

**Assessing Food Security and Related Welfare Reform Outcomes
in Two Southern States**

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Food security and individual freedom from hunger are widely accepted indicators of our nation's level of commitment to its poor and welfare-reliant citizens. The Food Stamp Program of the USDA allows many poor American citizens and families to have access to at least minimal, adequate amounts of nutritious foods. Some families stretch this food source with careful planning, budgeting, and various "tricks" or strategies; by enrolling in child feeding programs at schools or care facilities; and by visiting local food banks or church pantries. The Food Stamp Program is regarded as a successful effort in the nation's fight against hunger, but the program is not without limits. The average family food stamp grant is designed to provide families with the total cost of the USDA's Thrifty Food Plan (Gundersen, 1998). Even with careful planning, a poor family may find itself with few food benefits and very little cash at the end of a month. Food intake may suffer in quantity and quality at the end of a family's food resource cycle.

Passage of the PRWORA makes this monitoring even more crucial. The welfare reform act reduced funding for the Food Stamp Program, with reductions accomplished primarily by reducing or eliminating eligibility for single, able-bodied adults and legal immigrants (Oliveira, 1998). However, the Program was not folded into the block grant funds sent to the states, but remains under the control of the federal government. The Food Stamp Program continues to be an important component of the federal level safety net for poor families, and may play an even

bigger role in their lives as their welfare benefits eventually disappear (Kuhn, LeBlanc, & Gundersen, 1997).

Recent years saw the United States riding an unprecedented wave of economic prosperity, but that prosperity is threatened today by a nationwide recession. Once again, researchers monitor rural regions as areas particularly vulnerable to such economic downturns. Portions of the rural South contain some of the nation's worst child poverty, particularly for minority group children (CDF, 1998). States witnessed a remarkable decline in welfare caseloads during the five years of PRWORA - will these families survive the current recession and will their food security remain stable?

The purpose of the funded project was to advance our knowledge and understanding of food security issues as they relate to welfare reform in two Southern states. This purpose was accomplished through interviews with former welfare reliant and working poor women in Louisiana and South Carolina, conducted from late Fall 2000 through late Summer 2001. The investigators propose to enhance knowledge of the continuing consequences (positive and negative) of PRWORA legislation by studying the respective states, sharing information across state lines, and observing patterns of similarities and differences in food security outcomes for Temporary Assistance for Needy Families (TANF) families, former TANF families, low income non-TANF families, and local communities. The research can be conceptualized with the schematic presented in Figure 1:

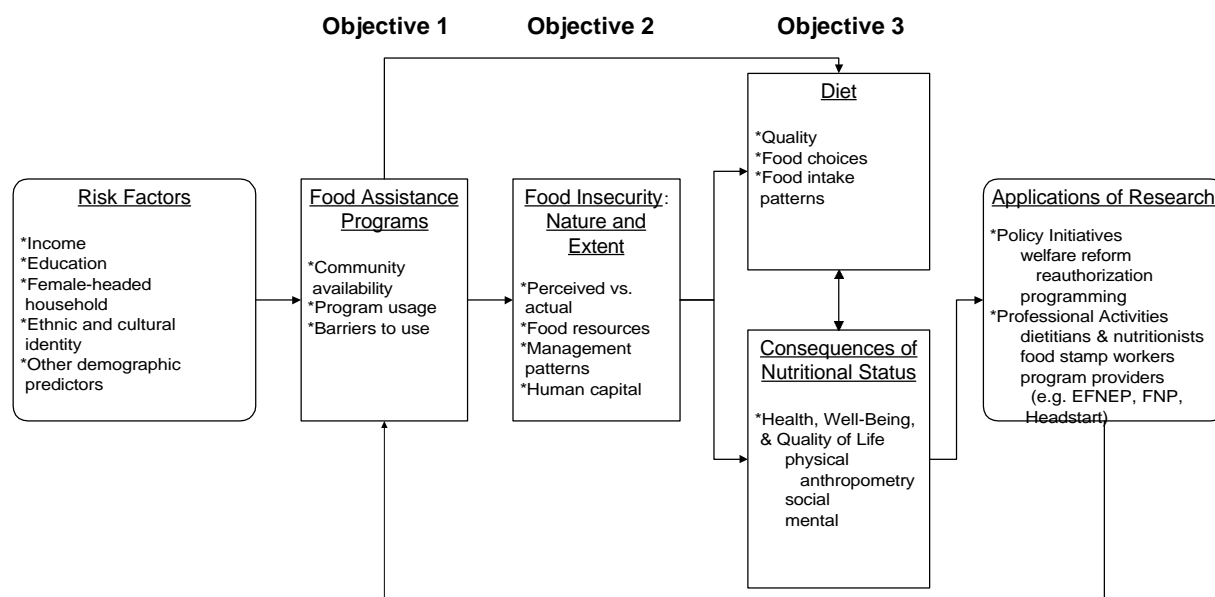


Figure 1 Schematic of Research Plan

Brief summary of the research context

The Louisiana Studies. In 1997, the Louisiana research team of Monroe and Tiller launched an in-depth, qualitative study of the impact of welfare reliance and the welfare reform law on rural Louisiana families. This work was part of a larger project conducted jointly by the School of Human Ecology and the Louisiana Forest Products Laboratory, and was funded by the Louisiana Agricultural Experiment Station, the U.S. Department of Commerce Economic Development Administration, and a state non-profit forest products association. During Fall, 1997, an intensive data collection effort was undertaken that included but was not limited to qualitative interviews with 84 women in 7 parishes at the sites where the women were participating in GED classes or training programs. (See Monroe & Tiller, 2001 for a more thorough discussion of the methodology of round one.) The first round of the research was completed in May, 1998. All of the women interviewed were currently receiving welfare payments in 1997-98 but faced the termination of their eligibility for welfare program participation over the

next 12-24 months. The women relied on an array of government assistance including food stamps, housing support, and Medicaid. Demographic characteristics of the women are presented in Table 1.

With funding through the ERS Small Grants program, the Louisiana women were visited again in Fall 1998 - Spring 1999. Monroe, Tiller, and Blalock (a team member added for this round) interviewed 52 of the women from Round 1. At this point, most of the women were in a transition period: their TANF eligibility had expired and they were making their initial efforts at paid work and wage based self sufficiency. The interview approach was qualitative, but the Short Form of the USDA's Food Security items was added to the interview. Related open-frame questions about food sources and strategies for feeding their families also were included. This research was reported at the ERS Small Grants Conference in October 1999 (See Monroe, Tiller, & Blalock, 1999, for a complete description of the methodology). Demographic characteristics of the Round 2 participants also are presented in Table 1.

Beginning in Fall 2000, again with ERS funding, the research team of Monroe and Tiller, along with Smith or O'Neil, contacted as many of the original women as could be located and invited their participation in a third round of data collection. At this writing, the women have long ago stopped receiving TANF and are participating in the work force; a few are struggling or have failed to succeed at paid work for reasons that will be noted. Thirty-four women participated in the study in this third round; data on only 32 women are reported here because 2 files were out for transcribing at this writing. Because of additional funding from the Louisiana Children's Trust Fund, researchers were able to give each woman a \$40 incentive payment. In addition to repeating much of the original qualitative research protocol, including administration of the Food Security Items (short form), the study incorporated two, 24-hour diet recalls and measurement of body

mass index (BMI) indicators completed under the direction of O'Neil and Smith. The timing of each woman's electronic food stamp deposit was used to organize the interviews, so that each woman was interviewed at the beginning and near the end of her resource cycle. Altogether, these data constitute a longitudinal, qualitative study of rural women's transition from welfare reliance to wage work.

The South Carolina Study. In the 2000-2001 funding cycle, the participation of Dr. Janet Marsh and Clemson University in upstate South Carolina was added. Marsh was assisted by a graduate research associate, Stacey Willocks. Marsh's particular interest is barriers to participation in food assistance programs and changing patterns of food assistance program use among current and former TANF participants with emphasis on the Food Stamp Program. Marsh's research protocol was similar to that used in LA.

The South Carolina project focused on the three rural counties surrounding Clemson University. Altogether, Marsh and Willocks completed interviews with 52 women. Within a few months after initiating this research project, the effects of a weakening SC economy were obvious. In South Carolina, the unemployment rate increased from 3.7 percent in January 2001 to 4.4 percent in March 2001, representing an increase in the number of jobless individuals to 17,000. As interviewing began, one county experienced plant closings or job lay-offs among four of its larger employers. Another county in which interviews were conducted lost approximately 1,200 jobs in 2000 from closings or layoffs in four manufacturing plants. Of the first three women interviewed in the third county, two women reported that they had moved to South Carolina because they thought there were lots of jobs and a chance to make some money. They were disappointed and unemployed. Perhaps reflecting the slowing economy, food stamp usage increased an average of 3.7% between August 2000 and April 2001 in each South Carolina

county in which the researchers worked.

Marsh met with personnel from a number of community agencies in the three county area to identify women to interview. The participating agencies included a [county] Family Learning Center and the [county] School District Adult Education Program. There were few food stamp or TANF participants in these programs. Two food pantries referred a few people to researchers. Other referrals came from two [counties] Department of Social Services (DSS) Jobs Programs, and the [county] Volunteers in Service. Staff were eager to refer their clients, motivated by their recognition that women needed the \$30 incentive payment. Women were interviewed in the buildings in which they took classes, their homes, or at a different public site of their choice.

Initially, the SC researchers spoke to groups of women in their classroom settings and invited them to participate. The study, their potential role and incentives to participate, and their “rights” with respect to the study were explained. More of the SC participants than LA participants were not receiving food stamps. In those cases, the date of the paycheck or other income source was used to organize the interview dates.

The interview approach was based on the LA instrument but was somewhat less qualitative than that used in LA. SC researchers did allow a substantial number of opportunities for open-ended responses. Inquiry focused on demographics, household composition, children and their well-being, education and training, employment, and government benefits. When it was appropriate to do so in the flow of the conversation, the women were asked to respond to the Short Form of the USDA's Food Security items. The first 24-hour food recall (i.e., capturing food intake at the beginning of the resource cycle) and BMI indicators were collected. If researchers were unable to reach women before their very next food stamp allotment or check (i.e., near the end of their resource cycle), the second food recall was completed two months (or two cycles)

after the first recall.

Epilogue. Monroe and Tiller in LA, and Marsh in South Carolina are participants in a recently approved CSREES Multi-state project (S-298) entitled “Assessing Impacts of Welfare Reform on Individual, Family, and Community Well-Being in the South.” The Louisiana and South Carolina studies together form an important part of the pilot studies conducted this past year in anticipation of a larger study assessing the impact of welfare reform in the rural South and Puerto Rico. The goal for both teams is to follow as many of these women as possible for the next several years, as part of our participation in the S-298 project.

Findings

The participants in the two states are hereafter referred to as the *LA participants* and the *SC participants*. It was never the researchers’ intention to merge the two participant groups for a cumulative or aggregate type analysis, rather to make general comparisons between the women. Most findings will be presented separately by state, and compared in later papers developed from these data.

Description of Participants

Louisiana. Data from 32 women who participated in the third round of the LA study are used in this analysis; they may be described as follows (see Table 1). The average age of the participants is just over 34 years old, and they range in age from 22 years old to 49 years old. Most of the women are African-American ($n = 29$); the remainder report their race/ethnicity as white. Twenty-two of the women were single at the time of the interview and five women were divorced for a total of 27 unmarried women. Three women were married and two women were separated from their spouses for a total of 5 married women at the time of the interview.

Education is collapsed in Table 1 but elaborated a bit here; data for one woman is missing.

Fifteen women had still not completed high school or received a GED. Eleven of the women reported less than a high school education with no additional education or training completed at the time of the interview; 4 women had not completed a GED or received a high school diploma but had completed some form of certification or job training program. Sixteen women had earned a high school diploma or GED; of these, 9 women had engaged in or completed some post-secondary school training or college-level studies. At the beginning of the study, nearly all of the women were enrolled in, at minimum, a GED completion program if they did not have a high school diploma. The women in this round who still had not completed the GED, or any additional training, and were not currently in any training program, may represent women who had attempted programs and failed, then run out of time to complete their programs. These women are not likely to attempt or to receive any further education at this point, leaving them at very high risk for longterm unemployment.

Half of the women resided alone with their own children, but about 20% of the women reported living with their mother, grandparents, or another relative, while eight of the women reported living with a husband or male “friend” at the time of the interview. Approximately 72% of the women interviewed have three or fewer children, but the average number of children still living at home with the women was just under three.

At the time of the third interview, none of the women were participating in Louisiana’s TANF program. The primary source of income for the women at this point is their own wages. Twenty women reported wages; the average monthly wage earned by the women was \$782, ranging from \$150/month to \$1950/month. Eleven women reported that they had no wage income, and one woman reported her spouse supported her on an income in excess of \$60k/year. Six women reported that they received some regular support from another person, usually a

boyfriend, averaging \$213/month and ranging from \$40-\$500/month. Sixteen women reported receiving child support payments, although few women reported that these payments were absolutely reliable or dependable. The average monthly child support payment was \$210, and ranged from \$68-\$694/month. The average monthly *cash income* from own wages, spouse or boyfriend's contributions, child support, and SSI (and excluding the one woman whose spouse's income was far above that earned by any other person in the study) was \$737.97.

One major concern for this group is over their rates of Medicaid enrollment. Twenty-three of 30 women with children still living at home reported that their children were enrolled in LaCHIP - Louisiana's Medicaid program for children, but seven mothers reported that their (eligible) children were not enrolled. Only five of the women reported still receiving Medicaid benefits for themselves; another four women reported being enrolled in private health care insurance through their employer. Probably many more of these women remain eligible for Medicaid benefits, and researchers encouraged the women to investigate this situation.

Table 1 is provided to summarize the foregoing demographics by round of data collection. The table also allows for comparisons to assist in determining whether the woman who participated in round 3 of the Louisiana study were notably different from the original 84 participants in round 1, and the 52 participants in round 2, of the study on any descriptive characteristics. As can be seen, the women in round 1 are about one year older than in round 2, an expected difference; but in round 3, a slightly older group of women was interviewed. This difference appears to be accounted for by a decline in the number of women in the youngest age group captured in this round. These young women present a contrasting picture of risk: as one might expect, in previous rounds they were likely to report little or no work history, less stability in intimate relationships, and were likely to bear more children. On the other hand, they were

more likely to be in a good position to complete their education, and they were more likely to be living with or in a close network of family and kin. Thus it is difficult to predict how the absence of these younger women skew the findings of round 3 but it is possible that education level for the total group is suppressed without this group.

In rounds 1 and 2 many of the women were engaged in education or training efforts to improve their workplace skills before their TANF benefits ran out. In round 2, any woman who did not have a diploma or GED but was working toward either, or who was working on any other kind of training or certification, was classified in Table 1 as in “some post secondary training.” By round 3, almost none of the women were currently engaged in any kind of training. The education status reported for them in round 3 is likely to be the final education disposition for nearly all these women. Only a few of the “less than high school” diploma/GED group completed any other kind of training that might improve their employment chances. Such low levels of education or training leaves the women and their households vulnerable to economic insecurity.

African-American women were increasingly likely to be counted among the interviews. The average number of children shows a small increase between rounds, an expected change given that the women are of childbearing years. The women averaged only 2.28 children living in the home with them; again, one would expect to see some of the children at home in earlier rounds moving out of the maternal household by 2001. Fewer women were receiving TANF benefits for their families in round 2 (21%) than in round 1 (95%), an anticipated change. By round 3, no women in this study continued to receive TANF benefits - “welfare” has ended for these women. Food stamp receipt also declined over the period of the LA studies and given the women’s low level of income in round 3, this lack of participation is a concern.

Table 1: Description of LA Participants by Rounds of Data Collection

Variable	Round 1- 1998 (n=84)	Round 2 - 1999 (n=52)	Round 3 - 2001 (n=32)
Race			
African-American	68 (80%)	45 (86.5%)	29 (91%)
Caucasian	14 (17%)	6 (11.5%)	3 (9%)
Other	2 (3%)	1 (2%)	0
Mean Age	29 years	30 years	34 years
19 - 22 years	18-21: n=21 (25%)	19-22: n=13 (25%)	20-23: n=2 (6%)
23 - 28 years	22-27: n=21 (25%)	23-28: n=12 (23%)	24-29: n=7 (22%)
29 - 36 years	28-35: n=21 (25%)	29-36: n=12 (23%)	30-37: n=9 (28%)
37 - 48 years	36-47: n=21 (25%)	37-48: n=15 (29%)	38-49: n=14 (44%)
Marital Status			
Unmarried	82 (97.6%)	48 (92.3%)	27 (84%)
Married	2 (2.4%)	4 (7.7%)	5 (16%)
Education			
Less than High Sch	58 (69%)	[2** (3.8%)]	15 (48%)
HS or GED	23 (27.4%)	24 (46.1%)	16 (52%)
Some post secondary training*	4	50	13
Mean # Children	2.5	2.7	2.8
# of Children			
1-2	45 (53.6%)	26 (50%)	15 (47%)
3-4	33 (39.3%)	22 (42.3%)	14 (44%)
5-8	6 (7%)	4 (7.6%)	3 (9%)
Program Participation*			
TANF	80 (95%)	11(21%)	0
Food Stamps	75 (89%)	45 (87%)	23 (72%)
Medicaid	79 (94%)	47 (90%)	23 (72%)

* More than one response accepted

** In round 2, this number represents women who had no high school diploma or GED certification AND were not/had not engaged in any training program.

South Carolina. Fifty-two women participated in the research and are described below.

The average age of the participants was 26.7 years, ranging from 15 - 53 years. The majority of the women were Caucasian (n = 45, or 86.5%), five (9.6%) were African American, and two (3.8%) were Hispanic. These figures are fairly representative of the percentage of minorities in the three counties. Twelve women were married; 40 women were single, divorced or separated at the time of the interview. Of the 52 women, 17 (33%) did not live with another adult, 12 (23%) lived with their mother, and nine (17%) lived with their husband. Four women reported no children living with them, and no woman had more than four children. Thirty-nine women (75%) had two children or less while nine women (17%) had three or four. A high school diploma or GED was held by 14 women (27%); thirty-two (62%) lacked a high school diploma or GED. Another six women (12%) had completed some college or held a 2-year degree. The education level of these women was compared to the education level of South Carolina women reported in the 1990 Census, not including the seven SC participants under the age of 18. The SC participants were more likely than SC women in the 1990 census to have less than a high school diploma (56% vs. 30.5%); they were equally likely to have received a high school diploma or GED certification or to have completed a 2-year degree (approximately 30% and 6% respectively, for both groups); but the SC participants were far less likely to report “some college” than the SC women in the 1990 census (6.7% vs. 18.2%). At the time of the interview, 22 women (43%) were working on either a GED or diploma. Another 18 women (35%) were participating in training programs provided by Family Literacy and the PAL-DSS Job Club; two women were engaged in “other” training. Ten women (19%) were not participating in any education or training.

Fifty percent of the SC participants were receiving TANF. [This and following program participation figures is a notable difference from the LA participants and most likely reflects the

sources and recruitment sites for the SC participants. Similar sources and sites were used in LA at the beginning of that study, some five years ago.] A majority of these women reported that they had only recently begun receiving TANF benefits -- few women had a long-term history of public assistance. Thirty-nine women (75%) received Medicaid benefits for themselves while 44 women (85%) reported that their children received Medicaid benefits. Only two women were receiving SSI benefits for themselves and one of these women reported receiving SSI benefits for her children. Twelve women (23%) reported government assistance with housing costs. Enrollment in the Women, Infants, and Children Supplement Food Program (WIC) included 21 women (40%). In sum, all of the women except for two reported that their family was receiving at least one form of public assistance at the time of the interview.

Food Stamp Program Participation

Louisiana. Most of the women in this round of the LA study still receive food stamps (72%). The average monthly food stamp benefit reported by these women was \$299.43. The monthly food stamp benefit for the families who reported receiving the benefit ranged from \$16 to \$594. The food stamp allotment in Louisiana for a family of 4 has just been increased to \$452/month. More than half (56%) of the women in the study reported that they spend an average of \$112.50 for food beyond their food stamp benefits each month. Four women receiving food stamps indicated that they spent no money out of pocket for food beyond their stamp benefits. Interestingly, women whose households no longer received food stamps were seldom able to give researchers even an estimate of their monthly food bill.

In previous rounds of research, few LA participants indicated any use or even awareness of food pantries in their communities. Usage is examined here because one of our S-298 Multi-state Project counterparts will focus on food pantries usage in rural communities. Three women in

this round indicated that they use church or community food pantries to supplement their food supply on a regular basis. One of these women received \$430/month in food stamps, had no children living at home with her and her male partner, and reported no other income of any kind. Their house had been without water and electricity for months. She indicated that the two of them kept meat on ice in their bathtub and cooked inside the house on a charcoal grill. Another of these women had four young children at home, received \$200/month in child support payments as her only cash income, and received \$413/month in food stamp benefits. She indicated that she visited a food pantry once or twice a month, and that her family's food sometimes runs out. She estimated that she spent \$40-50/month out-of-pocket for food. The third woman who visited the food pantry no longer received any food stamp benefits, relying on her \$675 monthly income and irregular payments of child support in the amount of \$69/month to feed herself and two children.

Thirty households - every household in the study that included children- participate in the feeding programs at their children's public schools, with children receiving free breakfast and lunch. In discussing strategies for stretching their food budget, it was clear that some women consciously rely on these meals served at school to insure balanced nutrition and sufficient food quantity for their children.

South Carolina. The average monthly food stamp benefit reported by the 34 women participating in the program was \$280. The monthly food stamp benefit for the families ranged from \$10 to \$455. Fifteen women (44%) of the 34 using food stamps reported that they spent no money for food beyond their food stamp benefits; six reported that they spent \$100 or more each month for food beyond their food stamp benefits. Among those spending money for food beyond their food stamp allotment, the average amount spent was \$52 each month.

Comparing SC food stamp participants and non-participants: Recall that the SC

researcher is interested in barriers to participation in food assistance programs, so here presents a general comparison of program participants and program non-participants from that study. The average age of the 34 women receiving food stamps was 29.8 years, compared to 20.6 years for the 18 women not participating in the program. Women in each group were equally likely to be married; eight women (23%) using food stamps were married and four women (22%) not using food stamps were married. Seventeen (50%) in the former group lived alone and five (15%) lived with their mother; none of the women in the non-food stamp group lived alone and seven (40%) lived with their mother. While most of the women in both categories had children (91% of participants versus 94% of non-participants), seven (21%) food stamp participants had three or four children compared to two (11%) non-participants with as many children.

Those women not using food stamps were less educated, due in part to seven women in this category who were under 18 years of age. However, if these seven women are removed from the analysis, of the remaining 11 women, ten (91%) were not high school graduates (diploma or GED). In contrast, 15 women (44%) receiving food stamps lacked a diploma or GED.

Twenty-seven (79%) women receiving food stamps were unemployed, compared to 12 (66%) women not receiving food stamps. Of the food stamp participants who were employed, three had been working three months or more; four of the six employed non-food stamp participants had been employed five months or more. The hours worked by food stamp participants ranged from eight to 40 hours a week with an average of 30.6 hours; the hours of the non-participants ranged from 23 to 40 hours with an average of 30.3 hours. Hourly wages ranged from \$5.50 to \$10.00/hour for the first group with an hourly average wage of \$7.50; average hourly wages ranged from \$5.25 to \$7.00 for the second group with an average hourly wage of \$6.00. (1 woman in the food stamp group and 2 women in the non-food stamp group were not

included in the wage analysis because they worked for a very minimal hourly wage and received tips.) Factors that could influence employment are disabilities and transportation. Disability was a problem for eight women (24%) on food stamps; it was not a problem for any of the non-food stamp women. Fifteen women (44%) receiving food stamps had their own car and 25 (74%) said that their mode of transport was dependable. Eight women (44%) in the latter group had their own car and 15 (83%) said their mode of transport was dependable. Some women indicated that opportunities for employment were limited due to the radius in which they could walk.

There are some differences in the benefits that these two groups of women received, as shown in the table below.

Table 2: Government Benefits: Food Stamp and Non-Food Stamp Participants

Benefits	Total Sample (n=52)	%	Food Stamp Participants (n=34)	%	Non-Food Stamp Participant (n=18)	%
TANF	26	50.0	24	70.6	2	11.1
Medicaid-Mother	39	75.0	27	79.4	12	66.7
Medicaid-Children	44	84.6	29	85.3	15	83.0
SSI-Mother	2	3.8	1	2.9	1	5.5
SSI-Children	1	1.9	0	0.0	1	5.5
Housing	12	23.1	12	35.3	0	0
WIC	21	40.4	12	35.3	9	50.0
No Benefits	2	3.8	0	0.0	2	11.0

Food security was an issue for a substantially high number of women on the Food Stamp Program, as shown in the table below. Thirteen women (38%) of women on food stamps identified themselves as having enough food compared to nine (50%) of women not using food stamps. Eleven women (32%) experienced hunger compared to two women (11%) in the latter group.

Table 3: Food Security Status: Food Stamp and Non-Food Stamp Participants

Food Security Status	Total Sample (n=52)	%	Food Stamp Participants (n=34)	%	Non-Food Stamp Participants (n=18)	%
Food Secure	22	44	13	38	9	50

Food Insecure, Without Hunger	17	32	10	29	7	39
Food Insecure With Hunger	13	25	11	32	2	11
TOTAL	52	100	34	100	18	100

Two federal food programs can have a strong influence on food security - Women, Infants, and Children Supplemental Food Program (WIC) and School Breakfast/Lunch programs. Twelve women (35%) who received food stamps participated in WIC. Nine of the non-food stamp women (50%) participated in WIC. This was most likely a function of their lower age. Among food stamp participants, 21 of the 25 women with child(ren) in school reported that their child(ren's) school provided free and reduced-price breakfast. Of these women, 18 (86%) said that their child(ren) eat breakfast at school. Of the 22 women who reported that free and reduced-price lunch is available at their child(ren's) school, 21 (95%) said that their children eat school lunch. In the non-food stamp group, only four women had children in school and three indicated that their children's school served breakfast and lunch and that their children ate both meals at free or reduced price.

Women in both groups were concerned about making ends meet. Sixteen women (47%) using food stamps indicated they were concerned and an additional two women (6%) indicated they were sometimes concerned. Six non-participants (33%) indicated they were concerned, and three (17%) indicated they were sometimes concerned. Food stamp participants were more likely to name family as a resource to help make ends meet than non-participants. Twenty-two women (65%) said that they needed their mother or other relative to help them. Ten non-participating women (56%) claimed their mother or relative as an important resource. Mothers were the main source for both groups, for 15 (44%) of the former and six (33%) of the latter. The women receiving food stamps were more likely to say they had no one to turn to for help in making ends

meet, 5 women (15%) in the former group and one woman (6%) in the latter group.

Summary – The two factors that distinguish SC participants of the Food Stamp Program from non-food stamp women is the high percentage of the former group that identified themselves as having a disability and also lived alone. Although the participating women had more education, the differences were between those with no high school diploma and those with a high school diploma.

USDA Food Security Items

Louisiana. Tables 4 and 5 present quantitative findings for the short form of the food security items presented to the women in the LA study. As can be seen, a consistent majority of the women report food security in their households, with about one-fifth of the women reporting insecurity. However, for two items there was a bi-modal distribution in responses indicating food security vs. food insecurity without hunger. The first question probed whether in the last 30 days the food in the household did not last and the woman did not have money to get more. Sixteen women (50%) indicated that was never the case for them, but 13 women (41%) indicated that it sometimes happened and 3 women indicated that it often happened in their households. These women did not indicate that they had no food or food safety net at that point, only that their own resources were running low. On the last item in this set, 14 of 32 women (44%) indicated that they always had enough to eat and the kinds of foods they wanted to eat - an important indication of food security. Eighteen women could not give this answer, although 13 of 18 (or 41% of the total LA participants) indicated that they had enough to eat but not always the kinds of food they wanted to eat. In at least one case a woman who gave this response said she would like to have more “sweets” to eat, so response #2 to the global item does not necessarily capture food insecurity.

For five women, the food security of their households seemed threatened. One woman lived with her grandparents and three young children in a ramshackle house. Their cash income was \$210/month in child support payments, and they received \$398/month in food stamp benefits. This woman indicated that she feeds her grandparents and her children first, making do with what was left or skipping meals. A second woman in this group receives \$120/month in child support for her one child, and \$238/month in food stamps. She reported no other source of income and said she often borrowed money from various members of her large family to help make ends meet. A third woman lived under very similar circumstances. A fourth woman lived in a small house with her three children, her mother, her two younger brothers and, until recently, her sister and her sister's three children. She earned approximately \$800/month but received no food stamp benefits because of what she claimed is a mistaken case of "welfare fraud" against her. She indicated that at night she often ate a pancake of flour and water with a large amount of syrup. The researchers also are aware that, shortly after the interview, this woman lost her job because she could not pass the required typing test. The fifth woman in this group indicated that her family sometimes runs out of food but that she does "not [go to the food pantry] anymore."

Overall, 68% of the LA participants can be classified as food secure based on their own reports. Many women told us that they have no trouble getting food, that they never run out of food, or that they always have food to eat. The remaining 32% experience some level of food insecurity. When asked, the women offered various strategies for stretching their food budget. Most often they mentioned eating with someone else who was cooking that day: a mother, grandmother, sister, or good friend. One woman said, "sometimes we'll go to his momma cook a big meal and she'll call us up there to come eat. Or either I go to my aunt's house, they fix big meals. And my grandmother, she cooks for the whole town sometimes. It's like so we go over

there most of the time.” Others mentioned stretching their food by preparing only sandwiches, eggs and grits, or cereal at night, or cooking only a couple of times in a week and eating leftovers in between. Some women spoke of buying large quantities of food, or pooling their resources to buy cases of food which they then split with relatives. Often, this food was part of what might be eaten at the relatives’ homes over the next several days. Beans and rice is a common staple in south Louisiana, but a few women indicated that they “can cook a pot of beans and rice to stretch, you know.” One woman worked in a local energy assistance office and she eats lunch with the Head Start program, children, and staff housed downstairs from her office. But some women indicated that there were times when there was just little or no food in the house. One mother said, “Some nights when you go to the kitchen to fix supper and there isn’t food.” Researchers asked, “what do you do on those nights?” “I try to tell them [her children] to wait ‘til tomorrow morning, might have some in the morning,” she responded.

Table 4: Modified Food Security Items, LA Participants, Previous 30 Days

Item	Never True	Sometimes True	Often True	No	Yes
The food that I bought just didn't last, and I didn't have money to get more.	16	13	3		
We couldn't afford to eat balanced meals.	23	7	2		
Did you ever cut the size of your meals or skip meals because there wasn't enough money for food?				25	7
Did you ever eat less than you felt you should because there wasn't enough money to buy food?				25	7
Were you ever hungry but didn't eat because you couldn't afford enough food?				28	4
Have you not eaten in order to have enough food for your children?				26	6
<p>Global Item: Which of these statements best describes the food eaten in your household in the last 30 days?</p> <p>(1) We always have enough to eat and the kinds of food we want. <u>n = 14</u></p> <p>(2) We have enough to eat but NOT always the KINDS of food we want. <u>n = 13</u></p> <p>(3) SOMETIMES we don't have ENOUGH to eat. <u>n = 4</u> (<i>food insecurity with hunger</i>)</p> <p>(4) OFTEN we don't have ENOUGH to eat. <u>n = 1</u> (<i>food insecurity with hunger</i>)</p>					

Table 5: Food Security Status of LA Participants: Number and Percent of Women

Number of Affirmative Responses	Food Security Status Level	Number of Respondents	Percent of Respondents
0	Food Secure	16	50
1	Food Secure	6	19
2	Food Insecure without Hunger	1	3
3	Food Insecure without Hunger	1	3
4	Food Insecure without Hunger	1	3
5	Food Insecure with Hunger	3	9
6	Food Insecure with Hunger	4	12.5
TOTAL		32	

All items code coded or re-coded so that in both tables, a higher score indicates food insecurity.

Comparing Tables 4 and 5, the reader might expect the number of participants who scored 3 or 4 on the global item ($n = 5$) to equal the number of participants whose number of affirmative responses, 5 or 6, indicate food insecurity with hunger ($n = 7$). In 5 cases these indicators match: women who indicated food insecurity with hunger on the global item also had summative affirmative responses to the other items that classified their households as food insecure with hunger. In both of the other cases, the women indicated on the global item that they had enough to eat but not the kinds of food they wanted to eat (response #2). One of these women said that she and her children “eat with my mother” and that it is “too expensive to eat a full meal.” When her food resources ran out she relied on food from her mother. This woman received no food stamp benefits and relied on her own wages of approximately \$900/month for herself and her son. She was among the best educated/trained of the women in the study. In the case of the other woman, she indicated that she buys “family packs of meat” and that she has “this big pot. I make a big pot and we can eat like three meals.” This woman was getting ready to move into a house built by Habitat for Humanity with her 2 pre-teen children and her disabled husband. This family received no food stamp benefits and relied on the woman’s \$800 monthly wages and her husband’s \$530 monthly SSI benefit. In sum, these strategies are quite typical of a predictable series of steps taken by food insecure households designed to protect their meager food resources (Connell, Yadrick, Hinton, & Su, 2001).

South Carolina. In this section, the quantitative findings are described for the short form of the food security items presented to the 52 women in the SC study. As can be seen in the table below, 22 (42%) were food secure (Group 1, or G1), 17 (33%) were food insecure without hunger (Group 2, or G2), and 13 (25%) were food insecure with hunger (Group 3, or G3). The number of women in G3 is very close to the number of women (9) who indicated they sometimes

don't have enough to eat, which was their response to a more global question not included in the six-question scale.

Table 6: Food Security Status of SC Participants: Number and Percent of Women

Number of Affirmative Responses	Food Security Status Level	Number of Respondents	Percent of Respondents	Group	#	%
0	Food Secure	12	23.1	G1	22	42%
1	Food Secure	10	19.2			
2	Food Insecure without Hunger	10	19.2	G2	17	33%
3	Food Insecure without Hunger	4	7.7			
4	Food Insecure without Hunger	3	5.8			
5	Food Insecure with Hunger	7	13.5	G3	13	25%
6	Food Insecure with Hunger	6	11.5			
TOTAL		52	100%		52	100%

With respect to marital status, three women (14%) in G1, three women (18%) in G2, and three women (23%) in G3 were living with their spouses. The number of other adults with whom the three groups of women lived varied considerably, with the women who experienced hunger least likely to live with other adults. Sixteen women (73%) in G1, ten women (59%) in G2, and 7 women (54%) in G3 lived with at least one other adult. Further, the women in G1 and G2 were more likely than women in G3 to have a third adult in the household. No women in G3 had a third adult in the household.

Interestingly, 4 women (31%) in the food insecurity with hunger group (G3) were employed, compared to 3 (18%) in G2, and 5 (23%) in G1. The women who experienced hunger had been employed the longest—an average of 27 weeks compared to women who were food secure (25 weeks), and women who were insecure but not hungry (12 weeks). Hours worked were very similar among the groups, about 30 hours each week. Hourly wages were \$6.70 for G1 and G2, and \$8.00 for G3.

Participation in the food stamp program was highest among G3 women, eleven women

(85%) compared to 13 women (59%) in G1 and ten women (59%) in G2. Average monthly food stamp benefits were \$323, \$297, and \$214, respectively. In G1, 60% indicated that they supplemented their monthly food stamp allotment with cash averaging \$14; 53% in G2 supplemented an average of \$44; and 80% in G3 supplemented an average of \$105.

Receipt of TANF raises the question of whether one would expect a person on TANF to be better or worse off than a person not on TANF. In South Carolina, the maximum monthly TANF benefit is \$201 for a family of three. TANF was received by 11 women (50%) in G1, 11 (65%) in G2, and 4 (31%) in G3. (See table below.) Additionally, women in G3 were least likely to receive Medicaid for themselves and their children. While only 5 (38%) of G3 women received Medicaid, over 85 percent in G1 and G2 received this benefit.

The receipt of WIC may have been a factor in food security. Women in both G1 (40%) and G2 (53%) were more likely to receive WIC than women in G3 (30%), yet 80 percent of G3 women had children age birth through four, compared to 75 percent in G1 and 88 percent in G2.

Table 7: Government Benefits by Food Security Status

Benefits	G1: Food Secure (n=22)	%	G2: Food Insecure Without Hunger (n=17)	%	G3: Food Insecure With Hunger (n=13)	%
TANF	11	50	11	65	4	31
Food Stamps	13	59	10	59	11	85
Medicaid- Mother	19	86	15	88	5	39
Medicaid- Child	20	91	16	94	8	62
SSI-Mother	1	5	1	6	0	0
SSI-Child	1	5	0	0	0	0
Housing	3	14	4	24	5	39
WIC	9	41	9	53	3	23
No benefits	1	5	0	0	1	8

Approximately one-half of the women felt they were “making ends meet.” Ten women (45%) in G1 felt they were, and three more women said “sometimes.” In G2, six women (35%)

said yes and two (12%) said sometimes. In G3, six women (46%) said yes. When asked what resources they used to make ends meet, less than 15 percent of the women in each group said “none.” Mothers and other relatives were most heavily relied on, named by at least 50% in each group. A substantial number of the women were limited in the number and diversity of resources they could call on to make ends meet. While most of them had at least one resource to call on for help, 13 G1 women (59%), 12 G2 women (71%), and six G3 women (46%) had no second source of assistance.

Summary - The two factors that distinguish women with hunger are the high percentage who identified themselves as having a disability and lived with a relatively few number of other adults – adults who might be counted on in times of need. Although the participating women had more education, the differences were between those with no diploma and those with a diploma. A higher percentage of the women who experienced hunger were working, but fewer were on Medicaid than women in the other groups. A higher percentage received food stamps. However, their allotment was substantially less, and the amount of money they spent to supplement their food stamps, was higher in relation to the other two groups.

Nutrition Assessment

Anthropometric Measures

Body Mass Index (BMI), also known as Quetelet Index, is the method of choice to determine obesity in a community or clinical setting. BMI is calculated using the formula: weight (kilograms)/height (meters²). The National Institutes of Health (NIH) have classified overweight and obesity using BMI (Table 8). The risk of co-morbid conditions, such as type 2 diabetes mellitus, hypertension, and coronary heart disease, increase with increasing BMI; excess risk of mortality increases at a BMI of 27. BMI, therefore, can be used to help assess the health risk of

populations. A limitation of BMI is that it may not reflect accurately body fat. This is particularly true of individuals with a large muscle mass or with individuals of “normal” weight with a poor muscle mass. Appropriate body fatness, as distinct from BMI, for a woman ranges from 20% to 25% of body weight (Behnke and Wilmore, 1974).

Table 8. Classification of overweight and obesity from the National Institutes of Health, National Heart, Lung, and Blood Institute. *Obes Res* 6(suppl 2):51S, 1998.

CLASSIFICATION	BMI (kg/m ²)
Underweight	<18.5
Normal	18.5-24.9
Overweight	25.0-29.9
Obesity, class I	30.0-34.9
Obesity, class II	35.0-39.9
Extreme obesity, class III	≥40

During the initial, in-home interview, age and stated height were recorded; weight, and percent body fat were determined for each woman using a Tanita TBF-521 Body Fat Monitor Scale. Measurements were made in triplicate; and an average weight, in conjunction with stated height, was used to calculate BMI, using the aforementioned formula. Several women were unwilling or unable to be weighed.

24 Hour Recalls. The 24 hour recalls, using the multiple-pass method used in CSFII (Guenther, *et al.*, 1996) were collected at the beginning and end of the resource cycle. Details of the menu collection and quality assurance procedures are described elsewhere (Ebzery, *et al.*, 1996; Nicklas, *et al.*, 1991). The recall at the end of the resource cycle was via a telephone interview. Recent studies confirm the comparability of 24 hour recalls administered by telephone versus those administered in-person (Casey, *et al.*, 1999; Dubois & Boivin, 1990; Galasso, *et al.*, 1994). Use of 24 hour recalls and food frequency questionnaires is a common method to assess

dietary intake in clients or patients.

Energy and nutrient intakes were determined from data obtained from the 24 hour recalls and compared with recommended intakes, Dietary Reference Intake (DRI) and Recommended Dietary Allowances (RDA), using Nutritionist V. Absolute intake and percent of total energy from total fat; saturated, polyunsaturated, and monounsaturated fatty acid; and cholesterol intake were calculated and compared with the National Cholesterol Education Program Guidelines. Twenty-four hour recall data were also used to determine the number of eating episodes per day; eating episodes were defined as the number of times participants ingested a food/beverage with any energy. To help assess dietary variety, the number of foods ingested per day was compared.

The second 24-hour diet recall was conducted over the telephone at the end of the resource cycle. Researchers prepared the women for this telephone interview during the initial interview. Materials were left behind for the woman to consult as she discussed her intake over the telephone, so that participant and researcher could be sure that they were using similar reference points during this interview.

Louisiana. Thirty women, 21 of whom received food stamps participated in the nutrition assessment aspect of this study. Demographics and anthropometrics of the Louisiana population are found in Table 9.

Table 9. Demographics and anthropometrics of Louisiana study participants receiving or not receiving food stamps; values are expressed as the mean \pm standard deviation.

	Food Stamp Recipients	Non-Food Stamp Recipients
Age (years)	34.48 \pm 8.96	36.44 \pm 9.58
Body Mass Index	26.51 \pm 5.64	29.74 \pm 6.95
% Body Fat	36.44 \pm 10.42	41.52 \pm 10.63

There were no differences between the groups. The most striking finding is the high prevalence of overweight and obesity. Among food stamp recipients, 13/21 (62%) are overweight or obese; 7 (54%) of these individuals are obese. Similar results were observed in the population that did not receive food stamps—5/9 (56%) were overweight or obese; of these 3 (60%) were obese. High percent body fat paralleled overweight/obesity in both populations. These findings support previous work of others who found a significant relationship between overweight/obesity and food insecurity or poverty (Towsend, et al., 2001; Sarlio-Lahteenkorva and Lehelma, 2001).

Twenty-four hour diet recalls were obtained from all LA participants; 30 interviews produced usable data. Data collection was scheduled so that participants were interviewed at the beginning and end of the resource cycle—that is, within just a few days after receiving their food stamp benefits, and again just a day or two before receiving their next deposit of food stamp benefits. The participants who did not receive food stamps were interviewed at two time points approximately one month apart, depending on their income resource cycle.

Food stamp recipients were slightly younger (26.51 ± 5.64 years) than non-food stamp recipients (29.73 ± 6.95 years). The LA participants as a whole were overweight, as determined using National Institutes of Health criteria. They had an average BMI of 27.54 ± 6.15 (span 5-40.37). In this group of participants, 17/28 (61%) were overweight/obese and 11/28 (39%) were obese, as adjudged using NIH criteria. Mean percent body fat was high in both the food stamp recipient group and the non-food stamp recipient group of participants ($38.07 \pm 10.57\%$, span 7.25 to 53.75). The group of participants that did not receive food stamps had a numerically high percent body fat ($41.52 \pm 10.63\%$) compared with those that did receive food stamps ($36.44 \pm 10.42\%$); however this was not statistically significant.

For women receiving food stamps, mean energy intake (kilocalories [kcal]) was significantly lower at the end of the resource cycle (1400±777 kcal), than at the beginning (1883±988 kcal) (p=0.0099). Mean energy intake increased in non-food stamp recipients when the end of the resource cycle (1725±872 kcal) when compared with the beginning of the cycle (1960±1486 kcal).

Diet quality of participants was poor. Mean intakes of sodium; calcium; iron; zinc; vitamins A, E, C, B6, and B12; thiamin; niacin; riboflavin; and folate are presented in Table 10.

Table 10. Micro nutrient intake (mean±SD) for Louisiana women, receiving food stamps (FS) or not receiving food stamps, at the beginning and end of the resource cycle.

Nutrient	Absolute Intake–FS		Absolute Intake–non FS	
	Beginning	End	Beginning	End
Sodium (mg)	3037.8±2080.1	2031.8±1747.1 ¹	2434.1±1500.7	2592.0±2553.3
Calcium (mg)	425.8±320.2	361.4±323.1	507.2±328.1	593.1±481.9
Iron (mg)	11.8±7.3	9.4±7.0	8.7±3.6	10.4±7.8
Zinc (mg)	8.07±6.3	8.2±6.3	6.3±4.2	4.6±5.4
Vitamin A (RE)	392.4±386.8	437.1±506.6	1360.6±2925.3	337.8±459.6
Vitamin E (mg)	6.5±8.2	6.8±11.3	2.9±2.8	2.2±2.5
Vitamin C (mg)	72.9±80.3	65.0±90.0	45.4±81.5	125.8±211.6
Vitamin B6 (mg)	1.3±1.1	1.1±1.1	1.08±0.6	0.9±0.9
Vitamin B12 (mcg)	3.8±4.3	3.0±2.5	3.0±3.5	1.9±2.2
Thiamin (mg)	1.4±1.0	1.1±0.9	1.0±0.6	1.2±0.87
Niacin (mg)	18.5±11.7	15.6±10	14.1±6.9	15.6±11.0
Riboflavin (mg)	1.4±0.8	1.2±0.2	1.5±1.04	1.2±1.0
Folate (mg)	225.2±170.9	205.1±206.7	215.8±108.3	186.7±148.5

¹ Significant difference (p=0.0252) between beginning and end of resource cycle

The only significant difference ($p=0.0252$) was observed for energy in women receiving food stamps between the beginning of the resource cycle (3037.7 ± 2080 mg) and the end of the cycle (2031.8 ± 1747.1). Individual sodium intake varied greatly in both groups. In women receiving food stamps, sodium intake at the beginning of the resource cycle ranging from 9633 mg to 646 mg and 6106 mg to 418 mg at the end of the cycle. Nine (43%) women receiving food stamps exceeded the recommended intake of 2,400 mg sodium/day; four of nine (44%) of women not receiving food stamps exceeded this level. Heavy reliance on fast foods is the probable cause of the high sodium intakes.

Most women failed to meet at least **b** of the recommended intake for selected key nutrients (Table 11). Of special concern are the high number of women, in both groups, that did not meet at least **b** of the recommended intake for calcium; iron; zinc; vitamins A, E, C, B6; and folate. Folate is especially important for women of child bearing potential; mean folate intake was approximately half of the DRI for both groups on both days. Folate is needed to help reduce the risk of neural tube defects. The high percentage in both the food stamp and non-food stamp group belie previous studies that suggest the nutrient intake of food stamp recipients is improved significantly.

Absolute total and saturated fatty acid intake and percent energy from these types of dietary fat is shown in Table 12. Participants receiving food stamps had a lower intake of saturated fat (grams [g]) at the end of the month (17.12 ± 11.86 g) compared with the beginning of the month (25.23 ± 17.91 g) ($p=0.0178$). No other differences in absolute total fat or saturated fatty acid intake or percent of energy from total fat or saturated fatty acid were observed. For the participant group as a whole, percent energy from total fat was higher than recommended by the

Table 11. Number and percent of Louisiana women who did not meet at least two thirds of the recommended intake for key micro nutrients at the beginning and end of the resource cycle.

Nutrient	Did not meet at least 2 of recommendation–FS		Did not meet at least 2 of recommendation–non FS	
	Beginning n (%)	End n (%)	Beginning n (%)	End n (%)
Calcium	16 (76.2)	15 (71.4)	4 (44.4)	5 (55.5)
Iron	10 (47.6)	12 (57.1)	7 (77.8)	3 (33.3)
Zinc	13 (61.9)	10 (47.6)	7 (77.8)	8 (88.9)
Vitamin A	18 (85.7)	16 (76.2)	5 (55.5)	7 (77.8)
Vitamin E	14 (66.6)	15 (71.4)	7 (77.8)	7 (77.8)
Vitamin C	8 (38.1)	9 (42.9)	6 (66.7)	6 (66.7)
Vitamin B6	13 (61.9)	14 (66.7)	3 (33.3)	4 (44.4)
Vitamin B12	5 (23.8)	8 (38.1)	3 (33.3)	4 (44.4)
Thiamin	4 (19.0)	8 (38.1)	2 (22.2)	3 (33.3)
Niacin	4 (19.0)	8 (38.1)	2 (22.2)	3 (33.3)
Riboflavin	7 (33.3)	9 (42.9)	2 (22.2)	2 (22.2)
Folate	17 (81.0)	17 (81.0)	5 (55.5)	5 (55.5)

NEP.–32.48 % compared with less than or equal to 30%; whereas, percent energy from saturated fatty acid was only slightly above (10.27% of energy from saturated fatty acids) the level recommended by the NEP.

The Food Guide Pyramid was established to help guide the public in selecting healthy food choices, as well as encourage variety in the diet. Table 13 clearly demonstrates that neither the women receiving food stamps nor those not receiving food stamps eat according to the Food Guide Pyramid. The low intake of fruits, vegetables, and dairy supports the finding of low intakes of vitamins A, C, and folate.

Table 12. Mean total fat and saturated fatty acid (SEA) intake \pm standard deviation, in grams (g) and percent energy, by Louisiana women at the beginning and end of the resource cycle.

	Food Stamp Recipients		Non-Food Stamp Recipients	
	Beginning	End	Beginning	End
Total fat (g)	70.99 \pm 48.42	60.52 \pm 5.20	56.01 \pm 43.79	74.21 \pm 7.16
Total fat (% energy)	34.71 \pm 9.93	33.24 \pm 10.94	26.89 \pm 12.59	29.78 \pm 12.55
SEA (g)	25.22 \pm 17.91	17.12 \pm 11.86 ¹	17.11 \pm 16.29	25.87 \pm 26.30
SEA (% energy)	11.38 \pm 4.31	10.48 \pm 3.82	7.89 \pm 4.37	9.89 \pm 5.16

¹ significantly different p=0.0178

Table 13. Mean number of servings \pm standard deviation from the Food Guide Pyramid by Louisiana women at the beginning and end of the resource cycle.

	Food Stamp Recipients		Non-Food Stamp Recipients	
	Beginning	End	Beginning	End
Grains	4.79 \pm 4.07	3.33 \pm 2.52	4.83 \pm 2.92	4.97 \pm 2.85
Fruit	0.52 \pm 0.93	0.58 \pm 0.78	0.31 \pm 0.75	0.83 \pm 1.97
Vegetables	2.14 \pm 1.91	1.38 \pm 2.36	1.17 \pm 2.11	1.17 \pm 2.41
Meat	2.15 \pm 1.82	2.20 \pm 1.53	2.19 \pm 1.31	1.94 \pm 1.66
Milk	0.75 \pm 0.83	0.476 \pm 0.73	0.61 \pm 0.78	0.56 \pm 0.21
Fats, Oils, Sweets	22.51 \pm 13.35	16.20 \pm 9.20	26.75 \pm 23.86	16.97 \pm 17.96

The number of menu items consumed by women receiving food stamps decreased significantly (p=0.039) from the beginning of the resource cycle (11.67 \pm 4.08) when compared with the end of the of the cycle (9.67 \pm 3.92), suggesting less variety in the diets, and possibly less food, at the end of the cycle. The number of menu items consumed by women not receiving food

stamps did not change (beginning=12.39±3.88 v end=12.00±4.30). The number of eating episodes in women who obtained food stamps decreased from 3.57±1.03 at the beginning of the research cycle to 3.04±0.97 at the end of the month (p=0.053), a finding that approaches significance. No significant differences in number of eating episodes were observed for the group of women not receiving food stamps. This cyclical pattern of food availability and intake has been linked with overweight in food insecure women (Townsend, *et al.*, 2001).

In the study in Louisiana, women were unable to define adequately a balanced meal. The food groups lacking most consistently were dairy, fruit, and vegetables—with the exception of beans or corn.

South Carolina. Forty four women from South Carolina participated in some aspect of the nutrition assessment aspect of this study; 28 of these women received food stamps.

Demographics (n=42) and anthropometrics of the South Carolina population are found in Table 14.

Table 14. Demographics and anthropometrics of South Carolina study participants receiving or not receiving food stamps; values are expressed as the mean ± standard deviation.

	Food Stamp Recipients	Non-Food Stamp Recipients
Age (years)	30.21±8.48	19.8±4.33 ¹
Body Mass Index	33.64±5.8 ²	27.23±7.22
% Body Fat	42.72±8.66 ³	37.33±9.62

¹ Significantly lower than LA population (p<0.0001)

² Significantly higher than LA population (p=0.003)

³ Significantly higher than LA population (p=0.008)

As a group, the South Carolina population (26.58±8.81 years) was significantly younger (p=0.0001) than the Louisiana population (35.06±9.03 years); further, the non-food stamp

recipients were significantly ($p < 0.0001$) younger than their Louisiana counterparts. Food stamps recipients have significantly higher ($p = 0.003$) calculated values for BMI than do their LA equivalents; whereas, this relationship was not seen for non-food stamp recipients. Twenty one of 27 food stamp recipients were overweight ($n = 4$ [19%]) or obese ($n = 17$ [81%]). By comparison, only 6 (40%) of non-food stamp recipients in South Carolina were overweight ($n = 3$ [50%]) or obese ($n = 3$ [50%]). Morbid obesity, with BMI values ranging to 51.7 was seen in the South Carolina population that reported receiving food stamps. This was also reflected in percent body fat readings—four individuals had values greater than 50%.

For women receiving food stamps, mean energy intake was numerically lower at the end of the resource cycle (1914 ± 887 kcal), than at the beginning (1595 ± 823 kcal) of the cycle. Mean energy intake decreased significantly ($p = 0.002$) in non-food stamp recipients when the end of the resource cycle (1550 ± 534 kcal) when compared with the beginning of the cycle (2546 ± 534 kcal). For the beginning of the resource cycle, mean energy intake was significantly higher ($p = 0.034$) in individuals not receiving food stamps, than those receiving food stamps; whereas, there was no difference at the end of the cycle.

Similar to diets reported by the Louisiana study population, the diets of the South Carolina women also demonstrated poor overall diet quality (Tables 15 and 16). The majority of women did not meet **b** of the recommended intakes of calcium; iron; vitamins A, E, and C; and folate. For food stamp recipients, mean intake of vitamin A decreased from that reported at the beginning of the resource cycle when compared with the mean intake at the end of the cycle. This may be due to a single high intake reported at the beginning of the cycle; it is not difficult to achieve this if foods high in a-carotene, such as carrots or mango are included in the diet. In the

Table 15. Micro nutrient intake (mean+SD) for South Carolina women, receiving food stamps (FS) or not receiving food stamps, at the beginning and end of the resource cycle.

Nutrient	Absolute Intake–FS		Absolute Intake–non FS	
	Beginning	End	Beginning	End
Calcium (mg)	758.2±619.5	590.7±451	978.2±1282.3	600.1±407.7
Iron (mg)	13.3±9.7	12.28±8.5	16.7±11.3	19.4±26.0
Zinc (mg)	9.5±7.4	8.0±5.9	9.87±5.87	7.5±6.0
Vitamin A (RE)	1108.0±1463.8 ¹	494.9±379.8	819.1±921	577.3±698
Vitamin E (mg)	7.1±11.9	5.1±8.2	6.0±9.14	6.6±12.4
Vitamin C (mg)	170.1±242.5	99.2±102.3	80.4±72	50.6 (61.2)
Vitamin B6 (mg)	1.5±1.3	1.2±0.9	1.2±0.8	0.92±0.8
Vitamin B12 (mcg)	4.4±4.7	6.7±18.9	3.2±3.1	1.5±1.4 ²
Thiamin (mg)	1.6±1.7	1.4±0.9	1.6±0.8	1.0±0.6 ³
Niacin (mg)	20.9±12.2	16.6±12.1	17.5±7.5	11.6±6.7 ⁴
Riboflavin (mg)	1.6±1.0	1.4±0.8	1.9±1.1	1.1±0.7
Folate (mg)	272.2±196.3	252.8±155.3	268.8±131.8	233.6±209.4

¹ Significant difference between the beginning and the end of the resource cycle (p=0.05)

² Significant difference between the beginning and the end of the resource cycle (p=0.023)

³ Significant difference between the beginning and the end of the resource cycle (p=0.008)

⁴ Significant difference between the beginning and the end of the resource cycle (p=0.02)

population not receiving food stamps, mean intake for vitamin B12, thiamin, and niacin was significantly lower (p=0.023, p=0.008, p=0.02, respectively) at the end of the resource cycle than at the beginning of the cycle. Further evaluation of individual diets and specific menu items are necessary to determine their effect on these values. In general, however, more study participants from South Carolina population met **b** of the dietary recommendations than did the participants from Louisiana. This may be because several of the South Carolina were participants in the

Table 16. Number and percent of South Carolina women who did not meet at least two thirds of the recommended intake for key micro nutrients at the beginning and end of the resource cycle.¹

Nutrient	Did not meet at least b of recommendation–FS		Did not meet at least b of recommendation–non FS	
	Beginning n (%)	End n (%)	Beginning n (%)	End n (%)
Calcium	15 (54)	19 (68)	8 (50)	7 (44)
Iron	16 (59)	14 (51.9)	6 (35.3)	8 (47.1)
Zinc	9 (33.3)	11 (40.7)	4 (25)	8 (50)
Vitamin A	13 (46.4)	15 (53.4)	7 (43.8)	8 (50)
Vitamin E	24 (85.6)	27 (71.4)	14 (87.5)	14 (87.5)
Vitamin C	12 (43)	14 (50)	12 (75)	8 (67)
Vitamin B6	12 (44.4)	11 (40.7)	6 (35.9)	7 (41.2)
Vitamin B12	10 (37.0)	11 (40.7)	4 (25)	10 (62.5)
Thiamin	6 (24.0)	6 (24.0)	3 (18.8)	6 (37.5)
Niacin	6 (22.2)	9 (33.3)	2 (12.5)	6 (37.5)
Riboflavin	4 (14.2)	6 (31.5)	0 (0)	5 (31.3)
Folate	15 (57.7)	14 (53.8)	8 (50)	10 (62.5)

¹ Numbers for food stamp recipients and non recipients may not add to 44 since some data are missing

National School Lunch Program; it may also be the result of more of the South Carolina population reporting use of more dietary supplements than the Louisiana population.

Mean total fat intake for the study participants in South Carolina was 83.07 ± 58.7 g on the first day of the cycle and 57.53 ± 32 g, at the end ($p=0.012$). For the women receiving food stamps, mean intake was 78.1 ± 55.4 g on the first day of the resource cycle and 61.0 ± 37.3 g at the end of the cycle (NS). When mean intake of total fat is expressed as a percent of the mean energy

intake for these days, it was 36.7 and 34.4%, respectively for the two study days. Women not receiving food stamps had a mean intake of total fat of 91.7 ± 65.15 g and 51.4 ± 20.0 g at the beginning and end of the resource cycle, respectively ($p=0.0356$). When mean total fat intake in grams was compared with mean total energy, the women not participating in the food stamp program consumed 32% and 30%, respectively for the two study points. The high mean level of total fat consumed on the first day of the cycle may reflect the high mean energy intake.

Mean saturated fatty acid intake for the entire South Carolina population was significantly ($p=0.021$) lower on the second day of the resource cycle 21.2 ± 14.0 g, than on day one 29.5 ± 22 g. Mean saturated fatty acid intake for food stamp recipients was 28.5 ± 23.0 g and 23.3 ± 16.4 g, respectively for the two days (NS). When compared with mean energy intake, approximately 13% of energy intake comes from saturated fat both at the beginning and end of the resource cycle. There was a significant difference ($p=0.027$) in mean levels of saturated fatty acid intake when the first day of the resource cycle (31.2 ± 20.6 g) to the end of the cycle (17.5 ± 7.48 g). When compared with mean energy intake, approximately 11% and ~10%, respectively, of energy comes from saturated fat. Mean percent energy from saturated fatty acid exceeds national recommendations to consume a diet with 10% or less of energy from saturated fat. Mean saturated fat intake of the South Carolina population was slightly higher than that of the Louisiana population.

Summary

The overwhelming majority of study participants in both the LA and SC populations have very poor diets, despite the fact that few of them report food insecurity or hunger. In many cases, their “poor” diet reflects a somewhat typical, unreformed “Southern” diet: heavy emphasis on fats: fried foods, fat meats eaten, and fat meat used for seasoning; starches; and large quantities

of food—when food is available. Their diets are also dependent on “fast” food, have little variety, and include few fresh fruits or vegetables and virtually no dairy.

During the second round of the LA research, researchers heard references to a “balanced” meal so often that a qualitative probe about this term was used in the present round of data collection. In this round, every woman in the LA population was asked to describe a “balanced” meal, or what it meant to her to prepare a balanced meal. Simply put, “balanced” means “huge” with emphasis on meat, rice, and beans. In some cases women could articulate it meant foods from each of the major food groups; they could often give some examples, but the women did not indicate that they ate this way. Moreover, milk and fruit were usually omitted from their definition. Occasionally a woman would point out that it was “too expensive” to prepare a “big” balanced meal every day.

It should be noted that, besides any obvious disconnect between nutrition education and personal behavior, many of the women in these studies are approaching an age where early, multiple pregnancies, poor diet, or drug or alcohol abuse, will begin to take a toll on their bodies and their health. Potential nutritional problems of the SC population are compounded further by the fact that some were pregnant and some were still in school—thus, growth and development of the mother and fetus is also impacted by poor nutrition. Although both populations had a high prevalence of overweight and obesity, the SC population had several participants who were morbidly obese. The cause of their obesity is unclear, but is likely do to a combination of resource cycling, poor food choices, lack of physical activity, and attitude to weight or weight gain. Nutrition-related chronic diseases, like type 2 diabetes mellitus, coronary heart disease, and hypertension disproportionately effect low income women; obesity is often a co-morbid condition. For many women, these chronic conditions are left untreated or are treated intermittently when

there is some crisis. The women's lack of health care coverage will surely loom large as their health history, poor nutrition, lack of available nutrition education, and other environmental stressors conspire to undermine their long term physical well being.

References

- Dubois, S. & Boivin J.F.. (1990). Accuracy of telephone dietary recalls in elderly subjects. J Am Diet Assoc, 90:1680-1687.
- Ebzery, M.K., Montgomery, D.H., Evans, M.A., Hewes, L.V., Zive, M.M., Reed, D., Rice, R., Hann, B., & Dwyer, J.T.. (1996). School meal data collection and documentation methods in a multisite study. School Food Service Research Review 20:69-77.
- Behnke, A.R. & Wilmore, J.H. (1974). Evaluation and Regulation of Body Build and Composition. Englewood Cliffs, NJ: Prentice-Hall
- Children's Defense Fund. (1998). The high price of poverty for children of the south. Available on-line: http://www.childrensdefense.org/fairstart_south.html.
- Connell, C., Yadrick, K., Hinton, A., & Su, J. (2001). Food insufficiency and the use of food assistance programs in the South. Report from the Southern Rural Development Center. Viewed on-line at <http://ext.msstate.edu/srdc>.
- Gundersen, C. (1998). Economic growth, welfare reform, and the food stamp program. Food review, January-April, 23-27.
- Galasso, R., Panico, S., Celentano, E., & Del Pezzo, M. (1994). Relative validity of multiple telephone versus face-to-face 24-hour dietary recalls. Ann Epidemiol 4:332-336.
- Guenther, P.M., DeMaio, T.J., Ingwersen, L.A., & Berlin, M. (1996). The multiple-pass approach for the 24-h recall in the Continuing Survey of Food Intakes by Individuals, 1994-1996. FASEB J; 10:A198.
- Kuhn, B.A., LeBlanc, M., & Gundersen, C. (1997). The food stamp program, welfare reform, and the aggregate economy. American Journal of Agricultural Economics, 79, 1595-
- Monroe, P.A. & Tiller, V.R. (2001). Commitment to work among welfare-reliant women. Journal of Marriage and Family, 63, 816-828.
- Monroe, P.A., Tiller, V.R., & Blalock, L.B. (1999). From welfare reliance to wage work: A report on food security among Louisiana's rural welfare population. Report presented to the Southern Rural Development Center and the ERS of the USDA. Viewed on-line at <http://ext.msstate.edu/srdc>.
- Nicklas, T.A., Forcier, J.E., Webber, L.S., & Berenson, G.S. (1991) School lunch assessment to improve accuracy of 24-hour dietary recalls for children. J Am Diet Assoc 91:711-713.
- Oliveira, V. (1998). Welfare reform affects USDA's food-assistance programs. Food

review, January-April, 8-15.

Sarlio-Lahteenkorva, S. & Lahelma, E. (2001). Food insecurity is associated with past and present economic disadvantage and body mass index. J Nutr. 131:2880-2884.

Townsend, M.S., Peerson, J., Love, B. Achterberg, C., & Murphy, S.P. (2001). Food insecurity is positively related to overweight in women. J Nutr. 131:1738-1745.

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