



**VOLUME 1**

---

# **Chronic Diseases**



# INTRODUCTION



## OFFICE OF HAWAIIAN AFFAIRS

The Office of Hawaiian Affairs (OHA) was established during the 1978 Constitutional Convention, Hawai'i State Constitution (Article XII). Chapter 10 of the Hawai'i Revised Statutes (HRS) defines OHA's roles and responsibilities: the betterment of the conditions of Native Hawaiians; to be the public agency responsible for the performance, development, and coordination of programs relating to Native Hawaiians; to assess policies and practices; and conduct advocacy.

In 2009, OHA's Board of Trustees adopted a new Strategic Plan focusing on six strategic priorities: *mo'omeheu* (culture), *'āina* (land & water), *ea* (governance), *ho'okahua waiwai* (economic self-sufficiency), *ho'ona'auao* (education), and *mauli ola* (health).

For *mauli ola*, one of the strategic results focuses on decreasing the chronic disease rates for Native Hawaiians. This fact sheet reports on currently available data for selected chronic diseases.

### *Ka lā i ka Mauiola.*

The sun at the source of life.  
Maui-ola (Breath-of-life) is  
the god of health.

(Pukui, 1983, #1422)

## OVERVIEW OF NATIVE HAWAIIAN HEALTH

There was a time in Hawai'i's past when Native Hawaiians had a holistic view of *mauli ola* (health) incorporating *mana* (sacred life force), *pono* (harmony, balance), and *lōkahi* (unity) for physical, mental, spiritual, and emotional well-being. A strong oral tradition facilitated the passing of knowledge from one generation to the next. The *mauka* to *makai* (mountain to ocean) *ahupua'a* (land division) provided an active and thriving subsistence living. Traditional cultural and medical art forms promoted care and healing. The *kapu* (sacred restrictions) system provided rules regulating behavior and conduct, and *'ohana* (family) values nurtured wellness and illness prevention.<sup>2,3</sup>

Then the Native Hawaiians experienced changes in political power, the loss of many ancient customs and practices, the introduction of diseases, and the decline of *mauli ola*. Devastating communicable disease epidemics characterized Native Hawaiian health in the eighteenth and nineteenth centuries. High rates of chronic diseases in the Native Hawaiian population are the hallmark of *mauli ola* in contemporary times.

### CONTENTS

#### INTRODUCTION

- Office of Hawaiian Affairs
- Overview of Native Hawaiian Health

#### NATIVE HAWAIIAN POPULATION

#### CHRONIC DISEASE STATUS

- Asthma
- Cardiovascular (Heart) Disease
- Diabetes
- Hypertension
- Obesity

#### TERMS

#### WORKS CITED

### *Mai ka piko o ke po'o a ka poli o ka wāwae, a la'a ma nā kihi 'eha o ke kino.*

From the crown of the head to the soles of the feet, and the four corners of the body.

An expression used in the prayers of healing. The four corners are the shoulders and hips;  
between them are the vital organs of the body.

(Pukui, 1983, #2066)



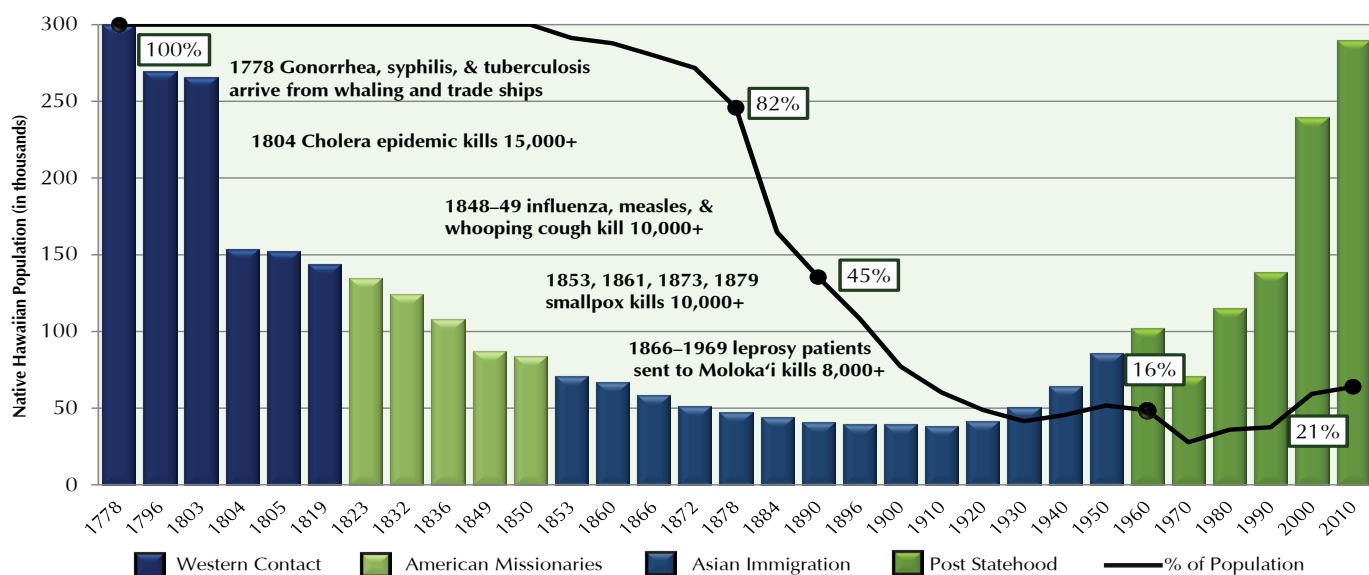
OHA Research Disclaimer: The data presented have been vetted for accuracy; however, there is no warranty that it is error-free. The data itself does not represent or confer any legal rights of any kind.

# NATIVE HAWAIIAN POPULATION

Native Hawaiian population estimates for the 1700s range from 100,000 to 1,000,000 with some consensus around 300,000.<sup>4</sup> This time period marks the beginning of extended contact between Native Hawaiians and foreigners from Europe and America. From 1778 to 1878, the Native Hawaiian population decreased by 82% from *ma'i malihini* (foreign

diseases) introduced after 1778.<sup>5</sup> Native Hawaiians had no natural immunity to these diseases. **Figure 1** depicts data for the past 232 years provided by former State Statistician, Robert Schmitt. Selected epidemics and the percent of Native Hawaiians versus the total population are highlighted.<sup>4, 6-10</sup>

**Figure 1. Native Hawaiian Population Trends in Hawai'i: 1778–2010**



Sources: Schmitt, 1968, 1970, 1977. Hope & Hope, 2003. U.S. Census Bureau, 2010. KALA, 2014.

The U.S. 2010 Census reports that there are 527,077 Native Hawaiians residing in the U.S. There is no data on the number of Native Hawaiians residing outside the borders of the U.S. The Native Hawaiian population makes up approximately 21.3% (289,970) of the population for the State of Hawai'i (1,360,301). The other 237,107 Native Hawaiians (45.0%) reside on the Continental U.S.<sup>9</sup> **Figure 2** depicts the 2011 demographic population in the State by race/ethnicity.<sup>11</sup>

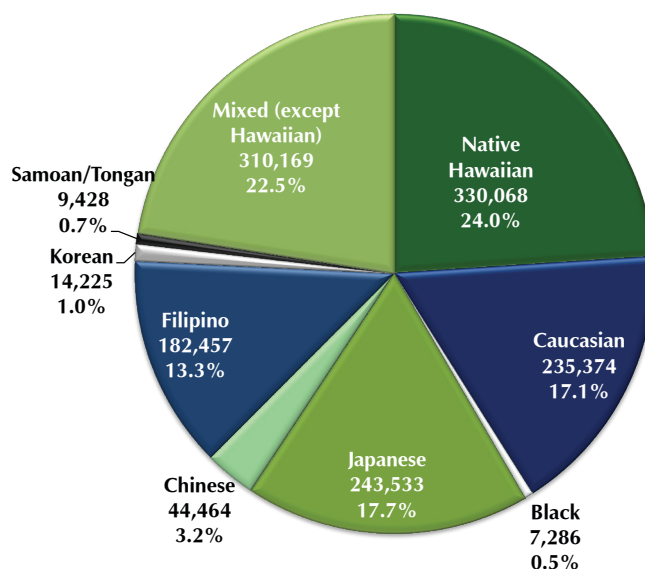
***Lawe li'ili'i ka make a ka Hawai'i,  
lawe nui ka make a ka haole.***

**Death by Hawaiians takes a few at a time;  
death by foreigners takes many.**

**The diseases that were known in the islands  
before the advent of foreigners caused fewer  
deaths than those that were introduced.**

(Pukui, 1983, #1960)

**Figure 2 State of Hawai'i Population by Race/Ethnicity: 2011**



Source: Hawai'i Department of Health, Hawai'i Health Survey, 2011.

# CHRONIC DISEASE STATUS

Unlike many of the diseases that devastated the Native Hawaiian population in the eighteenth and nineteenth centuries, chronic diseases are not contagious, cannot be prevented by vaccines, nor easily curable by medications. Chronic diseases are characterized as having long duration and slow progression. They are costly and the leading causes of illness, disability, morbidity, and mortality. People of all age groups and socio-economic status are affected by chronic diseases. Improper chronic disease management can lead to preventable hospitalizations and a shorter life span.

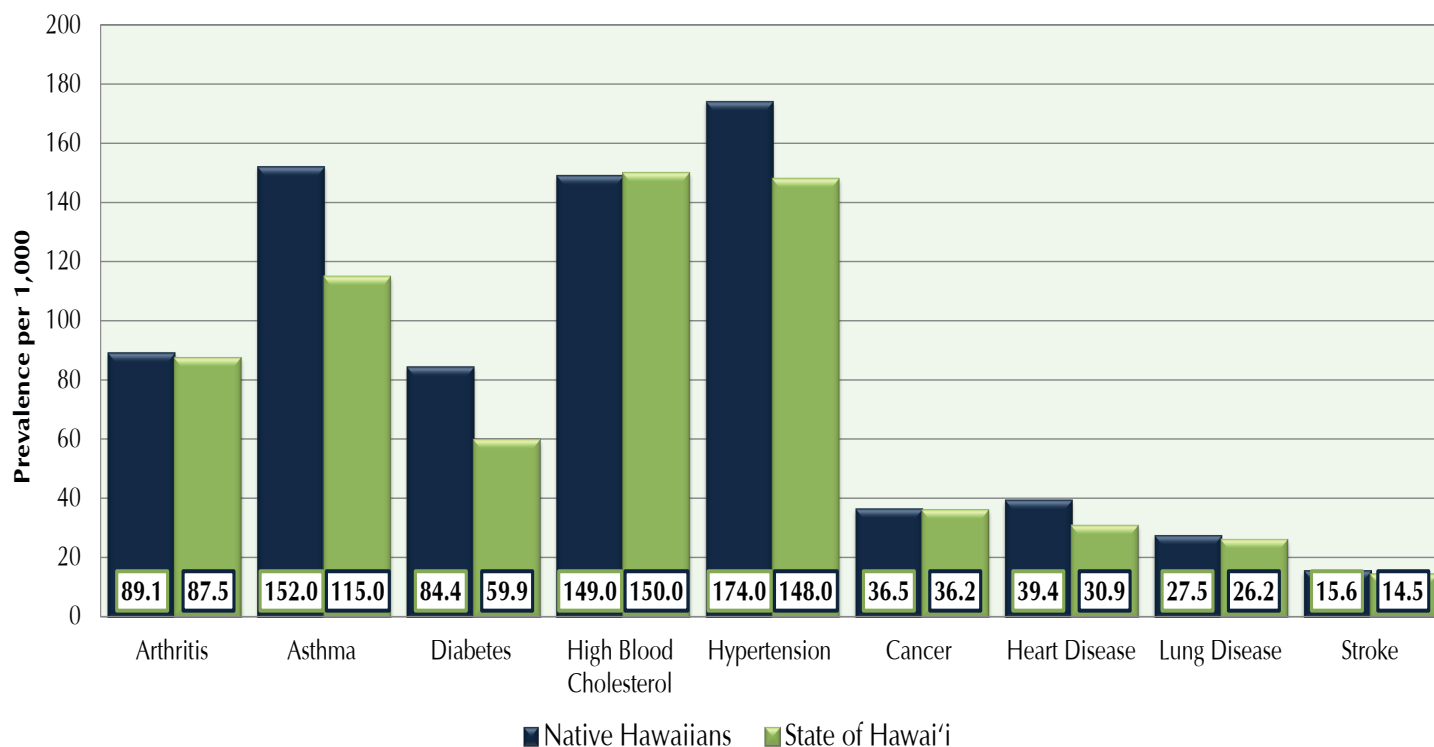
Chronic diseases can be linked to lifestyle choices such as poor nutrition, physical inactivity, heavy alcohol consumption, and tobacco use. These modifiable behaviors can in turn lead to hypertension, being overweight or obese, hyperglycemia (high blood glucose), or hyperlipidemia (high levels of fat in the blood), which are metabolic/physiological risk factors of chronic disease.

Investing in eliminating modifiable risk behaviors can greatly reduce disease burden and premature mortality.

## PREVALENCE

**Figure 3** depicts the prevalence per 1,000 persons of selected chronic diseases and other health conditions between Native Hawaiians and the State for age-adjusted data from the Hawai'i Health Survey in 2010.<sup>11</sup> Three chronic diseases will be discussed: asthma, cardiovascular (heart) disease, and diabetes. Hypertension and obesity, known to increase the risk for multiple chronic diseases and affect many Native Hawaiian adults and children, will also be addressed. For each of the selected chronic diseases, there is a brief description including prevalence, risk factors, and management. Figures 4–7 depict the prevalence per 1,000 persons between Native Hawaiians and the State for age-adjusted data from the Hawai'i Health Survey from 2004–2010.<sup>11, 12</sup> Call-out boxes contain other available information.

**Figure 3** Selected Chronic and Other Health Conditions for Native Hawaiians (age adjusted): 2010



Source. Hawai'i Department of Health, Office of Health Status Monitoring, Hawai'i Health Survey, 2010.



# ASTHMA

Asthma is a chronic lung disease characterized by reversible airflow obstructions that trigger exacerbations or attacks. Airflow obstructions narrow the airways, resulting in breathing difficulties that include coughing, breathlessness, chest tightness, and wheezing. The exact cause of asthma and its correlation with obesity are unknown. However, researchers believe genetic predisposition and environmental factors interact to cause asthma.<sup>13</sup>

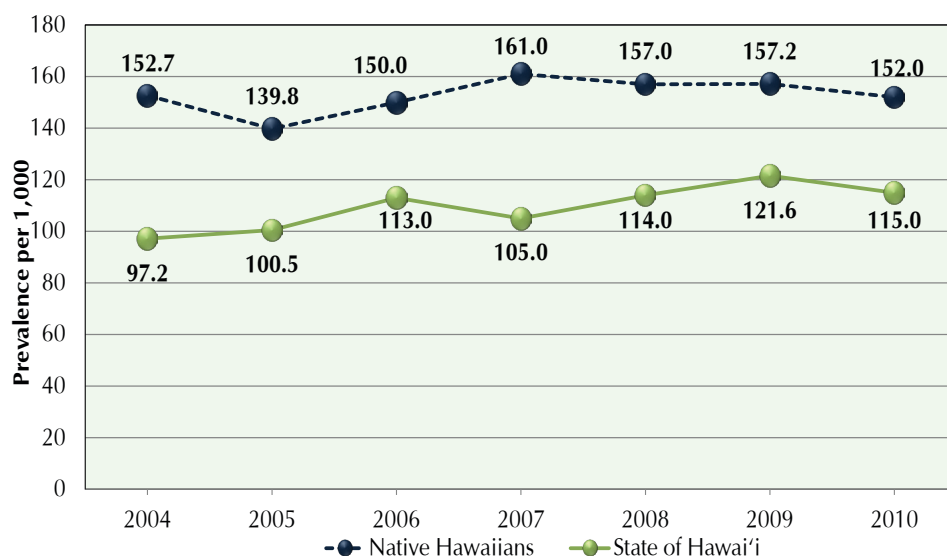
## PREVALENCE

At 31.0%, Native Hawaiians had the highest prevalence of asthma among Hawai'i's population in 2010. Among Native Hawaiians, children ages 0–14 had the highest rate, making asthma the most prevalent chronic disease among children. This age group accounted for 33.7% of Native Hawaiians with asthma and 44.8% of all children in the State with asthma. **Figure 4** shows age-adjusted asthma prevalence per 1,000 data for Native Hawaiians and the State from 2004–2010.<sup>11, 12</sup>

## MANAGEMENT

Current knowledge and treatments make it possible for most people to manage the disease. Asthma is more prevalent with poverty where living conditions that promote asthma may exist. Effective asthma management includes control of exposure to environmental triggers, consistent use of preventive medication, continual monitoring of the disease, and patient education. Consequences of improper asthma management include disruption of normal activities, lost work/school days, drop in productivity/grades, emergency room visits, hospitalizations, and death.<sup>13</sup>

**Figure 4** Prevalence of Asthma (age adjusted) in Hawai'i: 2004–2010



Sources: Hawai'i Department of Health, Office of Health Status Monitoring, Hawai'i Health Survey, 2004–2010. Hawai'i, Office of Hawaiian Affairs, *Native Hawaiian Data Book 2013*.  
Note: The Hawai'i Health Survey identified 5 race/ethnicity groups: Hawaiian, Caucasian, Filipino, Japanese, and Other/Unknown; and 9 age groups: 0–14, 15–17, 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, and 75+ years.

## Asthma Triggers

- Cigarette smoke
- Allergens and irritants
  - Mold
  - Dust
  - Food
  - Animal dander
  - Roaches
- Infections and colds
- Stress
- Exercise
- Temperature changes
- Air pollutants
  - Vog (volcanic fog)
  - Fireworks
  - Lava flow
  - Sugar cane burning

## 2011 Asthma Hospitalization Rates per 100,000

### YOUNG ADULTS WITH ASTHMA (18–34)

**Native Hawaiians:**  
29.1 (CI 18.3–39.8)

**State:**  
25.9 (CI 21.0–30.7)

### ADULTS 40+ WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) OR ASTHMA

**Native Hawaiians:**  
369.3 (CI 329.9–408.6)

**Native Hawaiians in:**

- **Hawai'i County**  
499.7 (CI 388.8–610.6)
- **Honolulu County**  
317.5 (CI 272.0–363.0)
- **Kaua'i County**  
477.3 (CI 286.4–668.3)
- **Maui County**  
408.5 (CI 294.1–522.8)

**State:**  
293.4 (CI 280.3–306.5)

\*Unadjusted hospitalization rates per 100,000 with 95% confidence intervals (CI) for Native Hawaiians and available county data for Native Hawaiians and the State.<sup>14</sup>

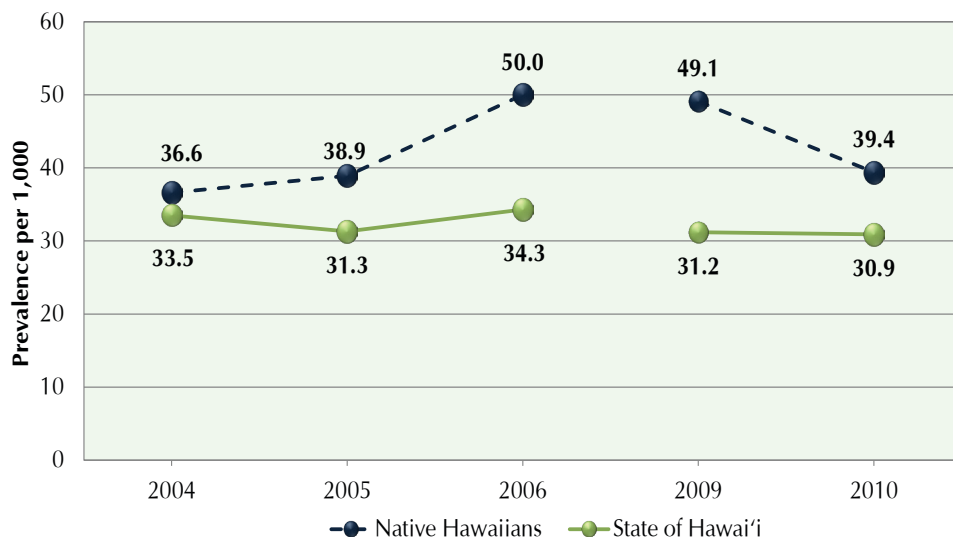
# CARDIOVASCULAR (HEART) DISEASE

Cardiovascular disease (CVD) refers to a host of disorders of the heart and is often called coronary heart disease or simply heart disease. Heart disease involves plaque on the artery walls of the heart (atherosclerosis). A heart attack or stroke occurs when the arteries are blocked. Heart failure, heart valve problems, angina (chest pain), and an irregular heartbeat (arrhythmia) are other types of heart disease.<sup>15, 16</sup>

## PREVALENCE

In 2010, Native Hawaiians had the third highest prevalence of heart disease (18.8%) among Hawai'i's population. Adults 55–64 years of age had the highest prevalence among Native Hawaiians at 29.0% and those 65–74 years of age had 22.6%. **Figure 5** shows age-adjusted heart disease prevalence per 1,000 data for Native Hawaiians and the State from 2004–2006 and 2009–2010.<sup>11, 12</sup>

**Figure 5.** Prevalence of Heart Disease (age adjusted) in Hawai'i:  
2004–2006, \*, 2009–2010



Sources. Hawai'i Department of Health, Office of Health Status Monitoring, Hawai'i Health Survey, 2004–2010. Hawai'i, Office of Hawaiian Affairs, *Native Hawaiian Data Book 2013*.

\*Data not available for the years 2007 and 2008.

Note. The Hawai'i Health Survey identified 5 race/ethnicity groups: Hawaiian, Caucasian, Filipino, Japanese, and Other/Unknown; and 9 age groups: 0–14, 15–17, 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, and 75+ years.

## RISK FACTORS AND MANAGEMENT

The most influential behavioral risk factors of heart disease and stroke are unhealthy diet, physical inactivity, alcohol abuse, and tobacco use. The effects of unhealthy diet and physical inactivity may manifest as high blood pressure, raised blood glucose, raised blood lipids, and increased weight. Age and family history are included in the list of major risk factors for heart disease; while they are unavoidable, individuals can reduce their risk with the cessation of tobacco use, reduction of salt in the diet, consumption of fruits and vegetables, participation in regular physical activity, and avoidance of the harmful use of alcohol. Other treatments besides lifestyle changes involve medications and surgical procedures. Heart disease is a major concern for pregnant women, as heart attacks are the leading cause of death during pregnancy.<sup>15, 16</sup>

## 2011 CVD Hospitalization Rates per 100,000

### HEART FAILURE

#### Native Hawaiians:

**292.2** (CI 267.7–316.6)

#### Native Hawaiians in:

- **Hawai'i County**  
**328.6** (CI 267.2–390.0)
- **Honolulu County**  
**293.0** (CI 262.3–323.8)
- **Kaua'i County**  
**285.1** (CI 183.1–387.2)
- **Maui County**  
**242.7** (CI 181.8–303.5)

#### State:

**267.4** (CI 257.8–277.1)

### ANGINA WITHOUT PROCEDURE

#### Native Hawaiians:

**9.6** (CI 5.2–14.0)

#### State:

**16.7** (CI 14.3–19.2)

\*Unadjusted hospitalization rates per 100,000 with 95% confidence intervals (CI) for Native Hawaiians and available county data for Native Hawaiians and the State.<sup>14</sup>

**The 2008–2009 age-adjusted mortality rates (per 100,000) for STROKE in Hawai'i for Native Hawaiian**

**Males: 47.1**

**Females: 37.7**

**Native Hawaiians of both genders had the HIGHEST MORTALITY rates in comparison to other race/ethnicity groups.<sup>15</sup>**

**The 2008–2009 age-adjusted mortality rates (per 100,000) for HEART DISEASE in Hawai'i for Native Hawaiian**

**Males: 160.0**

**Females: 79.6<sup>15</sup>**

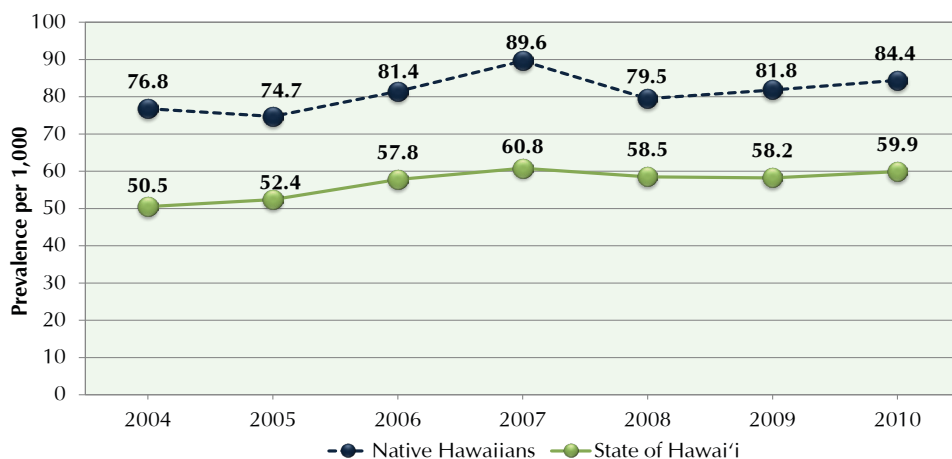
# DIABETES

Diabetes is a group of chronic diseases which occurs when the pancreas either does not produce enough insulin and/or the insulin cannot get glucose into the body's cells. The result is high blood glucose (sugar) levels. Insulin is an important hormone that regulates blood sugar. There are three main forms of diabetes. Type 1 diabetes (5% of cases) is characterized by deficient insulin production and requires daily administration of insulin. The cause of Type 1 diabetes is not known and there is no known prevention. Type 2 diabetes (95% of cases) is largely the result of excess body weight and physical inactivity. Gestational diabetes (2–10% of pregnant women) can occur at the onset of pregnancy.<sup>18, 19</sup>

## PREVALENCE

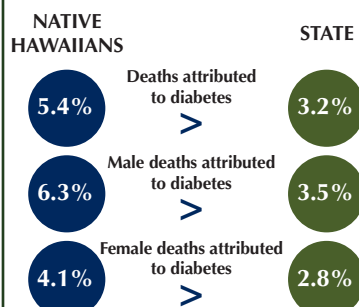
Native Hawaiians had the second highest prevalence of diabetes (22.0%) among Hawai'i's adult population in 2010. The highest prevalence among Native Hawaiians were adults 55–64 years of age (25.5%). **Figure 6** shows age-adjusted diabetes prevalence rates per 1,000 for Native Hawaiians and the State from 2004–2010.<sup>11, 12</sup>

**Figure 6.** Prevalence of Diabetes (age adjusted) in Hawai'i: 2004–2010



Sources. Hawai'i Department of Health, Office of Health Status Monitoring, Hawai'i Health Survey, 2004–2010. Hawai'i, Office of Hawaiian Affairs, *Native Hawaiian Data Book 2013*.  
Note. The Hawai'i Health Survey identified 5 race/ethnicity groups: Hawaiian, Caucasian, Filipino, Japanese, and Other/Unknown; and 9 age groups: 0–14, 15–17, 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, and 75+ years.

## 2009 Diabetes Deaths in Hawai'i<sup>17</sup>



## RISK FACTORS AND MANAGEMENT

Adults with diabetes may also have high blood pressure and cholesterol levels, and be obese. Pregnant women with gestational diabetes may later develop obesity and Type 2 diabetes. Early diagnosis can be accomplished through relatively inexpensive blood testing. Control and management can include healthy diet and exercise; smoking cessation; medication; annual eye and foot exams; and daily blood glucose monitoring. Vision loss, periodontal (gum) disease, nervous system damage, kidney failure, amputation, heart disease, stroke, and death are some of the complications and consequences.<sup>18,</sup>

19

## 2011 Diabetes Hospitalization Rates per 100,000

### SHORT-TERM DIABETES COMPLICATIONS

#### Native Hawaiians:

44.2 (CI 34.7–53.7)

#### Native Hawaiians in:

• **Hawai'i County**  
41.8 (CI 19.9–63.7)

• **Honolulu County**  
36.2 (CI 25.4–47.0)

• **Maui County**  
91.5 (CI 54.1–128.9)

#### State:

43.1 (CI 39.1–47.0)

### LONG-TERM DIABETES COMPLICATIONS

#### Native Hawaiians:

105.9 (CI 91.2–120.6)

#### Native Hawaiians in:

• **Hawai'i County**  
110.5 (CI 74.9–146.1)

• **Honolulu County**  
96.0 (CI 78.4–113.6)

• **Kaua'i County**  
95.0 (CI 36.1–154.0)

• **Maui County**  
151.2 (CI 103.1–199.2)

#### State:

82.8 (CI 77.3–88.2)

### UNCONTROLLED DIABETES

#### Native Hawaiians:

9.6 (CI 5.2–14.0)

#### State:

6.8 (CI 5.2–8.3)

### LOWER EXTREMITY AMPUTATION

#### Native Hawaiians:

24.5 (CI 17.4–31.6)

#### Native Hawaiians in:

• **Hawai'i County**  
38.8 (CI 17.7–59.9)

• **Honolulu County**  
21.1 (CI 12.8–29.3)

#### State:

17.4 (CI 14.9–19.9)

\*Unadjusted hospitalization rates per 100,000 with 95% confidence intervals (CI) for Native Hawaiians and available county data for Native Hawaiians and the State.<sup>14</sup>



# HYPERTENSION

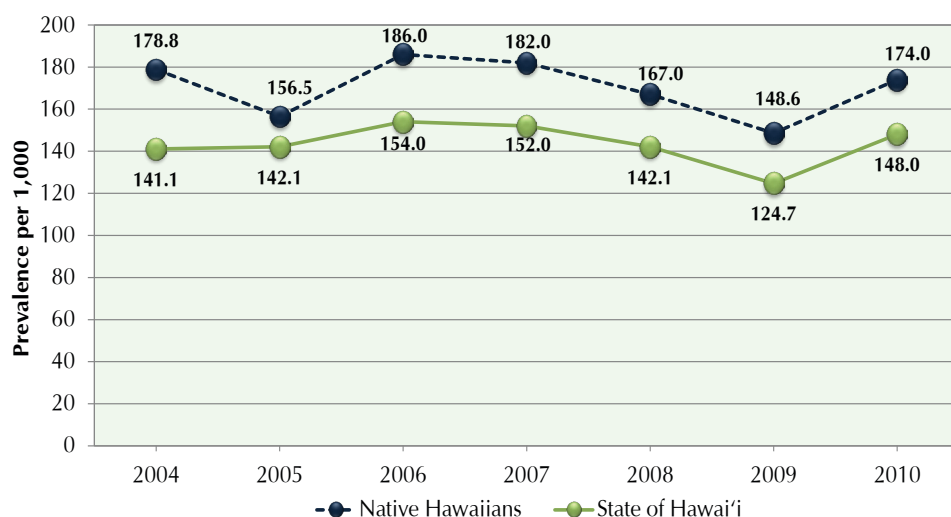


**B**lood pressure is the force put on the walls of the blood vessels with each heartbeat. It helps move blood through the body. It is measured by the amount of blood the heart pumps and the amount of resistance to blood flow in the arteries. The more blood the heart needs to pump due to narrower arteries, the higher the blood pressure. A normal reading is 120/80 where 120 is the systolic measurement representing the maximum pressure in the arteries and 80 is the diastolic measurement representing the minimum pressure in the arteries. Hypertension or high blood pressure is 140/90 and above.<sup>21</sup>

## PREVALENCE

At 18%, Native Hawaiians had the third highest prevalence of hypertension among Hawai'i's population in 2010. Adults 55–64 years of age had the highest prevalence among Native Hawaiians at 28.0%. **Figure 7** shows age-adjusted hypertension prevalence per 1,000 data for Native Hawaiians and the State from 2004–2010.<sup>11, 12</sup>

**Figure 7.** Prevalence of Hypertension (age adjusted) in Hawai'i: 2004–2010



Sources. Hawai'i Department of Health, Office of Health Status Monitoring, Hawai'i Health Survey, 2004–2010. Hawai'i, Office of Hawaiian Affairs, *Native Hawaiian Data Book 2013*.

Note. The Hawai'i Health Survey identified 5 race/ethnicity groups: Hawaiian, Caucasian, Filipino, Japanese, and Other/Unknown; and 9 age groups: 0–14, 15–17, 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, and 75+ years.

## RISK FACTORS AND MANAGEMENT

About 5% of hypertension cases have known causes such as kidney disease, thyroid tumors, or birth control pills. Despite unknown causes for the remaining 95%, hypertension is correlated with smoking, obesity, diabetes, sedentary lifestyle, sodium (salt) intake, vitamin D/calcium/potassium/magnesium deficiencies, alcohol, stress, and family history. Although aging is also a factor, children and teens can have hypertension. For pregnant women, chronic hypertension is high blood pressure before or during the first 20 weeks of pregnancy while gestational hypertension occurs after the first 20 weeks. Complications may include low birth weight or preterm births, premature delivery, preeclampsia, and future cardiovascular disease.<sup>21, 22</sup>

Treatments incorporate lifestyle changes and/or medication. Consequences of hypertension include accelerated brain aging, heart attack, heart failure, stroke, aneurysm, and kidney failure.<sup>21</sup>

### Blood Pressure Levels<sup>20</sup>

Level	Systolic (mm Hg)	Diastolic (mm Hg)
Normal	< 120	< 80
At risk	120–139	80–89
High	≥ 140	≥ 90

### Hypertension Symptoms<sup>21</sup>

- Headaches
- Fatigue
- Nausea
- Vision problems
- Chest pains
- Breathing problems
- Irregular heartbeat
- Blood in the urine

### 2011 Hypertension Hospitalization Rates per 100,000

#### HYPERTENSION

**Native Hawaiians:**  
25.0 (CI 17.9–32.2)

**Native Hawaiians in:**

- **Hawai'i County**  
59.7 (CI 33.6–85.9)
- **Honolulu County**  
14.3 (CI 7.5–21.1)

**State:**  
26.7 (CI 23.6–29.8)

\*Unadjusted hospitalization rates per 100,000 with 95% confidence intervals (CI) for Native Hawaiians and available county data for Native Hawaiians and the State.<sup>14</sup>



# OBESITY

Obesity describes individuals who are 20% or more above their ideal healthy weight according to the American Heart Association.<sup>23</sup> Body Mass Index (BMI), a number calculated using weight and height, is used as a screening tool to identify weight issues. It is not adjusted for age, gender, race/ethnicity, nor does it directly measure body fat. BMI cut-point limits define weight categories. The Centers for Disease Control and Prevention (CDC) adult obese cut point is a BMI  $\geq 30$ .

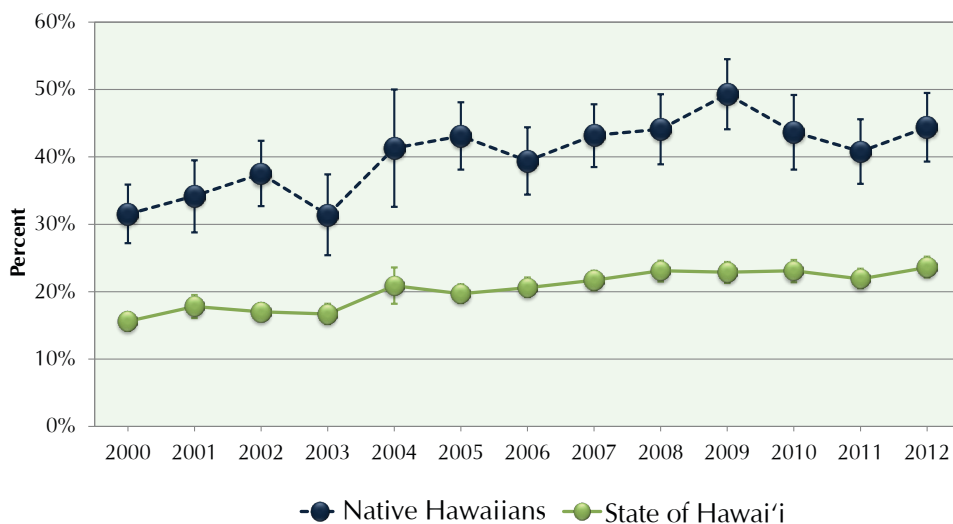
## YOUTH OBESITY

For children and adolescents, the BMI is calculated the same way, but interpreted using the CDC BMI-for-age growth charts because body fat amounts change with age and differ by gender.<sup>24</sup> In 2013, 13.4% (CI 11.5–15.3) of the State's public high school students were obese, versus 19.3% (CI 17.0–21.5) for Native Hawaiian public school students. Research studies indicate that obese children and adolescents are likely to become obese adults.<sup>24, 25</sup>

## ADULT OBESITY

In 2012, the State obesity rate of 23.6% (CI 22.0–25.1) was one of the lowest in the nation, but 44.4% (CI 39.3–49.5) of Native Hawaiians were obese. **Figure 8** shows the percent of obese Native Hawaiian and State adults with 95% CI from 2000–2012.<sup>26</sup> **Figure 9** shows the distribution of underweight, recommended weight, overweight, and obese adult BMI for Native Hawaiians and the State. The Native Hawaiian population is depicted in the outer circle and the State in the inner circle.<sup>26</sup>

**Figure 8.** Adult Obesity (BMI  $\geq 30$ ) in Hawai'i: 2000–2012



Source. Hawai'i Health Data Warehouse, Hawai'i Department of Health, Behavioral Risk Factor Surveillance System (HBRFSS), 2000–2012.

Adult BMI Cut Points <sup>24</sup>	
Underweight	<18.5
Recommended	18.5–24.9
Overweight	25.0–29.9
Obese	$\geq 30.0$

**44.4%**  
of Native Hawaiian  
adults are OBESE  
compared to 23.6%  
in the State.<sup>26</sup>

## Children/Adolescent BMI Cut Points <sup>24</sup>

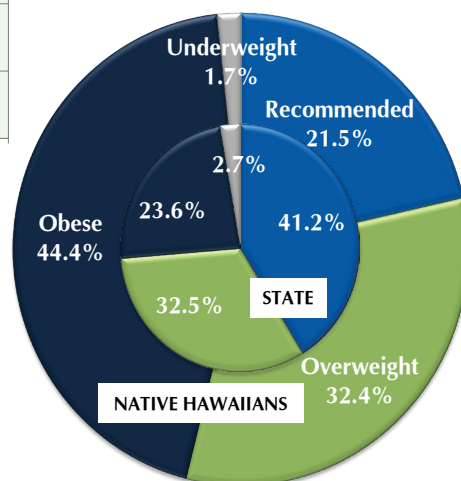
Underweight	< 5th Percentile
Normal	5th to < 85th Percentile
Overweight	85th to < 95th Percentile
Obese	$\geq 95th$ Percentile

**19.3%**

of Native Hawaiian public high school students are OBESE compared to 13.4% in the State.<sup>25</sup>

In 2013, there were an estimated 3,100 obese or overweight Native Hawaiian public high school students, or the population of Lāna'i.<sup>9, 25</sup>

**Figure 9.** Weight Classification for Native Hawaiians in Hawai'i: 2012



Source. Hawai'i Health Data Warehouse, Hawai'i Department of Health, Behavioral Risk Factor Surveillance System (HBRFSS), 2012.

# OBESITY (CONTINUED)



## PREGNANCY OBESITY

Pre-pregnancy obesity is a risk factor for adverse pregnancy and neonatal outcomes such as preterm/premature births, low birth weights, and mortality. Complications may include gestational diabetes, gestational hypertension, preeclampsia, and cesarean delivery. Pregnant women with high BMI had longer lengths of stay in hospitals from higher rates of cesarean deliveries and other obesity-related high risk conditions.<sup>27, 28</sup>

## RISK FACTORS

Minimal physical activity; poor nutrition and diet; sleep deprivation; and tobacco, alcohol, and illicit drug use are some modifiable health risk behaviors known to influence the onset of obesity. While individual choices directly influence obesity, the interaction between complex factors such as convenience technology, food production and availability, marketing, built environments, as well as social and cultural forces play an important role in this problem. Obesity is one of the biggest drivers of preventable chronic diseases, including asthma, cardiovascular disease, and diabetes. Being obese places one at increased risk for several other health conditions, including hypertension, hyperlipidemia (high blood cholesterol), stroke, anxiety, depression, arthritis, sleep apnea, liver and gallbladder disease, kidney failure, some cancers (endometrial, breast, and colon), abnormal menses, and infertility.<sup>23, 24</sup>

**20.2%** of Native Hawaiian mothers had preconception obesity compared to 13.9% (CI 11.8–16.3) in the (CI 16.0–25.3) State in 2011.<sup>29</sup>

## Obesity in Perspective

- In 2012, there were an estimated 43,000 overweight Native Hawaiians in the State, or the population of Hilo. This is also over twice the student population at the University of Hawai'i at Mānoa.<sup>9, 26, 30</sup>
- In 2012, there were an estimated 59,000 obese Native Hawaiians in the State, which is equivalent to filling both Aloha Stadium and the Stan Sheriff Center on O'ahu to capacity. This is also the equivalent to the entire student population in the University of Hawai'i System.<sup>26, 30</sup>
- This puts the number of obese or overweight Native Hawaiians at over 102,000, or 9.5% of the State's total population.<sup>9, 26</sup>
- 76.8% of Native Hawaiians are obese or overweight compared to 56.1% of the State.<sup>26</sup>

## SUMMARY

- *Ma'i malihini*, foreign diseases, caused the Native Hawaiian population to decline from the late eighteenth century to the early twentieth century. The current Native Hawaiian population residing in Hawai'i is similar to the late eighteenth century population.
- Compared to the State, there is a higher prevalence of Asthma, Cardiovascular (Heart) Disease, Diabetes, and Hypertension in the Native Hawaiian population.
- Over three-fourths of Native Hawaiians reported being either overweight or obese in 2012.

## 2010 Chronic Disease Prevalence per 1,000 (age adjusted) in Hawai'i<sup>11</sup>

NATIVE HAWAIIANS		STATE
152.0	Asthma	115.0
	>	
39.4	Cardiovascular (Heart) Disease	30.9
	>	
84.4	Diabetes	59.9
	>	
174.0	Hypertension	150.0
	>	



# TERMS



**Age-Adjusted Rate:** A statistical technique used to eliminate the effect of the age distribution of the population.

**American Community Survey (ACS):** An ongoing statistical survey conducted by the U.S. Census Bureau to collect population and housing information from about 3.5 million addresses yearly.

**Angina:** Heart disease with brief periods of intense chest pain.

**Behavioral Risk Factor Surveillance System (BRFSS):** A phone survey initiated in 1984 by the Centers for Disease Control and Prevention (CDC) to monitor modifiable risk factors for chronic diseases and other leading causes of death. The Hawai'i BRFSS (HBRFSS) is part of the national BRFSS.

**Body Mass Index (BMI):** A ratio of body weight (kg) to height (m<sup>2</sup>). If weight is in pounds (lb) and height in inches (in), multiply the ratio by 703 (CDC).

**Chronic Disease:** Noncommunicable disease of long duration, slow progression, and rarely cured completely.

**Chronic Obstructive Pulmonary Disease (COPD):** A group of diseases that restricts air flow and causes breathing problems. COPD includes emphysema and chronic bronchitis.

**Confidence Interval (CI):** A range of values for a measure, e.g., a rate, constructed so that this range has a specified probability (95%) of including the true value of the measure. The specified probability is called the confidence level, and the end points of the confidence interval are called the confidence limits (CDC).

**Hawai'i Health Survey (HHS):** Continuous statewide household phone survey of health and socio-demographic conditions.

**Hawai'i Pregnancy Risk Assessment Monitoring System (PRAMS):** A survey project funded by the CDC in collaboration with the Hawai'i Department of Health, Office of Health Status Monitoring to identify and monitor maternal behaviors and experiences before, during, and in the first few months after a live birth in Hawai'i.

**Native Hawaiian:** "any individual who is a descendant of the aboriginal people who, prior to 1778, occupied and exercised sovereignty in the area that now constitutes the State of Hawai'i," (U.S. Public Law 103-150).

**Preeclampsia:** A condition presented by dangerous hypertension, weight gain, headache, etc. in late pregnancy that may develop into convulsive eclampsia if untreated.

**Prevalence:** A proportion of a population that has a specified new or pre-existing condition at a specified point in time. To calculate, the numerator is the number of persons (both new cases and existing cases) during a specified time period and the denominator is the population during the same time period. (Note: Incidence only includes new cases and is used to determine a person's probability of being diagnosed with a disease during a given time period.)

**Vitals Statistics (VS):** The collection of vital statistics data including births, deaths, marriages, in the State is coordinated by the Office of Health Status Monitoring (OHSM) in the Hawai'i Department of Health.

**Youth Risk Behavioral Survey (YRBS):** A national school-based survey conducted by the CDC in conjunction with the State of Hawai'i Department of Health. YRBS monitors health conditions and risk behaviors among middle and high school students.

*Mana is our legacy. Maui ola is our destiny.*

# WORKS CITED



- <sup>1</sup> Pukui, M. K. (1983). *‘Ōlelo No‘eau, Hawaiian Proverbs and Poetical Sayings*. Honolulu, HI: Bishop Museum.
- <sup>2</sup> Blaisdell, R. K. (1993, Autumn). The Health Status of Kānaka Maoli (Indigenous Hawaiians). *Asian American and Pacific Islander Journal of Health*, Vol.1, No. 2.
- <sup>3</sup> Office of Hawaiian Affairs. (2011, May). *Native Hawaiian Health Fact Sheet 2011*. Honolulu, HI: Research Division, Demography.
- <sup>4</sup> Schmitt, R. C. (1968). *Demographic Statistics of Hawai‘i: 1778–1965*. Honolulu, HI: University of Hawai‘i Press.
- <sup>5</sup> Luolama, K. (1989). Polynesian Religious Foundations of Hawaiian Concepts Regarding Wellness and Healing. In *World’s Religious Traditions Healing & Restoring*. New York, NY: McMillan.
- <sup>6</sup> Schmitt, R. C. (1970, May-June). The ‘Ōku‘u–Hawai‘i’s Greatest Epidemic. *Hawai‘i Medical Journal*. Vol. 29, No. 5.
- <sup>7</sup> Schmitt, R. C. (1977). *Historical Statistics of Hawai‘i*. Honolulu, HI: University of Hawai‘i Press.
- <sup>8</sup> Hope, B. E., & Hope, J. H. (2003). Native Hawaiian Health in Hawai‘i: Historical Highlights. *Californian Journal of Health Promotion 2003*, Vol. 1, Special Issue: Hawai‘i, 1-9.
- <sup>9</sup> U.S. Census Bureau. (2010).
- <sup>10</sup> Kalaupapa National Historical Park (KALA). (2014). *Enduring Spirit, Sacred Ground*.
- <sup>11</sup> Hawai‘i Department of Health. (2004–2011). Office of Health Status Monitoring, Hawai‘i Health Survey.
- <sup>12</sup> Hawai‘i. Office of Hawaiian Affairs, Research Division, Demography. (2013). *Native Hawaiian Data Book 2013*.
- <sup>13</sup> Krupitsky, D., Baker, Kromer K., Kishaba, G., Pobutsky, A. (2010) *State of Asthma – Hawaii 2010, Environmental Exposure Supplement*. Honolulu, HI.
- <sup>14</sup> Healthcare Association of Hawai‘i. (2013, July). *State of Hawai‘i Community Health Needs Assessment*.
- <sup>15</sup> Hawai‘i Department of Health, Heart Disease and Stroke Prevention Program. (2011). *Hawai‘i’s Plan for the Prevention of Heart Disease and Stroke: A Voyage to Better Cardiovascular Health*.
- <sup>16</sup> Hawai‘i Department of Health, Heart Disease and Stroke Prevention Program. (2012). *2012 Coronary Heart Disease Fact Sheet*.
- <sup>17</sup> Hawai‘i Health Data Warehouse. (2013). Hawai‘i Department of Health, Vital Statistics.
- <sup>18</sup> Centers for Disease Control and Prevention. (2011). *National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States, 2011*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011.
- <sup>19</sup> Centers for Disease Control and Prevention. (2012). *Diabetes Report Card 2012*. Atlanta, GA: Centers for Disease Control and Prevention, US Department of Health and Human Services, 2012.
- <sup>20</sup> Centers for Disease Control and Prevention. (2014). *Measuring Blood Pressure, 2014*. Atlanta, GA: Centers for Disease Control and Prevention and Health Promotion, Division for Heart Disease and Stroke Prevention, 2014.
- <sup>21</sup> Medical News Today. (2014). *What is hypertension? What causes hypertension?*
- <sup>22</sup> Mayo Clinic. (2014). *High Blood Pressure and Pregnancy: Know the Facts*.
- <sup>23</sup> American Heart Association. (2014). *Obesity Information*.
- <sup>24</sup> Centers for Disease Control and Prevention (CDC). (2014). *Body Mass Index*.
- <sup>25</sup> Hawai‘i Health Data Warehouse. (2013). Hawai‘i Department of Health, Youth Risk Behavior Survey (YRBS).
- <sup>26</sup> Hawai‘i Health Data Warehouse. (2000–2012). Hawai‘i Department of Health, Behavioral Risk Factor Surveillance System (HBRFSS).
- <sup>27</sup> Hawai‘i Department of Health, Family Health Services Division. (2010). *State of Hawai‘i Maternal & Child Health Needs Assessment Summary*.
- <sup>28</sup> Centers for Disease Control and Prevention (CDC). (2014). *Pregnancy Complications*.
- <sup>29</sup> Hawai‘i Health Data Warehouse. (2013). Hawai‘i Department of Health. Hawai‘i Pregnancy Risk Assessment Monitoring System (PRAMS).
- <sup>30</sup> University of Hawai‘i Institutional Research and Analysis Office (UH IRO). *Enrollment Table 1*.

Photos Courtesy of: Markell, K. (2014). Personal Collection. Honolulu, HI. OHA, 2014.

Layout and Design: Communications (2015)

## Suggested Citation

Office of Hawaiian Affairs, Research Division, Demography. (2015). *Native Hawaiian Health Fact Sheet 2015. Volume I: Chronic Diseases*. Honolulu, HI.

For further research and information, please contact:



Research Division  
Demography Section  
demography@oha.org  
Nā Lama Kukui | 560 N. Nimitz Highway, Suite 200 | Honolulu, HI 96817  
www.oha.org  
Last update: June 2015.

Other Demography Section Products:  
[www.papakilodatabase.com](http://www.papakilodatabase.com)  
[www.ohadatabook.com](http://www.ohadatabook.com)

