

Nutrition and Physical Activity in Native Hawaiians and Pacific Islanders

A community and evidence-based perspective

- Archana J. McEligot
 - CSUF
- Juliet McMullin
 - UCR
- Ka'ala Pang
- Kawai Pang
 - *PIHP-Hawaii*
- Charlene Kazner
 - *Ainahau O Kaleponi
Hawaiian Civic Club*

Objectives

1. Identify the community's nutrition and PA challenges
2. Understand the health disparities for Pacific Islanders related to nutrition
3. Familiarize the audience to Pacific Islander dietary intakes and needs
4. Discuss the social determinants/cultural context for diet and PA in Pacific Islanders
5. Characterize dietary interventions in Pacific Islander populations

Our Values

Pili

Aloha

Mālama kekahi I kekahi

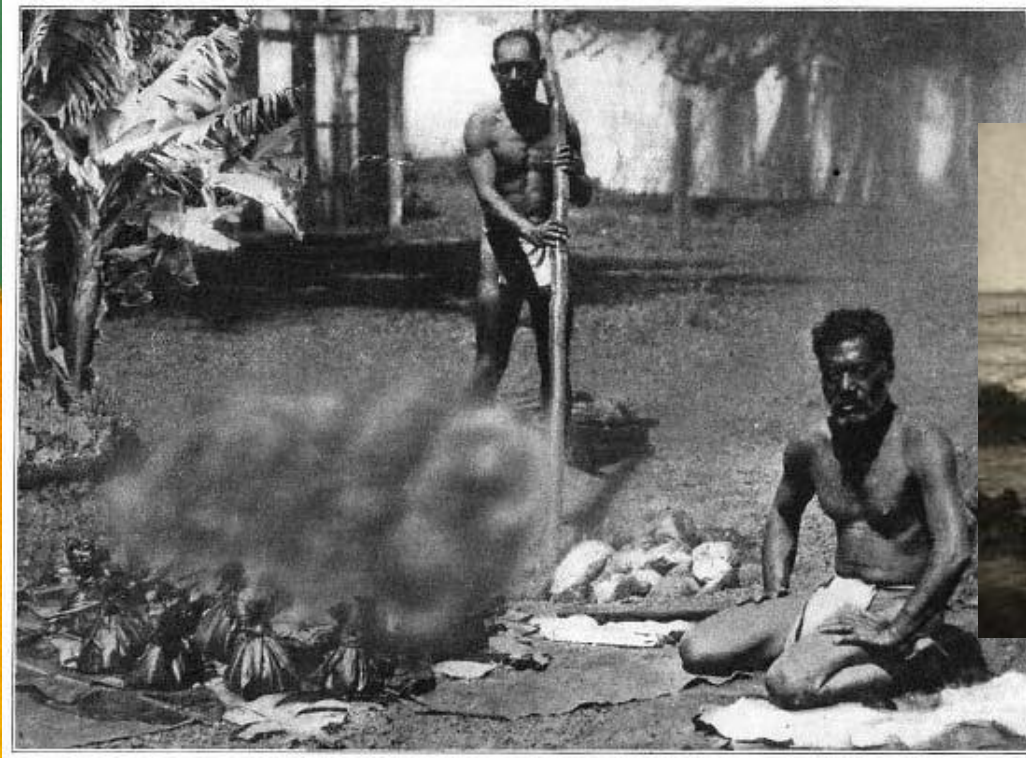
Maihilahila

Na'auao

Ano ano hua



Healthy Pacific Islanders



- Health problems aren't necessarily "who" NHPI are, traditionally their diet, lifestyle and health conditions were excellent

Healthy Pacific Islanders



Source: Brittany Todd

Healthy Pacific Islanders

- Discussion of weight, diet and exercise
 - Weight as very unhealthy vs question of size
 - Being able to do what you want to do.
 - “I see some very big Hawaiians, but they’re still doing the things they want to do”
- “It’s the way you carry yourself”
 - the emotion of being Hawaiian

Hula Warm-up

Pressing Problems

Objective 2: Health Disparities related to
nutrition and PA in NHPI

“Some of the problems are well known and we know what we should do...”

- Diseases
 - Diabetes, heart disease, cancer
- Practices
 - Diet and exercise
 - Nutritious vs non-nutritious
 - Fast vs home cooked
 - Hawaiian vs American



What Are Our Health Disparities? - Population

- According to the 2000 U.S. Census, there are 874,000 reported Native Hawaiian and Other Pacific Islanders, which account for 0.3% of the entire U.S. population ¹.
- Native Hawaiians and Pacific Islanders, as a group, experienced 2.4% growth between 2007 and 2008, third overall among race groups; Asians and Hispanics were second and first respectively².
- Native Hawaiians are the largest Pacific Islander group in the U.S. followed by Samoan, and Guamanian or Chamoru. These three groups account for 74% of the total respondents who reported belonging to a single Pacific Islander group¹.

1: Grieco, E. M. (n.d.). *The Native Hawaiian and Other Pacific Islander Population: 2000* (p. 1, Issue brief No. C2KBR/01-14). doi: <http://www.census.gov/prod/2001pubs/c2kbr01-14.pdf>

2: Paisano, Edna L. *We the American: Pacific Islanders. Rep.* Washington, DC: U.S. Government Printing Office, 1993. W. U.S. Department of Commerce Bureau of the Census, Sept. 1993. (p.3) <<http://www.census.gov/aprd/wepeople/we-4.pdf>>. From: White House Initiative on Asian Americans and Pacific Islanders Fact Sheet

What Are Our Health Disparities?

- Native Hawaiians are over 5 times as likely to experience diabetes between the ages of 19-35 (11% vs. 2%) compared to non-Hawaiians (Mau, *Epi Reviews*, 2009; Papa Ola Lokahi, NH Epi Center Pub).
- Native Hawaiians have the highest rate of deaths due to cancer compared to any other ethnic group in Hawaii (229 per 100,000) and the 2nd highest rate in the country. (Chu KC, *Cancer* 2005).

What Are Our Health Disparities?

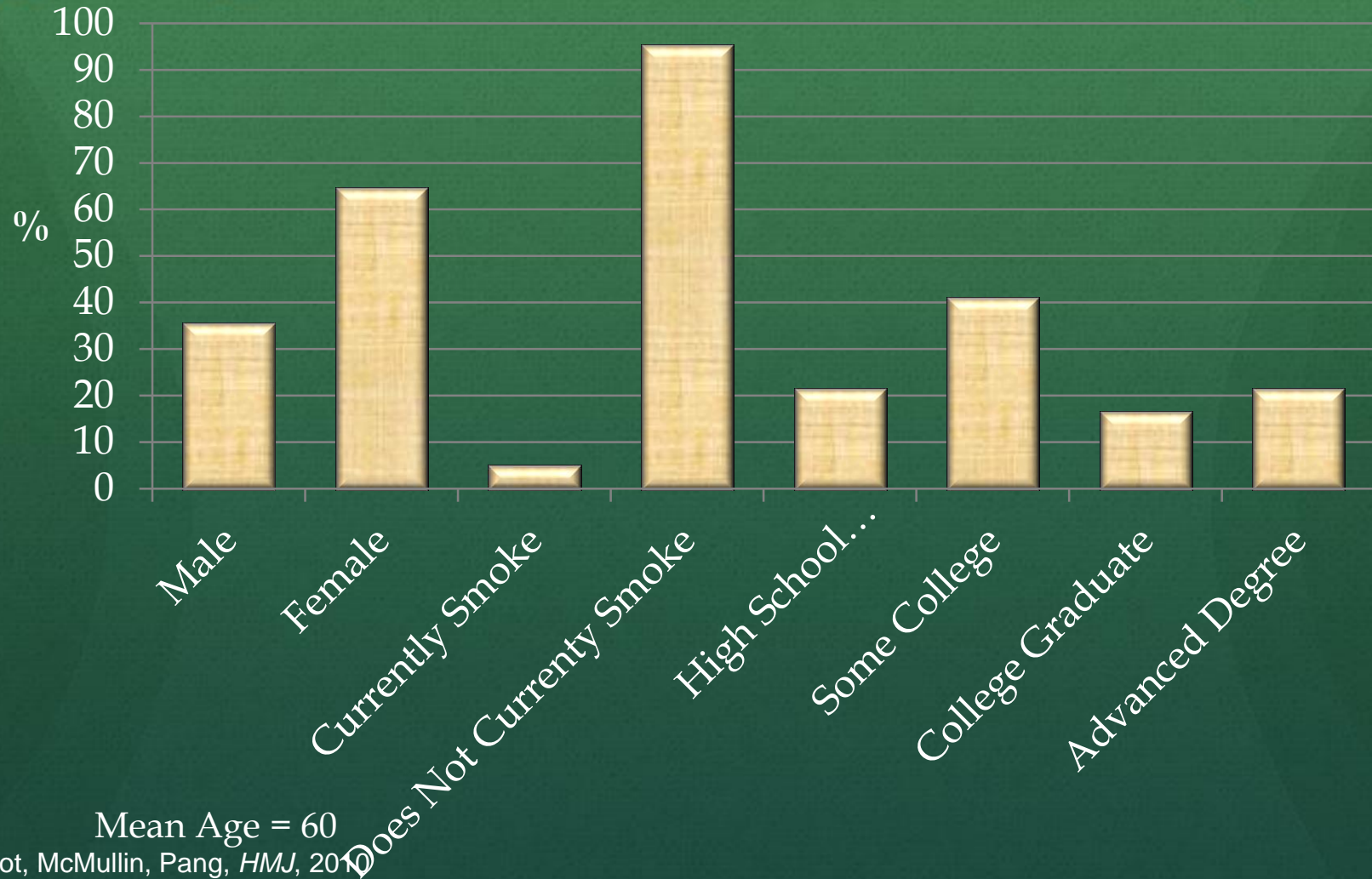
- Pacific Islanders reported higher adjusted rates of hypertension (1.50; 1.06, 2.13), diabetes (1.82; 1.25, 2.63), asthma (2.32; 1.65, 3.25), and arthritis (1.68; 1.20, 2.35). Pacific Islanders also more frequently reported having fair or poor health (1.46; 1.05, 2.04).
 - Most differences in self-reported health status and chronic disease outcomes were mediated by higher rates of overweight and obesity, but not higher rates of smoking, among Pacific Islanders (Bitton, *J Gen Intern Med.* 2010).
- According to the CDC, Native Hawaiians and other Pacific Islanders have the second highest rate of diagnoses of HIV infection and the second shortest AIDS survival rate of all Americans (Stafford, *AJPH*, 2010).

Health in Children

Source: Ethnic Health Assessment for Asian Americans, Native Hawaiians, and Pacific Islanders in California, August 2010

- Among children, California schools use Healthy Fitness Zones (HFZ) to evaluate whether a student meets the HFZ goal of physical activity and body composition.
- NHPs reported the highest proportion of 5th graders whose Body Mass Index (BMI) are not in the HFZ, with Samoans (53.9%) and Other Pacific Islanders (41.5%) having the highest rates across all racial/ethnic groups.
- Guamanian (34.7%), Native Hawaiian (34.6%), and Tahitian (34.4%) Californians also reported higher rates of 5th graders whose BMI are not in the HFZ compared to the state average (32%).
- More Samoan, Guamanian, Native Hawaiian, and Tahitian children have a body mass index (BMI) not within the Healthy Fitness Zone compared to the state average.

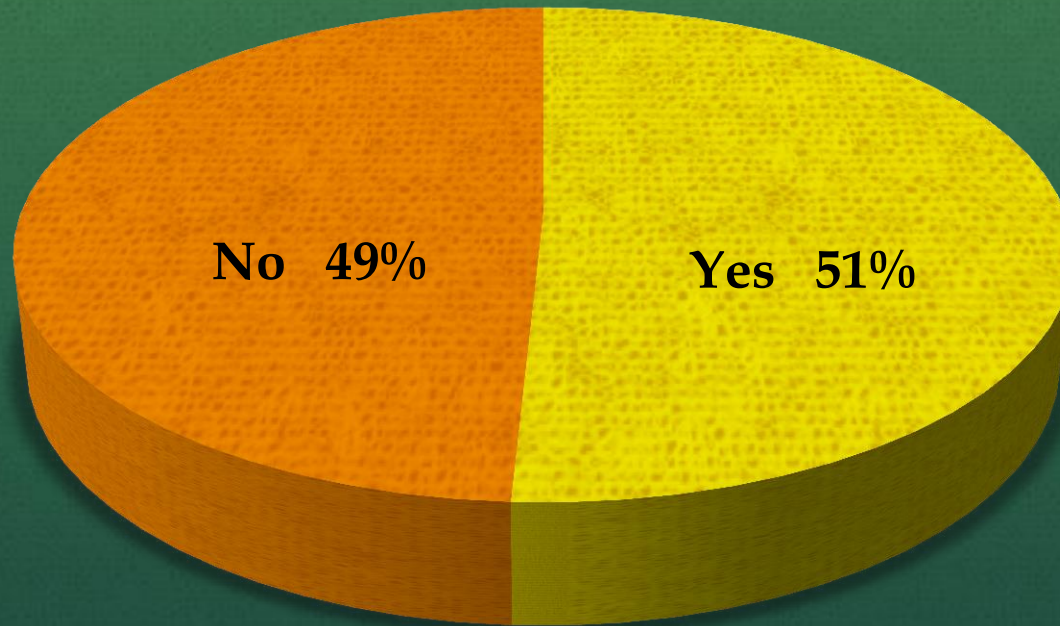
Demographics of DABS



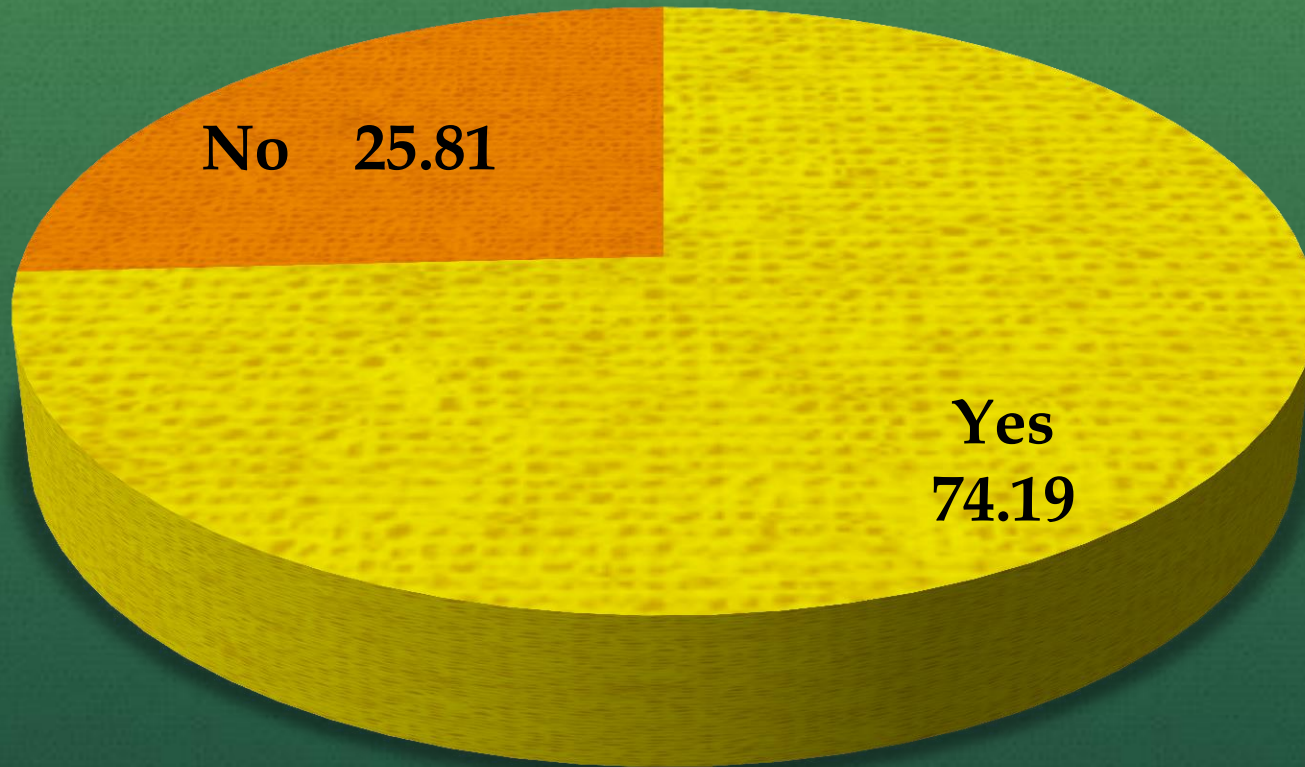
Mean Age = 60

What Are Our Health Disparities?

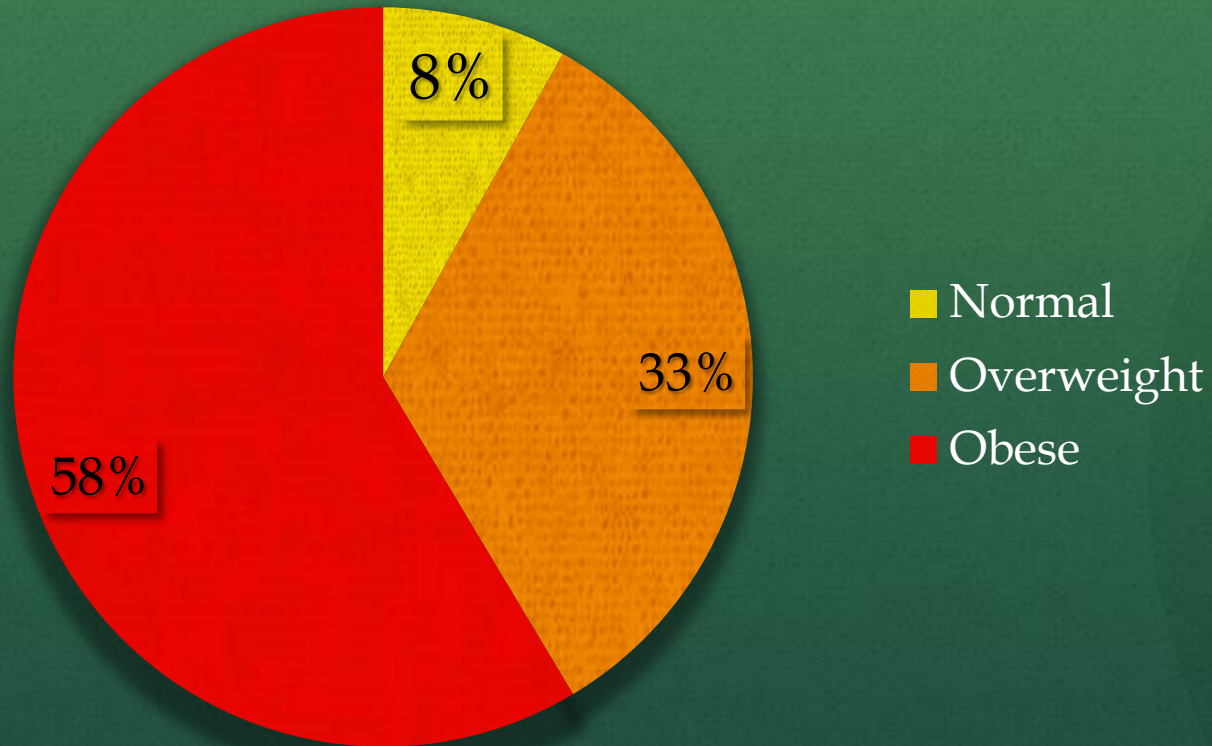
Chronic Condition



Cardiometabolic Disease



Body Mass Index





ʻAʻohe hana nui ke alu ʻia

(No work is too large when done by all)

Objective 3. Familiarize the audience to Pacific Islander dietary intakes and needs

Objective 4: Discuss the social determinants/cultural context for diet and PA for NHPI

What Are We Eating? Major studies on Diet and Nutrition for NHPI

- Wai'anae Diet Program, incorporated traditional Hawaiian values with a Traditional Hawaiian Diet (THD) of *kalo* (taro), *poi* (mashed taro), *'uala* (sweet potato), fish and chicken (1 - 3).
- The PILI 'Ohana project, a CBPR partnership, conducted in Hawai'i encourages culturally-sensitive healthful lifestyle behavior change through various nutrition and physical activity strategies (4), and results have shown reduction in weight and dietary fat intakes.
- The Multi-ethnic cohort study, cross-sectional study between Hawaii and California assessing dietary intakes among five ethnic groups

1. Fujita R, Braun KL, Hughes CK. The traditional Hawaiian diet: a review of the literature. *Pac Health Dialog*. 2004;11:250-9.

2. Shintani T, Beckham S, O'Connor HK, Hughes C, Sato A. The Waianae Diet Program: a culturally sensitive, community-based obesity and clinical intervention program for the Native Hawaiian population. *Hawaii Med J*. 1994;53:136-41.

3. Shintani T, Beckham S, O'Connor HK, Hughes C, Sato A. The Waianae Diet Program: a culturally sensitive, community-based obesity and clinical intervention program for the Native Hawaiian population. *Hawaii Med J*. 1994; 53:136-41.

4. [Nacapoy AH](#), [Kaholokula JK](#), [West MR](#), [Dillard AY](#), [Leake A](#), [Kekauoha BP](#), [Palakiko DM](#), [Siu A](#), [Mosier SW](#), [Marjorie KM](#); [PILI 'Ohana Project](#). Partnerships to address obesity disparities in Hawai'i: the PILI 'Ohana Project. *Hawaii Med J*. 2008 Sep;67(9):237-41.

What Are We Eating?

	Mean	Recommended Daily Allowance
<i>Whole Grain (serv)</i>	1.63	4.5
<i>Refined Grain (serv)</i>	3.73	4.5
<i>Vegetables (serv)</i>	2.52	5
<i>Fruits (serv)</i>	1.66	5
<i>Fiber (g)</i>	16.84	25 - 30
<i>Monounsaturated Fat (%)</i>	13.11	
<i>Polyunsaturated Fat (%)</i>	7.21	
<i>Saturated Fat (%)</i>	11.07	< 10%
<i>Total Fat (%)</i>	34.39	< 30%

	Mean (SD)	Males (N=21)		Mean(SD)	Females (N=34)	
		Range	% above guidelin es ^{a,b}		Range	% above guidelines ^a ,b
Food Intake						
Energy kcal	1882 (710)	992-3220		1601 (615)	579-3010	
% Energy from fat	33.7 (5.9)	22.3-44.2	24	34.8 (8.4)	18.2-48.3	22
Fiber, g	19.5 (6.3)	7.9-30.1	19	15.2 (7.3)	2.8-31.4	12
Vegetable, servings	2.9 (1.7)	0.7-6.6	14	2.3 (1.4)	0-5.8	3
Fruit, servings	1.9 (2.1)	0-8.3	14	1.5 (1.2)	0-5.6	3
Whole grain, servings	2.0 (2.0)	0-8.6	5	1.4 (1.3)	0-5.4	0
Refined grain, servings	4.0 (1.5)	0-7.3	66	3.5 (2.1)	0-9.0.	56
Total Folate, µg	452 (204)	240-995	52	393 (285)	104-1781	35
Natural Folate, µg	265 (125)	123-609	19	204 (89)	123-607	3
Synthetic Folate, µg	187 (166)	46-853	5	190 (236)	23-1373	9
Vitamin C, mg	110 (92)	28-322	48	83 (53)	23-205	44
Vitamin E, IU	10.3 (6.2)	3.4-28.0	19	13.4 (17.4)	1.8-100.9	18
Total carotenoids, µg ^c	10913 (6676)	1672-25118		8857 (6568)	487-25161	
Calcium, mg	754 (459)	234-2433	10	714 (332)	129-1568	9
Iron, mg	15.5 (5.5)	8.9-32.2	100	13.6 (9.6)	4.4-61.2	79
Supplement Intake						
Folate, µg	175 (246)	0-900	33	251 (309)	0-1000	44
Vitamin C, mg	168 (404)	0-1500	38	163 (330)	0-1060	26
Vitamin E, IU	94 (214)	0-833	43	65 (151)	0-667	47
Carotenoids, µg ^c	217 (598)	0-2550		1247 (6500)	0-38002	
Calcium, mg	139 (272)	0-1120	0	367 (661)	0-2970	9
Iron, mg	2.4 (8.2)	0-36.3	10	3.8 (8.3)	0-36	18

Table 2
Unadjusted and Adjusted Odds Ratios for Pacific Islanders Relative to Asian Americans

Outcome	Unadjusted OR (95% CI)	Adjusted OR ^a (95% CI)	Adjusted OR ^b (95% CI)	Adjusted OR ^c (95% CI)	Adjusted OR ^d (95% CI)
Current smoking	2.83 (2.08, 3.84)	2.64 (1.94, 3.60)	2.15 (1.57, 2.93)		
Overweight (BMI >25 kg/m ²)	2.22 (1.78, 2.76)	2.26 (1.81, 2.83)	2.26 (1.80, 2.84)		
Heavy alcohol intake	4.07 (1.97, 8.41)	3.79 (1.93, 7.45)	3.14 (1.60, 6.18)		
Adequate physical activity	1.67 (1.27, 2.19)	1.63 (1.24, 2.16)	1.62 (1.23, 2.14)		
Adequate fruit/vegetable intake	1.34 (1.02, 1.75)	1.31 (0.99, 1.74)	1.28 (0.96, 1.70)		
Regular PCP	0.89 (0.70, 1.14)	1.03 (0.79, 1.34)	1.16 (0.87, 1.56)		
Avoided seeing doctor due to cost	1.40 (1.07, 1.83)	1.36 (1.03, 1.79)	1.14 (0.85, 1.52)		
No health insurance (all ages)	1.60 (1.22, 2.10)	1.51 (1.14, 1.99)	1.07 (0.77, 1.48)		
Hypertension	1.20 (0.89, 1.61)	1.64 (1.16, 2.27)	1.50 (1.06, 2.13)	1.50 (1.06, 2.12)	1.23 (0.85, 1.78)
Diabetes	1.31 (0.95, 1.81)	1.82 (1.28, 2.57)	1.82 (1.25, 2.63)	1.84 (1.27, 2.69)	1.43 (0.95, 2.16)
Coronary heart disease	1.22 (0.64, 2.29)	1.68 (0.86, 3.25)	1.56 (0.75, 3.25)	1.60 (0.76, 3.37)	1.30 (0.59, 2.87)
Hypercholesterolemia	0.84 (0.57, 1.23)	0.94 (0.63, 1.41)	0.95 (0.63, 1.43)	0.96 (0.65, 1.41)	0.93 (0.61, 1.41)
Asthma	2.17 (1.57, 3.01)	2.26 (1.62, 3.15)	2.32 (1.65, 3.25)	2.33 (1.68, 3.25)	2.08 (1.48, 2.92)
Arthritis	1.14 (0.85, 1.55)	1.64 (1.19, 2.26)	1.68 (1.20, 2.35)	1.58 (1.11, 2.24)	1.38 (0.98, 1.93)
Fair or poor health	1.39 (1.02, 1.89)	1.66 (1.21, 2.28)	1.46 (1.05, 2.04)	1.37 (0.96, 1.95)	1.28 (0.90, 1.82)

^aUsing logistic regression to adjust for age, sex, and place of residence

^bUsing logistic regression to adjust for age, sex, place of residence, income, and education (main model)

^cUsing logistic regression to adjust for age, sex, place of residence, income, education, and smoking

^dUsing logistic regression to adjust for age, sex, place of residence, income, education, and BMI

All estimates were weighted to account for the complex survey design. Statistically significant differences (P < 0.05) are denoted in bold

OR = odds ratio; CI = confidence interval; BMI = body mass index; PCP = primary care physician

Table 3

Unadjusted and Adjusted Odds Ratios for Pacific Islanders Relative to Whites

Outcome	Unadjusted OR (95% CI)	Adjusted OR ^a (95% CI)	Adjusted OR ^b (95% CI)	Adjusted OR ^c (95% CI)	Adjusted OR ^d (95% CI)
Current smoking	1.04 (0.98, 1.12)	1.14 (0.84, 1.53)	0.98 (0.72, 1.34)		
Overweight (BMI >25 kg/m ²)	0.84 (0.68, 1.03)	0.91 (0.73, 1.13)	0.90 (0.72, 1.12)		
Heavy alcohol intake	1.07 (0.54, 2.13)	0.80 (0.40, 1.60)	0.78 (0.38, 1.61)		
Adequate physical activity	1.06 (0.82, 1.38)	0.84 (0.64, 1.12)	0.88 (0.67, 1.15)		
Adequate fruit/vegetable intake	1.06 (0.82, 1.37)	1.02 (0.78, 1.35)	0.99 (0.75, 1.29)		
Regular PCP	0.55 (0.43, 0.69)	0.80 (0.62, 1.04)	0.89 (0.68, 1.17)		
Avoided seeing doctor due to cost	1.29 (1.01, 1.64)	1.17 (0.91, 1.50)	0.93 (0.71, 1.23)		
No health insurance (all ages)	1.78 (1.38, 2.28)	1.56 (1.21, 2.02)	1.24 (0.91, 1.69)		
Hypertension	0.68 (0.52, 0.91)	1.18 (0.86, 1.62)	1.11 (0.81, 1.48)	1.12 (0.81, 1.54)	1.23 (0.88, 1.72)
Diabetes	0.97 (0.73, 1.31)	1.75 (1.28, 2.39)	1.56 (1.13, 2.14)	1.56 (1.14, 2.14)	1.76 (1.26, 2.48)
Coronary heart disease	0.47 (0.26, 0.85)	0.98 (0.51, 1.88)	0.90 (0.46, 1.74)	0.91 (0.47, 1.75)	0.94 (0.48, 1.84)
Hypercholesterolemia	0.69 (0.47, 1.00)	0.99 (0.64, 1.51)	0.97 (0.63, 1.49)	0.98 (0.64, 1.50)	1.05 (0.68, 1.63)
Asthma	0.99 (0.74, 1.33)	0.98 (0.72, 1.33)	0.93 (0.68, 1.26)	0.93 (0.68, 1.26)	0.94 (0.69, 1.29)
Arthritis	0.38 (0.29, 0.50)	0.64 (0.48, 0.86)	0.61 (0.46, 0.82)	0.61 (0.46, 0.82)	0.63 (0.47, 0.84)
Fair or poor health	0.91 (0.68, 1.21)	1.42 (1.06, 1.92)	1.19 (0.87, 1.64)	1.18 (0.85, 1.64)	1.27 (0.92, 1.76)

^aUsing logistic regression to adjust for age, sex, and place of residence^bUsing logistic regression to adjust for age, sex, place of residence, income, and education (main model)^cUsing logistic regression to adjust for age, sex, place of residence, income, education, and smoking^dUsing logistic regression to adjust for age, sex, place of residence, income, education, and BMIAll estimates were weighted to account for the complex survey design. Statistically significant differences ($P < 0.05$) are denoted in bold

OR = odds ratio; CI = confidence interval; BMI = body mass index; PCP = primary care physician

“Hawaiians don't eat until they're full, they eat until they're tired” -

- Joking and portion size
 - It's disrespectful not to eat what's on your plate
 - We bring lots of food to social events
 - “that's how you know who is Hawaiian”
 - We expect to see lots of food at social events
 - Similar across Pacific Islander groups
- Generational issues
 - Depression era
 - Poverty
- “It's difficult to preach to family members..”
 - Individual choice
 - People are stubborn



D.A.B.S. Diet Attitudes and Beliefs Study



Top 5 Choices

Poi

Fish

Lomi lomi salmon

Laulau

Sweet Potato

Others : rice, taro leaf, ulu

Objective 4: Social Determinants

Migration issues

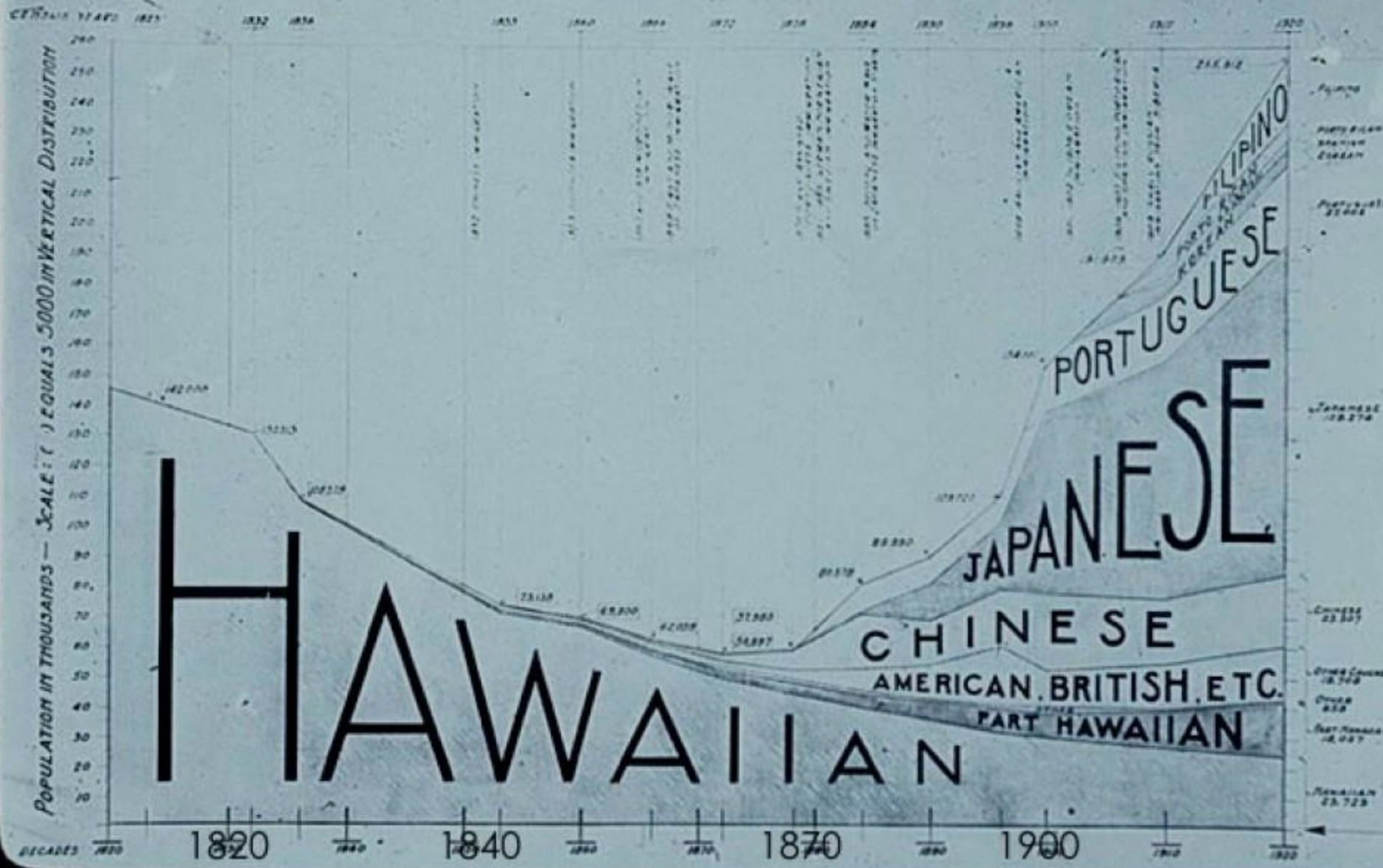
- Fund raisers for groups back home
- Access to food and changes in food
 - Research by Craig Janes – Samoan Communities
 - *Migration, Social Change, and Health: A Samoan Community in Urban California*. Stanford University Press 1990
- Various political relationships
 - Watch Talk Story with George and Greta Briand (Marshall Islands)

A CENTURY OF CHANGE IN HAWAII'S POPULATION

HORIZONTAL DISTRIBUTION REPRESENTS TIME — VERTICAL DISTRIBUTION REPRESENTS POPULATION

DRAWN TO SCALE i.e., A DISTANCE OF 1" IN VERTICAL DISTRIBUTION EQUALS 5000 POPULATION

COMPILED BY LOUIS E. SULLIVAN 1921.



Acculturation, Migration and Diet



Acculturation, Migration and Diet



Fast Food in Hawaii

Reasons for Leaving Country of Birth

OPPORTUNITY



Better Job



American Dream



Change of Life



Experience Living Away from Home



College

Stress, work and distance

- “It’s just more stressful to live in California”
 - Longer work hours
 - Activities after work
 - Staying home to do homework, playing video games
 - Commuting – “I just feel so lucky to be home”
 - Local environment
 - Beaches and parks are often very far away from where you live and work
 - Safety of the environment



Stress, work and distance

- <http://www.youtube.com/watch?v=-awmSB2L7UE>
- Dateline – “The Wai’anae Diet”
- Interview on Hawaiian Obesity

“To help get our ‘ōkole going...”

- Social vs individual
 - “if the kids go, then I have to go. And if the kids are there, then the grandparents will go”
 - “Activities should be social events, but should have a component that shows us how to do these things at home.”



- Access
 - Environment and healthy spaces
 - where you can get Hawaiian foods
 - “I lived here 10 years before I finally was able to hook up with the community. Now I am learning where I can get Hawaiian foods.”
- How to share foods
 - Too much food for the kupuna or singles
 - Community Gardens
 - Famili Pe Taha – Steven Fifita

Objective 5: Characterize dietary interventions in NHPI populations – Traditional Hawaiian Diet (THD)

Traditional Foods:

- kalo (taro)
- weet potato
- poi (mashed taro)
- fish
- chicken
- (both fish and chicken were occasionally eaten).

Preparation and cooking methods. Traditional Hawaiian diets were extremely low in fat primarily due to the simplicity of the cooking methods, as well as consumption of a high fiber, complex-carbohydrate diet.

Cooking methods emphasized for the present study include:

- Baking
- Steaming
- Broiling
- Boiling

Objective 5: Characterize dietary interventions in NHPI populations – PILI ‘Ohana

The PILI ‘Ohana program includes eight sessions focusing on lifestyle change, including:

- 1) Overview of the PILI Lifestyle Intervention
- 2) Getting started on eating less fat
- 3) Being more active
- 4) Healthy eating and monitoring
- 5) Keeping to reduced calories
- 6) Taking charge of your diet/environment
- 7) Communicating with health care providers
- 8) A wrap up session

`A`ohe hana nui ke alu `ia

- ❖ Native Hawaiian Community
- ❖ Ka'ala and Victor Pang & PIHP-Hawaii
- ❖ Momi Bone & Charlene Kazner

*Ainahau O Kaleponi
Hawaiian Civic Club*

- ❖ CSUF - Archana J. McEligot
- ❖ CSUF - Michele Wood
- ❖ WINCART - Sora Tanjasiri
- ❖ UCR - Juliet McMullin
- ❖ CSUF students
 - ❖ Shauna Winston
 - ❖ Rebekah Ngewa
 - ❖ Ryan Alano
 - ❖ Tiffany Price

