

## DEMOGRAPHIC, SOCIAL, AND MENTAL HEALTH ASPECTS OF AMERICAN INDIAN AND ALASKA NATIVE ADOLESCENTS IN HAWAI‘I

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*Abstract: American Indians and Alaska Natives (AI/ANs) constitute 2.2% of Hawai‘i’s population. Unfortunately, very little is known about the mental health of AI/AN youth in Hawai‘i. The purpose of this study (N = 7,214; 1992-1996) was to describe AI/AN adolescents versus non-AI/AN youth regarding demographic, social, and mental health variables. The results suggested that AI/AN adolescents were more open to different types of social-emotional supports, had relatively more non-traditional families with a smaller social network, and may be more vulnerable to academic and health difficulties, with particular risk for mental health issues for mixed AI/AN-Native Hawaiians. Implications are discussed, including intervention, socio-political issues, and future research.*

### INTRODUCTION

#### Nationally

American Indian and Alaska Native (AI/AN) adolescents in the U.S. represent one of the fastest-growing and diverse groups of youth (Center for Native American Youth, 2016). There are 562 federally recognized tribes (Indian Nations) in the U.S. (National Congress of American Indians, n.d.). Approximately 229 of these are located in Alaska. The remainder of the tribes is located in 33 other states. Knowing the demographic, social, and behavioral health aspects of a particular group of AI/AN adolescents is important because this information may help to identify critical epidemiologic outcomes, such as prevalence and risk-protective factors. This knowledge, in turn, may suggest prevention and intervention strategies that may help increase protective factors, decrease risk factors, and ultimately improve the mental health of AI/AN youth. This collective knowledge will also help to advance our scientific field in discerning similarities and differences across different groups of AI/AN adolescents.

There have been several seminal reviews on the mental and behavioral health of AI/AN adolescents (Gone & Trimble, 2012; Goodkind et al., 2010; Sarche, Spicer, Farrell, & Fitzgerald, 2011; Whitbeck, Walls, & Hartshorn, 2014). These resources have set the foundation for intervention and future research and have shown that AI/AN adolescents are at increased risk for socioeconomic, demographic, social-behavioral health, and physical health disparities (e.g., poverty, unemployment, low educational attainment, infant mortality, violence, substance use, mood and anxiety disorders, and suicide; American Indian and Alaska Native Mental Health Research, 1994; Center for Native American Youth, 2016; Gone & Trimble, 2012; Goodkind et al., 2010; Sarche et al., 2011).

However, it is important to note that there are also clear protective and resiliency factors. Whitbeck et al. (2014) found that one crucial aspect of resiliency was creating and maintaining pro-social networks as adolescents mature and develop. In addition, positive life events outweigh stressful events in influencing self-esteem. The important and supportive role that culture plays has been reinforced in other reviews (e.g., Center for Native American Youth, 2016).

Goodkind et al. (2010) highlighted seven focal causes of behavioral health disparities and focused on delivering culturally relevant services. One fundamental challenge to improving behavioral health care for AI/AN youth is the “divergence of Western and traditional indigenous approaches to mental health care and healing, and the disregard for effective indigenous practices in service provision, policy, and funding” (Goodkind et al., 2010, p. 387). This article also provided important policy recommendations. In essence, these recommendations acknowledged that due to “the process of colonization that occurred, the solution cannot be conceived of as the integration of two equal systems of care. Instead, it must involve primacy being given to traditional teachings and practices and an overall emphasis on the restoration of harmony” (p. 391).

These issues of cultural appropriateness in providing supports are also related to the ancestry and cultural identification of AI/AN youth. For example, when an AI/AN adolescent is of part or full AI/AN ancestry, then their cultural identification may need to be taken into account when addressing behavioral health disparities (e.g., Markstrom, Whitesell, & Galliher, 2011; Snipp & Saraff, 2011).

## **Hawai'i**

There are important reasons to study AI/ANs in Hawai'i. First, very little is known about indigenous AI/AN adolescents who reside in Hawai'i. Based on a literature review, there were

no studies that primarily focused on AI/ANs in Hawai‘i and their behavioral health, despite there being a growing concern for and scientific literature on the disparities experienced by the indigenous adolescents of the Hawaiian Islands—that is, Native Hawaiians (*kanaka maoli*). Although they reside in their homeland, Native Hawaiian adolescents tend to have lower socioeconomic status (Kamehameha Schools, 2014; Office of Hawaiian Affairs, 2015) and poorer mental health (e.g., Andrade et al., 2006; Choi-Misailidis & Kaulukukui, 2004).

Second, while different AI/AN tribes have many commonalities, there are also many intragroup differences within AI/ANs (e.g., geography). Being geographically distant from the continental U.S. and in the middle of the Pacific Ocean, Hawai‘i may further remove AI/ANs from tribal attachments and present additional stressors to AI/ANs. This difference may be especially important because of the protective nature of culture against behavioral health disparities.

Third, Hawai‘i has unique demographics as compared to the continental U.S., including having Native Hawaiians as the indigenous culture. Understanding the similarities and differences between these two indigenous cultures (e.g., Native Hawaiians and AI/ANs) will be valuable for both applied and scientific reasons (e.g., identifying overlapping risk and protective factors between the two cultures). In addition, Hawai‘i is unique in that it has one of the highest proportions of residents who are of mixed ancestry in the U.S.

Lastly, the more that is learned about AI/ANs in Hawai‘i, the more capable practitioners and researchers will become in promoting AI/ANs’ well-being through prevention, intervention, and further research. In addition, knowledge gained about AI/ANs in Hawai‘i may provide insights into AI/ANs residing in other remote locations on the continental U.S. (e.g., indigenous healing, bi- and multi-culturalism, access to and utilization of care).

### **Census**

Based on the 2010 U.S. Census, Hawai‘i consists of: 38.6% Asian Americans, 24.7% European Americans, 23.6% two or more races, 10.0% Native Hawaiians and/or Pacific Islanders, 1.6% African Americans, 0.3% (full) American Indians/Alaska Natives, and 1.2% “some other race” (U.S. Census Bureau, 2015). When examining all full- and part-Native Hawaiians (typically referred to as being “Native Hawaiian” or “Hawaiian”), the population of Hawai‘i consists of 19.8% Native Hawaiians (U.S. Census Bureau, 2000).

Our knowledge of AI/ANs in Hawai‘i is mainly derived from national surveys, such as the U.S. Census (i.e., see Table 1; U.S. Census Bureau, 2011-2013). For example, of the total

Hawai'i population of AI/ANs (1,390,348), 2.2% (31,052) are of one or more ancestries. Moreover, a much higher proportion of AI/ANs is of mixed ancestry (90.5%) compared to the mixed ethnicity percent of the entire Hawai'i population (23.6%). This difference is also true for the U.S. as a whole, where 51.1% of AI/ANs are of mixed ancestry compared to only 2.8% of the entire U.S. population. In addition, AI/ANs (mixed or full) in Hawai'i and the U.S. are comprised of a larger proportion of children and adolescents compared to the general population (e.g., higher proportion of individuals under the age of 18 and higher proportion of individuals enrolled in high school). Further, the general trend for AI/ANs of one or more ancestries for both Hawai'i and the U.S. as compared to their respective populations is lower socioeconomic status, including 1) higher percentage of grandparents responsible for grandchildren; 2) higher proportion of families with children in poverty; 3) higher rate of individuals 16 years of age or over who are unemployed; 4) lower household median income; 5) lower percent with health insurance; and 6) lower proportion completing a college or professional degree. Lastly, AI/ANs in both the U.S. and in Hawai'i had a slightly higher rate of being civilian veterans as compared to their respective populations. The only inconsistent result was AI/ANs of one or more ancestries in Hawai'i had a smaller average family size than Hawai'i's population, but the converse was true for the U.S. population.

**Table 1  
U.S. Census Data, American Community Survey, 2011-2013**

Demographic	Description	United States <sup>a</sup>		Hawai'i <sup>b</sup>	
		Total	AI/ANs	Total	AI/ANs
Race	One race	97.1%	48.9%	76.4%	9.5%
	More than one race	2.8%	51.1%	23.6%	90.5%
Age	< 18 years of age	23.5%	30.0%	22.0%	32.1%
	≥ 18 years of age	76.5%	70.0%	77.9%	67.8%
High School	Enrollment	20.6%	22.4%	19.9%	22.4%
Family	Average size	3.25	3.56	3.59	3.35
Grandparents	30 years or over responsible for grandchildren	38.2%	51.0%	24.0%	33.4%
Poverty	All families with children under 18 years of age	18.6%	29.6%	12.3%	18.2%
Employment	16 years and over unemployed	5.9%	9.3%	4.3%	7.7%
Income	Household median income	\$52,176	\$38,367	\$66,308	\$54,146
Health Coverage	No health insurance	14.8%	22.4%	6.9%	8.3%
Educational Achievement	Bachelor's degree or graduate/professional degree	29.1%	17.6%	30.3%	22.9%
Veterans	Civilian veterans	8.7%	9.4%	10.7%	13.2%

<sup>a</sup> United States total population = 313,861,723; American Indians/Alaska Natives = 5,208,962

<sup>b</sup> Hawai'i total population = 1,390,348; American Indians/Alaska Natives = 31,052

### **Other Studies**

Unfortunately, the U.S. Census does not collect data on many other important domains, such as academic, social, physical and mental health, and cultural identification factors. In addition, other national and statewide surveys regarding Hawai'i youth typically do not have sufficient numbers of AI/AN adolescents in their databases such that only cautious statements can be made about AI/AN adolescents in Hawai'i. What little we know has come from one study conducted by the National Center on Indigenous Hawaiian Behavioral Health (formerly, Native Hawaiian Mental Health Research Development Program). Hishinuma et al. (2005) examined violence victimization (defined as an individual who "was a victim of violence [was physically harmed by someone]") for adolescents, their family members, and their close friends within the past six months (Major Life Events Scale; Andrews, Lewinsohn, Hops, & Roberts, 1993). There was no statistically significant difference ( $p > .05$ ) in proportion of adolescents who self-reported being a victim of violence between part-full AI/AN (4.4%) and all other youth (3.2%), although part-full AI/AN females (5.0%) tended to self-report at a higher rate than part-full AI/AN males (3.7%). However, part-full AI/AN adolescents reported significantly more family members (9.7%,  $p < .01$ ) and close friends (15.8%,  $p < .01$ ) being victims of violence than non-AI/AN youth (6.6%, 10.1%, respectively). In addition, part-full AI/AN females tended to self-report at a higher rate than AI/AN males for family members (females = 11.0%, males = 8.2%) and close friends (females = 20.1%, males = 10.8%) being victims of violence. Therefore, the results suggested that female part-full AI/AN adolescents were at greater risk of being victims of violence compared to their male counterparts, and part-full AI/AN family members and close friends were at greater risk of being victims of violence than non-AI/AN family members and close friends.

### **Purpose**

The U.S. Census data and the one study cited above suggested that AI/AN adolescents may be at greater risk than non-AI/AN youth in Hawai'i for socio-economic, health, and behavioral disparities. The purpose of the present study is to describe the similarities and differences between AI/AN adolescents and non-AI/AN youth who reside in Hawai'i based on demographic, social, academic, physical health, mental health, and cultural measures.

## METHODS

### Sample Description

Data were from a five-year longitudinal cohort study conducted by the National Center on Indigenous Hawaiian Behavioral Health (NCIHBH; formerly the Native Hawaiian Mental Health Research Development Program) using the Hawaiian High Schools Health Survey (HSHS; see Andrade et al., 2006). The HSHS was based on the Sequoia High School Health Survey (Ackerson, Wiegman-Dick, Manson, & Baron, 1990). The HSHS questionnaire was administered to adolescents in Grades 9 through 12 from five participating schools on three Hawaiian Islands between the school years 1991-1992 and 1995-1996. A total of 12,284 surveys were completed by 7,317 participants.

For participants who completed more than one survey across the study period, the data from the first survey they completed were utilized. Of the 7,317 students who participated, only 103 (1.4%) did not complete the ethnicity question (see Measures section). Given the purpose of comparing across ethnic groups, data from these 103 students were not included in the analyses. Table 2 presents the sample description ( $N = 7,214$ ).

For the purposes of the present study, four mutually exclusive ethnic groups were used:

- 1) 287 of AI/AN ancestry (A; full or part, but no Native Hawaiian ancestry)
- 2) 614 of AI/AN and Native Hawaiian ancestries (AH; which could include other ancestries)
- 3) 4,219 of Native Hawaiian ancestry (H; full or part, but no AI/AN ancestry)
- 4) 2,094 of Other ancestry (O; with no AI/AN and/or Native Hawaiian ancestry), including Chinese (0.9%), Japanese (22.0%), European American (9.9%), Filipino (16.3%), Portuguese (0.8%), Korean (1.0%), Hispanic (0.4%), Samoan (1.3%), Tongan (0.3%), African American (0.2%), Puerto Rican (0.1%), or Mixed or other but no Native Hawaiian or AI/AN (46.6%)

Native Hawaiian youth were over-represented because the original purpose of the larger study was to investigate the mental health of Native Hawaiians. More females than males completed surveys, with this difference greater for AI/AN-Hawaiians as compared to Native Hawaiians and Others. There were more ninth graders primarily because we examined the first survey taken for each student. The three indigenous groups had significantly more ninth graders than the Other group, and the Other group had significantly more eleventh graders than AI/AN-Hawaiians and Native Hawaiians. Despite these grade-level differences, there were no overall

age differences ( $p > .05$ ) among the four groups: AI/AN ( $M = 15.5, SD = 1.3, n = 287$ ); AI/AN-Hawaiian ( $M = 15.4, SD = 1.2, n = 613$ ); Native Hawaiian ( $M = 15.5, SD = 1.3, n = 4,216$ ); and Other ( $M = 15.5, SD = 1.2, n = 2,090$ ).

**Table 2**  
Sample Description ( $N = 7,214$ )

		Total		One-Way	Full or Part		Part AI/AN		Full or Part		Not AI/AN		Two-Way $\chi^2$				
		N	% <sup>a</sup>	$\chi^2$	AI/AN (A)		& Native Hawaiian (AH)		Native Hawaiian (H)		or Native Hawaiian (O)		Overall $R^{2c}$	MC Cross-tabs) $p^d$	MC (2x2 Cross-tabs) <sup>e</sup>		
					n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>					
<b>Total (row percents)</b>		7,214	100.0	H > O > AH > A	287	4.0	614	8.5	4,219	58.5	2,094	29.0					
<b>What is your sex?</b>	Female	3,725	51.7	Females > Males	154	53.7	348	56.7	2,184	51.8	1,039	49.6	.001	*	AH > H & O		
	Male	3,484	48.3		133	46.3	266	43.3	2,031	48.2	1,054	50.4					
<b>What is your grade in school right now?</b>	9 <sup>th</sup>	2,925	40.6	9th > 10th & 11th > 12th	125	43.9	282	46.0	1,780	42.3	738	35.3	.006	****	A, AH, & H > O		
	10 <sup>th</sup>	1,549	21.5		58	20.4	124	20.2	896	21.3	471	22.6					
	11 <sup>th</sup>	1,445	20.1		57	20.0	106	17.3	787	18.7	495	23.7				****	O > AH & H
	12 <sup>th</sup>	1,278	17.8		45	15.8	101	16.5	747	17.7	385	18.4					

Note: AI/AN = American Indian or Alaska Native. MC = Multiple Comparisons.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , \*\*\*\* $p < .0001$

<sup>a</sup> Column percents

<sup>b</sup> One-way multiple comparisons were performed only if the overall one-way chi-square test was statistically significant; all overall one-way chi-square tests were statistically significant ( $p < .05$ )

<sup>c</sup> Square of the phi coefficient for interaction

<sup>d</sup> Two-way multiple comparisons (2x4) were performed only if the overall two-way chi-square test was statistically significant; all overall two-way chi-square tests were statistically significant ( $p < .05$ )

<sup>e</sup> Two-way multiple comparisons (2x2) were performed only if the two-way multiple comparisons (2x4) were statistically significant ( $p < .05$ )

## Measures

Tables 2, A1, and A2 provide the exact wording for the questions and possible responses on the HSHS questionnaire (see table footnotes as well). The questions fall into six categories: demographics, social, academic achievement, physical health, mental health, and culture.

Participants self-reported their demographic information, such as their sex, grade level, age, and length of time on island. Social questions asked the participants to identify their key family members and discuss those members' educational attainment, occupation status, and veteran status. In addition, participants were asked about the number of people in their household and the magnitude of their parents' expectation for their success. Further, participants were asked to complete six items for both the Perceived Social Support from Family Scale and the Perceived Social Support from Friends Scale (Procidano & Heller, 1983). These six items have been shown to be reliable and valid with the same sample (e.g., Nahulu et al., 1996). Participants' academic achievement was measured by their education goals, academic achievement relative to the achievement of their classmates, grades, satisfaction with school, perceived likelihood that the participant will complete the current school year, and perceived likelihood that the participant will complete high school. The physical health questions asked participants to report their level of concern with their physical health, their quality of physical health relative to their peers, frequency of physician and nurse visits, and number of sick days. Participants reported if they had a mental health condition, their level of concern of the mental health condition, their care-seeking preferences, and the amount of time since they had counseling. Finally, the culture section measured participants affiliation with Native Hawaiian cultural traditions through questions such as frequency of utilization of a Native Hawaiian healer; perceived importance of maintaining the Native Hawaiian culture; and value of Native Hawaiian beliefs, behaviors, and attitudes.

## **Procedures**

Prior to the administration of the HSHS questionnaire, parents and students were provided written materials describing the nature and purpose of the study. Parents were asked to return a postcard if they did not want their child to participate in the study. Students who had their parents' permission to participate had the option of providing their formal agreement or not providing their formal agreement on the day of the HSHS questionnaire administration. Students who provided their written agreement completed the survey in their homerooms while supervised by their teachers. At the time this study was implemented (in 1992), this type of "passive consent" was considered appropriate and was approved by the University of Hawai'i at Mānoa's Committee on Human Studies (i.e., Institutional Review Board). The survey generally took 30 to 45 minutes to complete. Approximately 60% of the student body was surveyed. A

previous analysis showed that there was a higher proportion of females who were surveyed. Individuals who were surveyed were more likely to have fewer absences, suspensions, and conduct infractions, and higher grade-point averages (Andrade et al., 2006).

### **Data Analyses**

The analyses were conducted using SAS 9.2. Chi-square tests were used to assess differences for demographic, social, and mental health categorical variables. First, an overall one-way chi-square test was used to determine if there was an unequal distribution among all categories of the variable in question. If the overall one-way chi-square test was statistically significant ( $p < .05$ ), the overall one-way chi-square test was partitioned into 2-by-1 crosstabs to perform pairwise multiple comparisons between categories of a variable. A category with a significantly lower proportion than another category was notated with a less-than sign. To assess the interaction between ethnicity and the variable in question, an overall two-way chi-square test was conducted. If the overall two-way chi-square test was statistically significant, then multiple comparisons (2-by-4 crosstabs) were used to assess the differences in proportion of a single category of a variable by the four ethnic groups. If a given 2-by-4 comparison was statistically significant, then multiple comparisons (2-by-2 crosstabs) were used to compare the proportion of a category of a variable for two ethnic groups at a time.

Differences among ethnic groups for demographic, academic, social, physical health, mental health, and cultural continuous variables were assessed using analysis of variance (ANOVA). First, an overall one-way ANOVA was used to determine if there were differences among the four ethnic groups for the variable in question. If the overall one-way ANOVA was statistically significant, pairwise multiple comparisons were used to identify differences between two ethnic groups at a time.

## **RESULTS**

Table A1 presents the results for tests with categorical response variables. Table A2 presents the results of tests with continuous response variables.

## Demographic

**Main Wage Earner (Table A1).** In general, AI/ANs had a higher proportion of the main wage earner being the biological mother, stepfather, and/or foster parents, and a lower proportion being the biological father, as compared to the other ethnic groups. The two ethnic group categories that included Native Hawaiians had higher proportions of the main wage earner being the grandparents, as compared to the Other ethnic group. Mixed results were noted for the highest educational level of the main wage earners. The Other ethnic group's most-frequent educational level for main wage earners was college graduate, whereas for the other three ethnic groups, the most-frequent educational level for main wage earners was high school graduate or GED (general educational development). Regarding the source of income, AI/ANs had the lowest proportion of main wage earners employed full-time, while non-AI/AN Native Hawaiians had the highest proportion. AI/ANs had a higher proportion of main wage earners being on welfare (as compared to non-AI/AN Native Hawaiians & Others) and had a higher proportion of main wage earners being self-employed/own business or farm (compared to the two Native Hawaiian groups). Both Native Hawaiian groups had a higher proportion of main wage earners being a military veteran compared to the Other ethnic group.

**Duration of Time Lived on O'ahu (Table A2).** O'ahu is the most-populated island of Hawai'i. As would be expected, Native Hawaiians had the greatest average number of years having lived on "this island" (i.e., O'ahu), followed by AI/AN-Native Hawaiians, the Other ethnic group, and then AI/ANs.

## Social

**Most Important Persons Who Brought Up Adolescent (Table A1).** Regarding the most important persons who brought up the adolescents, AI/ANs had higher proportions of stepfathers and foster parents; the Other ethnic group had higher proportions of traditional biological mothers and biological fathers; and Native Hawaiian ethnic groups had higher proportions of aunts, grandmothers, and grandfathers. In general, of these most-important persons, the ones with the highest educational achievement relative to the other ethnic groups for AI/ANs were stepfathers and foster parents, for Native Hawaiians were biological mothers and biological fathers, and for AI/AN-Native Hawaiians were grandmothers, grandfathers, foster parents, and *hānai* (adopted) parents. The results regarding the educational levels

achieved by the most important persons were mixed. Overall, the Other ethnic group attained higher education levels and the Other ethnic group's most-frequent educational level was college graduate, whereas for the other three ethnic groups, the most-frequent educational level was some college.

**Relatives Frequently Seen (Table A1).** For the relatives frequently seen besides the adolescents' parents, AI/ANs tended to have lower proportions seeing their grandmothers and their maternal grandfather as compared to non-AI/AN Native Hawaiians. The two ethnic groups that included Native Hawaiians had higher proportions than the Other ethnic group seeing their uncles, aunts, and cousins.

**Number of People in Home (Table A2).** The two Native Hawaiian ethnic groups had a higher average number of people who lived in their homes as compared to the remaining non-Native Hawaiian groups (i.e., AI/AN, Other).

**Parent Expectations (Table A2).** There were no statistically significant differences among the four ethnic groups.

**Perceived Family Support (Table A2).** Native Hawaiians indicated higher levels of family support compared to the AI/AN and the Other ethnic groups, and mixed AI/AN-Native Hawaiians self-reported higher levels of family support than the Other ethnic group.

**Perceived Friend Support (Table A2).** Native Hawaiians indicated higher levels of friend support than the other three ethnic groups.

## Academics

**Educational Goals (Table A1).** Although the large majority of students across all ethnic groups did not plan to drop out of high school, the two ethnic groups with AI/ANs (i.e., AI/ANs, AI/AN-Native Hawaiians) were more likely to self-report that their educational goal was to drop out of school as compared to the two remaining ethnic groups. AI/ANs were also more likely to report that their educational goal was to graduate from a technical school or two-year college as compared to the two Native Hawaiian ethnic groups.

**Doing Well in School Compared to Classmates (Table A2).** The Other ethnic group was more likely to rate themselves as doing better than their classmates compared to the three other ethnic groups.

**Grades in Last Report Card (Table A2).** The Other ethnic group self-reported higher academic grades for the last report card, followed by non-AI/AN Native Hawaiians, with the two AI/AN groups reporting the lowest grades.

**Feelings About Going to School (Table A2).** The non-AI/AN Native Hawaiians and Other ethnic group liked school more than the two AI/AN groups.

**Chances of Completing School Year (Table A2).** The Other ethnic group rated their likelihood of completing the school year higher than the other three ethnic groups.

**Chances of Getting a High School Diploma (Table A2).** There were no statistically significant differences among the four ethnic groups for self-rating of likelihood to complete high school.

## Physical Health

**Physical Health Worried or Concerned Adolescent in Past Month (Table A2).** The two Native Hawaiian (i.e., Native Hawaiian, mixed AI/AN-Native Hawaiian) groups self-reported higher levels of being worried or concerned about their physical health in the past month, as compared to the other two ethnic groups.

**Health Compared to Other Adolescents Their Age (Table A2).** There were no statistically significant results among the four ethnic groups.

**Number of Times Seen a Nurse or Doctor in the Past Six Months (Table A2).** The Other ethnic group had a significantly lower average number of times seeing a nurse or doctor in the past six months compared to the remaining three ethnic groups.

**Number of School Days Absent Because Sick in Past Month (Table A2).** The Other ethnic group had a lower average number of absences due to sickness in the past six months compared to the remaining three ethnic groups. In addition, AI/ANs had a higher number of absences than the Native Hawaiians.

## Mental Health

**Preferred Person to See for Help (Table A1).** AI/ANs were more likely to prefer seeing a church minister or priest when they had mental or emotional problems compared to the remaining three ethnic groups. In contrast, the two Native Hawaiian groups preferred seeing nurses and Native Hawaiian healers more than AI/ANs and the Other ethnic group, and the Other

ethnic group preferred seeing teachers or school counselors more than the remaining three ethnic groups.

**Had Any Serious Personal, Emotional, Behavioral, or Mental Health Problems in Past Six Months (Table A1).** In general, the mixed AI/AN-Native Hawaiian group had a higher proportion of adolescents who self-reported having had a serious personal, emotional, behavioral, or mental health problem that they felt needed special help or counseling during the past six months. Of these 151 mixed AI/AN-Native Hawaiians, 63 (42%) sought help and 88 (58%) did not seek help. The Other ethnic group had a higher proportion of adolescents who indicated that they had not been bothered by personal problems in the past six months.

**Discussed Problems with Family or Friends (Table A1).** AI/ANs had a higher proportion of adolescents who discussed problems with family or friends, but self-reported that this action did not help at all, as compared to the Native Hawaiians and Other ethnic group.

**Mental Health Worried or Concerned Adolescent in Past Month (Table A2).** The two Native Hawaiian (i.e., Native Hawaiian, mixed AI/AN-Native Hawaiian) groups self-reported higher levels of being worried or concerned about their mental health in the past month, as compared to the other two ethnic groups.

**Last Time Received Counseling or Any Other Mental Health Service (Table A2).** Mixed AI/AN-Native Hawaiians had more recent counseling or any other mental health service, followed by AI/ANs and Native Hawaiians, and then the Other ethnic group.

## **Native Hawaiian Culture**

**Number of Times Gone to See Native Hawaiian Healer in Past Six Months (Table A2).** The two Native Hawaiian (i.e., Native Hawaiian, mixed AI/AN-Native Hawaiian) groups had significantly more visits to a Native Hawaiian healer in the past six months compared to the remaining two ethnic groups.

**Importance in Maintaining Hawaiian Cultural Traditions (Table A2).** Same as above.

**Value of Hawaiian Beliefs, Behaviors, and Attitudes (Table A2).** Same as above.

## **DISCUSSION**

The purpose of the present study was to describe the similarities and differences between AI/AN adolescents and non-AI/AN youth who reside in Hawai'i on demographic, social,

academic, physical health, mental health, and cultural measures.

The overall results suggested that AI/AN adolescents, as compared to the other three ethnic groups, had *relatively* more non-traditional families with a smaller social network and may be more vulnerable to academic failure and health issues, with particular risk for mental health problems for those of mixed AI/AN-Native Hawaiian ancestry. For example, relative to the other groups, AI/ANs reported: (1) a larger proportion with stepfathers and foster parents as the most important persons who brought them up; (2) a larger proportion with stepfathers, foster parents, and biological mothers as the main wage earners who were comparatively less likely to be employed full-time and more likely to be on welfare or self-employed/own business or farm; (3) a smaller number of people who they lived with; (4) less contact with grandparents; (5) lower levels of perceived social (family, friend) support when compared to Native Hawaiians; and (6) having lived on the island of O‘ahu for the shortest time. Academically, especially in comparison to the Other ethnic group, AI/ANs self-reported lower educational goals, not doing as well in school, poorer last-report-card grades, liking school less, and lower chances of completing the school year. Although AI/ANs worried less about their physical health in the past month (compared to Native Hawaiians and mixed AI/AN-Native Hawaiians), AI/ANs saw a nurse or doctor more often in the past six months than the Other ethnic group and had more school absences due to being sick in the past month than the Other ethnic group and Native Hawaiians. Mixed AI/AN-Native Hawaiians (1) worried more about their mental health in the past month (compared to AI/ANs and the Other ethnic group); (2) had more serious mental health problems in the past six months, with approximately 3 in every 5 of them not seeking help; and (3) had more recent counseling or any other mental health service. AI/ANs had a higher percent who discussed problems with family members or friends relative to the other ethnic groups, although AI/ANs also had a higher proportion who self-reported that this did not help at all (as compared to Native Hawaiians and the Other ethnic group). Compared to the other three ethnic groups, AI/ANs had a greater preference seeing a church minister or priest when experiencing mental health problems. Mixed AI/AN-Native Hawaiians were similar to Native Hawaiians regarding Native Hawaiian culture (i.e., going to see a Native Hawaiian healer, maintaining and valuing Native Hawaiian traditions and beliefs) and had higher levels of Native Hawaiian cultural identification than AI/ANs and the Other ethnic group.

## Limitations

There were several limitations of the study. The data were from the early to mid- 1990s—approximately 20 years ago. The data set was utilized because it constituted the only large existing database that included a sufficient number of AI/ANs to compare to other ethnic groups. The methodological question becomes, “Has there been any major event or trend since the 1990s that would make the results different if the same study was conducted at present?” One large and growing movement that actually started in the 1960s and 1970s has been the Native Hawaiian Renaissance (e.g., Tsai, 2009). This movement has fostered greater awareness of past injustices (e.g., overthrow of the Native Hawaiian monarchy), increased pride in Native Hawaiian culture (including greater use of the Native Hawaiian language), and resulted in concrete advances for Native Hawaiians (e.g., immersion charter schools). In this regard, Native Hawaiian cultural identification has likely increased across the past half century. However, it is difficult to determine how this movement has impacted AI/AN cultural identification in Hawai‘i. Therefore, replication with a more contemporary study is certainly warranted. Although the database included a sufficient number of AI/ANs for group comparisons, the relative group sizes were disparate. In particular, there were 287 AI/ANs, 614 mixed AI/AN-Native Hawaiians, 4,219 Native Hawaiians, and 2,094 in the Other ethnic group. Therefore, there was more statistical power to detect differences among pair-wise comparisons that involved the Native Hawaiians and Other ethnic group. Although the variance accounted for ( $R^2$ ) was 16.4% for the variable of maintaining Native Hawaiian traditions and was 13.4% for valuing Native Hawaiian beliefs, behaviors, and attitudes, none of the remaining variances accounted for was more than 4.7%. This suggests that, in addition to ethnicity, future research should include variables more salient to predicting outcomes, such as physical health and mental health factors. Some of the prevalences were relatively small. For example, the prevalences for foster parents being the most important persons who brought up the adolescents were 2.5% of AI/ANs, 1.3% of mixed AI/AN-Native Hawaiians, 0.5% of Native Hawaiians, and 1.0% of the Other ethnic group. However, despite these rather small percent differences, when subjected to inferential statistical tests, these differences were statistically significant. Finally, because this study was relatively unique in examining AI/AN youth in Hawai‘i, we were more concerned about making Type II errors than Type I errors. Therefore, we set  $\alpha = .05$  for all tests. However, to protect against Type I errors to some extent, we first performed overall inferential statistical tests, and only if these were statistically significant did we go further and test individual pair-wise comparisons.

## Implications

Despite the limitations indicated above, this is the first large-scale empirical study of AI/AN adolescents in Hawai‘i. With the cautions delineated above, there are several implications of the findings. On the one hand, AI/AN youth appeared to be open to different avenues of support, including more informal social network (e.g., family, friends) and alternative-complementary interventions (e.g., church minister, priest). These avenues could be viewed as protective factors for both prevention and intervention to maintain and improve mental health well-being and resiliency for not only AI/AN youth, but also for immigrant minority groups. On the other hand, although open to these supports, AI/AN youth may have less overall access to these varied supports given their more non-traditional family circumstances (e.g., smaller social networks, less extended family) in Hawai‘i.

Given the above, AI/ANs in Hawai‘i may need more creative and/or targeted assistance to address some of the social and well-being disparities that the present study found. The prevention and intervention efforts should be culturally appropriate and “bottom-up” (i.e., community-based) in approach (Allen et al., 2011; Gone & Trimble, 2012; Goodkind et al., 2010; Novins & Bess, 2011), taking into account the unique circumstances AI/AN youth experience in Hawai‘i, including the large majority (90.5%) being of mixed ancestry (versus 23.6% in Hawai‘i). Consideration should be given for these efforts to be introduced in multiple and even non-traditional settings to maximize success, especially given that school connectedness may be lower. Positive, strength-based youth developmental approaches should be utilized (Allen et al., 2011; Antonio & Chung-Do, 2015). Such settings could include more traditional environments (e.g., one-on-one therapy), but also non-traditional venues (e.g., in schools, at churches, in the community; Castagno & Brayboy, 2008), including the use of technology (e.g., telepsychiatry), especially for underserved areas (e.g., neighbor islands).

For example, prevention initiatives could be implemented in settings where AI/AN youth are and where such programs can be institutionalized (e.g., in schools). As one example, Kailua High School, on the island of O‘ahu, is one of the pioneers in the development, implementation, and institutionalization of an Ethnic Studies course that emphasizes learning about other cultures firsthand and teaches tolerance and respect for individual and group differences (Makaiau, 2010; Rehuher, Momohara, Sugimoto-Matsuda, & Hishinuma, 2008). Similarities and differences between the indigenous groups of Native Hawaiians and AI/ANs can also be incorporated into prevention and intervention efforts. Native Hawaiians and AI/ANs are both indigenous

populations that have high proportions of mixed ancestry in Hawai‘i, while Native Hawaiians are in their homeland with larger social networks, and AI/ANs have immigrated to Hawai‘i and have smaller social networks.

In addition, however, it is important to address more macro historical, political, and sociological issues that may more likely impact all indigenous youth, including AI/ANs and Native Hawaiian adolescents, as noted in the AI/AN literature (e.g., Campbell & Evans-Campbell, 2011; Center for Native American Youth, 2016; Gone & Trimble, 2012; Goodkind et al., 2010; Sequist, 2017). These issues include a health care system that fosters health disparities, a lack of apology and restitution for past transgressions against AI/ANs, historical trauma of colonization, a need for education of the larger society regarding AI/AN well-being, and limited development and institutionalization of culturally relevant services. As we enter into an era of greater social awareness of indigenous values (e.g., harmony and balance with nature) and rights (e.g., Dakota Access Pipeline), accompanying this is the recognition of the importance of perspectives from a more indigenous and collectivistic viewpoint to improve well-being. Although the purpose of the present study was to compare and contrast AI/AN youth from non-AI/AN adolescents, AI/AN and Native Hawaiian youth share substantial commonalities, especially when the adolescents are of both indigenous ancestries. Such commonalities should be viewed as strengths rather than weaknesses and ways to further subdivide our youth.

Future qualitative (e.g., interviews, focus groups) and quantitative (e.g., surveys, epidemiologic studies, interventions) research should be considered that address AI/AN well-being: cultural identification (including of mixed identity; Markstorm et al., 2011; Snipp & Saraff, 2011) and cultural influences (e.g., holistic mind-body approach), risk-protective factors, strength-based positive youth-family development, potential prevention and intervention efforts, and workforce (e.g., lack of traditional AI/AN healers in Hawai‘i). At present, there does not exist a youth AI/AN cultural identification scale tailored to AI/AN youth in Hawai‘i who are more likely to be of mixed ancestry. Such a scale may provide greater insight into the role of culture for AI/AN youth in Hawai‘i.

## REFERENCES

- Ackerson, L. M., Wiegman-Dick, R., Manson, S., & Baron, A. (1990). Properties of the inventory to diagnose depression in American Indian adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 29(4), 601-607. <http://dx.doi.org/10.1097/00004583-199007000-00014>
- Allen, J., Mohatt, G. V., Rasmus, S. M., Two Dogs, R., Ford, T., ... & Camp, R. M. (2011). Cultural interventions for American Indian and Alaska Native youth: The Elluam Tungiinun and Nagi Kicopi Programs. In M. C. Sarche, P. Spicer, P. Farrell, & H. E. Fitzgerald (Eds.). *American Indian and Alaska Native children and mental health: Development, context, prevention, and treatment* (pp. 337-364). Santa Barbara, CA: Praeger.
- American and Alaska Native Mental Health Research. (1994). Calling from the rim: Suicidal behavior among American Indian and Alaska Native adolescents. *American and Alaska Native Mental Health Research*, 4, 1-279. <http://dx.doi.org/10.5820/aian.mono04.1994.in>
- Andrade, N. N., Hishinuma, E. S., McDermott, Jr., J. F., Johnson, R. C., Goebert, D. A., ... & Waldron, J. A. (2006). The National Center on Indigenous Hawaiian Behavioral Health study of prevalence of psychiatric disorders in Native Hawaiian adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 45(1), 26-36. <http://dx.doi.org/10.1097/01.chi.0000184933.71917.f4>
- Andrews, J., Lewinsohn, P., Hops, H., & Roberts, R. (1993). Psychometric properties of scales for the measurement of psychosocial variables associated with depression in adolescence. *Psychological Reports*, 73, 1019-1046. <http://dx.doi.org/10.2466/pr0.1993.73.3.1019>
- Antonio, M. C. K., & Chung-Do, J. J. (2015). Systematic review of interventions focusing on Indigenous adolescent mental health and substance use. *American Indian and Alaska Native Mental Health Research*, 22(3), 36-56. <http://dx.doi.org/10.5820/aian.2203.2015.36>
- Campbell, C. D., & Evans-Campbell, T. (2011). Historical trauma and Native American child development and mental health: An overview. In M. C. Sarche, P. Spicer, P. Farrell, & H. E. Fitzgerald (Eds.). *American Indian and Alaska Native children and mental health: Development, context, prevention, and treatment* (pp. 1-26). Santa Barbara, CA: Praeger.
- Castagno, A. E., & Brayboy, B. M. J. (2008). Culturally responsive schooling for indigenous youth: A review of the literature. *Review of Educational Research*, 78(4), 941-993. <http://dx.doi.org/10.3102/0034654308323036>
- Center for Native American Youth. (2016). *State of Native Youth Report: Drawing strength from our cultures: The state of Native youth, 2016*. Washington, DC: Center for Native American Youth at The Aspen Institute. Retrieved from <http://www.cnay.org/docs/state-of-native-youth-report-2016-web-spread.pdf>

- Choi-Misailidis, S., & Kaulukukui, C. M. (2004). Kūkulu i nā Hūlili: Building bridges to the understanding of Native Hawaiian mental health. *Hūlili: Multidisciplinary Research on Hawaiian Well-Being*, 1(1), 223-239. Retrieved from <http://www.ulukau.org/elib/collect/hulili04/index/assoc/D0.dir/doc242.pdf>
- Gone, J. P., & Trimble, J. E. (2012). American Indian and Alaska Native mental health: Diverse perspectives on enduring disparities. *Annual Review of Clinical Psychology*, 8, 131-160. <http://dx.doi.org/10.1146/annurev-clinpsy-032511-143127>
- Goodkind, J. R., Ross-Toledo, K., John, S., Hall, J. L., Ross, L., ... & Lee, C. (2010). Promoting healing and restoring trust: Policy recommendations for improving behavioral health care for American Indian/Alaska Native adolescent. *American Journal of Community Psychology*, 46, 386-394. <http://dx.doi.org/10.1007/s10464-010-9347-4>
- Hishinuma, E. S., Chang, J. Y., Goebert, D. A., Else, I. R. N., Nishimura, S. T., ... & Jones, L. M. (2005). Prevalence of victims of violence among ethnically diverse Asian/Pacific Islanders. *Violence and Victims*, 20(5), 561-575. <http://dx.doi.org/10.1891/vivi.2005.20.5.561>
- Kamehameha Schools. (2014). *Ka Huaka'i: Native Hawaiian educational assessment, 2014*. Honolulu, HI: Kamehameha Schools. Retrieved from [http://www.ksbe.edu/assets/spi/pdfs/kh/Ka\\_Huakai\\_2014.pdf](http://www.ksbe.edu/assets/spi/pdfs/kh/Ka_Huakai_2014.pdf)
- Makaiau, A. (2010, May). *Adolescent identity exploration in a multicultural community context: An educator's approach to rethinking psychological identity interventions*. Unpublished dissertation, University of Hawai'i at Mānoa.
- Markstrom, C. A., Whitesell, N., & Galliher, R. V. (2011). Ethnic identity and mental health among American Indian and Alaska Native adolescents. In M. C. Sarche, P. Spicer, P. Farrell, & H. E. Fitzgerald (Eds.). *American Indian and Alaska Native children and mental health: Development, context, prevention, and treatment* (pp. 101-131). Santa Barbara, CA: Praeger.
- Nahulu, L. B., Andrade, N. N., Makini, Jr., G. K., Yuen, N. Y. C., McDermott, Jr., J. F., ... & Waldron, J. A. (1996). Psychosocial risk and protective influences in Hawaiian adolescent psychopathology. *Cultural Diversity and Mental Health*, 2(2), 107-114. <http://dx.doi.org/10.1037/1099-9809.2.2.107>
- National Congress of American Indians. (n.d.). *An introduction to Indian Nations in the United States*. Washington, DC: National Congress of American Indians. Retrieved from [http://www.ncai.org/about-tribes/indians\\_101.pdf](http://www.ncai.org/about-tribes/indians_101.pdf)
- Novins, D. K., & Bess, G. (2011). Systems of mental health care for American Indian and Alaska Native children and adolescents. In M. C. Sarche, P. Spicer, P. Farrell, & H. E. Fitzgerald (Eds.). *American Indian and Alaska Native children and mental health: Development, context, prevention, and treatment* (pp. 189-203). Santa Barbara, CA: Praeger.

- Office of Hawaiian Affairs. (2015). *Native Hawaiian data book: Wiki Native Hawaiian data*. Retrieved from <http://www.ohadatabook.com/INC01.pdf>
- Procidano, M., & Heller, K. (1983). Measures of perceived social support from friends and from family: Three validation studies. *American Journal of Community Psychology, 11*, 1-24. <http://dx.doi.org/10.1007/BF00898416>
- Rehuher, D., Momohara, C., Sugimoto-Matsuda, J., & Hishinuma, E. S. (2008). *Ethnic studies course evaluation, 2007-2008: Technical report*. Honolulu, HI: Asian/Pacific Islander Youth Violence Prevention Center, Department of Psychiatry, University of Hawai'i at Mānoa.
- Sarche, M. C., Spicer, P., Farrell, P., & Fitzgerald, H. E. (Eds.). (2011). *American Indian and Alaska Native children and mental health: Development, context, prevention, and treatment*. Santa Barbara, CA: Praeger.
- Sequist, T. D. (2017). Urgent action needed on health inequities among American Indians and Alaska Natives. *Lancet, 389*, 1378-1379. [http://dx.doi.org/10.1016/S0140-6736\(17\)30883-8](http://dx.doi.org/10.1016/S0140-6736(17)30883-8)
- Snipp, M., & Saraff, A. (2011). American Indian and Alaska Native children and families: Social and economic conditions. In M. C. Sarche, P. Spicer, P. Farrell, & H. E. Fitzgerald (Eds.). *American Indian and Alaska Native children and mental health: Development, context, prevention, and treatment* (pp. 27-42). Santa Barbara, CA: Praeger.
- Tsai, M. (2009, August 9). Pride in Hawaiian culture reawakened. *Honolulu Advertiser*, p. A6.
- U.S. Census Bureau. (2000). *Aloha counts: Census 2000 special tabulations for native Hawaiians*. Washington, DC: Author. Retrieved from <http://ulukau.org/elib/cgi-bin/library?c=census00&l=en>
- U.S. Census Bureau. (2011-2013). *S0201: Selected population profile in the United States [Data]. 2011-2013 American Community Survey 3-Year Estimates*. Retrieved from <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmmk>
- U.S. Census Bureau. (2015). *Race and Hispanic or Latino origin: 2010*. Retrieved from <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF>
- Whitbeck, L. B., Walls, M., & Hartshorn, K. (2014). *Indigenous adolescent development: Psychological, social and historical contexts*. New York: Routledge.

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Appendix A. Variable Outcome Tables

Table A1  
Categorical Variable Outcomes

Variable		Value	Total		Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Two-Way $\chi^2$				
			N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Overall R <sup>2b</sup>	N	p <sup>c</sup>	Multiple Comparisons (2x4 Crosstabs)	
																	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>
Demographic	In your family, who is the main wage earner (bread-winner, who brings the main money support into the family)?  [Note: Implied forced-choice but many chose more than one option]	Biological mother	Yes	2,654	38.3	122	44.5	257	43.3	1,524	37.5	751	37.5	‡	6,933	**	A & AH > H & O
		Biological father	Yes	4,001	57.7	115	42.0	321	54.1	2,364	58.2	1,201	60.0		6,933	****	AH, H & O > A; O > AH
		Stepmother	Yes	58	0.8	4	1.5	6	1.0	30	0.7	18	0.9		6,933		
		Stepfather	Yes	498	7.2	41	15.0	36	6.1	287	7.1	134	6.7		6,933	****	A > AH, H & O
		Grandmother	Yes	189	2.7	5	1.8	14	2.4	146	3.6	24	1.2		6,933	****	AH & H > O
		Grandfather	Yes	197	2.8	7	2.6	25	4.2	137	3.4	28	1.4		6,933	****	AH & H > O
		Aunt	Yes	95	1.4	3	1.1	6	1.0	49	1.2	37	1.9		6,933		
		Uncle	Yes	109	1.6	6	2.2	12	2.0	56	1.4	35	1.8		6,933		
		Foster parents	Yes	36	0.5	5	1.8	6	1.0	12	0.3	13	0.7		6,933	***	A > O > H; AH > H
		Sibling (brother or sister)	Yes	83	1.2	2	0.7	7	1.2	43	1.1	31	1.6		6,933		
		Hanai parents	Yes	45	0.7	1	0.4	12	2.0	26	0.6	6	0.3		6,933	****	AH > H & O
Other	Yes	94	1.4	3	1.1	9	1.5	59	1.5	23	1.2		6,933				
	How much school did the main wage earner have?	8th grade or less		164	2.5	6	2.3	13	2.3	66	1.7	79	4.2	.040	6,570	****	O > AH & H
		Some high school		466	7.1	19	7.2	49	8.6	280	7.2	118	6.3		6,570		
		High school graduate/ GED <sup>e</sup>		1,872	28.5	70	26.4	162	28.6	1,285	33.2	355	19.0		6,570	****	H > A & AH > O

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**Table A1**  
**Categorical Variable Outcomes**

Variable												Two-Way $\chi^2$				
		Total			Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Multiple Comparisons (2x4 Crosstabs)			
		Value	N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Over-all R <sup>2b</sup>	N	p <sup>c</sup>	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>
How much school did the main wage earner have?	Some college or community college	1,633	24.9	65	24.5	155	27.3	991	25.6	422	22.5		6,570	*	AH & H > O	
(continued)	College graduate	1,589	24.2	57	21.5	101	17.8	825	21.3	606	32.4		6,570	****	O > A, AH & H	
	Master's degree	662	10.1	38	14.3	73	12.9	347	9.0	204	10.9		6,570	***	A, AH & O > H	
	Doctoral degree (Ph.D., Medical, Law)	184	2.8	10	3.8	14	2.5	72	1.9	88	4.7		6,570	****	A & O > H; O > AH	
Demographic	For the wage earner checked above, what is his/her source of income?	Employed, part-time	448	6.6	26	9.6	41	7.1	256	6.5	125	6.4	.015	6,762		
		Employed, full-time	5,028	74.4	160	59.3	419	72.6	3,054	77.0	1,395	71.6		6,762	****	H > AH & O > A
		Unemployed	72	1.1	6	2.2	6	1.0	43	1.1	17	0.9		6,762		
		Welfare	166	2.5	16	5.9	24	4.2	92	2.3	34	1.7		6,762	****	A & AH > H & O
		Self-employed/ own business or farm	816	12.1	45	16.7	62	10.8	393	9.9	316	16.2		6,762	****	A & O > AH & H
		Retired	165	2.4	12	4.4	17	3.0	92	2.3	44	2.3		6,762		
		Disability	67	1.0	5	1.9	8	1.4	36	0.9	18	0.9		6,762		

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Table A1  
Categorical Variable Outcomes

Variable												Two-Way $\chi^2$					
		Total			Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Multiple Comparisons (2x4 Crosstabs)				
		Value	N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Over-all R <sup>2b</sup>	N	p <sup>c</sup>	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>	
<b>Demographic</b>	Is the person(s) who is the main wage earner and/or brought you up a veteran (someone who used to be in the military)?	Yes	2,079	30.0	86	31.3	202	34.0	1,235	30.5	556	27.7	.003	6,928	*	AH & H > O	
	No	4,102	59.2	168	61.1	325	54.7	2,405	59.4	1,204	59.9		6,928				
	Not sure	747	10.8	21	7.6	67	11.3	408	10.1	251	12.5		6,928	*	O > A & H		
<b>Social</b>	Who is/are the most important person(s) who brought you up? (check all that apply)	Biological mother	Yes	6,328	89.2	250	89.0	528	86.4	3,694	89.0	1,856	90.5	‡	7,095	*	O > AH
	Biological father	Yes	5,121	72.2	164	58.4	413	67.6	3,004	72.3	1,540	75.1		7,095	****	O > H > AH > A	
	Stepmother	Yes	145	2.0	5	1.8	18	3.0	72	1.7	50	2.4		7,095			
	Stepfather	Yes	494	7.0	41	14.6	49	8.0	271	6.5	133	6.5		7,095	****	A > AH, H & O	
	Grandmother	Yes	2,223	31.3	55	19.6	199	32.6	1,447	34.8	522	25.5		7,095	****	AH & H > O > A	
	Grandfather	Yes	1,490	21.0	34	12.1	126	20.6	962	23.2	368	18.0		7,095	****	AH, H & O > A; H > O	
	Aunt	Yes	901	12.7	21	7.5	82	13.4	578	13.9	220	10.7		7,095	***	AH & H > A; H > O	
	Uncle	Yes	667	9.4	17	6.1	57	9.3	413	9.9	180	8.8		7,095			
	Foster parents	Yes	54	0.8	7	2.5	8	1.3	19	0.5	20	1.0		7,095	***	A, AH & O > H; A > O	
	Sibling (brother or sister)	Yes	955	13.5	38	13.5	80	13.1	515	12.4	322	15.7		7,095	**	O > H	
Hawaiian <sup>e</sup> parents	Yes	114	1.6	4	1.4	19	3.1	75	1.8	16	0.8		7,095	***	AH > H > O		
Other	Yes	269	3.8	8	2.9	31	5.1	160	3.9	70	3.4		7,095				

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**Table A1**  
**Categorical Variable Outcomes**

Variable		Value	Total		Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Two-Way $\chi^2$			
			N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Over-all $R^{2b}$	Multiple Comparisons (2x4 Crosstabs)		Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>
														N	p <sup>c</sup>	
Social	From the person(s) you chose above, who achieved the highest educational level?	Yes	3,681	53.9	159	57.6	321	54.3	2,193	54.9	1,008	51.4	‡	6,825	*	H > O
		Yes	2,760	40.4	91	33.0	217	36.7	1,579	39.5	873	44.5		6,825	****	H > A; O > A, AH & H
		Yes	63	0.9	2	0.7	9	1.5	29	0.7	23	1.2		6,825		
	[Note: Implied forced-choice but many chose more than one option]	Yes	212	3.1	22	8.0	22	3.7	112	2.8	56	2.9		6,825	****	A > AH, H & O
		Yes	374	5.5	7	2.5	43	7.3	264	6.6	60	3.1		6,825	****	AH & H > A & O
		Yes	315	4.6	4	1.5	32	5.4	220	5.5	59	3.0		6,825	****	AH & H > A & O
		Yes	319	4.7	9	3.3	29	4.9	192	4.8	89	4.5		6,825		
		Yes	242	3.6	9	3.3	21	3.6	147	3.7	65	3.3		6,825		
		Yes	26	0.4	3	1.1	5	0.9	10	0.3	8	0.4		6,825	*	A & AH > H
		Yes	313	4.6	13	4.7	21	3.6	169	4.2	110	5.6		6,825		
		Yes	41	0.6	2	0.7	9	1.5	23	0.6	7	0.4		6,825	*	AH > H & O
		Yes	93	1.4	3	1.1	6	1.0	57	1.4	27	1.4		6,825		
What is his/her educational level?	8th grade or less		67	1.0	1	0.4	9	1.5	17	0.4	40	2.1	.037	6,688	****	AH & O > H
	Some high school		283	4.2	14	5.2	26	4.4	148	3.8	95	5.0		6,688		

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Table A1  
Categorical Variable Outcomes

Variable												Two-Way $\chi^2$					
		Total			Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Multiple Comparisons (2x4 Crosstabs)				
		Value	N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Over-all R <sup>2b</sup>	N	p <sup>c</sup>	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>	
Social	What is his/her educational level?		1,378	20.6	49	18.2	115	19.6	960	24.5	254	13.2		6,688	****	H > A & AH > O	
	(continued)	High school graduate or GED <sup>f</sup>															
		Some college or community college	1,814	27.1	80	29.6	179	30.6	1,135	29.0	420	21.9		6,688	****	A, AH & H > O	
		College graduate	1,959	29.3	66	24.4	133	22.7	1,037	26.5	723	37.7		6,688	****	O > A, AH & H	
		Master's degree	927	13.9	49	18.2	100	17.1	497	12.7	281	14.7		6,688	**	A, AH & O > H	
		Doctoral degree (Ph.D., Medical, Law)	260	3.9	11	4.1	24	4.1	120	3.1	105	5.5		6,688	***	O > H	
		Besides your parents, what relatives do you see frequently? (check all that apply)	Yes	2,164	32.8	58	24.7	167	29.3	1,326	33.6	613	33.4	‡	6,592	**	H > A & AH; O > A
		Maternal grandfather (mother's father)	Yes	1,493	22.7	37	15.7	138	24.2	905	22.9	413	22.5		6,592		
	Paternal grandfather (father's father)	Yes	3,188	48.4	98	41.7	272	47.6	1,982	50.2	836	45.5		6,592	**	H > A & O	
	Maternal grandmother (mother's mother)	Yes															

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**Table A1**  
**Categorical Variable Outcomes**

Variable		Value	Total										Two-Way $\chi^2$				
			Total			Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Multiple Comparisons (2x4 Crosstabs)			
			<i>N</i>	% <sup>a</sup>	<i>n</i>	% <sup>a</sup>	<i>n</i>	% <sup>a</sup>	<i>n</i>	% <sup>a</sup>	<i>n</i>	% <sup>a</sup>	Over-all <i>R</i> <sup>2b</sup>	<i>N</i>	<i>p</i> <sup>c</sup>	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>	
<b>Social</b> (continued)	Besides your parents, what relatives do you see frequently? (check all that apply)	Paternal grandmother (father's mother)	Yes	2,222	33.7	63	26.8	192	33.6	1,378	34.9	589	32.1	6,592	*	H > A & O	
		Grandfather (hanai <sup>e</sup> )	Yes	224	3.4	9	3.8	23	4.0	134	3.4	58	3.2	6,592			
		Grandmother (hanai <sup>e</sup> )	Yes	268	4.1	9	3.8	35	6.1	151	3.8	73	4.0	6,592			
		Uncles	Yes	3,491	53.0	120	51.1	327	57.3	2,169	54.9	875	47.6	6,592	****	AH & H > O	
		Aunts	Yes	3,828	58.1	124	52.8	351	61.5	2,391	60.6	962	52.4	6,592	****	AH & H > A & O	
		Cousins	Yes	3,525	53.5	115	48.9	320	56.0	2,171	55.0	919	50.0	6,592	**	AH & H > O	
		Other	Yes	696	10.6	35	14.9	66	11.6	411	10.4	184	10.0	6,592			
<b>Academic</b>	My educational goal is to: _____	Drop out of school		25	0.4	3	1.1	8	1.3	10	0.2	4	0.2	.007	7,139	****	A & AH > H & O
		Graduate from high school		1,390	19.5	57	20.4	114	18.9	869	20.8	350	16.8	7,139	**	H > O	
		Graduate from a technical school or two-year college		875	12.3	49	17.6	75	12.4	474	11.4	277	13.3	7,139	**	A > AH & H; O > H	

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Table A1  
Categorical Variable Outcomes

Variable													Two-Way $\chi^2$			
		Total			Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Multiple Comparisons (2x4 Crosstabs)			
		Value	N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Over-all R <sup>2b</sup>	N	p <sup>c</sup>	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>
Academic	My educational goal is to: _____	Graduate from a four-year college	3,876	54.3	138	49.5	325	53.8	2,252	53.9	1,161	55.8		7,139		
	(continued)	Receive graduate training	973	13.6	32	11.5	82	13.6	572	13.7	287	13.8		7,139		
Mental Health	When you have mental or emotional problems, who would you prefer to see for help (check only one)?	Doctor	2,104	33.3	73	30.8	188	33.7	1,291	34.4	552	31.1	.047	6,326		
		Nurse	677	10.7	19	8.0	84	15.1	468	12.5	106	6.0		6,326	****	AH & H > A & O
		Native Hawaiian healer (kahuna lapa 'au)	700	11.1	19	8.0	83	14.9	519	13.8	79	4.4		6,326	****	AH & H > A > O
		Teacher or school counselor	2,137	33.8	82	34.6	142	25.5	1,111	29.6	802	45.1		6,326	****	O > A & H > AH
		Church minister or priest	708	11.2	44	18.6	61	10.9	364	9.7	239	13.4		6,326	****	A > O > H; A > AH

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**Table A1**  
**Categorical Variable Outcomes**

Variable												Two-Way $\chi^2$				
		Total			Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Multiple Comparisons (2x4 Crosstabs)			
		Value	N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Over-all R <sup>2b</sup>	N	p <sup>c</sup>	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>
Mental Health	Have you had any serious personal, emotional, behavioral, or mental health problems for which you felt you needed special help or counseling during the past 6 months? (circle only one)															
	Yes, and I did seek special help	458	6.5	23	8.2	63	10.4	279	6.8	93	4.6	.007	7,048	****	AH > H > O; A > O	
	Yes, but I did not seek special help	772	11.0	36	12.8	88	14.5	447	10.8	201	9.9		7,048	*	AH > H & O	
	I have had very few personal problems of any serious concern	2,609	37.0	104	36.9	225	37.1	1,541	37.3	739	36.5		7,048			
	I have not been bothered at all by personal problems during the past 6 months	3,209	45.5	119	42.2	231	38.1	1,867	45.2	992	49.0		7,048	****	O > A, AH & H; H > AH	
	Do you discuss any of your problems with any members of your family or friends? (circle only one)															
Yes, and it helps a lot	2,344	33.2	92	32.7	196	32.4	1,419	34.3	637	31.2	.004	7,064				
Yes, and it helps some	2,636	37.3	91	32.4	230	38.0	1,554	37.6	761	37.2		7,064				

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Table A1  
Categorical Variable Outcomes

Variable												Two-Way $\chi^2$				
		Total			Full or Part AI/AN (A)		Part AI/AN & Native Hawaiian (AH)		Full or Part Native Hawaiian (H)		Not AI/AN or Native Hawaiian (O)		Multiple Comparisons (2x4 Crosstabs)			
		Value	N	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	n	% <sup>a</sup>	Over-all $R^{2b}$	N	$p^c$	Multiple Comparisons (2x2 Crosstabs) <sup>d</sup>
Mental Health	Do you discuss any of your problems with any members of your family or friends? (circle only one)		316	4.5	21	7.5	35	5.8	170	4.1	90	4.4	7,064	*	A > H & O	
	(continued)	Yes, but it does not help at all		155	2.2	9	3.2	13	2.2	85	2.1	48	2.4	7,064		
		No, I do not have anyone I can talk with about my problems		110	1.6	4	1.4	9	1.5	63	1.5	34	1.7	7,064		
		No, no one cares to hear about my problems		822	11.6	36	12.8	70	11.6	482	11.7	234	11.5	7,064		
		No, I do not care to talk about my problems with anyone		681	9.6	28	10.0	52	8.6	361	8.7	240	11.7	7,064	**	O > AH & H

Note: AI/AN = American Indian or Alaska Native. All overall one-way chi-square analyses were statistically significant ( $p < .05$ )

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , \*\*\*\* $p < .0001$

<sup>a</sup> Column percents

<sup>b</sup> Square of the phi coefficient for interaction

<sup>c</sup> Two-way multiple comparisons (2x4) were performed only if the overall two-way chi-square test was statistically significant; all overall two-way chi-square tests were statistically significant ( $p < .05$ )

<sup>d</sup> Two-way multiple comparisons (2x2) were performed only if the two-way multiple comparisons (2x4) were statistically significant ( $p < .05$ )

<sup>e</sup> formally or informally adopted

<sup>f</sup> General Educational Development

<sup>†</sup> Overall two-way chi-square tests were not conducted for these variables because individuals belonged to more than one category

**Table A2**  
**Continuous Variable Outcomes**

Variable	Total			Full or Part AI/AN (A)			Part AI/AN & Native Hawaiian (AH)			Full or Part Native Hawaiian (H)			Not AI/AN or Native Hawaiian (O)			R <sup>2</sup>	P	Pairwise Multiple Comparison <sup>a</sup>	
	Mean	SD	N	Mean	sd	n	Mean	sd	n	Mean	sd	n	Mean	sd	n				
<b>Demographic</b>	How long have you lived on this island?	12.9	4.7	6,945	10.5	5.3	273	12.9	4.6	584	13.4	4.3	4,053	12.2	5.2	2,035	.024	****	H > AH > O > A
	How many people live in your home?	5.2	2.2	2,772	4.8	2.1	120	5.3	2.4	261	5.3	2.3	1,699	4.7	2.0	692	.014	****	AH & H > A & O
	How much do your parents expect of you? <sup>b</sup>	4.0	0.9	7,145	4.0	0.9	283	4.0	0.9	611	4.0	0.8	4,177	4.0	0.9	2,074	.001		
<b>Social</b>	Perceived Social Support from Family Scale (average score of completed items) <sup>c</sup>	3.6	0.9	6,596	3.5	0.9	265	3.6	0.9	565	3.7	0.9	3,760	3.5	0.9	2,006	.006	****	H > A & O; AH > O
	Perceived Social Support from Friend Scale (averaged score of completed items) <sup>c</sup>	3.9	0.8	6,623	3.8	0.8	265	3.9	0.8	567	3.9	0.7	3,786	3.8	0.8	2,005	.006	****	H > A, AH & O
<b>Academic</b>	Compared with your classmates, how well do you do in school? <sup>d</sup>	3.3	0.7	7,134	3.2	0.7	284	3.2	0.7	607	3.3	0.7	4,175	3.4	0.7	2,068	.007	****	O > A, AH & H
	On the average, what were your grades on your last report card? <sup>e</sup>	2.8	0.8	6,640	2.6	0.8	259	2.7	0.8	555	2.7	0.7	3,880	2.9	0.8	1,946	.007	****	O > H > A & AH

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Table A2  
Continuous Variable Outcomes

Variable	Total			Full or Part AI/AN (A)			Part AI/AN & Native Hawaiian (AH)			Full or Part Native Hawaiian (H)			Not AI/AN or Native Hawaiian (O)			R <sup>2</sup>	P	Pairwise Multiple Comparison <sup>a</sup>	
	Mean	SD	N	Mean	sd	n	Mean	sd	n	Mean	sd	n	Mean	sd	n				
Academic	How do you feel about going to school? <sup>f</sup>	2.6	1.0	7,181	2.8	1.0	285	2.7	1.0	612	2.6	1.0	4,199	2.6	1.0	2,085	.002	***	A & AH > H & O
	What are the chances that you will complete this school year? <sup>g</sup>	4.5	0.8	7,177	4.4	0.9	285	4.4	0.9	610	4.5	0.8	4,201	4.5	0.8	2,081	.002	**	O > A, AH & H
	What are the chances that you will get a high school diploma? <sup>e</sup>	4.5	0.8	7,178	4.4	1.0	285	4.4	0.9	610	4.5	0.8	4,203	4.5	0.8	2,080	.001		
Physical Health	During the last month, how much has your physical health worried or concerned you? <sup>h</sup>	2.5	1.2	7,151	2.3	1.3	282	2.5	1.3	611	2.5	1.2	4,186	2.4	1.2	2,072	.002	**	AH & H > A & O
	Do you think you are healthier than most people your age, not as healthy as most of them or do you think that your health is just about the same as most people your age? <sup>i</sup>	3.3	0.9	7,135	3.3	1.0	280	3.3	0.9	612	3.3	0.9	4,188	3.3	0.9	2,055	.000		
	In the past 6 months, how many times have you gone to see a nurse or doctor? <sup>j</sup>	2.5	1.2	7,094	2.6	1.2	286	2.7	1.3	607	2.6	1.2	4,160	2.4	1.1	2,041	.005	****	A, AH & H > O

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**Table A2**  
**Continuous Variable Outcomes**

Variable	Total			Full or Part AI/AN (A)			Part AI/AN & Native Hawaiian (AH)			Full or Part Native Hawaiian (H)			Not AI/AN or Native Hawaiian (O)			R <sup>2</sup>	P	Pairwise Multiple Comparison <sup>a</sup>
	Mean	SD	N	Mean	sd	n	Mean	sd	n	Mean	sd	n	Mean	sd	n			
<b>Physical Health</b>																		
During the past month of school, how many days were you absent because you were sick? <sup>k</sup>	1.9	1.1	7,136	2.1	1.2	286	2.0	1.2	612	1.9	1.2	4,179	1.9	1.1	2,059	.003	****	A, AH & H > O; A > H
<b>Mental Health</b>																		
During the last month, how much has your mental (emotional) health worried or concerned you? <sup>h</sup>	2.4	1.3	7,135	2.3	1.2	282	2.5	1.3	607	2.5	1.3	4,182	2.4	1.2	2,064	.002	**	AH & H > A & O
When did you last have counseling (dormitory counselor, school counselor, testing for personal problems), or any other mental health service? <sup>l</sup>	2.5	1.6	7,016	2.5	1.6	281	2.9	1.7	599	2.6	1.7	4,126	2.1	1.5	2,010	.028	****	AH > A & H > O
<b>Culture</b>																		
In the past 6 months, how many times have you gone to see a Native Hawaiian healer (for example, a kahuna lapa 'au)? <sup>j</sup>	1.1	0.5	7,126	1.1	0.3	284	1.2	0.6	607	1.1	0.6	4,178	1.1	0.3	2,057	.009	****	AH & H > A & O
How important is it to you to maintain Hawaiian cultural traditions? <sup>m</sup>	3.6	1.2	7,042	2.8	1.3	277	4.0	1.1	605	3.9	1.1	4,140	2.9	1.2	2,020	.164	****	AH & H > A & O

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**Table A2**  
**Continuous Variable Outcomes**

Variable	Total			Full or Part AI/AN (A)			Part AI/AN & Native Hawaiian (AH)			Full or Part Native Hawaiian (H)			Not AI/AN or Native Hawaiian (O)			R <sup>2</sup>	P	Pairwise Multiple Comparison <sup>a</sup>
	Mean	SD	N	Mean	sd	n	Mean	sd	n	Mean	sd	n	Mean	sd	n			
Culture How much do you value Hawaiian beliefs, behaviors and attitudes (circle one) <sup>m</sup>	3.5	1.2	7,065	3.0	1.2	281	3.9	1.0	606	3.8	1.1	4,144	2.9	1.1	2,034	.134	****	AH & H > A & O

Note: AI/AN = American Indian or Alaska Native

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , \*\*\*\* $p < .0001$

<sup>a</sup>Pairwise multiple comparisons performed only if one-way analysis of variance (ANOVA) was statistically significant ( $p < .05$ )

<sup>b</sup>1 = No Expectations, 5 = High Expectations

<sup>c</sup>This composite score was the average of available scores from six items. Each item in the scale had the following values: 1 = Always False, 2 = Often False, 3 = Neither True

<sup>d</sup>1 = Much Below Average, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Much Above Average

<sup>e</sup>A = 4.0, A- = 3.7, B+ = 3.3, B = 3.0, B- = 2.7, C+ = 2.3, C = 2.0, C- = 1.7, D or less = 1.0, Don't know = missing score

<sup>f</sup>1 = I like school very much, 2 = I like school quite a bit, 3 = I like school some, 4 = I don't like school very much, 5 = I hate school

<sup>g</sup>1 = Not At All Likely, 3 = Fairly Likely, 5 = Highly Likely

<sup>h</sup>1 = Not At All Concerned, 5 = Very Much Concerned

<sup>i</sup>1 = Not As Healthy As Others, 3 = About The Same, 5 = Healthier Than Others

<sup>j</sup>1 = Never, 2 = Once, 3 = Twice, 4 = 3-4 Times, 5 = 5 or More Times

<sup>k</sup>1 = None, 2 = 1-2 Days, 3 = 3-4 Days, 4 = 5-7 Days, 5 = 8 Days or More

<sup>l</sup>1 = Never, 2 = Over 2 Years Ago, 3 = 1-2 Years Ago, 4 = 6 Months - 1 Year Ago, 5 = Within the Last 6 Months

<sup>m</sup>1 = Not at all, 3 = Somewhat, 5 = Very much