

# CHILDREN'S HEALTHY LIVING PROGRAM



For Remote Underserved Minority  
Populations In The Pacific Region



United States Department of Agriculture  
National Institute of Food and Agriculture  
Agriculture and Food Research Initiative (AFRI)  
No. 2011-88001-30335







# Children's Healthy Living Program For Remote Underserved Minority Populations in the Pacific Region

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Fagaitua Prevalence Survey Results



United States Department of Agriculture  
National Institute of Food and Agriculture  
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# *Executive Summary*







# I. Executive Summary

## Introduction to the Report

The CHL program utilizes three major strategies towards its goals: 1) training, 2) extension – outreach, and 3) research - intervention. The purpose of this document is to report on the measures of these three strategies in your community. It includes information about CHL training, outreach and sustainability activities, and the research descriptive results of the Children’s Healthy Living Program Survey at the individual and household level and the results of the community level assessment. The community level assessment utilizes the Community Assessment Toolkit (CAT) – which comprises of assessments about the availability of food resources, parks, play spaces, and walkable streets – and a Food Cost Survey. Results of the intervention trial will be presented in a separate report following this one.

If you have any questions about this report, please contact *Rachel Novotny* at [novotny@hawaii.edu](mailto:novotny@hawaii.edu) or 808-956-3848.

Thank you for your interest and efforts for children’s health!



# Children's Healthy Living Program





## II. Children’s Healthy Living Program (CHL)

The Children’s Healthy Living Program for Remote Underserved Minority Populations in the Pacific Region (CHL) is a partnership among the remote Pacific jurisdictions of Alaska; American Samoa; Commonwealth of the Northern Mariana Islands (CNMI); the Federated States of Micronesia (FSM), the Republic of the Marshall Islands (RMI), the Republic of Palau; Guam; and Hawaii to study childhood obesity among Pacific children, ages two to eight years old.

The program is funded by the United States Department of Agriculture (USDA), National Institute of Food and Agriculture, Agriculture and Food Research Initiative (Grant no. 2011-68001-30335). CHL is coordinated from the Department of Human Nutrition, Food and Animal Sciences in the College of Tropical Agriculture, at the University of Hawai‘i at Mānoa with contracts to the University of Guam, University of Alaska Fairbanks, American Samoa Community College, Northern Marianas College, and fees for nutrition analysis and biostatistical services conducted at the University of Hawaii Cancer Center.

The goal of CHL is to help to create a social, cultural, political, economic, and physical environment in the Pacific Region that supports active play, physical activity, and eating healthy food, in order to promote health. In partnership with participating communities, our mission is to elevate the capacity of the region to build and sustain a healthy food and physical environment to help maintain healthy weight and prevent obesity among young children in the Pacific region.

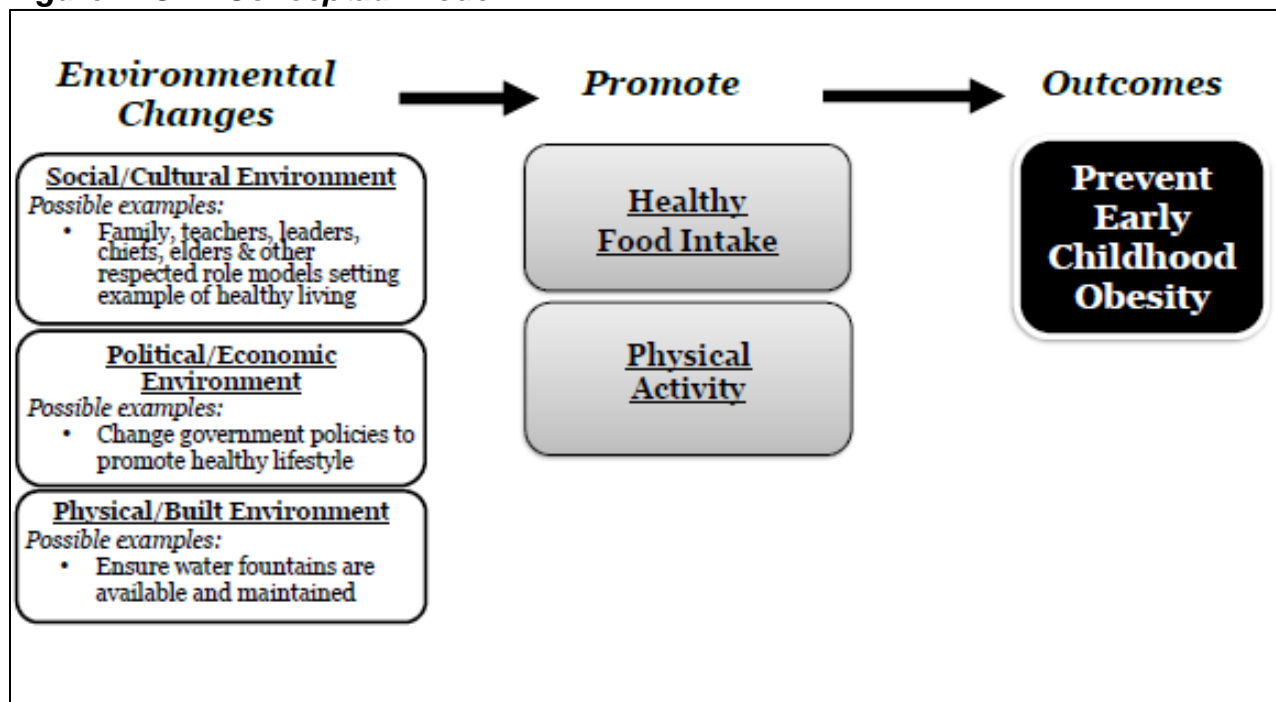
CHL strived for the following behavior targets:

- 1) Lower prevalence of excess weight and waist circumference for height
- 2) Increased sleep
- 3) Reduced consumption of sugar-sweetened beverages (SSB)
- 4) Higher fruit and vegetable intake

- 5) Higher water intake
- 6) Reduced TV/video viewing
- 7) Increased physical activity
- 8) Lower prevalence of acanthosis nigricans (AN)

Figure 1 illustrates CHL’s model to influence multiple aspects of the environment to promote healthy food intake and physical activity in young children ages two to eight years old (Braun et al., 2014).

**Figure 1. CHL Conceptual Model**



# The CHL Training Program







### **III. The CHL Training Program**

#### **Training Program Objectives**

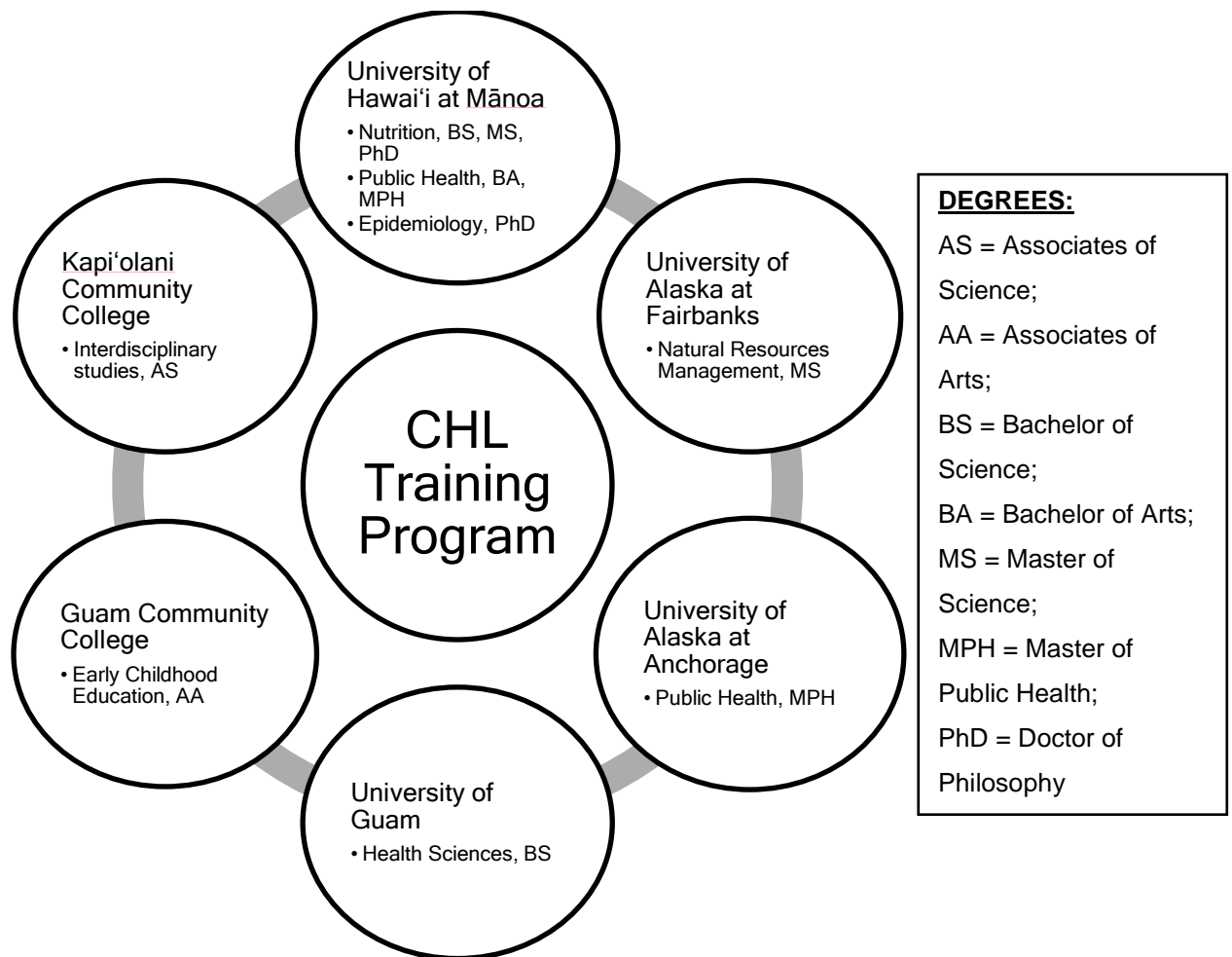
The development of the CHL Training Program (CHL-TP) was an essential component of CHL's multilevel approach to prevent childhood obesity. Approximately one third of the program's resources were invested in training. The CHL-TP's first objective was to train 22 United States Affiliated Pacific Region students in child obesity prevention through selected academic degree programs. A second objective was to enhance the students' academic education with training on childhood obesity prevention strategies and tools, through the offering of culturally appropriate and regionally relevant obesity prevention-related courses and programs.

#### **Training Program Partnerships**

The CHL-TP was a collaborative effort with institutions across the Pacific. Students selected for the program have attended courses at the University of Hawai'i at Mānoa, the University of Guam, Guam Community College, Kapi'olani Community College, and the University of Alaska at Fairbanks and Anchorage (Figure 2).

Partner jurisdictions created selection committees who screened and interviewed student applicants and identified the top candidates for the scholarship awards. Two students from each of Alaska, American Samoa, CNMI, Chuuk (FSM), Guam, Hawai'i, Kosrae (FSM), Pohnpei (FSM), the Republic of the Marshall Islands, the Republic of Palau, and Yap (FSM) were selected for a scholarship to enroll in a degree program at one of the partner institutions (Table 1).

**Figure 2. Institutions, Academic Program Areas and Degrees in the Children’s Healthy Living (CHL) Training Program**



From: Fialkowski MK, et al. Indigenous Workforce Training by the Children’s Healthy Living Program (CHL) to Prevent Childhood Obesity in the Underserved US Affiliated Pacific Region. *J Health Care Poor Underserved*. 2015; 26(2 Supplement): 83-95.

### Training Program Accomplishments

The CHL-TP developed a series of six 1-2 credit seminars that addressed the multiple causes of obesity and provided evidenced-based strategies for childhood obesity prevention. Conducting seminars using an online collaborative approach provided an opportunity for all the CHL trainees to engage in distance learning together while

strengthening their bond as a cohort and their ties to CHL and the region. The CHL-TP also partnered with the University of Hawai'i at Mānoa Public Health Program to allow CHL Trainees to take an indigenous health seminar as a part of their CHL seminar experience.

In addition to the CHL-TP seminar curriculum, CHL modified curriculum for the Food Science and Nutrition (FSHN) course, The Science of Human Nutrition (FSHN 185), offered both through the University of Hawai'i at Mānoa and the University of Hawai'i Outreach College. FSHN 185 utilized an online platform, which allowed for flexible and adaptive nutrition education delivery across the vast region of the Pacific and beyond. The modifications broadened the curriculum to reflect the unique environment and cultural diversity of the Pacific region. New modifications incorporate nutrition education with aspects of commonly consumed food and their significance in societal structure. To further support this Pacific adapted introductory nutrition course, a Pacific Food Guide was developed to help students enrolled in FSHN 185, to better connect the traditional foods of the Pacific with concepts of nutrition (Fialkowski et al, 2016).

<http://manoa.hawaii.edu/ctahr/pacificfoodguide/>

Other curriculum and educational materials developed by the CHL-TP included a comprehensive workshop to provide standardized measurement training to staff and field workers conducting measurements in anthropometry, dietary intake, physical activity, and acanthosis nigricans. The measurement training workshops conducted by CHL were successful in standardizing over 100 anthropometric measurers in 5 years across the Pacific region from Alaska to Micronesia. Workshop materials will continue to be utilized for standardization of educators and staff conducting regional measurements such as Head Start staff and community workers and is part of future curriculum being planned.

Students accepted into the CHL-TP conducted a CHL project in their home jurisdictions that supported childhood obesity prevention. Students at the graduate level blended

these projects with their theses and dissertations. All trainees presented their projects and budgets to a selected project committee for approval prior to implementation. Upon completion of their project all students submitted a formal write up and conducted an oral presentation. Examples of projects completed by graduates of the CHL-TP are outlined in Table 1.

Twenty-four students participated in the CHL-TP. Two Trainees dropped out of the program after their first year, due to personal reasons. The two vacant scholarship positions were offered to two other qualified Trainees from those respective jurisdictions. Two Trainees were released from the program due to poor performance. To date, 6 students (5 graduate and 1 undergraduate) have completed the CHL-TP and attained their degrees (Table 1). Two graduate-level Trainees from CNMI and Alaska are expected to complete their MPH degrees in the Spring of 2016 while 2 graduate level Trainees from American Samoa and CNMI, working towards a PhD in Epidemiology and an MPH, respectively, are expected to complete their degrees in Summer of 2016. Three undergraduate Trainees from American Samoa, Chuuk, and Kosrae are expected to graduate in Spring 2016 with Bachelor's degrees in Public Health (2) and Nutrition (1), respectively. One undergraduate Trainee from Yap is expected to graduate with a Bachelor's degree in Nutrition in Summer 2016. Four undergraduate Trainees from Pohnpei, Palau, Chuuk, and the Marshall Islands are expected to graduate in Fall 2017 with Bachelor's degrees in Health Science (3) and an Associate degree in Early Childhood Education (1), respectively.

**Table 1. CHL Training Program Graduates by Jurisdiction, Degree Type, and Project Description**

Student Name	Jurisdiction	Degree Name/Type	Project Description
Tanisha Aflague	Guam	PhD, Nutrition	To examine the willingness to try fruit and vegetables (F&V) and F&V intake among children, 3-12yrs, attending a cultural immersion camp compared to children from a camp without cultural immersion
Monica Esquivel	Hawaii	PhD, Nutrition	To build evidence on the effectiveness of Child Care Center wellness policies that promote intake of nutrient-dense food, healthy eating habits and nutrition education to improve child diet intake and prevent childhood obesity in Hawaii
Lenora Matanane	Guam	MS, Nutrition	To test whether access and availability to fruits and vegetables in food stores is associated with childhood overweight/obesity prevalence in selected Guam communities
Ashley Morisako	Hawaii	MPH, Native Hawaiian and Indigenous health	To outline the community engagement process instilled to effectively implement and evaluate a garden-based learning curriculum targeted for preschoolers in Hawaii in order to reduce and prevent childhood obesity
Ron Standlee-Strom	Alaska	MS, Natural Resource Management	To determine factors mediating the delivery of effective nutrition education as perceived by educators and Alaskan program participants
Trisha Johnson	Pohnpei	BS, Food Science and Human Nutrition	To determine traditional fruits and vegetables consumed by young children in Pohnpei, Federated States of Micronesia

PhD = Doctor of Philosophy; MS = Master of Science; MPH = Masters of Public Health; BS = Bachelor of Science

### Long-term Plans

The CHL program provided guidance in identifying other funding to Trainees who did not complete their degree programs within the life of the CHL grant. The CHL-TP also continues to serve as a source of professional collaboration and career networking for the Trainees. The CHL-TP plans to do long-term follow-up of the Trainees to gather

information on the career trajectory of graduates.

Curriculum developed by the CHL-TP will continue to be adapted for offering through multiple venues. The Pacific adapted online Introductory Nutrition class (FSHN 185) has been included as one of the options offered to students at the University of Hawai'i at Mānoa in the Fall, Spring, and Summer semesters. This class has also been designated as meeting the Hawaiian, Asian, and Pacific Issues General Education Focus area for the University of Hawai'i system, including the University of Hawai'i Outreach College. The nutrition education resource, the Pacific Food Guide, has also been developed into a web resource available for free at [www.manoa.hawaii.edu/ctahr/pacificfoodguide](http://www.manoa.hawaii.edu/ctahr/pacificfoodguide)

The series of seminars developed for the CHL Trainees on the causes of childhood obesity and evidenced-based strategies for childhood obesity prevention are currently being adapted into a comprehensive distance-learning platform for offering through a CHL Summer Institute. The online platform of the CHL Summer Institute will allow for a wider audience to benefit from its unique and important content. The CHL Summer Institute will offer various courses and modules for credit and non-credit through the University of Hawai'i Outreach College. The University of Hawai'i Outreach College allows for non-University of Hawai'i students to access this unique training opportunity at in-state tuition rates. For further information on the CHL Training Program please see the following resources:

- Fialkowski MK, et al. Indigenous Workforce Training by the Children's Healthy Living Program (CHL) to Prevent Childhood Obesity in the Underserved US Affiliated Pacific Region. *J Health Care Poor Underserved*. 2015; 26(2 Supplement): 83-95.
- CHL Training Program available at:  
<http://www.chl-pacific.org/trainingeducation/program-overview>

# CHL Community Intervention







## IV. CHL Community Intervention

### Target Behaviors, Strategies, and Cross Cutting Functions

CHL's goal was to achieve healthy weight among young children (ages 2 to 8 years) by promoting **six target behaviors**:

1. Increase consumption of fruits and vegetables, preferably locally grown fruits and vegetables
2. Increase physical activity
3. Increase water consumption
4. Increase hours of sleep
5. Decrease consumption of sugar sweetened beverages
6. Decrease screen time

To promote these target behaviors in communities with young children, the CHL team conducted community meetings, reviewed literature, and worked together to identify strategies and activities that would be appropriate for young children and their caregivers. The culture and environment of children and families also were taken into account.

Based on these data, CHL jurisdictions agreed to engage in **six strategies** to promote the target behaviors.

1. Introduce, enhance, and support policy for healthy eating and physical activity of 2-8- year-old children
2. Engage 2 to 8-year-old children in growing and eating local healthy foods
3. Train and support role models to promote CHL's six target behaviors
4. Increase accessibility of environments for safe play and physical activity for young children

5. Increase accessibility of drinking water for young children
6. Provide other education and training related to CHL's six target behaviors

These six intervention strategies were collapsed into **four cross-cutting functions**, signifying the four action areas of the intervention:

1. Strengthen and actualize school wellness policies
2. Partner and advocate for environmental change
3. Promote the CHL message
4. Train trainers (capacity building)



Children making fruit-infused drinking water

Specific recommended activities under each cross-cutting function were provided. Relationships between these activities and the CHL's behavior-change objectives are shown in Table 2. Specific activities conducted in Kagman are shown in the Areas of Focus Column.

**Table 2. Relationship of Areas of Focus to CHL Cross-Cutting Function and Target Behavior**

Cross-Cutting Function	Area of Focus (Activities)	Target Behavior Addressed
<b>1) Review Assessment Data for the Policy and Physical Environment related to the 6 CHL behaviors</b>		
<b>a) Review preschool (Head Start) wellness policy assessment data to identify training needs.</b>	Preschool Wellness Policies & trainings	All behaviors (Increase fruit & vegetable consumption; Increase physical activity; Increase water consumption; Increase sleep; Decrease sugar sweetened beverage consumption; Decrease screen time)
<b>i) Review preschool wellness policy assessment data to identify policy gaps</b>		
<b>ii) Address policy gaps with preschool administration</b>	Preschool Wellness Policies & trainings	All behaviors
<b>iii) Assess policy implementation quality identify strengths and weaknesses)</b>	Preschool Wellness Policies & trainings	All behaviors
<b>iv) Work with preschool administrators to address weaknesses in policy implementation</b>	Preschool Wellness Policies & trainings	All behaviors
<b>b) Review CAT (community assessment toolkit) data related to the physical environment to identify areas for advocacy.</b>	Community Gathering Spaces	Increase fruit & vegetable consumption Increase physical activity Increase water consumption Decrease sugar sweetened beverages
<b>i) Assess the physical environment using the CAT</b>		
<b>ii) Review CAT data related to the physical environment to identify areas for improvements and advocacy</b>	Alliance; Community Gathering Spaces	Increase fruit & vegetable consumption Increase physical activity Increase water consumption Decrease sugar sweetened beverages
<b>iii) Improve CAT-indicated physical activity environments</b>	Community Gathering Spaces	Increase fruit & vegetable consumption Increase physical activity Increase water consumption Decrease sugar sweetened beverages
<b>iv) Advocate (with partners, stakeholders, role models, coalitions, etc.) for CAT-indicated physical activity environment changes</b>	Alliance; Community Gathering Spaces	Increase fruit & vegetable consumption Increase physical activity Increase water consumption Decrease sugar sweetened beverages
<b>2) Partner and Advocate for Environmental Change</b>		
<b>a) Work with existing community organizations and coalitions and/or form new coalitions to advocate for:</b>	Alliance; Community Gathering Spaces	Increase physical activity
<b>i) Better access to parks that are safe and inviting</b>		
<b>ii) Better access to clean water</b>	Alliance; Community Gathering Spaces	Increase water consumption

Cross-Cutting Function	Area of Focus (Activities)	Target Behavior Addressed
iii) Safer environments for walking, biking, etc. (e.g., bike lanes/racks, sidewalks, greenways)	Alliance; Community Gathering Spaces	Increase physical activity
iv) Better food placement in stores	Alliance; Community Gathering Spaces	Increase fruit & vegetable consumption Increase Water consumption Decrease sugar sweetened beverages
v) Gardens and hydroponics	Alliance; Community Gathering Spaces	Increase fruit & vegetable consumption
b) Partner with existing entities to purchase or obtain sponsorship for:		
i) Water in the preschools and childcare centers		
ii) Gardening supplies for preschool kids	Community Gathering Spaces	Increase fruit & vegetable consumption
iii) Sports/play equipment for preschool kids		
iv) Campaigns and messages	Na Ki'i Ola	All behaviors
<b>3) Promote the CHL Message</b>		
a) Support Role Models to deliver CHL messages in various ways (using the CHL role model curriculum as a guide)	Support Community Role Models	All behaviors
b) Enhance existing social marketing campaigns in the intervention communities, and/or develop low-cost local social marketing campaigns related to the 6 CHL behaviors	Na Ki'i Ola	All behaviors
c) Advertise CHL or other activities that promote 6 CHL target behaviors	All areas of focus	All behaviors
<b>4) Train the Trainers</b>		
a) Train individuals to promote gardening in preschools and communities	Workshops	Increase fruit & vegetable consumption
b) Train individuals to lead interactive, hands-on sessions to promote the 6 CHL behaviors	Workshops	All behaviors
c) Train individuals to organize and lead family-based activities that support the 6 CHL behaviors (park clean-ups, hikes, cooking sessions, etc.)	Workshops; Community Gathering Spaces	All behaviors
d) Provide Technical Assistance (TA) to preschool and childcare staff on wellness policies	Preschool Wellness Policies & Trainings	All behaviors
e) Train childcare providers and preschool teachers in curricula related to 6 CHL behaviors	Preschool Wellness Policies & Trainings	All behaviors
f) Train role models (community champions, role celebrities, role models)	Support Community Role Models	All behaviors

# CHL Research Activities





## **V. Research Activities**

### **CHL Research Aims and Design**

CHL measured two to eight year-old children to identify young child overweight and obesity, acanthosis nigricans, and health behavior information about sleep, physical activity, screen time, eating of fruits and vegetables, and consumption of sugar-sweetened beverages and water.

### **Research Methods**

#### **Study Design**

The cross-sectional CHL study design collected data on body size, functional outcomes of obesity (acanthosis nigricans), food intake, physical activity, lifestyle behavior which included screen time, and demographics (baseline or prevalence). These were measured through anthropometry (height, weight, and waist circumference), Food and Activity Logs, questionnaires, accelerometry, and visual inspection (of the neck).

Data were collected between October 2012 and September 2013 in American Samoa, Alaska, Commonwealth of the Northern Mariana Islands (CNMI), Guam and Hawaii, and between October 2013 and June 2015 in FAS.

CHL research included data from the Federated States of Micronesia (Yap, Chuuk, Kosrae, and Pohnpei), the Republic of the Marshall Islands, and the Republic of Palau; referred to collectively in CHL as the Freely Associated States (FAS), and all other CHL jurisdictions – Alaska, American Samoa, CNMI, Guam, and Hawaii.

#### **Selection of Communities**

Communities were identified in Alaska, American Samoa, CNMI, Guam and Hawaii using the 2000 U.S. Census tract data (U.S. Census Bureau). In the FAS, 2010 country census data were used to inform selection of sites. The community eligibility criteria included population size of >1000 (except for FAS), >25% of the population of indigenous/native descent (except 15% in Alaska due to no targeted census tract within

the CHL catchment area with a population of more than 1000), having more than 25% indigenous /native ethnic groups, and >10% of the population under age 10 years. Additional selection criteria included adequate settings for measuring children (e.g., schools), reasonable accessibility for the CHL team, and geographic representation for FAS.

For the study of the effectiveness of the CHL intervention in American Samoa, CNMI, Guam and Hawaii, communities were selected as matched pairs. Four communities were selected (two matched-pairs). Two communities were selected (1 matched-pair) in Alaska. The matching included similar criteria as above, as well as community characteristics such as access to food stores and ethnic distribution. In each pair, one community was randomly assigned to intervention and the other to a delayed optimized intervention (community will receive intervention at the end of the main study). Two additional non-matched communities (third and fourth for Alaska and fifth and sixth for other jurisdictions) were selected from the eligible list of communities to serve as temporal indicators.

A second round of measurement occurred around 24-months from the baseline in Alaska, American Samoa, and Commonwealth of the Northern Mariana Islands (CNMI), Guam, and Hawaii to examine if CHL intervention activities in those jurisdictions were effective.

Smaller amounts of data were collected from the “temporal” communities. The temporal communities served to show changes in BMI over time, in communities that did not have any CHL activities.

***This report includes only the baseline data.*** The results of the CHL-wide intervention study examining changes between baseline and 24-month data will be available later in a separate report.



## Selection of Participants

Recruitment activities involved schools and other community venues and activities. Recruitment took place at Head Start sites, preschools, day care centers, kindergartens, WIC sites, community health centers and other appropriate venues (e.g., parks and community recreation centers). Recruitment efforts, led by CHL staff in each jurisdiction, involved close collaboration with community liaisons (e.g., teachers, school staff, program directors, matai, mayors) to enhance participation. The teams in all jurisdictions tailored the recruitment strategies to work effectively with the stakeholder organizations while meeting recruitment goals of CHL.

*NOTE: The following numbers are based on those who consented, rather than those who completed, the measures.\*\**

**Table 1: Number of Participants Consented in each Jurisdiction for CHL Research**

Number of Participants Consented in each Jurisdiction for CHL Research	
Jurisdiction Communities	Number Consented
Alaska <i>Anchorage, Fairbanks, Kenai, Mat-Su Valley</i>	713
American Samoa <i>Fagaitua/Pagai/Amaua/Auto/Utusia, Leloaloe/Aua, Onenoa/Tula/Alao, Aoloau/Aasu</i>	978
CNMI <i>Koblerville/San Antonio, Oleai, Kagman, San Roque, Saipan</i>	924
Guam <i>Yigo, Yona, Agat, Sinajana</i>	885
Hawaii <i>Nanakuli, Waimanalo, Hilo, Wailuku, Kauai, Molokai</i>	988
CHL Intervention Study Data (total)	4,488

<b>Freely Associated States</b>	
<b>Jurisdiction Communities</b>	<b>Number Consented</b>
<b>Pohnpei</b> <i>Nett, Mand, Sekere, Wenik</i>	<b>212</b>
<b>Republic of the Marshall Islands</b> <i>Majuro, Ebeye (Kwajalein atoll), Ailinglaplap</i>	<b>218</b>
<b>Palau</b> <i>Koror, Ngaraard, Melekeok, Airai</i>	<b>214</b>
<b>Yap</b> <i>Rull, Tomil, Weloy, Ulithi</i>	<b>205</b>
<b>Kosrae</b> <i>Tafunsak, Lelu, Sansrik, Malem, Utwe/Walung</i>	<b>207</b>
<b>Chuuk</b> <i>Weno (Sapuk, Iras), Tol, Tonoas, Uman</i>	<b>231</b>
<b>FAS Prevalence Data (total)</b>	<b>1,287</b>
<b>CHL Total (CHL Intervention + FAS Prevalence)</b>	<b>5,775</b>

# Community Report





## VI. Fagaitua Community Report

The total number of responses for each question may not match the total number of consented participants. Parents identified their children as eligible (including age eligible) and consented, upon which children participated in the study. In data analysis, upon calculation of age by study metrics, some children were outside the defined age range and were excluded from the analysis. In addition, not all who consented to participate in the study completed all parts or all items of all the questionnaires, so the results for each item reflect only those who answered that question or whose data were available at the time of this report. Potential outliers with extreme values (defined as those with a value of 3 standard deviations (sd) above or below the mean) were also excluded from this report. The total percentage may not add up to 100 because of rounding.





# Child Demographics







## Section 1. Child Demographics

A total of 155 children participated from Fagaitua. Parents / caregivers answered multiple questions about each of their children participating in the CHL research program. The following section reports some of that information collected, including child's sex, age, race and ethnicity.

**Sex:** All 155 children participated had data on sex.

**Table S.1.1. Number and Percent of Participants by Sex**

Sex	Number	Percent
Boys	79	51.0%
Girls	76	49.0%
Total	155	100.0%

**Age:** Child's age was calculated between age in years elapsed between child's date of birth and the date where anthropometry was measured. The distribution of age of the children is shown below.

**Table S.1.2. Number and Percent of Participants by Age**

Age in Years	Number	Percent
Age 2	16	10.3%
Age 3	26	16.8%
Age 4	32	20.7%
Age 5	29	18.7%
Age 6	22	14.2%
Age 7	16	10.3%
Age 8	14	9.0%
Total	155	100%

**Table S.1.3. Number and Percent of Participants by Age Group**

Age in Years	Number	Percent
2-5 years old	103	66.5%
6-8 years old	52	33.6%
Total	155	100%

### Racial and Ethnic Heritage

The data collection questions used in this section and for the household demographics came from various sources. Some items were generated by CHL staff; some came from The Center for Alaska Native Health Research Demographic and Medical Screening Questionnaire, the Behavioral Risk Factor Surveillance System 2011 survey, the 2011 Middle School Youth Risk Behavior Survey.

**Table S.1.4. The Distribution of Race of the Children Using the U.S. Office of Management and Budget (OMB) Definition**

Race of child of OMB definition	Number	Percent
Native Hawaiian or other Pacific Islander	149	96.1%
More than one race	6	3.9%
Total	155	100%

**Table S.1.5. The Distribution of Race/Ethnicity of the Children Using the CHL Pacific Definition Which Prioritize the Indigenous Ethnic Groups in the Jurisdiction (CHL Pacific)**

Race of child of Pacific definition	Number	Percent
Samoan	133	85.8%
Native Hawaiian mixed with other race group	16	10.3%
Mixed Samoan	6	3.9%
Total	155	100%

## Child's Birth Place

Parents or caregivers responded to the question: "In what city or country was your child born?"

**Table S.1.6. Child's Place of Birth**

Birth Place	Number	Percent
American Samoa	145	93.6%
West Samoa	5	3.2%
Hawaii	3	1.9%
USA (other than Hawaii)	2	1.3%
Total	155	100%

Parents responded to the question about residence: "How many years has your child lived here?"

Among the 155 children, 151 had information on this question. Among them, **133 (88.1%) lived their whole life in Fagaitua** and the rest, 11.9%, spent one fifth to three quarters of their life in Fagaitua.

## Language Child Speaks

The language distribution of the children in the survey is listed in the following table.

*Note: Language responses may total over 155 and 100% because some respondents could speak more than one language.*

**Table S.1.7. Top Languages Child Speaks**

Top languages child speaks	Number	Percent
Samoan	85	54.8%
English and Samoan	69	44.5%
English	1	0.6%
Total	155	100%

Samoan was the top language spoken at home (82.0%). Children in Fagaitua also spoke English at home. Fifty-one percent of children spoke one language other than English at home. **Forty-eight percent of the children spoke English and at least one other language.**

### **Summary**

Among the 155 children, 76 (49.0%) were girls and 79 (51.0%) were boys. Furthermore, 103 (66.5%) were of age group 2-5 years and 52 (33.6%) were of age group 6-8 years. Among the 155 children, all had information on race, of which 133 (85.8%) were Samoan.



*Child Anthropometric  
Measurement Results*





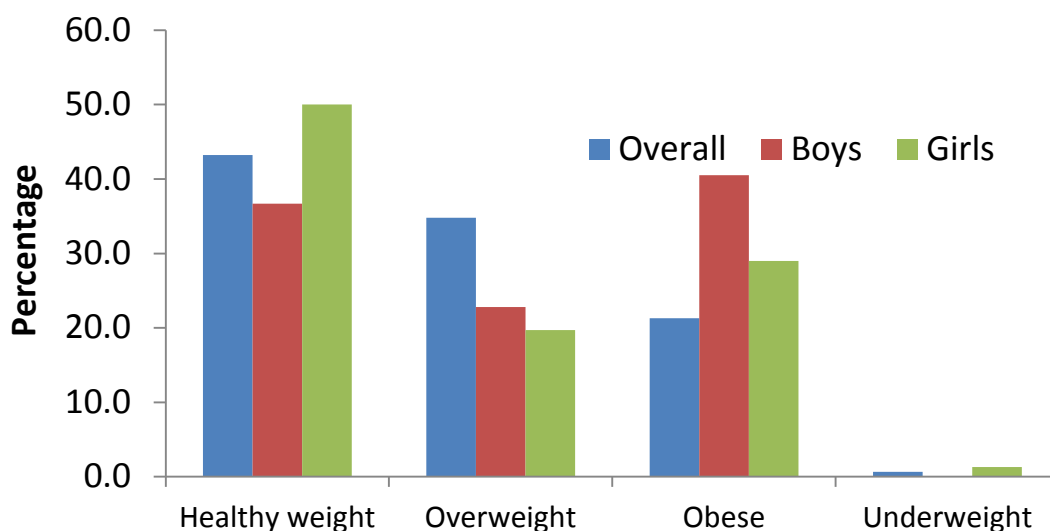
## Section 2. Child Anthropometric Measurement Results

### Body Mass Index

Among the 155 children who participated in Fagaitua, all had valid measurements of Body Mass Index (BMI).

Overweight was defined as the 85th - 94th percentile for BMI (weight, kg/(height, m<sup>2</sup>)) and obesity was defined as greater than or equal to the 95th percentile for BMI (Centers for Disease Control and Prevention, 2000).

#### *Prevalence of Overweight and Obesity of Study Children in Fagaitua*



A total of 155 children were included for this analysis. Among them, 43.2% were healthy weight, 21.3% were overweight, 34.8% were obese, and 0.7% was underweight. No difference was found between boys and girls, or between children ages 2-5 and those 6-8 years old.

### Abdominal Obesity

The International Diabetes Federation (IDF) suggests that children 6 years or older with a waist circumference equal or greater than the 90<sup>th</sup> percentile be considered as having abdominal obesity (Zimmet et al., 2007). For children younger than 6 years of age,

there is insufficient information for such classification. Using children ages 6-8 years in the CHL data set as the reference data, the 90<sup>th</sup> percentile cutoff value is 71.47 cm.

The 90<sup>th</sup> percentile cutoff value reported from the IDF, which uses “a nationally representative sample” of boys and girls, is 67.65 cm for 7-year olds.

Among the 52 participants in Fagaitua between the ages 6-8 years, using the CHL cutoff was **7 (13.5%) of 6-8 year olds were considered as having abdominal obesity** for the IDF cutoff value, **16 (30.8%) of 6-8 year olds were considered as having abdominal obesity.**

### **Acanthosis Nigricans (AN)**

Acanthosis nigricans is an indicator of high insulin levels, which can lead to insulin resistance and Type 2 diabetes. Acanthosis nigricans presents as a light brown, black velvety, rough, or a thickened lesion on the surface of the skin. These features are usually seen in body folds and creases, on the nape of the neck, armpits, and over the knuckles. This screening suggests a problem with handling the body’s insulin, and the possibility of having pre-diabetes or diabetes. CHL staff encouraged the parents/caregivers of these children to make an appointment for these children to see a doctor for further information and care.

Burke’s (1999) quantitative scale was utilized, with scores given for the severity of AN. Among the 155 children who participated, all had data on AN, of which 8 (5.2%) screened positive for AN.

### **Summary**

Overall, 56% of children measured in Fagaitua were overweight or obese. Strategies that have found to be effective in the prevention of childhood obesity include: (1) A healthy lifestyle, which encourages children to move more, sleep more and spend less screen time. (2) A healthy diet, which encourages children to drink more water, eat more fruit and vegetables and consume fewer sugar sweetened beverages.





*Child Nutrition  
And Diet Reports*





### Section 3. Child Nutrition and Diet Reports

Parents and caregivers completed logs of everything their children ate and drank for two assigned days. The design of the logs was based on previous research conducted by the principal investigator as well as other team members.

For Fagaitua, 130 Food and Activity Logs were reviewed by CHL staff and are included in this report.



The top five foods, beverages or condiments reported that children ate are shown in the table below.

**Table S.3.1. Top 5 Foods, Beverages, or Condiments Most Commonly Reported**

Food description	Fagaitua	
	Number of times reported	% of all foods reported
1. White rice	253	6.4%
2. Milk, 2%	144	3.6%
3. White bread	138	3.5%
4. Milk, 1%	137	3.4%
5. Canned sweetened tea	106	2.7%

### Fruit and Vegetable Intake

The United States Department of Agriculture (USDA) daily recommended amounts of fruits and vegetables for children 2-8 years of age are shown in the table below.

United States Department of Agriculture's My Daily Food Plan		
Daily recommended amount of fruits and vegetables	 VEGETABLES	 FRUITS
2 years	1 cup	1 cup
3 years	1 ½ cup	1 cup – 1 ½ cup
4-5 years	1 ½ cup – 2 cups	1 cup – 1 ½ cup
6-8 years	1 ½ cup – 2 ½ cups	1 cup – 2 cups

Children should consume at least 1 cup of fruit and 1 cup of vegetables daily, with these recommendations (as shown in the table) increasing as children age. This aligns with the CHL behavioral intervention target or goal: to eat more fruits and vegetables daily.

In Fagaitua, children ate 2.3 servings of fruits and vegetables per day on average as recorded by parents/caregivers on the two-day food log. The average servings of fruit was 1.4 per day and the average servings of vegetables was 1.0 per day.

78 children (60.0%) in Fagaitua met the U.S. national recommendations for daily fruit consumption.

23 children (17.7%) in Fagaitua met the U.S. national recommendations for daily vegetable consumption.

Note that the percentages meeting the fruit and vegetable recommendations may be underestimated as two days of food records may not reflect the true long-term diets of the children. However, a low proportion of children meeting the recommendation even using two days of records can be used as an indication that the population should increase intake.

## Water

Children should consume at least 32 - 40 fluid ounces (4 - 5 cups) of water from all beverages (milk, juice, drinking water) daily. CHL behavioral intervention target or goals were to encourage children to drink more water.

88.5% of parents / caregivers reported on the two-day Food and Activity Log that their

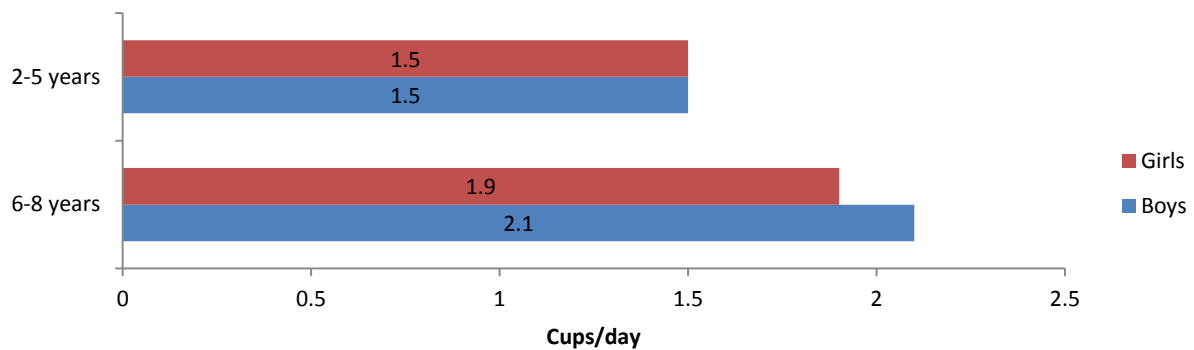
child drank water over these two days.

On average, children in Fagaitua drank 1.8 cups of water daily.

**Table S.3.3. Intake of Daily Drinking Water by Age Group and Sex**

Drinking water intake (cups / day) by sex	Fagaitua	
	Number	Average
<b>Boys</b>		
2 – 5 years	31	1.5
6 – 8 years	35	2.1
<b>All</b>	66	1.8
<b>Girls</b>		
2 – 5 years	22	1.5
6 – 8 years	42	1.9
<b>All</b>	64	1.7

**Recorded intake of Daily Drinking Water (cups / day) by Sex and Age for all Children**



**Sugar-Sweetened Beverages (SSB)**

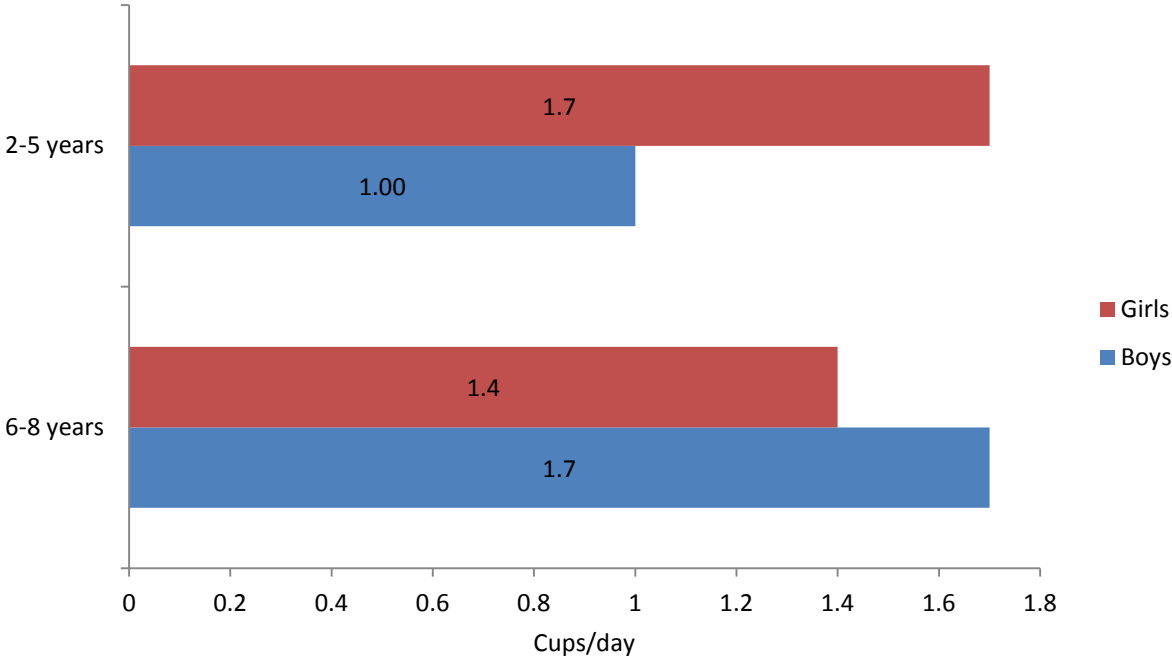
CHL behavioral intervention targets or goals are to limit (or avoid) the consumption of sugar-sweetened beverages (SSB).

From the two-day food record, 111 (85.4%) of parents/caregivers in Fagaitua reported that their child consumed SSBs.

Children drank 1.4 cups of sugar-sweetened beverages on average daily.

For Fagaitua, the most frequently consumed SSB included canned sweetened tea, canned orange-apricot drink, and soda.

***Children’s intake of Sugar-Sweetened Beverages (cups/day) for Fagaitua***



**Table S.3.4. Mean SSB intake (cups/day) for all Children and those with SSB's Recorded for Fagaitua**

Mean SSB intake (cups/day)	All children		SSB Recorded	
	Number	Mean (SD)	Number	Mean (SD)
<b>Boys</b>				
2 – 5 years	31	1.0	22	1.4
6 – 8 years	35	1.7	30	2.0
<b>All</b>	66	1.3	52	1.7
<b>Girls</b>				
2 – 5 years	22	1.7	22	1.7
6 – 8 years	42	1.4	37	1.6
<b>All</b>	64	1.5	59	1.7

**Table S.3.5. Proportion of SSB Consumption Greater than 2 Cups per day Among all Children and Only Children with SSB Recorded for Fagaitua**

Proportion of children with SSB consumption greater than 2 cups per day	All children, number (%)		SSB Recorded, number (%)	
	0-2 cups	greater than 2 cups	0-2 cups	greater than 2 cups
<b>Boys</b>				
2 – 5 years	26 (83.9%)	5 (16.1%)	17 (77.3%)	5 (22.7%)
6 – 8 years	23 (65.7%)	12 (34.3%)	18 (60.0%)	12 (40.0%)
<b>All</b>	49 (74.2%)	17 (25.8%)	35 (67.3%)	17 (32.7%)
<b>Girls</b>				
2 – 5 years	14 (63.6%)	8 (36.4%)	14 (63.6%)	8 (36.4%)
6 – 8 years	30 (71.4%)	12 (28.6%)	25 (67.6%)	12 (32.4%)
<b>All</b>	44 (68.8%)	20 (31.3%)	39 (66.1%)	20 (33.9%)







*Physical Activity From Accelerometers*





## Section 4. Physical Activity from Accelerometers

To provide data on their physical activity levels, about 100 children in each community were fitted with Actical accelerometers on the first day of measurement. Accelerometers are objective tools for measuring physical activity. Children were instructed to wear the accelerometers for 6 days without removal. Accelerometers were set to record children's movements at each second. Recorded movements are known as counts. The accelerometer counts were summed to derive the number of counts per minute (cpm). These cpm were then used to derive activity levels based on the following criteria:

- Sedentary, if  $\text{cpm} \leq 40$
- Light, if  $41 \leq \text{cpm} \leq 2295$
- Moderate, if  $2296 \leq \text{cpm} \leq 6815$
- Vigorous, if  $\text{cpm} \geq 6816$

**Sedentary** (physical inactivity) behaviors includes excessive sitting, lying, as well as screen time. In this study, time spent on sleeping was not excluded from the sedentary results and was also considered as sedentary. **Light** activities include things such as walking at a slow pace or cleaning. **Moderate** types of activities include brisk walking, dancing and some active play, while **Vigorous** activities include running, fast cycling and fast swimming.

Potential outliers with extreme values (defined as those with a value of 3 standard deviations (sd) above or below the mean) were excluded from this report. In Fagaitua, Actical accelerometers from 89 children provided valid data on their physical activity levels. After excluding outliers, on average children spent 10.6 hours in sedentary activities.

On average, children in Fagaitua spent 12 hours on light activities. On average, children in Fagaitua engaged 1 hour and 17 minutes on moderate activities. On average, children in Fagaitua spent 8 minutes on vigorous activities. On average, children spent

1 hour and 26 minutes on moderate or vigorous activities.

Of the 83 children with accelerometer data, 65 (78.3%) of children in Fagaitua met the U.S. national recommendations for achieving at least 60 minutes of moderate or vigorous activity daily, which is also a CHL behavioral intervention target or goal.

This information can be found in the following table.

**Table S.4.1. Hours of Physical Activity by Type**

Physical activity from accelerometer	Mean hours/day	
<b>Sedentary activities (weighted)</b>	10.6	
<b>Light activities (weighted)</b>	12.0	
<b>Moderate activities (weighted)</b>	1.3	
<b>Vigorous activities (weighted)</b>	0.1	
<b>Moderate and vigorous activities (weighted)</b>	1.5	
	Number	%
<b>Met national recommendation of <math>\geq 60</math> minutes of moderate or vigorous physical activity daily</b>	65	78.3%

**Summary**

In Fagaitua, a total of 89 children had valid accelerometer data. Among those 89 children, daily average minutes of moderate and vigorous physical activity (MVPA) per day were 90.0. No difference was found between the averages of those ages 2-5 and those 6-8 years old. Seventy-eight percent of those 89 children met the national recommendation of 60 minutes a day of MVPA. No difference was found between those ages 2-5 and those 6-8 years old.



# Screen Time





## Section 5. Screen Time

The following set of questions was adapted from Buckworth, J., & Nigg, C. (2004); Nigg, C. R. (2005); Haas, S., & Nigg, C. R. (2009).

Parents were asked, “On usual weekdays (Monday to Friday), how many hours a day does your child spend watching Television and/or videos/ DVD?” They were asked the same question about the weekend days.

Among the 155 children participated in Fagaitua, **time spent on TV watching per day was 1.9 hours per day** overall, 1.9 hours per day on weekdays, and 2.1 hours per day on weekends. The following table summarizes the distribution of duration of TV watching.

**Table S.5.1. Hours per day of TV Watching**

Hours per day child watches TV (n=156)	Percent of children		
	Per Day (adjusted for weekday and weekend)	Per Weekday	Per Weekend day
1/2 hour or less	14.2%	18.7%	25.2%
More than 1/2 hour up to 2 hours	44.5%	52.9%	36.1%
More than 2 hours up to 4 hours	33.6%	22.6%	29.7%
More than 4 hours up to 6 hours	7.7%	5.2%	8.4%
More than 6 hours up to 7 hours	--	0.7%	0.7%
<b>Total</b>	100%	100%	100%

### **INACTIVE Video Games (Per day, Per Weekday, and Per Weekend day)**

Parents were asked, “On a usual weekdays (Monday to Friday), how long on average a day does your child spend playing INACTIVE video games (DS, Play station, XBOX, Wii

computer games, etc.)?” They were asked the same question about the weekend days.

Among the 155 children participated in Fagaitua, a total of 154 had data on the overall time spent on inactive video games. The **overall average among those 154 children was 1.0 hours/day**. Average inactive video time on weekdays was 1.0 and on weekends was 1.0 hours/day. The following table summarizes the distribution of duration of inactive video playing time.

**Table S.5.2. Hours per day of Inactive Video Games**

Hours per day child spent on inactive video games	Percent of children		
	Per Day (adjusted for weekday and weekend)	Per Weekday	Per Weekend day
1/2 hour or less	52.6%	58.4%	55.8%
More than 1/2 hour up to 2 hours	27.9%	26.0%	28.6%
More than 2 hours up to 4 hours	16.2%	12.3%	13.6%
More than 4 hours up to 6 hours	3.3%	3.3%	2.0%
More than 6 hours up to 7 hours	--	--	--
<b>Total</b>	100%	100%	100%

**ACTIVE Video Games (Per day, Per Weekday, and Per Weekend day)**

Parents were asked, “On a usual weekdays (Monday to Friday), how long on average a day does your child spend playing ACTIVE video games (DS, Play station, XBOX, Wii computer games, etc.)?” They were asked the same question about the weekend days.

Among the 155 children participated in Fagaitua, a total of 154 had data on the overall time spent on active video games. The **overall average among those 154 children was 1.1 hours per day**. A total of 154 children had data on weekday active video time. Average active video time on weekdays was 1.1 hours per day. A total of 153 children had data on weekend active video time. Average active video time on weekend was 1.2



hours per day. The following table summarizes the distribution of duration of active video playing time.

**Table S.5.3. Hours per day of Active Video Games**

Hours per day child spent on active video games	Percent of children		
	Per Day (adjusted for weekday and weekend)	Per Weekday	Per Weekend day
1/2 hour or less	49.4%	57.1%	51.6%
More than ½ hour up to 2 hours	26.6%	24.0%	28.1%
More than 2 hours up to 4 hours	19.5%	16.2%	15.7%
More than 4 hours up to 6 hours	4.6%	2.6%	4.6%
More than 6 hours up to 7 hours	--	--	--
<b>Total</b>	100%	100%	100%

### Screen Time - Overall

This variable was created by adding the hours for watching TV and DVDs, the hours playing active video games, and the hours playing inactive video games. The overall mean is a weighted average of weekday and weekend hours.

Among the 155 children participated in Fagaitua, 154 had data on the overall screen time, which averaged 4.0 hours. A total of 153 had data on weekday screen time, which averaged 3.8 hours. A total of 154 had data on weekend screen time, which averaged 4.3 hours . The following table summarizes the distribution of duration of screen time.

**Table S.5.4. Hours per day of Screen Time**

Hours per day child spent on screen time	Percent of children
--	---------------------

	Per Day (adjusted for weekday and weekend)	Per Weekday	Per Weekend day
<b>1/2 hour or less</b>	11.0%	16.3%	19.5%
<b>More than ½ hour up to 2 hours</b>	20.8%	22.9%	18.8%
<b>More than 2 hours up to 4 hours</b>	24.7%	23.5%	16.2%
<b>More than 4 hours up to 6 hours</b>	17.5%	15.7%	22.1%
<b>More than 6 hours</b>	26.0%	21.6%	23.4%
<b>Total</b>	100%	100%	100%

## Summary

A total of 155 children were included in the analysis of screen time. Among them, average screen time such as watching TV, video games, or DVD, or playing active or inactive video games was 4.0 hours. No difference was observed between the averages of boys and girls, or between those ages 2-5 and those ages 6-8 years old.

While the national recommendation is for each child to spend 2 or less hours of screen time every day, **only 49 (31.6%) of our study children met this recommendation.** No difference was found between boys and girls, or between those ages 2-5 and those ages 6-8 years old. A vast majority 68.4% of children appear to be spending too much time watching screens! This is an opportunity for both parents and educators to intervene to help children spend less screen time.





## Section 6. Sleep

The National Sleep Foundation **recommends** for 2 year olds: 11-14 hours of sleep/night; for 3 to 5 year olds: 10-13 hours/night; and for 6 to 8 year olds: 9-11 hours/night. The National Sleep Foundation also gives a **range** that may be appropriate for an individual child which is a bit wider with 9-16 hours for 2 year olds; 8-14 hours for 3 to 5 year olds; and 7-12 hours for 6 to 8 year olds.

Parents were asked, “How many hours of sleep on average does your child get in a 24-hour period (at night and in naps)?” The respondents were asked to choose from 0 hours to over 13 hours in half hour increments. For those who chose over 13 hours, 13.5 hours was assigned instead; hence, the maximum hours are at 13.5 hours.

Some participants misunderstood the question but put down child’s nap time or hours sleep on the previous night instead of average sleep duration. Therefore, observations where sleep duration was less than 3.5 hours were removed from this report as those values are more or less considered as biologically implausible values.

**Table S.6.1. Number and Percent of Children’s Average Hours of Sleep per day by Age**

Hours of sleep in 24 hours at night and in naps (on average and from parent / caregiver report)	Number	%
<b>2 year olds</b>	11	100%
<b>Less than 9 hours</b>	3	27.3%
<b>9 hours to less than 11 hours</b>	1	9.1%
<b>11 hours or more (to 13.5 hours)</b>	7	63.6%
<b>3 – 5 year olds</b>	73	100%
<b>Less than 8 hours</b>	5	6.9%
<b>From 8 hours to less than 10 hours</b>	21	28.8%
<b>From 10 hours to 13.5 hours</b>	47	64.4%
<b>6 – 8 year olds</b>	38	100%

Hours of sleep in 24 hours at night and in naps (on average and from parent / caregiver report)	Number	%
Less than 7 hours	1	2.6%
From 7 hours to less than 9 hours	12	31.6%
From 9 hours to 13.5	25	65.8%

**Table S.6.2. Number and Percent of Children Meeting Recommended Hours of Sleep**

Met recommended hours of sleep	Number	%
Two year olds met recommendation of 11 – 14 hours of sleep	7	63.6%
Three to five year olds met recommendation of 10 – 13 hours of sleep	47	64.4%
Six to eight year olds met recommendation of 9 – 11 hours of sleep	25	65.8%

The following questions were modified from The Tayside children’s sleep questionnaire (McGreavey, Donnan, Pagliari, & Sullivan, 2005).

**Table S.6.3. Number and Percent of Minutes to Fall Asleep**

How long after going to bed does your child usually fall asleep?	Number	%
0 to less than 15 minutes	42	27.1%
15 to less than 30 minutes	61	39.4%
30 to less than 45 minutes	19	12.3%
45 to less than 60 minutes	11	7.1%
60 minutes and more	22	14.2%
<b>Total</b>	<b>155</b>	<b>100%</b>

**Table S.6.4. Number and Percent of Children with Difficulty Getting to Sleep**

<b>The child has difficulty getting to sleep at night (and may require a parent to be present)</b>	<b>Number</b>	<b>%</b>
<b>This sleep behavior never occurs</b>	73	47.1%
<b>The behavior occurs once or twice a month</b>	22	14.2%
<b>Occurs one to two times a week</b>	23	14.8%
<b>Occurs between three and five nights a week</b>	7	4.5%
<b>The sleep behavior happens every night</b>	30	19.4%
<b>Total</b>	155	100%

**Table S.6.5. Number and Percent of Children Not Falling Asleep in Own Bed**

<b>Child does not fall asleep in his or her own bed.</b>	<b>Number</b>	<b>%</b>
<b>This sleep behavior never occurs</b>	71	46.1%
<b>The behavior occurs once or twice a month</b>	24	15.6%
<b>Occurs one to two times a week</b>	33	21.4%
<b>Occurs between three and five nights a week</b>	2	1.3%
<b>The sleep behavior happens every night</b>	24	15.6%
<b>Total</b>	154	100%

**Table S.6.6. Number and Percent of Children Difficulty Falling Asleep After Wakening**

<b>After waking up in the night, child has difficulty falling asleep again by himself or herself.</b>	<b>Number</b>	<b>%</b>
<b>This sleep behavior never occurs</b>	76	49.0%

The behavior occurs once or twice a month	31	20.0%
Occurs one to two times a week	18	11.6%
Occurs between three and five nights a week	7	4.5%
The sleep behavior happens every night	23	14.8%
<b>Total</b>	<b>155</b>	<b>100%</b>

**Table S.6.7. Number and Percent of Children Sleeps Some of the Night in Parent's Bed**

Child sleeps in the parent's bed at some time during the night	Number	%
This sleep behavior never occurs	45	29.0%
The behavior occurs once or twice a month	30	19.4%
Occurs one to two times a week	26	16.8%
Occurs between three and five nights a week	12	7.7%
The sleep behavior happens every night	42	27.1%
<b>Total</b>	<b>155</b>	<b>100%</b>

**Table S.6.8. Number and Percent of Children Needing Parent to Replace a Comforter After Waking in Night**

If child wakes, he or she uses a comforter (e.g. pacifier or binky) and requires a parent to replace it.	Number	%
This sleep behavior never occurs	132	85.7%
The behavior occurs once or twice a month	6	3.9%
Occurs one to two times a week	4	2.6%
Occurs between three and five nights a week	5	3.3%
The sleep behavior happens every night	7	4.6%
<b>Total</b>	<b>154</b>	<b>100%</b>



**Table S.6.9. Number and Percent of Children Wanting a Drink During the Night**

Child wants a drink during night (including breast or bottle-feed)	Number	%
This sleep behavior never occurs	76	49.4%
The behavior occurs once or twice a month	26	16.9%
Occurs one to two times a week	31	20.1%
Occurs between three and five nights a week	7	4.6%
The sleep behavior happens every night	14	9.1%
<b>Total</b>	<b>154</b>	<b>100%</b>

**Table S.6.10. Number and Percent of Children with Sleeping Difficulties**

Do you think your child has sleeping difficulties?	Number	%
No	138	90.2%
Yes	15	9.8%
<b>Total</b>	<b>153</b>	<b>100%</b>

**Summary**

Among the 84 two to five year olds, 64% met the national recommendation of sleep of between 11-13 hours daily. Another 28% of children slept more than 8 hours but less than 11 hours daily and 7% slept less than 8 hours. About 30 (36%) of our younger children (2-5 years old) did not meet the national recommendation of 11-13 hours daily of sleep. This is an opportunity for both parents and educators to intervene to help children get more sleep.







## Section 7. Medical

Parents answered the question: Does your child have any current medical conditions diagnosed by a doctor? Among the 155 children, 154 had data on this and 14 (9.1%) reported that their children had a medical conditions diagnosed by a doctor. The top two medical conditions were asthma (13, 8.4%) and eczema (1, 0.7%).





*Early Life & Feeding  
Of A Child*







## Section 8. Early Life and Feeding of Child

### Birth Weight

Among the 155 children participated from Fagaitua, a total of 118 had information on birth weight. The distribution of birth weight into three groups is summarized in the following table.

**Table S.8.1. Number and Percent of Children by Birth Weight**

Birth Size	Number	%
Low birth weight < 2500 g	9	7.6%
Healthy birth weight (2500 – 4000 g)	95	80.5%
High birth weight > 4000 g	14	11.9%

Among the 155 children participated in Fagaitua, a total of 11 had information on birth length. Among the 11 children, 4 (36.4%) had birth length below the 5<sup>th</sup> percentile using the CDC 2000 reference data, which is at 45.57 cm.

### Early Feeding Pattern

Among the 155 children participated in Fagaitua, a total of 144 had information on breastfeeding. Among the 144 children, 110 (76.4%) of children were reported to ever have breastfed.

**Table S.8.2. Number and Percent of Children ever Breastfed or fed Breast Milk**

Child ever Breastfed or fed Breastmilk	Number	%
Yes	110	76.4%
No	34	23.6%
Total	144	100%
If Yes, (about children who were ever breastfed)		
Mean age child stopped breastfeeding or being fed breast milk (months) (n=89)	10.3 months	

Among the 155 children participated in Fagaitua, a total of 144 had information on formula feeding. Among those 144 children, 117 (81.3%) of children were reported to have ever formula fed. Mean age of children started formula feeding or stopped formula feeding is reported in the following table.

**Table S.8.3. Number and Percent of Children ever fed Formula**

<b>Child ever fed formula</b>	<b>Number</b>	<b>%</b>
<b>Yes</b>	117	81.3%
<b>No</b>	27	18.8%
<b>Total</b>	144	100%
<b>If Yes, (about children who were fed formula)</b>		
<b>Mean age (sd) child first fed formula (months) (n=101)</b>	4.1 months	
<b>Mean age (sd) child completely stopped drinking formula (months) (n=83)</b>	14.5 months	

A total of 122 out of the 155 children had information on age when the child was fed anything other than breast milk or formula (juice, cow's milk, sugar water, baby food, or anything else, even water). The mean age of this was 7.8 months.



# Household Demographics & Measures





## Section 9. Household Demographics and Measures

Parents and other caregivers brought their children to participate in the CHL measurement study. The following section summarizes the participant's relationship to the child, the parent or caregiver's marital status, educational achievement, employment status, family income, and family structure.

### Relationship

Relationship of the caregiver participant to the child is summarized in the following table.

**Table S.9.1. Number and Percent of Caregiver's Relationship to Child**

Relationship	Number	Percent
Biological mom	96	61.9%
Biological dad	28	18.1%
Grandmother	14	9.0%
Legal guardian, other	7	4.5%
Adoptive mom	6	3.9%
Step dad	4	2.6%

### Marital Status

A total of 153 out of the 155 participants had marital status information of the respondent (see the following table).

**Table S.9.2. Frequency and Percent of Caregiver's Marital Status**

Marital Status	Number	Percent
Married	118	77.1%
Single and living with boyfriend, girlfriend, or partner	18	11.8%
Single and not living with boyfriend, girlfriend, or partner	9	5.9%
Divorced	3	2.0%
Widowed	3	2.0%
Separated	2	1.3%

### Household Size and Multi-generation Households

All 155 children had information on the number of people lived in the same household

and their relationship to the child. Among them, 56 (36.1%) were from multi-generation households. Mean size of household was 6.5, with the minimum of 2 and maximum of 20.

## Education

The education levels of the caregivers – (the parents or guardians) are shown below

**Table S.9.3. Number and Percent of Caregiver’s Education Level**

Education	Number	Percent
Never attended school or only kindergarten	3	1.9%
Grades 1 up to 8 (elementary to middle)	4	2.6%
Grades 9 to 11(some high school)	14	9.0%
Grades 12 or GED (high school graduate)	73	47.1%
College or technical school 1 to 3 years	33	21.3%
College 4 years or more	28	18.1%
<b>Total</b>	<b>155</b>	<b>100%</b>

## Employment Status of the Caregiver Participants

Among the 155 children participated in Fagaitua, all had information on whether the respondent was employed for wages/salary, whether he/she was self-employed, whether he/she was out of work for more than a year or less than a year, whether the respondent was a homemaker, a student, unable to work, or whether the caregiver had more than one job.

**Table S.9.4. Number and Percent of Caregiver’s Employment Status**

Employment	Number	Percent
Employed for wages / salary	57	36.8%
Self-employed	8	5.2%
Out of work (less than 1 year)	12	7.7%
Out of work (more than 1 year)	12	7.7%
Homemaker	71	45.8%
Student	14	9.0%

<b>Retired</b>	1	0.7%
<b>Unable to work</b>	10	6.5%
<b>More than one job</b>	23	14.8%

\*Note: responses may total over 100% because respondents could select more than one category.

### Household Income Level

Among the 155 children that participated in Fagaitua, 115 had information on annual Household income from all sources over the past 12 months. The following table summarizes this information.

**Table S.9.5. Number and Percent of Caregiver's Household Income Level**

<b>Annual household income in the past 12 months</b>	<b>Number</b>	<b>Percent</b>
<b>Under \$10,000</b>	66	57.4%
<b>From \$10,000 to less than \$20,000</b>	19	16.5%
<b>From \$20,000 to less than \$35,000</b>	19	16.5%
<b>From \$35,000 to less than \$60,000</b>	10	8.7%
<b>\$75,000 or more</b>	1	0.9%
<b>Total</b>	115	100%

### Religion

Among the 155 children, a total of 153 had information on family's religious affiliation. Out of the 153, 0 (0%) reported no religious affiliation. Among the 153 with any type of religious affiliation, the distribution of different religious affiliations is presented in the following table. A total of 13 had information on how often they engage in religious activities. The mean number of times per month attending religious activities was 10.8 among those participants.

**Table S.9.6. Number and Percent of Respondents' Religious Affiliation**

<b>Religion Affiliation</b>	<b>Frequency</b>	<b>Percent</b>
<b>Protestant</b>	76	49.7%
<b>Mormon/Latter-day Saints</b>	29	19.0%
<b>Catholic</b>	20	13.1%
<b>Pentecostal</b>	9	5.9%

<b>Other</b>	7	4.6%
<b>Christian denomination not specified</b>	7	4.6%
<b>Baptist</b>	3	2.0%
<b>Evangelical Covenant</b>	2	1.3%
<b>Total</b>	153	100%

\*Other including Jehovah's Witness, Methodist, and those which cannot be specified.

### **Food Security / Resource Availability**

Food security and availability was included in the demographic questionnaire, to help understand the support services used by participants in our geographically varied jurisdictions. The food security questions were adapted from questions used by USDA to Assess Household Food Security (USDA, 2008). NHANES ([cdc.gov/nchs/data/nhanes/nhanes\\_11\\_12/fsg\\_family.pdf](http://cdc.gov/nchs/data/nhanes/nhanes_11_12/fsg_family.pdf)).

Participants were asked, in the past 12 months, how often money for food or money for utilities runs out before the end of the month. Among the 155 children that participated in Fagaitua, a total of 129 had information on whether money for food runs out or not and a total of 123 had information on whether money for utility runs out or not. The following table presents the answers.

**Table S.9.7. Number and Percent of Caregiver's Money for Food and Utilities**

<b>Food Insecurity and Utilities in past 12 months</b>	<b>Number</b>	<b>%</b>
<b>Money runs out for food before the end of the month.</b>		
<b>Never</b>	25	19.4%
<b>Seldom</b>	29	22.5%
<b>Sometimes</b>	57	44.2%
<b>Most times</b>	15	11.6%
<b>Always</b>	3	2.3%
<b>Money for household utilities (water, fuel, etc.) runs out before the end of the month.</b>		
<b>Never</b>	30	24.4%



<b>Seldom</b>	20	16.3%
<b>Sometimes</b>	52	42.3%
<b>Most times or always</b>	21	17.1%
<b>Always</b>	0	0%

A total of 148 children had information on whether they received assistance to pay food. Among those 148 children, 131 (88.5%) reported they received assistance. The following table summarizes different types of benefits their households received.

**Table S.9.8. Number and Percent of Caregivers Who Receive Food Assistance**

<b>Food Assistance Benefits received for those who obtained food assistance</b>	<b>Number</b>	<b>%</b>
<b>EBT/ SNAP / NAP (formerly called Food Stamps)</b>	30	23.1%
<b>Food Assistance (Food Bank / Food Pantries or Commodity foods)</b>	6	4.6%
<b>WIC benefits</b>	104	80.0%
<b>Free or reduced cost breakfast or lunch at school</b>	38	29.2%

\*Note: responses may total over 100% because respondents could select more than one category.

## **Culture**

The degree of participants' own group's cultural and U.S. mainland cultural identifications were assessed using an acculturation questionnaire originally designed for use with Native Hawaiians (Kaholokula, Grandinetti, Nacapoy and Chang, 2008).

The following tables summarize responses to those questions.

**Table S.9.9. Number and Percent of Caregiver's Knowledge of Traditional Culture and Lifestyle**

<b>Knowledge of traditional culture &amp; lifestyle</b>	<b>Number</b>	<b>Percent</b>
<b>Very knowledgeable</b>	66	42.9%
<b>Somewhat knowledgeable</b>	83	53.9%

Neutral or no response	2	1.3%
Somewhat not knowledgeable	1	0.7%
Not at all knowledgeable	2	1.3%

**Table S.9.10. Number and Percent of Caregiver' Involvement with Traditional Culture and Lifestyle**

Involved with traditional culture & lifestyle	Number	Percent
Very involved	51	33.1%
Somewhat involved	86	55.8%
Neutral or no response	10	6.5%
Somewhat not involved	2	1.3%
Not at all involved	5	3.3%

**Table S.9.11. Number and Percent of Caregiver's Feelings Toward Traditional Culture and Lifestyle**

Feel towards traditional culture & lifestyle	Number	Percent
Very positive	78	50.3%
Somewhat positive	62	40.0%
Neutral or no response	6	3.9%
Somewhat negative	1	0.7%
Very negative	8	5.2%

**Table S.9.12. Number and Percent of Caregiver's Association with Traditional Culture and Lifestyle**

How often associate with people of your traditional culture & lifestyle	Number	Percent
Most of the time	60	38.7%
Somewhat often	68	43.9%
Neutral or no response	11	7.1%
Very little of the time	5	3.2%
Not at all	11	7.1%

**Table S.9.13. Number and Percent of Respondents' Knowledge of U.S. Mainland/Lower 48 Culture and Lifestyle**

Knowledge of U.S. Mainland / Lower 48 culture and lifestyle	Number	Percent
Very knowledgeable	26	16.8%
Somewhat knowledgeable	78	50.3%
Neutral or no response	17	11.0%

Somewhat not knowledgeable	12	7.7%
Not at all knowledgeable	22	14.2%

**Table S.9.14. Number and Percent of Caregiver's Involvement in U.S. Mainland/Lower 48 Culture and Lifestyle**

Involvement with U.S. Mainland / Lower 48 culture and lifestyle	Number	Percent
Very involved	15	9.8%
Somewhat involved	70	45.8%
Neutral or no response	31	20.3%
Somewhat not involved	10	6.5%
Not at all involved	27	17.7%

**Table S.9.15. Number and Percent of Caregiver's Feelings Toward U.S. Mainland/Lower 48 Culture and Lifestyle**

Feeling towards U.S. Mainland / Lower 48 culture and lifestyle	Number	Percent
Very positive	19	12.3%
Somewhat positive	74	47.7%
Neutral or no response	22	14.2%
Somewhat negative	13	8.4%
Very negative	27	17.4%

**Table S.9.16. Number and Percent of Caregiver's Association with U.S. Mainland/Lower 48 Culture and Lifestyle**

How often associate with U.S. Mainland / Lower 48 culture and lifestyle	Number	Percent
Most of the time	14	9.1%
Somewhat often	65	42.2%
Neutral or no response	32	20.8%
Very little of the time	14	9.1%
Not at all	29	18.8%



# Community Assessment Results





## VII. Community Assessment Results

The Community Assessment Toolkit or CAT is a collection of data-recording forms to evaluate the food and physical activity environments of communities. These enabled us to study determinants of healthy eating, physical activity, and obesity among youth.

### Section 1. Food Resources and Physical Activity Environment

The assessment of the food environment included inventories and surveys of fast food restaurants, and food outlets, with documents adapted from other surveys (Bridging the Gap (BTG) and Community of Excellence (CX3))

- **CX3 Scores for Food outlet**
  - a. Accepts WIC and Food stamps / SNAP/ EBT
  - b. Availability of fresh fruit and quality of fruit
  - c. Availability of fresh vegetable and quality of vegetable
  - d. Other healthful foods
  - e. Unhealthy products
  - f. Nutrition information
  - g. Number of healthy and unhealthy ads present inside and outside the food outlet
  - h. Walkability
- **Fast food**
  - i. Advertisements that promoted price
  - j. Advertisements that included sugar-sweetened beverages
  - k. Number of healthy food options on the menu
  - l. Number healthy beverage options

The assessment of the physical activity environment included inventories and surveys of parks, school grounds, church grounds, and physical activity facilities, with documents adapted from Bridging the Gap (BTG). The assessment of community walkability was assessed with documents adapted from the National Center for Safe

Routes to School. Original forms can be found in Appendix A. CHL adapted forms can be found in Appendix B.

## **Section 2. Assessment of Schools**

**Method:** The tool used to assess schools is modified from the Bridging the Gap Program, University of Illinois at Chicago, School Observation Form (See APPENDIX for form used). The purpose of this survey is to improve our understanding of the availability and quality of physical activity features that are located on school grounds in CHL communities. A complete list of schools that were located within the community boundary, or on the periphery, and their locations was compiled for each community by local staff. Staff then assessed up to ten schools per community or assessed all of them when there were fewer than ten schools in a community. Staff were instructed to spend about 30 minutes walking through each school grounds to survey its accessibility, setting, amenities, sports fields (e.g., soccer, football, baseball), courts (e.g., tennis, basketball, volleyball), other features (e.g. track, pool, and playground) and incivilities.

**Eligible schools:** All school grounds were eligible for assessment. This includes schools sharing some sports features with an adjacent park.

### **School Setting, Parking, Sidewalks, and Amenities**

**Method:** Upon entering the school, staff assessed the presence of certain school settings, parking and sidewalk features, and certain school amenities.

Observations on school setting included whether it was adjacent to a park. In Fagaitua, there were 3 schools with this information. Out of those 3 schools, 1 (33.3%) were adjacent to a park, and 1 (33.3%) shared sports features with an adjacent park.

All schools had on-site parking, while 2 (66.7%) of schools had on-site parking with overhead lighting, and 1 (33.3%) had bicycle parking. Only 1 (33.3%) of schools had a sidewalk leading up to the entrance of the school, while 1 (33.3%) schools had



sidewalks with overhead lighting.

Observations on school amenities included whether it had closing time signage, restrooms, showers, and beverage vending machines. Among the 3 schools with such information, 1 (33.3%) had closing time signage, all 3 (100%) had restrooms, 2 (66.7%) had showers, and none had beverage vending machines.

**Table S.2.1. School Setting (N=3)**

School Setting	Number	Percent
<b>Setting</b>		
Adjacent to a park	1	33.3%
Shares sports features with a park	1	33.3%
<b>Parking</b>		
Parking on-site available (not including street parking)	3	100.0%
Parking has lights	2	66.7%
Bicycle parking racks or cages available	1	33.3%
<b>Sidewalk</b>		
Sidewalks on street lead up to the entrance	1	33.3%
Sidewalks have lighting	1	33.3%
<b>Amenities</b>		
School has closing time signage	1	33.3%
Restrooms present	3	100.0%
Showers present	2	66.6%
Beverage vending machines present	0	0.0%

## School Access and Barriers to Entry

Staff assessed each school for signage limiting entry and any physical barriers around the perimeter of the school. Among the three schools surveyed in Fagaitua, 2 (66.7%) had signage indicating the school name, 1 (33.3%) had signage stating that public use of the school was limited to specific times (e.g., after school), none of the schools had signage indicating that the school was private or had restricted access at all times (e.g. no trespassing, school use only), and 2 (66.7%) of the schools had a locked fence or other physical barrier around the perimeter.

**Table S.2.2. School Access and Barriers (N=3)**

Access and Barriers		
<b>Signage indicates school name</b>	2	66.7%
<b>Signage states public use of area is limited to specific times</b>	1	33.3%
<b>Signage states area is private or restricted access at all times</b>	0	0%
<b>Locked fence or other physical barrier around the perimeter prevents public access</b>	2	66.7%

## Sports Features

Staff assessed each school for a specific list of sports features to determine the number of each feature present and whether such a feature had lighting or not. Staff also rated the condition of each feature. These features are the same as those included in the assessment of parks.

### Condition of the Feature

Staff rated the condition and the presence of lighting for each feature item. The condition of a feature could be recorded as “poor”, “okay/good”, or “not rated”. When there was more than one of a particular feature, each was evaluated for condition while

the presence of lighting was assessed across all features. For example, if a school had 3 basketball courts and 2 were in okay condition, 1 was in poor condition, and 1 of them had lighting, then the staff would record the number of basketball courts as 3, 2 of which were rated okay/good, 1 was rated as poor, and that this school had lighting for this feature.

Feature condition was rated based on the feature's surface and related equipment, if any was available for the feature. Ultimately the feature condition rating was related to whether or not players could safely play or engage in physical activity on a feature without risking injury or falling. Staff took into consideration the type of activities that would take place on or within a particular feature as well as the material comprising the surface when considering its condition. When assessing the condition of equipment used for physical activity, staff took into consideration age, functionality, wear and tear, damage such as dents or sharp edges, missing pieces, and rust. For example, if a playing surface was composed of concrete, staff assessed whether smooth concrete covered the entire surface and looked for cracks or uneven slabs in the concrete surface. See APPENDIX C for a detailed protocol on how each sports feature was rated for condition.

### **Survey Results for Sports Features**

Across the three schools surveyed in Fagaitua, there were a total of 8 sports features, of which all 8 were rated as ok/good. Among the 8 rated features, 100% were rated as ok/good.

Multiuse fields were the most frequent features (2), followed by football fields (1), baseball fields (1), soccer fields (1), basketball courts (1), volleyball courts (1), and playgrounds (1). Playgrounds may be of particular interest to families with young children. The one playground in Fagaitua was rated ok/good and it had a playground area with lighting. The following table (Table S.3.3) summarizes the number of each sports feature, the conditions of the feature, and whether lighting was present for the feature across all 3 schools in Fagaitua.

**Table S.2.3. Sports features across all 3 schools in Fagaitua**

Feature	Total number of the feature	Condition of the Feature			Number of schools w/ Lighting
		OK/Good	Poor	Not rated	
Field multiuse	2	2	0	0	2
Field football	1	1	0	0	1
Field baseball	1	1	0	0	1
Field soccer	1	1	0	0	0
Court basketball	1	1	0	0	0
Court tennis	0	0	0	0	0
Court volleyball	1	1	0	0	0
Court multiuse	0	0	0	0	0
Track	0	0	0	0	0
Pool	0	0	0	0	0
Playground	1	1	0	0	1
Skateboarding	0	0	0	0	0
Exercise Stations	0	0	0	0	0
Rock Climbing	0	0	0	0	0

**School Features and Amenities**

Method: Staff assessed each school for a specific list of features and amenities to determine if the feature or amenity was present and to rate the condition of the surface or feature. These features are the same as those included in the assessment of parks.

When staff were unable to determine the condition of one or more features of a specific type (if more than one present), they rated the features of that type that were able to be rated. When any features of a specific type could not be rated due to construction/

repairs or seasonal closure, staff selected not rated.

### Survey Results of School Features and Amenities

Among the 3 schools in Fagaitua, there were a total of 22 features and amenities, of which all 22 were rated as ok/good. Among rated features and amenities, 100% were rated as ok/good. The most common features and amenities present were shelters (3), benches (3), trash bins (3), green space (2), beach for swimming (2), recreational beach (2), picnic tables (2), drinking fountains (2), and fences (2). Table S.3.4. summarizes the total number and condition of each individual feature/amenity which was assessed.

**Table S.2.4. Features and Amenities Across all 3 Schools in Fagaitua**

Feature	Total Number of the feature	Condition of the Feature		
		OK/Good	Poor	Not rated
Green Space	2	2	0	0
Beach for swimming	2	2	0	0
Beach, recreational	2	2	0	0
Beach with lifeguard	0	0	0	0
Waterpark	0	0	0	0
Shelters	3	3	0	0
Picnic Tables w/ Shade	2	2	0	0
Picnic Tables w/o Shade	0	0	0	0
Benches	3	3	0	0
Drinking fountain	2	2	1	0
Decorative fountain	0	0	0	0
Trash bins	3	3	0	0

<b>Grills</b>	0	0	0	0
<b>Fence</b>	2	2	0	0
<b>Trails</b>	1	1	0	0

## **Incivilities**

Method: Staff assessed each school for a list of incivilities and how much each was present. The term incivility is used to describe items in the environment that might discourage physical activity. These items are often signs of area deprivation or markers of blight. The following items in this section were used to assess the physical disorder of the school grounds environment. These incivilities are the same as those included in the assessment of parks.

### **Amount of Incivilities**

Staff looked for incivilities throughout the school and assigned a score for each of 9 incivility types based upon the amount that was present across the school settings. The possible ratings were: none (0), a little (1), some (2), and 3 (a lot). For the community, average rating for each of the item was used.

Among the three schools in Fagaitua, there was no evidence of broken glass, alcohol use, sex paraphernalia, or vandalism. However, there was on average a little bit of garbage, graffiti/tagging, evidence of substance abuse, dog refuse, and dogs left unattended (Table S.3.5).

***Table S.2.5. Average Amount of Each Incivility Across 3 Schools in Fagaitua***

<b>Incivility Type</b>	<b>Amount</b>
<b>Garbage</b>	A little
<b>Broken glass</b>	None
<b>Graffiti/Tagging</b>	A little

<b>Evidence of Alcohol use</b>	None
<b>Evidence of Substance Abuse</b>	A little
<b>Sex Paraphernalia</b>	None
<b>Dog Refuse</b>	A little
<b>Dogs Unattended</b>	A little
<b>Vandalism</b>	None

### **Section 3. Assessment of Churches**

Method: The tool used to assess churches is modified from the Bridging the Gap Program, University of Illinois at Chicago, Park Observation Form (See APPENDIX for form used). The purpose of this survey is to improve our understanding of the availability and quality of physical activity features that are located on church grounds in CHL communities. This assessment was only performed in jurisdictions where churches are commonly used as places for physical activity. A complete list of churches that had some outdoor physical activity features, such as fields, and that were located within the community boundary, or on the periphery, and their locations, was compiled for each community by local staff. Staff then assessed up to ten churches per community or assessed all of them when there were fewer than ten churches in a community. Staff were instructed to spend about 30 minutes walking through the grounds of each church to survey its accessibility, setting, amenities, sports fields (e.g., soccer, football, baseball), courts (e.g., tennis, basketball, volleyball), other features (e.g. track, pool, and playground) and incivilities.

**Eligible Churches:** The grounds of any church that had outdoor physical activity features and was on the inventory list were eligible for assessment.

### **Church Setting, Parking, Sidewalks, and Amenities**

Method: Upon entering the church grounds, staff assessed the presence of certain church settings, parking and sidewalk features, and certain church amenities.

In Fagaitua, there were 6 churches. Observations on church settings included whether it was within a quarter mile of another community feature (e.g. a school, housing, food store). Among the 6 churches, 5 churches were near another sports area.

Of the 6 churches, all (100%) had on-site parking, while 3 (50%) churches had on-site parking with overhead lighting, 3 (50%) had a sidewalk leading up to the entrance of the church and 1 (16.7%) had sidewalks with lighting overhead. None of the churches had bicycle parking.

Observations on church amenities included whether it had closing time signage, restrooms, showers, and beverage vending machines. Among the 6 churches, none had closing time signage, 6 (100%) had restrooms, 3 (50%) had showers, and none had beverage vending machines.

**Table S.3.1. Church Setting (N=6)**

<b>Church Setting</b>	<b>Number</b>	<b>Percent</b>
<b>Setting</b>		
<b>Within ¼ of a mile from another community feature</b>	5	83.3%
<b>Parking</b>		
<b>Parking on-site available (not including street parking)</b>	6	100%
<b>Parking has lights</b>	3	50%
<b>Bicycle parking racks or cages available</b>	0	0%
<b>Sidewalk</b>		
<b>Sidewalks on street lead up to the entrance</b>	3	50%
<b>Sidewalks have lighting</b>	1	16.7%
<b>Amenities</b>		



<b>Church has closing time signage</b>	0	0%
<b>Restrooms present</b>	6	100%
<b>Showers present</b>	3	50%
<b>Beverage vending machines present</b>	0	0%

### **Church Access and Barriers to Entry**

Staff assessed each church for signage limiting entry and any physical barriers around the perimeter of the church. Among the six churches surveyed in Fagaitua, none had signage indicating the church name, 4 (66.7%) had signage stating that an area was open to the public, 6 (100%) had signage indicating that an area was open to church members only, 2 (40%) had signage indicating that use of an area was limited to specific times, 6 (100%) had signage that use of an area required permission (e.g. from a minister or deacon), 6 (100%) had signage stating that supervision was needed (e.g. by an adult or minister), none had signage stating that an area was private or restricted at all times, and 5 (83.3%) had a locked fence or other physical barrier around the perimeter.

**Table S.3.2. Church Access and Barriers (N=6)**

<b>Access and barriers</b>		
<b>Signage indicates church name</b>	0	0%
<b>Signage states an area is open to the public</b>	4	66.7%
<b>Signage states an area is open to church members only</b>	6	100%
<b>Signage indicates that use of an area was limited to specific times (n=5)</b>	2	40%

<b>Signage states that use of an area required permission</b>	6	100%
<b>Signage states that supervision was needed</b>	6	100%
<b>Signage states area is private or restricted access at all times</b>	0	0%
<b>Locked fence or other physical barrier around the perimeter prevents public access</b>	5	83.3%

**Sports Features**

Staff assessed each church for a specific list of sports features to determine the number of each feature present and whether such a feature had lighting or not. Staff also rated the condition of each feature. These features are the same as those included in the assessment of parks.

**Condition of the Feature**

Staff rated the condition and the presence of lighting for each feature item. The condition of a feature could be recorded as “poor”, “okay/good”, or “not rated”. When there was more than one of a particular feature, each was evaluated for condition while the presence of lighting was assessed across all features for each church. For example, if a church had 3 basketball courts and 2 were in okay condition, 1 was in poor condition, and 1 of them had lighting, then the staff would record the number of basketball courts as 3, 2 of which were rated okay/good, 1 was rated as poor, and that this church had lighting for this feature.

Feature condition was rated based on the feature’s surface and related equipment, if any was available for the feature. Ultimately the feature condition rating was related to whether or not players could safely play or engage in physical activity on a feature without risking injury or falling. Staff took into consideration the type of activities that would take place on or within a particular feature as well as the material comprising the

surface when considering its condition. When assessing the condition of equipment used for physical activity, staff took into consideration age, functionality, wear and tear, damage such as dents or sharp edges, missing pieces, and rust. For example, if a playing surface was composed of concrete, staff assessed whether smooth concrete covered the entire surface and looked for cracks or uneven slabs in the concrete surface.

### Survey Results for Sports Features

Across the six churches surveyed in Fagaitua, there were a total of 12 sports features, of which 11 was rated as ok/good, 0 were rated as poor, and 1 was not rated.

The following table (Table S.3.3) summarizes the number of each sports feature, the conditions of the feature, and whether lighting was present for the feature across all 6 churches in Fagaitua.

**Table S.3.3. Sports Features Across all 6 Churches in Fagaitua**

Feature	Total number of the feature	Condition of the Feature			Number of churches w/ Lighting
		OK/Good	Poor	Not rated	
Field multiuse	3	2	0	1	3
Field football	0	0	0	0	0
Field baseball	0	0	0	0	0
Field soccer	0	0	0	0	0
Court basketball	4	4	0	0	4
Court tennis	0	0	0	0	0
Court volleyball	2	2	0	0	2
Court multiuse	3	3	0	0	3
Track	0	0	0	0	0
Pool	0	0	0	0	0

<b>Playground</b>	0	0	0	0	0
<b>Skateboarding</b>	0	0	0	0	0
<b>Exercise Stations</b>	0	0	0	0	0
<b>Rock Climbing</b>	0	0	0	0	0

### Church Features and Amenities

Method: Staff assessed each church for a specific list of features and amenities to determine if the feature or amenity was present and to rate the condition of the surface or feature. These features are the same as those included in the assessment of parks.

When staff were unable to determine the condition of one or more features of a specific type (if more than one present), they rated the features of that type that were able to be rated. When any features of a specific type could not be rated due to construction/repairs or seasonal closure, staff selected not rated.

### Survey Results of Church Features and Amenities

Among the 6 churches in Fagaitua, there were a total of 32 features and amenities, of which 28 were rated as ok/good, 2 was rated as poor, and 2 were not rated. The most common features and amenities present were trash containers (6), shelters (5), fences, (5), and green spaces (4). Table S.3.4. summarizes the total number and condition of each individual feature/amenity that was assessed.

**Table S.3.4. Features and Amenities Across all 6 Churches in Fagaitua**

Feature	Total Number of the feature	Condition of the Feature		
		OK/Good	Poor	Not rated
<b>Green Space</b>	4	3	0	1

<b>Beach for swimming</b>	3	3	0	0
<b>Beach, recreational</b>	2	2	0	0
<b>Beach with lifeguard</b>	0	0	0	0
<b>Waterpark</b>	0	0	0	0
<b>Shelters</b>	5	5	0	0
<b>Picnic Tables w/ Shade</b>	0	0	0	0
<b>Picnic Tables w/o Shade</b>	1	0	1	0
<b>Benches</b>	2	2	0	0
<b>Drinking fountain</b>	1	1	0	0
<b>Decorative fountain</b>	0	0	0	0
<b>Trash bins</b>	6	5	1	0
<b>Grills</b>	0	0	0	0
<b>Fence</b>	5	5	0	0
<b>Trails</b>	3	2	0	1

### **Incivilities**

Method: Staff assessed each church for a list of incivilities and how much each was present. The term incivility is used to describe items in the environment that might discourage physical activity. These items are often signs of area deprivation or markers of blight. The following items in this section were used to assess the physical disorder of the church grounds environment. These incivilities are the same as those included in

the assessment of parks.

### **Amount of Incivilities**

Staff looked for incivilities throughout the church and assigned a score for each of 9 incivility types based upon the amount that was present across the church settings. The possible ratings were: none (0), a little (1), some (2), and 3 (a lot). For the community, average rating for each of the item was used.

Among the 6 churches in Fagaitua, there was a little bit of garbage, broken glass, dog refuse, and dogs left unattended. The other incivilities such as graffiti/tagging, evidence of alcohol use, evidence of substance abuse, sex paraphernalia, and vandalism were not present (Table S.3.5).

**Table S.3.4. Average Amount of Each Incivility Across 6 Churches in Fagaitua**

<b>Incivility Type</b>	<b>Amount</b>
<b>Garbage</b>	A little
<b>Broken glass</b>	A little
<b>Graffiti/Tagging</b>	None
<b>Evidence of Alcohol use</b>	None
<b>Evidence of Substance Abuse</b>	None
<b>Sex Paraphernalia</b>	None
<b>Dog Refuse</b>	A little
<b>Dogs Unattended</b>	A little
<b>Vandalism</b>	None

## **Section 4. Food Availability and Marketing Form**

CHL's Food Availability Survey and Marketing Form is modified from the California Department of Health Communities of Excellence in Nutrition, Physical Activity, and

Obesity Prevention program (CX3). The purpose of this survey is to assess the availability of healthy foods, price, nutrition information, and marketing of foods in stores. In addition to the food environment, we surveyed the safety and walkability around stores. A complete list of food stores, including their locations, was compiled for each community by local staff. Staff then assessed up to ten stores per community or all of them when there were less than ten stores in a community. The types of stores assessed include supermarket chain, large grocery store, small market, convenience store, and other community sources for food products.

**Supermarket Chain:** a large store that sells food and other items, including canned and frozen foods, fresh fruits and vegetables, and fresh (raw) and prepared meats, fish, and poultry. It is owned by a company that has many stores such as Safeway, K-mart, payless. (This type of store has twenty or more employees and at least 4 cash registers.)

**Large Grocery Store** (not part of a large chain): a large store that sells food and other items, including canned and frozen foods, fresh fruits and vegetables, and fresh (raw) and prepared meats, fish, and poultry. It may be part of a small regional chain of fewer than 5 stores or may be independent. (This type of store also has twenty or more employees and at least 4 cash registers.)

**Small Market:** usually an independent store that sells food including canned and frozen foods, fresh fruits and vegetables, and fresh (raw) and prepared meats, fish, and poultry as well as convenience items and alcohol. (This type of store has fewer than 20 employees and 3 or less cash registers.)

**Convenience:** a store that sells convenience items only, including bread, milk,

soda, snacks and may sell alcohol and gasoline. These stores do not sell fresh (raw) meat. These stores also are known as food marts.

**Other:** a store that does not fit into supermarket chain, large grocery store, small market or convenience, but is seen by the community as a general source of food products. Examples would include farmers market, dollar stores or drug stores.

The following table is a breakdown of the store types surveyed in Fagaitua. Among the 2 stores assessed, the most common store types in Fagaitua were small market (2) stores.

**Table S.4.1. Type of Store**

Type of Store	Number	Percent
Supermarket chain	0	0%
Large grocery store	0	0%
Small market	2	100%
Convenience	0	0%
Other	0	0%

**Federal Food Assistance Acceptance at Store (WIC and Food Stamps/SNAP)**

Stores were assessed for whether or not they accept Federal Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and Food Stamps/SNAP benefits. WIC provides Federal grants to States to provide supplemental foods to low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age five who are found to be at nutritional risk (USDA, 2015). The Supplemental Nutrition Assistance Program (SNAP) offers nutrition assistance to eligible, low-income individuals and families.

Stores were also assessed on whether or not they display signage saying “We Accept WIC” and “We Accept Food Stamps/EBT” (electronic benefit transfer). Among the 2 stores surveyed, all stores had information on participating in WIC or Food



Stamps/EBT. Among those 2 stores, 1 (50%) accept WIC and 2 (100%) accept Food Stamps/EBT. Among the 2 stores with information on signage, 1 (50%) display signage for WIC being accepted and 1 (50%) display signage for Food Stamps/EBT being accepted.

**Table S.4.2. Benefits**

<b>Federal Benefits</b>	<b>Number</b>	<b>Percent</b>
<b>Accepts WIC</b>	1	50.0%
<b>Accepts Food Stamps or a SNAP vendor</b>	2	100.0%
<b>“We Accept WIC” signage displayed</b>	1	50.0%
<b>“We Accept Food Stamps/EBT” signage displayed</b>	1	50.0%

### **Variety, Quality, and Availability of Fruits and Vegetables and Other Health Foods**

Staff looked at the overall variety, quality, and availability of specific fruits and vegetables in stores. Stores were assessed for whether they had a wide variety (7 or more types), moderate variety (4-6 types), limited variety (1-3 types) or none of fruits and vegetables, separately. Of the 2 stores with this data in Fagaitua, 2 (100%) had a limited variety of fruit, 1 (50.0%) had a limited variety of vegetables, and 1 (50.0%) had no variety of vegetables.

**Table S.4.3. Variety of Fruits and Vegetables**

<b>Variety</b>	<b>Number</b>	<b>Percent</b>
<b>Fruits</b>		
<b>None</b>	0	0%
<b>Limited</b>	2	100%
<b>Moderate variety</b>	0	0%
<b>Wide variety</b>	0	0%
<b>Vegetables</b>		
<b>None</b>	1	50%
<b>Limited</b>	1	50%
<b>Moderate variety</b>	0	0%
<b>Wide variety</b>	0	0%

Stores were also assessed on the quality of their fruits and vegetables. Staff looked for signs of quality in the produce such as the lack of wilting, decay, shriveling, brown stems, and color changes.

- **Wilting** - leaves or stems are limp
- **Decay** - mold or blackening
- **Shriveling** - skin has wrinkles
- **Brown stems/dry stem cuts**
- **Color changes** - yellowing when item should be dark green

The quality was rated as:

- **None** - None sold
- **Poor** - All or most of fruit is of poor quality (brown, bruised, overripe, wilted)
- **Mixed Poor** - Mixed quality; more poor than good
- **Mixed Good** - Mixed quality; more good than poor
- **Good** - All or most of fruit is of good quality (very fresh, no soft spots, excellent color)

Of the 2 stores in Fagaitua assessed for quality, 1 (50%) had poor quality for fruit, 1 (50%) had mixed good for fruit, 1 (50%) had poor quality for vegetables, and 1 (50%) had none sold for vegetables.

**Table S.4.4. Quality of Fruit and Vegetables**

Quality	Number	Percent
<b>Fruit</b>		
None	0	0%
Poor	1	50%
Mixed Poor	0	0%
Mixed Good	1	50%
Good	0	0%
<b>Vegetable</b>		
None	1	50%
Poor	1	50%
Mixed Poor	0	0%

<b>Mixed Good</b>	0	0%
<b>Good</b>	0	0%

Stores were assessed for the availability and price of specific fruits (apple, banana, and orange) and vegetables (carrot, tomato, broccoli, and cabbage). A total of 2 stores in Fagaitua had data on the availability of these produce. The most commonly available fruits were apples and oranges which were each in 2 (100%) of stores. Bananas were in 1 (50.0%) of the stores. Broccoli and cabbage were each in 2 (100%) of the stores, while carrots and tomato was in only 1 (50%) of the stores.

**Table S.4.5. Availability of Selected Fruits and Vegetables**

Availability	Number	Percent
<b>Selected fruit</b>		
<b>Apple</b>	2	100%
<b>Banana</b>	1	50%
<b>Orange</b>	2	100%
<b>Selected vegetable</b>		
<b>Carrot</b>	1	50%
<b>Tomato</b>	1	50%
<b>Broccoli</b>	2	100%
<b>Cabbage</b>	2	100%

Stores were assessed for the availability of other healthy foods. **Healthy foods** are fruits and vegetables, whole grains, beans, nuts and seeds, non-fat and low fat milk products, and lean meat, poultry, and fish. Healthy foods include minimal or no added fat, sugars, or sweeteners. Unsweetened black coffee is included. Pickled vegetables, whole coconut, and coconut water are included.

Stores were specifically assessed for a variety of items considered to be low/reduced fat dairy or soy drinks, lean meat protein, non-meat protein, whole-grain, canned/frozen fruit or vegetables, and baby food. Of the 2 stores assessed in Fagaitua, 2 (100%) had at least one low/reduced fat dairy or soy beverage, 2 (100%) had at least one lean meat protein, 2 (100%) had at least one non-meat protein, 2 (100%) had at least one whole-

grain item, 2 (100%) had at least one canned/ frozen fruit or vegetable, and 1 (50%) had at least one baby food.

**Table S.4.6. Availability of Other Healthy Foods in Stores**

<b>Other Healthy Foods</b>	<b>Number</b>	<b>Percent</b>
<b>Low/reduced fat dairy or soy beverage</b>	2	100%
1% milk	1	50%
2% milk	2	100%
Skim milk	1	50%
Mozzarella	0	0%
Flavored soy beverage	0	0%
Plain soy beverage	0	0%
<b>Lean meat protein</b>	2	100%
Ground beef or turkey, lean (85% or higher)	2	100%
Whole chicken	1	50%
Tuna (light) canned in water	2	100%
Salmon canned in water	2	100%
Sardines canned in water, tomato, or mustard	2	100%
<b>Non-meat protein</b>	2	100%
Tofu, plain	0	0%
Beans, dried	1	50%
Beans, canned with no added fats, sugar or sweetener	2	100%
<b>Whole grain</b>	2	100%
Whole grain bread	1	50%
Brown rice	1	50%
High fiber cereal ( $\geq 3$ grams fiber, $\leq 12$ grams sugar per serving)	2	100%
Oatmeal (plain)	2	100%
Tortillas, soft corn or whole wheat (no lard)	0	0%
<b>Canned/ frozen fruit or vegetables</b>	2	100%
Any canned fruit packed in 100% fruit juice	2	100%
Any canned vegetable with no added fats, sugar, or sweetener	2	100%
Any frozen fruit with no added fats, sugar, or sweetener	0	0%
Any frozen vegetable with no added fats, sugar, or sweetener	2	100%
<b>Baby food</b>	1	50%

Other Healthy Foods	Number	Percent
Baby food, jarred, single fruit	1	50%
Baby food, jarred, single vegetable	1	50%
Baby food, jarred, single meat	1	50%

### Store Interior Advertisements or Promotions

Stores were assessed for specific ads or promotion themes in the interior of the store. First, staff looked to see if there were health promotion items around the fruit and vegetables display. Of the 2 stores with this data, none had a health promotion item. Staff then categorized each health promotion item into one of the following themes:

- 5 A Day signs
- Nutrition information
- Fruit and Veggies: More matters
- Children’s Healthy Living (CHL) or CHL partnership
- Other

In Fagaitua, there were no health promotion items. Stores were also assessed for ads promoting locally grown produce. Of the 2 stores with this data, none promoted locally grown produce.

**Table S.4.7. Advertisements Inside the Store**

Interior Advertisements	n	Percent
Health promotion around the fruit and vegetable display	0	0%
5 A Day signs	0	0%
Nutrition information	0	0%
Fruit and Veggies: More matters	0	0%
Children’s Healthy Living (CHL) or CHL partnership	0	0%
Other	0	0%
Promotion of locally grown produce	0	0%

Staff looked at the marketing (presence of ads and product placement) of specific healthy and unhealthy foods near the main check-out area. The presence of ads or promotions recorded included those next to or below the check out, on the floor, or hanging from the ceiling. The presence of products recorded included those next to or below the check out and near the exit doorway.

The healthy products surveyed include the following:

- Granola bars (whole grain,  $\geq 2$  g fiber,  $\leq 1$  g saturated fat,  $\leq 14$  g sugar per serving)
- Bagged Nuts/seeds (does not include honey roasted or w/ added sugar) (next to or below counter/check-out)
- Fresh fruit (next to or below counter/check-out)
- Bottled water (next to or below counter/check-out)
- Other: specify (such as dried fruit, trail mix, 100% juice, etc.)

The unhealthy products surveyed include the following:

- Gumball or candy machine (next to counter or exit doorway)
- Candy (next to or below counter/check-out)
- Soda (next to or below counter/check-out)
- Chips (next to or below counter/check-out)
- Other: specify (such as cookies, ice cream, beef jerky, energy drinks, etc.)

Among the 2 stores surveyed all had information on the marketing near the main check-out area. Looking at ads for healthy food products, all 2 stores had 0 ads. Looking at ads unhealthy food products, 1 store had 0 ads, and 1 store had ads for 1-2 items. More stores had at least one ad for unhealthy food products compared to healthy food products near the main check-out area (1 versus 0).

Looking at the presence of healthy food products near the main check-out area, 1 store

had 1-2 items, and 1 store had 3-5 items. Looking at the presence of unhealthy food products near the main check-out area, all 2 stores had 0 items. More stores had at least one healthy food product compared to unhealthy food product near the main check-out area (1 versus 0).

**Table S.4.8. Store Check-out Area Marketing**

Marketing next to the main check-out area	Healthy Food Products (n)	Unhealthy Food Products (n)
<b>Presence of ads or promotions</b>		
0	2	1
1-2 items	0	1
3-4 items	0	0
<b>Presence of products</b>		
0	0	2
1-2 items	1	0
3-5 items	1	0

### Store Exterior Advertisements on Healthy and Unhealthy Foods

Stores were assessed for ads promoting healthy or unhealthy foods on the exterior of the store. **Unhealthy products** are high calorie, low nutrient foods and beverages that include alcoholic beverages, soft drinks and other sweetened beverages including diet drinks, sweet desserts and highly sugared cereals, chips and other salty snacks, most solid fats, fried foods, and other foods with high amounts of sugar, fat and/or sodium.

**Healthy products** include minimal or no added fat, sugars, or sweeteners. Examples include fresh or dried fruits and vegetables, whole grain snacks ( $\geq 2$  g fiber per serving), energy bars ( $\leq 14$  g sugar per serving), nuts and seeds, non-fat and low fat milk products, water, or 100% fruit juice.

Among the 2 stores that had data on the presence of exterior ads for healthy foods, none had ads on healthy foods. Among the 2 stores that had data on the presence of exterior ads for unhealthy foods, all 2 (100%) had ads for unhealthy foods.

## Store Exterior Conditions

Stores were assessed for specific exterior conditions for food promotion. Among the 2 stores surveyed, none had produce bins on the sidewalk in front of the store. No stores had other products (e.g., soda, water) displayed on the sidewalk in front of the store or inside the store next to the window so they are clearly visible from the outside. There was no vending machine on the sidewalk in front of any of the 2 stores surveyed. There were no ads on the roof, walls, or anywhere on the store property of any of the 2 stores surveyed. One store (50%) had images of unhealthy foods and/or beverages painted on doors or windows of the storefront, while no stores had images of healthy foods and/or beverages. None of the stores had painted murals of healthy food and/or beverages on the building walls of the store.

**Table S.4.9. Store Exterior**

<b>Exterior Conditions</b>	<b>Number</b>	<b>Percent</b>
<b>Produce bins on the sidewalk in front of the store</b>	0	0%
<b>Products displayed on the sidewalk in front for the store or inside the store next to the window</b>	0	0%
<b>Vending machines on the sidewalk in front of the store</b>	0	0%
<b>Advertising (banners, posters, temporary signs, etc.) on the roof, walls or elsewhere on the property</b>	0	0%
<b>Images of healthy food (e.g. tomato, apple) and/or beverages (e.g. milk) painted on doors or windows of the storefront</b>	0	0%
<b>Images of unhealthy food (e.g. hamburger, hot dog) and/or beverages (e.g. soda, shake) painted on doors or windows of the storefront</b>	1	50%
<b>Painted murals of healthy foods and/or beverages anywhere on the building walls</b>	0	0%

## Perceptions of Safety at Store

Stores were assessed for perceptions of safety including whether there were bars or chains on the exterior, whether advertisements covered no more than 1/3 of the window area and the cash register could be seen from the outside for stores that sold alcoholic



beverages (e.g. the Lee Law which was passed in California) whether people felt safe walking in and around the store, and if the store was located in a safe, walkable environment. Among the 2 stores with this information, none had bars. None of the stores complied with Lee Law. None of the stores were rated that people feel safe during the walk around or outside of the store. None of the stores met standards for being located in a safe, walkable environment.

**Table S.4.10. Perceived Safety of Store**

<b>Safety</b>	<b>Number</b>	<b>Percent</b>
<b>Store has bars or chains on windows or doors</b>	0	0%
<b>Store sells alcohol and no more than 1/3 of window area is covered with ads (Lee Law)</b>	0	0%
<b>People feel safe during the walk around or outside of the store</b>	0	0%
<b>Store meets standards for being located in a safe, walkable environment</b>	0	0%

### **Overall Summary of Store Assessments**

Among the 2 stores surveyed in Fagaitua there were strengths and areas needing improvement in order for stores to support community health.

WIC and Food Stamps/SNAP benefits:

- All stores accepted Food Stamp/SNAP benefits; however signage on the store exterior for accepting these benefits can be improved for the other 1 store which lacked signage.

Variety, Quality, and Availability of Fruits and Vegetables and Other Healthy Foods

- Of the 2 stores in Fagaitua, all (100%) had a limited variety of fruit and 1 (50%) had limited variety of vegetables. There was 1 store that did not sell any vegetables.
- For the two stores that had fruits and vegetables, 1 store can improve their

quality of fruit and 1 store can improve their quality for vegetables.

- For the two stores that had fruits and vegetables, stores can improve the availability of common fruits and vegetables.
- Among the 2 stores assessed for Other Healthy Foods, 0 (0%) lacked at least one low/reduced fat dairy or soy beverage, 0 (0%) lacked at least one non-meat protein, 0 (0%) lacked at least one whole-grain item, 0 (0%) lacked at least one canned/ frozen fruit or vegetable, and 1 (50%) lacked at least one baby food.

### Ads, Promotions, and Marketing

- Among the 2 stores in Fagaitua, none of the stores had health promotion items around the fruit and vegetables display and none of them had promotion of locally grown produce.
- Stores in Fagaitua are more likely to have ads for unhealthy food products than healthy food products near the main check out area (1 store versus 0 stores). However, more stores had at least one healthy food product compared to unhealthy food product near the main check-out area (1 versus 0).
- On the store exterior 2 stores had ads for unhealthy foods, while 0 had ads for healthy foods.
- Looking at the store exterior conditions, 0 had produce bins on the sidewalk in front of the store. None of stores had images of healthy food and/or beverages painted on doors or windows of the storefront. None of the stores had painted murals of healthy foods and/or beverages anywhere on the building walls.

### Perceptions on Safety around the Store

- Of the 2 stores in Fagaitua, 0 had bars or chains on the windows, 0 stores were rated as people feeling safe around or outside of the store, and 0 stores were in a location deemed to be a safe, walkable environment.
- None of the stores met the standards of California's Lee Law to limit the amount

of space taken by advertisements for alcohol on the store exterior.

## Section 5. Walkability Survey

Everyone benefits from walking. These benefits include: improved fitness, cleaner air, reduced risks of certain health problems, and a greater sense of community, but walking needs to be safe and easy.

CHL staff conducted two separate walkability survey in Fagaitua. The survey included a checklist of items to be observed and rated, which are related to the safety and quality of the walk. The individual scores for these items were then added for a total score to get an overall rating for the community walkability.

Rating Scale for Each Walking Feature	Total Walkability Score	Community Walkability
1=awful	26-30	<b>Celebrate! You have a great neighbourhood for walking.</b>
2=many problems	21-25	<b>Celebrate a little. Your neighbourhood is pretty good.</b>
3=some problems	16-20	<b>Okay, but it needs work.</b>
4=good	11-15	<b>It needs lots of work.</b>
5=very good	5-10	<b>It's a disaster for walking!</b>
6=excellent		

The rating scores for Fagaitua are summarized in the table below. For the total score, the number of neighborhoods audited (n) is 5. This is followed by the mean total score (8.0), standard deviation (2.0), median (9.0), minimum (5.0), and maximum (10.0). According to the mean total score, the walking environment surveyed in Fagaitua is a disaster for walking and needs a lot of work to encourage community walkability.

**Table S.5.1. Community Walking Features**

Walking Features	n	mean	sd	med	min	max
<b>Total Walking rating</b>	5	8.0	2.0	9.0	5.0	10.0
<b>Room to walk</b>	5	1.4	0.5	1.0	1.0	2.0
<b>Ease of crossing street (s)</b>	5	1.2	0.4	1.0	1.0	2.0
<b>Ease of following safety rules</b>	5	4.0	0.0	4.0	4.0	4.0
<b>Drivers' behavior</b>	5	1.4	0.5	1.0	1.0	2.0
<b>Pleasantness of walk</b>	5	1.6	0.5	2.0	1.0	2.0

\*Walkability survey and rating scale is adapted from The National Center for Safe Routes to School ([www.saferoutesinfo.org/sites/default/files/walkabilitychecklist.pdf](http://www.saferoutesinfo.org/sites/default/files/walkabilitychecklist.pdf))

### **Food Cost Survey (FCS)**

The CHL Food Cost Survey (FCS), adapted from the Alaska Food Cost Survey, was conducted in all of the CHL jurisdictions in March 2014. Given the link between childhood obesity and food security, particularly in low income households, CHL conducted this survey of communities in the CHL jurisdictions. Three stores in Fagaitua were assessed to determine the cost and availability of market foods in Fagaitua.

The FCS is based on a meal plan, in particular, the USDA Thrifty Food Plan (TFP). The Thrifty Food plan, based on a national survey of dietary habits, is designed to meet the nutritional needs at low cost for a family of four with school age children (USDA, 1999). It assumes that the food items are bought at a store and are prepared at home. This menu is made of foods in 10 categories. The categories include fruits, vegetables, meats, legumes, dairy, egg, fats / oils, grain, sweets / beverages, and spices. Included in the report is the percent of each category towards the Thrifty Food Plan cost. The TFP is also used as the basis for determining food assistance levels provided in programs such as school lunch.

If a particular item was missing in a local area/ jurisdiction, we used the cost of a similar item as a substitute for the item that was on the national menu. However, in some

cases, items were unavailable and no obvious substitutes were available.

Portland, Oregon serves as a general indicator of and reference point for the price series in a somewhat comparable mainland/lower 48 city and its food costs have been collected using the same survey as that was used by CHL. The weekly food cost for a family of four with two adults and two young school- age children in Portland was \$142.37.

It is important to note that the Thrifty food Plan menu was developed based on diets and food availability in the contiguous U.S. Further work is necessary to document local diets and food availability and to examine how they may be incorporated into an adjusted thrifty food menu for use in Fagaitua, and its effect on community food costs.

Results for Fagaitua

- **Food Cost Survey, Costs of Food at Home (\$) based on the Thrifty Food Plan and USDA adjustments.**

In Fagaitua, the following foods had no price information: bagels, garlic, bananas, hamburger buns, dinner rolls, melon, canned kidney beans, cottage cheese, chili powder, French fries, French or Italian bread, oregano, chicken bouillon, molasses, paprika, cinnamon, Italian herb seasoning, vanilla, chicken bouillon, molasses, paprika, cinnamon, Italian herb seasoning, vanilla, and bottled lemon juice. The weekly food cost for the Thrifty Food Plan menu for a family of four in Fagaitua was \$189.71. In the CHL region, the average cost was \$215.18, with a minimum of \$173.97 and a maximum of \$286.30. The cost in Portland, USA was \$142.37. Fagaitua’s costs for the same or comparable food items of the Thrifty Food Plan are 133.3% of their cost in Portland, Ore.

**Table 1. Weekly and Monthly Food Cost to Eat According to the U.S. Thrifty Food Plan in Fagaitua**

Age, Groups	Weekly	Monthly
<b>INDIVIDUALS</b>		
Child, 6-8 years	\$39.75	\$172.28

<b>Child, 9-11 years</b>	\$47.17	\$204.43
<b>Male, 20-50 years</b>	\$53.71	\$232.75
<b>Female, 20-50 years</b>	\$49.06	\$212.59
<b>FAMILY</b>		
<b>Family of 2, 20-50 years</b>	\$113.07	\$489.98
<b>Family of 4 , Couple, 20-50 years and children, 6-8 and 9-11 years</b>	\$189.71	\$822.07

\* Ratio used to calculate cost of family of other size and individuals are based on Center for Nutrition and Policy and Promotion (CNPP)'s Official USDA Alaska and Hawaii Thrifty Food Plans at <http://www.cnpp.usda.gov>

- **Thrifty Food Plan, Weekly Food Costs: By Food Category**

Cost and percent of each food category was presented in the following table (Table 2), in the order from most expensive to least expensive.

**Table 2. Weekly Thrifty Food Plan Costs for a Family of 4 by Food Category in Fagaitua**

<b>Food Group</b>	<b>Cost</b>	<b>Percent</b>
<b>Fruit</b>	\$37.42	19.7%
<b>Meat</b>	\$36.10	19.0%
<b>Grain</b>	\$31.96	16.8%
<b>Vegetable</b>	\$27.94	14.7%
<b>Dairy</b>	\$23.79	12.5%
<b>Sweets and Beverages</b>	\$13.88	7.3%
<b>Spice</b>	\$6.38	3.4%
<b>Fats and Oils</b>	\$6.11	3.2%
<b>Egg</b>	\$3.22	1.7%
<b>Legume</b>	\$2.91	1.5%

- **Thrifty Food Plan, Weekly Food Costs: Top 10 Most Expensive Foods**

The top 10 most expensive foods in Fagaitua were presented in Table 3.

**Table 3. Top 10 Most Costly Food Items in Fagaitua**

<b>Food</b>	<b>Food Group</b>	<b>Price</b>	<b>Percent</b>
<b>Milk, 1% milk fat</b>	Dairy	\$14.56	7.7%

<b>Potatoes, any variety</b>	Vegetable	\$12.74	6.7%
<b>Oranges, any variety (bagged or loose)</b>	Fruit	\$12.19	6.4%
<b>Beef, ground, lean (16 to 23% fat)</b>	Meat	\$11.03	5.8%
<b>Orange juice, frozen concentrate</b>	Fruit	\$10.57	5.6%
<b>Bagels, plain, enriched</b>	Grain	\$7.78	4.1%
<b>Fruit drink, refrigerated, any flavor</b>	Sweet beverages	\$7.10	3.7%
<b>Milk, whole</b>	Diary	\$6.87	3.6%
<b>Pork, ground</b>	Meat	\$6.35	3.3%
<b>Noodles, yolk-free, enriched</b>	Grain	\$4.84	2.6%
<b>Total</b>		<b>\$94.03</b>	<b>49.5%</b>

## Summary

The CHL food cost survey found the cost of food for a family of four, using the TFP, to be \$189.71 per week which is 33.3% higher than the weekly food cost for a family of four in Portland, Oregon. In comparison to the average CHL region (\$215.98), the weekly food cost in Fagaitua was 12.2% lower.





# Summary of Prevalence Study



Children's Healthy Living Program



## **VIII. Conclusion / Summary of Prevalence Study**

The purpose of this report is to inform the community of the CHL research that was conducted in Fagaitua during 2012 and 2013. It is a “snapshot” of the community during this time period. It is hoped that this comprehensive report will help the community in designing programs, allocating resources, and advocating for policies that increase the health and well-being of young children in Fagaitua.

Having a greater the selection of fruit and vegetables at Fagaitua’s stores and improving walking conditions could serve to better the health and well-being of young children in the community.

13.9% of participants in Fagaitua reported that they ran out of money for food “most times” or “always” each month and 88.5% reported they received some type of food assistance. This is a concern as 73.9% of participants household income was <\$20,000 and the weekly cost to feed a family of four on the Thrifty Meal plan is \$189.71.

The CHL team would like to express our gratitude and appreciation to all the children, parents, caregivers, teachers, community members and partners who assisted in the collection of this information. Without the support and participation of the community this report would not exist.

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