



2010 SURVEY DATA

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# Healthy Eating and Active Living of Adults and Young Children in Arizona



ARIZONA HEALTH SURVEY

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# Executive Summary

The *2010 Arizona Healthy Survey* provides valuable information on healthy eating and active living of Arizona adults and young children (ages 2-5). Based on the survey data, this report presents the dietary patterns and physical activities of Arizona adults and children, the disparities of healthy eating and active living by various demographic and socioeconomic characteristics (e.g. gender, age, race/ethnicity, education, income, geographic service area, etc.) and the risk factors as well as implications of healthy eating and active living. Key findings of this project offer insights for local communities and state-level policy makers as they develop strategies to promote a healthy and active lifestyle and ultimately prevent or reduce obesity in Arizona.

## Healthy Eating

Major findings regarding healthy eating for Arizona adults and children include the following:

- Over half of Arizona adults age 18 and over reported eating two or more servings of fruit daily, and 22 percent reported eating three or more servings of vegetables daily. Twenty-eight percent of Arizona adults drank one or more servings of soda daily, and one-in-five drank one or more servings of other sugar-sweetened drinks daily.
- In general, male respondents were less likely to have a healthy diet than females. Younger adults were more likely to drink soda and other sugar-sweetened drinks daily, as well as eat fast food weekly. Hispanics/Latinos were less likely to eat three or more servings of vegetables daily than non-Hispanic Whites. Native American/American Indian and Hispanic/Latino adults were more likely to drink soda daily. African-Americans and Hispanics/Latinos were more likely to drink other types of soft drinks and eat fast food. People with higher income were more likely to eat recommended servings of fruit and vegetables and less likely to drink soda and other soft drinks.
- Among soda drinkers, non-Hispanic Whites on average consumed more servings of soda daily than Hispanics/Latinos. African-Americans had the highest average consumption of other sugar-sweetened drinks daily. People with higher income on average consumed less amounts of soda and other sugar-sweetened drinks.
- Over 70 percent of Arizona children age 2-5 consumed 100 percent fruit juice and two or more servings of fruit daily. One-fifth of children had three or more servings of vegetables daily.
- Twenty-three percent of Arizona children had less than two servings of milk daily, while 46 percent had three or more servings of milk daily. Most of them drank low-fat milk.
- Children in lower income families were reported more likely to drink 100 percent fruit juice and eat three or more servings of vegetables daily. Those in higher income families were more likely to eat two or more servings of fruit and three or more servings of milk daily. They were more likely to consume fat-free milk than children in the lowest income category.
- Hispanic/Latino children were more likely to drink 100 percent fruit juice daily than non-Hispanic Whites, but less likely to eat two or more servings of fruit than other racial/ethnic groups. Less than one-in-three Native American/American Indian children drank three or more servings of milk daily.
- Less than one-in-five Arizona children had sugar-sweetened drinks daily, 60 percent ate sweets daily and 61 percent ate fast food one or more times in a typical week.
- The reported rate of non-Hispanic White children drinking sugar-sweetened drinks daily was lower than that of Hispanic/Latinos, but non-Hispanic White children were more likely to eat sweets daily. Native American/American Indian children on average ate the highest servings of sweets daily.

## Active Living

Major findings regarding active living for Arizona adults and children include the following:

- Less than half of adults reported vigorous physical activities in a week, but close to 90 percent reported moderate physical activities. Physically active adults on average engaged in vigorous physical activities three days per week and moderate physical activities 4.3 days per week.
- A higher percentage of non-Hispanic Whites reported moderate physical activities in a week, and they on average spent more days on these activities than Hispanics/Latinos. Adults with higher educational attainment or higher annual household income were more likely to do vigorous and moderate physical activities weekly.
- About half of Arizona children were physically active for at least 60 minutes daily. Eighty-six percent of children went to a park at least once in the last 30 days, and 43 percent went to the library at least once in the last 30 days.
- About half of children in families with \$50,000 or more annual income were physically active for at least 60 minutes daily, compared to less than one-third in families with \$20,000-\$29,999 annual income. Children of lower-income families were more likely to go to a park, but less likely to go to the library.
- Native American/American Indian and Hispanic/Latino children were less likely to be physically active for at least 60 minutes than other racial/ethnic groups. Native American/American Indian children were also less likely to go to a park than other groups. Sixty-one percent of Asian, Pacific Islander, Native Hawaiian and 56 percent of non-Hispanic White children went to the library at least once in the last 30 days, which were significantly higher than that of Hispanic/Latino children (31 percent). Of those physically active, African-American and non-Hispanic White children had the highest average number of days being physically active for at least 60 minutes within a week.

## Risk Factors and Implications

Major findings regarding the risk factors and implication of healthy eating and active living for Arizona adults and children include the following:

- Educational attainment of Arizona adults facilitated healthy eating by increasing the likelihood of eating two or more servings of fruit and three or more servings of vegetables, while reducing the chance of eating fast food weekly. Adults with higher education also had higher average daily consumption of fruits and vegetables and lower average daily consumption of soda, other sugar-sweetened drinks and fast food.
- Adults with incomes above the federal poverty level had higher odds of consuming food in all of the five food groups, and on average they consumed more servings of fruit and vegetables daily and more fast food weekly, but less soda and other soft drinks. Supplemental Security Income (SSI) recipients on average consumed less servings of fruit, vegetables and fast food, but more soda than non-SSI recipients.
- Current smokers were less likely to consume two or more servings of fruit and three or more servings of vegetables daily. Of those fruit and vegetable consumers, they had fewer average servings of fruits and vegetables daily than non-smokers. Current smokers were also less likely to drink soda and other sugar-sweetened drinks daily. However, of those who drank soda and other sugar-sweetened drinks daily, they consumed more servings of soda and other sugar-sweetened drinks than non-smokers.
- The number of stores that sell fresh fruits and vegetables located within one mile of a respondent's home was positively associated with the amount of fruit consumed daily. It also lowered the odds of consuming soda and other soft drinks. The servings of soda and other soft drinks consumed increased with the number of convenience stores and grocery stores within one mile of a respondent's home.

- Parents' educational attainment increased children's odds of consuming 100 percent fruit juice, two or more servings of fruit and three or more servings of vegetables daily.
- Adults with physical, behavioral and mental conditions had lower odds of doing vigorous or moderate physical activities and on average spent fewer days on these activities.
- Educated adults were more likely to do vigorous and moderate physical activities and on average spent more days on these activities weekly. In addition, adults above federal poverty level had higher odds of and spent more days doing vigorous and moderate physical activities.
- Adults with parks, playgrounds and open space within walking distance of their homes had higher odds of doing vigorous and moderate physical activities and spent more days on these activities weekly.
- Parents' socioeconomic economic status, including their education and family poverty level, was positively and significantly related to whether a child is physically active for at least 60 minutes daily, the number of days he/she was active, the odds of going to the library and the number of times he/she went to the library in the past 30 days.
- The odds and the number of days a child went to a park increased with the availability of a park, playground or open space within walking distance of the child's home.
- The number of times parents or other family members took a child to a park, store or playground is positively associated with the odds and number of days the child was physically active for at least 60 minutes or went to a park or the library.
- Arizona adults who ate two or more servings of fruit or three or more servings of vegetables daily had lower body mass index (BMI) and were less likely to be overweight or obese. The number of sodas consumed daily and the servings of fast food consumed weekly were positively associated with BMI and the odds of being overweight or obese. Adults who performed vigorous or moderate physical activities weekly had lower BMI. The number of days spent on vigorous or moderate physical activities lowered the odds of being overweight or obese.
- Adults who consumed two or more servings of fruit had lower chances of having high blood pressure or heart disease. Eating three or more servings of vegetables daily and the number of vegetables consumed daily lowered the odds of having diabetes, high blood pressure or heart disease. Doing vigorous or moderate physical activities and the number of days performing these activities were associated with lower odds of having diabetes, high blood pressure and heart disease.
- Adults who consumed two or more servings of fruit or three or more servings of vegetables daily tended to rate their quality of life better. The number of fruits and vegetables consumed daily also improved their sense of well-being. The servings of soda and other sugar-sweetened drinks consumed daily and the servings of fast food consumed weekly were associated with a lower sense of well-being. Doing vigorous or moderate physical activities and the number of days spent on these activities in a week improved adults' sense of well-being.
- Children who consumed two or more servings of fruit daily and who went to the library tended to have a lower BMI. The servings of fruit consumed daily and the number of times to the library in the last 30 days was also negatively associated with BMI.

## Geographic Areas

Adult data for the 2010 *Arizona Health Survey* are stratified by six geographic regions, similar to the six service delivery areas for Arizona's publicly funded behavioral health and substance abuse services in Arizona. Child data were collected in five geographic regions.

Overall, the Mohave, Coconino, Navajo, Apache and Yavapai area had the lowest percentage of adults consuming two or more servings of fruit daily or eating fast food weekly, but the highest percentage of adults consuming three or more servings of vegetables daily. The Pinal and Gila area and the Graham, Greenlee, Cochise and Santa Cruz area had the highest share of adults who drink soda daily. The Yuma and La Paz area had the highest percentage of adults drinking other sugar-sweetened drinks daily.

Children in the Graham, Greenlee, Cochise, Santa Cruz, Pinal, and Gila area were least likely to consume one or more servings of 100 percent fruit juice daily (62 percent). Those in the Pima area were less likely to consume two or more servings of fruit than their counterparts in the Maricopa area. Children in the Mohave, Coconino Navajo, Apache and Yavapai area were most likely to consume three or more servings of vegetables. The Pima and Maricopa areas had the highest percentages of children consuming three or more servings of milk daily. The Yuma and La Paz area had the highest percentage of children drinking soda (37 percent) or other soft drinks (73 percent) daily.

The Yuma and La Paz area had the lowest rate of adults doing vigorous physical activities, and the Maricopa area had the lowest rate of adults doing moderate physical activities.

As to young children's (ages 2-5) active living, the Mohave, Coconino, Navajo, Apache and Yavapai area had the highest share of children (55 percent) being physically active for at least 60 minutes daily, while the Pima area had the lowest share (39 percent). Children in the Graham, Greenlee, Cochise, Santa Cruz, Pinal, and Gila areas were most likely going to a park (92 percent), and those in the Maricopa area were most likely go to the library (45 percent).

## Methodology in Brief

The 2010 Arizona Healthy Survey collected data through telephone interviews of 8,215 adults age 18 and over and 2,148 children under age 6. For the adult sample, households in Arizona were selected using Random Digit Dialing (RDD), a procedure excluding businesses and including unlisted residential telephone numbers, and one adult respondent was randomly selected in each household. In those sampled households with children (under age 6), one child was sampled, and a parent was interviewed about the child. A supplemental sample drawn from listed telephone numbers expected to reach households with children under age 6 was also used to increase the number of child interviews, as fewer than 8 percent of contacted households in the RDD sample were expected to have eligible children. Interviewers were trained and supervised. Interviews were conducted in English and Spanish between May 4 and August 15, 2010. For the last three weeks of the field period, only child interviews were attempted. The adult sample was weighted to represent the statewide population and the population in six geographic regions, allowing for generalizing based on demographic characteristics of the population. The child sample was weighted to represent the statewide population and the population in five geographic regions.

# Introduction

## Purpose of the Study

St. Luke's Health Initiatives (SLHI) serves as a catalyst to improve the health of individuals and communities in Arizona. The *2010 Arizona Health Survey*, sponsored by SLHI, was designed to collect data on individual indicators of health status, healthcare access, health-related behaviors and various demographic and social/environmental factors related to health. It was developed to complement the Arizona Health Query, the Youth Risk Behavior Survey, the Behavioral Risk Factor Surveillance System and other state-based health and healthcare data sources that are available for public use. Information collected will be analyzed to develop comprehensive, research-based knowledge that can be used to inform and improve public policy and community health/healthcare program planning decisions at the local, regional and state levels.

This report focuses on healthy eating and active living of Arizona adults and children. The findings of this study provide knowledge on the dietary patterns and physical activities of Arizona adults and children; the disparities of healthy eating and active living by gender, age, race/ethnicity, socioeconomic status and region; and the risk factors and implications of healthy eating and active living. The information will help local communities and state-level decision makers in considering options to promote a healthy lifestyle and prevent obesity.

The United States is experiencing an obesity epidemic. "More than one-third of U.S. adults (over 72 million people) and 17% of U.S. children are obese. During 1980-2008, obesity rates doubled for adults and tripled for children." Obesity is costly. "In 2008, overall medical care costs related to obesity for U.S. adults were estimated to be as high as \$147 billion. People who were obese had medical costs that were \$1,429 higher than the cost for people of normal body weight. Obesity also has been linked with reduced worker productivity and chronic absence from work" (Centers for Disease Control and Prevention (CDC), 2011). Unhealthy eating patterns and lack of physical activity (or a combination of the two) are leading causes of obesity. To prevent and reduce obesity, local communities and policymakers in Arizona need to understand the food consumption and physical activity patterns of adults and children and develop strategies accordingly to encourage healthy eating and active living.

## Methodology

The *2010 Arizona Healthy Survey* collected data through telephone interviews of 8,215 adults age 18 and over and 2,148 children under age six. For the adult sample, households in Arizona were selected using Random Digit Dialing (RDD), a procedure excluding businesses and including unlisted residential telephone numbers, and one adult respondent was randomly selected in each household. In those sampled households with children (under age six), one child was sampled, and a parent was interviewed about the child. A supplemental sample drawn from listed telephone numbers expected to reach households with children under age six was also used to increase the number of child interviews, as fewer than 8 percent of contacted households in the RDD sample were expected to have eligible children. The sample was weighted to be representative of the statewide population in Arizona, allowing for generalizing based upon the demographic characteristics of the population.

Survey questions and design were developed by SLHI with assistance from Westat (the firm contracted to conduct the survey), consultants and community partners who would use the data to inform their research, policy and planning decisions. Survey questions were pretested to ensure their objectivity and validity.

Westat, a professional research service firm based in Rockville, Maryland, drew the samples and administered the telephone survey. (Westat was also responsible for conducting the *2008 Arizona Health Survey* and the *2008* and *2010 California Health Interview Surveys*.) Interviewers were trained and supervised by Westat. The 2010 survey interviews were conducted in English and Spanish between May 4 and August 15, 2010. For the last three weeks of the field period, only child interviews were attempted.

Samples were weighted to adjust for the increased number of people using cell phones as their only means of telecommunication.



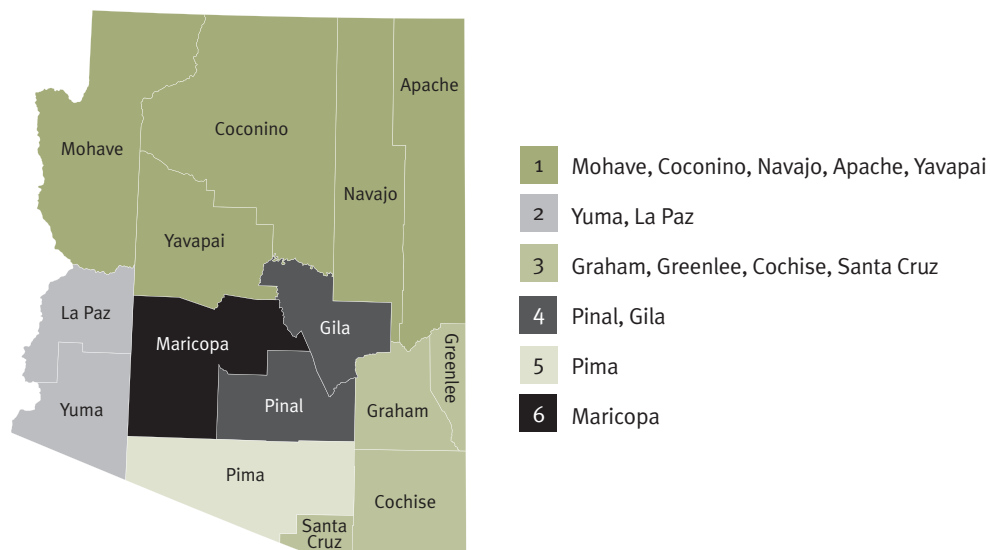
Comparison of the statistics generated in the statewide and Geographic Service Area (see below) samples with known population parameters indicated that the samples were representative microcosms of the populations they were designed to represent, to mirror Arizona's demographic composition. Separate weighting variables were calculated for each GSA.

Questions about the survey instrument and methodology for the *2010 Arizona Health Survey* should be directed to Kim VanPelt at SLHI at [kim.vanpelt@slhi.org](mailto:kim.vanpelt@slhi.org).

Data analyses for this study began with additional data cleaning and recoding of variables into categories for reporting purposes. The SAS 9.2 statistical program was used to produce frequency, mean and crosstab tables. To further elucidate statistically significant results, logistic regression and mean comparison analyses were performed. In addition, binary correlation analyses were conducted to examine the association of healthy eating, active living and various risk factors and implications.

The *2010 Arizona Health Survey* for adults examines health data in six regions often referred to as Geographic Service Areas (GSAs). These GSAs are the service delivery areas for Arizona's publicly funded behavioral health and substance abuse services. They represent a compilation of one or more Arizona counties for each service area. For the child survey, two of the GSAs were combined (GSAs 3 and 4). Thus, data for the child survey can be examined among five geographic areas.

**EXHIBIT 1: Geographic Service Areas (GSAs) in Arizona**



The adult and child samples were weighted to be representative of the statewide population and the population in six geographic areas for adults and five geographic areas for children in Arizona. The GSAs and the number of interviews conducted in each are shown in Table 1.

**Table 1: Geographic Service Areas: Sampling**

	Adult Sample Size	Child Sample Size
1. Mohave, Coconino, Navajo, Apache, Yavapai	1,053	364
2. Yuma, La Paz	743	407
3. Graham, Greenlee, Cochise, Santa Cruz	755	537*
4. Pinal, Gila	798	
5. Pima	2,143	412
6. Maricopa	2,723	428
<b>Total</b>	<b>8,215</b>	<b>2,148</b>

\* Geographic service areas 3 and 4 were combined for the child sample.

All data reported have been rounded. The survey data reflect a statewide weighted sample similar to the population data of both adults (aged 18 and over) and young children (age 5 and under) for Arizona.

Adults:

- Gender: 50 percent female, 50 percent male
- Age: 41 percent ages 18-39, 34 percent ages 40-59, and 25 percent ages 60 and older
- Race/Ethnicity: 66 percent non-Hispanic White<sup>1</sup>, 25 percent Hispanic/Latino
- Income level: 18 percent indicated an income of \$100,000 or more; 21 percent below \$20,000
- Federal Poverty Level: 17 percent were at or below the federal poverty level

**Table 2: 2010 Arizona Health Survey: Adults by Age, Race/Ethnicity and Income**

Age	%	Race/Ethnicity	%	Income	%
18-28	20	Non-Hispanic White	66	≤\$11,000	9
29-39	21	Hispanic/Latino	25	\$11,000-\$19,999	12
40-49	18	African-American	4	\$20,000-\$29,999	12
50-59	16	Asian, Pacific Islander, Native Hawaiian	2	\$30,000-\$49,999	20
60-69	12	Native American/American Indian	4	\$50,000-\$74,999	16
≥70	13			\$75,000-\$99,999	13
				≥\$100,000	18

All data have been weighted and rounded. Figures may not add up to 100 percent.

Children:

- Gender: 49 percent female, 51 percent male
- Age: 49 percent ages 2-3, 51 percent ages 4-5
- Race/Ethnicity: 44 percent non-Hispanic White, 45 percent Hispanic/Latino
- Income level: 19 percent at \$100,000 or more; 21 percent below \$20,000
- Federal Poverty Level: 25 percent were at or below the federal poverty level

**Table 3: 2010 Arizona Health Survey: Children by Race/Ethnicity and Income**

Race/Ethnicity	%	Income	%
Non-Hispanic White	44	≤\$11,000	11
Hispanic/Latino	45	\$11,000-\$19,999	10
African-American	4	\$20,000-\$29,999	11
Asian, Pacific Islander, Native Hawaiian	2	\$30,000-\$49,999	19
Native American/American Indian	5	\$50,000-\$74,999	17
		\$75,000-\$99,999	14
		≥\$100,000	19

All data have been weighted and rounded. Figures may not add up to 100 percent.

<sup>1</sup> Those who were self-identified as both White and Hispanic/Latino are excluded from the non-Hispanic White category and are considered Hispanic/Latino.

## Comparing Arizona and the United States

Overall, 50 percent of Arizona adults ages 18 and above reported eating two or more servings of fruits daily in 2010, compared to only 33 percent adults nationwide in 2009. Twenty-two percent of Arizona adults reported eating three or more servings of vegetables daily, compared to 26.3 percent nationwide (Morbidity and Mortality Weekly Report (MMWR), 2010). Fifty-five percent of Arizona adults met the recommended physical activity objective of “Healthy People 2010,” which is defined as moderate-intensity activities in a usual week for at least 30 minutes per day at least five days per week, or vigorous-intensity activities in a usual week for at least 20 minutes per day at least three days per week, or both, compared to only 49 percent national average in 2007 (CDC, 2010). In terms of obesity rate, 28 percent of Arizona adults were obese in 2010, compared to one-third nationwide in 2007-2009 (Shields, Carroll & Ogden, 2011). Over one-third of Arizona children ages 2-5 were obese in 2010, which was higher than the obesity rate of 10.4 percent nationwide in 2008 (CDC, 2010).

**Table 4: Healthy Eating, Active Living and Obesity Rate of Adults and Children, Arizona vs. the United States**

	<b>% Arizona</b>	<b>% National</b>
<b>Adult (18 and older)</b>		
≥2 Servings of Fruit	50	33
≥3 Servings of Vegetables	22	26
Recommended Physical Activity	55	49
Obesity Rate	28	34
<b>Children (ages 2-5)</b>		
Obesity Rate	39	10

# Healthy Eating

## Adult

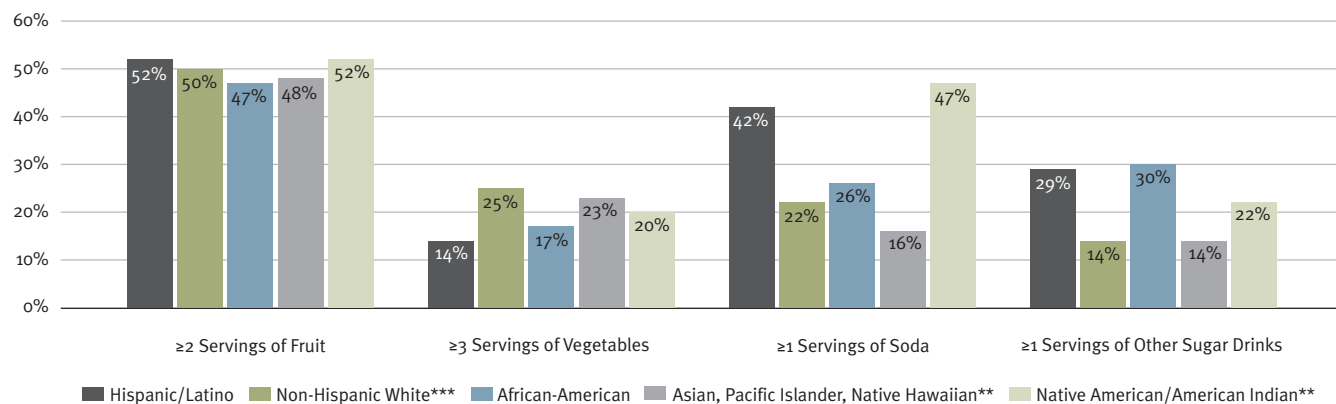
The 2010 Arizona Health Survey asked adult respondents their consumption of fruits, vegetables, soda, other types of sugar-sweetened drinks in a typical day, and their consumption of fast food in a typical week. Over half of Arizona adults ages 18 and over reported that they eat two or more servings of fruit during a typical day. This finding is significantly different from the finding of the 2009 Behavioral Risk Factor Surveillance System (BRFSS), which shows that only 34 percent of Arizona adults ages 18 and over consumed fruit two or more times daily (MMWR, 2010). About 22 percent of adults reported eating three or more servings of vegetable in a typical day, which is consistent with the finding of the 2009 BRFSS (24 percent). Additionally, 28 percent of adults reported drinking one or more servings of soda, such as Coca-Cola® and 7UP®, in a typical day, and 19 percent of adults drink one or more servings of other types of sugar-sweetened drinks, such as sports or energy drinks.

The patterns of food consumption vary by gender, age, race/ethnicity and income (see Table A-1). Male respondents (n = 2,884) in general were less likely to have a healthy diet than female respondents. About 44 percent and 15 percent male respondents indicated they eat two or more servings of fruit and three or more servings of vegetables in a typical day, respectively, compared to 56 percent and 28 percent female respondents (n = 5,331). In contrast, 34 percent and 23 percent of male respondents reported drinking one or more servings of soda and other sugar-sweetened drinks, respectively, compared to only 22 percent and 14 percent of female respondents. These differences are statistically significant (p<.001).

The percentage of adults drinking soda and sugar-sweetened beverages in a typical day decreases with age. Young adults (ages 18-28, n=503) were significantly more likely to report consumption of soda (39 percent) and other sugar-sweetened drinks (34 percent), compared to those who are older. Additionally, 47 percent young adults (aged 18-28) indicated they eat two or more servings of fruit in a typical day, which is significantly lower than the rate of the 29-39 year olds (55 percent, p<.001). The 29-39 age group (n=794) was more likely to consume three or more servings of vegetables daily (25 percent), compared to other age groups.

A lower percentage of African-Americans reported eating two or more servings of fruit per day (47 percent) than other race/ethnic groups, but the differences are not statistically significant (see Figure 1). Hispanics/Latinos (n=1,662) were significantly less likely to consume three or more servings of vegetables daily (14 percent) than non-Hispanic Whites (25 percent, p<.001); Asians, Pacific Islanders and Native Hawaiians (23 percent, p<.01); or Native Americans/American Indians (20 percent, p<.01). In terms of soft drinks, about 47 percent of Native Americans/American Indians (n=243) reported drinking one or more servings of soda in a typical day, followed by Hispanics/Latinos (42 percent), African-Americans (26 percent), non-Hispanic Whites (22 percent), and Asians, Pacific Islanders and Native Hawaiians (16 percent). African-Americans (30 percent) and Hispanics/Latinos (29 percent) were more likely to consume one or more servings of other types of sugar-sweetened drinks in a typical day than non-Hispanic Whites (14 percent); Asians, Pacific Islanders and Native Hawaiians (14 percent); and Native Americans/American Indians (22 percent).

**Figure 1: Percent of Adults Reported Food Consumption in a Typical Day by Race/Ethnicity**



Reference group: Hispanic/Latino; Significance, \*p<.05; \*\*p<.01; \*\*\*p<.001.

Arizona adults with annual household income of \$100,000 or more (61 percent, n=957) were more likely to consume two or more servings of fruit in a typical day than those with less income (see Table A-1). The share of adults who consumed three or more servings of vegetables in a typical day also increased with the level of income. Adults with an annual household income of \$30,000 and more had a significantly higher chance of eating three or more servings of vegetables in a typical day than those with less than \$11,000 annual household income. More than twice the percentage of adults in the highest income category (\$100,000 or more) reported eating 3 or more servings of vegetables in a typical day than those in the lowest income category (less than \$11,000). In contrast, the likelihood of soda consumption reduced significantly with the increasing level of income. Half of adults with less than \$11,000 annual household income reported drinking one or more servings of soda in a typical day, while only 18 percent of adults with \$100,000 or more annual household income did so. In addition, adults with an annual household income of \$30,000 or more had a significantly lower chance of drinking other types of sugar-sweetened drinks in a typical day than those with less than \$11,000 annual household income.

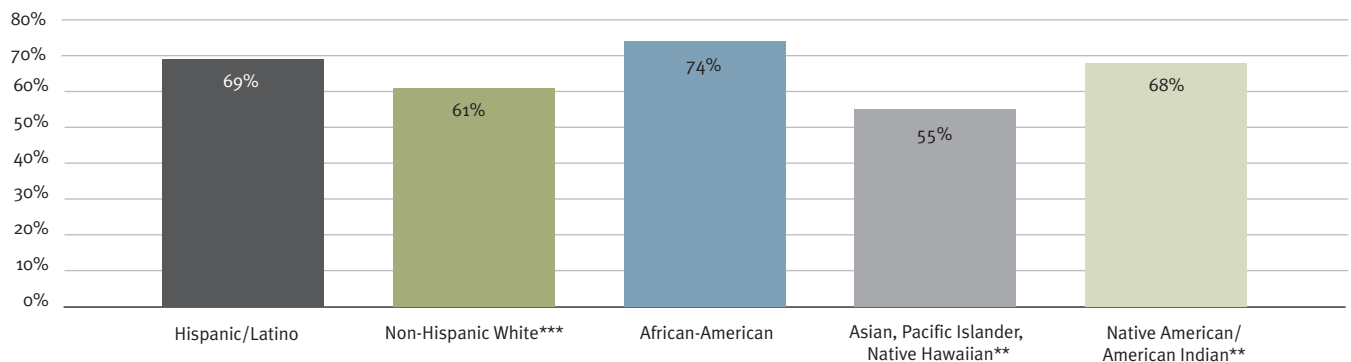
There were slight variations in the patterns of food consumption across GSAs in Arizona (see Table A-1). Half of adults in the Maricopa area (51 percent, n=2,594) reported eating two or more servings of fruit in a typical day, which was significantly higher than those in the Mohave, Coconino, Navajo, Apache and Yavapai area (45 percent, n=1,014, p<.001). In contrast, the Mohave, Coconino, Navajo, Apache and Yavapai area had the highest percentage of adults (27 percent) eating 3 or more servings of vegetable in a typical day, followed by Pima (24 percent), Yuma and La Paz (23 percent), and Maricopa (21 percent) areas. Adults in the Pinal and Gila area were the least likely to consume of three or more servings of vegetable in a typical day (16 percent, n=760), but they were more likely to drink one or more servings of soda (over 31 percent) than adults in other areas. Additionally, the Mohave, Coconino, Navajo, Apache and Yavapai area had significantly lower percentage of adults (13 percent, p<.001), while the Yuma and La Paz area had a significantly higher percentage of adults (25 percent, p<.05), drinking one or more servings of sugar-sweetened drinks in a typical day than the Maricopa area (19 percent).

About two-thirds of Arizona adults (64 percent) reported eating fast food in a typical week (see Table A-2). Male adults (68 percent) were more likely to eat fast food than female adults (60 percent). In addition, the likelihood of fast food consumption in a typical week decreased with age. Seventy-seven percent of young adults ages 18-28 consumed fast food in a typical week, compared to only 45 percent of those aged 70 and older (p<.001). Mid-income adults (annual household income of \$30,000-\$99,999) were more likely to eat fast food in a typical week than those of low income (less than \$11,000). As to fast food consumption by GSA, adults of the Mohave, Coconino, Navajo, Apache and Yavapai area (58 percent, p<.001) and the Pima area (62 percent, p<.05) were less likely to eat fast food than those in the Maricopa area (65 percent). The Yuma and La Paz area had the highest percent of adults (68 percent) reported eating fast food in a typical week.

Almost three-fourths of African-Americans reported eating fast food in a typical week, followed by Hispanics/Latinos (69 percent), Native Americans/American Indians (68 percent), non-Hispanic Whites (61 percent), and Asians, Pacific Islanders and Native Hawaiians (55 percent) (see Figure 2).

Of these Arizona adults who reported drinking soda and other sugar-sweetened drinks in a typical day and eating fast food in a typical week, they consumed an average of 2.5 servings of soda and 2.1 servings of other sugar-sweetened drinks in a typical day, and 2 servings of fast food in a typical week, respectively (see Table A-3). Male adults on average consumed a significantly higher amount of soda, other sugar-sweetened drinks and fast food, compared to females (p<.001).

**Figure 2: Percent of Adults Eating Fast Food in a Typical Week by Race/Ethnicity**



Reference group: Hispanic/Latino; Significance, \*p<.05; \*\*p<.01; \*\*\*p<.001

Young adults (ages 18-28) had an average of three servings of soda and 2.2 servings of other sugar-sweetened drinks in a typical day as well as 2.4 servings of fast food in a typical week (see Table 6). Their average consumption of soda and fast food, but not other sugar-sweetened drinks, were significantly higher than those of older age groups ( $p < .05$ ).

**Table 5: Average Food Servings in a Typical Day by Age**

Age Group (years)	Mean (Standard Deviation)		
	Soda (day)	Other Soft Drinks (day)	Fast Food (week)
18-28 <sup>a</sup>	3.0 (3.1)	2.2 (1.6)	2.4 (1.9)
29-39	2.5 (2.2)*	2.0 (1.4)	2.0 (1.6)***
40-49	2.3 (1.9)**	2.1 (1.6)	2.0 (1.6)***
50-59	2.1 (1.9)***	2.1 (1.6)	1.9 (1.7)***
60-69	1.9 (1.4)***	2.2 (2.0)	1.8 (1.3)***
70 and older	1.5 (0.9)***	2.1 (2.0)	1.6 (1.2)***

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

Although a lower percentage of non-Hispanic White adults reported drinking soda in a typical day compared to Hispanic/Latino adults, among those who did drink one or more servings of soda in a day, their average consumption (2.7 servings) was significantly higher than that of Hispanics/Latinos (2.2 servings,  $p < .01$ ) (see Table A-3). African-Americans had the highest average consumption of other sugar-sweetened drinks (2.9 servings) in a typical day among all racial/ethnic groups and it was significantly higher than that of Hispanic/Latino adults (2.1 servings,  $p < .01$ ). Asians, Pacific Islanders and Native Hawaiians on average consumed the least amount of soda, other sugar-sweetened drinks, and fast food, compared to other racial/ethnic groups, and their average consumption of fast food in a typical week (1.5 servings) was significantly lower than that of Hispanic/Latino adults (2.1 servings,  $p < .05$ ).

Higher annual household income tends to lower the consumption of soda and other soft drinks, but not of fast food. On average, adults with an annual household income of \$100,000 or more drank 1.8 servings of soda in a typical day, which was significantly lower than those with less than \$11,000 income (2.6 servings,  $p < .05$ ). Additionally, adults in both \$50,000-\$74,999 and \$100,000 or more income categories had an average consumption of 1.8 servings of other sugar-sweetened drinks in a day, and these categories were significantly lower than those with the lowest income (2.6 servings,  $p < .05$ ). In contrast, adults who ate fast food in a typical week on average had fast food twice and it had little variation by their income level.

Adults in the Graham, Greenlee, Cochise and Santa Cruz area who drank soda in the typical day had the highest average soda consumption of three servings, and those in the Yuma and La Paz area had the lowest average of 1.8 servings. Despite the variations of average soda consumption across regions, the Maricopa area was not significantly different from other areas in daily average soda consumption. In terms of other soft drinks, the Mohave, Coconino, Navajo, Apache and Yavapai area had the highest average consumption of 3.1 servings in a typical day, followed by the Graham, Greenlee, Cochise and Santa Cruz area (3.0 servings), and these two areas were significantly higher than the Maricopa area (2.1 servings,  $p < .05$ ). The average fast food consumption in a typical week had very little variation across GSAs in Arizona.

## Child

The 2010 Arizona Health Survey asked questions on children’s (ages 2-5) daily consumption of 100 percent fruit juice, fruit, vegetables, milk (including the type of milk), soda and other sugar-sweetened drinks, and sweets, as well as weekly consumption of fast food.

The 2010 Dietary Guidelines for Americans recommended eating more fruits and vegetables. According to the guidelines, American children (ages 2 to 18) and adults (ages 19 to 30 years) consumed more than half of their daily fruit intake as juice. “Although 100 percent fruit juice can be part of a healthy diet, it lacks dietary fiber and when consumed in excess can contribute extra calories.” (USDHHS/USDA, 2010, p.35) Therefore, it is suggested that the majority of fruit consumption should come from whole fruits. When juices are consumed, 100 percent fruit juice should be encouraged. Sweetened juice products with minimal juice content, such as juice drinks or fruit drinks, are considered sugar-sweetened beverages rather than fruit juice. The guidelines also recommended drinking water and other unsweetened beverages with few or no calories.

Over 70 percent of Arizona children ages 2-5 consumed one or more servings of 100 percent fruit juice (73 percent) and two or more servings of fruit (78 percent) daily (see Table A-4). Only about one-fifth of children had three or more servings of vegetables per day. Overall, 66 percent of children consumed five or more servings of 100 percent fruit juice, fruit and vegetables daily.

A slightly higher percentage of boys (n = 1,137) consumed one or more servings of 100 percent fruit juice (74 percent), two or more servings of fruit (79 percent) and five or more servings of fruit juice, fruit and vegetable daily (68 percent), respectively, compared to girls (n=1,011). The differences were not statistically significant. However, girls were much more likely to eat three or more servings of vegetables per day (24 percent) than boys (18 percent, p<.01).

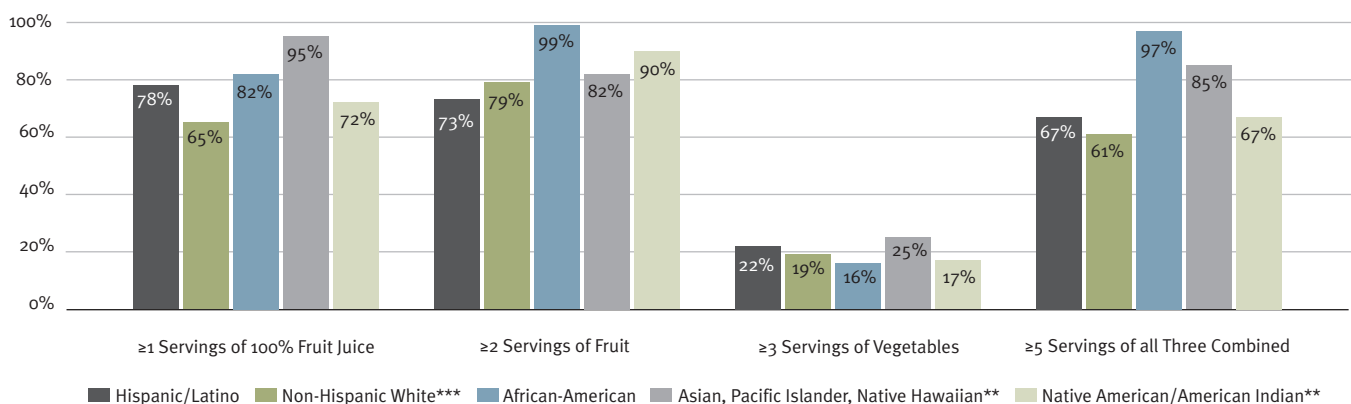
Children ages 2-3 (69 percent, n=772) were less likely to drink one or more servings of 100 percent fruit juice daily, but more likely to consume two or more servings of fruit (81 percent) than the 4-5 year olds (76 percent and 75 percent, respectively, n=678). Additionally, about one-in-four children in the 2-3 age group consumed three or more servings of vegetables daily, and two-thirds consumed five or more servings of fruit juice, fruit and vegetables daily, compared to 19 percent and 65 percent for the 4-5 year olds, respectively. The differences were not statistically significant.

Notably, the percent of children who consumed 100 percent fruit juice decreased as annual household income increased. About 95 percent of children in families with less than \$11,000 annual income had one or more 100 percent fruit juice daily, while only 58 percent and 64 percent children in families with \$75,000-\$99,999 and \$100,000 or more annual income did so, respectively (p<.001). The daily vegetable consumption shared a similar pattern. One-third of children in families with less than \$11,000 annual income had three or more servings of vegetables daily, while only less than a tenth and a fifth of children in families with \$75,000-\$99,999 and \$100,000 or more annual income did so, respectively (p<.01). In contrast, the likelihood of children consuming two or more servings of fruit increased with annual household income.

The percent of children consuming 100 percent fruit juice, two or more servings of fruit, three or more servings of vegetables and five or more servings of fruit and vegetables combined had little variation across regions. Children in the Graham, Greenlee, Cochise, Santa Cruz and Pinal, and Gila areas were less likely to consume 100 percent fruit juice (62 percent) than those in the Maricopa area (73 percent, p<.05). Mohave, Coconino, Navajo, Apache and Yavapai area children were most likely to have three or more servings of vegetable daily (30 percent). Children in the Pima area were less likely to consume two or more servings of fruit (71 percent), compared to those in the Maricopa area (79 percent, p<.05).

About four-fifths of Hispanic/Latino children had one or more servings of 100 percent fruit juice daily, which was significantly higher than that of non-Hispanic Whites (65 percent, p<.001) (see Figure 3). However, Hispanic/Latino children were less likely to consume two or more servings of fruit daily (73 percent) compared to other racial/ethnic groups. Almost all African-American children had two or more servings of fruit daily (99 percent), followed by Native Americans/American Indians (90 percent), Asians, Pacific Islanders and Native Hawaiians (82 percent) and non-Hispanic Whites (79 percent). Less than one-fifth of African-American (16 percent), Native American/American Indian (17 percent) and non-Hispanic White children (19 percent) consumed three or more servings of vegetable daily. Asian, Pacific Islander and Native Hawaiian children were most likely to have three or more servings of vegetables (25 percent). In terms of combined daily consumption of 100 percent fruit juice, fruit and vegetables, African-American (97 percent) and Asian, Pacific Islander and Native Hawaiian (85 percent) children were more likely to have five or more daily servings than Hispanic/Latino children (67 percent).

**Figure 3: Percent of Children Who Consumed Each Type of Food Daily by Race/Ethnicity**



Reference group: Hispanic/Latino; Significance, \*p<.05; \*\*p<.01; \*\*\*p<.001.

The 2010 Dietary Guidelines for Americans underscore the importance of dairy food as a core part of a healthy diet for people of all ages, including children (USDHHS/USDA, 2010). The guidelines recommended two cups of fat-free or low-fat milk per day or an equivalent amount of other dairy products, for children ages 2-3, 2.5 cups for children ages 4-8 years, and three cups for those nine years and older. “Choosing fat-free or low-fat milk and milk products provides the same nutrients with less solid fat and thus few calories” (USDHHS/USDA, 2010, p.38) than those of whole milk.

Overall, more than one-fifth of Arizona children (23 percent) had less than two servings of milk daily, but close to half had three or more servings daily (46 percent) (see Table A-5). Most of the children had low-fat milk (54 percent), followed by whole milk (26 percent), fat-free milk (12 percent) or other milk (11 percent).

Girls were more likely to have less than two servings of milk (26 percent) than boys (21 percent,  $p < .05$ ). Additionally, girls were much less likely to have low-fat milk (49 percent), but more likely to have fat-free milk (18 percent) compared to boys (59 percent and 18 percent, respectively,  $p < .001$ ).

One-in-five Arizona children ages 2-3 drank less than two servings of milk per day, and even more (27 percent) of the 4-5 year olds did so ( $p < .01$ ). The 2-3 year olds were also more likely to drink three or more servings of milk (50 percent) than the 4-5 year olds (41 percent,  $p < .05$ ). In terms of the type of milk, a significantly higher percentage of 4-5 year olds drank low-fat milk (61 percent) and a much lower percent drank whole milk (22 percent) or fat-free milk (7 percent), compared to the 2-3 year olds (47 percent, 30 percent and 16 percent, respectively,  $p < .01$ ).

More than one-third of Asian, Pacific Islander, Native Hawaiian (34 percent) and one-fourth of non-Hispanic white children (28 percent) drank less than two servings of milk daily, compared to only 18 percent of Hispanic/Latino children ( $p < .05$ ). Less than one-in-three Native American/American Indian children drank 3 or more servings of milk daily (29 percent), which was significantly lower than that of Hispanic/Latino children (46 percent,  $p < .05$ ). In terms of the type of milk, African-American (83 percent), Hispanic/Latino (56 percent), non-Hispanic white (50 percent), and Native American/American Indian children mostly drank low-fat milk, while Asian, Pacific Islander and Native Hawaiian children mostly drank whole milk (49 percent).

The daily milk consumption varied across regions. Children in the Pima and Mohave, Coconino, Navajo, Apache and Yavapai areas were at a higher risk of insufficient intake of milk compared to those in other regions in Arizona. About one-in-three children (31 percent) in these five counties drank less than two servings of milk daily, which was significantly higher than that of the Maricopa area (21 percent). A higher percentage of children in the Pima and Maricopa areas consumed 3 or more servings of milk daily (47 percent each), compared to those in other areas. Additionally, children in the Pima area were more likely to drink low-fat milk (70 percent) and less likely to drink whole milk (16 percent) than those in the Maricopa area (51 percent and 29 percent, respectively,  $p < .001$ ).

**Table 6: Child Milk Consumption in a Typical Day by Family Income**

Income	% Child					
	<2 Servings of Milk	≥3 Servings of Milk	Whole Milk <sup>b</sup>	Low-fat Milk <sup>b</sup>	Non-fat Milk <sup>b</sup>	Other Milk <sup>b</sup>
Less than \$11,000 <sup>a</sup>	22	33	19	75	1	7
\$11,000-\$19,999	15	57***	32*	49***	23***	1*
\$20,000-\$29,999	20	62***	18	72	3	11
\$30,000-\$49,999	20	36	30*	54***	15**	2*
\$50,000-\$74,999	30	41	27	54***	7*	12
\$75,000-\$99,999	30	50**	16	58**	10**	21***
\$100,000 or More	22	55***	26	48***	13**	18**

a Reference group; Significance: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; percentages are weighted.

b The total percent of children who consume each type of milk may exceed 100%, as parents/guardians were allowed to check multiple types of milk.



Children in higher income families were more likely to have three or more servings of milk daily (see Table 7). More than half of children in families with an annual income of \$11,000-\$29,999 and \$75,000 and above consumed three or more servings of milk daily, compared to only 33 percent of children in families of less than \$11,000 annual income. In terms of the type of milk, children in higher income families (\$11,000-\$19,999 and \$30,000 and above) were more likely to consume fat-free milk, but less likely to consume low-fat milk, compared to those in the lowest income category (less than \$11,000).

Less than one-in-five young Arizona children (19 percent) drank one serving of sugar-sweetened drinks daily, which includes soda, such as Coke or 7UP, or other sugar-sweetened drinks, such as fruit punch or sports drinks (see Table A-6). Over half of children (60 percent) ate one or more servings of sweets daily, including cookies, candy, doughnuts, pastries, cake or popsicles. Sixty-one percent of Arizona children ate fast food one or more times in a typical week.

The consumption of sugar-sweetened drinks, sweets and fast food were not significantly different between boys and girls. However, it did vary by age. The 4-5 year olds were more likely to have sugar-sweetened drinks daily and fast food weekly (23 percent and 64 percent, respectively) than the 2-3 year olds (15 percent,  $p<.001$ , and 58 percent,  $p<.05$ , respectively). In addition, among those who did consume sweets daily, the 4-5 year olds consumed a significantly higher average amount of sweets than the 2-3 year olds (1.7 servings vs. 1.3 servings,  $p<.001$ ).

Children in families with an annual income of \$11,000-\$19,999 and \$20,000-\$29,999 were more likely (31 percent and 36 percent) to drink one or more servings of sugar-sweetened drinks daily than those in families with annual income of less than \$11,000 (16 percent,  $p<.01$ ). However, those in the highest income categories (\$75,000-\$99,999 and \$100,000 or more) were much less likely to drink sugar-sweetened drinks daily (9 percent and 8 percent, respectively). In terms of fast food consumption, children in families with \$11,000 and more annual income were more likely to eat fast food one or more times weekly than those with less than \$11,000 family income (36 percent,  $p<.001$ ). Children’s consumption of sweets, however, was not significantly different across income levels.

Children in the Yuma and La Paz area were more likely to consume sugar-sweetened drinks and sweets daily (37 percent and 73 percent, respectively) than those in the Maricopa area (18 percent and 58 percent, respectively). Among the consumers, children in the Graham, Greenlee, Cochise, Santa Cruz, and Pinal and Gila areas had the highest average consumption of sugar-sweetened drinks and sweets (1.7 and 1.8 servings daily, respectively).

A significantly lower percentage of non-Hispanic White children reported drinking one or more servings of sugar-sweetened drinks daily (7 percent), compared to Hispanic/Latino children (29 percent,  $p<.001$ ) (see Table 8). In contrast, non-Hispanic White children were more likely to eat sweets daily than their Hispanic/Latino counterparts (64 percent vs. 57 percent,  $p<.01$ ), but they on average consumed less than Hispanic/Latino children (1.3 servings vs. 1.6 servings daily,  $p<.001$ ). Native American/American Indian children who did eat one or more servings of sweets daily consumed the highest average amount of sweets among all racial/ethnic groups (2.3 servings).

**Table 7: Child Consumption of Sugar-sweetened Drinks, Sweets, and Fast Food by Race/Ethnicity**

Race/Ethnicity	≥1 Servings of Sugar-sweetened Drinks (day)		≥1 Servings of Sweets (day)		≥1 Servings of Fast Food (week)	
	%	Mean (St.D.)	%	Mean (St.D.)	%	Mean (St.D.)
Non-Hispanic White	7***	1.6 (1.3)	64**	1.3 (0.6)***	61	1.5 (0.7)
Hispanic/Latino <sup>a</sup>	29	1.5 (1.0)	57	1.6 (1.0)	61	1.5 (0.8)
African-American	17	1.2 (0.5)	60	1.6 (0.6)	53	1.8 (0.7)
Asian, Pacific Islander, Native Hawaiian	29	1.6 (0.7)	70	2.1 (0.9)*	73	1.3 (0.5)
Native American/American Indian	26	2.0 (0.7)	47	2.3 (1.4)***	59	1.2 (0.5)

<sup>a</sup> Reference group; Significance: \* $p<.05$ ; \*\* $p<.01$ ; \*\*\* $p<.001$ ; percentages are weighted.

# Active Living

## Adult

Adult respondents of the 2010 Arizona Health Survey were asked how many days in a typical week they did vigorous and moderate physical activities, respectively. Vigorous physical activities include those that take hard physical effort, such as aerobics, running, soccer, fast bicycling or fast swimming. Moderate physical activities include those that take moderate physical effort, such as walking, bicycling, swimming, dancing or gardening.

Less than half of adults (48 percent, n = 8,196) said they had done vigorous physical activities in a typical week, but close to 90 percent of adults had done moderate physical activities (see Table A-7). Of those adults who had done vigorous physical activities (n=2,915), they did these activities three days per week on average. Adults who had done moderate physical activities (n = 7,050) spent an average of 4.3 days per week on these activities.

African-Americans and Asians, Pacific Islanders and Native Hawaiians were more likely to do vigorous physical activities in a week (both at 58 percent), compared to Hispanics/Latinos (48 percent) and non-Hispanic Whites (47 percent) (see Table 9). However, Asians, Pacific Islanders and Native Hawaiians who had done vigorous physical activities spent significantly less days (2.5 days) on these activities in a week than Hispanics/Latinos (3.1 days, p<.05). Non-Hispanic Whites were more likely to do moderate physical activities in a week (89 percent) than Hispanics/Latinos (86 percent, p<.001) and they on average spend more days on these activities (4.4 days) than Hispanics/Latinos (4.1 days, p<.001).

**Table 8: Adult Physical Activities in a Typical Week by Race/Ethnicity**

Race/Ethnicity	Vigorous Physical Activities		Moderate Physical Activities	
	%	Mean (St.D.)	%	Mean (St.D.)
Non-Hispanic White	47	3.0 (1.6)	89***	4.4 (2.0)***
Hispanic/Latino <sup>a</sup>	48	3.1 (1.7)	86	4.1 (1.9)
African-American	58***	3.1 (1.7)	89	4.3 (2.0)
Asian, Pacific Islander, Native Hawaiian	58*	2.5 (1.5)*	91	3.8 (2.0)
Native American/American Indian	54*	3.3 (1.7)	85	4.2 (1.9)

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

Male adults were more likely to do and spent more time on vigorous and moderate physical activities, respectively, than female adults. Over half of male adults had done vigorous physical activities (54 percent) and close to 90 percent had done moderate physical activities in a typical week, compared to 42 percent and 87 percent of females, respectively (p<.01) (see Table A-7).

Married adults were slightly more likely to do moderate physical activities (89 percent) than those who were unmarried (87 percent, p<.05). However, of those who did exercise, they spent fewer days on these activities (4.2 days) than their unmarried counterparts (4.4 days, p<.04). Additionally, there were no statistically significant differences between married and unmarried adults in their vigorous physical activities.

Young adults (aged 18-28) were the most likely to do vigorous and moderate physical activities. The percentage of adults who did vigorous physical activities reduced significantly from 75 percent of the 18-28 year-olds to 20 percent of those 70 and older (p<.001). However, physically active older adults (ages 60-69 and 70 and older) on average reported more days of vigorous physical activities in a typical week (3.4 days and 3.5 days, respectively) than young adults ages 18-28 (3.0 days, p<.01). The percentage of adults did moderate physical activities also reduced from 93 percent of the young adults (ages 18-28) to 78 percent of those 70 and older. Additionally, of those who did moderate physical activities in a week, 18-28 year olds reported the highest average days of doing these activities (4.6 days).

Active lifestyle also varies by educational attainment. Adults who did not complete high school were the least likely to do vigorous or moderate physical activities in a typical week (35 percent and 81 percent, respectively). In contrast, more than half of adults who graduated from a two-year college, or attended a four-year college or gained a Bachelor's or post-graduate degree did vigorous physical activities and about 90 percent of them did moderate physical activities in a week. Of these physically active adults, the average number of days doing vigorous physical activities did not vary by education. Only those with a high school diploma or who attended a four-year college reported significantly higher average number of days doing moderate physical activities (4.4 and 4.5 days, respectively) than those who did not complete high school (four days,  $p < .001$ ).

Adults with higher annual household income were more likely to do vigorous and moderate physical activities. Over sixty percent of adults with \$75,000 or more income reported vigorous physical activities, compared to 36 percent of those with \$11,000-\$19,999 income. In addition, over ninety percent of adults with an income of \$75,000 and more did moderate physical activities in a typical week, compared to only 81 percent of adults with less than \$11,000 income. However, the average number of days these physically active adults did vigorous and moderate physical activities does not vary much by their income level.

The percent of Arizona adults who did vigorous and moderate physical activities in a week and the average number of days doing these activities were similar across geographic areas. Close to half of adults in the Pinal and Gila, Pima and Maricopa areas reported doing vigorous physical activities. Almost 90 percent of adults in all counties reported moderate physical activities.

## Child

The 2010 Dietary Guidelines for Americans suggested children be physically active for at least 60 minutes daily (USDHHS/USDA, 2010). About half of Arizona children (48 percent) were physically active for at least 60 minutes daily (see Table A-8). Almost nine-out-of-ten children (86 percent) went to a park at least once in a month and 43 percent went to the library at least once in a month. Of those who did go to a park or the library, they on average went to a park twice a week (8.4 days/month) and went to the library 3.2 days per month.

Boys and girls were not significantly different in their likelihood of being physically active for at least 60 minutes daily. Girls were more likely to go to a park (90 percent), but less likely to go to the library (38 percent) than boys (81 percent and 48 percent, respectively). The 2-3 year olds were more likely to be physically active for at least 60 minute daily than the 4-5 year olds (69 percent vs. 64 percent,  $p < .05$ ), but the two age groups were similar in the likelihood and average number of days going to a park or visiting the library.

About half of children in families with \$50,000 or more annual income were physically active for at least 60 minutes daily, compared to less than one-third in families with \$20,000-\$29,999 annual income (30 percent). Additionally, children in families with \$100,000 or more annual income had an average of 6.5 days being physical active for at least 60 minutes in a week, which was higher than that of children in families with less than \$11,000 or \$11,000-\$19,999 annual income (5.9 days and 5.0 days, respectively). Children of lower-income families were more likely to go to a park, but less likely to go to the library, than those in a higher income family. Ninety-five percent of children in families with less than \$11,000 annual income went to a park in the past 30 days, while only 79 percent and 86 percent of those in the \$75,000-\$99,999 and \$100,000 or more income categories did, respectively. Over half of children in families with \$50,000-\$74,999 and \$75,000-\$99,999 annual income went to a library at least once in a month, but only 39 percent of those in the less than \$11,000 income category did.

In terms of GSAs, children in the Mohave, Coconino, Navajo, Apache and Yavapai area were more likely to be physically active for at least 60 minutes daily (55 percent), compared to those in other regions, and children in the Pima area were the least likely to be so (39 percent). Additionally, children in the Graham, Greenlee, Cochise, Santa Cruz and Pinal, and Gila areas were more likely to go to a park (92 percent), but less likely to go to the library (35 percent) than those in other areas. Close to half of children in the Maricopa area (45 percent), which was the highest among all regions, went to the library at least once in a month.

Native American/American Indian (37 percent) and Hispanic/Latino children (41 percent) were less likely to be physically active for at least 60 minutes than Asian, Pacific Islander and Native Hawaiian (52 percent), African-American (49 percent) and non-Hispanic White children (48 percent) (see Table 10). Among those who were physically active, African-American and non-Hispanic White children were active for at least 60 minutes on an average of 6.8 days and 6.3 days in a week, respectively, and both were significantly higher than that of Hispanic/Latino children (5.8 days/week). Additionally, Native American/American Indian children (76 percent) were less likely to go to a park in a month than those of other races/ethnicities. Over half of Asian, Pacific Islander and Native Hawaiian (61 percent) and non-Hispanic white children (56 percent) went to the library at least once in a month, which were significantly higher than that of Hispanic/Latino children (31 percent).

**Table 9: Child Physical Activities by Race/Ethnicity**

Race/Ethnicity	Physically Active ≥60 Minutes (Daily)		Go to a Park		Go to the Library	
	%	Mean (St.D.)	%	Mean (St.D.)	%	Mean (St.D.)
Non-Hispanic White	48***	6.3 (1.3) ***	85	7.9 (7.0)	56***	3.3 (2.7)
Hispanic/Latino <sup>a</sup>	41	5.8 (1.9)	87	8.3 (9.0)	31	3.0 (2.5)
African-American	49	6.8 (0.8) ***	90	6.3 (5.9)	38	3.4 (3.6)
Asian, Pacific Islander, Native Hawaiian	52	6.2 (1.5)	86	12.2 (8.5)	61***	2.3 (1.7)
Native American/ American Indian	37	6.0 (1.8)	76*	12.3 (10.2)**	25	3.9 (1.5)

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

# Risk Factors and Implications

## Healthy Eating

Research has shown that healthy eating is influenced by various individual, socio-cultural, economic, political and environmental factors, including race/ethnicity, gender, education, income or poverty level, smoking, knowledge of healthy diets, advice by physicians, mass media, government dietary guidelines, policies promoting healthy eating, food prices, neighborhood characteristics and access to healthy food options (Beydoun & Wang, 2008; Booth, et al., 2001; CDC, 2009; Pollard, Kirk & Cade, 2002; Popkin, Duffey, & Gordon-Larsen, 2005; Story, et. al., 2008; Yeh, et al., 2008). This study examines the associations between healthy eating and respondents' educational attainment, poverty level, receiving SSI, smoking status, access to professional advice on healthy eating and access to healthy food options for Arizona adults, as well as the associations between healthy eating and parents' educational attainment, family poverty level and access to knowledge about nutrition or healthy eating for Arizona children.

Prior studies have found that socioeconomic status (SES), including educational attainment and income, improves the likelihood of adequate fruit and vegetable intake and overall diet quality (Beydoun & Wang, 2008). The correlation analysis (see Table A-9) showed that educational attainment of Arizona adults facilitated healthy eating by significantly increasing the likelihood of daily consumption of two or more servings of fruit ( $\rho=0.11$ ,  $p<.001$ ) and three or more servings of vegetables ( $\rho=0.16$ ,  $p<.001$ ), while reducing the chance of eating one or more servings of fast food weekly ( $\rho= -0.04$ ,  $p<.001$ ). However, educational attainment also increased the odds of drinking one or more servings of soda and other sugar-sweetened drinks per day. In terms of the amount of food consumption (see Table A-9), educational attainment increased daily healthy food consumption of fruits and vegetables, while lowered the consumption of soda, other sugar-sweetened drinks and fast food.

Poverty in the *2010 Arizona Health Survey* was measured by four levels: 1) at or below 100 percent federal poverty level (FPL); 2) between 100 percent FPL and 200 percent FPL; 3) between 200 percent FPL and 300 percent FPL; and 4) more than 300 percent FPL. It was calculated based on a respondent's annual household income and the number of people in the household. The results indicated that higher FPL increased the likelihood of consuming food in all of the five food groups. In terms of the amount of food consumption (Table A-10), respondents of higher FPL consumed more servings of fruit and vegetables daily and more fast food, but less soda and other soft drinks. Additionally, SSI recipients had lower odds of consuming two or more servings of fruit, three or more servings of vegetables, and one or more servings of soda daily, as well as one or more servings of fast food weekly. SSI recipients also consumed less amounts of fruit, vegetables and fast food, but more soda, compared to non-SSI recipients.

Smoking status was found to lower the odds of consuming an adequate amount of fruit, vegetables, milk and fruit juice daily (Wilson & Nietert, 2002). The results of this study supported the finding. Current Arizona smokers, who smoked a cigarette in the last 30 days, were less likely to consume two or more servings of fruit ( $\rho= -0.15$ ,  $p<.001$ ), three or more servings of vegetables ( $\rho= -0.06$ ,  $p<.001$ ), one or more servings of soda ( $\rho= -0.13$ ,  $p<.001$ ) and other sugar-sweetened drinks daily ( $\rho= -0.07$ ,  $p<.001$ ). Notably, current smokers tended to consume less amount of fruit ( $\rho= -0.18$ ,  $p<.001$ ) and vegetables ( $\rho= -0.09$ ,  $p<.001$ ) daily, but more servings of soda ( $\rho= 0.15$ ,  $p<.001$ ) and other sugar-sweetened drinks ( $\rho= 0.08$ ,  $p<.001$ ).

Respondents of the *2010 Arizona Health Survey* were asked whether they had discussed healthy eating with their personal doctor in the past 12 months. The correlation results showed that access to professional advice on healthy eating was only positively and significantly associated with the odds of eating one or more servings of fast food in a week, but not other types of food (Table A-9). Discussing healthy eating with doctors also increased the amount of fruit, vegetables and fast food products that Arizona adults consume (Table A-10).

The presence of food stores and the availability of healthy food in those stores are important contributors to healthy diet of community residents (Story, et. al., 2008). The *2010 Arizona Healthy Survey* asked the respondents to estimate the number of stores within

one mile of his/her home that sell fresh fruits and vegetables, the number of convenience stores and the number of grocery stores within one-half mile of his/her home, respectively. The number of stores within one-half mile of the respondent's home that sells fresh fruits and vegetables did not significantly increase his/her odds of eating two or more servings of fruit or three or more servings of vegetable daily (Table A-9), but it did increase the amount of fruit he/she consumed daily (Table A-10,  $r=0.02$ ,  $p<.001$ ). The correlation analysis also shows that the number of stores that sell fresh fruits and vegetables in the neighborhood significantly lowered the odds of consuming soda and other soft drinks. Additionally, the number of convenience stores within one-half mile of the respondent's home lowered the odds of consuming three or more servings of vegetable, as well as the odds of drinking soda or other soft drinks, but it increased the odds of eating fast food weekly. It also lowered the amount of vegetables adults consume (Table A-10,  $r=-0.04$ ,  $p<.001$ ) and increased the amount of soda, other soft drinks and fast food consumed. The results also showed that the odds of drinking soda and other soft drinks decreased as the number of grocery stores within one-mile of the respondent's home increased (Table A-9,  $\rho= -0.04$ ,  $p<.001$ ;  $\rho= -0.05$ ,  $p<.001$ , respectively), but the servings of soda and other soft drinks consumed increased significantly with higher number of grocery stores within one-mile of the respondent's home (Table A-10).

Parents' educational attainment had a significant and positive association with Arizona children's odds of eating one or more servings of 100 percent fruit juice, two or more servings of fruit and three or more servings of vegetables (see Table A-11). In addition, children whose parents had higher education were more likely to drink non-fat milk or other milk. They were also more likely to have one or more servings of sugar-sweetened drinks daily. In contrast, parents' education lowered children's odds of eating sweets and drinking low-fat milk. In terms of the amount of food consumption (see Table A-12), parents' education was positively associated with children's daily servings of fruits and vegetables, but was negatively related to the daily servings of 100 percent fruit juice or sugar-sweetened drinks.

Children ages 2-5 in families with higher FPL had increased odds of consuming one or more servings of 100 percent fruit juice and two or more servings of fruits daily (Table A-10). The odds of consuming three or more servings of vegetables, 5 or more servings of fruit juice, fruit and vegetables, and three or more servings of milk were not significantly associated of the family's federal poverty level. The odds of consuming sweets daily and fast food weekly decreased, while the odds of drinking sugar-sweetened drink increased, with higher federal poverty level. Additionally, a higher federal poverty level was associated with lower servings of 100 percent fruit juice, combined daily servings of fruit juice, fruit and vegetables, and sugar-sweetened drinks consumed by Arizona children. However, it increased the number of times children eat fast food in a week.

The opportunity to discuss healthy eating with a doctor was only positively associated with the odds of consuming two or more servings of fruit daily for Arizona children ( $\rho=0.07$ ,  $p<.01$ ), but not the odds of consuming other food. It was not significantly associated with the amount of food children consume either.

## Active Living

Active living research has shown that individual characteristics, neighborhood environment and socio-economic and political factors, such as gender, race/ethnicity, socioeconomic status, physical impairment, access to parks and recreation facilities, access to trails, neighborhood characteristics, perceived safety of the environment and policies, facilitate or hinder physical activity (Brownson, et al. 2001; Booth, et al., 2001; Craig, et al., 2002; Popkin, et al. 2005). This study examines the associations between active living and an individual's physical, behavioral and mental condition, education, poverty level, access to parks and recreation facilities and neighborhood environment for Arizona adults, as well as the associations between physical activity and a child's physical, behavioral and mental condition, parents' education, family poverty level, access to a park, playground or open space within walking distance, and the frequency that parents or other family members taking a child to the park, store or a playground.

Physical, behavioral and mental conditions may be a barrier for adults to engage in vigorous or moderate physical activities daily. The correlation analysis showed that Arizona adults with physical, behavioral and mental conditions that create difficulty for them to go outside the home by themselves significantly lowered their odds of doing vigorous (see Table A-13,  $\rho= -0.13$ ,  $p<.001$ ) or moderate physical activities ( $\rho= -0.17$ ,  $p<.001$ ). It also lowered the number of days they did vigorous or moderate physical activities in a typical week.

Individual socioeconomic status is related to their active lifestyle. Educated adults tend to be more physically active, while low-income adults are less physically active. Arizona adults with higher educational attainment were found to be more likely to do vigorous ( $\rho=0.14$ ,  $p<.001$ ) and moderate physical activities ( $\rho=0.12$ ,  $p<.001$ ), respectively, and they also spent more days doing these activities in a week. Similarly, those with higher FPL had higher odds of, and spent more days, doing vigorous and moderate physical activities.

Access to parks and recreation facilities facilitates an active lifestyle. The result of the correlation analysis was consistent with the findings of prior studies. Arizona adults with parks, playgrounds or open space within walking distance of their homes had higher odds of doing vigorous ( $\rho=0.08$ ,  $p<.001$ ) and moderate ( $\rho=0.08$ ,  $p<.001$ ) physical activities, respectively, and also spent more days doing these activities.

Neighborhood safety is a risk factor that potentially hinders an individual's physical activities outside his/her home. The results of the analysis, however, did not show significant correlation between the perceived neighborhood safety and the odds or the number of days that Arizona adults do vigorous or moderate physical activities.

In contrast to adults, children's physical, behavioral and mental conditions were not significantly related to whether they are physically active for more than 60 minutes daily, or the number of days they are physically active for more than 60 minutes in a week (see Table A-14). It was not significantly related to the odds and the number of days that a child goes to a park or goes to the library either.

Parents' socioeconomic status, including their educational attainment and family poverty level, was found to be significantly related to whether a child is physically active for at least 60 minutes daily, the number of days he/she is active, the odds of going to the library in a month, and the number of times he/she goes to the library (Table A-14). However, parents' education and the family's poverty level were not significantly related to the odds of a child going to a park.

The odds and the number of days a child going to a park significantly correlated with the availability of a park, playground or open space within walking distance of a child's home ( $\rho=0.11$ ,  $p<.001$  and  $\rho=0.20$ ,  $p<.001$ , respectively). Access to parks, playground and open space, however, did not have significant correlations with a child being physically active for at least 60 minutes daily or going to the library.

Children's active living lifestyle was often shaped by parents' behavior. The results showed that the number of times parents or other family members taking a child to a park, store or a playground had a significant and positive association with the odds and the number of days the child was physically active for at least 60 minutes, went to a park or went to the library.

## Implications for Healthy Eating and Active Living

A diet high in fruits and vegetables and participation in regular physical activity can lower BMI and reduce the risk for several chronic diseases and conditions, such as diabetes, coronary heart diseases and high blood pressure, which are the leading causes of death, and thus improve quality of life and sense of well-being.

Arizona adults who ate two or more servings of fruits or three or more servings of vegetables daily had lower BMI and were less likely to be overweight or obese (overweight is measured as BMI between 25.0 and 29.9; obese is measured as BMI at 30.0 or above) (see Table A-15). Additionally, adults with higher BMI, who are more likely to be overweight or obese, consumed fewer servings of fruit and vegetables daily. In contrast, the number of sodas consumed daily and the amount of fast food consumed weekly was positively associated with BMI and the odds of being overweight or obese. Adults who did vigorous or moderate physical activities weekly had lower BMI and were less likely to be overweight or obese. In addition, the number of days that the respondent did vigorous or moderate physical activities, respectively, was also associated with a lower BMI and lower odds of being overweight or obese.

Adults who consume two or more servings of fruit had lower chances of having high blood pressure or heart disease ( $\rho=-0.02$ ,  $p<.05$  and  $\rho=-0.5$ ,  $p<.001$ ,) respectively. The more servings of fruit that adults consumed daily, the lower was their odds of having high

blood pressure. Eating three or more servings of vegetables daily lowered their odds of having diabetes, high blood pressure or heart disease. The more servings of vegetables adults consumed daily, the less likely they had diabetes, high blood pressure or heart disease. In addition, doing vigorous or moderate physical activities and the number of days spent on these activities also lowered the odds of having diabetes, high blood pressure and heart disease.

Healthy eating and active living can lower the level of stress, and in turn improve self-rated health or sense of well-being. Respondents of the 2010 Arizona Health Survey were asked, “Would you say in general that your quality of life and sense of well-being is excellent, very good, good, fair or poor.” Those who consumed two or more servings of fruit or three or more servings of vegetable daily tended to rate their quality of life better ( $\rho=0.12$ ,  $p<.001$  and  $\rho=0.14$ ,  $p<.001$ ,) respectively. The servings of fruits and vegetables consumed also increased the sense of well-being. Adults doing vigorous or moderate physical activities also had a better sense of well-being, and the number of days they engaged in these physical activities improved their sense of well-being. In contrast, the servings of soda and other soft drinks consumed daily and the servings of fast food consumed weekly was associated with lower sense of well-being.

The correlation analyses of children’s BMI and their food consumption and physical activities showed that those who consumed two or more servings of fruit daily ( $\rho= -0.08$ ,  $p<.05$ ) and those who went to the library tended to have a lower BMI ( $\rho=-0.10$ ,  $p<.001$ ). The servings of fruit consumed daily and the number of times a child went to the library in a month was also negatively associated with the BMI.

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## Appendix: Data Tables

Table A-1: Percent of Adults Who Reported Food Consumption in a Typical Day

	% Respondents			
	≥2 Servings of Fruit	≥3 Servings of Vegetable	≥1 Servings of Soda	≥1 Servings of Other Sugar-sweetened Drinks
<b>Sex</b>				
Male <sup>a</sup>	44	15	34	23
Female	56***	28***	22***	14***
<b>Age Group (years)</b>				
18-28 <sup>a</sup>	47	19	39	34
29-39	55***	25***	36*	19***
40-49	48	21	29***	20***
50-59	50	22	21***	14***
60-69	50	22	17***	8***
70 and older	49	21	12***	7***
<b>Income</b>				
Less than \$11,000 <sup>a</sup>	49	15	50	26
\$11,000-\$19,999	45	17	41***	25
\$20,000-\$29,999	47	14	39***	23
\$30,000-\$49,999	48	20*	27***	19**
\$50,000-\$74,999	50	22**	25***	16***
\$75,000-\$99,999	53	27***	17***	10***
\$100,000 or More	61***	33***	18***	15***
<b>Geographic Service Areas</b>				
Mohave, Coconino, Navajo, Apache, Yavapai	45***	27***	28	13***
Yuma, La Paz	47	23	30	25*
Graham, Greenlee, Cochise, Santa Cruz	47	18	31	19
Pinal, Gila	49	16*	31*	20
Pima	52	24*	27	17
Maricopa <sup>a</sup>	51	21	27	19

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

**Table A-2: Percent of Adults Who Reported Eating Fast Food in a Typical Week**

	%
<b>Sex</b>	
Male <sup>a</sup>	68
Female	60***
<b>Age</b>	
18-28 <sup>a</sup>	77***
29-39	67***
40-49	70***
50-59	60***
60-69	52***
≥70	45***
<b>Income</b>	
≤\$11,000 <sup>a</sup>	60
\$11,000-\$19,999	61
\$20,000-\$29,999	61
\$30,000-\$49,999	65*
\$50,000-\$74,999	69***
\$75,000-\$99,999	68**
≥\$100,000	64
<b>Geographic Service Areas</b>	
Mohave, Coconino, Navajo, Apache, Yavapai	58***
Yuma, La Paz	68
Graham, Greenlee, Cochise, Santa Cruz	63
Pinal, Gila	65
Pima	62*
Maricopa <sup>a</sup>	65

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

**Table A-3: Average Amount of Food Consumption by Sex, Race/Ethnicity and Geographic Service Areas**

	Mean (Standard Deviation)		
	Soda (day)	Other Sugar-sweetened Drinks (day)	Fast Food (week)
<b>Overall</b>	<b>2.5 (2.4)</b>	<b>2.1 (1.6)</b>	<b>2.0 (1.7)</b>
<b>Sex</b>			
Male <sup>a</sup>	2.6 (2.3)	2.2 (1.8)	2.2 (1.9)
Female	2.3 (2.5) <sup>***</sup>	1.9 (1.1) <sup>***</sup>	1.8 (1.4) <sup>***</sup>
<b>Race/Ethnicity</b>			
Non-Hispanic White	2.7 (2.7) <sup>**</sup>	2.1 (1.6)	2.0 (1.6)
Hispanic/Latino <sup>a</sup>	2.2 (2.0)	2.1 (1.6)	2.1 (1.8)
African-American	3.0 (2.6)	2.9 (1.4) <sup>**</sup>	2.3 (2.8)
Asian, Pacific Islander, Native Hawaiian	1.1 (0.2)	1.6 (0.6)	1.5 (0.9) <sup>*</sup>
Native American/American Indian	2.1 (2.1)	2.4 (1.5)	1.9 (1.1)
<b>Income</b>			
Less than \$11,000	2.6 (2.8)	2.6 (1.6)	1.9 (1.2)
\$11,000-\$19,999	2.6 (2.0)	2.5 (2.0)	2.1 (2.1)
\$20,000-\$29,999	3.0 (3.8)	2.2 (1.6)	2.1 (1.8)
\$30,000-\$49,999	2.3 (1.7)	2.1 (1.7)	1.9 (1.8)
\$50,000-\$74,999	2.1 (1.7)	1.8 (1.1) <sup>*</sup>	2.1 (2.0)
\$75,000-\$99,999	2.1 (1.7)	2.3 (2.1)	2.0 (1.4)
\$100,000 or More	1.8 (1.1) <sup>*</sup>	1.8 (1.1) <sup>*</sup>	2.0 (1.3)
<b>Geographic Service Areas</b>			
Mohave, Coconino, Navajo, Apache, Yavapai	2.9 (3.8)	3.1 (2.4) <sup>***</sup>	2.0 (2.0)
Yuma, La Paz	1.8 (1.2)	1.7 (0.9)	2.0 (1.4)
Graham, Greenlee, Cochise, Santa Cruz	3.0 (2.6)	3.0 (2.9) <sup>*</sup>	1.9 (1.2)
Pinal, Gila	2.3 (1.8)	2.3 (1.7)	2.0 (1.4)
Pima	2.5 (2.6)	2.0 (1.2)	2.1 (1.5)
Maricopa <sup>a</sup>	2.4 (2.0)	2.1 (1.5)	2.0 (1.7)

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

Table A-4: Child Fruit Juice, Fruit, and Vegetable Consumption in a Typical Day

	% Child			
	≥1 Servings of 100% Fruit Juice	≥2 Servings of Fruit	≥3 Servings of Vegetables	≥5 Servings of Fruit Juice, Fruit and Vegetables
<b>Overall</b>	<b>73</b>	<b>78</b>	<b>21</b>	<b>66</b>
<b>Sex</b>				
Male <sup>a</sup>	74	79	18	68
Female	71	76	24**	64
<b>Age Group (years)</b>				
2-3	69**	81**	23	66
4-5 <sup>a</sup>	76	75	19	65
<b>Income</b>				
Less than \$11,000 <sup>a</sup>	94	73	33	79
\$11,000-\$19,999	72***	72	22*	62**
\$20,000-\$29,999	76***	87**	24	74
\$30,000-\$49,999	88	69	30	67*
\$50,000-\$74,999	65***	86**	14***	68*
\$75,000-\$99,999	58***	76	9***	50***
\$100,000 or More	64***	84**	19**	65**
<b>Geographic Service Areas</b>				
Mohave, Coconino, Navajo, Apache, Yavapai	78	78	30*	71
Yuma, La Paz	80	75	17	64
Graham, Greenlee, Cochise, Santa Cruz, Pinal, Gila	62*	81	15	65
Pima	72	71*	22	66
Maricopa <sup>a</sup>	73	79	21	65

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

Table A-5: Child Milk Consumption in a Typical Day

	% Child					
	<2 Servings of Milk	≥3 Servings of Milk	Whole Milk <sup>b</sup>	Low-fat Milk <sup>b</sup>	Non-fat Milk <sup>b</sup>	Other Milk <sup>b</sup>
<b>Overall</b>	<b>23</b>	<b>46</b>	<b>26</b>	<b>54</b>	<b>12</b>	<b>11</b>
<b>Sex</b>						
Male <sup>a</sup>	21	46	27	59	6	11
Female	26*	46	25	49***	18***	10
<b>Age Group (years)</b>						
2-3	20**	50**	30**	47***	16***	9*
4-5 <sup>a</sup>	27	41	22	61	7	13
<b>Race/Ethnicity</b>						
Non-Hispanic White	28***	45	28	50*	14	12*
Hispanic/Latino <sup>a</sup>	18	46	27	56	11	8
African-American	24	54	21	83***	0.5	0.1
Asian, Pacific Islander, Native Hawaiian	34*	31	49**	28**	2	21*
Native American/American Indian	22	29*	6**	55	12	27***
<b>Geographic Service Areas</b>						
Mohave, Coconino, Navajo, Apache, Yavapai	31**	41	25	50	14	17*
Yuma, La Paz	18	46	19	63	13	9
Graham, Greenlee, Cochise, Santa Cruz, Pinal, Gila	19	37	24	56	9	13
Pima	32***	47	16***	70***	9	10
Maricopa <sup>a</sup>	21	47	29	51	12	10

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

b The total percent of children consume each type of milk may exceed 100% as parents/guardians are allowed to check multiple types of milk.

**Table A-6: Child Consumption of Sugar-sweetened Drinks, Sweets and Fast Food**

	≥1 Servings of Sugar-sweetened Drinks (day)		≥1 Servings of Sweets (day)		≥1 Servings of Fast Food (week)	
	%	Mean (St.D.)	%	Mean (St.D.)	%	Mean (St.D.)
<b>Overall</b>	<b>19</b>	<b>1.5 (1.0)</b>	<b>60</b>	<b>1.5 (0.9)</b>	<b>61</b>	<b>1.5 (0.7)</b>
<b>Sex</b>						
Male <sup>a</sup>	20	1.5 (1.0)	60	1.5 (0.8)	62	1.4 (0.8)
Female	17	1.5 (1.0)	59	1.5 (0.9)	60	1.5 (0.7)
<b>Age Group (years)</b>						
2-3	15 <sup>***</sup>	1.6 (1.3)	59	1.3 (0.7) <sup>***</sup>	58 <sup>*</sup>	1.4 (0.7) <sup>*</sup>
4-5 <sup>a</sup>	23	1.5 (0.7)	60	1.7 (1.0)	64	1.5 (0.8)
<b>Income</b>						
< \$11,000 <sup>a</sup>	16	1.7 (0.8)	58	1.6 (1.0)	36	1.5 (0.7)
\$11,000-\$19,999	31 <sup>**</sup>	2.2 (1.5)	56	1.8 (1.5)	56 <sup>***</sup>	1.6 (0.9)
\$20,000-\$29,999	36 <sup>***</sup>	1.3 (0.5)	70	1.4 (0.7)	71 <sup>***</sup>	1.4 (0.6)
\$30,000-\$49,999	17	1.5 (1.3)	63	1.4 (0.7)	80 <sup>***</sup>	1.2 (0.5) <sup>*</sup>
\$50,000-\$74,999	20	1.4 (0.8)	63	1.6 (0.8)	62 <sup>***</sup>	1.5 (0.7)
\$75,000-\$99,999	9 <sup>*</sup>	1.0 (0.3)	52	1.4 (0.6)	69 <sup>***</sup>	1.6 (0.8)
\$100,000 or More	8 <sup>*</sup>	1.0 (0.2)	61	1.4 (1.0)	59 <sup>***</sup>	1.4 (0.7)
<b>Geographic Service Areas</b>						
Mohave, Coconino, Navajo, Apache, Yavapai	19	1.5 (0.9)	56	1.6 (0.8)	63	1.5 (0.7)
Yuma, La Paz	37 <sup>**</sup>	1.5 (0.8)	73 <sup>*</sup>	1.5 (1.0)	66	1.6 (1.0)
Graham, Greenlee, Cochise, Santa Cruz, Pinal, Gila	21	1.7 (1.0)	59	1.8 (1.3) <sup>**</sup>	66	1.2 (0.6)
Pima	17	1.2 (0.4)	65	1.5 (0.7)	66	1.6 (0.6)
Maricopa <sup>a</sup>	18	1.6 (1.1)	58	1.4 (0.9)	59	1.5 (0.8)

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

**Table A-7: Adult Physical Activities in a Typical Week**

	Vigorous Physical Activities		Moderate Physical Activities	
	%	Mean (St.D.)	%	Mean (St.D.)
<b>Overall</b>	<b>48</b>	<b>3.1 (1.6)</b>	<b>88</b>	<b>4.3 (2.0)</b>
<b>Sex</b>				
Male <sup>a</sup>	54	3.1 (1.6)	89	4.4 (2.0)
Female	42***	3.0 (1.6) **	87**	4.2 (2.0)***
<b>Marital Status</b>				
Not Married <sup>a</sup>	49	3.0 (1.7)	87	4.4 (2.0)
Married	48	3.1 (1.6)	89*	4.2 (2.0)*
<b>Age Group (years)</b>				
18-28 <sup>a</sup>	75	3.0 (1.7)	93	4.6 (1.9)
29-39	58***	3.0 (1.6)	89***	4.1 (2.0)***
40-49	48***	2.9 (1.6)	90**	4.1 (2.0)***
50-59	38***	3.1 (1.6)	88***	4.1 (2.0)***
60-69	31***	3.4 (1.7)**	86***	4.3 (1.9)*
70 and Older	20***	3.5 (1.8)**	78***	4.4 (2.0)
<b>Education</b>				
Did not Complete High School <sup>a</sup>	35	2.9 (1.7)	81	4.0 (2.1)
High School	46***	3.1 (1.6)	87***	4.4 (1.9)***
Professional, Business or Trade School	47***	3.2 (1.9)	86*	4.3 (2.0)
Graduated from a Two-year College	50***	3.1 (1.7)	91***	4.3 (1.9)
Attended a Four-year College	54***	2.9 (1.7)	89***	4.5 (2.0)***
Bachelor's Degree	57***	3.1 (1.5)	92***	4.2 (1.9)
Post-graduate Degree	54***	3.1 (1.5)	93***	4.2 (2.0)
<b>Income</b>				
Less than \$11,000 <sup>a</sup>	42	3.2 (1.5)	81	4.2 (2.0)
\$11,000-\$19,999	36*	3.1 (1.9)	86**	4.2 (2.1)
\$20,000-\$29,999	42	2.9 (1.7)	85*	4.3 (2.0)
\$30,000-\$49,999	43	2.9 (1.6)	89***	4.3 (2.0)
\$50,000-\$74,999	44	3.0 (1.5)	86**	4.1 (1.9)
\$75,000-\$99,999	63***	3.0 (1.6)	92***	4.1 (1.9)
\$100,000 or More	62***	3.3 (1.6)	95***	4.3 (1.9)
<b>Geographic Service Areas</b>				
Mohave, Coconino, Navajo, Apache, Yavapai	45*	3.2 (1.8)	89	4.3 (2.0)
Yuma, La Paz	44	3.3 (1.7)	89	4.0 (1.9)
Graham, Greenlee, Cochise, Santa Cruz	47	3.2 (1.8)	90	4.4 (2.0)
Pinal, Gila	49	3.3 (1.6)	89	4.3 (1.9)
Pima	49	3.1 (1.7)	90	4.4 (2.0)*
Maricopa <sup>a</sup>	49	3.0 (1.6)	88	4.2 (2.0)

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.

Table A-8: Child Physical Activities

	Physically Active ≥60 Minutes (daily)		Go to a Park		Go to the Library	
	%	Mean (St.D.)	%	Mean (St.D.)	%	Mean (St.D.)
<b>Overall</b>	<b>48</b>	<b>6.1 (1.6)</b>	<b>86</b>	<b>8.5 (8.4)</b>	<b>43</b>	<b>3.2 (2.6)</b>
<b>Sex</b>						
Male <sup>a</sup>	45	6.1 (1.6)	81	7.8 (7.5)	48	3.2 (2.9)
Female	45	6.1 (1.7)	90***	9.0 (9.1)*	38***	3.2 (2.2)
<b>Age Group (years)</b>						
2-3	69*	6.1 (1.7)	87	8.6 (8.1)	42	3.2 (2.4)
4-5 <sup>a</sup>	64	6.1 (1.6)	84	8.3 (8.7)	44	3.2 (2.8)
<b>Income</b>						
Less than \$11,000 <sup>a</sup>	47	5.9 (1.7)	95	5.7 (5.4)	39	2.6 (1.5)
\$11,000-\$19,999	40	5.0 (2.5)***	94	12.2(11.2)***	32	2.8 (2.7)
\$20,000-\$29,999	30***	5.7 (2.0)	89	8.5 (9.7)	40	3.6 (2.1)
\$30,000-\$49,999	43	6.0 (1.7)	88*	8.1 (8.1)	42	3.5 (2.1)
\$50,000-\$74,999	51	6.3 (1.3)	80***	6.3 (6.2)	54**	2.6 (1.8)
\$75,000-\$99,999	51	6.4 (1.3)	79***	7.9 (5.3)	53*	3.4 (3.3)
\$100,000 or More	49	6.5 (1.0)*	86**	9.8 (8.6)***	46	3.7 (3.5)
<b>Geographic Service Areas</b>						
Mohave, Coconino, Navajo, Apache, Yavapai	55**	6.4 (1.5)	81	9.5 (8.7)	39	3.2 (1.7)
Yuma, La Paz	46	5.9 (1.8)	81	7.5 (7.6)	41	3.7 (5.1)
Graham, Greenlee, Cochise, Santa Cruz, Pinal, Gila	44	6.1 (1.6)	92	7.8 (7.3)	35*	2.9 (2.1)
Pima	39*	5.9 (1.7)	82	6.1 (5.7)**	42	3.3 (3.7)
Maricopa <sup>a</sup>	45	6.1 (1.7)	87	8.9 (8.9)	45	3.2 (2.3)

a Reference group; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001; percentages are weighted.



**Table A-9: Correlation between Individual and Environmental Factors and the Likelihood of Food Consumption of Arizona Adults**

	≥2 Servings of Fruit (daily)	≥3 Servings of Vegetables (daily)	≥1 Serving of Soda (daily)	≥1 Serving of Other Sugar-sweetened Drinks (daily)	≥1 Serving of Fast Food (weekly)
<b>Individual</b>					
Education	0.11***	0.16***	0.20***	0.11***	-0.04***
Poverty Level	0.07***	0.10***	0.19***	0.13***	0.04**
Receive SSI	-0.02*	-0.03**	-0.03*	—	-0.06***
Smoking	-0.15***	-0.06***	-0.13***	-0.07***	—
Discuss Healthy Eating with Doctor	—	—	—	—	0.05***
<b>Environmental</b>					
Stores Sell Fruits and Vegetables	—	—	-0.04***	-0.06***	0.05***
Convenience Stores	—	-0.03**	-0.11***	-0.07***	0.10***
Grocery Stores	—	—	-0.04***	-0.05***	0.04***

Only statistically significant correlations are reported; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001.

**Table A-10: Correlation between Individual and Environmental Factors and the Amount of Food Consumption of Arizona Adults**

	Daily Servings of Fruit	Daily Servings of Vegetables	Daily Servings of Soda	Daily Servings of Other Sugar-sweetened Drinks	Weekly Servings of Fast Food
<b>Individual</b>					
Education <sup>a</sup>	0.12***	0.22***	-0.19*	-0.11*	-0.04***
Poverty Level <sup>a</sup>	0.08***	0.15***	-0.19**	-0.13**	0.05***
Receive SSI <sup>a</sup>	-0.03*	-0.05***	0.02*	—	-0.06***
Smoking <sup>a</sup>	-0.18***	-0.09***	0.15***	0.08***	—
Discuss Healthy Eating with Doctor <sup>a</sup>	0.03*	0.04**	—	—	0.06***
<b>Environmental</b>					
Stores Sell Fruits and Vegetables <sup>b</sup>	0.02***	—	0.05***	0.06***	0.06***
Convenience Stores <sup>b</sup>	—	-0.04***	0.11***	0.07***	0.10***
Grocery Stores <sup>b</sup>	—	—	0.04***	0.05***	0.05***

a Spearman correlation; b Pearson correlation; Only statistically significant correlations are reported; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001.

**Table A-11: Correlation between Risk Factors and the Likelihood of Food Consumption of Arizona Children**

	Parent's Education	Poverty Level	Discuss Healthy Eating with Doctor
≥1 Servings of 100% Fruit Juice	0.12***	0.13***	—
≥2 Servings of Fruit	0.08**	0.08**	0.07**
≥3 Servings of Vegetables	0.06*	—	—
≥5 Servings of Fruit Juice, Fruit and Vegetables	—	—	—
<2 Servings of Milk	—	—	—
≥3 Servings of Milk	—	—	—
Whole Milk <sup>b</sup>	—	—	—
Low-fat Milk	-0.09***	-0.09**	—
Non-fat Milk	0.10***	0.06*	—
Other Milk	0.13***	0.09**	—
≥1 Servings of Sugar-sweetened Drinks	0.25***	0.19***	—
≥1 Servings of Sweets	-0.06*	-0.07*	—
≥1 Servings of Fast Food (Weekly)	—	-0.08**	—

Only statistically significant correlations are reported; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001.

**Table A-12: Correlation between Risk Factors and the Amount of Food Consumption of Arizona Children**

	Parent's Education	Poverty Level	Discuss Healthy Eating with Doctor
Daily Servings of 100% Fruit Juice	-0.20***	-0.19***	—
Daily Servings of Fruit	0.06*	—	—
Daily Servings of Vegetables	0.10***	—	—
Combined Daily Servings of Fruit Juice, Fruit and Vegetables	—	-0.06*	—
Daily Servings of Milk	—	—	—
Daily Servings of Sugar-sweetened Drinks	-0.25***	-0.21***	—
Daily Servings of Sweets	—	—	—
Weekly Servings of Fast Food	—	0.08**	—

Only statistically significant correlations are reported; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001.

**Table A-13: Correlation between Individual and Environmental Risk Factors and the Likelihood and Amount of Physical Activities of Arizona Adults**

	Vigorous Physical Activities		Moderate Physical Activities	
	Yes/No	No. of Days	Yes/No	No. of Days
<b>Individual</b>				
Physical, Behavioral and Mental Condition	-0.13***	-0.13***	-0.17***	-0.11***
Education	0.14***	0.14***	0.12***	0.07***
Poverty Level	0.14***	0.14***	0.10***	0.06***
<b>Environmental</b>				
Access to Parks and Recreation Facilities	0.08***	0.08***	0.09***	0.07***
Perceived Neighborhood Safety	—	—	—	—

Only statistically significant correlations are reported; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001.

**Table A-14: Correlation between Risk Factors and the Likelihood and Amount of Physical Activities of Arizona Children**

	Physically Active ≥60 Minutes (daily)		Go to a Park		Go to the Library	
	Yes/No	No. of Days	Yes/No	No. of Days	Yes/No	No. of Days
Physical, Behavioral and Mental Condition	—	—	—	—	—	—
Parents' Education	0.12***	0.16***	—	0.07**	0.22***	0.22***
Poverty Level	0.10***	0.12***	—	—	0.12***	0.11***
Access to Parks, Playgrounds and Open Space	—	—	0.11***	0.20***	—	—
Being Taken to a Park, Store or a Playground	0.12***	0.14***	0.07**	0.26***	0.10***	0.11***

Only statistically significant correlations are reported; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001.

**Table A-15: Correlation between Food Consumption, BMI, Chronic Disease and Conditions and Sense of Well-being of Arizona Adults**

	BMI	Overweight or Obese	Diabetes	High Blood Pressure	Heart Disease	Sense of Well-being
≥2 Servings of Fruit	-0.04***	-0.03**	—	-0.02*	-0.02*	0.12***
≥3 Servings of Vegetables	-0.06***	-0.05***	-0.03**	-0.03*	-0.03*	0.14***
Servings of Fruit Daily	-0.05***	-0.05***	—	-0.03*	—	0.15***
Servings of Vegetables Daily	-0.05***	-0.04***	-0.04***	-0.02*	-0.03*	0.20***
Servings of Soda Daily	0.05***	0.03*	-0.07***	-0.07***	—	-0.13***
Servings of Other Soft Drinks Daily	—	—	-0.07***	-0.08***	-0.05***	-0.09***
Servings of Fast Food Weekly	0.12***	0.11***	—	-0.05***	-0.03**	-0.06***
Vigorous Physical Activities	-0.11***	-0.08***	-0.13***	-0.19***	-0.14***	0.19***
Moderate Physical Activities	-0.07***	-0.03*	-0.10***	-0.09***	-0.10***	0.17***
Days Doing Vigorous Physical Activities	-0.12***	-0.09***	-0.13***	-0.18***	-0.13***	0.20***
Days Doing Moderate Physical Activities	-0.12***	-0.08***	-0.09***	-0.06***	-0.06***	0.17***

Only statistically significant correlations are reported; Significance: \*p<.05; \*\*p<.01; \*\*\*p<.001.