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The Relationship between Food Insecurity and Weight in the United States, 2011 – 2014

Sebastian Villamizar-Santamaria

Center for Latin American, Caribbean, and Latino Studies

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The Relationship between Food Insecurity and Weight in the United States, 2011 - 2014

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The Center for Latin American, Caribbean and Latino Studies is a research institute that works for the advancement of the study of Latin America, the Caribbean, and Latinos in the United States in the doctoral programs at the CUNY Graduate Center. One of its major priorities is to provide funding and research opportunities to Latino students at the Ph.D. level.

The Center established and helps administer an interdisciplinary specialization in Latin American, Caribbean and Latino Studies in the Masters of Arts in Liberal Studies program.

The Latino Data Project was developed with the goal of making information available on the dynamically growing Latino population of the United States and especially New York City through the analysis of extant data available from a variety of sources such as the U.S. Census Bureau, the National Institute for Health, the Bureau of Labor Statistics, and state and local–level data sources.

All Latino Data Project reports are available at http://clacls.gc.cuny.edu

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## Table of Contents

Guide to Tables ........................................................................................................................................ 4
Guide to Figures ....................................................................................................................................... 4
Executive Summary .............................................................................................................................. 6
Body Mass Index and Food Insecurity among the Total Population ..................................................... 8
Body Mass Index and Food Insecurity by Sex .................................................................................... 10
Body Mass Index and Food Insecurity by Race/Ethnicity ............................................................... 14
Body Mass Index and Food Insecurity by Poverty Status ............................................................... 20
Conclusions ........................................................................................................................................ 24
Statistical Appendix ............................................................................................................................ 25
Guide to Tables

Table 1: Variables Used by IHIS to Calculate the Food Security Index

Guide to Figures

Figure 1: Percentage of the Population who were Underweight, Normal Weight, Overweight or Obese, United States, 2011 - 2014

Figure 2: Percentage of the Population who were Food Insecure, United States, 2011 - 2014

Figure 3: Percentage of the Population who were Food Insecure by Weight Category, United States, 2011 - 2014

Figure 4: Percentage of Men who were Underweight, Normal Weight, Overweight or Obese, United States, 2011 - 2014

Figure 5: Percentage of Women who were Underweight, Normal Weight, Overweight or Obese, United States, 2011 - 2014

Figure 6: Percentage of the Population who were Food Insecure by Sex, United States, 2011 - 2014

Figure 7: Percentage of Men who were Food Insecure by Weight Category, United States, 2011 - 2014

Figure 8: Percentage of Women who were Food Insecure by Weight Category, United States, 2011 - 2014

Figure 9: Percentage of the Population who were Underweight by Race/Ethnicity, United States, 2011 - 2014

Figure 10: Percentage of the Population who were Normal Weight by Race/Ethnicity, United States, 2011 - 2014

Figure 11: Percentage of the Population who were Overweight by Race/Ethnicity, United States, 2011 - 2014

Figure 12: Percentage of the Population who were Obese by Race/Ethnicity, United States, 2011 - 2014

Figure 13: Percentage of the Population who were Food Insecure by Race/Ethnicity, United States, 2011 - 2014
Figure 14: Percentage of the Underweight Population who were Food Insecure by Race/Ethnicity, United States, 2011 - 2014

Figure 15: Percentage of the Normal Weight Population who were Food Insecure by Race/Ethnicity, United States, 2011 - 2014

Figure 16: Percentage of the Overweight Population who were Food Insecure by Race/Ethnicity, United States, 2011 - 2014

Figure 17: Percentage of the Obese Population who were Food Insecure by Race/Ethnicity, United States, 2011 - 2014

Figure 18: Percentage of the Population in Poverty who were Underweight, Normal Weight, Overweight or Obese, United States, 2011 - 2014

Figure 19: Percentage of the Population Not in Poverty who were Underweight, Normal Weight, Overweight or Obese, United States, 2011 - 2014

Figure 20: Percentage of the Population who were Food Insecure by Poverty Status, United States, 2011 - 2014

Figure 21: Percentage of the Population in Poverty who were Food Insecure by Weight Category, United States, 2011 - 2014

Figure 22: Percentage of the Population Not in Poverty who were Food Insecure by Weight Category, United States, 2011 - 2014
Executive Summary

This report examines the relation between weight and food insecurity in the United States between 2011 and 2014, using data collected by the Integrated Health Interview Series (IHIS) surveys.\(^1\) Weight is assessed by body mass index, and the population is divided into four weight groups based on body mass index ranges.\(^2\) Those analytic groups are underweight, normal weight, overweight, and obese. This study explores trends in weight and food insecurity among the total population, by sex, and among the four major race/ethnic groups in the U.S.

There are three key findings. First, food insecurity rates declined among the general population of Latinos between 2011 and 2014, however, food insecurity rates rose dramatically among underweight Latinos over that time period. Second, food insecurity rates were greatest among the obese and the underweight in the total population, but insecurity rates declined among all weight groups between 2011 and 2014. Third, the Latino and non-Hispanic black populations had substantially higher food insecurity rates than the non-Hispanic white and Asian populations.

Almost two-thirds of the total population in the United States was overweight or obese between 2011 and 2014. Across the nation, food insecurity declined between 2011 (12.8%) and 2014 (10.6%), which may be a reflection of economic recovery from the 2007-2008 recession.

Food insecurity rates were the highest among the obese population between 2011 (17.0%) and 2014 (14.0%). This relation may be because food insecurity leads people to buy inexpensive, but less healthy food (e.g., fast food), which may be related to a higher body mass index.

Food insecurity rates were the second highest among the underweight population between 2011 (12.6%) and 2014 (13.1%). This result may be observed because food insecurity also leads people to go without food, creating malnutrition that reduces body mass index.

Among the Latino population, food insecurity rates rose dramatically among underweight Latinos, from 7.8% in 2011 to 23.2% in 2014. Food insecurity rates dropped among Latinos in the other three weight categories (See figure 14).

Food insecurity rates declined among both males (from 11.9% to 9.6%) and females (from 13.7% to 11.4%) between 2011 and 2014. Among the underweight and normal weight populations, food insecurity was lower among females than males in each year. In contrast, among the overweight and obese populations, food insecurity rates were higher among women than men.

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\(^1\)The IHIS survey collects a food security index under their material hardship variables. This index was calculated by each person’s responses to a series of questions related to the number of times they did not have money to buy food, that they had to skip meals or that they were hungry (for a full list of the variables used to build the index, see Table 1 in the Statistical Appendix). Thus, if they responded affirmatively to three or more of these ten questions, they were classified as having food insecurity.

Data include adults aged 18 and above.

\(^2\) Weight category is assessed using Body Mass Index (BMI), which is an international standard to measure people’s amount of fat, tissue and bones. By dividing someone’s weight by their height, the result can be classified in one of four categories. The IHIS uses the National Center for Health Statistics’ guidelines of the BMI. According to those guidelines, a person can be underweight (if the BMI is less than 18.5), normal weight (BMI between 18.5 to less than 25), overweight (BMI between 25 and 30), or obese (BMI of 30 and more). The BMI is useful to see what population is at risk of suffering health problems associated to weight, like type 2 diabetes, fatty liver disease or malnutrition.
About two-thirds of the Latino population were overweight or obese between 2011 and 2014. Among the major race/ethnic groups, Latinos had the highest percentage of people in the overweight category at 37.7% in 2011 and 38.8% in 2014. Obesity rates were high among the Latino population at 31.7% in 2011 and 31.9% in 2014.

Among the four major race/ethnic groups, the Latino and non-Hispanic black populations had significantly higher food insecurity rates than the non-Hispanic white and Asian populations. Among Latinos, the food insecurity rate was 21.0% in 2011 and 16.9% in 2014. Non-Hispanic blacks had the highest rates of food insecurity at 22.4% in 2011 and 20.1% in 2014. High food insecurity rates among Latinos and non-Hispanic blacks may be related to lower economic stability among these populations.

Food insecurity declined among normal weight, overweight, and obese Latinos between 2011 and 2014. However, insecurity rates rose greatly among underweight Latinos, from 7.8% in 2011 to 23.2% in 2014. This pattern may be because of lower economic stability among underweight Latinos, as exemplified by increasing unemployment rates during the same period.

Food insecurity rates were higher among people in poverty compared to people not in poverty between 2011 and 2014. Among the people who lived in poverty in 2011, 34.2% were food insecure. (See figure 20). Only 9.5% of people who were not in poverty were food insecure. In 2014, 31.2% of people who were living in poverty were food insecure, while only 7.6% of people not in poverty were food insecure.
Body Mass Index and Food Insecurity among the Total Population

The percentage of underweight people in the United States was small and stable between 2011 (1.5%) and 2014 (1.8%). (See figure 1). The proportion of the population in the normal weight category declined from 35.3% in 2011 to 33.9% in 2014. Almost two-thirds of the U.S. population were overweight or obese between 2011 and 2014. The percentage of overweight people was constant between 2011 and 2014 (34.9% in each year). The proportion of obese people rose from 28.3% in 2011 to 29.4% in 2014. Thus the U.S. population saw a small shift from normal weight to obesity between 2011 and 2014.

Food insecurity in the United States decreased between 2011 and 2014. In 2011, about 12.8% of the total population experienced food insecurity. By 2014, that percentage dropped to 10.6%. (See figure 2). The decline in food insecurity may be related to the economic recovery between 2011 and 2014, as reflected in declining unemployment rates between 2011 (6.4% unemployed) and 2014 (4.6% unemployed). As more people reach job and economic stability, they may be more likely to afford food. It is unlikely that this trend is due to access to food stamps, as the percentage of the population who received food stamps was stable between 2011 (13.1%) and 2014 (13.8%).
Among the normal weight population, food insecurity decreased slightly between 2011 (10.9%) and 2014 (9.0%). (See figure 3). Insecurity dropped from 11.4% to 8.8% among the overweight. Food insecurity declined from 17.0% in 2011 to 14.0% in 2014 among the obese population. In contrast to the other weight groups, food insecurity was relatively stable among the underweight population at 12.6% in 2011 and 13.1% in 2014.³

Comparatively, food insecurity rates were the highest among the obese population in each year examined in this report. This trend may be because food insecurity leads people to buy inexpensive, but less healthy food (e.g., fast food), which may be related to a higher body mass index.

³ There was an abrupt peak in the food insecurity rate among the underweight population in 2012, which may be due to the survey sampling since this rate was relatively similar among the other three years.
Body Mass Index and Food Insecurity by Sex

The percentage of underweight men was low and stable between 2011 (0.6%) and 2014 (1.0%). (See figure 4). Less than a third of men were normal weight between 2011 (29.3%) and 2014 (28.3%). By far the largest proportion of men were in the overweight category. About 41.3% of men in 2011 were overweight, a number than remained stable in 2014 (41.6%). The obesity rates among men were steady between 2011 (28.8%) and 2014 (29.1%).

The percentage of underweight women was stable between 2011 (2.4%) and 2014 (2.6%), and higher than underweight rates among men. (See figure 5). The percentage of normal weight women declined from 41.2% in 2011 to 39.3% in 2014. As the rate of normal weight women declined, the proportion of obese women rose from 2011 (27.8%) to 2014 (29.6%). About 28.7% of women were overweight in 2011 and this proportion stabilized in 2014 (28.5%).
Figure 4
Percentage of Men who were Underweight, Normal Weight, Overweight, or Obese
United States, 2011-2014

Figure 5
Percentage of Women who were Underweight, Normal Weight, Overweight, or Obese
United States, 2011-2014
Food insecurity decreased among both men and women between 2011 and 2014. (See figure 6). Among men, food insecurity rates declined from 11.9% to 9.6%. Among women, the food insecurity rates dropped from 13.7% (2011) to 11.4% (2014). Comparatively, more women than men were food insecure between 2011 and 2014. This difference may be because women have less economic security than men, as exemplified by lower personal incomes compared to men (e.g., 55.9% of people who earned less than $35,000 in yearly median income were women in 2014).

**Figure 6**
Percentage of the Population who were Food Insecure by Sex
United States, 2011-2014

Food insecurity rates declined among men in all weight categories. In 2011 about 16.5% of underweight men were food insecure, which decreased to 14.9% in 2014. (See figure 7). Between 2011 and 2014, the percentage of normal weight men who were food insecure decreased from 11.5% to 10.5%. Food insecurity among overweight men dropped from 10.5% in 2011 to 8.1% in 2014. Obese men had the second highest rates of food insecurity, and those rates declined between 2011 (13.9%) and 2014 (10.4%).

The percentage of underweight, food insecure women was 11.6% in 2011 and 12.4% in 2014. (See figure 8). Food insecurity decreased among normal weight women between 2011 (10.5%) and 2014 (8.0%). Among overweight women, food insecurity rates dropped from 12.6% to 9.9%. Food insecurity rates were highest among obese women, and those rates decreased from 20.1% to 17.4%.

Comparatively, food insecurity rates were lower among underweight and normal weight women compared to underweight and normal weight men in each year. In contrast, the rates of food insecurity were higher among overweight and obese women compared to their male counterparts.
Figure 7
Percentage of Men who were Food Insecure by Weight Category
United States, 2011-2014

Figure 8
Percentage of Women who were Food Insecure by Weight Category
United States, 2011-2014
Body Mass Index and Food Insecurity by Race/Ethnicity

Among the Latino population, the proportion of underweight people was stable between 2011 (0.9%) and 2014 (1.0%). (See figure 9). The Asian population had the highest proportion of underweight people among each major race/ethnic group. In 2014, 4.9% of Asians were underweight, compared to 1.8% of non-Hispanic whites and 1.3% of non-Hispanic blacks.

About 29.7% of the Latino population were in the normal weight category in 2011, which dropped slightly to 28.3% in 2014. (See figure 10). The Asian population had the highest percentage of normal weight people. In 2011, about 57.6% of Asians were normal weight, which declined to 56.4% in 2014. Almost a third of the non-Hispanic white population was normal weight between 2011 (36.7%) and 2014 (34.8%). Among non-Hispanic blacks about 25.5% were normal weight in 2011 and 25.9% in 2014.

The Latino population had the highest percentage of people in the overweight category among the major race/ethnic groups. About 37.7% of Latinos were overweight in 2011, and 38.8% in 2014. (See figure 11). Less than a third of the Asian population was overweight between 2011 (30.0%) and 2014 (28.3%). The percentage of non-Hispanic whites that were overweight was steady between 2011 (34.9%) and 2014 (35.2%). Among the non-Hispanic black population, the percentage of overweight individuals decreased from 34.1% in 2011 to 32.0% in 2014.

Latinos had the second highest rates of obesity. About 31.7% of Latinos were obese in 2011, which was stable at 31.9% in 2014. (See figure 12). Only 8.9% of Asians were obese in 2011, and this proportion rose to 10.4% in 2014. Non-Hispanic blacks had the highest obesity rates at 39.4% in 2011 and 40.7% in 2012. Obesity rates among non-Hispanic whites increased from 26.9% in 2011 to 28.2% in 2014.
Figure 9
Percentage of the Population who were Underweight by Race/Ethnicity
United States, 2011 - 2014

Figure 10
Percentage of the Population who were Normal Weight by Race/Ethnicity
United States, 2011 - 2014
Figure 11
Percentage of the Population who were Overweight by Race/Ethnicity
United States, 2011 - 2014

Figure 12
Percentage of the Population who were Obese by Race/Ethnicity
United States, 2011 - 2014
Food insecurity declined among all four major race/ethnic groups between 2011 and 2014. (See figure 13). The Latino population had the second highest food insecurity rate at 21.0% in 2011 and 16.9% in 2014. This decreasing trend may be related to declining poverty and unemployment rates among Latinos. Their poverty rates dropped from 24.0% in 2011 to 23.3% in 2014, and unemployment rates decreased from 8.6% to 5.6%. Non-Hispanic blacks had the highest percentages of food insecurity among all racial/ethnic groups between 2011 (22.4%) and 2014 (20.1%), which may also be a reflection of lower economic stability among these populations. Among non-Hispanic whites, food insecurity decreased from 9.6% in 2011 to 7.6% in 2014. Only 7.0% of Asians were food insecure in 2011, and this number dropped to 4.9% in 2014.

Food insecurity rose greatly among underweight Latinos between 2011 and 2014, from 7.8% to 23.2%. (See figure 14). This dramatic increase in insecurity among underweight Latinos is contrary to the declining trend in insecurity that occurred among the general population and among Latinos in the other three weight categories. This trend may be related to economic insecurity among underweight Latinos, as exemplified by their rising unemployment rates between 2011 (7.9%) and 2014 (11.1%) among only underweight Latinos. Almost one-third of underweight non-Hispanic blacks were food insecure between 2011 (31.1%) and 2014 (32.8%). The percentage of underweight non-Hispanic whites who were food insecure was 12.3% in 2011 and 11.5% in 2014. The Asian population had the lowest rates of food insecurity at 3.2% in 2011 and 4.4% in 2014.

![Figure 13](image-url)

**Figure 13**
Percentage of the Population who were Food Insecure by Race/Ethnicity
United States, 2011 - 2014

Food insecurity rose greatly among underweight Latinos between 2011 and 2014, from 7.8% to 23.2%. (See figure 14). This dramatic increase in insecurity among underweight Latinos is contrary to the declining trend in insecurity that occurred among the general population and among Latinos in the other three weight categories. This trend may be related to economic insecurity among underweight Latinos, as exemplified by their rising unemployment rates between 2011 (7.9%) and 2014 (11.1%) among only underweight Latinos. Almost one-third of underweight non-Hispanic blacks were food insecure between 2011 (31.1%) and 2014 (32.8%). The percentage of underweight non-Hispanic whites who were food insecure was 12.3% in 2011 and 11.5% in 2014. The Asian population had the lowest rates of food insecurity at 3.2% in 2011 and 4.4% in 2014.
Food insecurity rates among normal weight Latinos was 18.4% in 2011, which declined to 16.3% in 2014. (See figure 15). Among normal weight non-Hispanic blacks, the food insecurity rate was 22.2% in 2011, which decreased to 18.1% in 2014. Food insecurity rates among normal weight non-Hispanic whites were 8.6% in 2011 and 7.0% in 2014. Among normal weight Asians, the food insecurity rate was 6.6% in 2011 and 4.2% in 2014.

In 2011, the food insecurity rate among overweight Latinos was 20.0%, which declined to 15.9% in 2014. (See figure 16). Among non-Hispanic blacks the food insecurity rate was 20.1%, which dropped to 17.8%. Among non-Hispanic whites, food insecurity rates dropped from 8.1% in 2011 to 5.7% in 2014, and among the Asian population food insecurity rates decreased from 7.9% to 5.3%.

Food insecurity rates among obese Latinos decreased from 24.6% in 2011 to 18.1% in 2014. (See figure 17). Among obese non-Hispanic blacks the food insecurity rates were 25.0% in 2011 and 22.8% in 2014. The rate of food insecurity among obese non-Hispanic whites declined from 12.7% to 10.3%. Among Asians, food insecurity dropped between 2011 (9.9%) and 2014 (7.4%).

**Figure 14**

Percentage of the Underweight Population who were Food Insecure by Race/Ethnicity
United States, 2011 - 2014

![Chart showing food insecurity rates by race/ethnicity and year](chart.png)
Figure 15
Percentage of the Normal Weight Population who were Food Insecure by Race/Ethnicity
United States, 2011 - 2014

Figure 16
Percentage of the Overweight Population who were Food Insecure by Race/Ethnicity
United States, 2011 - 2014
Body Mass Index and Food Insecurity by Poverty Status

Among the population living in poverty, the percentage of people who were underweight rose from 1.9% in 2011 to 3.3% in 2014. (See figure 18). The proportion of people in poverty with normal weight decreased from 35.5% to 33.9%. The percentage of those in poverty in the overweight category remained stable between 2011 (29.9%) and 2014 (30.1%). Obesity rates were stable among the population who were living in poverty at 32.6% in 2011 and 32.8% in 2014).

Among the population not living in poverty, the proportion of the underweight people was stable between 2011 (1.4%) and 2014 (1.6%). (See figure 19). The percentage of normal weight people decreased among those people not in poverty (35.1% in 2011 to 33.6% in 2014). The proportion of the overweight people did not change between 2011 (35.7%) and 2014 (35.8%). Obesity rates increased among those people not in poverty, from 27.9% in 2011 to 29.1% in 2014.
Figure 18
Percentage of the Population in Poverty who were Underweight, Normal Weight, Overweight, or Obese
United States, 2011-2014

Figure 19
Percentage of the Population Not in Poverty who were Underweight, Normal Weight, Overweight, or Obese
United States, 2011-2014
Among the people who lived in poverty in 2011, 34.2% were food insecure. (See figure 20). Only 9.5% of people who were not in poverty were food insecure. In 2014, 31.2% of people who were living in poverty were food insecure, while only 7.6% of people not in poverty were food insecure.

Among people in poverty who were underweight, food insecurity rates remained stable between 2011 (30.5%) and 2014 (31.0%). (See figure 21). However, food insecurity rates decreased among people in poverty in all the other weight categories. Among the people who in poverty who were normal weight, food insecurity rates declined from 29.1% in 2011 to 27.0% in 2014. Insecurity rates dropped from 33.2% to 28.4% among the overweight. Food insecurity rates were the highest among obese people living in poverty at 40.6% in 2011 and 37.7% in 2014.

Food insecurity rates decreased among people who were not living in poverty. (See figure 22). Among the underweight population who were not in poverty, food insecurity rates dropped from 9.3% in 2011 to 7.6% in 2014. Food insecurity rates among the normal weight people decreased from 8.0% to 6.5%. Food insecurity rates declined among the overweight population not living in poverty between 2011 (8.8%) and 2014 (6.5%). Food insecurity rates were the highest among the obese population. In 2011, 12.7% of people in this group were food insecure, and this rate decreased to 10.1% in 2014.

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As with a previous section in this report, there was a sharp increase in food insecurity rates in 2012, likely as a result of sampling since this rate was similar through the other years studied.
Figure 22
Percentage of the Population Not in Poverty who were Food Insecure by Weight Category
United States, 2011-2014

Figure 21
Percentage of the Population in Poverty who were Food Insecure by Weight Category
United States, 2011-2014
Conclusions

Who are the most food insecure in the United States? According to the analyses, women, Latinos, and non-Hispanic blacks experienced higher food insecurity rates than men, non-Hispanic whites, and Asians. Food insecurity rates were higher among the obese and the underweight than normal weight and overweight people.

What are the reasons for these differences in food insecurity rates? The ability to purchase food is highly dependent on people’s employment opportunities. Women earn less than men. Latinos and non-Hispanic blacks have higher unemployment rates than non-Hispanic whites and Asians. Differences in economic security may translate to differences in food security.

Have food insecurity rates changed between 2011 and 2014? Food insecurity declined among the total population in the United States between 2011 and 2014. This trend might be a reflection of two factors. First, the recovery of the economic crisis of 2007-2008 allowed more people to secure jobs, thus enabling them to purchase food. Second, the expansion of the food stamps policy in recent years gives people greater access to food.

How have these trends affected the Latino population? Despite a general decrease in food insecurity rates among Latinos, food insecurity rose among underweight Latinos. The divergent results may be related to economic insecurity among underweight Latinos, such as their rising unemployment rates between 2011 and 2014.

What is the relationship between food insecurity and poverty? People living in poverty had higher rates of food insecurity than people not in poverty. This difference might be attributed to the differences in employment rates.

What are some areas for future research? Based on these results, future work should investigate several considerations. First, it is important to analyze the patterns of spatial access to food sources. The ability to buy food is meaningless unless there are different types of food providers available nearby, ranging from supermarkets to farmers and local markets. Second, there is a need to better understand how different cultural, cuisine traditions affect food insecurity and body mass index. The report shows that the Asian population are the least overweight and obese, as well as the least food insecure. Is there something particular about certain Asian diets that account for these results? Finally, research should examine the efficacy of policies that promote good food habits, like having a balanced diet and promoting access to healthy food.
### Statistical Appendix

#### Table 1
Variables Used by IHIS to Calculate the Food Security Index

<table>
<thead>
<tr>
<th>Variable name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSRUNOUT</td>
<td>In the last 30 days, the family worried the food would run out before having money to buy more</td>
</tr>
<tr>
<td>FSNOLAST</td>
<td>In the last 30 days, the food did not last until the family had money to buy more</td>
</tr>
<tr>
<td>FSBALANC</td>
<td>In the last 30 days, the family could not afford balanced meals</td>
</tr>
<tr>
<td>FSSKIP</td>
<td>In the last 30 days, adults had to have smaller portions or skip meals because there was not enough money</td>
</tr>
<tr>
<td>FSSKIPNO</td>
<td>Number of days FSSKIP happened</td>
</tr>
<tr>
<td>FSATELESS</td>
<td>In the last 30 days, the person ate less than they should because there was not money in the past 30 days</td>
</tr>
<tr>
<td>FSHUNGRY</td>
<td>In the last 30 days, the person was hungry and could not eat because there was no money</td>
</tr>
<tr>
<td>FSWIGHT</td>
<td>In the last 30 days, the person lost weight because there was not money to buy food</td>
</tr>
<tr>
<td>FSNOTEAT</td>
<td>In the last 30 days, the person did not eat for the whole day</td>
</tr>
<tr>
<td>FSNOTEATNO</td>
<td>Number of days FSNOTEAT happened</td>
</tr>
</tbody>
</table>