Where is Our Next Meal Coming from? The Recession and Food Insecurity in the Southern U.S.

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Abstract:

The Supplemental Nutrition Assistance Program (SNAP) is the cornerstone of federal food assistance programs and serves as the first line of defense against food insecurity. SNAP is especially important in the south which has the highest rate of food insecurity in the U.S. In fiscal year 2010, SNAP accounted for 71.5% of federal spending for primary food and nutrition assistance to low income households in the U.S. In 2010, monthly SNAP participation averaged 40.3 million persons, up 43% in two years mainly due to the recession of 2007-2009. This paper examines the relationship between food insecurity, the recession, and the Supplemental Nutrition Assistance Program (SNAP) in Georgia, 2009 and 2010. Factors associated with the rise in the number of person eligible for SNAP benefits at the county level included the unemployment rate, education, the percentage of African Americans in the county, and the poverty rate.

Keywords: Food insecurity, Recession, SNAP

I.   Introduction

The economic recession, which began in December 2007 and ended June 2009 (NBER), and the slow economic recovery, 2009-2011, has expanded and deepened food insecurity in the U.S., especially in Georgia and other southern states. This situation exists despite the existence of income transfer payments such as the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps (FS), and other food assistance programs. The U.S. Department of Agriculture administers the Supplemental Nutrition Assistance Program, the National School Lunch Program, Women, Infants and Children (WIC), the Child and Adult Food Program, and the National School Breakfast Program. These five programs accounted for 96% of the total

spending ($95.6 billion in 2010) on the 19 primary food assistance programs in the U.S. (Paggi 2011, p. 6). Of the five programs, all are entitlement programs, except WIC, which require eligible beneficiaries to be served if eligible applicants apply for services.

SNAP is the cornerstone of federal food assistance programs and serves as the first line of defense against food insecurity (Ratcliffe and McKernan 2010). In fiscal year 2010, SNAP accounted for $68.3 billion or 71.5% of federal spending for primary food and nutrition assistance to low income households in the U.S. SNAP benefits are income transfer payments in the form of Electronic Debit Transfers (ETB).

Monthly participation in SNAP averaged 40.3 million persons in 2010, up 43% in two years. The Economic Research Service reports "… that at some point in the year [2010] one in four Americans participated in at least one of the USDA's food and nutrition assistance programs" (Paggi 2011, p. 7).

II.   Objectives

The focus of this research is on food insecurity in Georgia, which ranked 46th out of 50 for the least food secure states in the U.S. according to the Food Research and Action Center (2011). Georgia is a good representative of the food insecurity situation in the south which has the highest rate of food insecurity in the U.S.

III.   Literature Review

Food insecurity is closely associated with poverty and unemployment in the U.S. (DeParle 2012, p. 1). In 2009, the U.S. poverty rate was 14.3% with 46.2 million Americans living in poverty according to the Census Bureau. In 2010, the poverty threshold for a family of four was $22,314, not adjusted for regional differences. Poverty rates are higher for minorities, 28% and 27% for Blacks and Hispanics, respectively.

Households temporarily unemployed or living in poverty are especially vulnerable to transitory food insecurity which can be categorized as limited or uncertain access to enough nutritious food for all household members to lead an active and healthy life. The recession[1], 2007 to 2009, and slow economic recovery have exacerbated food insecurity because unemployment rates remain high.

Food insecurity is the outcome of a household being unable to acquire or uncertain of having enough food to meet the needs of all its members (Nord et al. 2010). Due to the most recent economic downturn, recent estimates of households' food insecurity in the United States have reached higher than acceptable levels. Households are classified as food secure, food insecure without hunger, or food insecure with hunger based on the number of food-insecure conditions reported. Households are classified as food insecure with hunger if their reported food-insecure conditions suggest that one or more household members were hungry at some time during the year because the household could not afford enough food. Households with children are further classified by whether any children were hungry at any time during the year because of the household's lack of money and other resources for food (Nord et al. 2004).

The U.S. Department of Agriculture has recently introduced new definitions for food insecurity in the U.S. The two labels were low food security and very low food security. Low food security is classified as reports of reduced quality, variety, or desirability of diet with little or no indication of reduced food intake. People who lack quality nutrition and have limited access to food are classified as low food secure. Very

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[1] According to the National Bureau of Economic Research Business Cycle Dating Committee, the recession started in December 2007 and ended in June 2009. This data was announced on September 20, 2010, (http://www.nber.org/cycles.html)

low food security includes reports of multiple indications of disrupted eating patterns and reduced food intake.

Low-income households spent more of their income on food during the recession, 35.6% in 2009 versus 23.0% in 2006, which put additional households at risk of food insecurity. Kumcu and Kaufman (2011) reported that SNAP participation and real food spending by low income households increased and food security among low income households improved by 2.2% due to additional funding primarily from the American Recovery and Reinvestment Act of 2009 (ARRA).

Gundersen and Oliveira (2001) investigated the relationship between food insufficiency and the food stamp program (FSP), observing that food stamp participants have higher food insufficiency rates than eligible non-participants, even after controlling for other factors. Gundersen and Oliveira argue that this is due to the self-selection of food insufficient households into the SNAP program. Using simultaneous equation models, they show that when selection bias is controlled, food stamp recipients have the same probability of food insufficiency as non-recipients.

Regionally, food insecurity is more prevalent in the south compared to other regions of the country. Georgia is a very good representative case study of food insecurity in the southern U.S. because of its economic structure, poverty, and socio-demographic characteristics. In 2010, Georgia's median household income of $41,186 was 10.8% lower than of the national average; 19.12% of the state's population lived in poverty while 8.5% of its workers were paid at or below the minimum wage. Only Louisiana and Mississippi had a higher percentage of their population living in poverty, 21.6% and 22.7%, respectively (U.S. Census Bureau, SAIPE).

In Georgia, the economic and food insecurity situation remains especially acute as unemployment exceeds the national average. Between 2008 and 2009, 300,000 more people fell into poverty, a 20% increase that exceeded the national average (Schneider, 2010). Nearly 1.6 million Georgians or 16.5% of the state's citizens are living in poverty (U.S. Census Bureau). This is up from 1.4 million (14.6% of all residents) in 2008. Poverty rates for rural counties exceed those in urban counties by 58%. Food insecurity and household poverty are closely associated with the economic well-being of families in Georgia. According to the latest U.S. Census report, 22% of the state's children live in poverty (Food Research & Action Center 2012). These statistics suggest that many households in Georgia are food insecure due to an increase in people living in poverty.

A profile of SNAP-participating households/persons in Georgia provides some interesting data on the program for FY 2010, which straddles both years of the analysis. Of the approximately 1.581 million SNAP participants, 48.7% were children, 44.8% were nonelderly adults, and 6.5% were elderly adults (Eslami et al. 2011, p. 77). The distribution of SNAP participants by race and ethnic status indicated that 35.3% were white, 55.8% African Americans, 2.3% Hispanic, and 6.6% other races (Eslami et al. p. 76). Average household size for SNAP participants was 2.3 persons. The majority of SNAP households, 88%, did not receive public assistance while 12% received benefits under the four primary supplemental income assistance programs such as Temporary Assistance for Needy Families (TANF), State General Assistance (GA), Social Security (SS), or Supplemental Security Income (SSI).

SNAP eligible households had little disposable income. In Georgia, only 12.8% of the SNAP households had incomes above the poverty line, while 49% had incomes below

50% of the poverty line and 38.1% had incomes between 51 to 100% of the poverty line (Eslami et al. 2011, p. 82). The average monthly gross income for all SNAP households was $669 which was 8.5% below the national average. The average monthly SNAP benefit received by SNAP households was $313, 9% more than the national average (Eslami et al. 2011, p. 67). Furthermore, more than 31.8% of monthly disposable funds (gross income plus SNAP benefits) came from SNAP in Georgia, compared to the national average of 28% (Eslami et al. 2011, p. 68). The average certification period was 7.9 months compared to the national average of 12.1 months.

Other food insecurity safety net programs include the National School Lunch Program which provides free and reduced-price meals for students. Millions of children participate in the National School Lunch Program and the School Breakfast Program. The National School Lunch Program provided 11.4% or $10.9 billion in nutritional supplements for eligible children in public schools while the Women, Infants and Children (WIC) contributed 7.0% or $6.7 billion (Paggi 2011). In Georgia, 65% of the state's students participated in NSLP (Food Research & Action Center 2012).

IV.   Data

Secondary county level data on SNAP participation and local socio-economic factors for 2008 through 2010 were obtained from the *Food Environment Atlas* published by the Economic Research Service (ERS) of the U.S. Department of Agriculture (http://www.ers.usda.gov/foodatlas/). The *Atlas* provides socio-economic data on average number of SNAP participants and SNAP eligible residents by county in Georgia, other food assistance programs, median income, poverty rates, and race/ethnicity. The

data in the *Atlas* are sourced from different government entities for all 3,141 U.S. counties. In this study, all 159 counties in Georgia were included in the data set.

The data for the demographic variables came from the U.S. Census Bureau's Small Area Income and Poverty Estimates (SAIPE) program. SAIPE provides annual estimates of income and poverty statistics for all states, counties, and school districts. The main objective of SAIPE is to provide estimates of income and poverty for the administration of federal programs in all Georgia counties.

Socioeconomic variables indicate the racial/ethnic composition of the county, including the percent of county residents who are white, black or African-American, Asian, and Hispanic. Economic well-being is measured by median household income in thousands of U.S. dollars. Lastly, the poverty rate indicates the percent of county residents with household income below the poverty threshold.

V.   Descriptive Statistics

As recovery from the recession slowed, SNAP received additional funding from three sources: the 2008 Farm Bill, the American Recovery and Reinvestment Act of 2009 (ARRA), and the fiscal year 2010 Department of Defense Appropriations Act which provided states with additional SNAP administrative funds. Eligibility rules for food assistance were adjusted while minimum monthly benefits increased from $10 to $16 (Eslami et al. 2011, p. 90).

The poverty rate in Georgia counties averaged 19.12% in 2010, ranging from 4.7% to 35.6%. In Georgia, Wheeler County (a rural county) had the highest poverty rate of 35.6%, while Fayette County, a suburban county near Atlanta, had a poverty rate of only 4.7% (Table 1). Thirty-one percent of Georgia's counties were classified as

persistent poverty counties which are defined as counties where the poverty rate averaged

20% or more over 1970-2000. In comparison, the national average poverty rate was

4.3% (SAIPE). Childhood poverty averaged 26.68% in Georgia, ranging from 6.40% to

50.40%. Georgia's unemployment rate of 10.45% is higher than the national average of

9.1% (U.S. Census Bureau, SAIPE).

Unemployment, as measured by the number of persons who were without work in

Georgia counties, averaged 10.45% in 2010, ranging from 6.0% to 19% (Table 1). As

unemployment increased, the percentage of participants in the SNAP participants also

increased (Table 2). As the number of SNAP caseloads increased, more children qualified

for the National School Lunch Program, another safety net program and an indicator of

food insecurity. Ninety-nine percent of Calhoun County's students were eligible for the

free National School Free Lunch Program last year. Calhoun County's median household

income is reported to be only $29,435, 28.5% below the state median income.

VI. Conceptual Model

At the micro level, food insecurity is a function of income, public and private

transfers, and household composition (Ratcliffe and McKernan 2010). Food insecurity

may decline as persons enroll in SNAP but enrollment in the program is a self-selection

process; people must apply for the program and meet eligibility criteria. Our study

focuses on the factors associated with the growth in people eligible for SNAP in Georgia

during the recession and slow economic recovery. While the number of eligible persons

for SNAP increased 12.5% between 2007 and 2008, the largest increase in eligible

persons during the recession was 30.5% between 2008 and 2009 (Table 3). However,

while the participation rate for SNAP benefits out of the total eligible population

decreased during the period 2007-2011, ranging from 18.3% to 21.3% (Table 3), the number of eligible persons grew, resulting in a larger number of SNAP participants. Additional funding under the American Recovery and Reinvestment Act of 2009 certainly may have expanded the number of SNAP participants due to additional resources transferred from the federal government to the states. The additional funding may not be captured in the cross-sectional data in the *Food Environment Atlas*.

VII.   Methodology

Several socio-economic and demographic characteristics were hypothesized to contribute to an increase in persons and households eligible for SNAP benefits such as the percent of African Americans and Hispanics in the county, educational attainment, metro versus non-metro classification, and the unemployment rate. The number of eligible persons for SNAP benefits was specified as a function of race, poverty rate, metro versus non-metro classification, educational level in the county, and the unemployment rate in the specific years.

A generalization of Poisson regression was used to model the percentage of SNAP eligible participants by county in Georgia specified in the generalized linear models framework, using SASProc GENMOD (SAS 2008). When modeling the counts of those eligible for SNAP assistance in Georgia counties, a typical approach would be to use Poisson regression. One assumption of Poisson regression is that the mean and variance are equal across counties. When this does not hold, as is the case with county SNAP eligible counts, the data is said to be over-dispersed. One method to model this over-dispersion is to assume the outcome follows a negative binomial distribution rather than a Poisson distribution. Further, the natural log of the outcome was modeled as a

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linear function of the predictors. To account for the differences in county population levels, an offset was used, modeled as the log of county population.

Let the regression equation be

(1) $Log(Y) = Log(POP) + \beta_1 + \beta_2 PCT\_Black + \beta_3 PCT\_Hisp +$

$\beta_4 Poverty + \beta_5 Metro + \beta_6 PCT\_HS + \beta_7 Unemploy + \varepsilon$,

where Y is the number of persons in the county eligible to receive SNAP benefits for 2009 and 2010, respectively, POP is the county population, PCT_Black is the percent of African Americans in the county population, PCT_Hisp is the percent of Hispanics in the county population, $Poverty$ is the poverty rate in the county, $Metro$ is the metro/non-metro county classification (0=non-metro; 1=metro), PCT_HS is the percent of adults in the county with a high school education, $Unemploy$ is the county-level unemployment rate for 2009 and 2010, respectively, and ε is the random error term.

Subtracting $Log(POP)$ from both sides and combining the terms yields

(2) $Log(Y) - Log(POP) = \beta_1 + \beta_2 PCT\_Black + \beta_3 PCT\_Hisp +$

$\beta_4 Poverty + \beta_5 Metro + \beta_6 PCT\_HS + \beta_7 Unemploy + \varepsilon.$

This yields the final model

(3) $Log\left(\frac{Y}{POP}\right) = \beta_1 + \beta_2 PCT\_Black + \beta_3 PCT\_Hisp + \beta_4 Poverty +$

$\beta_5 Metro + \beta_6 PCT\_HS + \beta_7 Unemploy + \varepsilon .$

This was the empirical model estimated in this analysis. Caution should be exercised in interpreting the estimated coefficients due to the log-linear relationship in the model. It can be seen that the ratio Y/POP represents the percent of county residents eligible for SNAP benefits. Through exponentiation of equation (3) we find

$$(4) \quad \frac{Y}{POP} = \exp(\beta_1 + \beta_2 PCT\_Black + \beta_3 PCT\_Hisp + \beta_4 Poverty +$$

$$\beta_5 Metro + \beta_6 PCT\_HS + \beta_7 Unemploy + \varepsilon)$$

$$= \exp(\beta_1) * \exp(\beta_2 PCT\_Black) * \exp(\beta_3 PCT\_Hisp) * \exp(\beta_4 Poverty) *$$

$$\exp(\beta_5 Metro) * \exp(\beta_6 PCT\_HS) * \exp(\beta_7 Unemploy) * \exp(\varepsilon) .$$

This shows the multiplicative nature of the parameter estimates. Rather than a one unit

increase in a predictor leading to a β increase (or decrease) in the outcome, with the log-

linear relationship, a one unit increase in a predictor leads to a multiplicative increase of β

in the outcome.

For example, a one unit increase in the unemployment rate, which signifies

deterioration in the employment/economic outlook, the log of % eligible for SNAP

increases by .0374. As the unemployment rate increases by one unit, the % eligible for

SNAP is multiplied by a factor of 1.038 (=e^.0374). This is the expected relationship: as

the unemployment rate increases, so does the percent of those eligible for SNAP benefits.

The same logic applies to the other variables in the model. A one unit increase in

PCT_Black leads to the log of % eligible for SNAP increasing by .0041. Furthermore, as

the % black in the county increases by one unit, the % eligible for SNAP is multiplied by

a factor of 1.004 (=e^.0041). For instance, if the % eligible for SNAP is 20%, a 1%

increase in the African American population in the county leads to 20.08% eligible

(=20*1.004), holding other factors constant.

IX.   Empirical Results

Two separate regression models were run to determine the factors associated with

the percentage of persons receiving SNAP benefits in 2009, at the nadir of the recession

in Georgia, and in 2010, during the slow economic recovery. The results indicate that

counties with a higher percentage of African Americans and Hispanics experienced an increase in the number of eligible persons for SNAP benefits (Table 4). This is consistent with economic data indicating that the recession hit minorities more than whites.

Education is an important factor in economic well-being and the results indicate that as the percent of the adult population with a high school degree in the county increases, the number of persons eligible for SNAP increases, *ceteris paribus*. The positive sign on the *PCT_HS* coefficient probably reflects the conditions during the recession when unemployment increased and individuals with only a high school education were associated with layoffs in construction, manufacturing, and service occupations, which is a reflection of the structure of Georgia's economy. College-educated workers were less likely to be laid off. The percentage of persons with a college education in the county, *PCT_College*, was substituted for *PCT_HS* education, resulting is a negative coefficient for both years. This was the expected relationship. Higher-educated workers have more imbedded human capital and are more valuable to companies and public institutions.

The poverty rate in the county, *Poverty*, was significant and positive in all estimation models. As the poverty rate in the county increased, the percentage of persons eligible for SNAP benefits increased as expected since the safety net criteria is associated with personal or household income relative to the poverty rate.

The *Metro* and non-metro county classification did not appear to be significant in explaining the percentage of persons eligible for SNAP in either 2009 and 2010. In addition, the percentage of persons of Hispanic origin in the county, *PCT_Hisp*, was not

statistically significant. This is as expected because Georgia's Hispanic population is only about 6%.

IX.   Discussion and Conclusion

The results of this research are consistent with other models for estimating SNAP participation and food insecurity. Ratcliffe and McKernan (2010) used a bivariate probit model, which controls for endogeneity of SNAP receipt, to conclude that program participation reduces food insecurity by 31.2 % (p.14) and very low food insecurity by 20.2 % (p. 16). Given the increase in SNAP eligible persons throughout the state and the growth in SNAP participation during the recession and slow economic recovery, we may conclude that the program contributed to a reduction in food insecurity *once eligible persons were enrolled in the program*.

Enrollment in SNAP may not completely alleviate food insecurity as some researchers have suggested but it is a step in the right direction, *ceteris paribus*. Nord and Golla (2009) addressed this very important issue. Their research revealed,"The prevalence of very low food security increased from around 7 or 8 percent 12 months prior to entering SNAP to nearly 20 percent in the last few months prior to entry [into the program]" (p. 15). The prevalence of very low food security declined to around 12 percent within a few months of program entry. Thus, the initial receipt of SNAP benefits suggests an ameliorative effect of the program on food insecurity by "… reducing the prevalence of very low food security among recent entrants by about one-third" (p. i).

Ratcliffe and McKernan (2010) also concluded that SNAP participation reduces the likelihood of being food insecure, very food insecure, and food insufficient (p.17). Thus, this may explain the dramatic loosening of eligibility requirements which gave

states greater discretion in determining eligibility and raised household income and asset limits on eligibility as part of the federal response to the recession under the American Recovery and Reinvestment Act of 2009. While conservative groups criticized the growth in eligible individuals and overall program costs, the response to food insecurity in the U.S., and Georgia in particular, appears appropriate for a difficult socio-economic situation.

Table1. Statistics on Food Insecurity in Georgia's 159 Counties, 2010[1]

Variable	Mean	Standard Deviation	Minimum	Maximum
Median Household Income $	41,186	11,400	26,697	88,626
Unemployment %	10.45	2.18	6.0	19.0
Poverty Rate %	19.12	6.31	4.7	35.2
Persistent Poverty Counties%[2]	0.31		0	1
Childhood Poverty Rate%	26.68	8.67	6.40	50.4
Metro Counties %	0.44		0	1.0
Single Parent Household %	37.63	11.79	3.2	77.2
African American Population %	27.8	16.86	0.7	75.6
White Population %	65.20	16.38	20.0	96.0
Hispanic Population %	5.88	5.00	0.8	30.7
Asian Population%	0.88	1.14	0.0	9.3
Other Races %	0.24	0.14	0.0	1.1
Change in eligible Persons for SNAP Benefits 08/09%	29	14	-0.90	79
Change in Eligible Persons for SNAP Benefits 09/10%	18	8	-0.1	54
Low Income Receiving SNAP 07%	39.39	9.73	16.21	75.57
Student Free-Lunch Eligible 08%	51.58	15.71	11.93	99.08
Student Reduced-Price-Lunch Eligible 08%	10.21	2.51	0.00	17.17

[1]The data on income, employment, and food insecurity are for the state average of Georgia's 159 counties.
[2]Persistent poverty counties are defined as counties where the poverty rate was 20% or more from 1970-2000.
Source: U.S. Department of Agriculture, Economic Research Service, *Food Environment Atlas*. 2011, http://www.ers.usda.gov/foodatlas/; U.S. Census Bureau. *Small Area Income and Poverty Estimates*. http://www.census.gov/cgi-gin/saipe/saipe/cgi.

Table 2. Supplemental Nutrition Assistance Program in Georgia, 2008- 2010

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SNAP/Food Stamp Program	2008	2009	2010
Average Monthly Participation (Individuals)	1,021,155	1,286,078	1,591,078
Percent of Total Population with SNAP %	10.5%	13.1%	16.4%
Change in Participation in Last 5 Years %	36.1%	48.3%	72.7%
Average Monthly Benefit per Person	$104.19	$125.95	$134.35
	(FY 2007)	(FY 2008)	(FY 2009)
Participation Rate of Eligible Persons %	63.0%	64.0%	74.0%
Rank among 50 States	34	31	26
Participation Rate of Eligible Working Poor %	55.0%	53.0%	66.0%
Federal Funding for SNAP in Georgia ($billion USD)	$1.28	$1.94	$2.57
Change in Federal Funding from Previous Year %	11.7%	51.6%	32.5%

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Source: Food Research and Action Center, National and State Program Data,
http://frac.org/reports-and-resources/reports-2/

Table 3. Supplemental Nutrition Assistance Programs in Georgia 2007-2011

Year	SNAP Benefits[1]	Average Amount Issued Per Month		# Persons Participating	Participation Rate %[2]	%Change in Eligible Persons[3]
		Person	Household			
2007	$ 91.3	$ 97	$237	201,558	21.3%	
2008	$108.2	$101	$248	216,662	20.4%	12.5%
2009	$184.1	$132	$317	262,574	18.9%	30.5%
2010	$220.4	$133	$307	303,738	18.3%	16.5%
2011	$243.4	$133	$297	334,262	18.3%	10.3%

[1]Million dollars per year.
[2]Participating in the SNAP program.
[3]Change in number of eligible persons for SNAP benefits.
Source: USDA, National Data Bank Version 8.2, Supplemental Assistance Program, Statistical Summary of Operations, FNS 388A, By State, (SNAP R19) July 2011, Issued September 20, 2011.

Table 4. Estimation Results of SNAP Participation Rates in Georgia: Percentage of High School Versus College Graduates

Variable	2009	2009	2010	2010
PCT_Black	0.0041*** (0.0014)	0.0055** (0.0013)	0.0042*** (0.0014)	0.0058*** (0.0013)
PCT_Hisp	0.0015 (0.0041)	0.0002 (0.0036)	0.0042 (0.0039)	0.0032 (0.0034)
Poverty	0.0390*** (0.0045)	0.00289*** (0.0043)	0.0320*** (0.0043)	0.0235*** (0.0040)
Metro	0.0322 (0.0411)	0.0349 (0.0379)	0.0029 (0.0400)	0.0076 (0.0361)
PCT_HS	0.0203*** (0.0044)		0.0200*** (0.0042)	
PCT_College		-0.0211*** (0.0028)		-0.0214*** (0.0026)
Unemploy_09	0.0374*** (0.0087)	0.0228*** ((0.0084)		
Unemploy_10			0.0146* (0.0085)	0.0039 (0.0078)
Constant	-3.6995*** (0.1853)	-2.4240*** 0.1337	-3.1962*** (0.1778)	-1.9646*** (0.1222)
Deviance	158.2	157.9	158.0	157.7
Pearson Chi-Square	135.3	138.7	137.9	141.3
AIC	2615.7	2589.6	1659.7	1620.7
Observations	150	150	150	150

Note: Dependent variable = Log_ PCT_SNAP eligible population by county, 2009 and 2010. Standard errors in parentheses. ***p < 0.01, **p < 0.05, *p <0.10.

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Where is Our Next Meal Coming From?
The Recession and Food Insecurity in the Southern United States

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Introduction

- Economic recession from December 2007 - June 2009 (NBER) and slow economic recover from 2009 - 2011 has expanded and deepened food insecurity in the U.S.
- SNAP is cornerstone of federal food assistance programs comprising 71.5% of federal spending for food and nutrition assistance to low income households
- USDA modified SNAP eligibility criteria under the 2008 Farm Bill, the American Recovery and Reinvestment Act of 2009 (ARRA), and the 2010 Department of Defense Appropriations Act to expand program participation and benefits

Food Security Environment

"Food security exists when all people, at all times, have physical and economic access to sufficient, safe, nutritious food." – World Food Summit

- "In 2010, one in five Americans struggled with 'food hardships.'" – Food Research and Action Center
- "In 2011, 46.3 million people or 1 in 7 Americans received SNAP/Food Stamps" – Food Research and Action Center
- "[Georgia] is among the worst states for food insecurity, ranking 46th out of 50 in the nation." – Atlanta Business Chronicle

Prevalence of food insecurity, average 2008-10

Food insecurity below U.S. average
Food insecurity near U.S. average
Food insecurity above U.S. average

Source: Calculated by ERS based on Current Population Survey Food Security Supplemental data.

Objective

This paper examines the relationship between food insecurity, the economic recession (2007-2009), and the Supplemental Nutrition Assistance Program (SNAP) in Georgia.

Methodology

A generalization of Poisson regression was used to model the percentage of SNAP eligible participants by county in Georgia, specified in the generalized linear models framework. The outcome variable was assumed to follow a negative binomial distribution, with the natural log of the outcome modeled as a linear function of the predictors.

$$Log(Y) = Log(POP) + \beta_1 + \beta_2 PCT\_Black + \beta_3 PCT\_Hisp + \beta_4 Poverty + \beta_5 Metro + \beta_6 PCT\_HS + \beta_7 Unemploy + e$$

Variable	Description
Y	Number of persons eligible to receive SNAP benefits in the county
POP	Total population of the county (offset variable)
PCT_Black	African Americans as percent of county population
PCT_Hisp	Hispanics as percent of county population
Poverty	Poverty rate in the county
Metro	Metro county classification (0 = non-metro, 1 = metro)
PCT_HS	Percent of adults in the county with high school education
Unemploy	County-level unemployment rate
e	Error term

Monthly Unemployment Rate Georgia, U.S. (2000-2012)
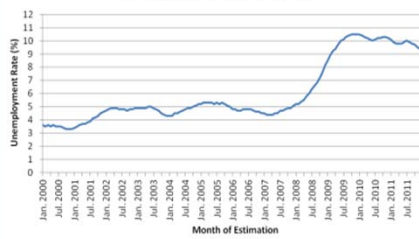
SNAP Participation Georgia, U.S. (2007-2011)

— Individuals
···· Households
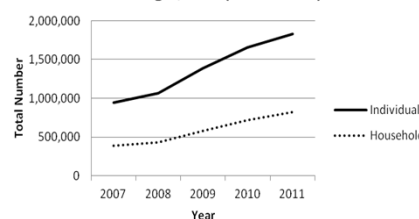
Data

Statistics on Food Insecurity in Georgia Counties, 2010[1]

Variable	Mean	Standard Deviation	Minimum	Maximum
Unemployment (%)	11.20	2.18	6.00	19.00
Poverty Rate (%)	19.12	6.31	4.70	35.20
Metro Counties (0 or 1)	0.44		0.00	1.00
African American Population (%)	27.80	16.86	0.70	75.60
Hispanic Population (%)	5.88	5.00	0.80	30.70
Change in Eligible Persons for SNAP Benefits from 2008 to 2009 (%)	29.00	14.00	-0.90	79.00
Change in Eligible Persons for SNAP Benefits from 2009 to 2010 (%)	18.00	8.00	-0.10	54.00
Low Income Receiving SNAP 2007 (%)	39.39	9.73	16.21	75.57

1- The data on income, employment, and food insecurity are for the state average of Georgia counties.

Supplemental Nutrition Assistance Programs in Georgia, 2007-2011

Year	Snap Benefits[1]	Average Household Issuance	Number of Households Participating	Participation Rate[2]	Percentage Change in Eligible Persons[3]
2007	$91.30	$237	201,558	21.30%	-
2008	$108.20	$248	216,662	20.40%	12.50%
2009	$184.10	$317	262,574	18.90%	30.50%
2010	$220.40	$307	303,738	18.30%	16.50%
2011	$243.40	$297	334,262	18.30%	10.30%

1- Millions of dollars
2- Participating in the SNAP program
3- Change in number of eligible persons for SNAP benefits

Estimation Results of Food Insecurity in Georgia

Variable	2009	2010
PCT_Black	0.0041***	0.0042***
	(0.0014)	(0.0014)
PCT_Hisp	0.0015	0.0042
	(0.0041)	(0.0039)
Poverty	0.0370***	0.0320***
	(0.0045)	(0.0043)
Metro	0.0322	0.0029
	(0.0411)	(0.0400)
PCT_HS	0.0203***	0.0200***
	(0.0044)	(0.0042)
Unemploy	0.0374***	0.0146*
	(0.0087)	(0.0085)
Constant	-3.6995***	-3.1962***
	(0.1853)	(0.1778)

Note: Dependent variable: Log_PCT_SNAPeligible population by county, 2009 and 2010. Standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.10.

Conclusions

Factors associated with SNAP eligibility in Georgia's 159 counties include:
- Percent of African-Americans
- Poverty rate
- Unemployment rate
- Percent of adults with a high school education

The economic recession (2007-2009), impacted the African-American community more than Caucasian and Hispanic communities.

The poverty rate in the county is a clear indicator of a higher percentage of SNAP eligibility.

As unemployment increased, SNAP eligibility also rose.

Although previous research has shown the influence of education on income earnings potential, the sign of the high school education coefficient for our model had the opposite sign of our initial hypothesis.

There was no difference between metro and non-metro counties in SNAP eligibility.

The percentage of Hispanic residents had no significant impact on SNAP eligibility likely due to their lower share of the total population.

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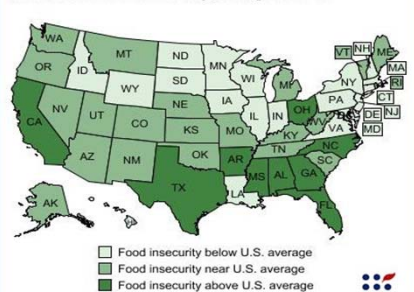
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