

**WHEN EVEN THE ‘DOLLAR VALUE MEAL’
COSTS TOO MUCH: FOOD INSECURITY AND
LONG TERM DEPENDENCE ON FOOD PANTRY
ASSISTANCE**

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ABSTRACT

Understanding the characteristics of people needing services is critical to designing effective anti-poverty programs. Using time-series data from client files at participating non-profit food pantries, profiles of 463 individuals accessing private, non-profit food assistance from 2005-2008, representing more than 5,000 separate visits were created. First the characteristics of clients accessing the pantries are presented. Then, to analyze how each of a number of variables affects pantry status, a limited, exploratory regression analysis is used to test the impact of food stamp status and number of individuals in the household on length of food pantry usage measured in days. Client characteristics like income, race, and household size provide little substantive information about the length of time a food pantry client relies on the food assistance network. Instead, this study shows that organizational characteristics appear to be much better predictors of reliance on a food pantry. This finding suggests that organizational capacity may offer a new perspective for food assistance policy.

INTRODUCTION

Each year, poverty affects millions of Americans in many different and sometimes unseen ways. Hunger is one of the clearest indicators of poverty (Jensen, 2002), but this indicator often goes unnoticed and, consequently,

unaddressed by poverty programs at the federal, state, and local level. Like other manifestations of poverty, society deals with hunger through both government and charity-based programs. And, again, like other anti-poverty programs, these food assistance programs have been based on the idea that people would ‘fall’ onto hard times, and could “lift themselves” out of it. Food assistance programs were designed to be short-term solutions for crisis situations (Daponte and Bade, 2006).

In reality food assistance programs are increasingly a long-term answer for the hungry. More than two-thirds of people receiving assistance from food pantries get help on a regular basis, and the use of private food assistance has risen dramatically since 1980, even before the most recent economic recession (Berner and O’Brien, 2004; Berner, Ozer, and Paynter, 2008). Who are the people who receive long term food assistance? Why don’t federal programs such as food stamps fill this need? What moves a person from short-term need to long-term dependence? Using time-series data gathered from practitioner partners in North Carolina to answer these questions. This study contributes to a better understanding of food assistance need and thus can be used by policymakers to inform debate on federal and state programs, to strengthen relationships between government and the nonprofit community, and by food banks to better understand their clients. .

BACKGROUND AND LITERATURE REVIEW

Though the great majority of undernourished people live in the world’s poorest countries, there are a sizeable number of individuals inside the United States lacking stable, assured and adequate access to food (Jensen, 2002). USDA food assistance programs usually serve as an economic safety net for these individuals, buffering the

effects of poverty. There is growing evidence suggesting food stamp recipients are not finding government assistance sufficient to meet the needs of their households, and as a result, are turning to emergency food providers in the private, non-profit sector for help (Eisinger 1999; Daponte 2000). Pantry directors provide anecdotal evidence suggesting people who cannot qualify for food stamp benefits are seeking food pantry aid with increasing frequency implying that the food-based social safety net in the United States is inadequate.

One measure of welfare reform's success had been the decline in food stamp recipients in the late 1990s. Aggregate food bank and food stamps program usage patterns are well documented. In one study, Berner and O'Brien (2004) found a statistically significant relationship between welfare reform and increased demand on food banks. However, it was not known whether hungry individuals were simply turning to, or relying more heavily on, other sources. The Berner and O'Brien study examined the combined monthly food outflow patterns of 193 emergency food providers (EFPs) in central North Carolina from 1995-2000 along-side food stamp participation figures. The authors showed that while the number of food stamp recipients declined, the amount of food going out through EFPs rose. Results indicated that since welfare reform, these EFPs withdrew around 50 more tons of food for their clients than they otherwise would have over the time period. These aggregate results raised the question of whether one result of welfare reform was a temporary shift of direct service provision from government to non-profits. Since 2000, food stamp participation has risen again, but EFP usage also has continued to rise dramatically and is at record levels. According to Feeding America (formerly America's Second Harvest), 25 million Americans turned to charities for food assistance in 2004 (America's Second Harvest 2006). Demand for food assistance is rising across

the board. The newly issued USDA report on food insecurity shows a 3.5 percent increase in food insecure households from 2007 to 2008 – a period before the effects of the recession rippled through the U.S. economy (see USDA release 0575.09). Estimates of the number of hungry Americans are at an all time high.

Charities are struggling to meet the demand. As recently as early 2009, food pantries and banks reported running out of food (see for example, “Newly Poor Swell Lines at Food Banks” New York Times, February 19, 2009). And food insecurity in our society is not without cost. Numerous studies (e.g., Hamelin, Habrict, and Beaudry, 1999; Jensen, 2002; Olson, 1999) suggest poorer academic performance and health outcomes are related to food insecurity. A more recent study in Illinois even showed a relationship between being the mother of a low birth weight baby and the stress associated with trying to pay for household food needs (Hollander, 2007).

Researchers are realizing there may be a greater dependence on non-profit food assistance programs than previously thought. Some suggest, such as Jensen (2002), that welfare reform programs created in the mid-1990s (e.g. the Personal Responsibility and Work Act of 1996) can be blamed for creating an increased reliance on the major entitlement program for low income households. States, through welfare reform, required recipients to access job training or employment opportunities to gain access to public assistance (Conlan, 1998). Though noble in design, the practical result is that an increased number of individuals enrolled in technical programs became employed in service industry jobs, and still remained unable to afford basic necessities like housing, medical care, and food simultaneously. Many people choose to enroll in the food stamp program to access food assistance resources. However, many more who are eligible for the program never apply at all, and even some of those who

receive food stamp benefits still report not having enough food and experiencing chronic hunger (Jensen, 2002). There seems to be a consensus now that for many people, choosing between government and non-profit food assistance is not an option. Both are needed. Daponte and Bade state, "...36 percent of households dependent on a food pantry receives food stamps and one third of pantry households have never even applied for FS. (This) suggests a fundamental shift in the needy's perception of the food safety net (Daponte and Bade 2006, 668-9)." To put this in a more tangible context, a 2004 study by Mosley and Tiehen of three counties near Kansas City found that over three years, more than 13 percent of area households visited a pantry and some of the same people accessing food stamps also accessed food pantries. They conclude, "The data suggest that households are not substituting one form of assistance for the other but rather are accessing multiple types of assistance when necessary (Mosley and Tiehen 2004, 267. See also Bhattarai, Duffy, and Raymond 2005, 295)." The proliferation, even institutionalization (Borders and Lindt, 2009) of emergency food providers as a part of the social safety net is now a well accepted reality (Davis & Senauer, 1986; Leitch-Kelly, Rauschenbach, & Campbell, 1989; Hunger in America, 2006).

While it seems clear that people are using both public and private non-profit food assistance, little is known about these individuals and their needs. For example, unlike studies focused on welfare and other government-sponsored programs, the nature of food assistance "spells" has not yet been analyzed in depth. There are only a few studies which attempt to explain what happens on an individual level when a short term crisis turns into the long term dependence on food assistance. In one example, Daponte and Bade (2006) suggest that although local and regional non-profit food assistance programs (food pantries, food banks, soup kitchens, etc.)

were established as a way to address short-term food needs, many individuals are now using them on a long-term basis. Berner, Ozer, and Paynter (2008), in another example, found the working poor are at a slightly greater risk for making recurrent visits to the food pantry than those who do not work. Pantry clients who work are more likely to have sacrificed food to pay for other life necessities, such as utilities or mortgage. Moreover, for those who are not employed, government benefits do not seem to provide an adequate food safety net. As a result, non-profits are increasingly pressured to fill the gap.

Understanding the characteristics of people needing these services is critical to designing effective anti-poverty programs. Following previous literature focused on the welfare spells mentioned above (Bane and Ellwood, 1986; Stevens, 1994; Stevens, 1999; Sandefur and Cook, 1998; Blank and Ruggles, 1997), this analysis considers what factors influence how long an individual receives food assistance from local non-profits.

RESEARCH QUESTIONS

The central research questions for this study are:

1. Who is seeking food assistance outside of the government social safety net, and when?
2. What factors influence how long an individual receives food assistance from local non-profits?

DATA

One explanation for the lack of research on this topic is the difficulty of collecting valid and reliable data. While many food providers maintain data on the number of clients served, their methods for tracking clients differ widely. Soup kitchens may track the number of individuals coming through the door, the number of families served, or

the number of meals served in a year. Each provider may or may not ask for client names and keep records of how frequently an individual returns for assistance, depending on the pantry's organizational capacity. Our experience in working directly with two large food banks has shown there is an exception to this data problem: established, local non-profit food pantries (those in existence long and consistently enough to be regular members of a regional food bank) tend to have each client complete an intake form for each visit. They also tend to maintain long-term records for each client, usually on paper. These records serve as the raw data for the profiles in our project.

The research plan employed in this study has been tested in other work across issue areas. Profiles have been created in other studies, such as an analysis of single mothers and emergency food assistance in Wisconsin conducted by Bartfield in 2002 and low-income families in Iowa studied by Jensen, Keng, and Garasky in 2000. Among the variables included in these analyses are employment status and receipt of governmental aid including welfare, social security and food stamps (Bartfield 2002; Jensen, Keng, and Garasky 2000). These studies provide the foundation on which the model for the current analysis is built.

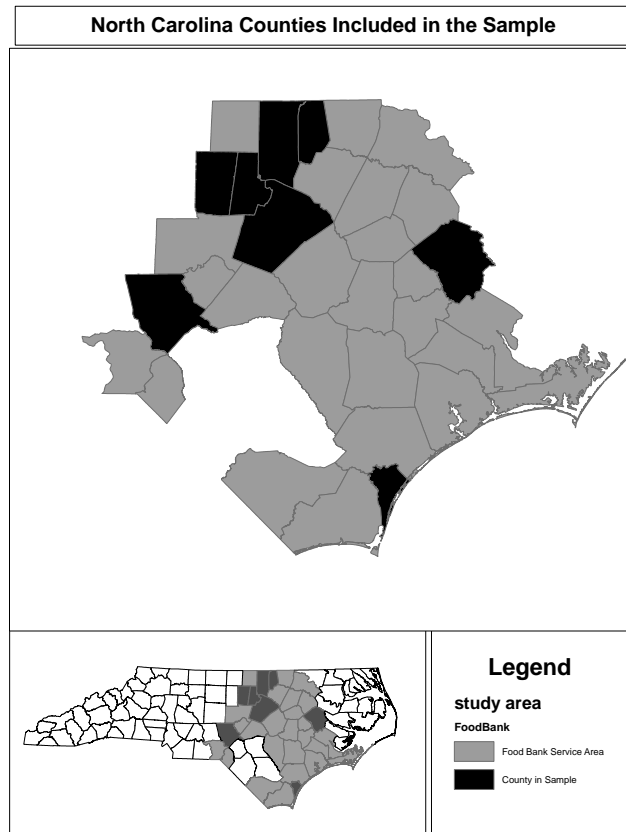
RESEARCH METHODS

In 2005, the USDA reported North Carolina ranked higher than the national average for rates of both food insecurity (13.8 percent) and prevalence of hunger (4.9 percent) among the state population. Moreover, the rates increased significantly from previous reports. Within North Carolina, our focus is on non-profit food pantries that work with The Food Bank of Central and Eastern North Carolina (The Food Bank). Food banks act as distributors of bulk food donations to their individual member agencies,

which can include shelters, day cares, assisted living facilities, soup kitchens, nursing homes, senior centers and other facilities in addition to traditional pantries. The sampling frame is limited to only traditional food pantries (as defined by the Food Bank – excluding agencies such as soup kitchens or after-school feeding programs) that have been members of the Food Bank for at least one year.

The Food Bank's service area includes 34 counties and 870 member agencies. Of these, 480 are food pantries. From these, 40 eligible pantries in the central and eastern parts of the state, covering eight counties were identified and are shown in Figure 1.

These pantries are willing to participate and have, at a minimum, consistent hard copy client files. Rather than rely on a sample, the Food Bank identified those pantries most likely to be willing and able to participate in the research, with the hope that if the effort to gather and analyze data were successful here, the project could expand in a random way across food banks in multiple states. Therefore, this is not a random sample of pantries. To date, 21 pantries have been visited. Because some pantry records were unusable or variables captured are unique to single organizations, results presented in this paper come from only 10 pantries. Despite these limitations to our data, a uniquely rich set of data has been captured to provide glimpses into the value of a larger, more generalizable study.



At each pantry, access to all client files was obtained. Using the filing system at each pantry and a random number generator, files were randomly selected. The goal at each pantry was to gather at least 30 files. Often data collection continued beyond 30 to complete the random selection of the entire client file system. Record selection was also governed by time and availability of pantry staff. All data gathering took place on-site. Most records were paper-based, and for confidentiality reasons, files did not leave the site. The data for each individual are recorded from when he or she first visited the pantry to the

present. Each client is assigned a record number in a secure, electronic coding database. Then, in a separate, secure, electronic database, the following information is recorded:

- a. The client code number
- b. All dates the selected client has visited the pantry
- c. Demographics of the selected client
- d. Address of the selected client at time of each visit
- e. Employment status of client
- f. Participation in other government assistance programs (Food Stamps, TANF, Social Security)
- g. Reason for pantry visit

Unfortunately, food pantries are not generally in the business of data collection so that not all pantries collect the same information. The analyses presented in this paper, therefore, have different numbers of total observations, and use different variables, depending on the question involved. For example, while some organizations in the study (N= 3) asked clients for age or date of birth, employment status, and participation in entitlement programs, most simply recorded the date of a visit, client name, address, and type of service provided. However, the simple act of gathering client addresses provides enough information to track a client over the lifecycle of a pantry's records and to marry that information to census block data, a level more specific than previously studied. Using 2000 census block data from Short Form 3 a demographic profile of client groups accessing food pantry services was constructed. Data as old as 1991 were captured but because there are not enough annual client visits at in all years to meet the assumptions

for normally distributed data, the final dataset for this paper includes only the 5,295 visits recorded between January 2005 and October 2008.

Poverty research (for example, see Daponte, Sanders, and Taylor, 1999) generally includes variables like age, race, household size, and household income. Dummy variables were used as necessary for the analysis. Because item non-response may be an issue with several variables, a third group, the non-response clients, was created. Binomial variables are coded so that the reference category is always the absence of a trait, characteristic, or condition.

LIMITATIONS

A limitation of this study data is that all food pantry clients self-select participation. A sample of potential but non-participant clients cannot be taken because there is no way to identify these individuals. Another data limitation is related to time – the data reflects information reported from 2005 to 2008. For certain variables, primarily demographic ones, these addresses are matched to census block group data from 2000, the smallest geographic units used by the U.S. Census. Most studies using census data use census tract data by matching information like zip code to the data. However, with individual client addresses we are able to be more specific. There may have been major changes in the census block group demographics in the intervening years, but this is unlikely.

There are also some methodological limitations. Using any set period of time truncates the sample. In the full data set, sample truncation is avoided on the front end (the start date) by going back in time to when each individual started service, although it is still truncated on the far end (the end date – the present). However, in this introductory analysis, sample truncation cannot be avoided

at both ends. Some of the first and last, apparently short-term, clients included in the paper have been or eventually will become long-term outside of our time period. However, since previous research suggests that only about 10 percent of those would make that status change (Berner, Ozer, and Paynter, 2008), a similar pattern is estimated to occur here. Given this assumption, this is not enough to significantly affect the results. Further analysis with a longer time period should provide better information for solutions to this problem.

An additional limitation is the records of one pantry may not capture visits of those same clients to other pantries. Thus, a client's complete non-profit food assistance history may not be fully captured. The underlying assumption for this study is that individuals visit the same pantry because of its location or convenience. This assumption is based on the restrictions of the data, its unique characteristics, and the availability of client records (and different formats) from agency to agency. This is the only responsible assumption to be made with the data at this time; but the reality is that clients may be moving around from pantry to pantry since different pantries have different rules regarding how often clients can receive food. Eventually, the data will be used to check this assumption by cross-referencing clients between pantries, however, this is still a limitation we cannot verify this at this time. As a result, there is no variable for multiple pantry use in the model. In a related limitation, if a client moves out of a pantry's service area, and the pantry has no record of that move, there is no way to separate when a client stops needing service versus when they move out of the area.

**RESEARCH QUESTION 1: WHO IS SEEKING
FOOD ASSISTANCE OUTSIDE OF THE
GOVERNMENT SOCIAL SAFETY NET, AND
WHEN?**

Using demographic characteristics of census block groups and information reported by pantry clients a description of the people using the food assistance network is created. Overall, pantry clients are not coming for short term assistance. As seen in Table 1 below, the average food pantry client has a 1,823 day long relationship with individual pantries. These individuals come from homes that are smaller than expected. The prevailing notion is that larger households would have more food needs and therefore we expected to see bigger households in the sample. This is not the case. Another stereotype that these data puts to rest is that most clients visiting a food pantry are poor; in fact, only 7.8 percent of those living in addresses in these census blocks are from homes with incomes below the federal poverty line.

According to census data, about half of the food pantry clients in the sample are African-Americans (see Table 1). When compared to individual counties and the state as a whole this is a surprising finding. Most North Carolinians are Caucasian and in all but two counties (see Table 2), African-Americans and Hispanics make up less than 20 percent of the total county population. However, in the sample, these groups are the majority.

Table 1
Characteristics of Food Pantry Clients

	N	Mean	Median	Standard Deviation
Days between first and last pantry visit	5211	1823.0	1365.0	2269.58
Number of People in Household	3853	2.57	2.0	1.51
Below poverty line*	3375	7.8	6.7	.053
Hispanic*	3157	4.1	0.0	.382
African American*	3157	51.3	51.7	.099
Age 20 to 64*	3157	60.3	59.0	.272
Age 65 and older*	3157	14.5	11.1	.159

Table 2
Racial characteristics of sample compared to home counties and NC overall

	African-American	Caucasian	Hispanic	Other
Clients in county				
Durham	40	50	8	4
Granville	35	60	4	2
Moore	15	80	4	2
New Hanover	17	80	2	1
Orange	14	78	5	2
Pitt	34	62	3	2
Vance	48	48	4	2
Wake	20	72	5	3
North Carolina	21	71	7	1

Source: Authors' calculations; U.S. Census 2000.

While only limited conclusions can be drawn from this information pantry location may play a part in the

clientele that frequent it. That is, pantries are neighborhood organizations and it is possible that food pantries are located in communities where populations are more homogenous, leading to skewed distribution of the data. This is an area that will require more data collection, geospatial analysis, and research.

Based on previous research (Berner, Ozer, and Paynter, 2008), we expected to find pantry clients had household incomes at or slightly higher than the federal poverty line for families of four. These data confirm our suspicion. The median income reported by pantry clients is slightly higher than \$31,000 per year. The median income for counties where the pantries are located is higher than that reported by pantry clients, and these are not the poorest counties in the state. That is, in this group are some of the higher income areas of the state (for example, Raleigh, Chapel Hill, and Wilmington).

Table 3

Median Household Income per Year, 2000 compared to reported household income.

	Pantry Counties	North Carolina	United States
Median Income	\$ 45,826	\$ 43,867	\$ 50,007
Durham	47,599		
Granville	45,746		
Moore	44,988		
New Hanover	46,556		
Orange	48,926		
Pitt	36,881		
Vance	33,924		
Wake	61,984		

Source: U.S. Census, 2000.

FOOD STAMPS

Because many pantries affiliated with the Food Bank report requiring a client to apply for food stamps to receive more than emergency assistance, the expectation was that a large number of long-term food assistance clients would get this benefit. We find the opposite (see Table 4). When pantries collect the data (n=7), most clients report not receiving food stamp benefits. However, some pantries (n=5) that recorded the highest number of visits per client either do not record this information or the data quality was so poor it could not be included. As a result, more than half the cases in this data set have missing values for this variable. This will be discussed more fully in the methodology and discussion that follows.

Table 4
Food Stamp Status

	Frequency	Percent	Cumulative Percent
Does not receive food stamps	1439	27.2	27.2
Receives food stamps	445	8.4	35.6
Pantry did not collect data	227	4.3	39.9
Missing or unreported	3184	60.1	100.0

Source: Authors' calculations.

**RESEARCH QUESTION 2: WHAT FACTORS
INFLUENCE HOW LONG AN INDIVIDUAL
RECEIVES FOOD ASSISTANCE FROM LOCAL
NON-PROFITS?**

To test the second research question OLS regression is used to identify factors that influence whether a person is a ‘long-term’ client of nonprofit food assistance services (pantries). As described in the methodology section, information comes directly from client records for many of the variables. In other cases, information from the Census block where the person lived at the time of the visit must be used as a proxy for the characteristics of the individuals in testing these hypotheses. For example, if a census block is entirely made up of households earning more than \$35,000 per year, assume the individual from that census block who used the pantry also lives in a home with income higher than \$35,000 per year. Finally, the data are at the pantry level. In the models below, information from all these levels is used. But first, the variables, how they are measured, and the related hypotheses are presented.

The Dependent Variable

The dependent variable captures the concept of whether or not a client needs long term food assistance. The nature of our data precludes inclusion of individuals who are not visiting the pantry. That is, this historical data over time will not allow interview of those who do not need food assistance. Therefore, clients belong to one of two categories: short term or long term. Pantries and food banks already define clients in this way, in just two groups, whether informally or formally (see Berner, Ozer, and Paynter, 2008). Fortunately, because data on each visit for each client is captured, a much more precise definition of the length of time of relationship with a pantry is used in this analysis. Initially the number of visits was viewed as a

sign of dependency, and a likely candidate for a dependent variable, but this was ultimately rejected. Using only the number of pantry visits is too blunt an instrument for a problem as complex as determining why a person would become reliant on public services. For example, a person may need to go to the food pantry every week for two or three months during a spell of unemployment. He or she would then show a high number of visits over a relatively short period of time. Another person may go regularly, but not often, over a period of years. The two people could end up with the same number of visits but the levels of dependency are completely different. That is, one is a long-term, system dependent food pantry client while the other is a short term, emergency specific food pantry client. As an alternative, the time from first to last visit measured in days and is our dependent variable. This measure best represents how long a person has a relationship with a single pantry.

Variables Of Interest

Households in poverty: The percentage of households in poverty in the relevant census block for our client was chosen as the measure of poverty for two reasons. First, income is an indicator of financial stability of a household. Therefore, if an individual is more likely to have a lower income, the more that person would need to visit a food pantry long-term. Second, the household poverty level is an important break point for this study. Anecdotal evidence suggests the pantry client group often includes individuals who earn more than the official poverty level for their household, but who still do not earn enough to sustain a household. In fact, the federal definition of poverty has been roundly criticized (Citro and Michael, 1995; Glennerster, 2002). Many poverty advocates (for example, see the National Center for Children in Poverty) suggest that a family of four (2 adults,

2 children) needs about twice the federal poverty limit to meet basic needs. If this variable is significant, one might conclude while clients may come from a broader income base, long-term reliance on a food pantry still is focused on those in deeper poverty than others. If this variable is not significant, then it supports the idea that long-term reliance on food pantries is limited to the very poor.

H_{a1} : The more likely a person comes from a household in poverty, (as measured by the proportion of the block population who meet federal poverty guidelines), the longer the length of time a client has a relationship with a pantry.

H_{a0} : Household poverty status does not shorten the length of time a client has a relationship with a pantry.

Household size: We hypothesize larger households will be dependent on food pantry assistance longer small households, simply as a function of greater need.

H_{b1} : The greater the number of people in a household, the longer the length of time a client has had a relationship with a pantry.

H_{b0} : The number of people in a household does not lengthen the time a client has had a relationship with a pantry.

Race: There are conflicting ideas of the role of race. One could argue, for example, that usage would be higher with the Hispanic population, since they are more recent immigrants and more tied to agricultural and construction, short-term, transient work. However, one could also argue the Hispanic community was family and community centered, and therefore relied more heavily on informal networks than pantries. There may be similar arguments around poverty and informal networks for the

African-American community. Both of these are measured against the benchmark of being Caucasian.

It is difficult to control for race directly, because pantries do not collect such demographic information. In fact, some pantries avoid asking clients for demographic information because they believe it might discourage people from coming to the pantry. One pantry director said, "The color of your skin has nothing to do with whether or not you need food." While race may not be a factor in being served, it is commonly associated with poverty, and therefore, is often considered in predicting type and length of food assistance need. In North Carolina, Hispanics are growing as a proportion of the population. Due to income limitations and frequent status as illegal immigrants, we would expect Hispanic status also to be associated with a longer relationship with a food pantry. The race variables are measured by the proportion of the group in the census block from which the client came. While 2000 Census data may limit us to a certain extent, especially with the Hispanic population, patterns in the data from 2000 should still be relevant today, even if levels of population have grown.

Hd₁: The length of time of the client-pantry relationship will be longer if a client is African-American.

Hd₀: The length of time of the client-pantry relationship will not be longer if the client is African-American.

Hd₂: The length of time of the client-pantry relationship will be longer if a client is Hispanic.

Hd₀₂: The length of time of the client-pantry relationship will not be longer if the client is Hispanic.

Age: Age has an impact on the length of time a client has a relationship with a pantry. Evidence from previous research (Berner, Ozer, and Paynter, 2008) suggests many clients of pantries are older. Again, this is measured by association with a census block, and its characteristics of age. A variable for ages 18-64 and 65 and older is included in the model. The reference age group is less 18 years old.

He₁: If a person is over 65, the higher the length of time a client has a relationship with a pantry.

He₀: Whether a person is over 65 does not increase the length of time a client has a relationship with a pantry.

Food stamp benefits: Based on previous research (Berner, Ozer, and Paynter, 2008) food stamp benefits should not substantially improve a person's ability to shorten the relationship with a food pantry once it begins. As previously noted, there is a substantial issue with missing data in this analysis. To address this, several models were constructed. First, all cases were coded as either having food stamp benefits (1) or not (0), then a third option was added for those pantries that reported this information is not collected (coded as 8) and all other missing or incomplete information was treated as missing (9). This is a more cautious, but accurate, way to proceed. A series of dummy variables for food stamp status was created: receives food stamps (1), all other coded as zero; does not receive food stamps (1), all other coded as zero; and pantry does not collect this information (1), all other zero. By doing this whether a particular food stamp status is different from others and from the category of missing data could be tested.

Hf₁: If a person is receives food stamp benefits, the length of time a client has a relationship with a pantry is shorter.

Hf₀: Whether a person receives benefits does not decrease the length of time a client has a relationship with a pantry.

Most control variables are those associated with the pantry visited, which has its own characteristics. Therefore, a dichotomous dummy variable is included for each pantry. One of the largest pantries was excluded to serve as the benchmark. All variables were tested with bivariate correlations for multicollinearity. None was found.

RESULTS

A Using a standard OLS regression with the variables discussed previously and all cases in the dataset, there are significant effects, with relatively large unstandardized beta coefficients for each pantry. Therefore, the initial analysis was followed with a model that does not include the pantry specific dummy variables and variations on food stamp variables. The results of the models are included in Table 5.

Four models are presented with two major differences. The fully specified Model 1 includes all the food pantries and dummy variables for food stamp status. Because there are a substantial number of missing cases in the food stamp variable (almost half) both imputation and excluding cases were considered. Model 2 includes the food stamp variable as a nominal indicator of food stamp status and retains all the pantries. Model 3 returns to food stamp dummy variables and excludes data from two pantries that are idiosyncratic compared to others in the sample. Finally, Model 4 eliminates all food pantry variables.

Table 5
Results from Regression Models

	Model 1	Model 2	Model 3	Model 4
Constant	1532.09	1600.49	3586.98	2864.56
Number of people in household	9.84	5.73	14.07	-30.20
Poverty	-1809.18*	-1734.02***	-2327.14***	-115.31
African-American	-846.21***	-862.89***	-1181.34***	-1357.55***
Hispanic	-993.36***	-1006.67***	-1438.09***	-2215.49***
Age 20 to 64	-23.46	-79.10	5.57	93.01
Age 65 or older	1496.82***	1511.53***	1582.13***	1057.41***
Original food stamps variable	--	-4.38	--	--
Receives food stamps	610.58***	--	380.43***	-456.40***
Does not receive food stamps	-50.11	--	-303.58***	-1103.59***
Pantry does not record food stamp status	323.35*	--	-1168.74***	-905.83***
Pantry A	286.84	411.59**	-1379.15***	--
Pantry B	-893.95***	-609.66**	-1742.41***	--
Pantry C	86.16	248.27	--	--
Pantry D	2363.56***	2378.86***	--	--
Pantry E	-115.04	-96.16	-1686.15***	--
Pantry F	26.68	86.30	-1564.18***	--
Pantry G	-643.09***	-516.56**	-2244.69***	--
Pantry H	-635.99**	-589.39*	-2385.42***	--
Pantry I	414.98**	470.60**	-1260.62***	--
Pantry J	-331.98*	-290.39	-1921.45***	--
Pantry K	319.18*	332.52*	-1604.22***	--
Adjusted r ²	.252	.246	.202	.116
F	90.19	97.20	75.55	78.02

* = p<.10; ** = p<.05; *** =p <.01

Source: Author's calculations

DISCUSSION

At this early stage, two preliminary observations about non-profit food assistance in North Carolina emerge: The situation of the pantry could be described as “fragile.” Unfortunately, the situation of the clients seems disappointingly stable. That is, clients seem to rely on food pantries for long term assistance without the promise of solutions for bettering their situations. Without systemic policy change, including but not limited to considerations of raising the minimum wage, healthcare reform, and educational opportunities, the working poor, and others experiencing the struggles related to food insecurity will continue to remain on the rolls of clients requesting assistance from the network of nonprofit food pantries across North Carolina.

There are a number of surprising and important results from these models. First the specific hypotheses are discussed, and the paper ends with some overall conclusions.

- A) Lower Income:** The hypothesis that poverty is positively related to length of association with a pantry is not supported consistently. In Model 1, it is statistically significant, but only the exploratory level and with a negative coefficient. Poverty is not a significant predictor in Models 2 and 4 but is ($p < .01$) in Model 3. What is clear from these conflicting results is that the impact of income is a fairly minor factor in determining the length of a client relationship with a food pantry.
- B) Food Stamp status:** Food stamp status has a statistically significant impact on length of client relationship with a food pantry in Models 1, 3, and 4. The effect is not significant in Model 2 when food

stamps are included as a nominal variable. Interestingly, though, the sign of the coefficient is positive. This suggests two things. First, there is little evidence to support the hypothesis. Though the variable is a significant predictor the magnitude of the effect is unsubstantial and explains little about the length of client relationships with food pantries. However, when a client receives food stamps this tends to lengthen the time a client seeks assistance rather than shorten it, meaning that food stamp benefits are not enough to lessen reliance on the food assistance network.

- C) Household size:** Common stereotypes suggest that larger families would need more food assistance, longer. On the other hand, one might expect larger families to have more resources available leading to a greater economy of scale, and more food resources in the home. The variable household size is not significant in any model. This finding aligns with previous research. Deaton and Paxton (1998) found that when holding all else constant, food consumption per head decreases with more people in the house, in poor countries and in wealthy places like the United States, Britain, France, Thailand, Pakistan, and South Africa.

ADDITIONAL RESEARCH FINDINGS

Our pantry visits, as well as our years of previous interaction with pantries and food banks, raised a variety of organizational capacity issues. These observations were not the original objective of the research, but are a compelling part of the story of the nature of food insecurity in North Carolina. The 15 pantries we visited:

- do not have any or have only a very limited number of professional staff
- of the staff or volunteers at the pantry, few, if any, have formal management training
- do not have computerized records
- of the staff and volunteers, few, if any, have computer skills needed for data or record management
- do not have updated or well-equipped space
- rely on donated space
- depend on the support of a single individual, often an elderly white woman
- depend on the support of a religious institution

Perhaps the most important finding, however, concerns the overall model. The pantry specific dummies played the dominant role over the variables listed above. When the dummies were excluded, the variance explained by the model dropped from 25 percent to only 11 percent. Far more is being explained by pantry characteristics than individual characteristics. Capacity issues such as physical storage space and equipment, staff training and educational levels, funding sources, and volunteer management may play a large part in determining why one pantry has longer client relationships than others. This is an area we plan to explore in future research.

CONCLUSION

This challenges our whole effort in using individual characteristics to explain why some people use a food pantry longer than others. As a research field, we have been focused on characteristics of demand – do immigrants need more help, or for longer? Do people with jobs, or with large families, or with government benefits? Our results suggest the focus should be placed on the *supply side* – on

how pantries provide support. This study suggests demand is not increasing from some stable equilibrium, but that pantries are changing, growing, slowing changing from emergency based organizations to institutionalized quasi-governmental support structures, and that demand has not, perhaps has never, been close to being met. Distribution increases are likely seen more as a manifestation of the increase in supply of non-profit food assistance – as non-profits improve and expand their outreach, they simply provide more access points for pent-up demand. One telling anecdote comes from the Food Bank with which we partnered for this research. Ten years ago the Food Bank established new, temporary agencies in areas in eastern areas of North Carolina hit hard by flooding from Hurricane Floyd. Those agencies have never closed.

Future research should be conducted on the organizational capacity of food pantries to meet local food assistance needs in an institutionalized, long-term fashion. To address hunger, a focus on the barriers that might limit the providers, rather than the seemingly intractable, deep rooted problems that beset the individual clients may be more appropriate. Physical resources such as transportation systems or food retailer location may play a role in food insecurity within communities. For example, health policy research on nutrition and cancer prevention shows a difference in the numbers of commercial exercise facilities, supermarkets and fast food restaurants located in neighborhoods populated by African-American, Hispanic, and Caucasians (Ranson, et al, 2009). Other studies consider how sociocultural factors like poverty, racism and prejudice minority health behaviors (Hewins-Maroney, et al, 2005; Watson, 2001) or how training programs like leadership development can positively impact human resources within organizations (Frederickson, 2004). From these and other studies a rich set of variables emerge to allow a deeper consideration of the relationship between

food assistance providers and healthy, stable communities. Certainly a successful focus on the providers is more easily within the reach of government decision-makers than developing programs to change individuals.

This project does not promote a specific policy or course of action. That is because we firmly believe that any course of action will fail without a clear understanding of the nature and extent of the problem and the education of policy-makers as well as ‘do-ers’ working on hunger issues. This project proposes to go to the source – the food pantries themselves – to create a longitudinal database that will help us understand who needs assistance, for how long, and why. This information will be used to understand where we now in terms of hunger, and how we got here. We hope we can do so in a way that meets the highest methodological standards. Our goal is to help change the policy environment surrounding hunger to foster systematic change.

Our hope is that our results will initiate conversations between service providers and policymakers. Based on our previous research, we believe the most effective hunger programs will result from collaborative solutions born of holistic groups of stakeholders rather than from individual units such as local governments, non-profit organizations, social service providers, or the State. In short, effective hunger policies will arise when all the stakeholders join at one table. We hope that this dialogue will give rise to policy options that we can understand, about which we can educate, and on which we act.

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