

# A Comparison of Health Education and Physical Activity Practice in Four Regions of the Hawaiian Island of Oahu

Donna Chun, Ed.D.<sup>1</sup>; Norman Eburne, Ph.D.<sup>2</sup>; Joseph Donnelly, Ph.D.<sup>3</sup>

<sup>1</sup> Brigham Young University – Hawaii; <sup>2</sup> Professor of Health Education, Exercise and Sport Science Department, Brigham Young University – Hawaii; <sup>3</sup> Professor of Health Education, Department of HPPERLS, Montclair State University

Corresponding author: Associate Professor, Exercise and Sport Science Department, Brigham Young University – Hawaii, 55-220 Kulanui Street, Laie, Hawaii 96762; Phone: 808.293.3353; Fax: 808.293.3754; Email: [CHUND@BYUH.EDU](mailto:CHUND@BYUH.EDU)

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## Abstract

### English:

The purpose of this study was to compare four distinct Hawaiian districts on the island of Oahu regarding their efforts in presenting quality health education and physical activity. The ethnic groups represented in this study included Hawaiian, Pacific Islander, Asian and Caucasian. Questionnaires based on the Action for Healthy Kids Healthy Schools Summit Survey were sent to 168 schools on Oahu. The return response of the surveys was 79% with 132 schools either returning the survey or being interviewed by a follow-up phone call. Statistical analysis utilizing ANOVA identified any significant differences among the districts, school levels, and ethnic groups. Further analysis using Tukey's Honestly Significant Difference Post Hoc Test indicated specific differences after significant ANOVA was found. Based on data collected in this study, it would appear that fewer than half of the schools were in the process of making health and physical education culturally sensitive, and that state health education standards were mostly being implemented at the middle and high school level. Elementary schools that were "in progress" for implementing health standards and adopting physical education standards should be given assistance from the district level. Additional assistance should also be given to elementary schools that were "in progress" for testing health topics and providing uniform assessment in physical education. Hawaiian schools on Oahu were contributing to the physical activity of students by offering physical education classes, however, this could be greatly improved by inclusion of daily physical education taught by certified instructors at all levels especially elementary.

### Spanish:

el propósito de este estudio era comparar cuatro distritos hawaianos distintos en la isla de Oahu con respecto a sus esfuerzos en la presentación de la educación y de la comprobación de salud de la calidad actividad. Los grupos étnicos representados en este estudio incluyeron a hawaiano, Isleño, asiático y caucásico pacíficos. Cuestionarios basados en la acción para La encuesta sobre sana la cumbre de las escuelas de los cabritos sanos fue enviada a 168 escuelas en Oahu. La respuesta de vuelta de los exámenes era el 79% con 132 escuelas cualquiera el volver examen o siendo entrevistado con por una llamada telefónica de la carta recordativa. Análisis estadístico utilizar ANOVA identificó cualquier diferencia significativa entre los distritos, niveles de la escuela, y grupos étnicos. Análisis adicional usando Tukey honesto La prueba hoc del poste significativo de la diferencia indicó diferencias específicas después ANOVA significativo fue encontrado. De acuerdo con datos recogió en este estudio, él aparezca que menos que la mitad de las escuelas estaban en el proceso de hacer salud y educación física cultural sensible, y esa educación de salud del estado los estándares eran puestos en ejecucio'n sobre todo en el nivel de la High School media y secundaria. Escuelas primarias que estaban "en marcha" para poner estándares de la salud en ejecucio'n y adoptar estándares de la educación física se debe dar ayuda del nivel del distrito. La ayuda adicional se debe también dar a elemental escuelas que estaban "en marcha" para los asuntos de prueba de la salud y uniforme del abastecimiento gravamen en la educación física. Las escuelas hawaianas en Oahu contribuían a la actividad física de estudiantes ofreciendo la educación física clasifica, sin embargo, esto se podía mejorar grandemente mediante la inclusión diariamente de la comprobación educación enseñada por los instructores certificados en todos los niveles especialmente elementales.

**Keyword(s):** health education, physical activity, ethnicity

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## Introduction

American children and youth are heavier today than at any time in our history. There are over 5 million school aged children and youth who are overweight. This represents more than 15 percent of that age group's population (National Institutes of Health, 2002). Excess body fat is associated with a higher risk of developing a variety of illnesses (Chai, Kaluhiokalani, Little, Hetzler, Zhang, Mikami, & Ho, 2003; Pateman, Shoji, Serna, & Distajo, 2002). Some of these illnesses, such as Type 2 diabetes, high blood pressure, and coronary heart disease have severe implications on the quality of life and longevity. A major goal for the nation is to reduce the number of obese and overweight children and youth by more than 50% by the year 2010 (Ogden, Flegal, Carroll & Johnson, 2002).

Factors associated with obesity include genetics, nutrition and exercise patterns. Therefore, in order to reduce or diminish the rates of child and youth obesity it would seem important to monitor both the exercise and activity patterns of the young as well as to examine their eating habits and behaviors. Although the health and well being of children is the primary responsibility of parents, the schools have a critical role to play in these matters. Schools contribute to effective and health promoting behavior that diminishes the likelihood of obesity in three major ways: 1) School lunch, breakfast, snacks and the foods made available at school activities have both an immediate impact on caloric and nutrient content as well as a long-range influence by demonstrating and reinforcing eating behaviors. 2) The physical education and associated programs in recreation and sports play a role. Also the availability of the school's physical facilities for after-school, weekend and holiday play offers great potential to increase caloric expenditure and promote weight management. 3) Schools may contribute to healthy body weight via the programs made available in comprehensive school health education programs. One goal of comprehensive school health education is to develop health literacy, which will enable students to engage in critical thinking and problem solving concerning health matters (Centers for Disease Control and Prevention, 1996). National health education standards seek to develop students capable of accessing health information, practicing health-enhancing behaviors, demonstrating goal-setting, and comprehending information pertaining to such health-related matters as weight control and management.

Oahu is an island approximately 23 miles in length and 12 miles in width comprised of four

distinct regions. These geographic regions are determined by two mountain ranges, the Koolau Range on the Windward side and the Waianae Range on the Leeward side. The Honolulu region on the south shore is the most populous and is a center for commerce. In the Honolulu School District there are 28 Elementary Schools, 8 Middle Schools, and 6 High Schools. The Windward side contains the cities of Kailua and Kaneohe, the Marine Corps Base of Hawaii, and many rural communities along the northeast shore. In the Windward School District there are 19 Elementary Schools, 2 Middle Schools, and 4 High Schools. The central district encompasses the cities of Mililani and Wahiawa as well as major army and air force bases. It has been Oahu's main agricultural area. In the Central School District there are 21 Elementary Schools, 6 Middle Schools, and 6 High Schools. The fourth region is the Leeward side, which is the driest portion of the island. The Leeward side is comprised of many small communities. In the Leeward School District there are 22 Elementary Schools, 4 Middle Schools and 6 High Schools.

Hawaii is a very ethnically diverse state. This diversity produces a population where there is no true majority and minorities are readily accepted. Ethnic diversity was of interest to the authors because certain regions tend to be populated by higher proportions of one or another ethnic group. Therefore the ethnicity of students was considered as well as physical education and activity facility accessibility and health education efforts found in the schools in each of the four regions of the island. Items used in this study were based upon a survey designed by the Action For Healthy Kids Project and modified to meet the needs of this study (Partnership for Prevention, Priorities in Prevention, 2000).

### Purpose

The purpose of this study was to compare four distinct regions on the island of Oahu regarding their efforts in presenting quality health education and physical activity.

## Method

### Survey

All data was collected through a survey developed by Action for Healthy Kids to determine the status of health education, physical activity, and nutrition/food services in the schools throughout the U.S. (Partnership for Prevention, Priorities in Prevention, 2000). The initial survey was quite extensive, and so the information was condensed to a two-page version of the survey (Appendix A). The survey developed by Action for Healthy Kids was divided into three sections. Due to the extent of the information collected and data analysis in this study,

only sections one and two were presented in this article. Section three was presented in a separate article.

Section one of the survey focused on health education and physical education. Questions E1-E3 dealt specifically with the implementation of standards, assessment, and culturally sensitive instruction in health. Questions E4-E10 referred to the implementation of standards, lifelong fitness, culturally sensitive instruction, and assessment in physical education along with the number of days of physical education and the hiring of physical education specialists. For a list of the questions see Appendix A for details on specific questions.

Section two of the survey (Questions P1-P5) identified issues regarding physical activity and specifically focused on physical fitness, use of school facilities by outside groups, intramurals, school recess, and club activities. For a list of the questions see Appendix A for details on specific questions.

Ten schools from the Central and Windward Districts were involved in a pilot study to determine clarity and understanding of the questions. All ten schools involved in the pilot study were part of the study sample. Copies of the survey were then sent to the principals of all public schools on the island inclusive of a total of 168 schools. After a month, only 30% of the schools had responded. The researchers then made contact with the principals through phone interviews. Where principals were not available, vice-principals reported the information.

#### **Enrollment**

For demographic reporting the schools were grouped by enrollment as to small, medium, and/or large. For the elementary schools the small enrollment included less than 350 students, the medium school enrollment between 351 and 600, and the large enrollment greater than 601 students (Table B1 Appendix B). The middle school enrollment was grouped as follows: small included less than 700 students, medium between 701 and 899 students, and large greater than 900 students (Table B2 Appendix). At the high school level the small enrollment was less than 1499 students, medium enrollment between 1500 and 1999 students, and the large enrollment greater than 2000 students (Table B3 Appendix B).

#### **Ethnicity**

As evidenced by the number of ethnic groups in this study, Hawaii is known for its many international cultural groups. A school environment and community is impacted greatly by the ethnic background and socio-economic structure of the community and families that live within the community and district. Knowing the international

nature of a school community and district also make for interesting comparative analysis relating to academic achievement and school level accomplishments. The ethnic groups represented in this study included Hawaiian, Pacific Islander, Asian and Caucasian. The Filipino race, not necessarily considered Asian in Hawaii, was grouped under the Asian category since it is considered part of the Pacific-Asian Rim. Each school's website provided the breakdown on student ethnicity. Reporting of ethnic categories was determined by percentages as to small, medium and large except for the Pacific Islander category. Small grouping for the Hawaiian less than 14%, 14-22% for medium grouping, and 23% and greater for large grouping (Table B4 Appendix B). Grouping for the Asian category included less than 21% for small grouping, 21-39% for medium grouping, and 40% and greater for large grouping (Table B6 Appendix B). The Caucasian category included the following: small grouping 10% or less, medium grouping 11-30%, and 31% and greater for large grouping (Table B7 Appendix B). Polynesians other than Hawaiians were categorized under the Pacific Islander category. The smaller group included from 1-3%, and the larger group 4% or greater (Table B5 Appendix B).

#### **Analysis**

Statistical analysis utilizing ANOVA identified any significant differences among the districts, school levels, and ethnic groups. The chance rejection level was set at  $P \leq .05$ . Further analysis using Tukey's Honestly Significant Difference Post Hoc Test was used when significant differences were found.

#### **Findings**

The return response of the surveys was 79% with 132 schools either returning the survey or being interviewed by a follow-up phone call. The schools included a total of 90 elementary schools, 20 middle schools, and 22 high schools. Within the four school districts on Oahu, 33 schools were in Central District, 42 schools in Honolulu District, 32 schools in Leeward District, and 25 schools in Windward District. Results of the data were reported by districts, school levels, ethnicity, and significant percentages.

#### **Findings by Districts**

The mean enrollment size for each district is listed in Table 1. When enrollment size was compared between districts, it was found that there was a significant difference between Honolulu District and Leeward District, and also between Leeward District and Windward District.

**Table 1. Mean Enrollment Size Within Districts by Levels (N=132) and Differences When Comparing Districts by Enrollment Size**

District	Central	Honolulu	Leeward	Windward
Central	X	No	No	No
Honolulu	---	X	Yes (p = .022)	No
Leeward	---	---	X	Yes (p = .041)
Windward	---	---	---	X

F = 3.83, p = .011  
 Tukey HSD Post Hoc Test  
 \*Means  
 Central District - 841 (EL-605/N=21, MS-966/N=6, HS-1538/N=6) Total N = 33  
 Honolulu District - 637 (EL-417/N=28, MS-704/N=8, HS-1562/N=6) Total N = 42  
 Leeward District - 968 (EL-678/N=22, MS-1264/N=4, HS-1830/N=6) Total N = 32  
 Windward District - 628 (EL-475/N=19, MS-950/N=2, HS-1204/N=4) Total N = 25

**Table 2. Differences When Comparing Districts by Question E8 (Hiring of Certified Physical Education Teachers)**

District	Central	Honolulu	Leeward	Windward
Central	X	No	No	Yes (p = .031)
Honolulu	---	X	No	Yes (p = .048)
Leeward	---	---	X	No
Windward	---	---	---	X

F = 3.25, p = .024  
 Tukey HSD Post Hoc Test  
 \*Means  
 Central District - 2.42  
 Honolulu District - 2.34  
 Leeward District - 2.34  
 Windward District - 1.72

The only survey question that was significantly different when compared by districts was Question E8, the hiring of certified physical education teachers. The finding was that Central and Honolulu Districts did better than the Windward District in hiring certified physical education teachers (Table 2).

**Findings by School Levels**

When comparing levels by enrollment size, it was found that there were significant differences in enrollment size between the elementary schools and both the middle schools and the high schools, and also between the middle schools and the high schools (Table 3).

When comparing the survey questions by school level, it was found that high schools did better in implementing health standards (Question E1) and testing health topics (Question E2) than elementary schools (Table 4). Middle schools also did better in testing health topics than elementary schools (Table 4).

In addition to Question E2, both middle and high schools did better than the elementary schools for the following survey questions: Question E8 (Hiring of Certified Physical Education Teachers), Question E10 (Uniform Assessment in Physical Education), and Question P5, Sport Clubs (Table 5).

Table 3. Differences When Comparing Levels of Schools by Enrollment Size

School Level	Elementary School	Middle School	High School
Elementary School	X	Yes (p = .000)	Yes (p = .000)
Middle School	---	X	Yes (p = .000)
High School	---	---	X

F = 93.99, p = .000  
 Tukey HSD Post Hoc Test  
 \* Means  
 Elementary School = 537.38 (N = 90)  
 Middle School = 919.50 (N = 20)  
 High School = 1563.91 (N = 22)

Table 4. Differences When Comparing School Level by Survey Question E1 (Health Standards) and E2 (Test Health Topics)

School Level	Elementary School	Middle School	High School
Elementary School	X	No (E1) Yes (E2-p=.012)	Yes (E1-p = .004) Yes (E2-p=.004)
Middle School	---	X	No
High School	---	---	X

F = 6.95, p = .001 (Question E1)  
 F = 8.04, p = .001 (Question E2)  
 Tukey HSD Post Hoc Test  
 \*Means for E1 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 2.55 (N = 87)  
 Middle School = 2.85 (N = 20)  
 High School = 2.95 (N = 22)  
 \*Means for E2 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 2.51 (N = 83)  
 Middle School = 2.95 (N = 20)  
 High School = 3.00 (N = 21)

Middle schools were found to do better than both high schools and elementary schools for Question E5, Daily Physical Education (Table 6). It was also found that middle schools did better than elementary schools for Question E9 (Adopting Physical Education Standards) and Question P2, Intramurals (Table 6).

Both elementary schools and middle schools did better than high schools for Question P4, Employing Recess for Physical Activity (Table 7). Lastly, the only item where elementary schools did better than high schools was Question E6, Requiring Physical Education One Day Per Week (Table 7).

**Table 5. Differences When Comparing School Level by Survey Questions E8 (Hiring Certified Physical Education Teachers, E10 (Uniform Assessment in Physical Education, and P5 (Sport Clubs)**

School Level	Elementary School	Middle School	High School
Elementary School	X	Yes (E8-p=.000) Yes (E10-p=.001) Yes (P5-p=.001)	Yes (E8-p=.000) Yes (E10-p=.002) Yes (P5-p=.019)
Middle School	---	X	No (E8) No (E10) No (P5)
High School	---	---	X

F = 21.80, p = .000 (Question E8)  
 F = 10.69, p = .000 Question E10)  
 F = 8.84, p = .000 (Question P5)  
 Tukey HSD Post Hoc Test  
 \*Means for E8 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 1.89 (N = 84)  
 Middle School = 2.95 (N = 20)  
 High School = 2.91 (N = 22)  
 \*Means for E10 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 2.06 (N = 88)  
 Middle School = 2.80 (N = 20)  
 High School = 2.73 (N = 22)  
 \*Means for P5 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 1.51 (N = 90)  
 Middle School = 2.30 (N = 20)  
 High School = 2.10 (N = 21)

### *Findings by Ethnicity*

The mean enrollment of Hawaiian students in the schools is found in Table 8. Windward District had the largest percent of Hawaiian students (43%) followed by Leeward District with 27%. When districts were compared by Hawaiian extraction, it was found that there were significant differences between Central District and both Leeward District and Windward District. There were also significant differences between Honolulu District and Windward District, and between Leeward District and Windward District (Table 8).

Students of Chinese, Japanese, Korean, and Filipino ancestry were grouped under the Asian category. Honolulu District had the largest percent of Asian students (49%) followed by Leeward District with 39%. When comparing the mean enrollment of Asian ethnicity in the districts, it was found that there were significant differences between Central District and both Honolulu District and Windward District. There were also significant

differences between Honolulu District and both Leeward District and Windward District, and between Leeward District and Windward District (Table 8).

The mean enrollment of Caucasian students in the schools is found in Table 8. The district with the largest percent of Caucasian students was Central District with 21%. When the mean enrollment of Caucasian extraction was compared by districts, it was found that there were significant differences between Central District and both Honolulu District and Leeward District, and also between Honolulu District and Windward District (Table 8).

Polynesians other than Hawaiians were categorized under the Pacific Islander category. This group included people of Tongan, Samoan, Tahitian, Fijian and Micronesian extraction. Honolulu District had the largest percent of Pacific Islanders with 7%. There were no significant differences between districts (Table 8).

**Table 6. Differences When Comparing School Level by Survey Questions E5 (Daily Physical Education), E9 (Adopting Physical Education Standards), and P2 (Intramurals)**

School Level	Elementary School	Middle School	High School
Elementary School	X	Yes (E5-p=.000) Yes (E9-p=.038) Yes (P2-p=.000)	No (E5) No (E9) No (P2) Yes (E5-p=.001)
Middle School	---	X	No (E9) No (P2)
High School	---	---	X

F = 14.45, p = .000 (Question E5)  
 F = 4.19, p = .017 Question E9)  
 F = 13.73, p = .000 (Question P2)  
 Tukey HSD Post Hoc Test  
 \*Means for E5 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 1.16 (N = 90)  
 Middle School = 2.00 (N = 20)  
 High School = 1.27 (N = 22)  
 \*Means for E9 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 2.60 (N = 88)  
 Middle School = 2.95 (N = 20)  
 High School = 2.86 (N = 22)  
 \*Means for P2 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 1.80 (N = 89)  
 Middle School = 2.90 (N = 20)  
 High School = 2.29 (N = 21)

When examining the international nature of the Hawaiian and Asian students, two survey questions were significantly different. It was found that for Question E2 (Test Health Topics) schools with 14-22% Hawaiian students did better than schools with <13% Hawaiian students, and that schools with 40%+ Asian students did better than schools with <20% Asian students (Table 9). For Question E8 (Hire Certified Physical Education Teachers) schools with 14-22% Hawaiian students did better than schools with >22% Hawaiian students, and that schools with 40%+ Asian students did better than schools with <20% Asian students (Table 9).

When comparing the Caucasian Category by survey results, it was found that schools with >30% Caucasian students did better on Survey Question E3 (Provide Culturally Sensitive Health Instruction) than schools with 11-30% Caucasian students (Table 10). It was also found that schools with <10% or >31% Caucasian students did better than schools with 11-

30% Caucasian students on Question E7, Instruction in Lifelong Fitness (Table 10).

**Responses to Survey Questionnaire**

Table 11 refers to the specific responses for each survey question. The responses were coded “Yes”, “In Progress”, “No”, and “Don’t Know” (Table 11). Of great importance to the researchers were the “Yes-responses” that fell below 55%. It included the following survey questions: Question E3 (providing culturally sensitive instruction in health education, 39%), Question E4 (providing culturally sensitive instruction in physical education, 33%), Question E5 (offering daily physical education, 14%), Question P2 (offering intramurals for all students, 48%), and Question P5 (offering sport clubs, 33%). It should be noted that 85% of the schools had physical education once a week (Question E6). In addition positive responses included 84% of the schools allowing outside groups to use school facilities after hours (Question P3), and 92% of the schools offering recess for free play activity (Question P4).

**Table 7. Differences When Comparing School Level by Survey Questions E6 (Physical Education One Day Per Week), and P4 (Employ Recess for Physical Activity)**

School Level	Elementary School	Middle School	High School
Elementary School	X	No (E6) No (P4)	Yes (E6-p=.000) Yes (P4-p=.000)
Middle School	---	X	No (E6) Yes (P4-p=.000)
High School	---	---	X

F = 12.15, p = .000 (Question E6)  
 F = 18.14, p = .000 Question P4  
 Tukey HSD Post Hoc Test  
 \*Means for E6 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 2.89 (N = 90)  
 Middle School = 2.60 (N = 20)  
 High School = 2.18 (N = 22)  
 \*Means for P4 (Based on 1 = Small, 2 = Medium, 3 = Large)  
 Elementary School = 2.97 (N = 90)  
 Middle School = 3.00 (N = 20)  
 High School = 2.38 (N = 21)

**Table 8. Differences When Comparing Districts by Hawaiian, Asian and Caucasian Categories**

District	Central	Honolulu	Leeward	Windward
Central	X	No (H)	Yes (H-p=.026)	Yes (H-p=.000)
		Yes (A-p=.000)	No (A)	Yes (A-p=.001)
		Yes (C-p=.000)	Yes (C-p=.009)	No (C)
		No (P)	Yes (P-p=.017)	No (P)
Honolulu	---	X	No (H)	Yes (H-p=.000)
			Yes (A-p=.030)	Yes (A-p=.000)
			No (C)	Yes (C-p=.003)
			No (P)	No (P)
Leeward	---	---	X	Yes (H-p=.001)
				Yes (A-p=.000)
				No (C)
				Yes (P-p=.013)
Windward	---	---	---	X

F = 18.39, p = .000 (Hawaiian)  
 F = 22.07, p = .000 (Asian)  
 F = 9.13, p = .000 (Caucasian)  
 F = 4.30, p = .006 (Pacific Islander)  
 Tukey HSD Post Hoc Test  
 \*Means (Hawaiian)  
 Central District = 15.64% (N=33); Honolulu District = 17.37% (N = 42);  
 Leeward District = 26.94% (N = 32); Windward District = 43.35% (N = 25)  
 \*Means (Asian)  
 Central District = 33.45% (N = 33); Honolulu District = 49.24% (N = 42);  
 Leeward District = 38.84% (N = 32); Windward District = 17.58% (N = 25)  
 \*Means: (Caucasian)  
 Central = 21.03% (N = 33); Honolulu = 7.05% (N = 42);  
 Leeward = 10.97% (N = 32); Windward = 18.31% (N = 25)  
 \*Means (Pacific Islander)  
 Central = 3.30% (N = 33); Honolulu = 6.56% (N = 42);  
 Leeward = 5.16% (N = 32); Windward = 4.19% (N = 25)



**Table 9. Differences When Comparing Hawaiian and Asian Categories by Survey Question E2 (Test Health Topics) and E8 (Hiring Certified Physical Education Teachers)**

Category	Small (H – 1-13%, A – 1-20%)	Med (H – 14-22%, A – 21-39%)	Large (H - 23%+, A – 40%+)
Small (H - 1-13%) (A – 1-20%)	X	Yes (H-E2-p = .033) No (A-E2) No (H-E8) No (A-E8)	No (H-E2) Yes (A-E2-p=.023) No (H-E8) Yes (A-E8-p=.006) No (H-E2)
Med (H - 14-22%) (A – 21-39%)	---	X	No (A-E2) Yes (H-E8-p=.020) No (A-E8)
Large (H - 23%+) (A – 40%+)	---	---	X

F = 3.26, p = .042 (Question E2 Hawaiian)  
F = 3.66, p = .029 (Question E2 Asian)  
F = 4.16, p = .018 \*Questions E8 Hawaiian)  
F = 5.71, p = .004 (Question E8 Asian)  
Tukey HSD Post Hoc Test  
\*Means – Hawaiian Question E2 (Based on 1 = Small, 2 = Medium, 3 = Large)  
Group 1 = 2.51 (N = 43); Group 2 = 2.88 (N = 34);  
Group 3 = 2.64 (N = 47)  
\*Means – Asian Question E2 (Based on 1 – Small, 2 = Medium, 3 = Large)  
Group 1 = 2.41 (N = 32); Group 2 = 2.70 (N = 33);  
Group 3 = 2.78 (N = 59)  
\*Means – Hawaiian Question E8 (Based on 1 = Small, 2 = Medium, 3 = Large)  
Group 1 = 2.35 (N = 43); Group 2 = 2.50 (N = 36);  
Group 3 = 1.94 (N = 47)  
\*Means – Asian Question E8 (Based on 1 – Small, 2 = Medium, 3 = Large)  
Group 1 = 1.87 (N = 31); Group 2 = 2.06 (N = 32);  
Group 3 = 2.51 (N = 63)

**Table 10. Differences When Comparing Caucasian Category by Survey Question E3 (Provide Culturally Sensitive Health Instruction) and Survey Question E7 (Instruction in Lifelong Fitness)<sup>a</sup>**

Caucasian	Small (1-10%)	Medium (11-30%)	Large (31%+)
Small (1-10%)	X	No (E3) Yes (E7-p= .037)	No (E3) No (E7)
Medium (11-30%)	---	X	Yes (E3-p = .037) Yes (E7-p= .012)
Large (31%+)	---	---	X

F = 3.19, p = .045 (Question E3)  
F = 6.83, p = .002 (Question E7)  
Tukey HSD Post Hoc Test  
\*Means – Question E3 (Based on 1 = Small, 2 = Medium, 3 = Large)  
Small Group = 2.15 (N = 66)  
Medium Group = 1.88 (N = 33)  
Large Group = 2.57 (N = 14)  
Means – Question E7 (Based on 1 = Small, 2 = Medium, 3 = Large)  
Small Group = 2.82 (N = 76)  
Medium Group = 2.46 (N = 37)  
Large Group = 2.93 (N = 15)

<sup>a</sup> Question E7 (Based on 1=Small, 2=Medium, 3=Large)

**Table 11. Responses to Questions Regarding Health Education, Physical Education, and Physical Activity (N=132)**

Questions	Yes	In Progress	No	Don't Know
<b>Education</b>				
E1. Health Standards	87 (65.9%)	38 (28.8%)	3 (2.3%)	3 (2.3%)
E2. Test Health	94 (71.2%)	18 (3.6%)	12 (9.1%)	7 (5.3%)
E3. Health Culturally Sensitive	52 (39.4%)	23 (7.4%)	38 (28.8%)	19 (14.4%)
E4. PE Culturally Sensitive	44 (33.3%)	13 (9.8%)	60 (45.5%)	15 (11.4%)
E5. Daily PE	18 (13.6%)	4 (3%)	110 (83.3%)	0
E6. PE 1x/wk	112 (84.8%)	4 (3%)	16 (12.1%)	0
E7. Lifelong Fitness	100 (75.8%)	21 (15.9%)	7 (5.3%)	4 (3%)
E8. Certified Staff	76 (57.6%)	4 (3%)	46 (34.8%)	5 (3.8%)
E9. PE Standards	99 (75%)	23 (17.4%)	8 (6.1%)	2 (1.5%)
E10 Assess	73 (55.3%)	21 (15.9%)	36 (27.3%)	2 (1.5%)
<b>Physical Activity</b>				
P1. Focus on Fitness	101 (76.5%)	15 (11.4%)	14 (10.6%)	2 (1.5%)
P2. Intramurals	63 (47.7%)	10 (7.6%)	57 (43.2%)	2 (1.5%)
P3. Facilities	111 (84.1%)	6 (4.5%)	14 (10.6%)	1 (1%)
P4. Recess	122 (92.4%)	2 (1.5%)	7 (5.3%)	1 (1%)
P5. Sport Clubs	43 (32.6%)	9 (6.8%)	79 (59.8%)	1 (1%)

## Discussion

The Windward District had the smallest number of schools, and likewise the smallest mean enrollment. Honolulu District had the largest number of schools, but smaller mean enrollment in the schools, especially at the elementary and middle school level. In each of the four districts the mean enrollments for the middle and high schools were larger than for the elementary schools. In addition the mean enrollment in the high schools was significantly larger than the mean enrollment for the middle schools.

The only survey question that was significantly different between districts was Question E8, the hiring of certified physical education teachers. The finding was that Central and Honolulu Districts did better than the Windward District in hiring certified physical education teachers. A closer analysis of the original data revealed the reality of the situation. Unfortunately approximately over half of the elementary schools in the Windward District do not hire certified physical education teachers. The lack of hiring physical education specialists in the elementary schools is not surprising since it is common practice in Hawaii to have the general classroom teacher be responsible for all subject areas including art, music and physical education. School principals ultimately decide how to utilize their resource positions and whether or not physical education is a priority. With the passage of *No Child Left Behind* and especially in schools that are under

corrective action, principals have admitted to the researchers that physical education was not a priority.

Analysis by school level revealed that the middle and/or high schools were significantly different and did better than the elementary schools in several areas. The first area was the implementing of health standards and testing of health topics. The testing of health topics refers to the assessment of instruction covered in health education. A second area was the adoption of physical education standards and providing uniform assessment in physical education. Uniform assessment refers to all physical education classes within the same school being assessed in the same or similar manner. Closer analysis of the data revealed that elementary schools were implementing and adopting health and physical education standards, however, a number of elementary schools had indicated that they were "in progress" of implementing and adopting health and physical education standards, and likewise, "in progress" for not testing health topics and providing uniform assessment in physical education. In Hawaii middle and high school physical education teachers are qualified to teach health. However, in the elementary schools the general classroom teacher most likely may have enrolled in only one university teacher preparation course in health and physical education, and therefore may need additional inservice training in health education.

Other areas where the elementary schools seem to lag behind middle and/or high schools included the hiring of certified physical education teachers, and

inclusion of intramurals and sport clubs. As mentioned earlier, the hiring of certified physical education specialists at the elementary level is a concern, and physical education is not always a priority especially if a school is under corrective action. Since physical education may not be a priority in certain schools, the inclusion of sport clubs would also most likely not be a priority. On the other hand, intramurals is being offered in the elementary schools, however, only for the upper level grades. The survey did not reflect responses for elementary schools that provided intramurals for just the upper grades exclusive of the lower grades.

On Oahu when students in the middle schools enroll in physical education, it is on a daily basis, however, only for the semester. During the other semester physical education is rotated with health and science. The high schools offer physical education on a semester basis, but not daily. No elementary school had daily physical education, and closer analysis revealed that the elementary schools had physical education once a week. Hawaii is not alone in this battle as Illinois for many years has been the lone state in the union to mandate daily physical education K-12. More recently Georgia has joined Illinois and passed the mandatory physical education requirement in public schools. However, the pressure comes not only from the lack of funding, but from such mandates as *No Child Left Behind*, and the fact that school administrators feel a need to schedule subject areas deemed more important to them than basic health and wellness, without which other subject areas could not be adequately pursued because of poor health status.

The largest contingency of Hawaiian students was found in the Windward District (43%) followed by the Leeward District (27%). Central and Honolulu Districts had a smaller enrollment of Hawaiian students with 16% and 17%, respectively. Honolulu District had the largest enrollment of Asian students (49%) followed by 39% in the Leeward District, and 34% in the Central District. The Windward District had a much smaller enrollment of Asian students with 18%. The largest percentage of Caucasian students was found in the Central District (21%) where military bases are located at Schofield Barracks, Wheeler Air Force Base, Fort Shafter Army Base, Hickam Air Force Base, and Pearl Harbor Navy Base. Windward District where the Kaneohe Marine Corp Base is located followed with 18% of Caucasian students. Leeward and Honolulu Districts had 11% and 7% of Caucasian students, respectively. The Pacific Islander category was the smallest ethnic group represented. The largest percentage of Pacific Islanders (7%) was found in the Honolulu District followed by 5% in the Leeward

District, 4% in the Windward District, and 3% in the Central District.

Analysis comparing ethnicity identified four survey questions which resulted in significant differences. These questions included testing health topics (E2), providing culturally sensitive health instruction (E3), instruction in lifelong fitness (E7), and hiring certified physical education teachers (E8). Schools with 14-22% Hawaiian students did better in testing health topics (Question E2) than schools with a smaller enrollment of Hawaiian students. Closer analysis of the data revealed that many of the schools with 14-22% Hawaiian students were middle and high schools which schedule health as part of the regular curriculum. Schools with 40%+ Asian students did better in testing health topics (Question E2) than schools with <20% Asian students. Closer analysis of the data revealed that many schools in the Honolulu District were implementing health standards and testing health topics, and many of the schools with 40%+ Asian students were in the Honolulu District which had the largest number of Asian students.

It was found that schools with 14-22% Hawaiian students did better in hiring certified physical education teachers (Question E8) than schools with >22% Hawaiian students. The district with the greater percentage of Hawaiian students was Windward District. A previous finding in this study was that over half of the elementary schools in the Windward District were not hiring certified physical education specialists. Schools with 40%+ Asian students did better in hiring certified physical education specialists (Question E8) than schools with <20% Asian students. The data revealed that schools in the Honolulu District had adopted a policy of hiring certified physical education specialists, and that Honolulu District had the largest number of Asian students.

Schools with >30% Caucasian students did better in providing culturally sensitive health instruction (Question E3) than schools with 11-30% Caucasian students. With Hawaii being part of the American system and in schools with a larger number of Caucasian students, teachers instruct according to what is outlined in the assigned text and teach to the status quo of the American culture.

It was also found that more schools with <10% or >31% Caucasian students did better than schools with 11-30% Caucasian students in providing instruction in lifelong fitness (Question E7). A closer analysis of the data revealed that students attending schools with a greater percentage of Caucasian students live close to or within a military base where parents in the military participate in a fitness program. As for schools with <10% Caucasian

students providing lifelong fitness, the researchers need further analysis.

Of importance to the researchers were the specific “yes-responses” of the survey questions that fell below 55%. First of all only 39% of the schools provided culturally sensitive instruction in health education, and 33% in physical education. With the many ethnic groups in Hawaii other than Caucasian, teachers on Oahu should provide culturally sensitive instruction in health and physical education to better meet the needs of all students. Secondly, the provision of physical activity in the schools has been suspect. Elementary students should be receiving at least 30-60 minutes of physical activity and upwards of several hours daily (Siedentop, 2001). According to findings in this study, only 14% of the schools on Oahu, mainly middle schools, received daily physical education, and 85% of the elementary schools had physical education once a week. In addition 48% of the schools offered intramurals for all students and 33% offered sport clubs. In order to meet the dose-response of physical activity necessary for the health of children, it is therefore important especially at the elementary level that extended and coordinated physical activity programs be offered to supplement the once a week physical education program. In support of an extended physical activity program findings in this study did show that elementary and middle schools on Oahu offered recess time where students were able to participate in free activity. Although recess cannot take the place of physical education, it does offer additional opportunity for students to be active if they choose.

### Conclusions

Based on data collected in this study, it would appear that:

1. Although the population of the schools on Oahu is very international in nature, fewer than half of the schools were in the process of making health and physical education culturally sensitive.
2. Two-thirds of schools on Oahu have implemented standards that follow state health education guidelines, but mostly at the middle and high school level.
3. High schools and/or middle schools did better in adopting physical education standards, testing health topics, and providing uniform assessment in physical education than the elementary level.
4. Hawaiian schools on Oahu are contributing to the physical activity of students by offering

physical education classes, however, this could be significantly improved by inclusion of daily physical education taught by certified instructors at all levels especially elementary.

5. Health education and daily physical activity can be an effective force in addressing the obesity epidemic in the U.S. generally and Oahu specifically.

### Recommendations

1. With the multi-ethnicity of international cultures in Hawaii, the schools in Oahu should be more culturally sensitive in their instruction in health and physical education.
2. Elementary schools that are “in progress” for implementing health standards and adopting physical education standards should be given assistance from the district level. Additional assistance should also be given to elementary schools that are “in progress” in testing health topics and providing uniform assessment in physical education.
3. It is strongly recommended that the principals in the Windward District, especially at the elementary level look seriously at hiring certified physical education specialists.
4. A secondary issue related to the hiring of physical education specialists, is the scheduling of daily physical education in the schools on Oahu. All things said, until such a time comes when the nation, Hawaii included, sees the need for daily physical activity, principals should be responsible for an extended and coordinated program of physical activity where creative implementation of physical activity is scheduled before, during and or after school assisted by school staff and faculty, parents, and the community at large including businesses, government agencies, and the health and recreational industry.
5. Studies have shown that obesity is a problem with school-age children in Hawaii especially in the elementary schools and those of Hawaiian descent (Chai et al., 2003). In the Windward District the mean percent of Hawaiian ethnicity is 43%, closely followed by the Leeward District with a mean of 27%. Health education, nutritional guidance, and the scheduling of daily physical activity would be a step in the right direction in helping to resolve the issue of hypokinesia and childhood obesity in Hawaii.

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## Appendix A

## Appendix B

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**Appendix A**

**ACTION FOR HEALTHY KIDS SURVEY**

School District \_\_\_\_\_ Public School \_\_\_\_ Private School \_\_\_\_

Elementary School \_\_\_\_\_ Middle School \_\_\_\_\_ High School \_\_\_\_\_ School Enrollment \_\_\_\_\_

Percent of Students: Hawaiian \_\_\_\_\_ Pacific Islander \_\_\_\_\_ Asian \_\_\_\_\_ Caucasian \_\_\_\_\_ Other \_\_\_\_\_

Percent of Students Participating in: Breakfast \_\_\_\_\_ Lunch \_\_\_\_\_

Percent of Students Receiving Subsidized Meals \_\_\_\_\_

<u>Health, Physical &amp; Nutrition Education</u>	Yes	In Progress	No	Don't Know
1. Your school has implemented standards that follow state health education guidelines.	_____	_____	_____	_____
2. Your school tests students on health topics.	_____	_____	_____	_____
3. Your school provides culturally sensitive instruction (instruction that reflects the ethnic background of students) in health education and nutrition.	_____	_____	_____	_____
4. Your school provides culturally sensitive instruction (instruction that reflects the ethnic background of students) in physical education.	_____	_____	_____	_____
5. Your school requires daily physical education for all students.	_____	_____	_____	_____
6. Your school requires physical education for all students at least one day per week.	_____	_____	_____	_____
7. Your school provides instruction in life-long fitness activity.	_____	_____	_____	_____
8. Your school has adopted a policy stating that newly hired staff who teach physical education will be certified by the state to teach physical education.	_____	_____	_____	_____
9. Your school has adopted standards for physical education or has developed its own standards based on the National Standards for Physical Education.	_____	_____	_____	_____
10. Your school requires uniform assessment of student learning in physical education.	_____	_____	_____	_____

<u>Physical Activity</u>	Yes	In Progress	No	Don't Know
1. Your school physical education program has a current focus on physical fitness.	_____	_____	_____	_____
2. Your school makes intramurals available to all students.	_____	_____	_____	_____
3. Your school encourages the use of school facilities for physical activity programs offered by the school and/or community-based organizations outside school hours.	_____	_____	_____	_____
4. Your school employs recess or other free time for physical activity.	_____	_____	_____	_____
5. Your school includes clubs that promote physical activity.	_____	_____	_____	_____

Comments:

## **Appendix B**

### **DEMOGRAPHIC DATA**

District	Small (<350)	Medium (350-600)	Large (601+)	Total
Central	2	6	13	21
Honolulu	12	14	2	28
Leeward	2	6	14	22
Windward	7	8	4	19
Total	23	34	33	90

District	Small (<350)	Medium (350-600)	Large (601+)	Total
Central	2	2	2	6
Honolulu	4	2	2	8
Leeward	0	0	4	4
Windward	0	0	2	2
Total	6	4	10	20

District	Small (<350)	Medium (350-600)	Large (601+)	Total
Central	3	2	1	6
Honolulu	3	2	1	6
Leeward	2	1	3	6
Windward	2	2	0	4
Total	10	7	5	22

Size	Central	Honolulu	Leeward	Windward	Total
Category 1 <14%	18	19	7	0	44
Category 2 14-22%	5	16	12	4	37
Category 3 23%+	10	6	13	22	51
Total	33	41	32	26	132

Size	Central	Honolulu	Leeward	Windward	Total
Category 1 1-3%	23	27	11	18	79
Category 2 4%+	10	15	21	7	53
Total	33	42	32	25	132

Size	Central	Honolulu	Leeward	Windward	Total
Category 1 <21%	6	2	8	18	34
Category 2 21-39%	15	6	8	6	35
Category 3 40%+	12	33	16	2	63
Total	33	41	32	26	132

Size	Central	Honolulu	Leeward	Windward	Total
Category 1 <11%	9	34	24	9	76
Category 2 11-30%	16	8	6	10	40
Category 3 31%+	8	0	2	6	16
Total	33	42	32	25	132

