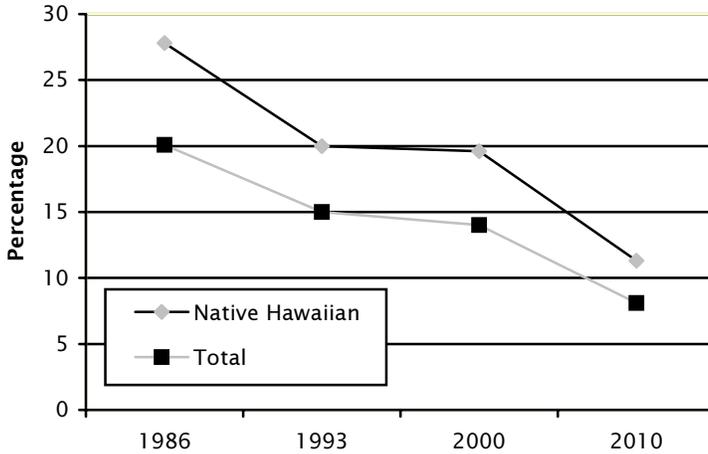


Figure 9. Acute drinking trends 1986-2010

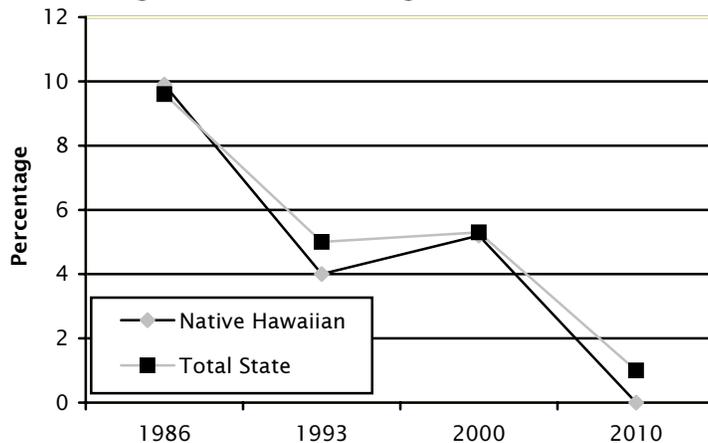


weight are defined in terms of the Body Mass Index (BMI), which is a measure based on the ratio of height and weight, with different thresholds applying to different age groups and genders. Adults are overweight if their BMI is 26 to 29 and considered obese if their BMI is 30 or greater.

In 1999 and 2000, the BRFSS respondents were asked for their height and weight, from which BMI is calculated. As shown in Table 7, about 16% of adults in Hawai'i were obese, however about 32% of Native Hawaiian adults were obese. Among Native Hawaiians, rates of obesity were similar among men and women. In the general population, about 17% of men were obese, compared to about 14% of women.

Trends in the percent of adults who were overweight (Figure 11) were examined. The prevalence of being overweight among Native Hawaiians is higher than for the total population statewide. Prevalence has increased for both groups since 1986 and is currently about 50% higher than it was then. If these current levels and past trends continue, the prevalence will be even higher by 2010, estimated at 50% of Native Hawaiian adults and

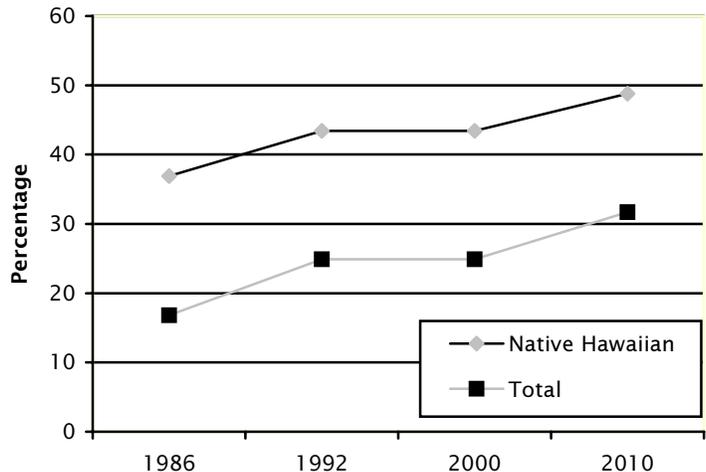
Figure 10. Chronic drinking trends 1986-2010



30% of adults in the general population. This indicates a need to continue to educate everyone about the dangers of being overweight and to encourage improved diet and increased physical activity.

Physical Inactivity. Physical inactivity has been identified as a risk factor for various health conditions, including obesity, hypertension, and heart disease. The value of physical activity is being promoted increasingly as a preventive measure. Various definitions of physical activity are being used, but the BRFSS reports on the percentage of respondents that are physically inactive, which means that they do not have even irregular physical activity. The findings, shown in Table 7, suggest that about 23% of adults in Hawai'i are physically inactive, and the rate is similar among Native Hawaiians (24.3%). More females are inactive, about one in three females, compared with one in five males.

Figure 11. Trends in percent overweight 1986-2010



Fruit and Vegetable Consumption. Previous discussion has focused upon health risk factors. Adequate nutrition is a protective factor for health. Eating at least five servings of fruits and vegetables a day is being used as a general indicator of obtaining adequate vitamins, minerals and fiber in one's diet. BRFSS respondents were asked if they eat five or more servings of fruits and vegetables a day. Native Hawaiians show very similar percentages to the total population of the state in this regard (Table 7). However, about 25% of females achieved this goal, compared to only 15% of Native Hawaiian men and 19% of men in the general population.

Physical Exam. Regular physical exams are an important preventive tool through which to monitor health and detect problems early. More than 76% of adults in the state had a physical exam in the past year, compared to about 70% of Native Hawaiian

Figure 12. Trends in percent women who had a mammogram 1982-2010

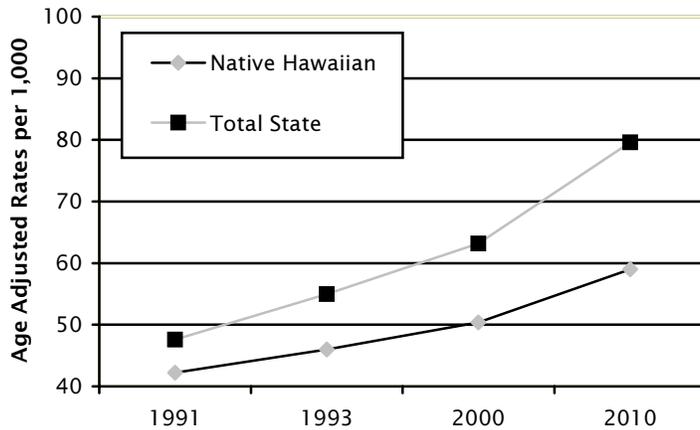
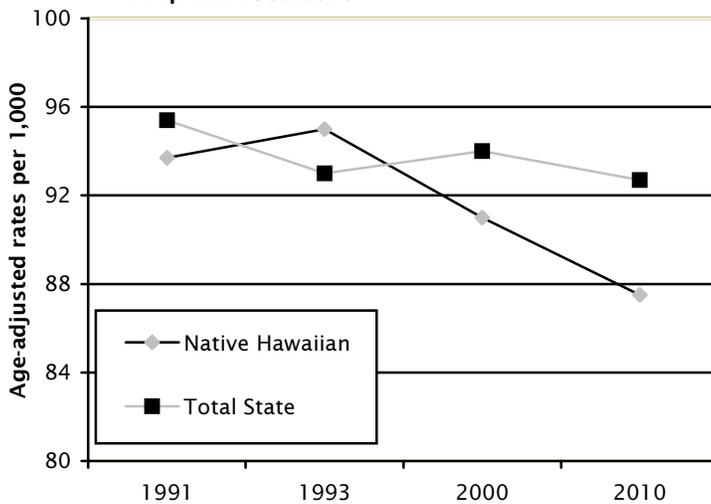


Figure 13. Trends in percent women who had a Pap test 1982-2010



adults (Table 7). Women were more likely to have physical exams than men.

Blood Stool Test. Blood stool tests are given for the purpose of detecting colon cancer, which is the third leading cause of cancer. Usually, patients are given kits that help them collect stool samples at home, and these are mailed to the lab for analysis. For adults age 50 or greater, a blood stool test is recommended annually. As shown in Table 7, about a third of Hawai'i's adults have done a blood stool test. Completion rates are low for Native Hawaiian men, with only 21% reporting that they had done this test, compared to about 31% of men in the general population. However, about 37% of Native Hawaiian women reported completing this test, compared to about 33% of women in the general population.

Sigmoidoscopy. Another screening test for colon cancer is the sigmoidoscopy. In this procedure, a thin, flexible rod is inserted through the anus to look for polyps and other

abnormalities in the lower part of the colon. This test is recommended once every 5 years in adults age 50 and older. As suggested in Table 7, about a third of adults in Hawai'i have had a sigmoidoscopy. Among females, about 40% of Native Hawaiians had this test, compared to about 30% in the general population. Among males, only about 18% of Native Hawaiian men have had this test, compared to about 34% of men in the general population.

Women's Health Screening Tests. Screening for breast and cervical cancers include breast physical exam, mammograms, and Pap smear tests. Mammograms and clinical breast exams are critical in early detection of breast cancer, and the Pap smear is an essential tool in the early detection of cervical cancer. Both cancers can be cured if found and treated early.

Rates of testing among Native Hawaiian women are lower than for women in the general population (Table 7). About 82% of Native Hawaiian women have had a breast physical exam (compared to about 85% of women in the general population), about 50% have had a mammogram (compared to about 63% of women in the general population), and 91% have had a Pap smear (compared to about 94% of women in the general population).

Questions about mammograms were first included in the BRFSS in 1991. At that time, about half of women in the overall population reporting having a mammogram, compared to about 40% of Native Hawaiian women. The prevalence of mammograms in both populations has steadily increased, and in 2000 half of Native Hawaiian women and more than 60% of women in the overall population said they have received mammograms. If this trend continues, by 2010 almost 60% of Native Hawaiian women and 80% of women in the overall population will have received mammograms (Figure 12). This increasing trend is encouraging, yet the difference between Native Hawaiian women and total women indicates a continuing need to stress the importance of mammograms. As reported in a previous update of this report, a much larger proportion of both Native Hawaiian women and women in the general population (between 80% and 90%) have received clinic breast exams than have received mammograms³.

A very high proportion of women, both Native Hawaiian and women overall, have had Pap smears, with rates fluctuating between 90% and 95% of women. If the slight decline in Pap smear completion by Native Hawaiian women that occurred between 1993 and 2000 continues, however, 2010 completion rates for Native Hawaiian women may dip below 90% (Figure 13).

Summary

Mortality. Native Hawaiians continue to die at younger ages than Hawai'i residents in other ethnic groups. This means that innovative prevention efforts are needed for every age group to help keep Native Hawaiians alive. Programs need to focus on reducing infant deaths by increasing the number of women who receive prenatal care and increasing the number of babies and infants that receive health care. We need programs to reduce motor vehicle injury and other injuries (including self-inflicted injuries). And we need programs that will help Native Hawaiians avoid heart disease and diabetes, and to catch cancer early when it is treatable.

Morbidity. Prevalence of arthritis, asthma, diabetes, hypertension, and high cholesterol has increased since the early 1980s for both Native Hawaiians and the state. This indicates a continuing trend extending back two decades or more and suggests that efforts to prevent or arrest the prevalence of these conditions have not succeeded. In addition, Native Hawaiians are experiencing much higher prevalence of hypertension, diabetes and asthma than other ethnic groups and statewide. Continuing efforts to reduce the risks and negative impact of these conditions must be high priority for Native Hawaiians.

Behavioral Risks and Preventive Measures. It appears that currently (1999/2000) Native Hawaiians generally engage in risky behaviors at higher rates than the general population, thus placing them at greater-than-average risk for various health problems. Although smoking prevalence has decreased overall, Native Hawaiians are smoking in higher proportions, with forecasts of slight increases. Acute and chronic drinking rates have declined for the Native Hawaiian, as well as the general population, but Native Hawaiians still have slightly higher rates. The prevalence of being overweight has, and continues to be, higher among Native Hawaiians than for the general population; and an increase in the proportion of overweight residents for all ethnicities is expected. Native Hawaiian males, more than females, engage in risky behaviors. For example, they are more likely to smoke and drink and less likely to get regular physical checkups and sigmoidoscopies. This reluctance may be responsible in part to the lower health status of Native Hawaiian males.

Native Hawaiians, however, are engaging in some protective behaviors in about the same proportions as the general population. For example, about 25% of Native Hawaiian women are eating five or more fruits and vegetables per day, and more Native Hawaiians are getting physical exams and other screening exams. Overall participation in women's health screening has increased over time and is expected to continue. This is good news, since these are important preventive tools for serious chronic diseases. These improvements may be related to increases in Native Hawaiian

health professionals, supported by the Native Hawaiian Health Scholarship Program, and to increased access to health education and to increased care through outreach programs such as the Native Hawaiian Health Care Systems and the Breast and Cervical Cancer Control Program. If these programs are allowed to continue and to expand, we should see continued improvement in overall health status of Native Hawaiians.

Acknowledgements

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