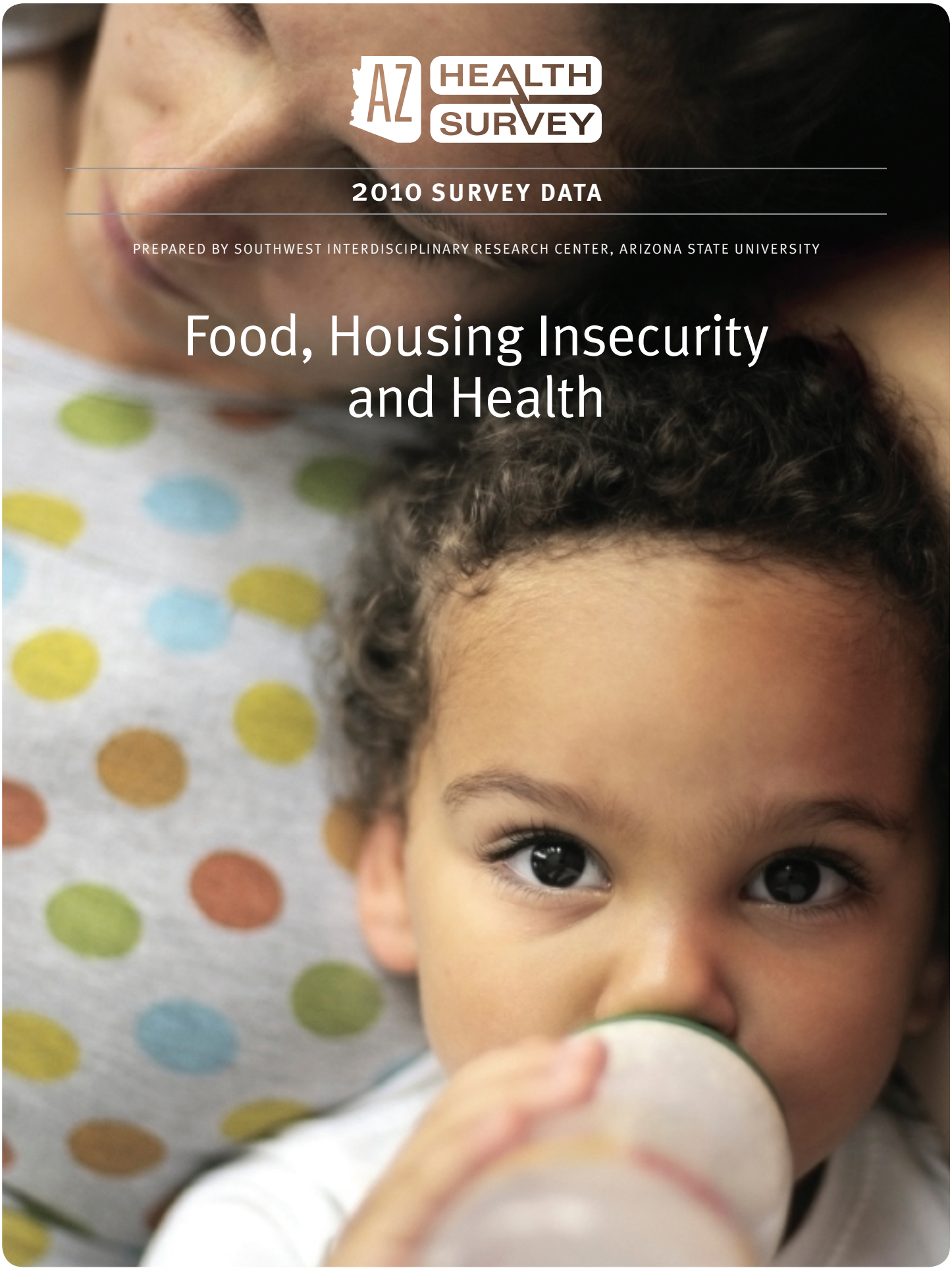

AZ HEALTH SURVEY

2010 SURVEY DATA

PREPARED BY SOUTHWEST INTERDISCIPLINARY RESEARCH CENTER, ARIZONA STATE UNIVERSITY

Food, Housing Insecurity and Health

Food, Housing Insecurity and Health

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Summary of Food and Housing Insecurity Findings from the 2010 Arizona Health Survey

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 related to prevalence of healthy eating and active living behaviors 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 those disparities. 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.

Income, Work and Health

- Over one-third of Arizonans (37 percent) have low income.
- Fifteen percent of respondents were unemployed (i.e., not working but looking for work). Asian, Pacific Islander or Native Hawaiians were most likely to report currently working, while Native Americans/American Indians were least likely to report working.
- The percentages of respondents who reported having psychological distress, poor health and poor quality of life/sense of well-being were three to four times higher among respondents at or below 100 percent of the Federal Poverty Level (FPL) than they were among respondents above 300 percent of the FPL.
- Not working was associated with negative health outcomes including psychological distress, poor health and poor quality of life. Working part-time was associated with worse health outcomes than working full-time.
- Not working due to disability was the factor associated with the highest rates of psychological distress, poor health and poor quality of life/sense of well-being, even more than race/ethnicity or economic status.

Food Insecurity and Health

- Forty percent of low-income respondents were food insecure. Compared to non-Hispanic Whites, Hispanic/Latino and Native American/American Indian respondents reported significantly higher levels of food insecurity even when controlling for the effect of economic status, educational attainment, age and marital status on food insecurity. Hispanics/Latinos were 129 percent more likely and Native Americans/American Indians were 63 percent more likely than non-Hispanic Whites to be food insecure.
- Lower economic status and the presence of children in the household were associated with higher levels of food insecurity. Nearly one-half (48 percent) of respondents at or below 100 percent of the FPL were food insecure as were 43 percent of low-income households with children under age 18.
- Respondents who were food insecure reported worse health outcomes than those who were food secure.
- Food security/insecurity did not appear to have much effect on healthy eating habits among low-income respondents.
- Educational attainment and gender were the only two factors associated with marked differences in eating habits. Fewer than one in ten adults with less than a high school education reported healthy eating habits compared to one in four of those with a college degree. The percentage of females who reported healthy eating habits was twice that of males.
- Only one in six people met the United States Department of Agriculture (USDA) recommendations for daily consumption of fruits and vegetables; 45 percent did not meet either recommendation.
- Healthier eating habits were associated with better health outcomes.

Housing Insecurity and Health

- One in four (24 percent) low-income respondents were housing insecure; 70 percent of those who were housing insecure were also food insecure.
- Individuals most likely to be housing insecure were female; between the ages of 29 and 39; those with less than a high school education; Hispanic/Latino, Native American/American Indian or Black/African-American; at or below 100 percent of the FPL; and/or those with children under age 18 in the household.
- The prevalence of housing insecurity was significantly higher among Native American/American Indian (22 percent), Hispanic/Latino (20 percent) and Black/African-American (17 percent) respondents than among non-Hispanic White respondents (9 percent).
- Even when controlling for the effect of economic status, educational attainment, age and marital status on housing insecurity, compared to non-Hispanic Whites, Black/African-American respondents were 59 percent more likely and Hispanic/Latino respondents were 32 percent more likely to be housing insecure.
- Compared to those who were housing secure, individuals who were housing insecure experienced higher levels of psychological distress (39 percent compared to 14 percent), poor health (37 percent compared to 19 percent) and poor quality of life/sense of well-being (31 percent compared to 13 percent).
- Individuals who rented their homes or had another arrangement experienced greater housing insecurity than those who owned their homes.
- The percentage of respondents who reported poor health and/or poor quality of life/sense of well-being was lower among adult children living with their parents than among those not living with their parents.
- Nine percent (n=332) of 2010 Arizona Health Survey respondents living with children under the age of 18 in the household reported that at least one of those children was their own grandchild.
- Compared to other adults living with children, those living with their grandchildren reported higher levels of psychological distress (28 percent compared to 18 percent), poor health (46 percent compared to 17 percent) and poor quality of life/sense of well-being (40 percent compared to 13 percent).

Background

The economic recession of the past few years has been hard on Americans in general and Arizonans in particular. According to the U.S. Census Bureau, Arizona now has the second highest poverty rate in the country (Knopf & Simpson, 2010). The state unemployment rate rose from 3.76 percent in 2007 to 9.94 percent in 2010 (Bureau of Labor Statistics, 2011), and over 65,000 foreclosures were filed between January and November 2010, breaking a previous foreclosure record (Zahid, 2011). Many Arizonans find it challenging to purchase adequate food and pay for a place to live during the best of times. Economic strife only adds to these pressures, increasing demand for food and housing assistance (Parrott, 2008).

Unfortunately, the bursting of the housing bubble and the subsequent recession have had disparate effects on families of different racial and ethnic backgrounds. As a result, the racial gap in household wealth has even further increased (Kochhar, Fry, & Taylor, 2011). According to a Pew Research Center report released in July 2011, declining housing values were "the principal cause of the recent erosion in household wealth," and Arizonans and Hispanics were among the hardest hit (Kochhar et al., 2011, p. 2). Indeed, data from the 2010 Arizona Health Survey showed that 35 percent of Native American/American Indian households, 34 percent of Hispanic/Latino households and 27 percent of Black/African-American households were below 100 percent of the FPL, compared to 11 percent of non-Hispanic White households (see Table A-1).

Another noticeable consequence of this economic downturn has been Arizonans' increasing struggles to provide food for their families (Knopf & Simpson, 2010). Between 2008 and 2010, the average monthly participation in the Supplemental Nutrition Assistance Program (SNAP), formerly known as food stamps, increased 70 percent among Arizonans, from 258,517 households in 2008 to 439,364 households in 2010 (Food and Nutrition Service, 2011). Further, on average, between 2007 and 2009, 14.5 percent of Arizona households reported being food insecure compared to 13.5 percent of households nationwide (Nord, Coleman-Jensen, Andrews, & Carlson, 2010).

Changes in work and income and related pressures of food and housing insecurity ultimately affect individuals' physical and psychological well-being. Potential consequences of food insecurity include illness, lack of concentration, low productivity, increased household stress and disruptions in family dynamics (Hamelin, Habicht, & Beaudry, 1999). Additionally, food insecurity may be a contributor to the mounting obesity epidemic (Knopf & Simpson, 2010).

This report examines the health and well-being of Arizonans in the midst of the recent economic downturn. It analyzes respondents' economic and employment statuses, eating habits and food and housing insecurity. The report further discusses the relationship of each of the items examined to respondents' health through measures of psychological distress, general health and quality of life/sense of well-being.

Methodology

The 2010 Arizona Health Survey data are the result of telephone interviews of 8,215 adult heads of household living in Arizona. The sample was weighted to be representative of the statewide population in Arizona allowing for generalizing[1] based upon the demographic characteristics of the population.

Survey questions and design were developed by St. Luke's Health Initiatives with assistance from Westat (the firm contracted to conduct the survey), consultants and community partners who use the data to inform their research, policy and planning decisions. Survey questions were pretested[1] to ensure their objectivity and validity.

Westat, a professional research service firm based in Rockville, Maryland, drew the samples[1] 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*). Respondents were selected using Random Digit Dialing (RDD), a procedure that excludes businesses and includes unlisted residential telephone numbers. Interviewers were trained and supervised by Westat. The 2010 survey interviews were conducted between May 4 and July 22, 2010.

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 (GSA) samples (see below) with known population parameters[1] indicated that the samples were representative microcosms of the populations they were designed to represent to mirror Arizona's demographic composition. Separate weighting variables[1] were calculated for each GSA. The sampling error for the statewide sample was .011 percent, calculated when the proportion answering a question is 50 percent and assuming the 95 percent level of significance.[1]

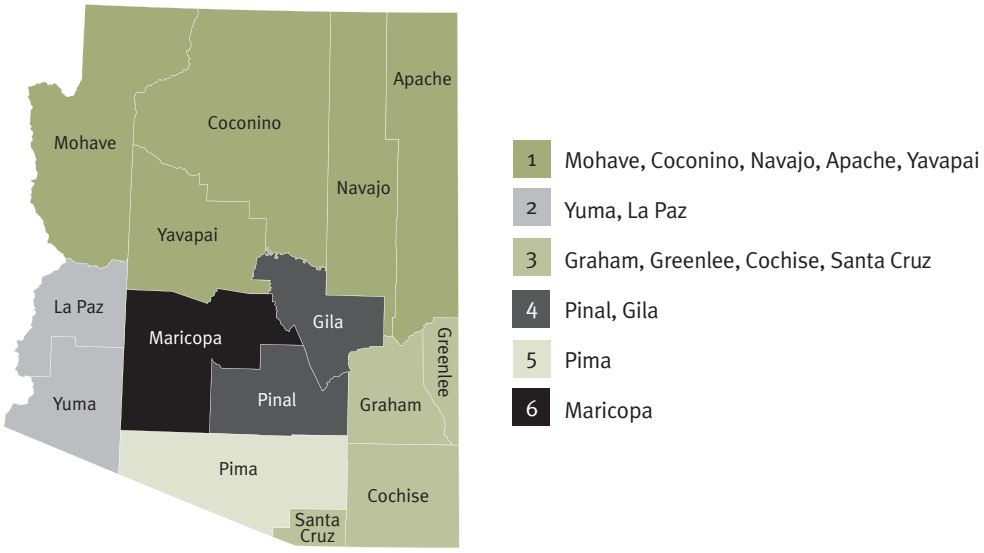
Questions about the survey instrument and methodology for the *2010 Arizona Health Survey* should be directed to Kim VanPelt at St. Luke's Health Initiatives at kim.vanpelt@slhi.org.

Data analyses by the Southwest Interdisciplinary Research Center (SIRC) began with additional data cleaning and recoding of variables into categories for reporting purposes. The SPSS statistical program was used to produce frequency and crosstab tables. To further elucidate statistically significant differences among certain variables, binary logistic regressions were performed.

The 2010 Arizona Health Survey 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.

1 Definitions for terms are provided in Appendix B.

EXHIBIT 1: Geographic Service Areas (GSAs) in Arizona



The sample was weighted to be representative of the statewide population and the population in six GSAs in Arizona. The GSAs and the number of interviews conducted in each are shown in Table 1. All random samples have sampling error when estimating population parameters. The sampling errors for the statewide sample and each GSA, calculated when the proportion answering a question is 50 percent and assuming the 95 percent level of significance, are shown in Table 1.

Table 1. Geographic Service Areas: Sampling

	Sample Size	Sample Error (+/-)
1. Mohave, Coconino, Navajo, Apache, Yavapai	1,053	.030
2. Yuma, La Paz	743	.036
3. Graham, Greenlee, Cochise, Santa Cruz	755	.035
4. Pinal, Gila	798	.035
5. Pima	2,143	.021
6. Maricopa	2,723	.019
Total	**8,215**	**.011**

All data reported have been rounded. The survey data reflect a statewide weighted sample similar to the following population data for Arizona.

Economic Indicators and Health

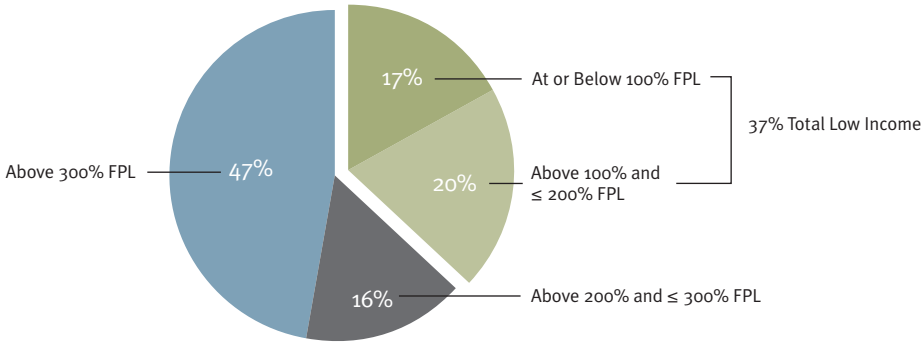
Economic Status

The overall economic status of each respondent was measured using a ratio of the number of people living in the household to the respondent's total household income to determine his or her proximity to the FPL. For one person, in the 48 contiguous states and the District of Columbia, the poverty guideline during the data collection period was $10,380. For each additional person in the household, it increased $3,470. Thus, for a family of four the poverty level was $22,050 (Department of Health and Human Services, 2010). Based on these guidelines, respondents were categorized into one of four mutually exclusive economic status categories: (1) *At or below 100 percent FPL*; (2) *Above 100 percent FPL and less than or equal to 200 percent FPL*; (3) *Above 200 percent FPL and less than or equal to 300 percent FPL*; or (4) *Above 300 percent FPL*.

There were a total of 8,215 respondents on the 2010 Arizona Health Survey. Approximately 80 percent (n = 6,548) provided the necessary information to be categorized into an economic status category. Thus, *all references to economic status in this report include only the 6,548 respondents for whom appropriate data were provided*.

Of the respondents whose economic status was determined, 37 percent reported an economic status that placed them at or below 200 percent of the federal poverty level (Figure 1). These respondents are referred to throughout this report as *low-income*.

Figure 1. Economic Status of 2010 Arizona Health Survey Respondents (n = 6,548)



Health

Respondents on the 2010 Arizona Health Survey were asked to rate their general health as *excellent, very good, good, fair* or *poor*. Those who answered *excellent, very good* or *good* were considered to have *good health* while those who answered *fair* or *poor* were considered to have *poor health*. Respondents were also asked to rate their quality of life/sense of well-being on the same scale. Similarly, those who answered *excellent, very good* or *good* were considered to have *good quality of life/sense of well-being* while those who answered *fair* or *poor* were considered to have *poor quality of life/sense of well-being*.

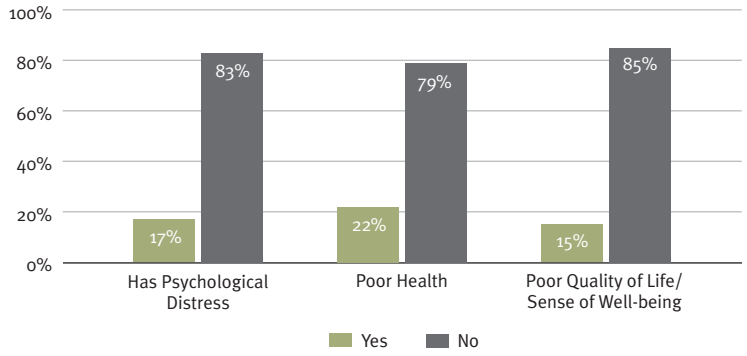
Additionally, the Arizona Health Survey used the Kessler 6 Scale (K6) to assess symptoms or levels of psychological distress among respondents. Elevated levels of psychological distress are associated with mental health conditions such as depression and anxiety (Dhingra, Zack, Strine, Druss, Berry, & Balluz, 2011). The questions included in the K6 were as follows:

- About how often in the past 30 days did you feel nervous?
- During the past 30 days, how often did you feel hopeless?
- During the past 30 days, how often did you feel restless or fidgety?
- How often did you feel so depressed that nothing could cheer you up?
- During the past 30 days, about how often did you feel that everything was an effort?
- During the past 30 days, about how often did you feel worthless?

The scores from the Arizona Health Survey sample on the K6 were divided into two categories: those experiencing serious or mild to moderate psychological distress were categorized as *Has Psychological Distress*, and those who were likely to be well or have low psychological distress were categorized as *No Psychological Distress*.

Most respondents reported positive health outcomes on all three measures. Of the total sample (n = 8,215), only 17 percent reported experiencing psychological distress, 22 percent reported poor health, and 15 percent reported poor quality of life/sense of well-being (Figure 2).

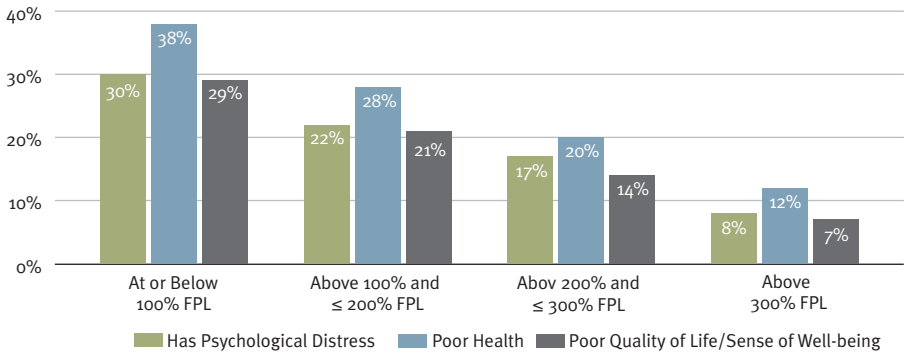
Figure 2. Health Outcomes Among 2010 Arizona Health Survey Respondents (n = 8,215)



Economic Status and Health

As expected, higher economic status was associated with better health outcomes. The results displayed in Figure 3 show a clear pattern of improvement (i.e. smaller percentages of respondents reporting negative outcomes) across all three health measures (*psychological distress, general health and quality of life/sense of well-being*) with increasing economic status. Respondents in the lowest economic status category (*at or below 100 percent FPL*) were more than three times as likely as those in the highest economic status category (*above 300 percent FPL*) to report having poor health (38 percent compared to 12 percent), almost four times as likely to report experiencing psychological distress (30 percent compared to 8 percent), and more than four times as likely to report poor quality of life/sense of well-being (29 percent compared to 7 percent).

Figure 3. Impact of Economic Status on Health Outcomes



Employment

According to the U.S. Bureau of Labor Statistics (2011), in 2010 Arizona's annual average unemployment rate was 10 percent, higher than the national average (9.6 percent), making Arizona one of only 15 states to report an annual average unemployment rate of 10 percent or more. This rate was more than 250 percent of Arizona's unemployment rate in 2007 (3.8 percent) and more than 150 percent of the 2008 rate (5.9 percent).

Working Status

The 2010 Arizona Health Survey asked, "Do you currently work at a job or business?" Over half of all respondents reported not working at all (51 percent), while 49 percent reported working at least part-time. A snapshot of those currently working is displayed in Figure 5.

Those most likely to report currently working were:

- Male
- Between the ages of 29 and 59
- College graduates
- Asian, Pacific Islander or Native Hawaiian
- Above 300 percent of the federal poverty level
- Living with children under 18 in the household

Those less likely to report currently working were:

- Female
- Age 70 or older
- Those with less than a high school diploma
- Native American or American Indian
- At or below 100 percent of the federal poverty level
- Living in households without children

Of respondents who were currently working, over two-thirds (67 percent) were working for a private company, non-profit organization or foundation; 19 percent worked for the government and 14 percent were self-employed (see Figure 4).

Figure 4. Distribution of Respondents Currently Working, by Type of Employer

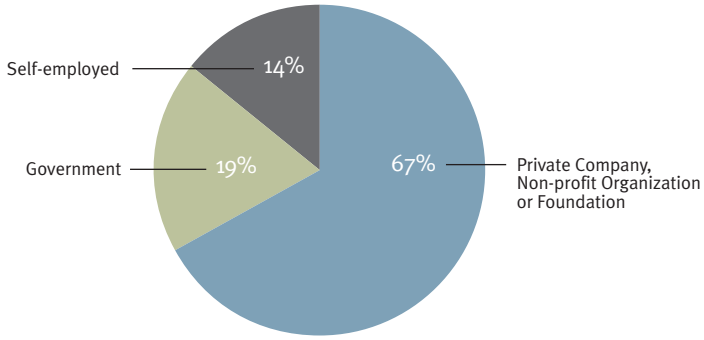
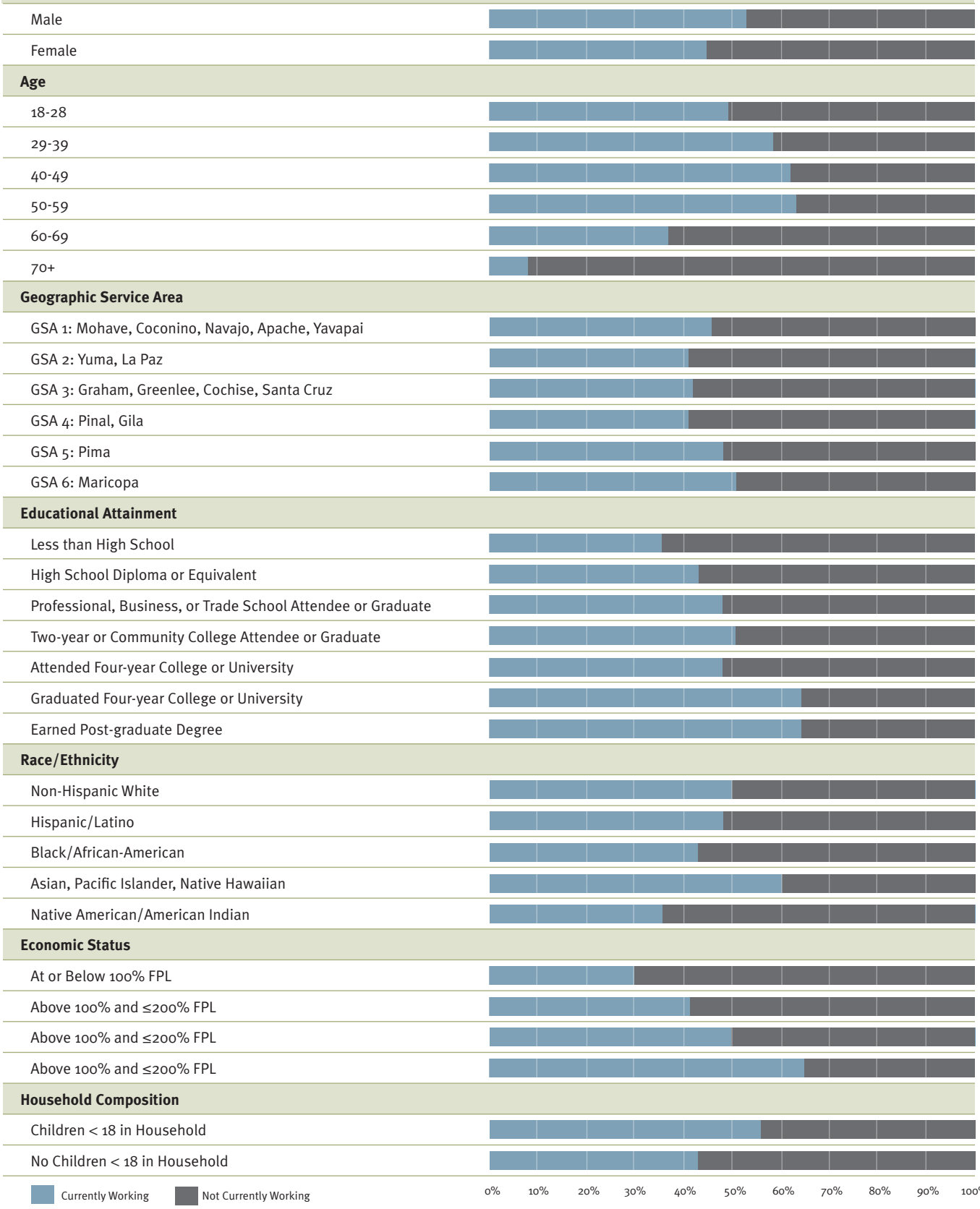


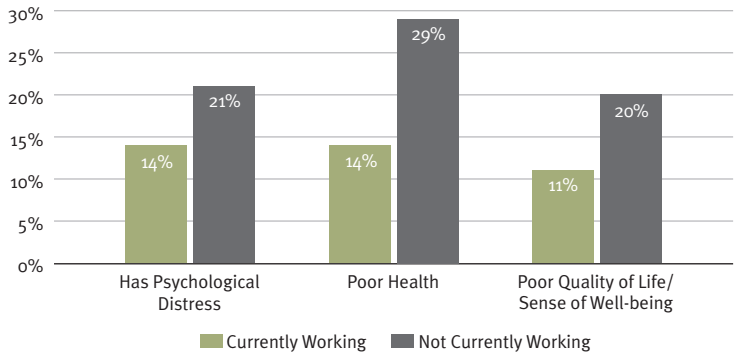
Figure 5. Individual and Selected Household Characteristics of Respondents by Working Status



Working Status and Health

Respondents' working status were clearly related to health outcomes. As shown in Figure 6, those who reported currently working were less likely than those not currently working to report having psychological distress, poor health and/or poor quality of life/sense of well-being.

Figure 6. Differences in Health Outcomes as a Function of Working Status

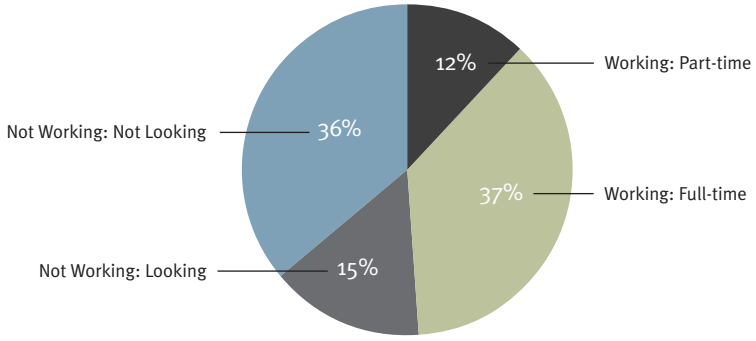


Employment Status

To more fully examine differences among respondents as a function of their employment status, a new variable, *Employment Status*, was created. Respondents who reported on the previous question that they were currently working were then asked whether they worked full-time, part-time or both. Those who answered part-time were categorized as having the employment status of *Working: Part-time*; those who answered full-time or both were categorized as *Working: Full-time*.

Respondents who reported on the previous question that they were not currently working were asked, "Are you currently looking for work?" Those who answered yes were categorized as having the employment status of *Not Working: Looking* while those who answered no were categorized as *Not Working: Not Looking*. The *Not Working: Looking* group (n=1,256) is referred to throughout this report as *unemployed*, suggesting an unemployment rate of approximately 15 percent among 2010 Arizona Health Survey respondents (Figure 7).

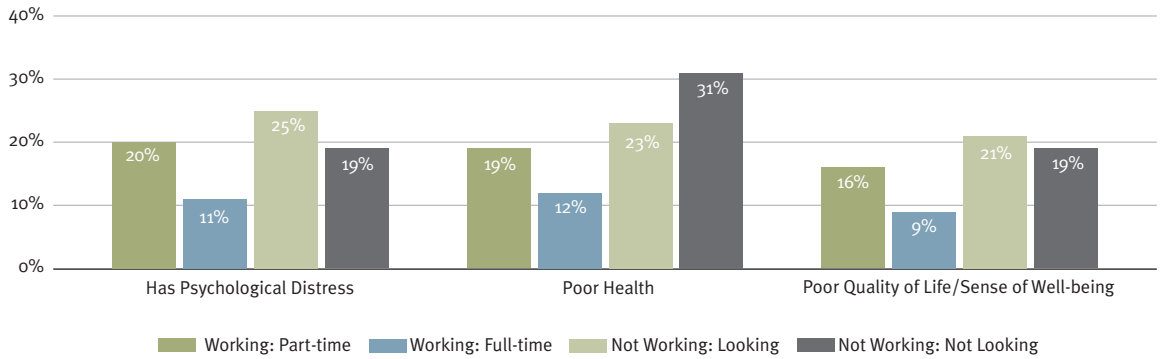
Figure 7. Employment Status of 2010 Arizona Health Survey Respondents



Employment Status and Health

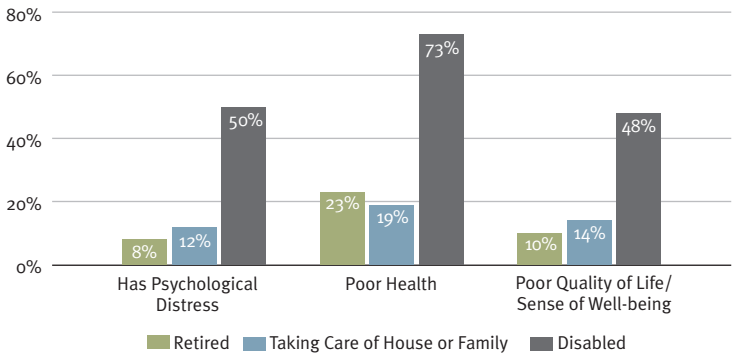
The relationship between respondents' employment status and their health outcomes was quite interesting (Figure 8). Of respondents who were currently working, those working full-time reported better health outcomes across all three measures than those working only part-time. Additionally, while the unemployed (i.e., *Not Working: Looking*) experienced the highest amounts of psychological distress (25 percent) and were most likely to report poor quality of life/sense of well-being (21 percent), respondents who were not working and not looking for work were the most likely to report poor health (31 percent).

Figure 8. Differences in Health Outcomes as a Function of Employment Status



Potential reasons the *Not Working: Not Looking* group may have reported such poor health may be explained by examining respondents' answers when asked, if not working and not looking for work, "What is the main reason you are not working?" The three most prevalent reasons reported were: *Retired* (46 percent), *Taking care of house or family* (21 percent), and *Disabled* (19 percent). Of these three subgroups, those who were disabled reported much more negative health outcomes across the board than those who were retired or taking care of the house or family; 50 percent reported experiencing psychological distress, 73 percent reported poor health and nearly half (48 percent) reported poor quality of life/sense of well-being (Figure 9).

Figure 9. Health Outcomes Among Respondents Not Working and Not Looking for Work



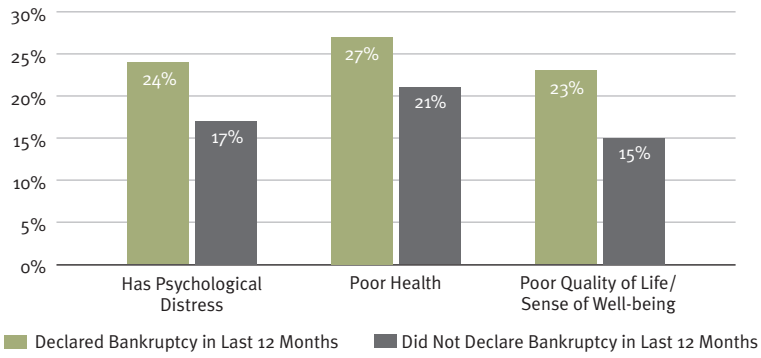
Of all the factors examined (including race/ethnicity and economic status), not working due to disability was the factor most likely to be associated with negative health outcomes on all three health measures. Compared to the overall sample, respondents who reported not working due to disability were nearly three times more likely to report having psychological distress (50 percent compared to 17 percent), and more than three times as likely to report poor health (73 percent compared to 22 percent) and poor quality of life/sense of well-being (48 percent compared to 15 percent).

It is also notable that, compared to the overall sample as well as to other respondents not working and not looking for work, retired respondents were less likely to report having psychological distress and poor quality of life/sense of well-being. According to a 2009 Pew Research Center report on the effects of the recession on Americans of different generations/age groups, older Americans, most of whom are already retired, "are less likely than younger and middle-aged adults to say that in the past year they have…suffered losses in their retirement accounts; or experienced trouble paying for housing or medical care. They're more likely to report being very satisfied with their personal finances. And they're less likely to say the recession has been a source of stress in their family" (Morin & Taylor, 2009, pp.1-2).

Bankruptcy

Only two percent of the Arizona Health Survey respondents had declared bankruptcy in the last 12 months (n=178). However, as displayed in Figure 10, those who declared bankruptcy were more likely than those who did not declare bankruptcy to report having psychological distress (24 percent compared to 17 percent), poor health (27 percent compared to 21 percent), and poor quality of life/ sense of well-being (23 percent compared to 15 percent).

Figure 10. Differences in Health Outcomes as a Function of Bankruptcy



Eating Habits

Definitions

During the survey period (May-July 2010), guidelines from the USDA suggested that in order to be healthy, individuals should consume two to four servings of fruit and three to five servings of vegetables per day. Following these guidelines, answers to the following questions on the 2010 Arizona Health Survey were used to categorize respondents as *unhealthy, moderately healthy* or *healthy eaters*:

- "How many servings of fruit do you usually eat in a typical day?"
- "How many servings of vegetables [including potatoes, not fried] do you usually eat in a typical day?"

Respondents who met the minimum USDA recommendations for both fruits and vegetables were classified as *healthy eaters*. Those who met the recommendations for either fruits or vegetables were classified as *moderately healthy eaters*, and those who did not meet either recommendation were classified as *unhealthy eaters*.

Eating Habits Findings from 2010 Arizona Health Survey

Fewer than one in five respondents (17 percent) met the minimum USDA recommendations for both fruits and vegetables and were thus classified as *healthy eaters*. One-half of respondents consumed the recommended servings of fruit, while only 22 percent consumed the recommended servings of vegetables. Approximately 45 percent of respondents did not meet either recommendation; these respondents were classified as *unhealthy eaters* (see Table A-2).

According to findings from the 2010 Arizona Health Survey (shown in Figure 11), the healthiest eaters were:

- Female
- Between the ages of 29 and 39
- College graduates
- Above 300 percent of the federal poverty level

The unhealthiest eaters were:

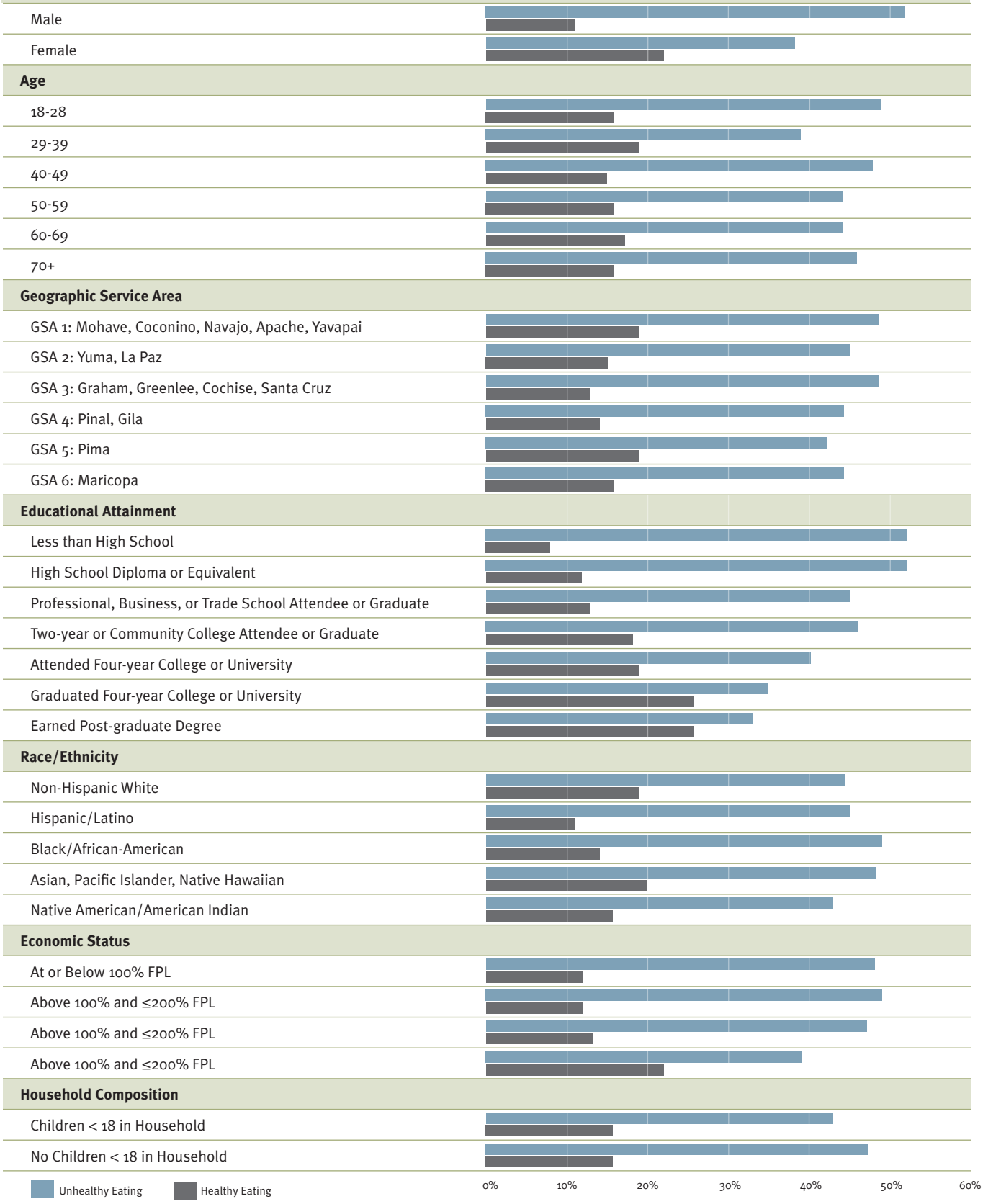
- Male
- In all age groups other than 29 to 39
- Those with a high school diploma or less
- At or below 300 percent of the federal poverty level

Eating habits varied most noticeably with respect to gender and educational attainment. Females were twice as likely as men to report eating healthy (22 percent and 11 percent, respectively), and the percentage of respondents who reported eating healthy continuously increased with higher levels of education, from eight percent of those with less than a high school education to 26 percent of those with a college degree.

Economic status did not appear to make a difference in eating habits among households at or below 300 percent of the federal poverty level. Those between 200 and 300 percent of the federal poverty level reported eating habits that were very similar to those under the poverty level (i.e., at or below 100 percent FPL), with just over one in ten persons in each category meeting the daily recommendations for fruits and vegetables (i.e., reporting healthy eating) and nearly half (47 percent and 48 percent, respectively) reporting that they do not meet either recommendation. Above 300 percent of the federal poverty level, however, there was a 10 percent increase in healthy eaters (up to 22 percent), and a 10 percent decrease in unhealthy eaters (down to 39 percent).

As expected, given the results of previous studies linking well-balanced diets to better health (e.g., Hendrickson, Smith, & Eikenberry, 2006), healthier eating habits were associated with better health outcomes among 2010 Arizona Health Survey respondents. Respondents who consumed the recommended servings of both fruits and vegetables (*healthy eaters*) were less likely than those who met only one recommendation (*moderately healthy eaters*) and those who did not meet either recommendation (*unhealthy eaters*) to experience psychological distress, poor health and poor quality of life/sense of well-being (see Table A-3).

Figure 11. Eating Habits by Individual and Household Characteristics



Food Insecurity

Definitions

The USDA, Economic Research Service (ERS) defines household food security and insecurity (2009) as follows:

- **Food Security:** Access by all members at all times to enough food for an active, healthy life.
- **Food Insecurity:** Limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.

Food security runs on a continuum with varying degrees of severity. The USDA classifies households as food insecure if they meet at least three conditions, the least severe of which include (in order of increasing severity):

- They worried whether their food would run out before they got money to buy more.
- The food they bought didn't last, and they didn't have money to get more.
- They couldn't afford to eat balanced meals.

The 2010 Arizona Health Survey (Arizona Health Survey) included questions about the existence of the latter two conditions among respondents who were identified as low-income (i.e., at or below 200 percent of the FPL). Specifically, these respondents were asked whether the following two statements were *often true*, *sometimes true* or *never true* for themselves and their households in the last 12 months:

- "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more."
- "(I/We) couldn't afford to eat balanced meals."

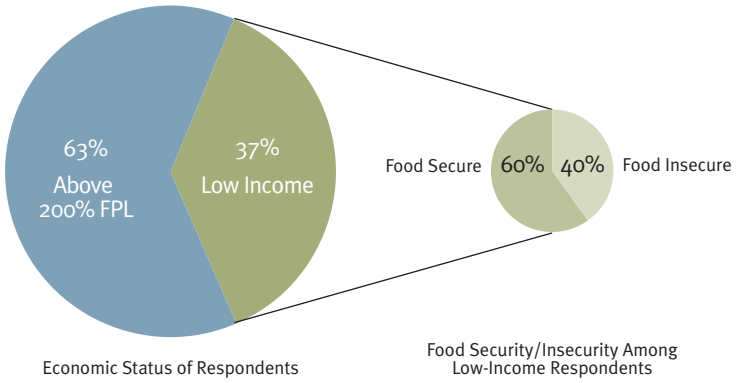
Respondents who provided affirmative responses (*often true* or *sometimes true*) to both statements were classified as *food insecure*. In other words, respondents who answered that at least once in the last 12 months the food they bought did not last and they did not have money to buy more *and* that at least once in the last 12 months they could not afford to eat balanced meals were identified as food insecure. Similar to the methodology used by Bickel, Nord, Price, Hamilton, and Cook (2000) in the *Guide to Measuring Household Food Security* published by the USDA, respondents were classified as *food secure* if they answered *never true* to either question.

As explained in the "Economic Status" section of this report, of the respondents whose economic status was ascertained (n = 6,548), 37 percent were at or below 200 percent of the federal poverty level and thus considered low-income (n = 2,425). The latter group was the only set of respondents who were asked the two food security questions; therefore, *all references to food security in this report apply only to respondents identified as low-income.*

Food Insecurity Findings from 2010 Arizona Health Survey

As displayed in Figure 12, of those who answered both food security questions (n = 2,414), approximately 40 percent were food insecure.

Figure 12. Economic Status and Food Security/Insecurity Among 2010 Arizona Health Survey



Individual and selected household characteristics of food security and insecurity are displayed in Figure 13. The results showed that individuals most likely to be food insecure were:

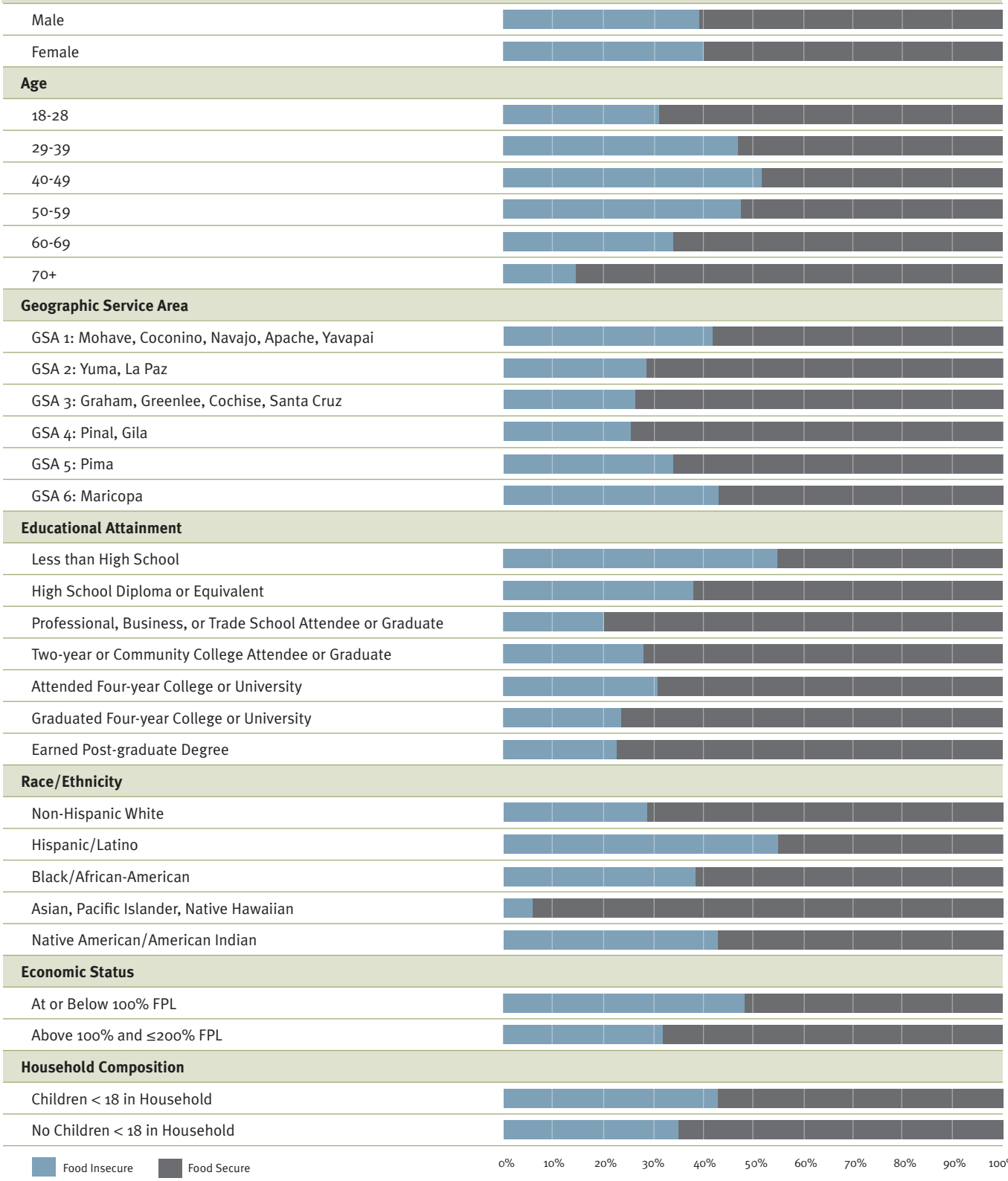
- Between the ages of 29 and 59
- Those with a high school (38 percent) or less than high school (55 percent) education
- Hispanic/Latino (55 percent), Native American/American Indian (43 percent) or Black/African-American (39 percent)

Compared to non-Hispanic Whites, Hispanic/Latino and Native American/American Indian respondents reported significantly higher levels of food insecurity even when controlling for the effect of economic status, educational attainment, age and marital status on food insecurity (see Table A-6). Hispanics/Latinos were 129 percent more likely and Native Americans/American Indians were 63 percent more likely than non-Hispanic Whites to be food insecure.

Figure 13 also shows that, consistent with findings from the most recent USDA report on household food security (Nord et al., 2010), respondents living in urban areas were more likely than those living in non-urban areas to be food insecure except in GSA 1: Mohave, Coconino, Navajo, Apache, Yavapai. Over one-third of low-income households in GSA 5: Pima County (34 percent) and GSA 6: Maricopa County (43 percent) were food insecure, as well as 42 percent of those in GSA 1 (Mohave, Coconino, Navajo, Apache, and Yavapai counties). By contrast, less than 30 percent of respondents in GSA 2 (Yuma, La Paz, GSA 3: Graham, Greenlee, Cochise, Santa Cruz) and GSA 4 (Pinal and Gila counties) reported being food insecure.

Not surprisingly, lower economic status was associated with higher levels of food insecurity as was the presence of children in the household. According to findings from the 2010 Arizona Health Survey, nearly one-half (48 percent) of respondents at or below the federal poverty level were food insecure compared to nearly one-third (32 percent) of respondents between 100 and 200 percent FPL. Additionally, 43 percent of low-income households with children under age 18 were food insecure compared to 35 percent of households without children. These findings resemble 2009 USDA findings which showed that, nationally, 43 percent of households with an income-to-poverty ratio under 1.0 (i.e., households below 100 percent of the federal poverty level) were food insecure, compared to approximately 35 percent of households with an income-to-poverty ratio under 1.85, which the authors defined as low-income (Nord et al., 2010).

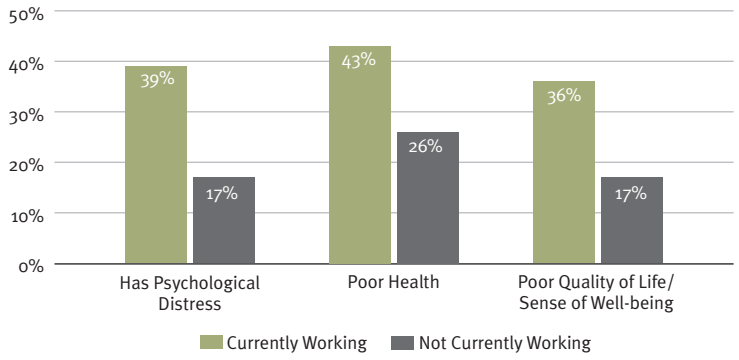
Figure 13. Individual and Household Characteristics of Food Security/Insecurity Among Low-income Households



Food Insecurity and Health

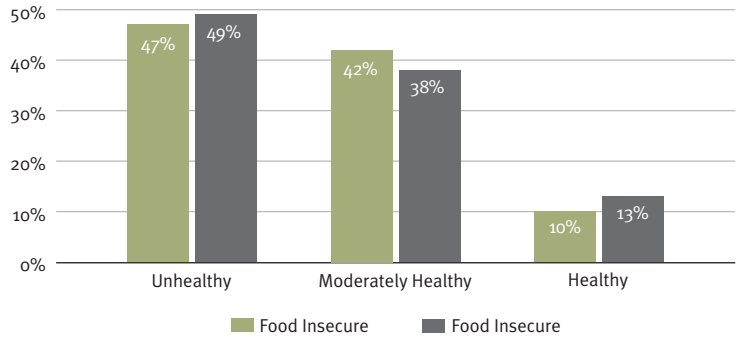
Based on three different measures of physical or mental health, food insecurity appears to be associated with negative health outcomes. Food insecure respondents were more than twice as likely as food secure respondents to experience psychological distress (39 percent compared to 17 percent) and report poor quality of life/sense of well-being (36 percent compared to 17 percent). Likewise, 43 percent of those who were food insecure reported poor overall health compared to 26 percent of those who were food secure.

Figure 14. Impact of Food Security/Insecurity on Health and Quality of Life



Food security did not appear to have much effect on healthy eating habits among low-income respondents (Figure 15). Similarly, 49 percent of those who were food secure and 47 percent of those who were food insecure were classified as unhealthy eaters, meaning that on an average day they did not meet the daily USDA recommendations for fruits or vegetables. Only 13 percent of food secure respondents and 10 percent of food insecure respondents met both requirements and were thus classified as healthy eaters.

Figure 15. Eating Habits Among Food Secure/Insecure Respondents



Housing Insecurity

Definitions

The 2010 Arizona Health Survey asked all respondents (n = 8,215) about their housing situations. Specifically, respondents were asked, "Has there been a time in the past 12 months when you did not have enough money to provide adequate housing for you and your family?" Respondents who answered affirmatively (*often true* or *sometimes true*) were determined to be *housing insecure*. Those who answered negatively (*never true*) were determined to be *housing secure*.

Characteristics Associated with Housing Insecurity

As indicated in Figure 16, those most likely to be housing insecure were:

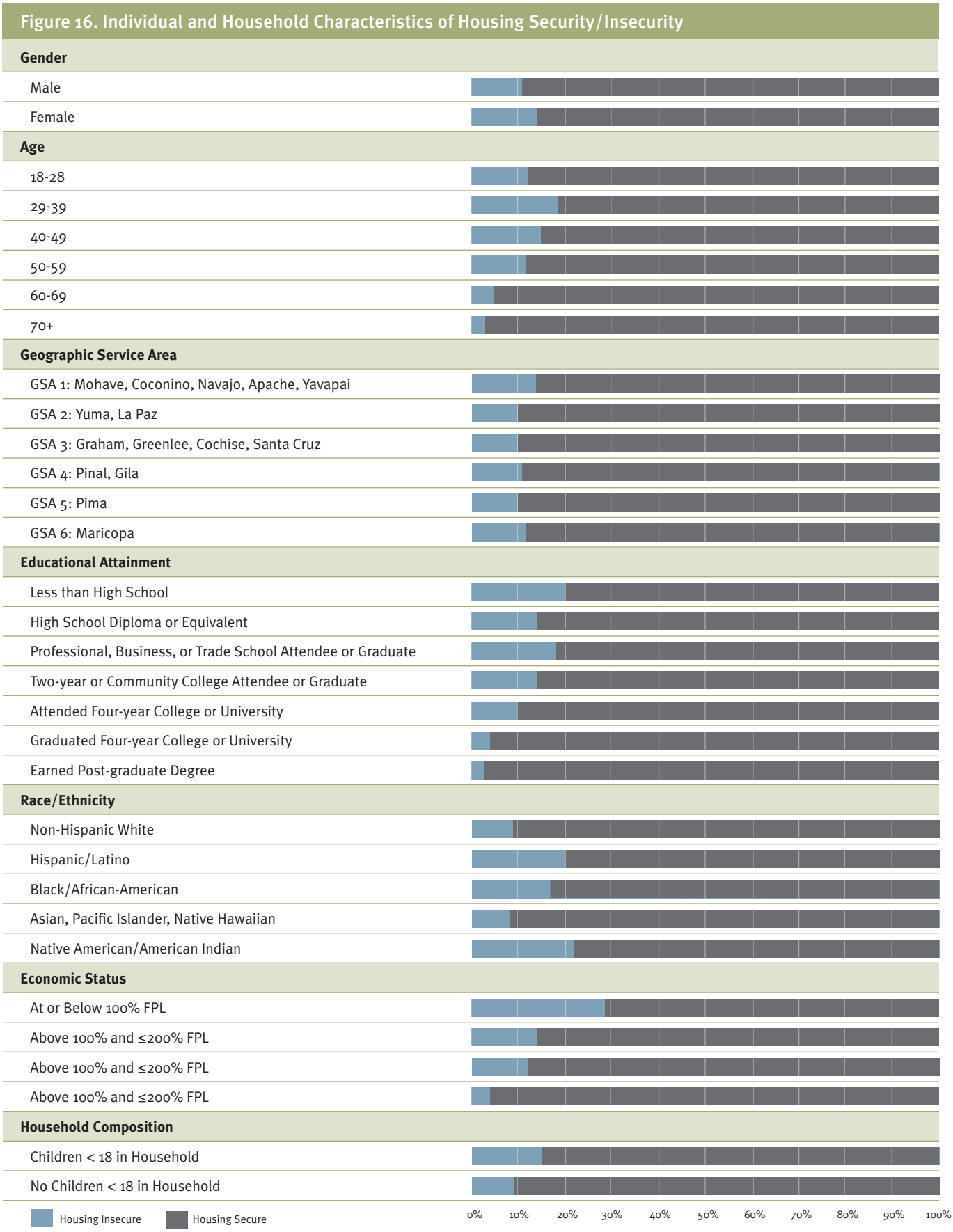
- Female
- Between the ages of 29 and 39
- Those with less than a high school education
- Hispanic/Latino, Native American/American Indian or Black/African-American
- At or below 100 percent FPL
- Living with children under age 18 in the household

Similar to the data on food insecurity, respondents in rural areas (GSAs 2-4) and GSA 5 (Pima County) (10 percent each) were slightly less likely to be housing insecure than those in GSA 1 (Mohave, Coconino, Navajo, Apache and Yavapai) (14 percent) and GSA 6 (Maricopa county) (12 percent). Additionally, as also shown with regard to food insecurity, the likelihood of housing insecurity increased with decreasing economic status and the presence of children under age 18 in the household.

Consistent with the findings of Staveteig and Wigton (2000) in a report using National Survey of American Families data, there were discrepancies in housing insecurity among Arizona Health Survey respondents in different racial and ethnic categories. While only nine percent of non-Hispanic Whites were housing insecure, the prevalence of housing insecurity was significantly higher among Native Americans/American Indians (22 percent), Hispanics/Latinos (20 percent) and Blacks/African-Americans (17 percent). In fact, even when controlling for the effect of economic status, educational attainment, age and marital status on housing insecurity, compared to non-Hispanic Whites, Black/African-American respondents were 59 percent more likely and Hispanic/Latino respondents were 32 percent more likely to be housing insecure[2] (see Table A-7).

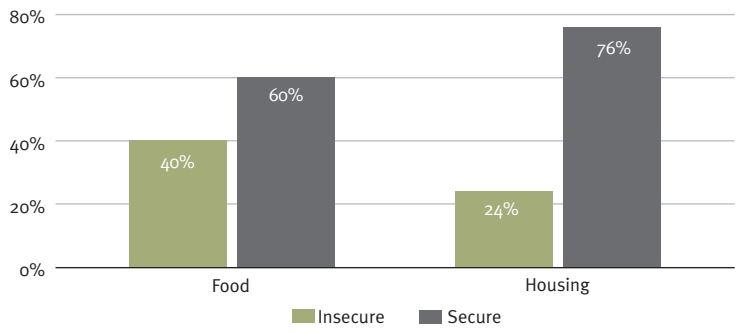
2 Though the prevalence of housing insecurity was highest among Native American/American Indian respondents, the differences were no longer significant after controlling for economic status, educational attainment, age and marital status.

Figure 16. Individual and Household Characteristics of Housing Security/Insecurity



In order to compare the prevalence of housing insecurity to the prevalence of food insecurity, housing security was calculated specifically for the low-income respondents. Whereas 40 percent of low-income respondents were food insecure, approximately one-quarter (24 percent) were housing insecure, as shown in Figure 17. These results coincide with those reported by Kushel, Gupta, Gee and Haas (2005) who examined food insecurity and housing instability[3] among over 16,000 low-income[4] adults; the authors determined that 24 percent were food insecure and 43 percent had housing instability.

Figure 17. Food and Housing Security/Insecurity Among Low-Income Respondents



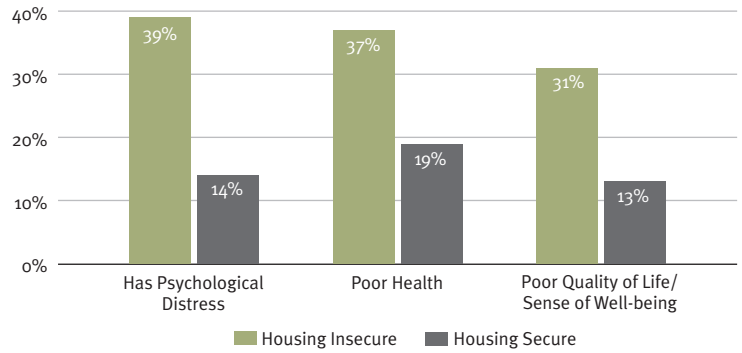
Further, among low-income respondents, while less than half (42 percent) of those who were food insecure were also housing insecure (see Table A-4), 70 percent of those who were housing insecure were also food insecure (see Table A-5). This provides support for findings indicating that when individuals and households experience economic hardship, adequate housing may be a higher priority than adequate and healthy food.

Housing Insecurity and Health

Results of a 2008 Gallup poll showed that individuals with high overall well-being tend to have both interpersonal and financial stability (Pelham, 2008). The recent recession has been hard on Arizona residents. Economic strife has added pressure to people trying to maintain financial stability, which may affect personal physical and mental well-being. Figure 18 includes information on individuals' psychological state, general health status and quality of life/sense of well-being in the context of housing security.

Individuals who were housing insecure had higher levels of psychological distress (39 percent) than those who were housing secure (14 percent). Likewise, those who were housing insecure were more likely than others to report poor health (37 percent and 19 percent, respectively) and poor quality of life/sense of well-being (31 percent and 13 percent, respectively).

Figure 18. Impact of Housing Security and Insecurity on Respondents' Health



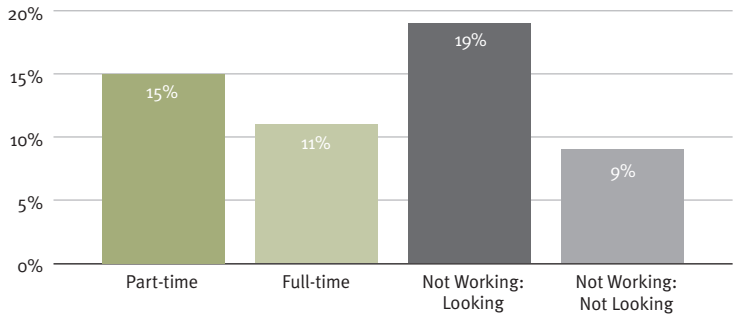
3 The authors defined housing instability as "self-reported difficulty in paying rent, mortgage or utility bills in the past year," (p. 72).

4 As defined in the present report, *low-income* was defined by Kushel et al. (2005) as below 200 percent of the poverty level.

Employment Status and Housing Security

As might be expected, housing security varied with employment status. Nineteen percent of respondents who were not working but looking for work (i.e., unemployed) were housing insecure, compared to 15 percent of those working part-time, 11 percent of those working full-time and nine percent of those who were not working but not looking for work.

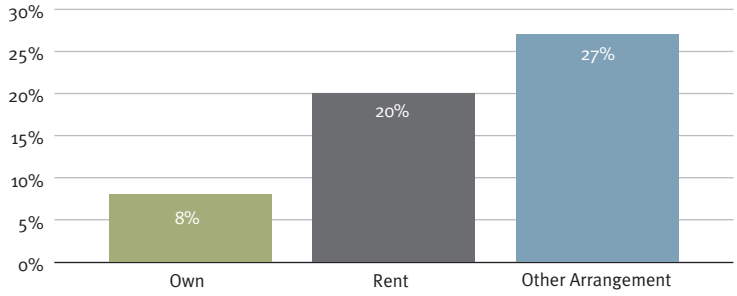
Figure 19. Prevalence of Housing Insecurity Among Respondents Differentiated by Employment Status



Homeownership and Housing Security

Another financial factor that can impact housing security is whether individuals own or rent their homes. Results of the 2010 Arizona Health Survey indicated that individuals who owned their own homes were more likely to be housing secure than those who rented or had another arrangement (Figure 20). Only eight percent of homeowners were housing insecure compared to 20 percent of renters and 27 percent of those with other housing arrangements (not specified).

Figure 20. Housing Insecurity by Home Ownership



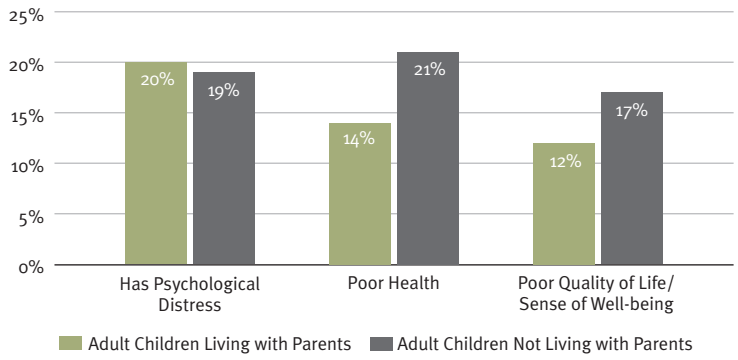
Multigenerational Households

Adult Children

The 2010 Arizona Health Survey examined multigenerational households consisting of adult children living with their parents, grandparents living with grandchildren and grandparents acting as primary caretakers for their grandchildren. Approximately 10 percent of all respondents reported living in the same household with one or both of their parents (n = 792); 63 percent of these were between the ages of 18 and 28, 24 percent between the ages of 29 and 39, eight percent between 40 and 49 and five percent between 50 and 59.

Findings from the 2010 Arizona Health Survey indicated that adult children living with their parents were just as likely to experience psychological distress as those not living with their parents (20 percent compared to 19 percent). However, those not living with parents reported poorer health and poorer quality of life than those living with parents (Figure 21).

Figure 21. Percentages of Adult Children Reporting Negative Health Outcomes Differentiated by Whether or Not They Live with at Least One of their Parents

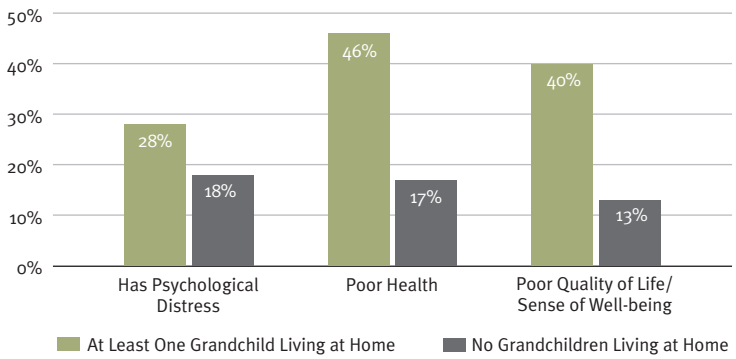


Grandparents Living with Grandchildren

Respondents who reported having children under age 18 living in their households (n=3,669) were asked, "Do you have any of your own grandchildren under the age of 18 living in your home?" Of those who were asked, nine percent (n=332) responded, Yes and of this group, 52 percent were responsible for most of the basic needs of those grandchildren.

Differences in health outcomes between respondents with at least one of their own grandchildren living in their home and those with children other than their own grandchildren living in their home are displayed in Figure 22. Respondents with their own grandchildren living in their home were more likely to report having psychological distress (28 percent compared to 18 percent), poor health (46 percent compared to 17 percent), and poor quality of life/sense of well-being (40 percent compared to 13 percent). Whether or not respondents with their own grandchildren living in their home were responsible for most of the basic needs of those children did not appear to have much further impact on respondents' health outcomes.

Figure 22. Health Outcomes Among Respondents Living with Children Under Age 18 in Household



Conclusion

The 2010 Arizona Health Survey data showed some specific areas of concern regarding food, housing and health issues for Arizona adults and their families. Approximately 15 percent of adults were unemployed and over one-third (37 percent) reported having low income. Both of these characteristics were associated with negative health outcomes including psychological distress, poor health and poor quality of life/sense of well-being. In fact, for the 17 percent of respondents at or below 100 percent of the FPL, psychological distress, poor health and poor quality of life were three to four times higher than they were among respondents above 300 percent of the FPL.

Overall, Arizonans are not eating in ways that experts suggest they should in order to maintain healthy lifestyles. Only one in six people met the USDA recommendations for daily consumption of fruits and vegetables while 45 percent did not meet either recommendation. Among low-income respondents, 40 percent reported experiencing food insecurity. These respondents reported worse health outcomes on all three measures than those who were food secure.

Stable housing is also an issue for many Arizonans. One-fourth (24 percent) of low-income respondents reported that they were housing insecure in the past year. Further, 70 percent of those who were housing insecure were also food insecure. The individuals who were housing insecure also experienced higher levels of psychological distress, poor health and poor quality of life/sense of well-being compared to those who were housing secure.

These findings clearly indicate that many Arizonans are struggling to find adequate employment, food and housing. This is particularly concerning because a lack of security in these areas not only has negative implications for the health and well-being of the individuals but for their children and other household members as well. It must be recognized that economic status, nutrition, housing and health are interrelated issues. Mechanisms and systems designed to address the problems faced by these individuals and families need to take into account all these related aspects in order to truly provide improved health outcomes for them and for our communities.

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Appendix A: Data Tables

Table A-1. Percentage of Respondents Below 100 Percent of the Federal Poverty Level by Race/Ethnicity

	Number	%
Non-Hispanic White	475	11%
Hispanic/Latino	484	34%
Black/African-American	64	27%
Asian, Pacific Islander or Native Hawaiian	24	19%
Native American/American Indian	84	35%

Table A-2. Proportion of Respondents Who Met/Did Not Meet USDA Recommendations

	Number	%
Fruit – Met Recommendation	4,070	50%
Vegetables – Met Recommendation	1,769	22%
Met Both Recommendations	1,344	17%
Did Not Meet Either Recommendation	3,634	45%

Table A-3. Prevalence of Negative Health Outcomes Among Respondents by Eating Habits

	Has Psychological Distress	Poor Health	Poor Quality of Life/ Sense of Well-being
Unhealthy Eating Habits	21%	24%	19%
Moderately Healthy Eating Habits	15%	20%	14%
Healthy Eating Habits	11%	15%	8%

Table A-4. Prevalence of Housing Security/Insecurity Among Low-income, Food Secure/Insecure Respondents

	Housing Secure	Housing Insecure
Food Secure	88%	12%
Food Insecure	58%	42%

Table A-5. Prevalence of Food Security/Insecurity Among Low-income, Housing Secure/Insecure Respondents

	Food Secure	Food Insecure
Housing Secure	70%	30%
Housing Insecure	30%	70%

Table A-6. Binary Logistic Regression Estimates of Food Insecurity Among Low-income Respondents

	Odds Ratio	95% CI
Native American/American Indian	1.63**	1.15-2.32
Black/African-American	1.33	0.87-2.05
Hispanic/Latino	2.29***	1.88-2.78
Economic Status	0.57***	0.48-0.68
Age	0.94*	0.89-1.00
Educational Attainment	0.87***	0.81-0.92
Marital Status (Married)	1.12**	1.12-1.60

Notes: *p<0.05 **p<0.01 ***p<0.001.

Table A-7. Binary Logistic Regression Estimates of Housing Insecurity

	Odds Ratio	95% CI
Native American/American Indian	1.33	0.94-1.88
Black/African-American	1.59*	1.10-2.28
Hispanic/Latino	1.32**	1.10-1.59
Economic Status	0.54***	0.50-0.59
Age	0.85***	0.80-0.89
Educational Attainment	0.93**	0.88-0.98
Marital Status (Married)	1.25	0.91-1.25

Notes: *p<0.05 **p<0.01 ***p<0.001.

Appendix B: Definition of Terms

DRAWING A SAMPLE: Using simple random sampling to select participants by some random, defined method (Gay, Mills, & Airasian, 2006, p. 102).

FEDERAL POVERTY LEVEL (for all states except Alaska and Hawaii): 100 percent of FPL-$10,830; 150 percent of FPL-$16,245; 200 percent of FPL-$21,660. For each additional person in the household, the guideline increased by $3,470 *(FY 2009/2010 Federal Poverty Guidelines, LIHEAP Clearinghouse)*.

GENERALIZABILITY: The applicability of research findings to settings and contexts different from the one in which they were obtained (Gay, Mills, & Airasian, 2006, pg. 598).

LEVEL OF SIGNIFICANCE: Level of confidence that a result is in fact significant and not just a chance difference (i.e. $p<0.05$-95% confidence that result is in fact significant and not just random chance, 5 percent chance that result is not significant and just random chance) (Gay, Mills, & Airasian, 2006, p. 196).

POPULATION PARAMETERS: Characteristics that define a specific population (Healey, 2007, p. 124).

PRETEST: Questions were asked to a small group (piloted) to determine the validity (tested questions to assure they reflect the real and intended meaning) of the questions (Babbie, 2001, p. 143).

SAMPLING ERROR: The expected chance variation in variables, out of the researchers control (Gay, Mills, & Airasian, 2006, p. 111).

WEIGHTED: Giving more weight to some cases than others. Disproportionate sampling and weighting come into play in two basic ways. First, you may sample subpopulations disproportionately to ensure sufficient numbers of cases from each for analysis. Also, it allows you to take a representative subpopulation and 'weight' the data to ensure its representativeness to a larger population (Babbie, 2001, p. 209).

WEIGHTING VARIABLES: Equation created to weight data (Babbie, 2001, p. 209).