VOLUME 3

Social Determinants of Health
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: to support 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 to conduct advocacy.

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

For maoli ola, OHA seeks to improve the quality and longevity of life so Native Hawaiians will enjoy healthy lifestyles and experience reduced onset of chronic diseases. This fact sheet reports on the social determinants of health related to OHA’s strategic plan.

Overview of Native Hawaiian Health

There was a time in Hawai‘i’s past when Native Hawaiians had a holistic view of maoli ola (health) incorporating mana (sacred life force), pono (harmony, balance), and lokahi (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 a framework of rules regulating behavior and conduct, and ‘ohana (family) values nurtured wellness and illness prevention.1, 2

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 maoli 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 maoli ola in contemporary times.

Mai ka piko o ke po‘o a ka poli o ka wāwae, a la‘a ma nā kihi ʻeha 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)

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SOCIAL DETERMINANTS OF HEALTH

The traditional *ahupua’a* system ensured environmental, economic, and social well-being in ancient Native Hawaiian society. The needs of the Native Hawaiian people were met through diligent environmental management and controlled resource use. Over the course of the nineteenth and twentieth centuries, Native Hawaiians quickly lost the ability to continue their practice of sustainability. A growing cash-based economy, rapidly developing western style education system, and constitutional government replaced traditional ways. Native Hawaiians underwent sweeping cultural and lifestyle transformation.

Native Hawaiians are perhaps the one racial group with the highest health risk in Hawai‘i. This risk stems from high economic and cultural stress, lifestyle and risk behaviors, and late or lack of access to health care. Accordingly, it is not surprising to find among Native Hawaiians a high incidence of diseases, ailments, early disability, and premature death.

Background

Everyone has the right to good health. However, not everyone has the same opportunities to make health-promoting choices. Even with great motivation, the barriers to health may be too great for individuals to overcome. Health behaviors, quality and affordable medical care, genetic makeup, and physical and social environments are critical determinants of health. The physical and social environments are better known as the social determinants of health.

Social determinants of health are the complex and interconnected structures, circumstances, environments, institutions, and systems that contribute to or harm the health of individuals and communities. Social determinants of health are shaped by cultural, political, environmental, social, and economic conditions. Childhood experiences, educational attainment, employment, income, housing, culture, public policy, social and familial support networks, built and physical environments, and access to health care and social services are some of the most commonly cited social determinants of health. Leading national and international organizations recognize the social determinants of health as the single most important factor in individual and population health outcomes.

Social Determinants of Health and the Life Course

Health begins before birth during *ho‘okauhua* (gestation) with the social determinants affecting health resources for the *hāpai* (pregnant) *makuahine* (mother). The early years of life can be conceptualized as three phases: infancy, childhood, and adolescence. *Keiki li`ili`i* (early childhood) is a critical developmental phase that influences health and social outcomes throughout the life course. The financial and social resources at a family’s disposal can enhance or inhibit their ability to provide *keiki* (children) with nurturing and stimulating environments conducive to cognitive and behavioral development. The effects of education and income impact health at all stages of life, but are most profound during childhood. *ʻOpio* (adolescents) are generally a healthy group. When *ʻōpio* experience adverse health outcomes, the causes are often preventable. Some common health issues among *ʻōpio* include engaging in risky sexual behaviors, using tobacco, alcohol, or other illicit drugs, becoming a teen mother, or sustaining injuries from accidents or violence.

The later years in life can also be viewed as two phases, adulthood and elderhood. *Mākuia* (adults) and *kūpuna* (older adults) are vulnerable to chronic diseases and stressors. Some stressors common among *mākuia* include working long or irregular hours, dealing with daily parental responsibilities, or caring for older family members. Long-term exposure to these stressors can put *mākuia* at higher risk for injuries, digestive problems, hypertension, obesity, or heart disease. For *kūpuna*, mobility, or the ability to effectively and safely move in the environment is essential to health and well-being. Impaired mobility can cause mental distress from the inability to independently perform daily activities, access goods and services, and interact with *ʻohana*. The physical problems associated with limitations in mobility include depression, cardiovascular (heart) disease, cancer, and injuries. The social determinants of health impact individuals in similar ways, but manifest themselves differently at each stage of life.

The social determinants of health are the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness.
Key Concepts

Health Disparities

Health disparities are the differences in incidence, prevalence, mortality, and burden of health conditions among population groups. The absence of favorable cultural, political, social, and economic conditions can inhibit an individual’s ability to achieve good health. Health disparities adversely affect population groups based on: gender, age, race/ethnicity, socio-economic status, geography, sexual orientation, disability, historical trauma, social disadvantage, or a combination of these factors.7, 14

Socio-Economic Status

Socio-economic status measures an individual’s economic or social position in relation to others based on education, occupation, and income. Some of the established health conditions linked with low socio-economic status include low birth weight, infant and maternal mortality, cardiovascular (heart) disease, hypertension, arthritis, diabetes, and certain cancers. Obesity is an exception because of its prevalence is similar across income levels.7, 15, 16

Health Literacy

Health literacy refers to the ability to access, process, and comprehend health information. Proficiency in health literacy is required to make decisions needed to prevent or treat illness. Low educational attainment and limited English proficiency (LEP) affect a person’s ability to navigate the intricacies of the health care system. Individuals with limited health literacy skills are more likely to enter the health care system at a later stage of illness, have a greater risk for preventable hospital admissions, and utilize fewer preventive services. High use of services designed to treat disease complications translates into higher health care costs. As the population becomes more diverse with respect to age, culture, and language, having adequate health literacy skills has the potential to reduce health disparities.17

Cultural Integration in Health Services

Cultural integration in health services refers to health care that meets the social, cultural, and linguistic needs of patients. Successful cultural integration in health services requires incorporating traditional and contemporary knowledge and practices into patient care. Perception of health and illness are shaped by cultural factors such as methods of communication, expression of symptoms, coping styles, and willingness to seek treatment. In western cultures, illness is conceived as a pathological imbalance in the body, whereas Native Hawaiians view ma‘i (illness) as a disruption in lōkahi. Native Hawaiians reference illness categories such as, ma‘i i kino (body sickness), ma‘i i waho (sickness from outside influences), or ma‘i ma loko (sickness from within caused by quarrels in the family). Each sickness type warrants a different treatment regimen. It is important for providers to investigate the etiology of health issues Native Hawaiian patients may present to ensure proper diagnosis of symptoms. Providers who understand and respect these spheres of influence are better equipped to provide care that is respectful and responsive to patients’ beliefs and values. Cultural integration in health services has the potential to reduce health disparities and produce favorable health outcomes.18–20

Figure 1. Selected Native Hawaiian versus State Social Determinants of Health Indicators

| EDUCATION       | • 47.0% are proficient in Math (State: 58.0%) |
| INCOME          | • $7,554 is the difference between Native Hawaiian and State median family income |
| HOUSING         | • 43.3% rent their housing units (State: 43.8%) |
| HEALTH          | • 6.4% have no health insurance (State: 6.7%) |

Health Literacy Skills17

- Having general health knowledge
- Filling out complex forms
- Seeking timely medical care
- Utilizing preventive services
- Providing consent
- Understanding instructions on medications
- Calculating premiums, copays, and deductibles to select health insurance plans

Native Hawaiian Health Philosophies

Native Hawaiian health encompasses lökahi, pono, and mana. Lökahi describes the unity between akua (gods), känaka (humans), and 'āina. Pono, or harmony, is maintained through proper thoughts, feelings, and emotions. Ma'i occurs when there is a disruption in lökahi or pono, resulting in loss of mana. Mana refers to the life force found in all things animate and inanimate in the universe that connects akua, känaka, and 'āina.

Critical to Native Hawaiian health is lökahi, or harmony with self and others. The three corners of the lökahi triangle represent mind, body, and spirit. The connection between these three apices exists within the na'a'u (mind, heart, and affections), or the emotional center of the person. Native Hawaiians understand the interconnectedness of lökahi and thus treat the mind, body, and spirit as one. The presence of problems, conflicts, illness, or disease suggests dissonance in one or more corners of the lökahi triangle. Restoring balance requires holistically healing all three corners.

Kähuna (Native Hawaiian Health Practitioners)

Kähuna (experts) served as medical providers for Native Hawaiians before the introduction of western medicine. Kähuna specialize in various areas of healing practices. Some of these healing practices are listed in Figure 3. Similar to contemporary medical doctors, kähuna l’a’au (medical practitioners) spend a minimum of fifteen years studying and training in their specialty area, but often times train their whole lives. Sustaining these health practices will be difficult as there are an estimated 60–80 kähuna in Hawai’i with an average age of 75.

Figure 2. The Lökahi Triangle

Adapted from Rezentes, 1996.

Figure 3. Selected Hawaiian Health Specialties

<table>
<thead>
<tr>
<th>Hawaiian Health Specialist</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Ai Pono</td>
<td>Nutrition</td>
</tr>
<tr>
<td>Ha’iha’i iwi</td>
<td>Chiropractor</td>
</tr>
<tr>
<td>Hähä</td>
<td>Diagnostician</td>
</tr>
<tr>
<td>Ho’ohānau</td>
<td>Obstetrician</td>
</tr>
<tr>
<td>Lā’au lapa’au</td>
<td>Herbal medicine</td>
</tr>
<tr>
<td>Lomi lomi</td>
<td>Massage</td>
</tr>
<tr>
<td>Ho’oponopono</td>
<td>Conflict resolution</td>
</tr>
<tr>
<td>Pahu</td>
<td>Surgeon</td>
</tr>
<tr>
<td>Pā’ao’ao</td>
<td>Pediatrician</td>
</tr>
</tbody>
</table>


Ho’oponopono

Lā’au lapa’au, lomi lomi, and ho’oponopono are the predominant traditional healing modalities practiced today. Ho’oponopono, or “to make right”, is a traditional healing practice that seeks to rectify imbalances within the family and spiritual world. Ho’oponopono is a method of counseling and mediation used to resolve conflicts and maintain harmonious relationships. Proceedings are traditionally a family matter, unless a non-relative is involved in the pilikia (trouble). Either a kähuna l’a’au or kūpuna is called upon to serve as the haku (mediation leader). A successful ho’oponopono session requires participants to speak truthfully for healing to occur. During the period of discussion, family members air grievances and confess their transgressions. The process continues until there is repentance, restitution, and mutual forgiveness.

Native Hawaiians understand health and wellness as balance between akua, känaka, and ʻāina. Kähuna train in various healing specialties and are responsible for restoring health.
Native Hawaiian Health and the Land

Native Hawaiian identity is rooted in the land and sea as expressed in the proverb, “Ka mauli o ka ‘aina a he mauli kānaka,” the life of the land is the life of the people. From this, the land serves as a critical component in Native Hawaiian health, spirituality, and well-being. The land provides sustenance, spiritual strength, and political empowerment. Tending to the land signifies the physical relationship between people and earth, or mālama ‘āina (caring for the land). Like a family bond, the land reciprocates by caring for the people.

Physical Environment

The physical environment includes the earth’s natural features like air, water, natural vegetation, landform, and climate. The clearest connection between the physical environment and health is the use of natural elements for food and medicine. Native Hawaiians were skilled agriculturalists who developed irrigation systems for their wetland kalo (taro), engineered loko i’a (fishponds), and understood how to enrich the soil to maximize production value. Native Hawaiians once exclusively survived off the resources of the physical environment and produced enough food to nourish a population estimated between 100,000 and 1,000,000. The introduction of foreign diseases reversed this notion. Subsequently, a surge in economic growth and development from trade and commerce marked not only the epidemiological transition from infectious to chronic diseases, but also to a heavy reliance on imported products. The once self-sufficient society now relies on an estimated 85–90% imported food products.

Organic agriculture produces products using methods that preserve the environment and avoids most synthetic materials like pesticides and antibiotics. The principles of organic agriculture are closely aligned with traditional Hawaiian farming practices of sustainable food production. Organic agriculture seeks to enhance the physical environment and natural resources to produce foods of high nutritional value; reduce dependence on non-renewable resources; minimize adverse impacts on food safety, water quality, and wildlife; increase food security; and restore economic self-sufficiency.

Built Environment

The built environment is the part of the physical environment constructed by human activity. The built environment consists of urban design, land use, zoning patterns, and transportation systems. Some examples of the built environment include homes, buildings, streets and highways, public transportation, parks, and open spaces. The design of the places where we live, play, and work affect patterns of living that can facilitate or hinder the adoption of healthy behaviors.

After thirty years of building westward on O‘ahu, development trends are shifting back east towards urban Honolulu. Figure 4 depicts the Kaka‘ako skyline, the epicenter of urban development on O‘ahu. There is growing recognition that land use planning and health are linked. However, planning authorities have traditionally prioritized economic development and environmental stewardship over health promotion in urban design. Likewise, public health officials concentrate on providing direct health care services and prevention services rather than constructing healthy environments. Lack of coordination between planning and health authorities can create structural limitations that work against health.

Figure 4. Kaka‘ako Skyline

The social, service, and economic characteristics of a neighborhood can also affect health. Close proximity to parks, schools and after-school programs, retailers, employment, as well as medical facilities provides convenient access to frequented destinations. In contrast, residents living in neighborhoods with busy streets, high crime rates, polluted beaches, and numerous convenience stores and fast food establishments face greater obstacles to make health-promoting choices. Exposure to neighborhood disadvantage in early childhood has profound effects that can continue into adolescence and adulthood. Differences in the quality and availability of resources across neighborhoods can create or exacerbate health disparities along the socio-economic gradient.

The land is central to Native Hawaiian health, spirituality, and well-being because the land provides sustenance, spiritual strength, and political empowerment. The physical constructs of the land, or built environment can also affect health.
Moani's Experience with the Social Determinants of Health

Baby Kaleo was born eight weeks early, weighing two pounds. Kaleo’s eighteen-year-old mother, Moani, grew up in an ‘ohana where high-fat meals and smoking were the norm. Moani decided to forego college in order to make ends meet and lives with her makuahine and tūtū (grandmother) in Anahola, Kaua‘i. Moani works at a local fast-food establishment that pays minimum wage and provides free meals to employees at the end of their shifts. While pregnant she consumed more high-fat, high-salt foods to nourish her fetus and developed pre-eclampsia. Getting regular exercise was difficult because her workplace was located in a high crime neighborhood, inaccessible by public transportation, and lacked sidewalks. When Moani became pregnant she quit smoking, but was still exposed to second-hand smoke at home. The recently enacted law banning smoking for people under twenty-one years old provided further impetus for change in Moani’s personal behaviors.

Moani had health insurance coverage from her makuahine because she is under twenty-six years old. Despite having health insurance, accessing health care was difficult. There was no obstetrical care available in Anahola able to accommodate her complex pregnancy. The closest facility was located a thirty minute car drive away in Lihu’e. Since Moani was dependent on her makuahine for rides, she missed several prenatal care appointments that conflicted with her and Kaleo’s work schedules. Unable to control her blood pressure, baby Kaleo was born prematurely with cognitive deficits. The educational system could not provide Kaleo with the individual educational support he needed to thrive and he eventually dropped out of school at sixteen.

Advocacy and Public Policy

As part of its mandate to advocate for Native Hawaiians, OHA assesses the policies and practices of other agencies impacting Native Hawaiians by providing legal and policy compliance review, assessment, and corrective action services to OHA’s top leadership, allowing the organization to take proactive steps when organizations interpret or implement laws in ways that may harm the Hawaiian community or may not be in its best interest. Each year OHA submits a package of proposed bills to the Hawai‘i State Legislature. OHA’s Board of Trustees also votes to take positions on a variety of legislation impacting the Hawaiian community.

Social Determinants of Health Planning (Act 155)

In 2014, the Hawai‘i State Legislature amended the State Health-Planning Statute for the first time in nearly 30 years, modernizing the existing law so that it is aligned with best practices in health planning. The amendment seeks to accomplish three things including:

- Allow state agencies to plan and invest resources to eliminate health disparities by addressing the social determinants of health;
- Align state policy with federal policy codifying the federal government’s commitment to improve Native Hawaiian health; and
- Specifically address the health disparities of Native Hawaiians, other Pacific Islanders, and Filipinos.

Nā Limahana o Lonopūhā

Nā Limahana o Lonopūhā, the Native Hawaiian Health Consortium, is an integrated network of leading senior executives and health care providers committed to addressing the status of Native Hawaiian health throughout the State of Hawai‘i. This consortium proposes progressive models of culture and research-based methods in implementing prevention and treatment programs focused on systemic outcomes among the various levels of Native Hawaiian health and wellness. The consortium comprises private, nonprofit, state, academic, community health centers and community-based providers with direct and indirect services throughout Native Hawaiian communities. This collaborative network is established to exemplify a multi-level approach to improving Native Hawaiian health outcomes in the 21st century, specifically as those outcomes relate to chronic diseases.
Traditional Native Hawaiian education is regarded as a highly spiritual process designed to train haumāna (students) in occupation-specific roles. Haumāna acquire mana as they progress in their training. Mana is a power bestowed from the gods that can be inherited, enhanced, or lost. Hawaiian scholar Mary Kawena Pukui refers to mana as the ultimate personal possession that carries an obligation to improve upon talents. For example, the kāhuna lā‘au lapa‘au can transmit mana from healing plants to ill patients, but would lose this ability if they neglect their patients. This example describes practical learning opportunities as a hallmark of traditional Native Hawaiian education.

Educational Attainment and Health

In contemporary times, education shifted from occupation-specific knowledge to education on a breadth of topics. The health benefits of early childhood education extend from the first years of life to adulthood. As of the 2014-2015 school year, children in Hawai‘i who are 5 years old must attend kindergarten. Besides the home, schools are the ideal place to promote health because they reach most children for an extended period. In the short-term, early education improves health because children are more likely to have an ongoing source of health care. All public and private school students in Hawai‘i must meet health examination and immunization requirements.

The long-term effects of education on adult health include improved cognitive development, improved social-emotional development, and general health knowledge. Improved cognitive development is associated with greater academic achievement, which translates into better employment opportunities and higher earning potential. Improved social-emotional development is associated with decreased propensity for risk-taking, stress, absenteeism from school, and self-regulation. General health knowledge informs students of health promoting and risky behaviors. High educational attainment predisposes the recipient to a higher health trajectory. These individuals report lower chronic and acute disease burden, independent of basic demographic and employment indicators.

The lowest percentage of all race/ethnicities.

Parents’ Educational Attainment

Parents’ educational attainment can influence their children’s health status and development beginning early in life. This is seen in the correlation between maternal post-secondary education completion and infant mortality. In 2013, 16.2% of resident Native Hawaiian mothers in Hawai‘i who had live births were college graduates, the lowest percentage in comparison to other race/ethnicities. In the same year, the infant mortality rate was 5.8 (per 1,000 live births). Native Hawaiians had the second-highest infant mortality rate after Caucasians. Parents with lower educational attainment often face greater obstacles in providing healthy home environments for their children due to limited time, money, and resources. This can affect children’s educational prospects through the quality of schools in lower-income neighborhoods. Children growing up in these environments are more likely to follow similar pathways as their parents, perpetuating an intergenerational cycle of low educational attainment and health disparities.

Health Sciences Degree Attainment

With more people expected to seek regular health care from expanded health insurance coverage across the United States, there is a corresponding demand for personnel to provide those services. In 2014, Hawai‘i had a shortage of 889 physicians. Primary care was the specialty with the greatest shortage, especially on the neighbor islands. This problem is further exacerbated with a misdistribution of physicians practicing in urban O‘ahu, forcing residents to commute from rural areas or the neighbor islands to obtain care. This difficulty in accessing care is reflected in the higher rates of Native Hawaiian emergency hospitalizations on the neighbor islands for both acute and chronic conditions. Educating future health care professionals in the communities they plan to serve has the potential to improve access to high quality care as providers may be able to better tailor interventions in accordance with the patient’s beliefs. Figure 5 depicts selected 2013–2014 post-secondary health sciences degree attainment in the University of Hawai‘i System (Hilo, Mānoa, and West O‘ahu) for Native Hawaiians and overall student population. Only 13.1% of students earning health sciences degrees were Native Hawaiian.

Percent of 2,860 FTE physicians in Hawai‘i who were Native Hawaiian in 2010.

Figure 5. 2013–2014 University of Hawai‘i Post-Secondary Degree Attainment in the Health Sciences

<table>
<thead>
<tr>
<th>Degree</th>
<th>Native Hawaiian</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine (MD)</td>
<td>3</td>
<td>62</td>
</tr>
<tr>
<td>Nursing (BS, MS, DNP, PhD)</td>
<td>49</td>
<td>381</td>
</tr>
<tr>
<td>Pharmacy (BS, MS, Pharm.D)</td>
<td>10</td>
<td>164</td>
</tr>
<tr>
<td>Psychology (BA/MS, DNP, PhD)</td>
<td>40</td>
<td>345</td>
</tr>
<tr>
<td>Public Health (MPH, MS, DrPH, PhD)</td>
<td>6</td>
<td>31</td>
</tr>
<tr>
<td>Social Work (BS, MSW, PhD)</td>
<td>39</td>
<td>139</td>
</tr>
</tbody>
</table>

Source. UH IRO, 2015.
Native Hawaiians were once economically self-sufficient and survived off the land’s natural resources. Persons with access to wai (fresh water) were regarded as wealthy because of wai’s centrality to agriculture and aquaculture. The Hawaiian word for wealth, waiwai, is derived from the word wai for water. Water symbolized bounty for the Hawaiian planter because crops such as kalo depended on water for productivity. In modern times, ownership of wai’s scarce counterpart, ʻāina, signifies wealth.\textsuperscript{32, 68}

Living in Hawai‘i poses a great challenge for not only Native Hawaiians, but all residents because of the high cost of living. With the nation’s highest food and electricity costs, householders make difficult choices of having to select which bills get paid every month.\textsuperscript{69} Homes without electricity cannot keep refrigerated medicines or fresh produce. Parents working long hours may be exhausted from working a long shift to cook nutritious meals and instead rely on cheap high-calorie meals. Individuals without health insurance cannot receive preventive services or seek care when they fall ill. Families unable to pay monthly mortgages or rent are left to move in with other family members or seek other shelter, creating crowded living spaces. The closest primary care physician may be an hour bus ride away, making the visit costly and time-consuming. With barely enough financial resources for daily living expenses, planning for the future becomes nearly impossible, leaving people with the ability to only respond to urgent needs.

### Income

Income represents a person’s material resources. Components of income can include a combination of the following: employment, government assistance, dividends or interest from investments, child support, alimony, deferred compensation, and pensions. Over a person’s lifetime, income can fluctuate with notable decreases in significant life events such as job loss, disability, retirement, or economic downturns. Therefore, income relates to health through expenditures on material resources necessary for health and well-being. The mechanisms in which income can influence health include purchasing shelter, nutritious food, safe transportation, leisure activities conducive to health, and educational expenses.\textsuperscript{70, 71}

Income acts as an enabler or barrier to the other social determinants of health. Generally, people with higher incomes experience better health outcomes than those with lower incomes. A decent and secure income allows families to access health promoting resources.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Native Hawaiians</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Household Income</td>
<td>$65,688</td>
<td>$68,020</td>
</tr>
<tr>
<td>Median Family Income</td>
<td>$72,762</td>
<td>$80,316</td>
</tr>
<tr>
<td>Per Capita Income</td>
<td>$20,472</td>
<td>$29,577</td>
</tr>
<tr>
<td>Median Male Earnings</td>
<td>$41,821</td>
<td>$48,440</td>
</tr>
<tr>
<td>Median Female Earnings</td>
<td>$36,707</td>
<td>$40,370</td>
</tr>
</tbody>
</table>


Poverty

Poverty is characterized by the chronic deprivation of resources, capabilities, choices, security, and power necessary for an adequate standard of living.\textsuperscript{72} Persons with lower socioeconomic status tend to experience poorer health in comparison to those in favorable circumstances. Poverty diminishes the opportunity to obtain healthy foods, safe housing, sanitation, education, employment, and medical care.

Percent of Native Hawaiian families with related children less than 18 years who lived in poverty in 2013 in comparison to 10.3% of the State.\textsuperscript{22}
Employment

For many, employment provides the main source of income and avenue in which people get health insurance. In Hawai‘i, employees working more than twenty hours a week for four consecutive weeks and earning a monthly wage greater than $628.36 are eligible for health insurance benefits. Health insurance provides protection from financial risks in the event of illness or injury. Depending on the employer, employees may also be entitled to work-related resources such as paid sick and personal leave, workplace health promotion programs, and retirement benefits.74 75

The most common occupation among Native Hawaiian men was in construction while office and administrative jobs were the most common occupation among Native Hawaiian women. Figure 7 shows the top five occupations among Native Hawaiians by gender from 2006–2010. Four of five occupations for men are physically demanding and can put workers at higher risk for injuries. In contrast, women worked in sedentary jobs, allowing for limited opportunities for movement or exercise.76

Figure 7. Native Hawaiian Occupations by Gender

<table>
<thead>
<tr>
<th></th>
<th>Native Hawaiian Males</th>
<th>Native Hawaiian Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupation</td>
<td>Est.</td>
<td>Occupation</td>
</tr>
<tr>
<td>Construction</td>
<td>10,760</td>
<td>Office &amp; Administrative</td>
</tr>
<tr>
<td>Transportation</td>
<td>4,928</td>
<td>Sales</td>
</tr>
<tr>
<td>Office &amp; Administrative</td>
<td>4,046</td>
<td>Education</td>
</tr>
<tr>
<td>Grounds Cleaning &amp; Maintenance</td>
<td>3,978</td>
<td>Food</td>
</tr>
<tr>
<td>Installation, Maintenance, &amp; Repair</td>
<td>3,711</td>
<td>Management</td>
</tr>
</tbody>
</table>


In addition to having the nation’s highest food and electricity costs, Hawai‘i also has high housing costs. Hawai‘i has the nation’s second-highest median monthly mortgage of $1,960 and highest median gross rent of $1,414. The Department of Housing and Urban Development (HUD) defines affordable housing as paying no more than 30% of income on gross housing and utility costs. Households spending over the 30% threshold often have insufficient funds for other living expenses. In 2013, 39.5% of Native Hawaiian home owners and 51.2% of renters paid over 30% of their gross income on housing.22 76 77

Affordable housing has the potential to improve health by freeing up family resources to satisfy other essential needs. High housing costs force too many families to choose between eating nutritious food, making bill payments, or postponing needed health care. A period of unemployment or unexpected expense like an emergency room bill can threaten housing stability and lead to eviction or homelessness. Housing availability and affordability force many Native Hawaiian families to double-up with others to live in crowded living spaces. While living with extended family can provide social support, crowding has been linked with stress and respiratory and infectious diseases. Inhalation or exposure to toxins such as pesticides, mold, asbestos, lead, radon, and carbon monoxide can put residents at risk for injury, asthma, and poisoning. Unstable housing can jeopardize children’s performance in school because they lack a stable home environment. A stable home provides families with a sense of privacy, stability, and control, which can improve health outcomes.77–80

2013 Native Hawaiian Median Monthly Housing Costs in Hawai‘i22

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>The median monthly mortgage.</td>
<td>$1,960</td>
</tr>
<tr>
<td>The median monthly gross rent.</td>
<td>$1,274</td>
</tr>
</tbody>
</table>

The physical design of homes can also affect health. Stairs, slippery floors, and lack of grab bars increase the risk for unintentional injuries. Falls at home are the leading cause of fatal and non-fatal injuries among kūpuna. Aging in place is usually the most affordable option for kūpuna on fixed incomes, but their homes may not be designed for their needs. In 2013, 40.5% of non-institutionalized civilian Native Hawaiian adults age 65 years and older had a disability and 5.7% lived in poverty.22 Alternative housing options such as nursing homes, long-term care facilities, and assisted living homes are not only costly, but also reduce independence.78 80 81

Affordable housing has the potential to improve health by freeing up family resources to satisfy other needs.
Healing Places

Native Hawaiians recognize specific places and natural resources as having special healing powers. Wahi pana (legendary place) are visited during significant events of the life cycle, from conception to birth, times of celebration and difficulty, and death. Kūkānilolo is a sacred wahi pana on the island of O‘ahu that served as a place of chiefly births during ancient times. Kūkānilolo contains birthing pōhaku (stone) credited with having special healing powers to absorb pain. Following the child’s birth, the piko (umbilical cord) may have been left at Kūkānilolo. The practice of returning the piko to the land signified the child’s connection to their ancestral homeland. Native Hawaiians believed the piko absorbed the mana from the pōhaku. This mana provided the child with good health and spiritual strength.

Nā Piko ‘Ekolu

Nā piko ‘ekolu literally translates into “three umbilical cords.” Metaphors are prominently featured in the Hawaiian language, thus nā piko ‘ekolu (three body points) expresses multiple meanings. Nā piko ‘ekolu symbolizes a person’s spiritual connection to their past, present, and future. These relationships are inseparable and essential to good psychological health. Other symbolic, figurative, physical, spiritual, and metaphorical meanings of nā piko ‘ekolu are shown in Figure 8.

Figure 8. Nā Piko ‘Ekolu

<table>
<thead>
<tr>
<th>Meaning Type and Description</th>
<th>Piko ‘Aumākua (Ancestors or heritage)</th>
<th>Piko ‘Iewe (Immediate family)</th>
<th>Piko ‘Iwi Kuamo’o (Descendants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbolic</td>
<td>‘Aumākua (ancestors), Kāpuna (grandparents)</td>
<td>Mākua (parents)</td>
<td>‘Opio (youth), Keiki (children)</td>
</tr>
<tr>
<td>Figurative</td>
<td>Wā mamua (past)</td>
<td>Kēia ao (present)</td>
<td>Ka wā mahope (future)</td>
</tr>
<tr>
<td>Physical</td>
<td>Po‘o (head)</td>
<td>‘Iewe (placenta)</td>
<td>‘Iwi kuamo’o (reproductive organs)</td>
</tr>
<tr>
<td>Spiritual</td>
<td>Mālama ‘āina (caring for the land) by honoring sense of place and relationships with ‘aumākua</td>
<td>Maintain familial relationships and bonds</td>
<td>Transmit Hawaiian culture, language, values, and knowledge to future generations</td>
</tr>
<tr>
<td>Metaphorical</td>
<td>Huluhulu (roots)</td>
<td>Hā (stalk)</td>
<td>‘Ohā (shoots)</td>
</tr>
</tbody>
</table>


Kalo

Kalo (Colocasia esculenta (L) Schott) is a canoe plant that was introduced by Polynesians to Hawai‘i. Native Hawaiians expertly cultivated kalo as a dietary staple. Kalo was the central crop of Hawaiian agricultural society because of its cultural, economic, political, and spiritual significance. At the peak of kalo production, over 300 varieties were planted across 20,000 acres (31 square miles). Today, there are less than a hundred Hawaiian kalo varieties in existence. In 2011, approximately 450 acres or 0.04% of all farm acreage in Hawai‘i was used for kalo production.

450 Acres

Acres used for kalo production in Hawai‘i in 2011. This is equivalent to the acreage in the Kaka‘ako Mauka region, bordered by Ala Moana, Punchbowl, South King, and Pi‘ikoi streets.
Kalo (Continued)

The origin of kalo is rooted in the genealogies of Papahānaumoku (Earth Mother) and Wākea (Sky Father). Hāloa (everlasting breath) was the first human descendant of Papahānaumoku and Wākea and younger brother of Hāloana (quivering long stalk). Hāloana was born prematurely and died but Hawaiians recognize him as Hāloa’s elder brother. The first kalo plant grew in the spot where Hāloana was buried. Hāloa ate from the kalo plant. Thus, kalo is regarded as not only a staple food, but also as progenitor of the Hawaiian people.39

Kalo is used as a metaphor to describe the connection to family and represents a common ancestral bond to Hāloa. Pukui writes, “Members of the ‘ohana, like the taro are all from the same root.”20 The word ‘ohana comes from the root word ‘oha (shoots). The ‘ohana derives its strength and stability from the huluulu (roots), just as a person traces their roots to their aumāku and kūpuna. Hā (stalk) comes from Hāloa and represents the connection between generations, or māku. Hā carries another metaphorical definition, meaning the breath of life. Replanting the hā marks the renewal of life into ‘ohana or keiki. The place where the stem and leaf meet is called the piko, or connection to the past, present, and future.32, 90

Nā Piko ‘Ekolu Conceptual Model

Figure 9 depicts the conceptual model for the social determinants of health using the kalo plant to illustrate nā piko ‘ekolu concept. The model represents the interplay of individual, relational, and structural variables that contribute to the social determinants of health for Native Hawaiians. The purpose of the conceptual model is to: identify social determinants of health; identify sources of health disparities; explore direct and indirect mechanisms that impact health; illustrate relationships between determinants; incorporate Native Hawaiian ideologies of health and wellness; and map potential entry points for targeted interventions and policy. The factors listed are neither deterministic nor claiming that the factors listed are the only factors relevant to the social determinants of health. The model rather highlights the critical components most relevant to Native Hawaiians.32, 54, 84, 91–93 When discussing the social determinants of health for Native Hawaiians, it is important to integrate nā piko ‘ekolu to sustain the essence of Native Hawaiian well-being.

- The huluulu, or piko ‘aumāku, lies deep in the ground drawing nutrients from the environment. Beneath superficial layers, huluulu span great lengths providing an anchor to the earth and ‘aumāku. Although huluulu remains unseen, it is the source of enduring strength and foundation for healthy growth just as culture and history provide a sense of identity. Kalo can grow upwards only when connection to piko ‘aumāku is maintained.

- The hā, or piko ‘īewe stands above ground providing stability for the plant. The hā serves as a buffer, protecting the plant from harsh conditions just as parents do for their children. Differential exposure to water, soil, and sun can positively or negatively impact the kalo’s health. Similarly, differences in political or socio-economic structures can generate social stratification in society, engendering health damaging or promoting conditions. Social stratification describes how society is stratified based on level of education, occupation, income, and fixed social conditions.

- The presence of ‘ōhā, or piko ‘iwi kuamo‘o, signifies the plant’s overall vitality. ‘Ōhā cannot grow unless both huluulu and hā are firmly planted in the ground just as keiki need guidance from māku and kūpuna. Thus, the ‘ōhā represents the personal and interpersonal circumstances that individuals have direct control over.

- The piko, or nā piko ‘ekolu resides in the center of the pu‘u‘u‘u (heart) shaped leaf. The piko connects all members and generations of the ‘ohana through deeply rooted spiritual, emotional, mental, and physical bonds. The strength of these bonds in turn determines overall health and wellness.

SUMMARY

Social determinants of health are the complex and interconnected structures, circumstances, environments, institutions, and systems that contribute to or harm health. Incorporating a holistic approach to health and well-being via the social determinants is consistent with both the Native Hawaiian view of mauli ola and leading health organizations. Addressing the social determinants of health has the potential to not only improve health, but also provide equal opportunity to lead a healthy, fulfilling, and productive life.

Mana is our legacy, Mauli ola is our destiny.

Impacts of the Social Determinants of Health on:

MO‘OMEHEU- strong Hawaiian identity among Native Hawaiians that balances economic, environmental, social, and cultural wellness;
‘AINA- environmental stewardship of natural resources and community infrastructure that facilitates active lifestyles;
EA- advocating for policy that affects health directly or indirectly by enacting structural change;
HO’ONA’AUOA- increase knowledge and skills to facilitate healthier behaviors and better employment opportunities;
HO’OKAHUA WAIWAI- employment that provides fair wages, benefits, and opportunities for advancement; and housing that is safe, affordable, and secure; and
MAULI OLA- physical, spiritual, mental, and emotional balance of the individual, family, and community.
figure 9. Nā Piko ‘Ekolu

NĀ PIKO ‘EKOLU

Piko

Health
Physical
Emotional
Spiritual
Mental

Dimensions
Mortality
Morbidity
Physical Functioning
Well-being

PIKO ‘IWI KUAMO‘O

‘Ohā

Personal/
Interpersonal
Family Structure
• Composition, size, generation, marital status

Material Circumstances
• Housing, neighborhoods, physical & built environments

Modifiable Behaviors
• Diet, exercise, smoking, drinking, drug use, sexual activity

Psychosocial Circumstances
• Life events, stress

Community Network
• Religious affiliations, social institutions & support

Acculturation

PIKO ‘AUMĀKUA

Huluhulu

Cultural
Values
Mo‘olelo (stories & traditions)
Language
‘Āina (land)
Wai (fresh water)

Historical
‘Ali‘i (chiefs)
Introduction of Foreign Diseases
Land Privatization
Statehood

PIKO ‘IEWE

Hā

Political
Governance
Social/Public Policy
• Civil institutions

Social Justice
• Human rights, racism

Power & Prestige

Health System
• Access & quality of care

Socio-Economic
Education
Occupation
Income
• Poverty, wealth

Fixed Social Conditions
• Age, race/ethnicity, sex, disability, sexual orientation

Active Travel: Method of transportation that focuses on physical activity (walking or cycling) as opposed to sedentary forms (driving or riding the bus).

Affordable Housing: Housing for which occupants pay no more than 30% of their income on gross housing costs and utilities (HUD).

Built Environment: The part of the physical environment constructed by human activity.

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

Cultural Integration in Health Services: The ability of health care providers to deliver care that meets the social, cultural, and linguistic needs of patients (CDC).

Educational Attainment: The level or number of years of schooling a person has completed.

Family: A family consists of a householder and one or more other persons living in the same household who are related to the householder by birth, marriage, or adoption. All persons in a household who are related to the householder are regarded as members of his or her family. A household can contain only one family for purposes of census tabulations. Not all household contain families since a household may comprise a group of unrelated persons or one person living alone (U.S. Census Bureau).

Family Income: In compiling statistics on family income, the incomes of all members 15 years old and over in each family are summed and treated as a single amount (U.S. Census Bureau).

Health Disparities: The difference in the incidence, prevalence, mortality, and the burden of health conditions between population groups.

Health Literacy: The ability to access, process, and comprehend health information (HHS).

Household: A household includes all the persons who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements (U.S. Census Bureau).

Household Income: Includes the income of the household and all other persons 15 years old and over in the household, whether related to the householder or not. Because many households consist of only one person, average household income is usually less than average family income (U.S. Census Bureau).

Infant Mortality Rate: The number of infant deaths per 1,000 live births.

Land Use: The functional dimension of land for different purposes and activities. Land use categories include: residential, industrial, recreational, and environmental protection (Barton, 2009).

Live Birth: The complete expulsion or extraction from its mother of a product of conception that did, after the complete expulsion or extraction from its mother, breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or movement of voluntary muscle, whether or not the umbilical cord was cut or the placenta attached ($338-1, HRS).

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).

Organic Agriculture: Produces products using methods that preserve the environment and avoids most synthetic materials like pesticides and antibiotics (USDA).

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

Primary Care: Basic health care services that includes health promotion, disease prevention, health maintenance, patient education and counseling, referrals to specialty providers, and diagnosis and treatment of acute and chronic illnesses (Public Health Service Act).

Social Determinants of Health: The complex structures, circumstances, environments, institutions, and systems that contribute to or harm the health of individuals and communities. Social determinants of health are shaped by cultural, political, environmental, social, and economic conditions (Commission on Social Determinants of Health).

Social Stratification: Describes how society is stratified based on level of education, occupation, income, and fixed social conditions.

Per Capita Income: Per capita income is the mean income computed for every man, women, and child in a particular group. It is derived by dividing the total income of a particular group by the total population in that group (excluding patients or inmates in institutional quarters) (U.S. Census Bureau).

Physical Environment: The part of the environment that includes natural elements such as air, water, natural vegetation, landform, and climate.

Socio-Economic Status: Measures an individual’s economic or social position in relation to others based on education, occupation, and income (CDC).

Urban Sprawl: The expansion of an urban area into surrounding regions.

Vital Statistics: The collection of vital statistics data including births, deaths, and marriages is coordinated by the Office of Health Status Monitoring in the State of Hawai’i Department of Health.

Hawaiian Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
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<tr>
<td>ahupua’a</td>
<td>land division</td>
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<tr>
<td>‘āina</td>
<td>land</td>
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<tr>
<td>akua</td>
<td>gods</td>
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<td>ali‘i chief</td>
<td>chief</td>
</tr>
<tr>
<td>‘aumākua</td>
<td>deified ancestors</td>
</tr>
<tr>
<td>ea</td>
<td>governance</td>
</tr>
<tr>
<td>hā</td>
<td>stalk</td>
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<td>haku</td>
<td>mediation leader</td>
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<td>hāpai</td>
<td>pregnant</td>
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<td>ho‘oponopono</td>
<td>conflict resolution</td>
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<td>placenta</td>
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<td>children</td>
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<td>keiki  ili‘ili‘i</td>
<td>early childhood</td>
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<td>kūpuna</td>
<td>older adults, grandparents</td>
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<td>illness</td>
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<td>ma‘i i waho</td>
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<td>maka‘i</td>
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<td>nā piko ‘ekolu</td>
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<td>shoots</td>
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<td>pu‘uawai</td>
<td>heart</td>
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<td>grandmother</td>
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<td>wahi pana</td>
<td>legendary place</td>
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<td>fresh water</td>
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<td>waiwai</td>
<td>wealth</td>
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</tbody>
</table>
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