



CHRONIC DISEASE DISPARITIES REPORT 2011: Social Determinants



**Chronic Disease Management and Control Branch
Hawai'i State Department of Health**

A Message from the Director of Health:



Aloha Kakou,

The Hawai'i State Department of Health is pleased to present the *Chronic Disease Disparities Report 2011: Social Determinants*. The report, produced under the direction of the department's Chronic Disease Management and Control Branch, compiles surveillance information and other data sources on chronic disease disparity issues specific to our state's population into a comprehensive document.

This report is the first of its kind in Hawai'i to focus on the big-picture issues that impact disparate health – from education status to poverty to the costs of chronic disease. Understanding these issues is critical for determining effective ways to meet the department's mission to protect and enhance the health of all the people of Hawai'i. This report shifts the attention away from individual risk factors to focus on the social determinants of health that affect chronic disease in Hawai'i making it an invaluable tool.

We hope the report will provide decision makers, community-based organizations, and the public with timely and relevant information necessary for program planning, policy development, and greater consumer education and advocacy to create a healthier Hawai'i.

I invite you to join us in creating the changes needed to fulfill our vision for healthy communities, healthy people, and healthy islands.

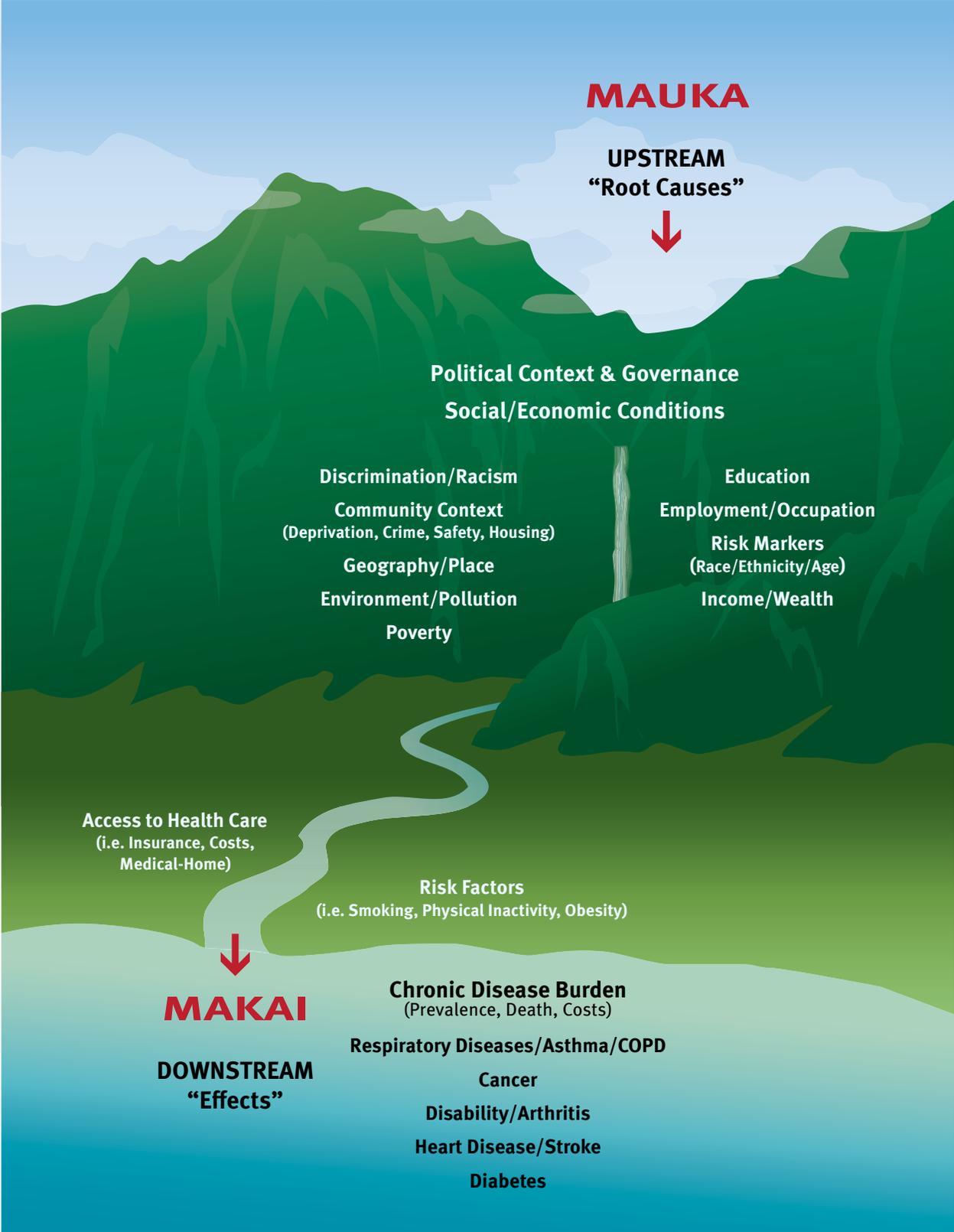
Sincerely,

A handwritten signature in black ink, which appears to read "Loretta J. Fuddy". The signature is fluid and cursive, with a large, stylized initial "L".

Loretta J. Fuddy, A.C.S.W., M.P.H.
Director of Health
Hawai'i State Department of Health

August 2011

Promoting Lifelong Health & Wellness



ROOT CAUSES OF HEALTH DISPARITIES IN CHRONIC DISEASE IN HAWAII

The diagram on the previous page depicts the traditional Hawaii Ahupua‘a concept wherein resources and capacity flow from Mauka (the mountain) to Makai (the sea), from “upstream” to “downstream.”

In the diagram, the depiction of Ahupua‘a, resources and capacity to sustain the community flow from the mountain to the sea where health and well-being are sustained in a healthy, holistic cycle.

LEVEL 1: “Upstream” (Mauka)

Upstream “root causes” are socio-economic and political structures that influence living conditions and social circumstances that can support or impede health. Socio-economic and political structures can create conditions that result in poverty or wealth, job instability or stability, opportunities for education or insufficient education, discrimination/racism, historical trauma, and community deprivation.

LEVEL 2: “Downstream” (Makai)

Downstream effects of socio-economic conditions can result in safe or unsafe neighborhoods, access to health care, conditions conducive to activities that relieve stress (smoking or drug use) or change unhealthy behaviors (access to safe places for physical activity). These in turn can result in higher prevalence of chronic disease and premature mortality.

“Poorer people live shorter lives and are more often ill than the rich. This disparity has drawn attention to the remarkable sensitivity of health to the social environment.” (1)

— Wilkinson & Marmot (2003)

INTRODUCTION AND PURPOSE

The purpose of this report is to (1) provide a broad picture of some of the health disparities and social determinants of health that are apparent across all chronic diseases, risk factors and risk markers in Hawaii and (2) illustrate that these differences follow a social gradient, not just “high” or “low” differences in population groups. A social gradient in health runs through all societies, because all societies have social gradients. The social gradient effect focuses on where people are in relative to others on a gradient or ascending/descending slope. People that are in the lowest or poorest category generally experience the worst health, while even those in the lower-middle classes will generally have worse health outcomes than those in the upper middle classes and higher social strata.^A

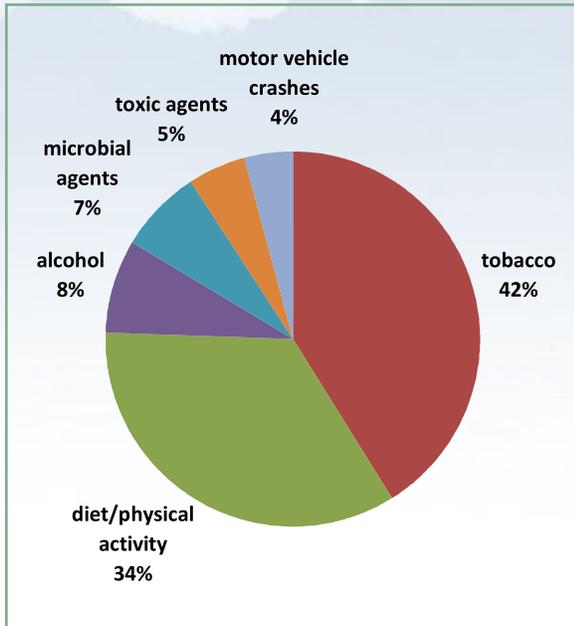
Therefore, this report is not a typical chronic disease burden report. Since the focus is on the social gradients in health, it does not include all of the statistical features of typical chronic disease burden reports. Typical, disease specific, chronic disease reports are already available on the Hawaii State Department of Health (DOH) website. Instead, this report focuses on some of the main social determinants of health for which the DOH has existing data and which are known to be linked with social status: household income, educational level, poverty, and access to care and costs. The DOH is in the process of acquiring additional data on occupation and other social variables (work, stress, and reactions to race) which may be included in future reports or supplements.

Figures 1 and 2 below depict this relationship in pie charts. Figure 1 depicts the actual causes of death in the U.S. in 2004 as calculated by Mokdad et al. (2). The risk factors of tobacco use and physical activity and nutrition (diet) were responsible for more deaths than any other cause, at 76% combined.

Figure 2 depicts the estimated deaths due to social factors such as poverty, low education and low household education. The social factor of low education was responsible for the most deaths in 2010 at 28%, followed by racial segregation (20% of all deaths), low social support (19% of all deaths), and individual poverty (15% of all deaths) (3). The social gradients of low education and poverty and their impact chronic disease for the people of Hawaii will be explored in greater detail throughout this report.

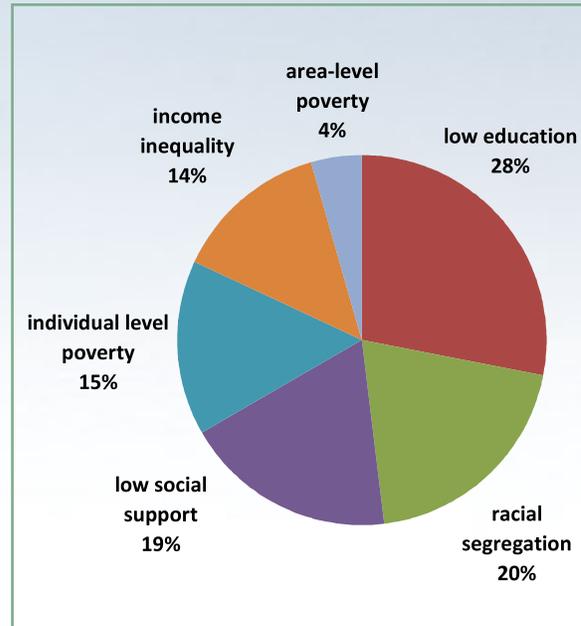
^A **Social Gradient** – Defined as an individual's or population group's position in society and differential access to and ability to secure resources such as education, employment and housing, as well as different levels of participation in civic society, control over life and exposure to chronic stress.

Figure 1. Estimated Actual Causes of Death in the U.S., 2004



Source: Based on Mokdad, Marks, Stroup and Gerberding, JAMA, 291:10, 2004.

Figure 2. Estimated Deaths due to Social Factors in the U.S., 2011



Source: Based on Galea, Tracy, Hoggart, DiMaggio and Karpati, AJPH, 11:8, August 2011.

DATA SOURCES AND METHODS

The main source of data for this report is the Behavioral Risk Factor Surveillance System (BRFSS). In addition, mortality data from the DOH-Office of Health Status Monitoring have been included, along with selected hospital discharge and emergency room data from the Hawaii Health Information Corporation (HHIC) and national sources (e.g. U.S. Census, Medicaid and others). All data sources are cited in the graphs and links to data are also provided. Data sources and methods used in this report are described below.

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM (BRFSS)

The BRFSS is the largest continuously conducted telephone health survey in the world. The annual telephone survey of non-institutionalized adults (>18 years) has been conducted in all states and territories in the United States (U.S.) since 1988. The BRFSS, based on self-reports, assesses risk factors for disease(s) and conditions related to the ten leading causes of death in the U.S. population. Data collected through the BRFSS is routinely used to capture health information on demographically defined subgroups (gender, ethnicity, age, educational level, income level,

geographic location). The BRFSS enables the Centers for Disease Control and Prevention (CDC), state health departments, and other health related agencies to monitor risk behaviors related to chronic diseases, injuries and death.

The DOH has been an active participant in the BRFSS since 1986. The Hawaii BRFSS is a collaboration between the DOH and the CDC. The Hawaii BRFSS follows all the protocols and guidelines of the CDC. The survey uses a complex random sample design. The adult participant is selected randomly when the number of adults in the randomly sampled telephoned household is more than one. For more information, refer to the appendix/glossary and the survey website: <http://hawaii.gov/health/statistics/brfss/index.html>.

HAWAII HEALTH INFORMATION CORPORATION (HHIC)

The HHIC is a private, not-for-profit corporation established in 1994. It maintains one of Hawaii's largest healthcare databases, which contains nearly one million inpatient discharge records collected from Hawaii's 22 acute care hospitals for each year since 1993. These discharge records contain patient demographic information, hospital visit costs and duration, and patient diagnosis using the International Classification of Diseases (ICD), Version 9 (ICD-9) codes and by Diagnostic Related Codes (APR-DRG). The DOH has a subscription to view aggregated and de-identified patient data, and has obtained permission to present the data in this report. For more information, refer to: <http://hhic.org/>.

VITAL RECORDS

The management of data from birth certificates, marriage licenses, and death certificates is handled by the Office of Health Status Monitoring (OHSM) within the DOH. This office collects, processes, analyzes and disseminates relevant, population-based data in order to assess the health status of Hawaii's population and to fulfill health statistics legal requirements. OHSM also provides vital statistics and demographic and health data for use in identifying state and community health trends, identifying population groups at risk for serious health problems, and evaluating program effectiveness. For more information: <http://hawaii.gov/health/statistics/vital-statistics/index.html>.

CRUDE VERSUS AGE-ADJUSTED PREVALENCE RATES

The BRFSS data in this report are crude prevalence rates that are not age-adjusted. Age adjustment or standardization is done when doing a direct comparison of different populations to remove the impact of different age distributions (as a potential confounding variable) between populations, or within a single population over time on a particular variable of interest. The only areas where we have discerned that this impacts the chronic disease or risk factor rates on the

BRFSS is for slightly higher rates among Japanese for diabetes (since the Japanese have an older population). Since this report focuses specifically on chronic disease disparities in Hawaii, using single year data, age-adjusted rates using the US 2000 Standard Population are not reported here unless specifically indicated.^B

TESTS OF SIGNIFICANCE

Tests of significance were not performed in the creation of this report. The report is not designed to look at specific statistically significant differences within each disease, risk factor or variable. Instead, the intent is to look at broad patterns across all chronic diseases and the social gradient. These gradients are more discernable when significance testing and confidence intervals are not displayed.^C Nevertheless, confidence intervals for the BRFSS prevalence data are available on the DOH website: <http://hawaii.gov/health/statistics/brfss/index.html>. Specific statistically significant findings within each chronic disease can also be found in the individual chronic disease reports for cancer, smoking and tobacco use, diabetes, heart disease and stroke and chronic obstructive pulmonary disease on the DOH website: <http://hawaii.gov/health/family-child-health/chronic-disease/index.html>.

HEALTH DISPARITIES AND INEQUITIES IN CHRONIC DISEASE

Fact: Health disparities are those differences in the incidence, prevalence, mortality, burden of diseases and other adverse health conditions or outcomes that exist among specific population groups.

Health disparities can affect population groups based on (4) gender, age, ethnicity, socioeconomic status, geography, sexual orientation, disability or special health care needs and (5) 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 (4).

Health disparities become health inequities when they result from systematic and unjust distribution of resources and are deemed unfair or inequitable (5).

The “social determinants of health” are non-medical and non-behavioral forerunners of health and illness. These are social, political, economic and cultural conditions in which people are born, grow, live, work and age that impact their health (6).

^B An additional source for chronic disease data is the Hawaii Health Survey. See: <http://hawaii.gov/health/statistics/hhs/index.html>

^C While there is the possibility of confounding in the independent variables analyzed here, time and space considerations precluded multivariate analyses, which are planned for the future.

Fact: Chronic diseases – such as heart disease, cancer, stroke, diabetes, and chronic lower respiratory diseases – are the most prevalent, most disabling, and most costly of all diseases (7) and account for 4 of the top 5 causes of death in Hawaii.

Fact: The social and economic environment can do more to increase the chronic disease burden than individual behavior or medical systems (6). Research suggests that known individual risk factors explain less than 50 percent of many chronic diseases (8, 9). Furthermore, individual behavioral change efforts are often hindered by policies and environments that fail to support healthy choices.

Fact: Social determinants of health follow a hierarchical social gradient. Where people stand on the social ladder is definitively related to their chances of illness and length of life.

Fact: Addressing disparities/social differences in health require looking beyond the medical system and individual risk factors to the root causes, or upstream factors that determine a person's health (4, 8, 10, 11, 12).

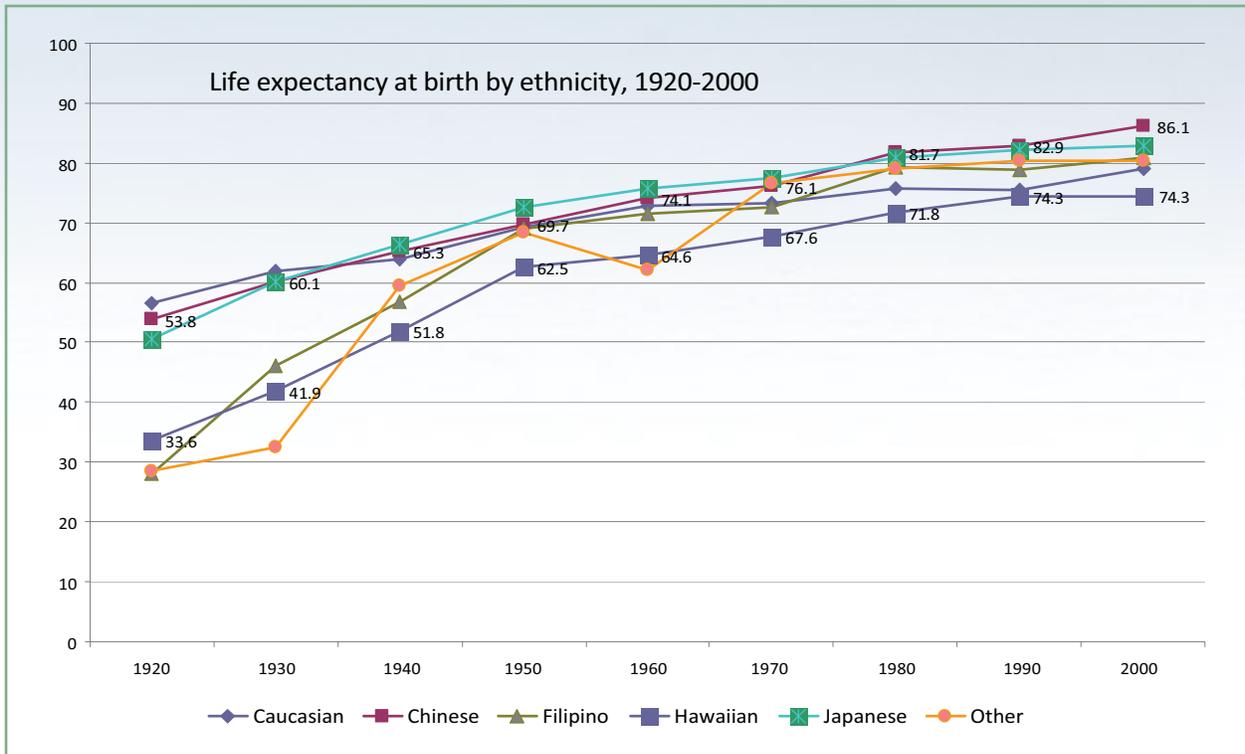
The four most important factors that influence health are:

- 1) Whether or not someone lives in poverty or experiences income insecurity (8, 13, 14)
- 2) Whether or not someone finishes high school (8, 13)
- 3) Whether or not someone engages in physical activity (14)
- 4) Whether or not someone smokes (13, 14, 15)

This report covers (1) chronic disease and risk factor indicators for disparities in household income, educational level, health insurance coverage, (2) county level indicators for chronic diseases, poverty, language and mortality and (3) chronic disease costs. Data indicators on occupation, racism, and social context are being gathered but there is currently a lack of linked data on chronic disease and many social determinant indicators. Some race/ethnicity data are also presented, with race/ethnicity as a risk marker for chronic disease or other adverse health outcomes.

LIFE EXPECTANCY DISPARITIES

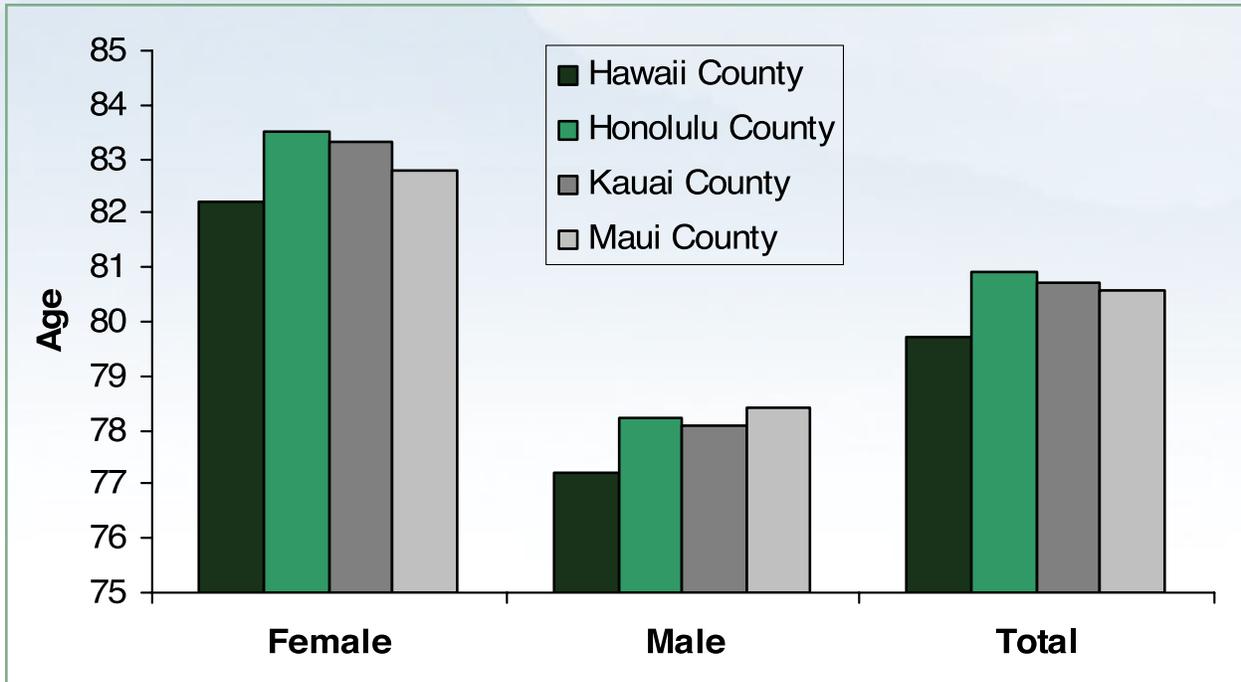
Figure 3. Life Expectancy at Birth by Ethnicity, Hawaii, 1920– 2000



Sources: For data from 1910-1990, Hawaii DBET; For data from 2000 Park, Braun, Horiuchi, Tottori and Onaka (2009). Longevity Disparities in Multiethnic Hawaii: An Analysis of 2000 Life Tables. Public Health Reports, July-August 2009, Vol. 124, p.580.

In Hawaii, life expectancy at birth has increased steadily over the past eighty years (Figure 3). Life expectancy for the Native Hawaiian population is consistently lower than that of other ethnic groups and was almost 12 years shorter (74.3 years) than the Chinese population which had the highest life expectancy (86.1 years) in 2000.

Figure 4. Life Expectancy at Birth, by County and Sex, Hawaii, 2005



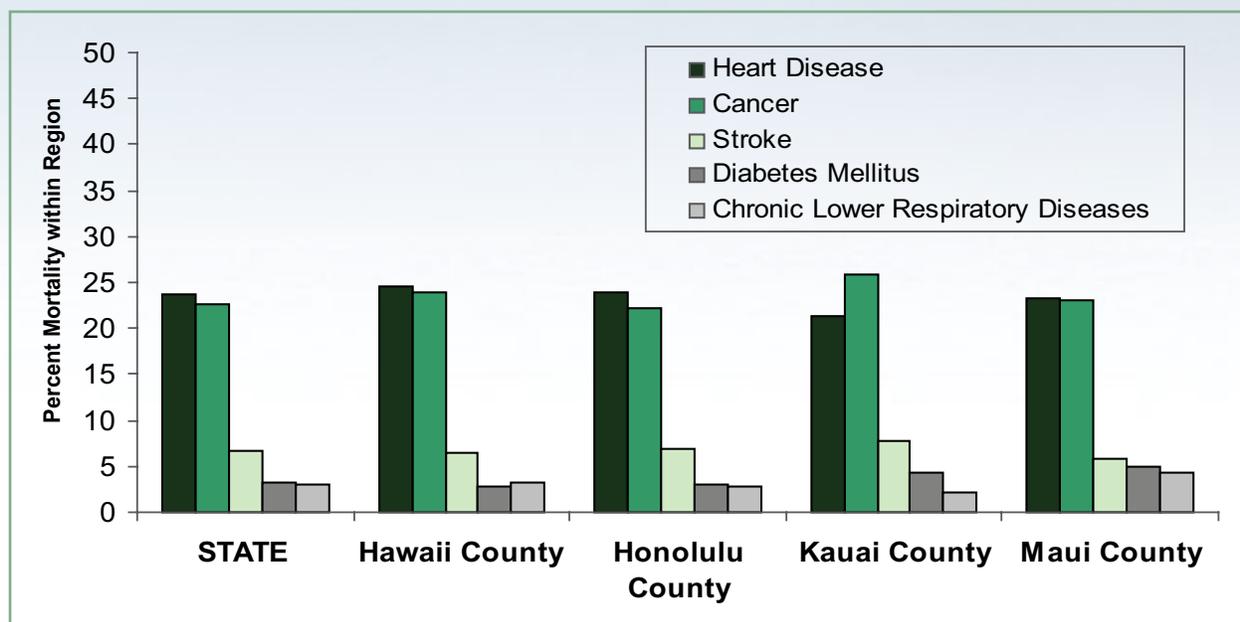
Source: Murray, C.J.L., C.M. Michaud, M.T. McKenna, and J.S. Marks, "U.S. Patterns of Mortality by County and Race: 1965–1994." Harvard Center for Population and Development Studies, 1998. Available at: Trends in Hawaii website: http://www.healthtrends.org/status_life_expect.aspx.

Hawaii County has the lowest life expectancy rate for both males and females.

Females have longer life expectancy than their male counterparts in all counties.

MORTALITY DISPARITIES

Figure 5. Leading Age-Adjusted Chronic Disease Causes of Death by County and State, Hawaii, 2008

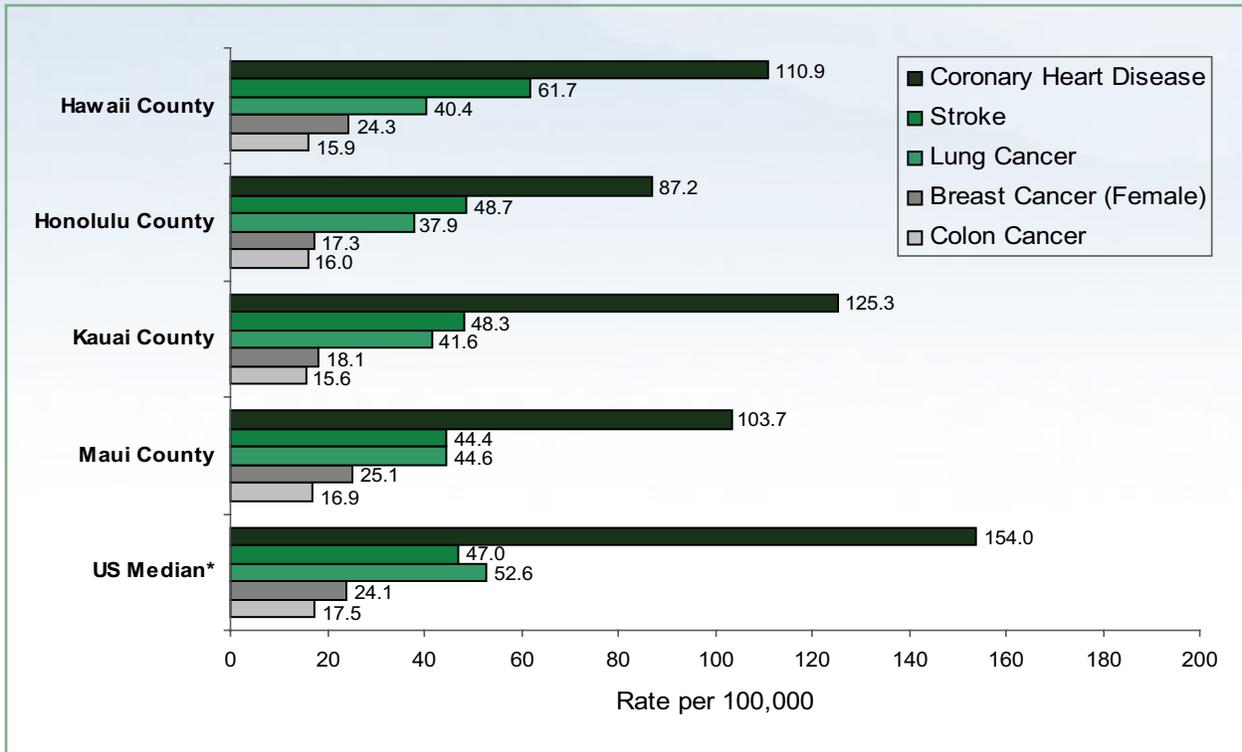


Source: The State of Hawaii Data Book, 2008. Hawaii State Department of Health, Office of Health Status Monitoring, 2008. <http://hawaii.gov/dbedt/info/economic/databook/db2009/section02.pdf>.

In 2008, the leading cause of death in Hawaii due to chronic disease was heart disease, followed by cancer, stroke, diabetes and chronic lower respiratory diseases.

In 2008, Heart disease was the leading cause of chronic disease death on every island except Kauai, where cancer was the leading cause of death.

Figure 6. Age-Adjusted Mortality Rates per 100,000 for Leading Chronic Disease Causes of Death, Hawaii, 2003–2005



*For all US Counties
 Source: National Center for Health Statistics (NCHS). Vital Statistics Reporting System, 2003–2005. Rates are age-adjusted to the year 2000 standard; per 100,000 population.

The highest mortality rates due to Coronary Heart Disease and Stroke are in Hawaii County.

The highest mortality rates due to lung, breast, and colon cancer are in Maui County.

Mortality alone doesn't convey the full impact of chronic disease. Chronic diseases are lifelong conditions that are often manageable but not curable.

Figure 7. Estimated Number of Adults with Chronic Conditions by Number of Chronic Conditions, Hawaii, 2009

| Number of Chronic Conditions | Estimated Adults | % |
|------------------------------|------------------|------|
| NONE | 181,424 | 18.0 |
| 1 | 288,558 | 28.7 |
| 2 | 219,199 | 21.8 |
| 3 | 149,173 | 14.8 |
| 4 | 83,430 | 8.3 |
| 5 | 45,181 | 4.5 |
| 6 | 21,084 | 2.1 |
| 7 | 11,564 | 1.2 |
| 8 | 4,345 | 0.4 |
| 9 or more | 2,086 | 0.3 |

Almost 17% of adults in Hawaii have 4 or more chronic diseases.

Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009. Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

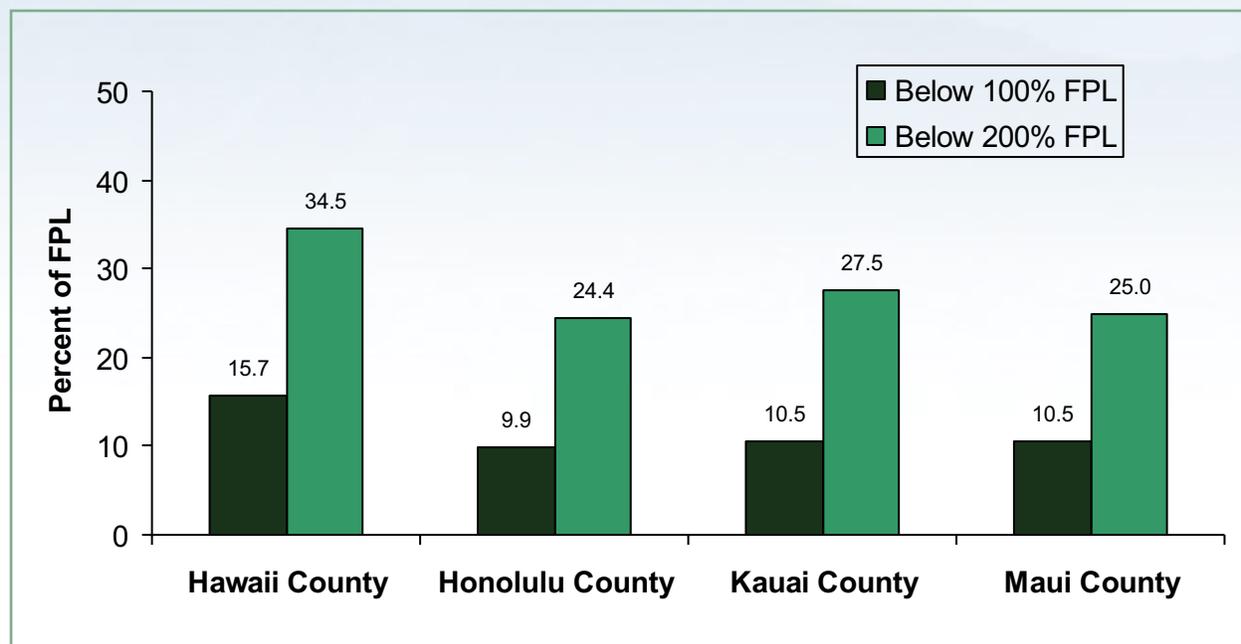
In Hawaii, 82% of adults have at least one of the following chronic diseases: heart disease, heart attack, stroke, diabetes, asthma, disability, cancer, chronic obstructive pulmonary disease, high blood pressure, high blood cholesterol or obesity.

“Mortality is strongly patterned by key social characteristics and prevalent health risk factors, and underscores the need for health policy and clinical interventions focusing on the social determinants of health, especially ones that focus on income security, smoking prevention/cessation, and physical activity.” (14)

— Lantz, Golberstein, House, & Morenoff (2010)

POVERTY DISPARITIES

Figure 8. Percent of Population Below 100% and 200% Federal Poverty Level (FPL) by County, Hawaii, 2000



Source: State of Hawaii Primary Care Needs Assessment Data Book 2009. Family Health Services Division, Hawaii Department of Health, January 2010. Available at: <http://Hawaii.gov/health/doc/pcna2009databook.pdf>.

In 2000, while Hawaii County had the greatest percentage of people living below both 100% and 200% of the federal poverty level, at least one-fourth of the population in each county falls below 200% of the federal poverty level.

At least 10% of the population in each county falls below 100% of the federal poverty level.

HAWAII POVERTY INDEX

Poverty either, alone or in combination with other factors, can contribute to income gradients and social class issues which create unfairness in health outcomes. Research suggests that living below 200% of the federal poverty level imposes a greater societal health burden than either smoking or obesity (13). This report provides a Hawaii-specific poverty index comparing counties to the state (Figure 9). Hawaii County has some of the worst poverty indicators in Hawaii.

Figure 9. Poverty Index by State and County, Hawaii, 2007, 2008

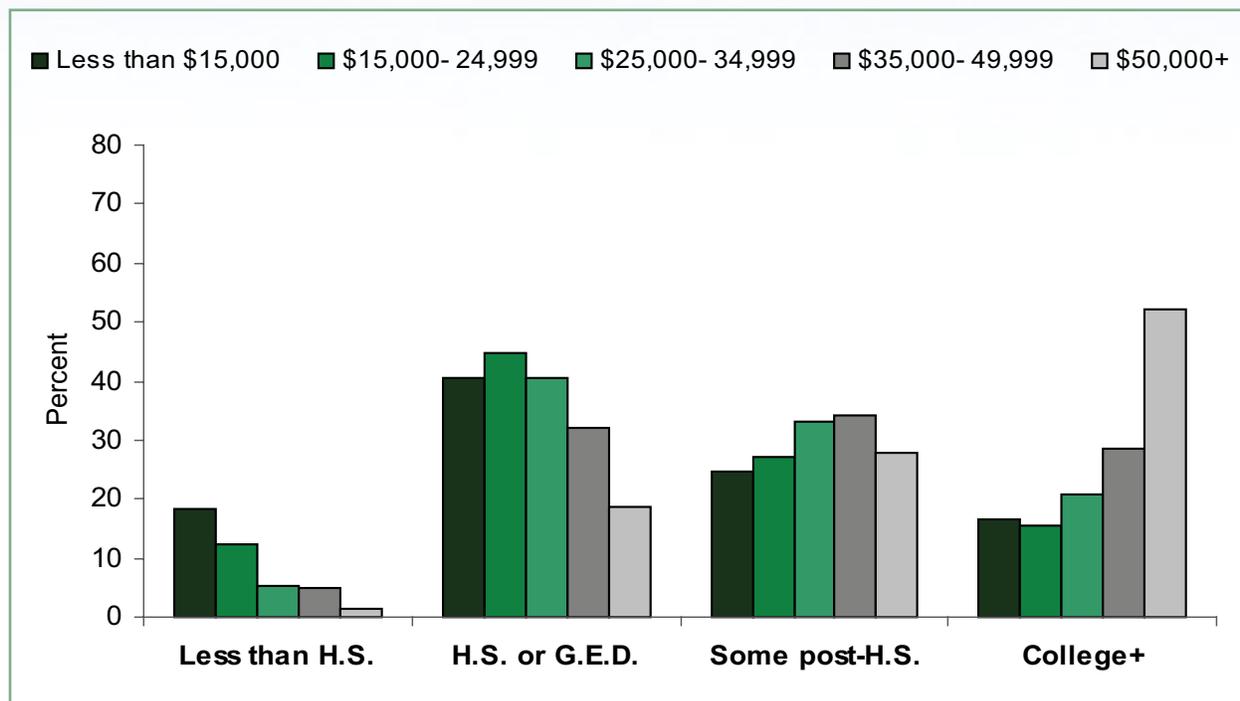
| POVERTY INDEX for HAWAII | State | Hawaii | Honolulu | Kauai | Maui |
|---|--------------|---------------|-----------------|--------------|-------------|
| Percent new families with first birth to unmarried mother, under age 20, who lacks high school diploma (2007) | 6.2 | 8.3 | 5.3 | 9.3 | 8.4 |
| Percent adults (18+ years of age) with no high school diploma (2008) | 9.7 | 9.0 | 9.5 | N/A | 10.6 |
| Percent births to teens aged 10–17 (2003–2008) | 2.6 | 3.8 | 2.2 | 3.6 | 3.2 |
| Pregnancy rate for women aged 15–19 (per 1,000) (2007) | 62.0 | 63.8 | 62.5 | 65.6 | 54.4 |
| Birth rates to resident teens ages 15–19 (per 1,000) (2007) | 41.4 | 53.1 | 37.2 | 50.3 | 49.1 |
| Percent families with female householder (No husband present) living in poverty (2006–2008) | 18.1 | 26.7 | 16.5 | 19.7 | 15.2 |
| Median household income (2007) | \$62,613 | \$55,779 | \$64,849 | \$55,786 | \$60,435 |
| Percent children under 18 years old in families with income below the federal poverty line (2007) | 10.8 | 18.1 | 9.5 | 12.5 | 9.8 |
| Percent people living below the federal poverty line (2007) | 8.5 | 13.1 | 7.8 | 9.0 | 6.8 |
| Percent children (K–12) receiving free or reduced-cost lunch (2008) | 38.6 | 48.1 | 37.9 | 35.0 | 33.1 |
| Unemployment rate (not seasonally adjusted) (2008) | 3.9 | 5.5 | 3.5 | 4.4 | 4.5 |
| Percent births with low birth weight (<2500 g) (2003–2008) | 8.2 | 8.2 | 8.2 | 7.5 | 7.4 |
| Percent births with less than adequate prenatal care (2003–2008) | 29.2 | 32.6 | 25.5 | 29.5 | 50.3 |
| Infant Mortality (deaths per 1000 live births) (2003–2008) | 6.3 | 6.5 | 6.2 | 3.9 | 6.0 |
| Percent households receiving financial aid (TANF/TANOF) (2008) | 2.2 | 3.6 | 2.0 | 1.5 | 1.6 |
| Percent households receiving food stamps (2008) | 11.6 | 19.7 | 10.6 | 10.4 | 8.9 |

Sources: The Census Bureau. Small Area Income Poverty Estimates. U.S. Census Bureau, Decennial Census, American Community Survey. Hawaii State Department of Health, Office of Health Status Monitoring, Vital records. Hawaii State Department of Labor and Industrial Relations, Research and Statistics Office. Hawaii State Department of Education, Systems Accountability Office. U.S. Census Bureau, Small Area Income and Poverty Estimates (SAIPE). U.S. Census Bureau, 2006–2008 American Community Survey 3-Year Estimates. National Center for Health Statistics, Vital Statistics Reporting System, 2003–2005. State of Hawaii Primary Care Needs Assessment Data Book 2009. Family Health Services Division, Hawaii Department of Health, January 2010.

EDUCATION, HOUSEHOLD INCOME AND EMPLOYMENT STATUS

This section will explore the relationship between education, household income and employment status and chronic diseases. Individual risk factors and cancer screenings will be explored as well. Income and education are highly correlated, especially in the lower and higher income brackets, as depicted below (Figure 10). People with less than a high school education are more likely to have lower household incomes. Increased educational level leads to increased income.

Figure 10. Household Income by Education, Hawaii, 2009

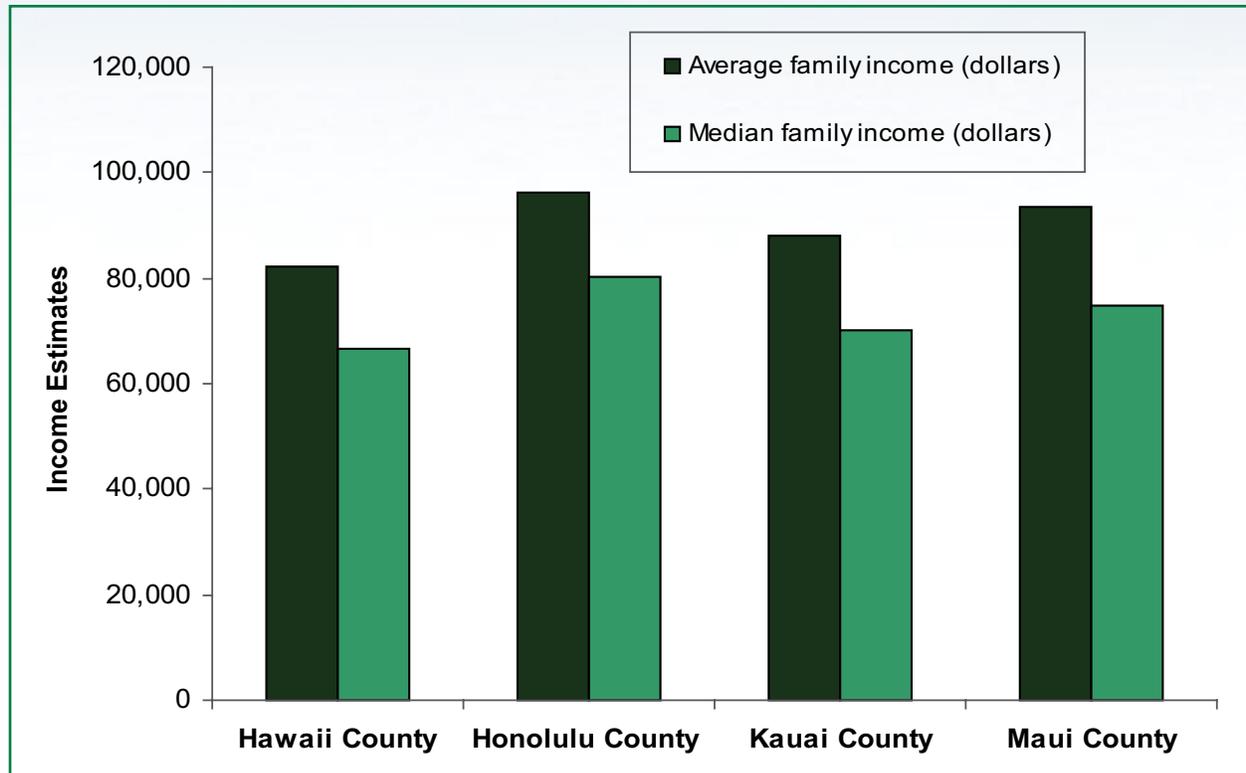


Source: Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (BRFSS), Prevalence and Trends Data, 2009. <http://apps.nccd.cdc.gov/brfss/income.asp?cat=DE&yr=2007&qkey=1737&state=HI>.

LESS INCOME = WORSE HEALTH

Income is inextricably linked to health. Income and wealth provide access to better circumstances, including health-promoting conditions such as safe places to live or access to healthier foods. Having lower household income affects the extent to which people can afford to make such health-promoting choices for themselves, their families and their communities.

Figure 11. Median Family Income and Average Family Income Estimates by County, Hawaii, 2006–2008

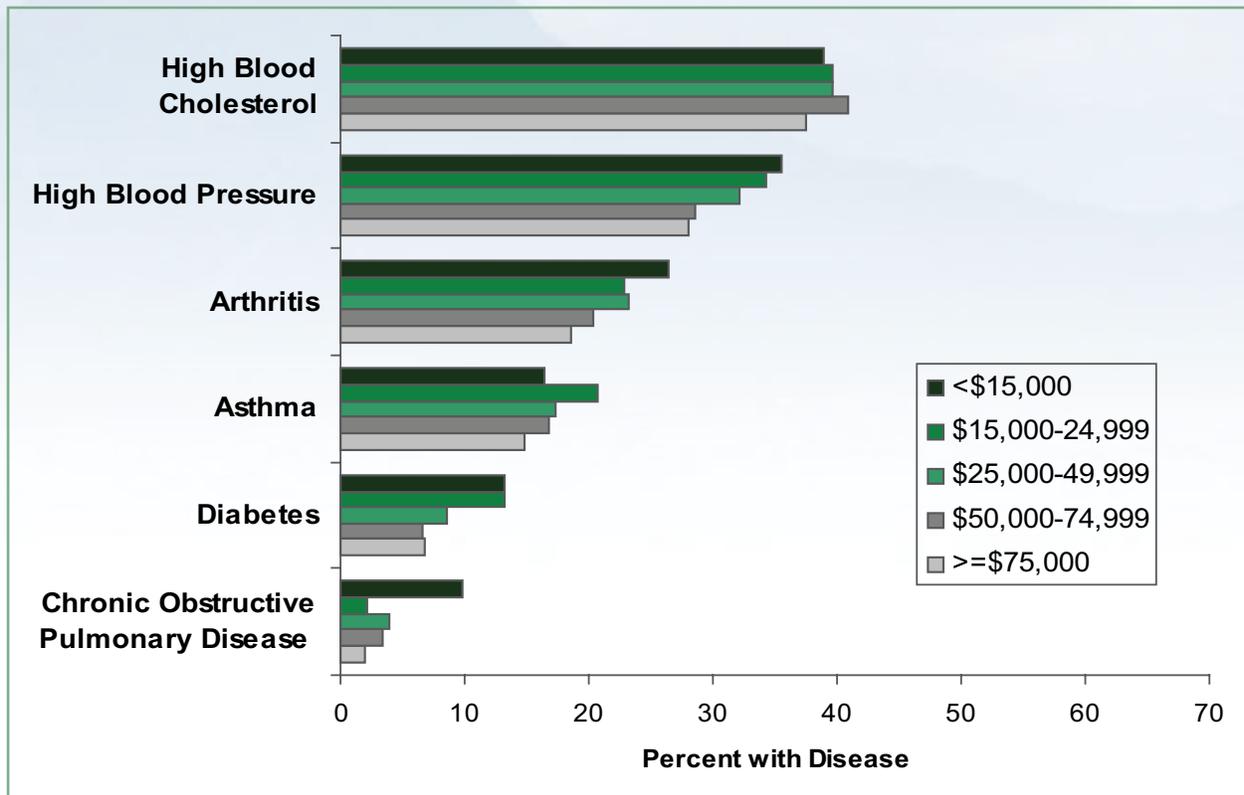


Data source: U.S. Census Bureau, 2006–2008 American Community Survey. U.S. Census 2006–2008 American Community Survey 3-Year Estimates.

The median measure cuts the income distribution in half. Median family income means that half of the families make above that amount, while half make less than that amount. For instance, half the families in Maui County live on over \$74,840 per year and half live on less.

Honolulu County has the highest median and average family income, followed by Maui, Kauai and Hawaii Counties.

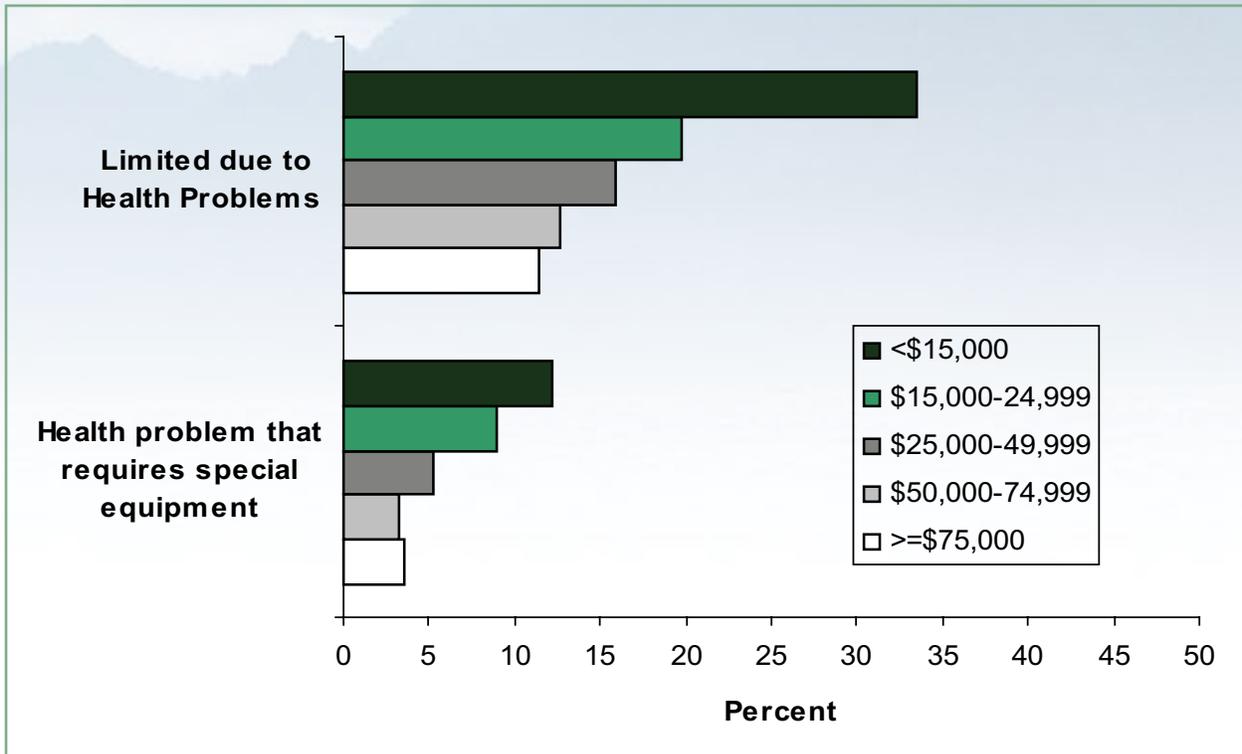
Figure 12. Selected Chronic Diseases by Household Income, Hawaii, 2008, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009, COPD Data from 2008 BRFSS.
 Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html> and <http://hawaii.gov/health/statistics/brfss/brfss2008/demo08.html>.

In Hawaii, with the exception of blood cholesterol, there is a fairly consistent association and social gradient between income and chronic disease, where those in the lowest income groups report higher chronic disease prevalence than those in the highest income group.

Figure 13. Disability Status by Household Income, Hawaii, 2009



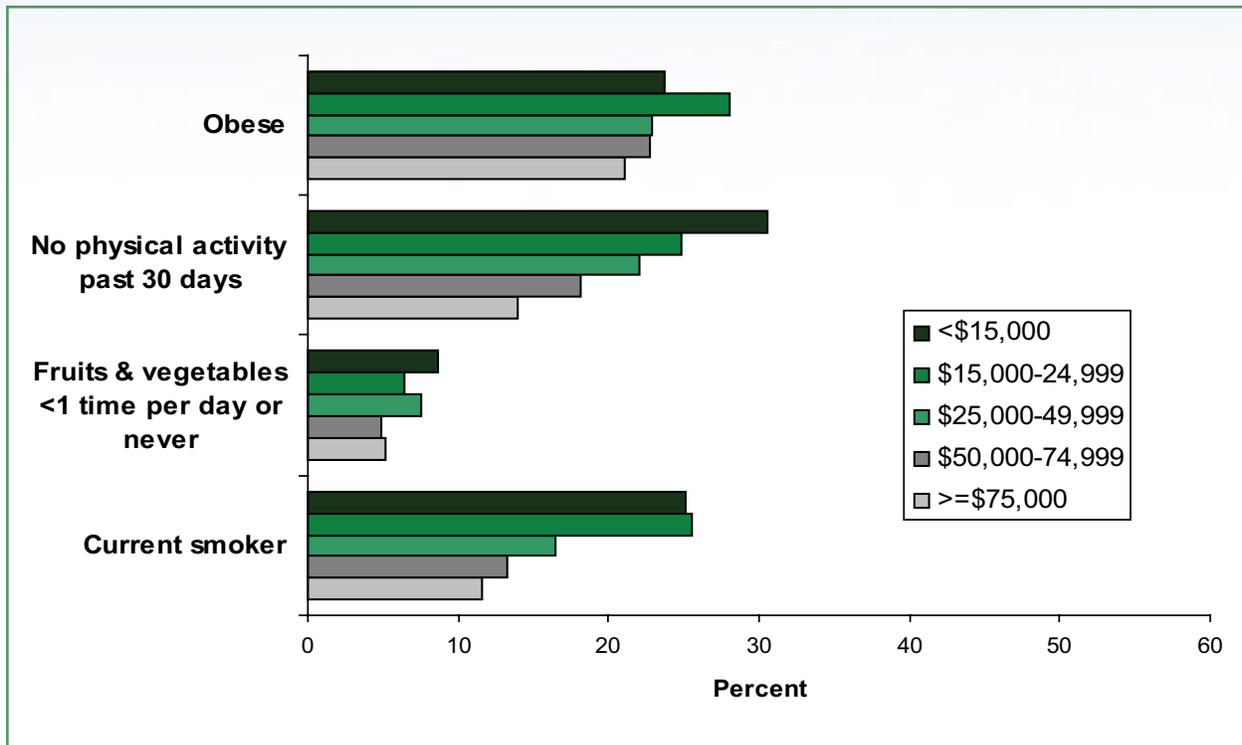
Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
 Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

Those with household income less than **\$15,000 per year also report more activity limitations due to health problems** than those with incomes over **\$75,000 per year (33.4% versus 11.4%)** and health problems requiring special equipment (**12.2% versus 3.6%**).

These measures of disability follow a social gradient for income level.

Illustrating the role of social determinants in health does not negate the effects of individual behavior. However, individual behavior is constrained by the socio-economic environment. Individual choices not to smoke or eat healthy food are constrained by people's income, educational attainment or living circumstances, as well as chronic social stressors. Economic resources as well as social stressors often impact the extent to which people can make health-promoting choices for themselves and their families and communities (16).

Figure 14. Behavioral/Modifiable Risk Factors by Household Income, Hawaii, 2009

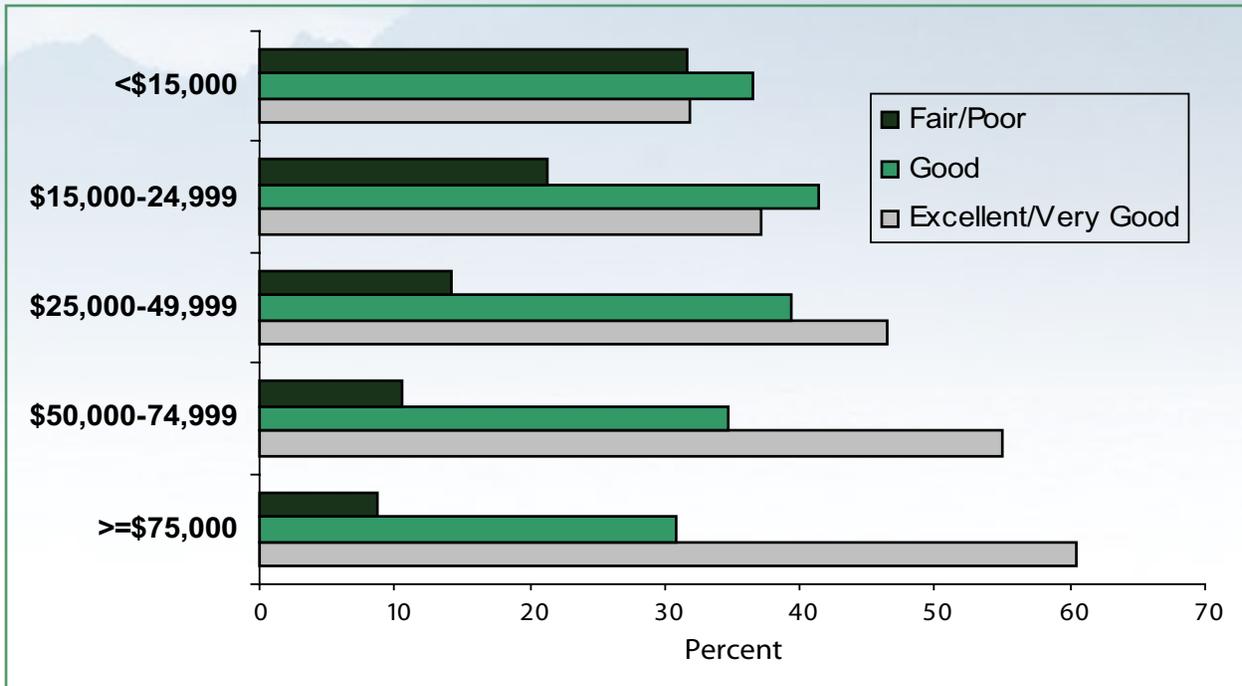


Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009demo09.html>.

The social economic gradient is most evident for leisure time physical activity and smoking status and less evident for fruit and vegetable consumption and obesity.

That is, people with lower household incomes are less likely to report no physical activity in the past 30 days and more likely to report current smoking.

Figure 15. Household Income and Self-Reported Health Status, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

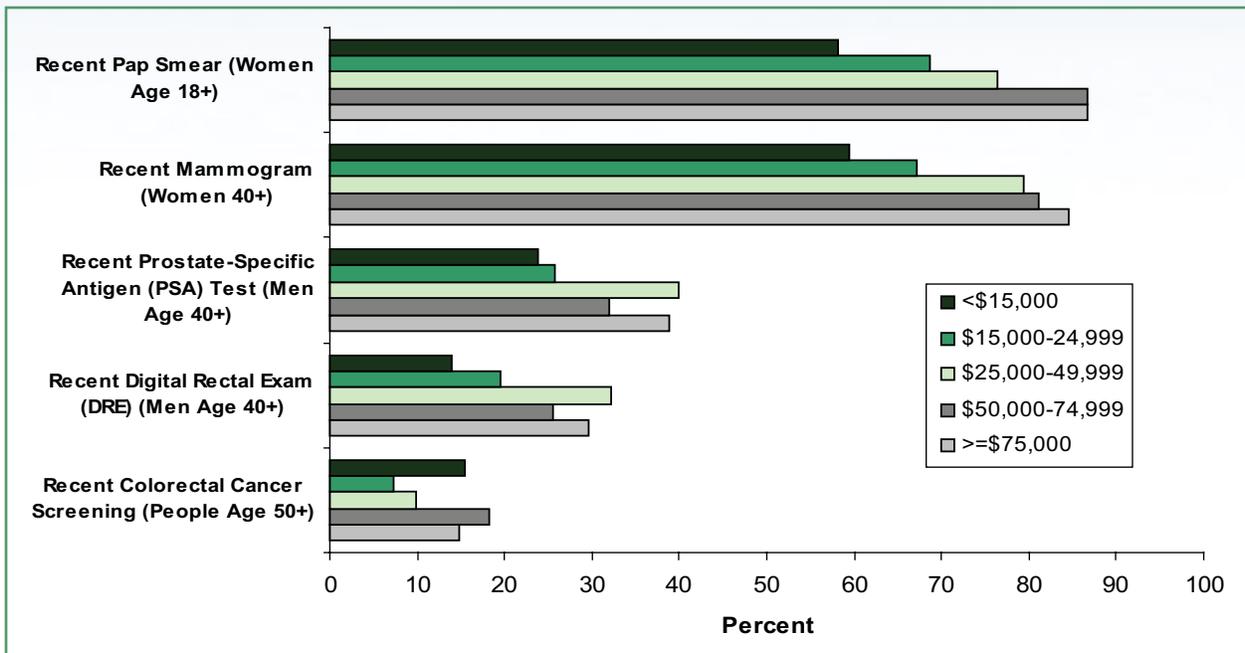
There is an inverse relationship between self-reported health status and household income.

Those with lower income levels are more likely to report poorer overall health status.

Those with higher incomes are more likely to report excellent/very good health.

Those with less household income are less likely to report getting recommended cancer screenings, again following a social gradient (Figure 16). The income and cancer screening gradient appears to be more prominent among women (87% with incomes at or above \$75,000 screened for cervical cancer versus 58% with incomes below \$15,000 per year). For colorectal cancer screening there is no discernable pattern. For prostate cancer and digital rectal screening, the expected gradient is present except for those in the middle income category (\$25–\$49,000).

Figure 16. Recent Cancer Screening by Household Income, Hawaii, 2009

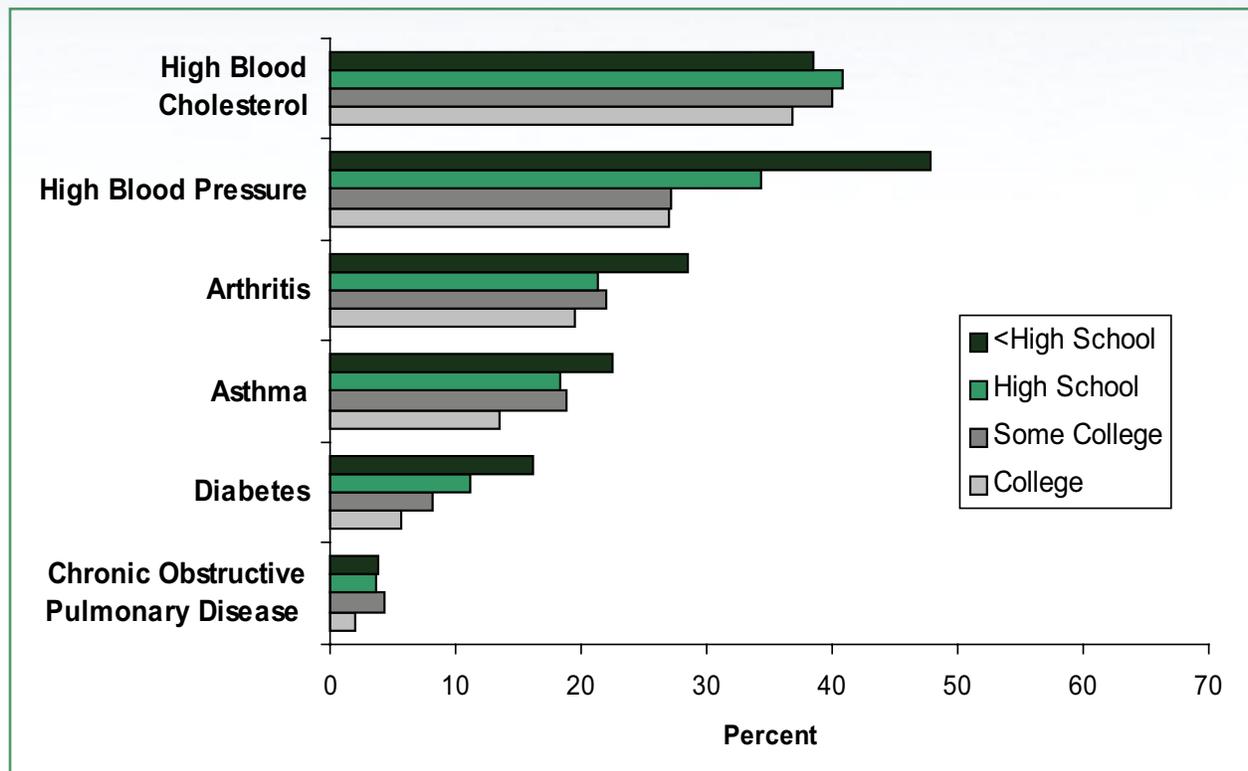


Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
 Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

LESS EDUCATION = WORSE HEALTH

Educational attainment is closely linked to better options for employment and income, which in turn can influence health seeking behaviors and access to healthcare. Having more education and a better job is also linked with stronger social supports – the networks and norms that support healthy behaviors and discourage behaviors that are health-harming.

Figure 17. Prevalence of Selected Chronic Diseases by Education Level, Hawaii, 2008, 2009



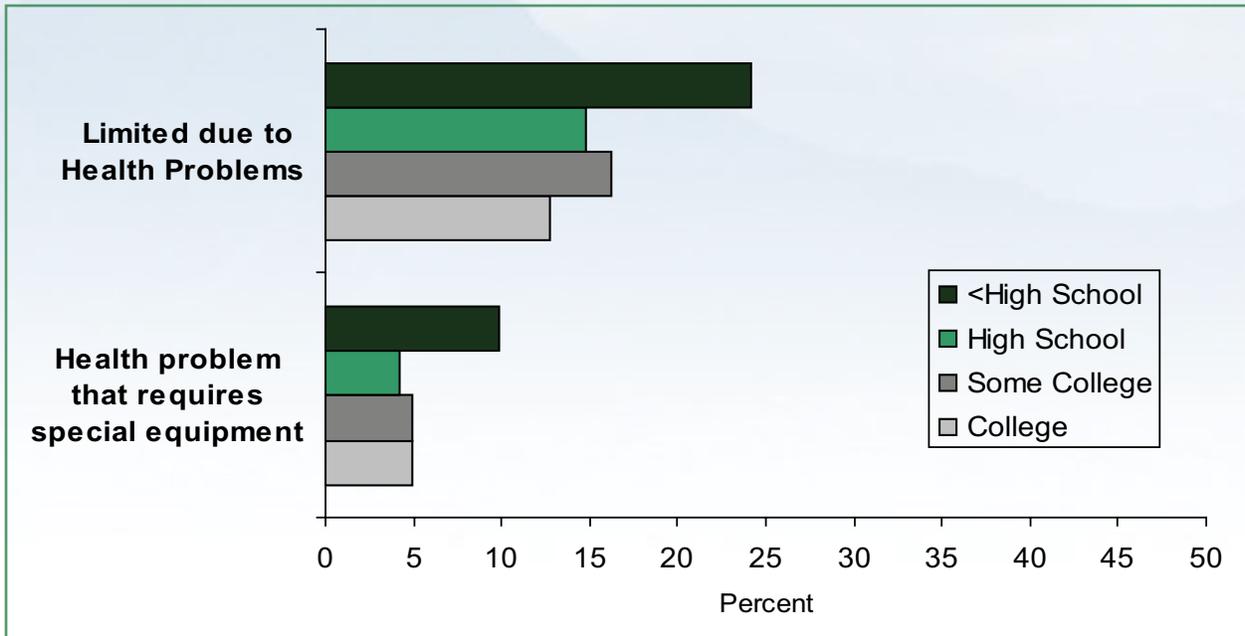
Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009, COPD Data from 2008 BRFSS.

Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html> and <http://hawaii.gov/health/statistics/brfss/brfss2008/demo08.html>.

Those with less than a high school education report higher prevalence of high blood pressure, arthritis, asthma, and diabetes.

Prevalence of these conditions follows a fairly consistent social gradient by education level.

Figure 18. Prevalence of Disability by Education Level, Hawaii, 2009

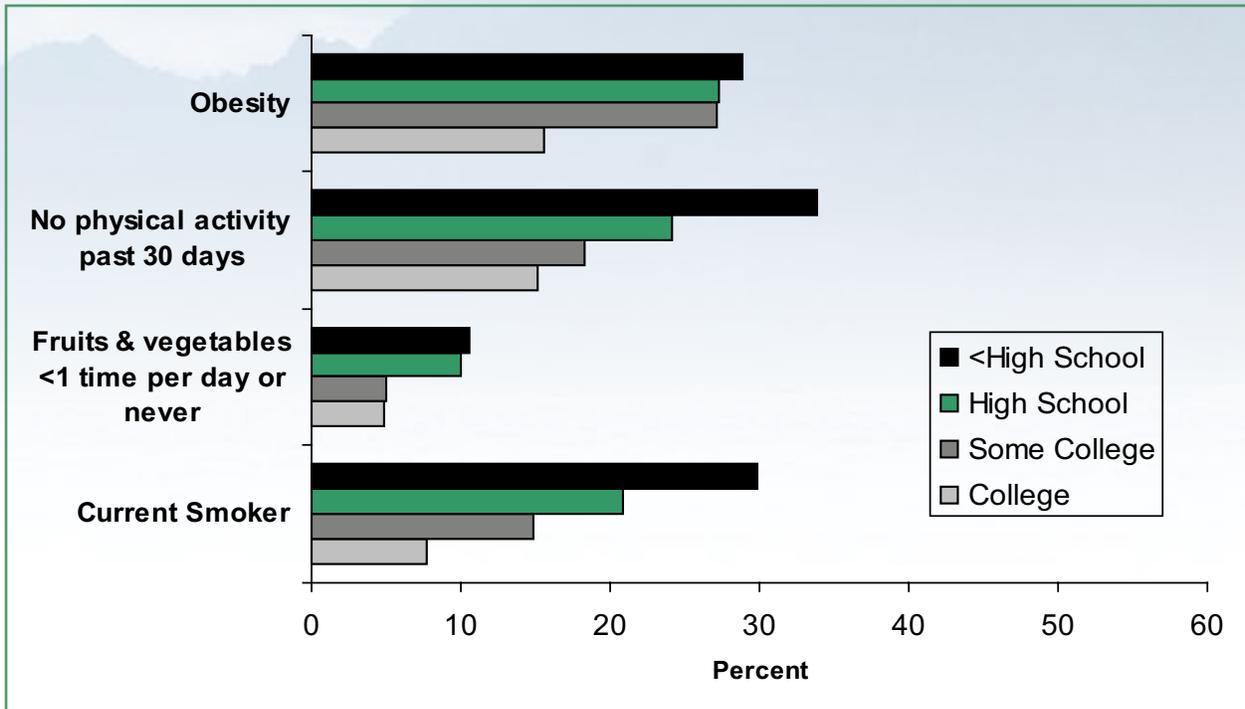


Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

Those with less than high school education report more activity limitations and the use of assistive devices (e.g. disabilities) than those with higher education.

This pattern follows a social gradient by educational level.

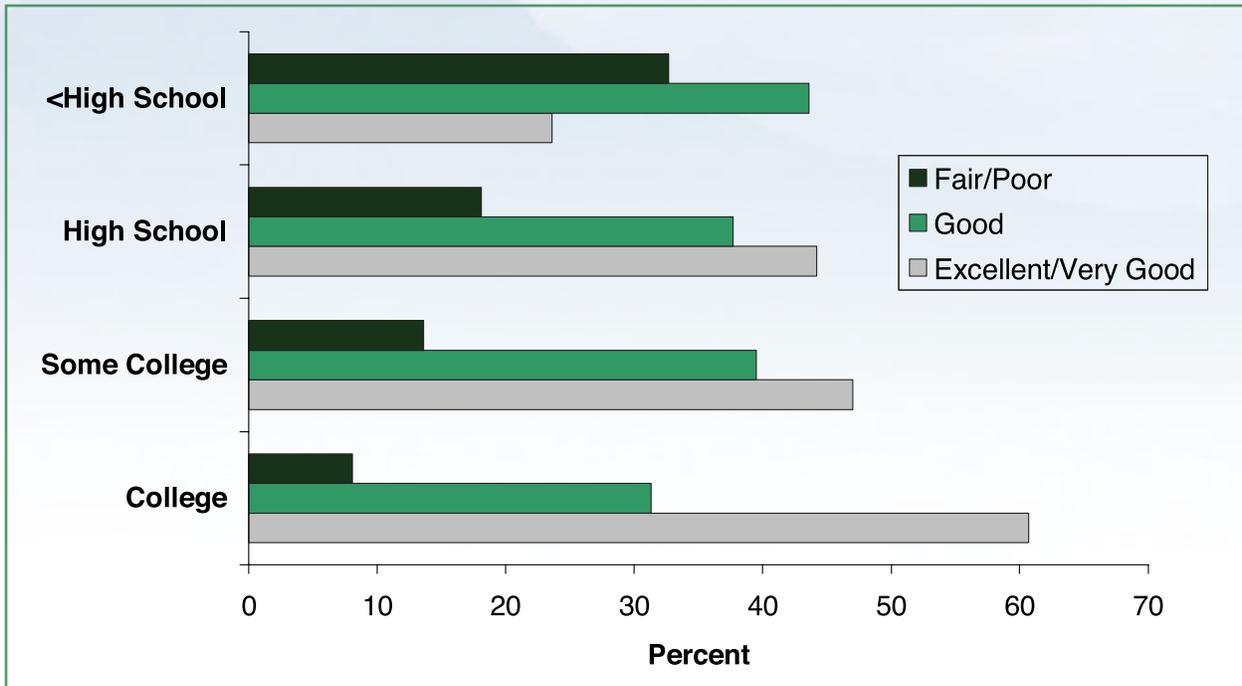
Figure 19. Behavioral/Modifiable Risk Factors by Education Level, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

There is a clear social gradient by education level whereby those with the least education are more likely than those with the most education to report being obese, having no leisure time physical activity, eating fruits and vegetables less than 1 time per day and being a smoker.

Figure 20. Education Level by Self-Reported Health Status, Hawaii, 2009



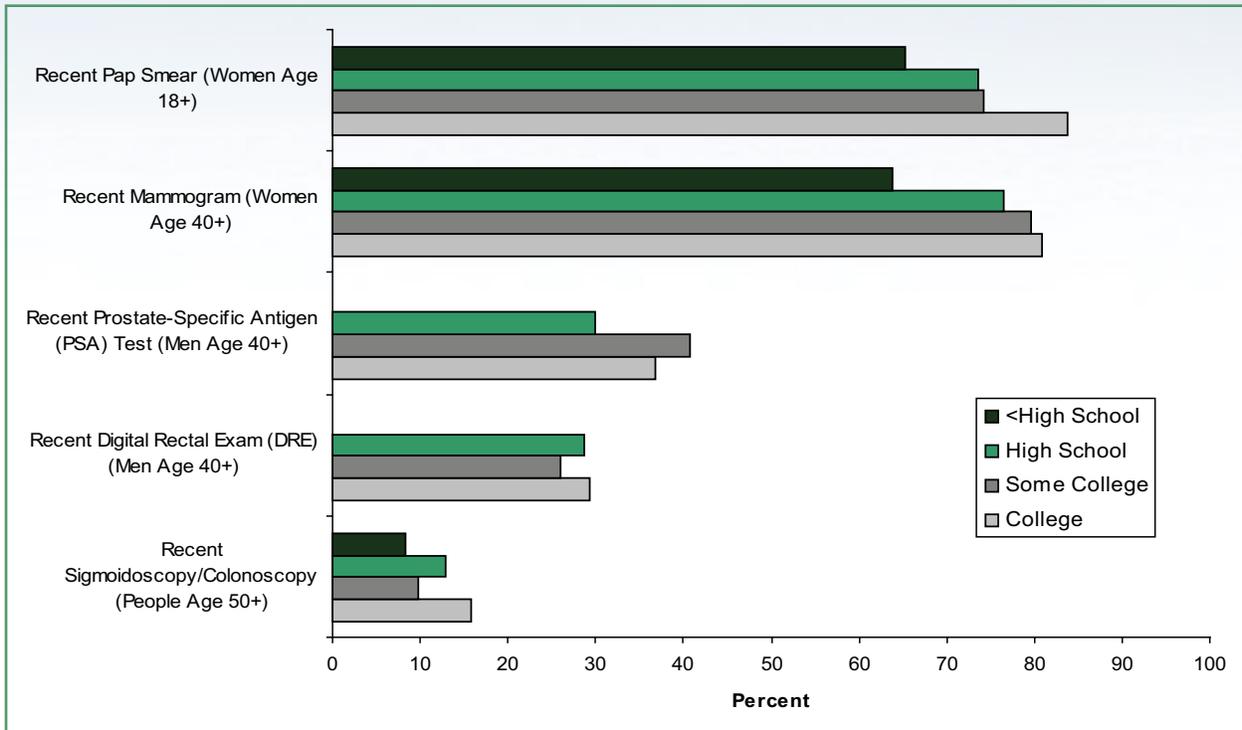
Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

As with income, there is an inverse relationship between self-reported health status and education level, following a social gradient.

Those with high school or less than high school education report poorer overall health status.

As Figure 21 indicates, those with lower educational levels also are less likely to report getting recommended cancer screenings. This gradient is especially pronounced among women for breast and cervical cancer screening. For example, among those with a college degree, 84% reported a recent cervical cancer screening, while only 66% of those with less than a high school education did.

Figure 21. Recent Cancer Screening by Education Level, Hawaii, 2009

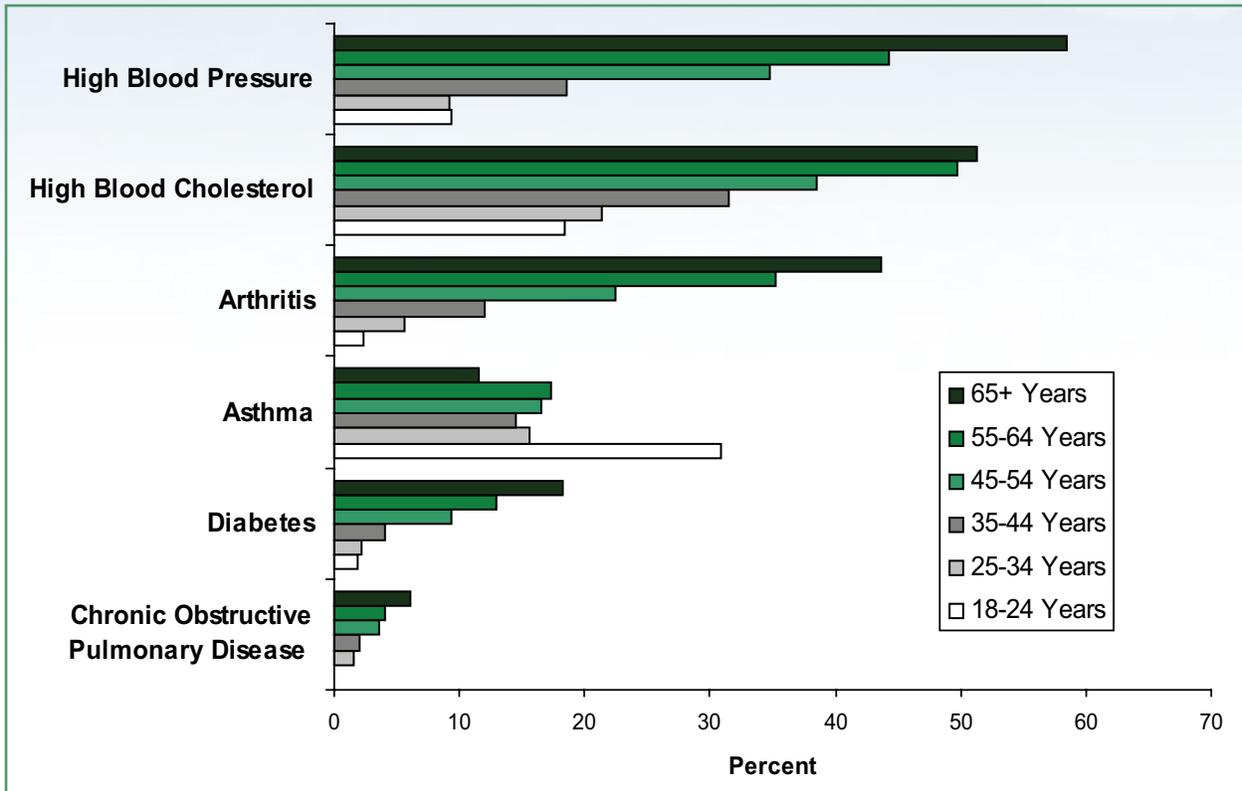


Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009. Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>. Note: Data missing in recent Prostate and DRE exam respondents with less than high school education due to sample size less than 50.

WITH INCREASED AGE, INCREASED CHRONIC DISEASE

Age is a risk marker for chronic conditions.

Figure 22. Selected Chronic Diseases by Age, Hawaii, 2008, 2009



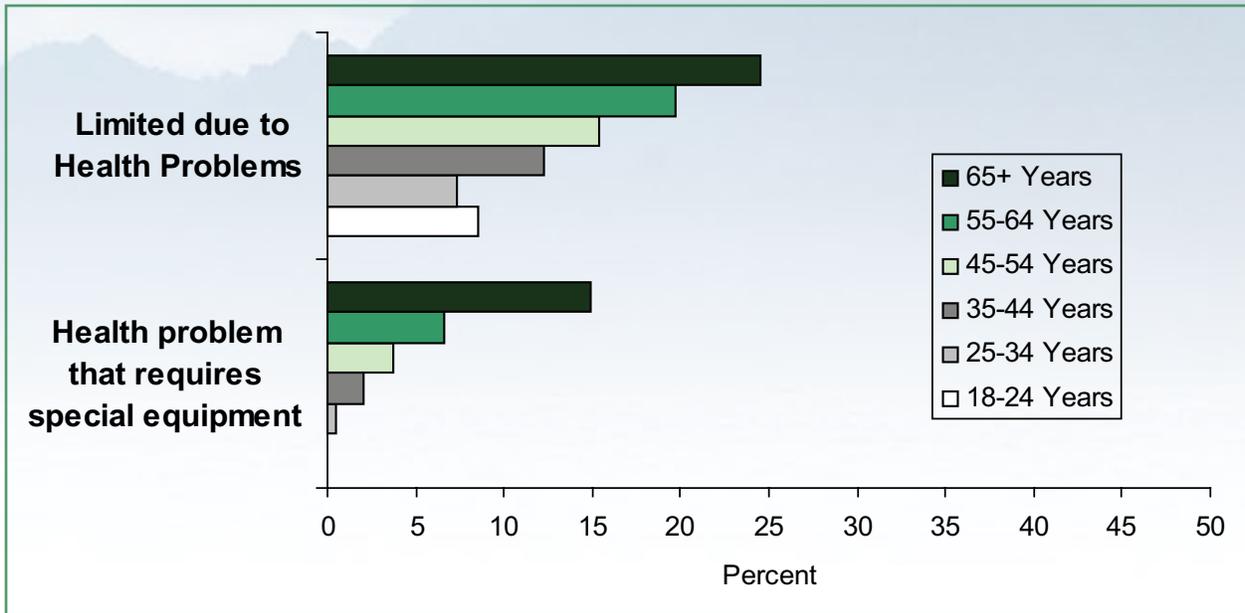
Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009, COPD Data from 2008 BRFSS.

Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html> and <http://hawaii.gov/health/statistics/brfss/brfss2008/demo08.html>.

*COPD reported as 18–34 Years

The prevalence of chronic disease and risk factors, such as high blood pressure, is highest for those aged 65 and over (for all chronic diseases except asthma).

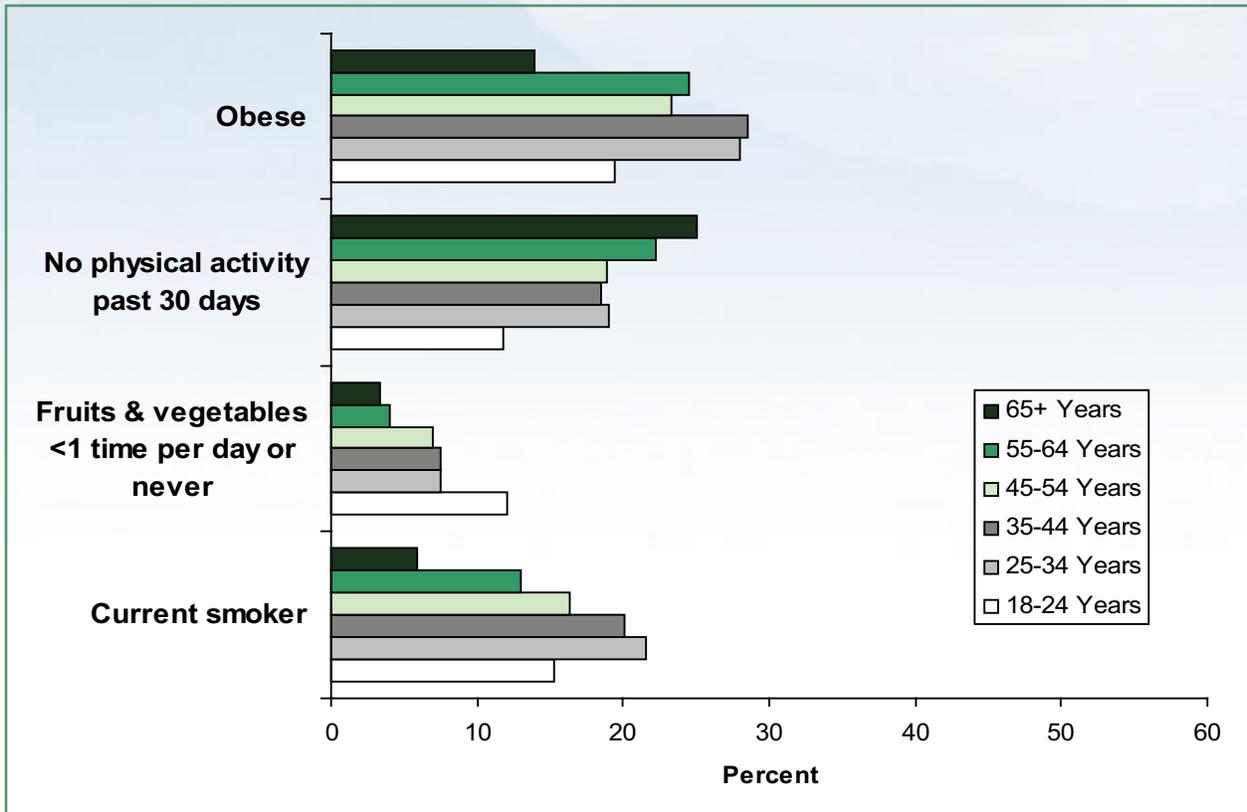
Figure 23. Disability Status by Age, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

Disability or limitations due to health problems increases with age, as does the use of special equipment.

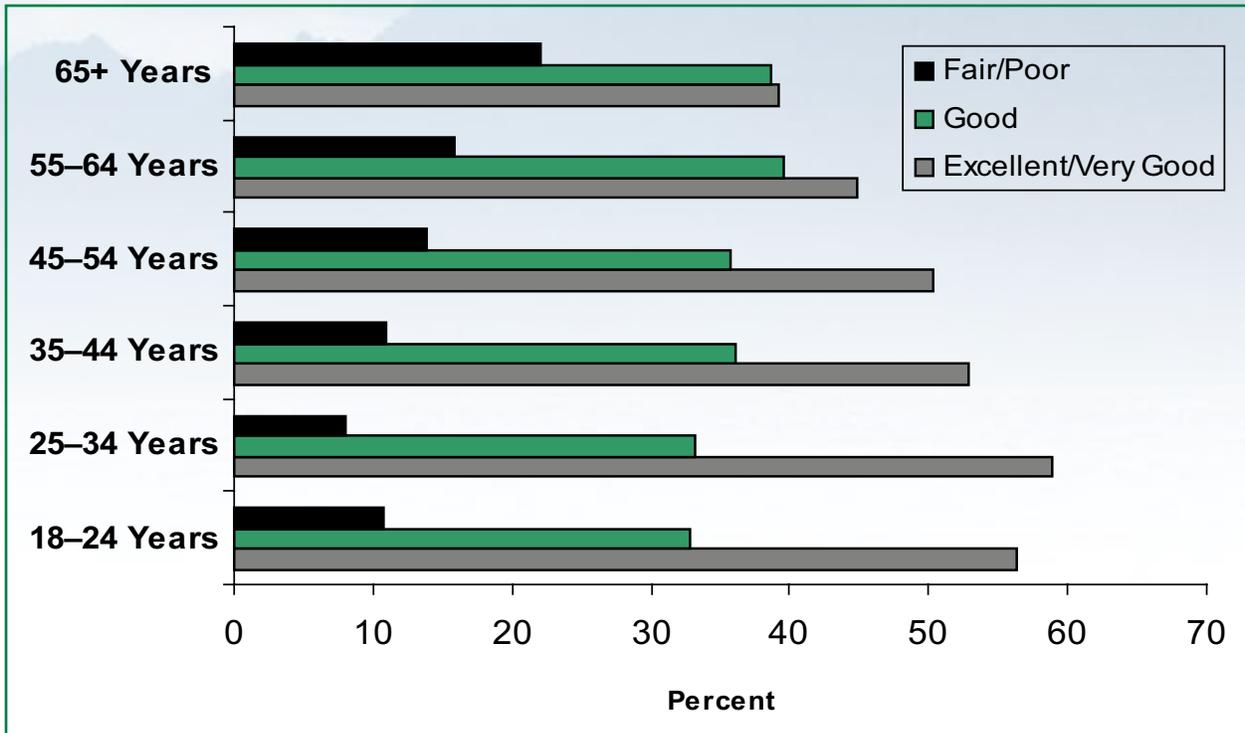
Figure 24. Behavioral/Modifiable Risk Factors by Age, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
 Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

Among those 18 and older, those over age 65 are less likely to smoke, eat recommended fruits and vegetables or be obese. Those 65 and over are the least likely to have leisure time physical activity.

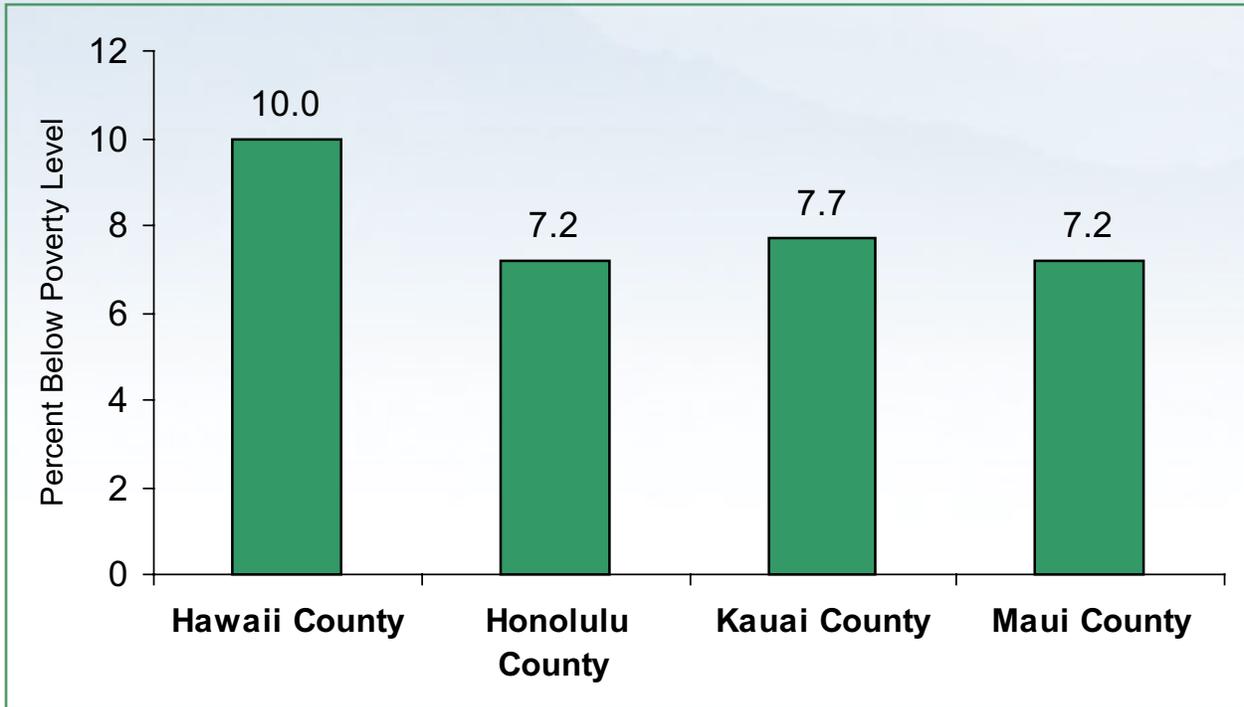
Figure 25. Age by Self-Reported Health Status, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

With the exception of those 18-24, there is an inverse relationship between age and poor health status.

Figure 26. Percentage of Individuals 65 Years and Older with Incomes below the Poverty Level by County, Hawaii, 2006–2008

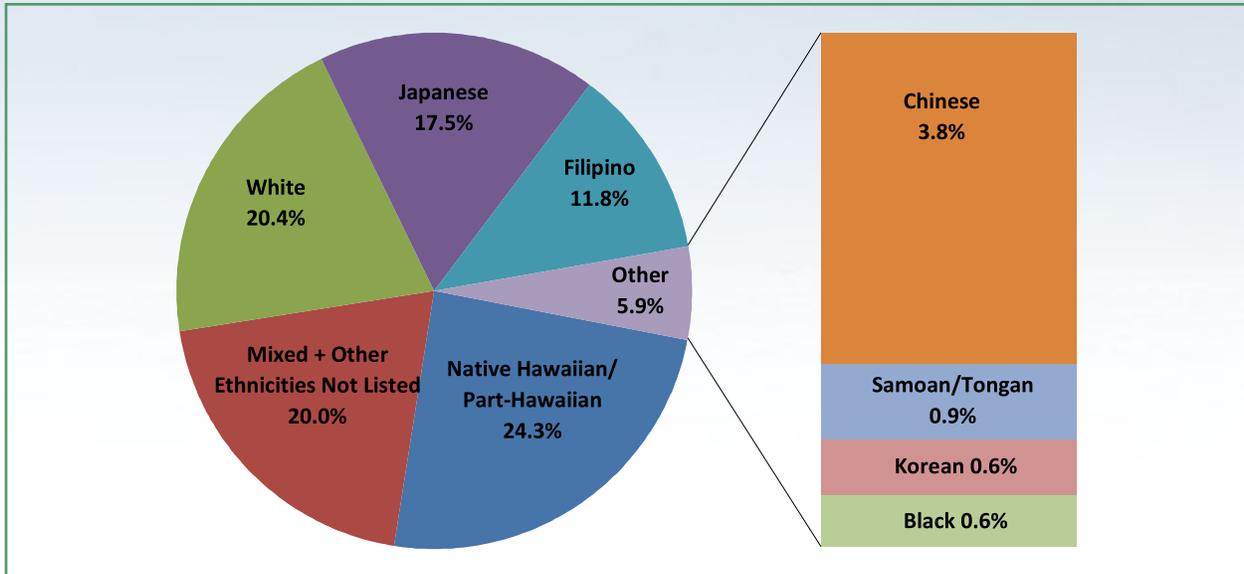


Source: U.S. Census Bureau, 2006-2008 American Community Survey. 2006–2008 American Community Survey 3-Year Estimates.

While Hawaii county has the highest percentage of people aged 65 years and older living in poverty, all islands have significant proportions of elders in poverty (more than 7% across all counties).

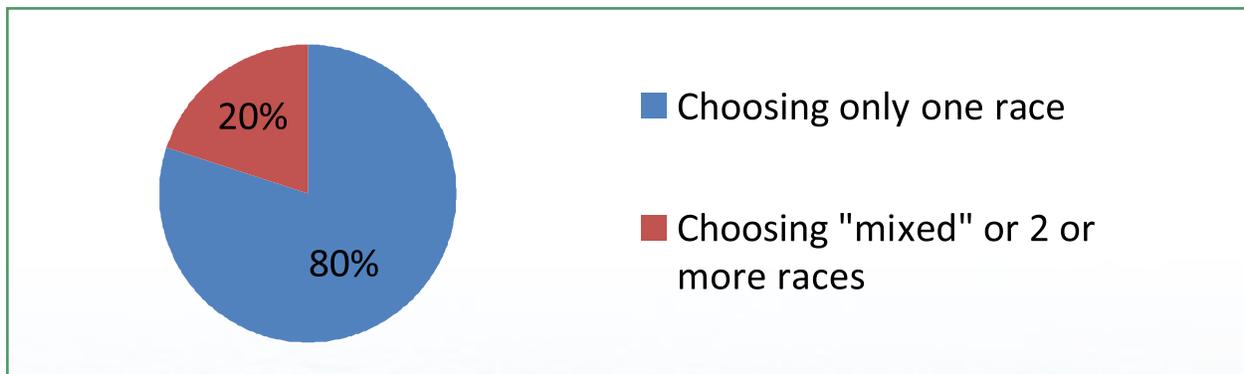
RACE/ETHNICITY = RISK MARKERS FOR HEALTH DISPARITIES

Figure 27. Major Ethnic Groups in Hawaii, 2008



Source: Hawaii Department of Business, Economic Development & Tourism. State of Hawaii Data Book, 2008. Available from <http://Hawaii.gov/dbedt/info/economic/databook/2008-individual/01/014108.pdf>. Based on survey data provisionally weighted by the US Census 2000.

Figure 28. Proportion of Individuals Choosing Only One Race versus Choosing Mixed Race, Hawaii, 2008



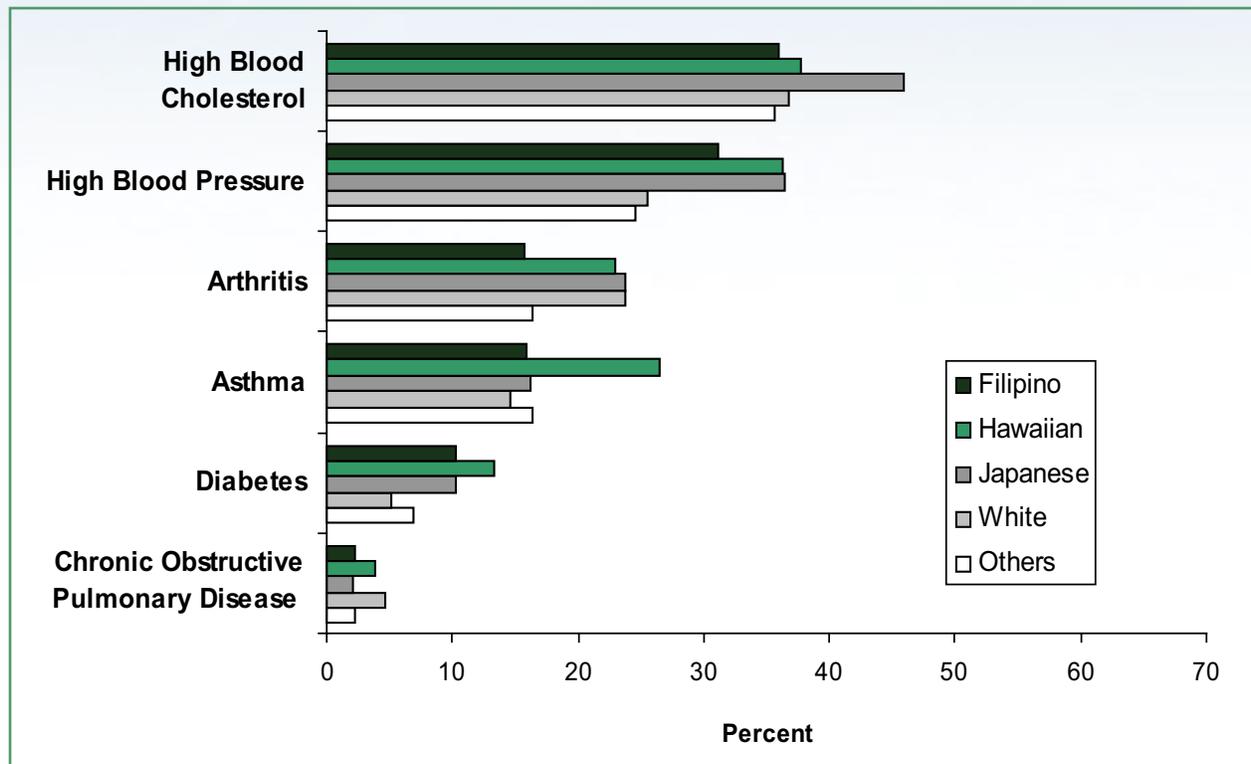
Source: Hawaii Department of Business, Economic Development & Tourism. State of Hawaii Data Book, 2008. Available from <http://Hawaii.gov/dbedt/info/economic/databook/2008-individual/01/014108.pdf>. Based on survey data provisionally weighted by the US Census 2000.

Hawaii is a diverse state, with 20% of the population claiming more than one race.^D

^D Two new modules are being tested on the Hawa'i BRFSS in 2010 to better gauge racism (reactions to race) and social context. Data will be available in 2011.

Research indicates that socioeconomic measures often account for a large part of racial/ethnic differences, which supports increased attention to consideration of both race/ethnicity and socioeconomic factors (17). Here we are presenting data on race/ethnicity alone as a risk marker (not a gradient).

Figure 29. Prevalence of Selected Chronic Diseases by Race and Ethnicity, Hawaii, 2008, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009, COPD Data from 2008 BRFSS. Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html> and <http://hawaii.gov/health/statistics/brfss/brfss2008/demo08.html>.

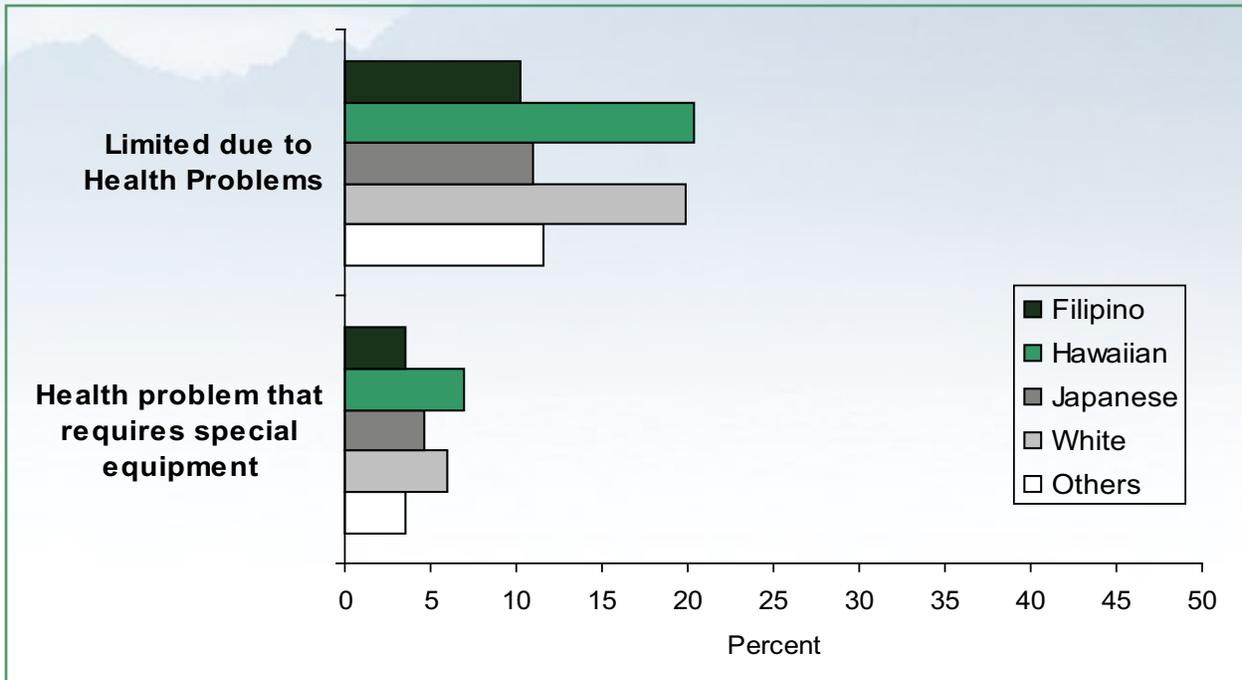
The prevalence of high blood cholesterol is highest among Japanese.

The prevalence of asthma is highest among the Native Hawaiian population.

High blood pressure and diabetes are more prevalent among Native Hawaiians, Filipinos and Japanese.

The prevalence of arthritis is highest among Japanese, whites, and Native Hawaiians.

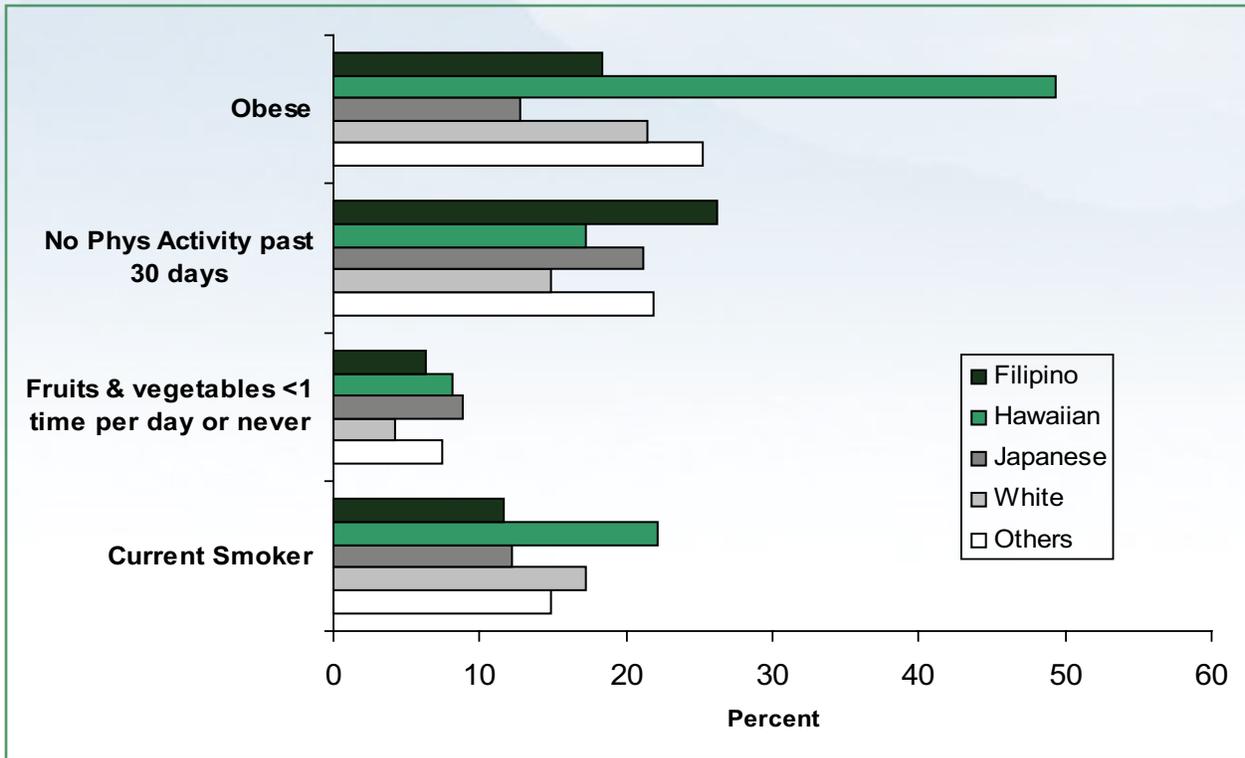
Figure 30. Prevalence of Disability by Race/Ethnicity, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

The highest prevalence of limitations due to health conditions and the use of special equipment to handle these health conditions occur in the Native Hawaiian and white populations.

Figure 31. Behavioral/Modifiable Risk Factors by Race/Ethnicity, Hawaii, 2009

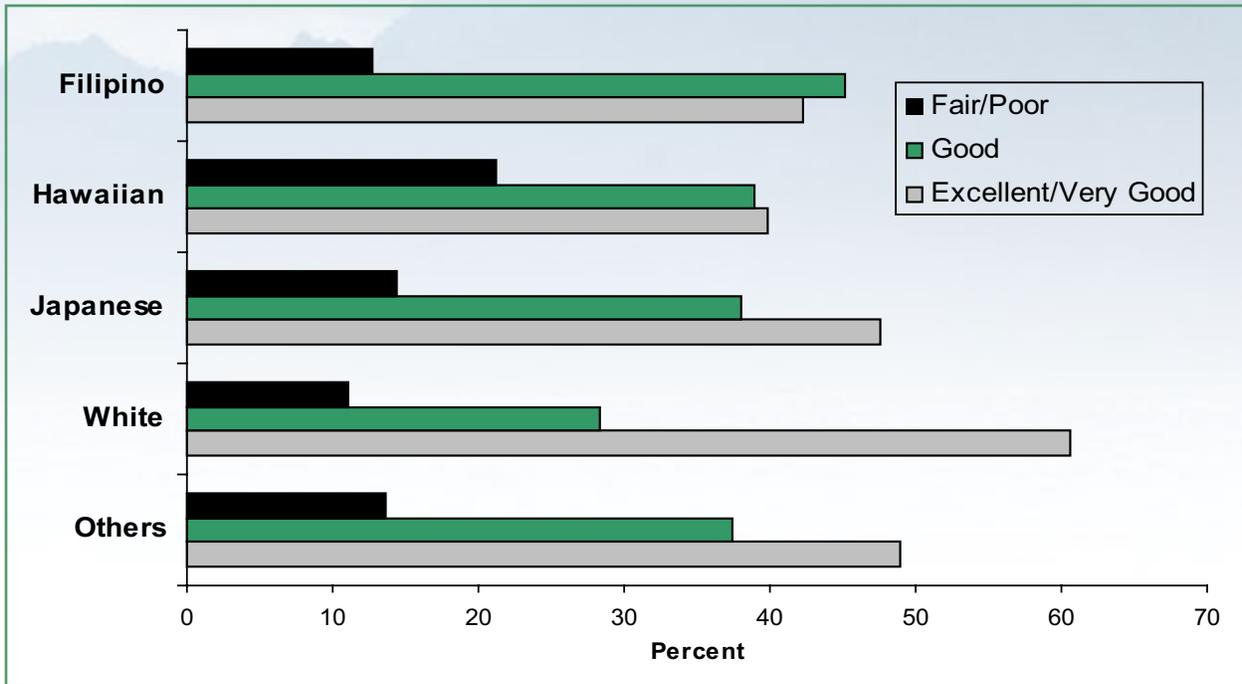


Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
 Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

Almost half of Native Hawaiians report being obese (49.3%) and almost one-quarter are current smokers (22.1%).

No leisure time physical activity and less than one fruit or vegetable per day vary by race/ethnicity.

Figure 32. Race and Ethnicity by Self-Reported Health Status, Hawaii, 2009

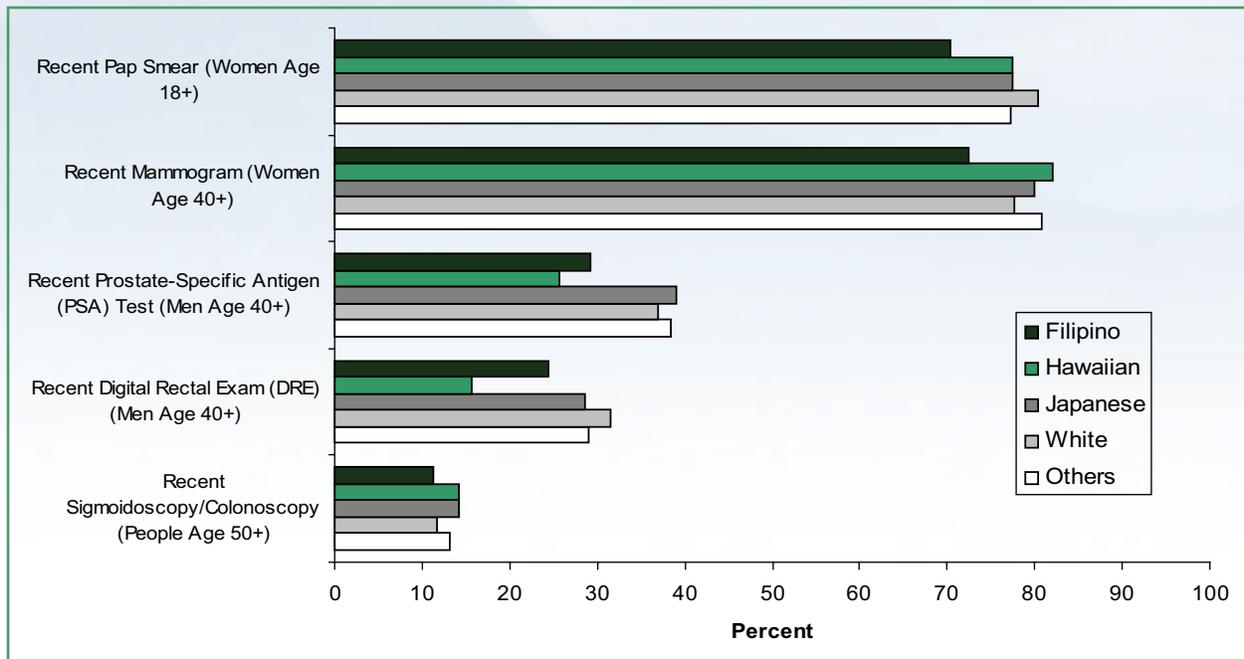


Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

Native Hawaiians are slightly more likely to report fair/poor health, followed by Japanese and others.

And, while whites are more likely to report excellent-very good health, they had much lower proportions reporting good health than other ethnic groups.

Figure 33. Recent Cancer Screening by Race-Ethnicity, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
 Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

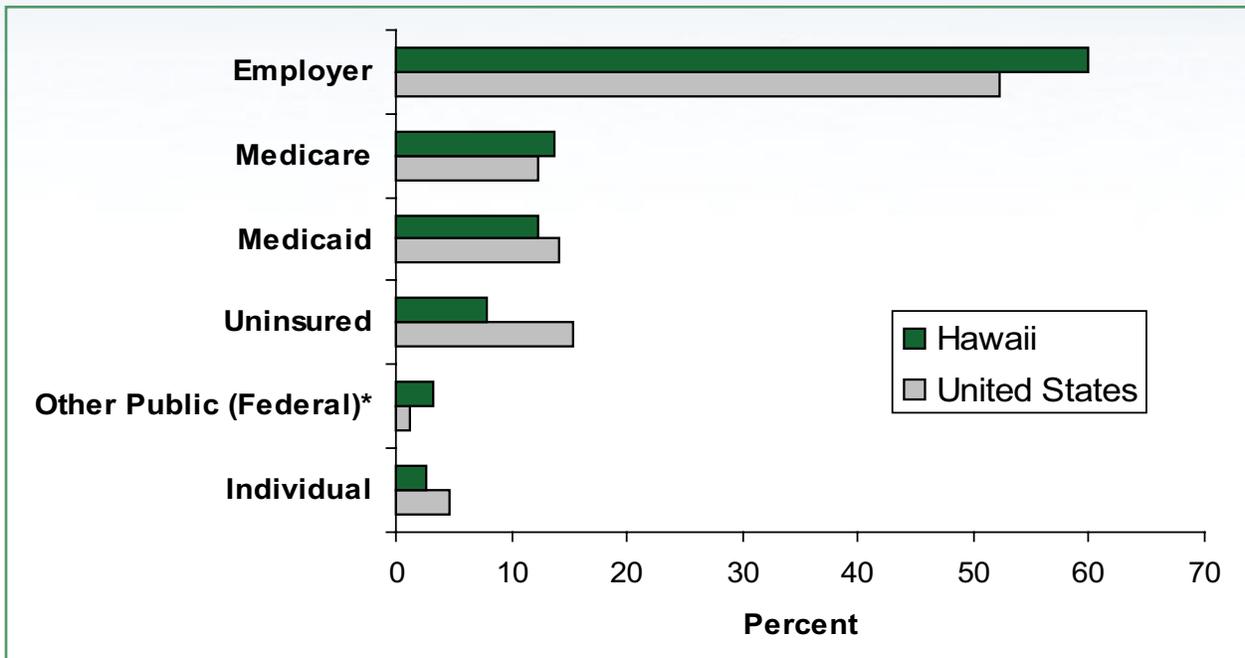
Filipino women report lower cervical, and breast cancer screenings.

Native Hawaiian men report the lowest prostate cancer screenings and colorectal cancer screening (DRE), yet the rates are also markedly lower among Filipino men.

LACK OF HEALTH INSURANCE AND SOCIO-DEMOGRAPHIC FACTORS

The State of Hawaii is regarded as a healthy state in terms of healthcare coverage, compared to the U.S. overall (Figure 34). This section highlights how health insurance is actually linked to employment status in Hawaii.

Figure 34. Health Insurance Coverage of the Total Population, Hawaii, (2007–2008), U.S. (2008)



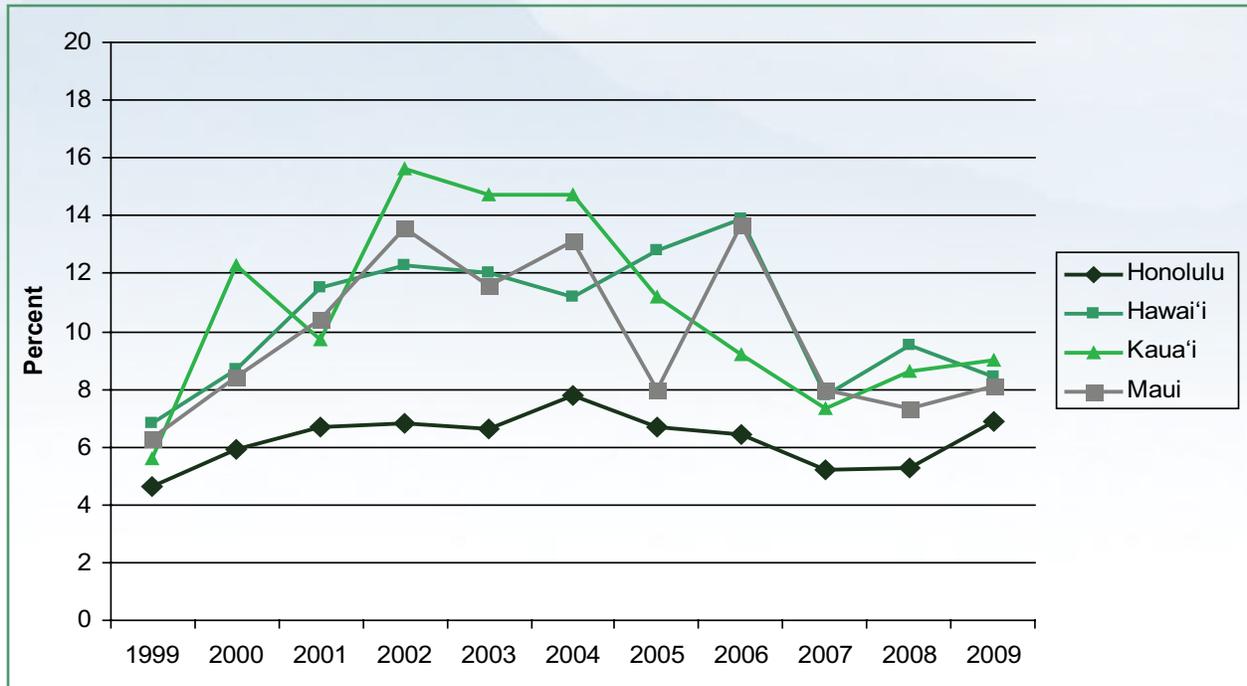
Source: Urban Institute and Kaiser Commission on Medicaid and the Uninsured estimates based on the Census Bureau's March 2008 and 2009 Current Population Survey (CPS: Annual Social and Economic Supplements).

* Other Public (Federal) includes: Veterans, TRICARE, non-elderly Medicare

Although Hawaii has fewer uninsured than the national average, Hawaii also has a higher percentage of employer-based coverage than the national average.^E

^EHawaii's labor laws require employers to offer health insurance to any employee working over 20 hours per week. This may account for the high percentage of employer-based insurance.

Figure 35. No Health Insurance by County, Hawaii, 1999–2009



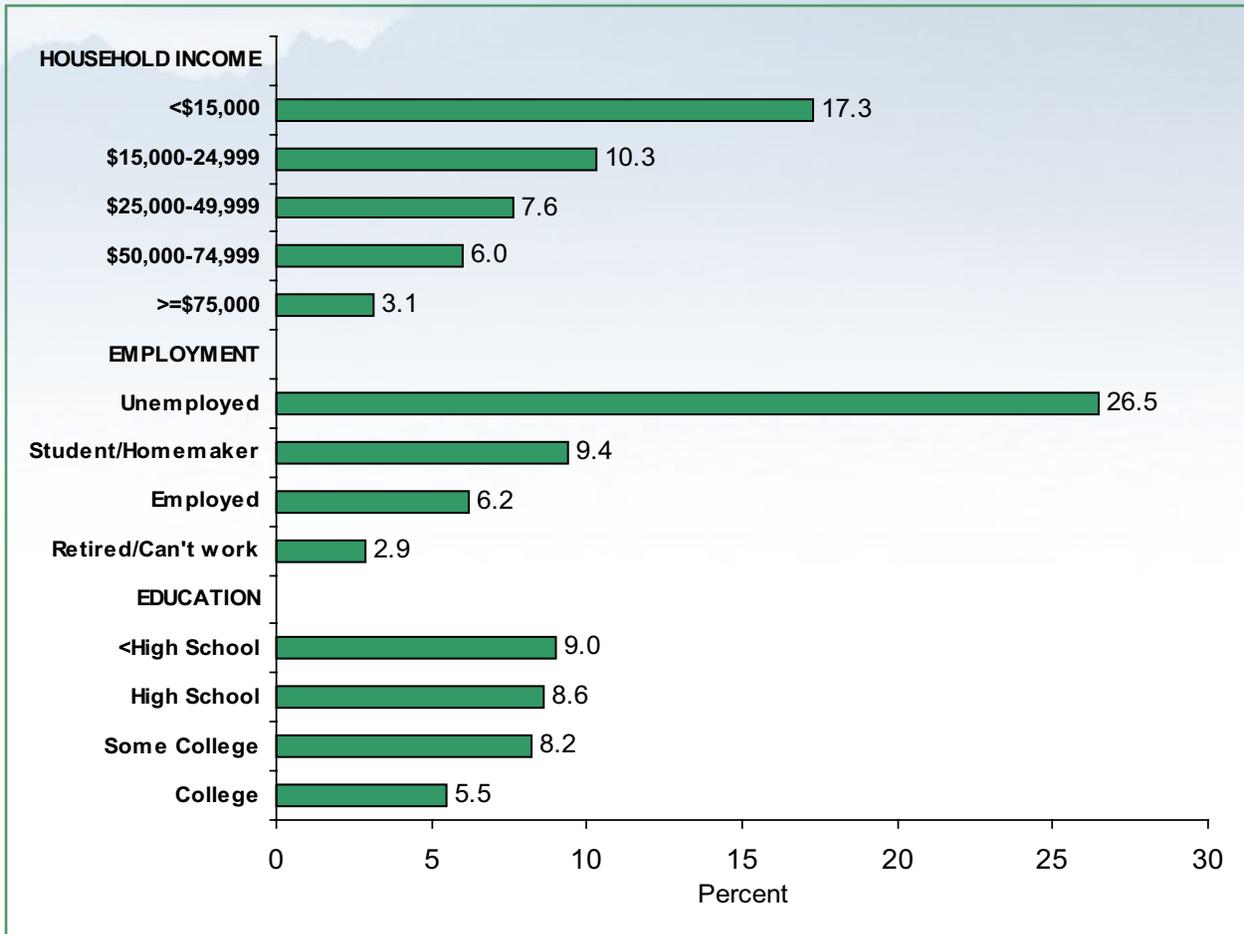
Source: Behavioral Risk Factor Surveillance System, 1999–2009.

Available at: http://uhfamily.hawaii.edu/Cof_Data/cfilcfi_results.asp?indicator=013&selector=Subject&value=es&label=Economic%20Security and <http://hawaii.gov/health/statistics/brfss/brfss/index.html>.

Honolulu County has the lowest proportion of the population reporting no health insurance coverage.

The proportions reporting no insurance coverage have decreased for Kauai from 2004–2007.

Figure 36. Selected Socioeconomic Factors by No Health Insurance, Hawaii, 2009

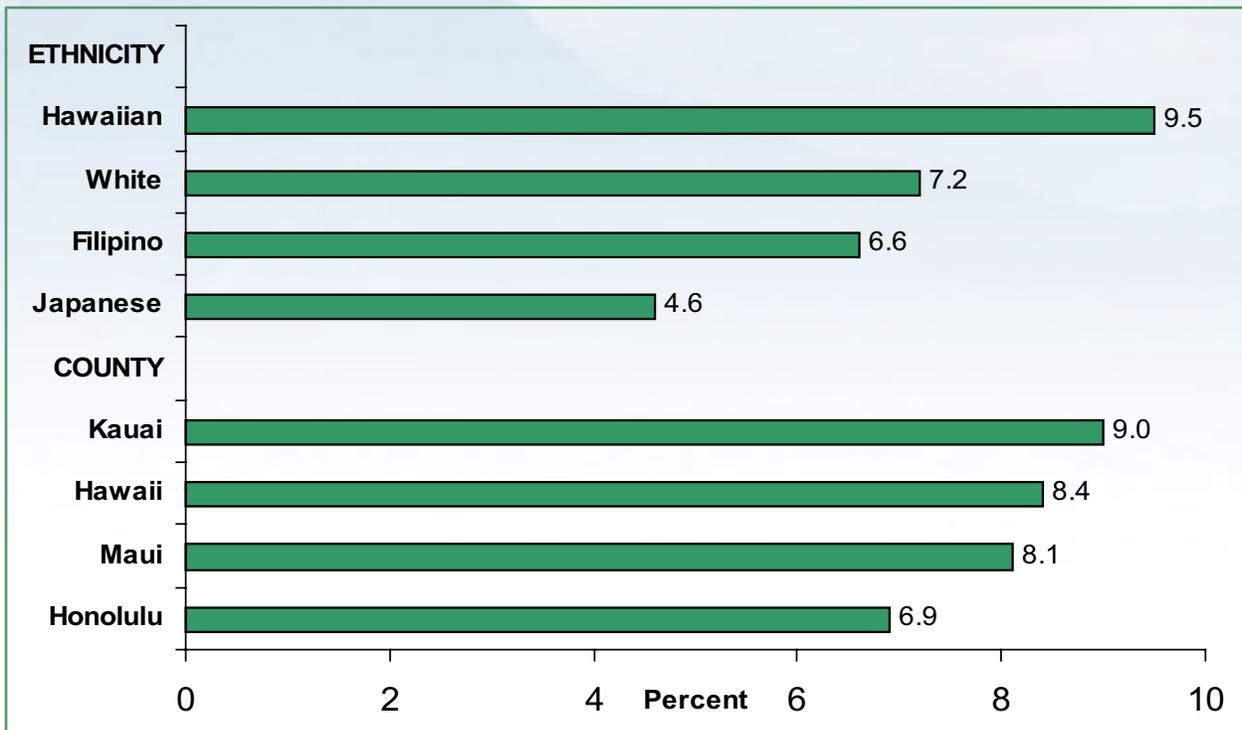


Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

People reporting no health insurance in Hawaii are more likely to:

- have low household income,
- and/or be unemployed,
- and/or have less than a college education.

Figure 37. Ethnicity and County by No Health Insurance, Hawaii, 2009



Source: Behavioral Risk Factor Surveillance System (BRFSS) 2009.
Available at: <http://hawaii.gov/health/statistics/brfss/brfss2009/demo09.html>.

People reporting no health insurance in Hawaii are more likely to be:

- **Native Hawaiian,**
- **and/or Reside on Hawaii, Kauai, or Maui.**

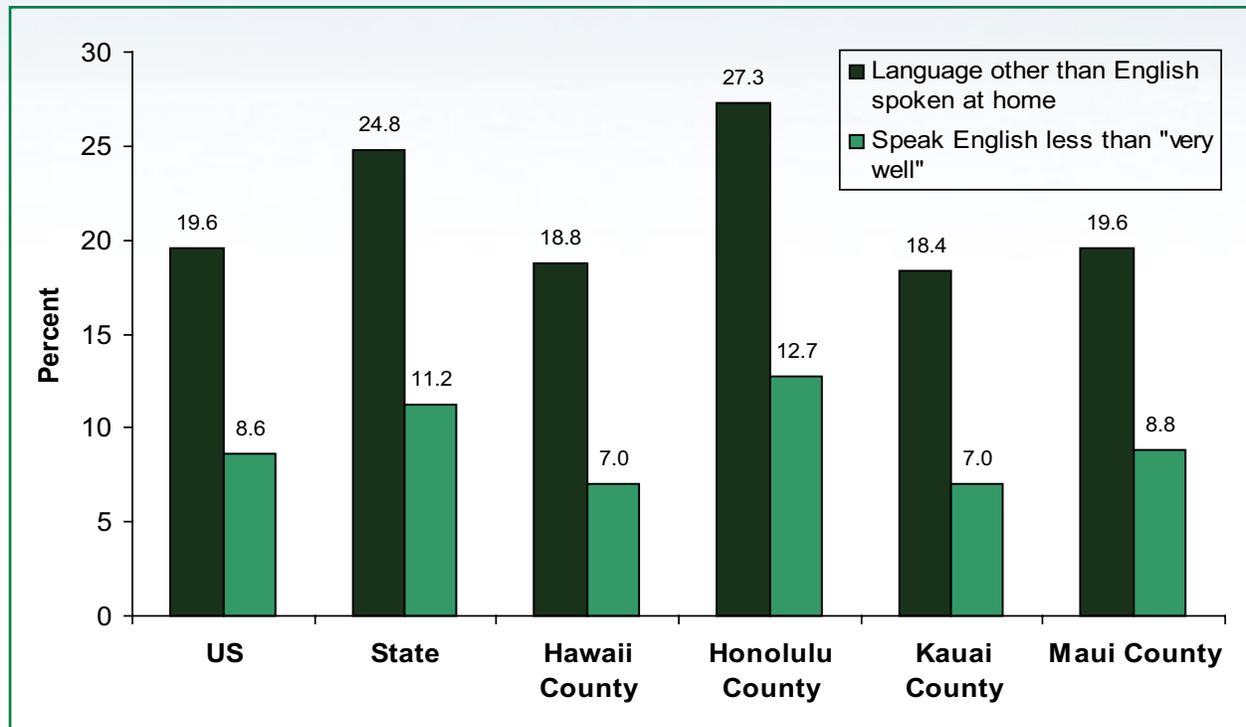
MESSAGE:

- In Hawaii, the majority of those who are insured have employer-based coverage.
- The majority of those who lack health insurance are likely to report being Native Hawaiian, and/or have less education, and/or have less household income, and/or be unemployed, and/or reside in Kauai, Hawaii or Maui Counties.
- Those with less education and income also have higher prevalence of chronic disease and disability burden.

INADEQUATE ACCESS TO CARE: LANGUAGE BARRIERS

The state of Hawaii has a greater percentage (24.8%) of non-English speaking households and people with limited English proficiency than the U.S. (19.6%) overall (Figure 38).

Figure 38. Percent of People 5 Years and Over Who Speak a Language Other Than English in the Home and Speak English Less Than "Very Well" by County, Hawaii, 2006–2008



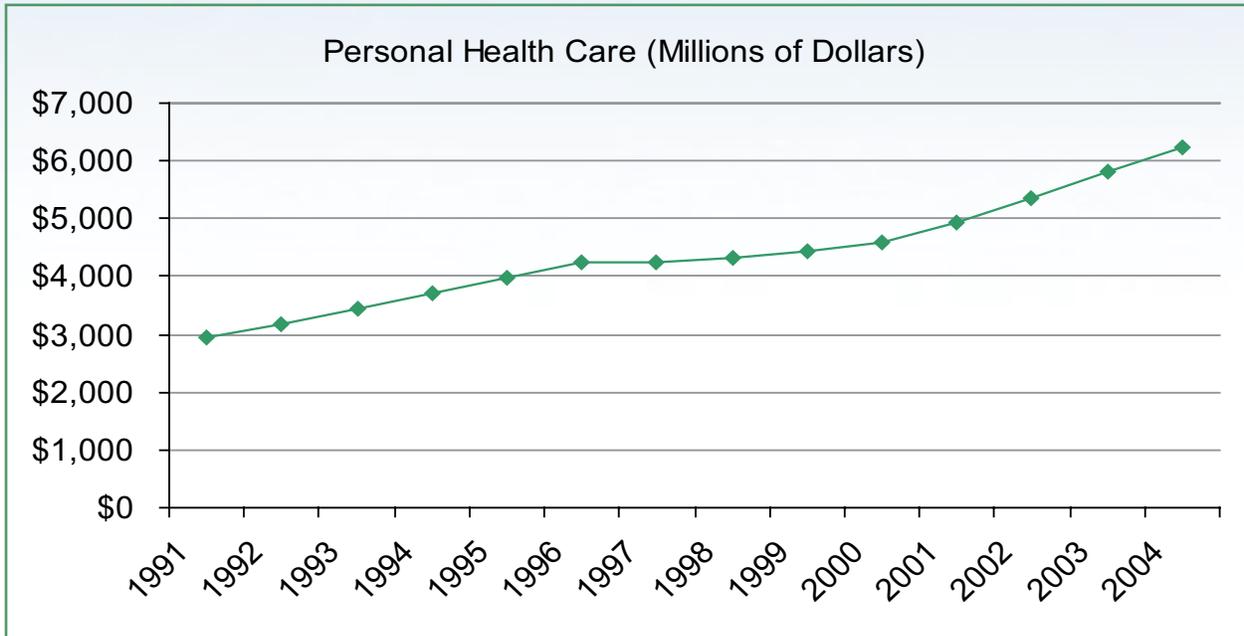
Source: U.S. Census Bureau, 2006-2008, American Community Survey, 2006–2008 American Community Survey 3-Year Estimates.

Honolulu County has the highest percentage of non-English speaking households and people with limited English proficiency, although there are at least 1 in 6 people in all parts of the state that speak a language other than English at home.

THE ECONOMIC COSTS OF CHRONIC DISEASE IN HAWAII

As depicted in Figure 39, the costs for health care in Hawaii have risen dramatically in recent years, with costs more than doubling between 1991 (~\$3 billion) and 2004 (\$6.2 billion).

Figure 39. Hawaii Personal Health Care Expenditures (PHCE), All Payers, 1991–2004



Source: Centers for Medicare and Medicaid Services, National Health Expenditure Data, Health Expenditures by State of Residence, 1991–2004. Hawaii Personal Health Care Expenditures (PHCE), All Payers, 1991–2004.

In 2004, the most recent year for which state-level data are available, Hawaii spent a total of \$6.2 billion on health care, which represents \$4,941 per person or 12.5 percent of Gross State Product (GSP) (21).

MOST COSTLY CHRONIC DISEASES

Figures 40 and 41 (below) depict Medicaid data from the Medical Expenditure Panel Survey (MEPS), which is widely considered the most complete source of data on the cost and use of health care and health insurance coverage. Medicaid costs are a good indicator for state health care costs because Medicaid primarily covers poor and low-income residents and is paid for largely through taxes. Therefore, Medicaid costs are a good representation of what we all pay financially for chronic disease care and health care utilization. These costs are substantial and mirror the leading causes of death.

As depicted on Figure 40, Hypertension consumes the most Medicaid chronic disease dollars at \$59.7 million per year followed by diabetes (\$52.2 million) and stroke (\$41.1 million).

Figure 40. Total Medicaid Costs for Selected Chronic Disease, US and Hawaii, 2007*

| Group | Hypertension | Diabetes | Stroke | Heart Disease | Cancer | Congestive Heart Failure |
|----------------|------------------|------------------|-----------------|-----------------|-----------------|--------------------------|
| US Overall | \$16,183,936,000 | \$12,415,769,000 | \$9,745,191,000 | \$4,714,560,000 | \$2,088,373,000 | \$2,060,876,000 |
| Hawaii Overall | \$59,708,000 | \$52,179,000 | \$41,126,000 | \$20,755,000 | \$9,082,000 | \$9,093,000 |

*Cost estimates from the 2001–2005 Medical Expenditure Panel Survey (MEPS) inflated to 2007 dollars.

Source: Chronic Disease Cost Calculator, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). <http://www.cdc.gov/chronicdisease/resources/calculator/index.htm>.

However, the cost of any specific condition is not a good representation of its prevalence or severity. The per-person cost for chronic disease is highest for stroke (\$7,420) followed by congestive heart failure (\$3,690) and diabetes (\$3,190).

Figure 41. Cost per Medicaid Beneficiary for Selected Chronic Diseases, US and Hawaii, 2007*

| Group | Stroke | Congestive Heart Failure | Diabetes | Hypertension | Cancer | Heart Disease |
|----------------|---------|--------------------------|----------|--------------|---------|---------------|
| US overall | \$7,400 | \$3,620 | \$3,310 | \$2,180 | \$1,570 | \$1,320 |
| Hawaii Overall | \$7,420 | \$3,690 | \$3,190 | \$2,120 | \$1,560 | \$1,340 |

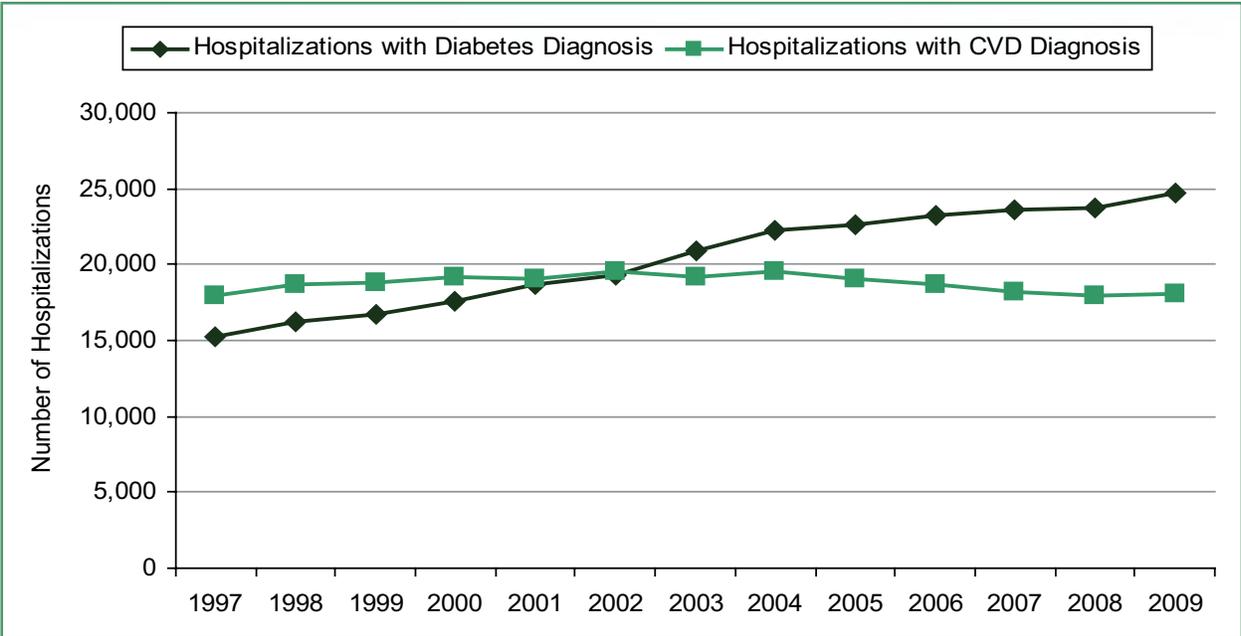
*Cost estimates from the 2001–2005 Medical Expenditure Panel Survey (MEPS) inflated to 2007 dollars. Source: Chronic Disease Cost Calculator, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). <http://www.cdc.gov/chronicdisease/resources/calculator/index.htm>.

COSTS ASSOCIATED WITH HEALTH CARE UTILIZATION

As depicted in Figures 42 and 43, although hospitalizations for cardiovascular disease events have remained relatively stable since 1997, the costs for these events have been steadily increasing over the same time period (from \$5.2 million in 2003 to \$6.7 million in 2009).

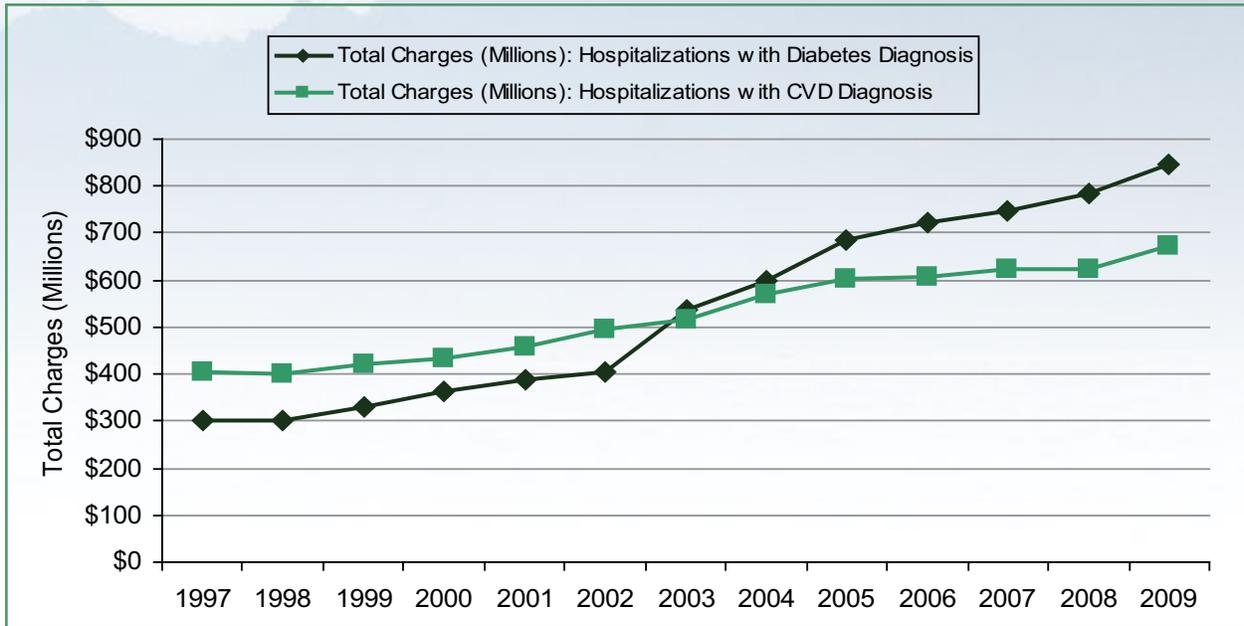
Hospitalizations for diabetes have been increasing steadily since 1997, but costs have risen even more dramatically (\$5.3 million in 2003 to \$8.5 million in 2009, or an increase of \$3 million in just five years).

Figure 42. Total Hospital Discharges with a Diagnosis of Diabetes or Cardiovascular Disease (CVD), Hawaii, 1997–2009



Source: Hawaii Health Information Corporation (HHIC), 2009. Note: Diabetes diagnosis based on ICD-9 code 250xx (pregnancy-related diabetes excluded based on MDC 14), CVD diagnosis based on ICD-9 codes 390–459.

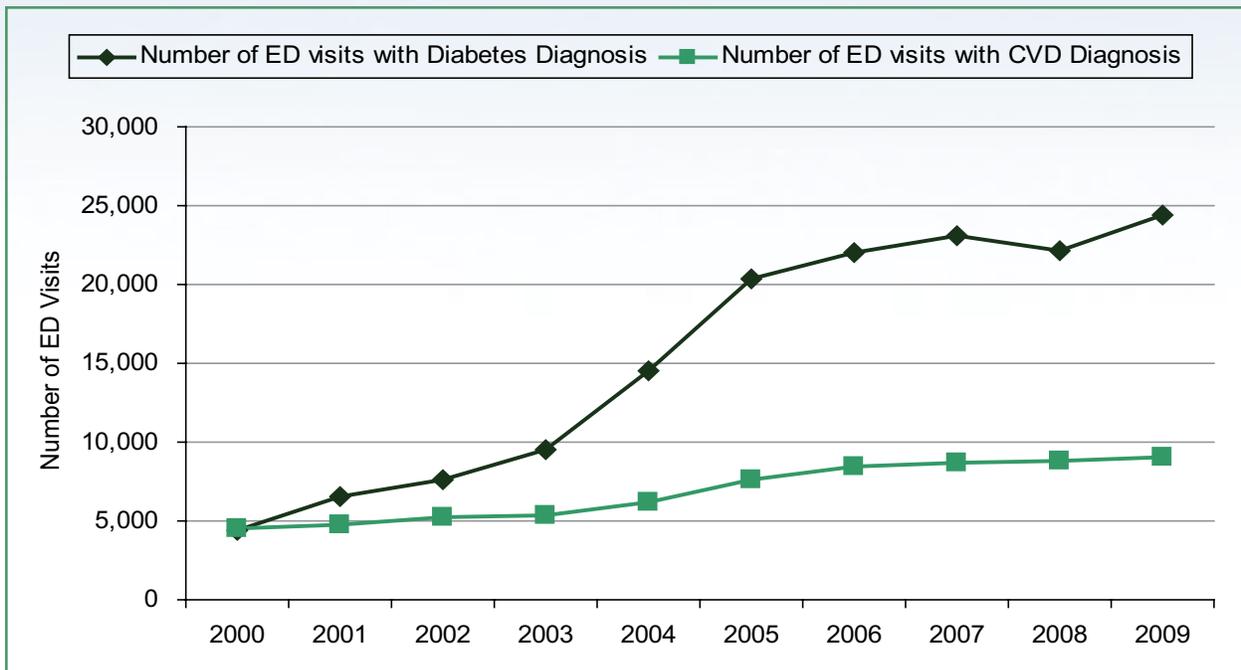
Figure 43. Total Hospital Charges (in millions) with a Diagnosis of Diabetes or Cardiovascular Disease (CVD), Hawaii, 1997–2009



Source: Hawaii Health Information Corporation, 2009. Note: Diabetes diagnosis based on ICD-9 code 250xx (pregnancy-related diabetes excluded based on MDC 14), CVD diagnosis based on ICD-9 codes 390–459.

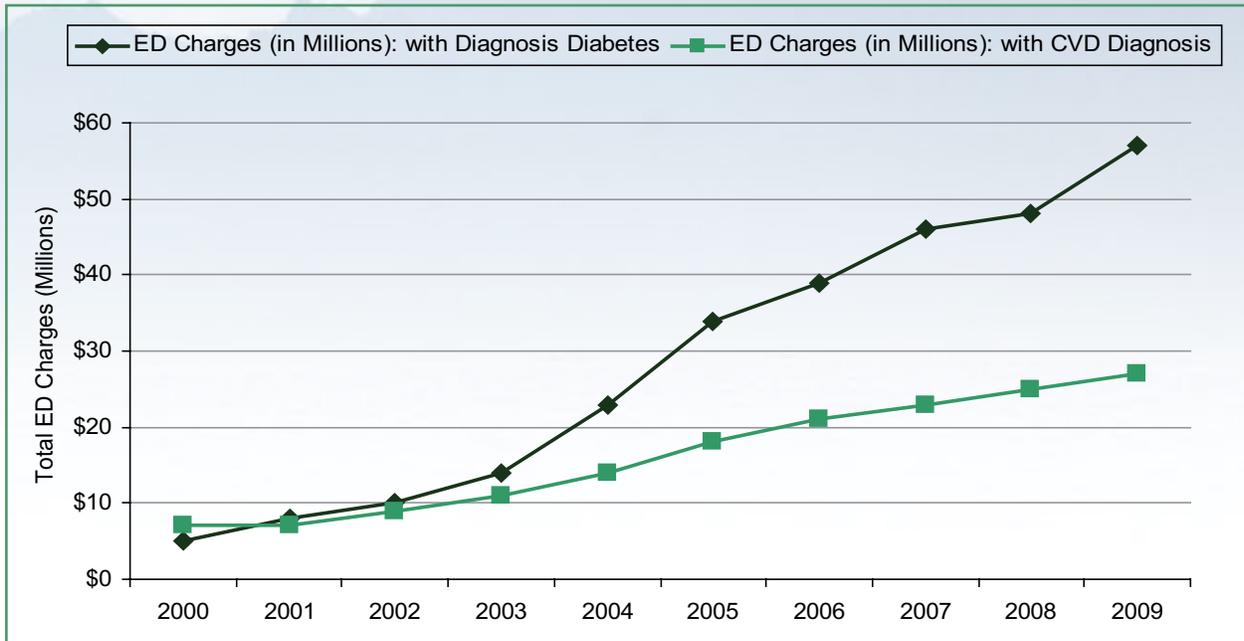
Emergency department (ED) visits for cardiovascular disease have risen since 1997, but the costs have been increasing more dramatically, especially since 2004 (Figures 44 and 45). In contrast, ED visits for diabetes have increased dramatically (from ~10,000 in 2003 to ~25,000 in 2009) while costs have increased at almost the same rate (\$14 million in 2003 to \$57 million in 2009).

Figure 44. Number of Emergency Department Visits with a Diagnosis of Diabetes or Cardiovascular Disease (CVD), Hawaii, 2000–2009



Source: Hawaii Health Information Corporation, 2009. Note: Diabetes diagnosis based on ICD-9 code 250xx (pregnancy-related diabetes excluded based on MDC 14), CVD diagnosis based on ICD-9 codes 390–459.

Figure 45. Total Charges in Millions with a Diagnosis of Diabetes or Cardiovascular Disease (CVD), Hawaii, 2000–2009



Source: Hawaii Health Information Corporation, 2009.

Notes: Diabetes diagnosis based on ICD-9 code 250xx (pregnancy-related diabetes excluded based on MDC 14), CVD diagnosis based on ICD-9 codes 390–459.

SUMMARY:

- Overall personal healthcare expenditures have been steadily increasing for the people of Hawaii.
- As health spending rises, so does the number of people with inadequate health insurance (18).
- Heart Disease, Stroke and Diabetes are the most costly chronic diseases for Medicaid enrollees and for tax payers.
- The hospitalization and emergency department costs of heart disease and diabetes are rising faster than the prevalence rate.

ECONOMIC IMPACT ON HAWAII

Lost Productivity

The direct medical cost of treating cancers, diabetes, heart disease, hypertension, stroke, mental disorders, and pulmonary conditions totaled \$1.1 billion in 2003 (19) (Figure 46). However, the medical costs are far surpassed by workplace productivity losses as ill employees and their caregivers are often forced either to miss work days (absenteeism) or to show up but not perform well (presenteeism).

Figure 46. Impact of Lost Workdays and Lower Productivity — Economic Impact in Hawaii, 2003 (Annual Costs in Billions)

| | |
|-------------------------|--------------|
| Treatment Expenditures: | \$1.1 |
| Lost Productivity: | \$3.9 |
| Total Costs: | \$4.9 |

Source: DeVol R. and Bedroussian A., An Unhealthy America: The Economic Burden of Chronic Disease, Milken Institute, October 2007. Report available at www.milkeninstitute.org.

The cost of treating chronic diseases in Hawaii totaled \$1.1 billion in 2003.

The impact of lost workdays and lower employee productivity due to chronic disease resulted in an annual economic loss in Hawaii of \$3.9 billion in 2003 (19).

The combined cost of medical and productivity losses were estimated at \$4.9 billion in 2003. These cost estimates from 2003 have likely increased substantially.

Figure 47 compares the Gross Domestic Product (GDP)^F in 2050 if it continues on its current spending patterns VERSUS the potential gain if Hawaii invests in community-based chronic disease prevention and management efforts as described above.

Figure 47. Economic Impact of Investment in Disease Prevention and Management in Hawaii, 2003–2050 (Real Gross Domestic Product (GDP) in 2050, in billions 2003 dollars)

| | |
|---|-------------------|
| GDP in 2050, current spending patterns: | \$156 |
| GDP in 2050, with investments in disease prevention and management: | \$184 |
| Potential Gain in GDP: | \$27 (18%) |

Source: DeVol R. and Bedroussian A., *An Unhealthy America: The Economic Burden of Chronic Disease*, Milken Institute, October 2007. Report available at www.milkeninstitute.org.

By 2050, community-based disease prevention and management efforts could add \$27 billion to the state’s economic output, a boost of 18% (19).

^FHawaii’s Gross domestic product (GDP) refers to the market value of all final goods and services produced in a given period. GDP is often considered an indicator of a country or states’ standard of living. Source: Wikipedia. Available at: http://en.wikipedia.org/wiki/Gross_domestic_product.

Rising Health Care Costs Have Consumed a Larger Portion of Wages

As the costs for treating chronic diseases increases, so does the cost of health insurance. The tables below show how health insurance premiums for families and individuals in Hawaii have risen over the last decade compared to earnings.

Figure 48. Increase in Premiums for Family Coverage in Hawaii, Job-Based Health Insurance, 2000–2009**

| Premiums by source of payment | 2000 | 2009 | Dollar Change | Percent Change |
|------------------------------------|---------|----------|---------------|----------------|
| Total premium spending per worker* | \$6,407 | \$11,740 | \$5,693 | 94.2% |
| Share of premium paid by employer | \$4,735 | \$8,981 | \$4,246 | 89.70% |
| Share of premium paid by worker | \$1,311 | \$2,759 | \$1,448 | 110.40% |

*Numbers do not add due to rounding.

Data Source: Estimates by Families USA based on Medical Expenditure Panel Survey (MEPS) data.

From 2000 to 2009, the average annual premium (employer and worker share of premiums combined) for Hawaii grew by **94.2 percent**.

Figure 49. Growth in Median Earnings in Hawaii, 2000–2009

| Median Earnings | | Dollar Change | Percent Change |
|-----------------|----------|---------------|----------------|
| 2000 | 2009 | | |
| \$26,180 | \$32,912 | \$6,732 | 25.7% |

Data Source: Estimates by Families USA based on U.S. Census Bureau's American Community Survey (ACS) data from median worker earnings.

Yet during this same time period, the median earnings of Hawaii's workers rose from \$26,180 to \$32,912—a mere \$6,732, or **25.7 percent**.

Figure 51. Growth in Premiums in Hawaii for Family Health Coverage Compared to Growth in Earnings, 2000–2009**

| 2000–2009 | | Premium Increase as a Multiple of Earnings Growth |
|---|-----------------------------------|---|
| Percent Change in Total Family Premiums | Percent Change in Median Earnings | |
| 94.2% | 25.7% | 3.7 |

Data Source: Estimates by Families USA.

**Source: Families USA, 2009, Costly Coverage: Premiums Outpace Paychecks in Hawaii. Available at: <http://familiesusa2.org/assets/pdfs/costly-coverage/hawaii.pdf>.

From 2000 to 2009, health insurance premiums for Hawaii’s families rose **3.7 times** faster than median earnings.

MESSAGE: Health insurance premium costs have increased faster than earnings for many of Hawaii’s working families.

“At current spending levels, investments in public health, education, public safety, safety-net, and community development programs may be more efficient at increasing survival than further investments in medical care.”(18)

— Muennig and Glied (2010)

SUMMARY AND RECOMMENDATIONS

KEY MESSAGES:

- Income, poverty, education, and place all result in social gradients in health. Income and wealth shape access to health-promoting conditions.
- If the major determinants of health are social, so must be the remedies (21), especially if we are to target those most at risk (22, 23)
- Chronic diseases are the most costly, most prevalent, and most disabling of all diseases.
- Community-based approaches are recommended for effectively addressing social determinants of health (9, 24).
- Social policy is health policy. Focusing on health disparities requires political will (13) and integrated approaches (20).

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GLOSSARY OF TERMS

Asthma - An inflammatory disorder of the airways, which causes attacks of wheezing, shortness of breath, chest tightness, and coughing.

Arthritis - Inflammation of one or more joints, which results in pain, swelling, stiffness, and limited movement.

Body Mass Index (BMI) - A measure used in classifying weight categories and to determine overweight and obesity. BMI equals weight in kilograms ÷ [height in meters]² with a BMI of 18.5–24.9 considered normal, 25–29.9 considered overweight, and 30 or more considered obese.

Chronic Disease - In medicine, a chronic disease is a disease that is long-lasting or recurrent. The term chronic describes the course of the disease, or its rate of onset and development. Chronic diseases are the leading causes of death and disability in the United States. Nearly one in two Americans (133 million) has a chronic medical condition of one kind or another,^G and chronic illnesses cause about 70% of deaths in the United States and take up about 75% of the costs each year.^H

Diabetes - Diabetes mellitus is a group of diseases characterized by high levels of blood glucose (blood sugar). In a person with diabetes, the normal use of food for energy is disrupted because of defects in insulin production, insulin action, or both. Insulin is a hormone which assists with the uptake of glucose into the body's cells. When insulin defects are present, the normal pathway of energy production is disrupted and high blood glucose levels result.

High Blood Cholesterol (HBC) - People with high blood cholesterol (too much cholesterol in the blood) have a greater chance of getting heart disease. High blood cholesterol on its own does not cause symptoms; so many people are unaware that their cholesterol level is too high. Cholesterol can build up in the walls of arteries (blood vessels that carry blood from the heart to other parts of the body). This buildup of cholesterol is called plaque. Over time, plaque can cause narrowing of the arteries. This is called atherosclerosis, or hardening of the arteries. Special arteries, called coronary arteries, bring blood to the heart. Narrowing of your coronary arteries due to plaque can stop or slow down the flow of blood to your heart. When the arteries narrow, the amount of oxygen-rich blood is decreased. This is called coronary heart disease (CHD). Large plaque areas can lead to chest pain called angina. Angina happens when the heart does not receive enough oxygen-rich blood. Angina is a common symptom of CHD. Some plaques have a thin covering and can burst (rupture), releasing cholesterol and fat into the bloodstream. The release of cholesterol and fat may cause your blood to clot. A clot can block the flow of blood. This blockage can cause angina or a heart attack.^I

^G*Chronic Conditions: Making the Case for Ongoing Care*. Robert Wood Johnson Foundation & Partnership for Solutions: Johns Hopkins University, Baltimore, MD for the Robert Wood Johnson Foundation (September 2004 Update). Available at: <http://www.rwjf.org/qualityequality/product.jsp?id=14685>

^HCenters for Disease Control and Prevention (CDC). Chronic Disease Prevention and Health Promotion. Available at: <http://www.cdc.gov/chronicdisease/index.htm>.

^INational Heart Lung and Blood Institute, 2008. What Is High Blood Cholesterol? Available from: http://www.nhlbi.nih.gov/health/dci/Diseases/Hbc/HBC_WhatIs.html.

High Blood Pressure (HBP) - A condition in which pressure in arterial circulation is greater than desired. Blood pressure numbers include systolic and diastolic pressures. Systolic blood pressure is the pressure when the heart beats while pumping blood. Diastolic blood pressure is the pressure when the heart is at rest between beats. Blood pressure is often measured with the systolic number above or before the diastolic, such as 120/80 mmHg. (The mmHg is millimeters of mercury—the units used to measure blood pressure). Blood pressure is considered high when systolic pressure is 140 mm Hg and higher OR diastolic pressure is 90 mm Hg and higher.¹

Health Disparities - Population-specific differences in the burden and impact presence of disease, health outcomes, or access to health care. These can be gaps across racial, ethnic, population and socioeconomic groups.

Morbidity - Generally defined as the proportion of sickness or of a specific disease in a geographical locality.

Mortality - The number of deaths in a given time or place, or the proportion of deaths to population.

Mortality Rate - The number of deaths within a defined population during a specified interval of time.

Prevalence - The number of persons with a self-reported disease or condition (existing cases) at a specific point in time divided by the total number of persons in the population at that same point in time. In this report, prevalence is presented as the percent of adults with a disease or condition (e.g. COPD, diabetes, high blood pressure) within a given year.

Social Determinants of Health - Social and environmental conditions that affect health and well-being. These can include housing and neighborhoods; safe schools and play areas; access to healthy food; income and work conditions; and sanitation and environmental quality.

Social Gradient - Defined as an individual's or population group's position in society and differential access to and ability to secure resources such as education, employment and housing, as well as different levels of participation in civic society, control over life and exposure to chronic stress.

¹National Heart Lung and Blood Institute, 2008. What Is High Blood Pressure? Available from: http://www.nhlbi.nih.gov/health/dci/Diseases/Hbp/HBP_WhatIs.html.

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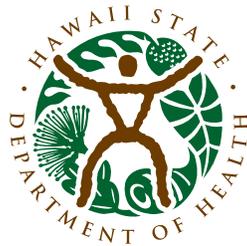
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