

FOOD SAFETY KNOWLEDGE AND PRACTICES FOLLOWED BY MEMBER AGENCIES  
OF THE FOOD BANK OF NORTHEAST GEORGIA

by

HOLLY HASLAM GARNER

(Under the Direction of Elizabeth L. Andress)

ABSTRACT

The objectives of this study were to assess the Food Bank of Northeast Georgia (FBNEG) member agencies' staff and volunteers' knowledge of food safety practices and to determine the best way to reach staff and volunteers with food safety information. An original survey instrument was developed in collaboration with the staff of the FBNEG and faculty in the Department of Foods and Nutrition at The University of Georgia. The survey was mailed to all 249-member agencies of the FBNEG located in twenty-three counties. The survey data identified food safety problem areas in emergency food assistance programs. Based on the findings, it is apparent that many clients of the FBNEG and therefore other emergency food assistance programs need to improve food handling especially temperature control practices, thermometer use, cleaning and storage practices. Various approaches will need to be employed in addition to the traditional class approach in order to reach the majority of this population segment.

INDEX WORDS: Food bank, Food safety, Emergency food assistance, Survey, Food Bank of Northeast Georgia

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## **DEDICATION**

To the memory of my grandmother, Mary Ellen Haslam (Nana) and my Aunt, June Pyles,  
who taught me to live life to the fullest and that life is too short to be spent worrying.

## **ACKNOWLEDGEMENTS**

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## **CHAPTER 1**

### **INTRODUCTION**

The number of individuals in the United States suffering from insufficient access to food continues to grow. Today, 11.1% of households are considered to be food insecure and 3.5% are classified as food insecure with hunger (Nord et al, 2003). Due to these growing numbers of individuals facing hunger, a greater burden is being placed on the Emergency Food Assistance System (EFAS) to provide food to those in need. The EFAS is made up of emergency food providers including: food banks, food rescue organizations, emergency food organizations (EFOs), soup kitchens, and food pantries that are privately run or receive a small amount of federal funding (Briefel et al, 2003). The EFAS is intended to act as a nutrition “safety net,” by providing temporary food assistance to individuals in need. Currently, there are tens of thousands of emergency food programs in the U.S. providing assistance to one tenth of the population. The dependency on charitable food assistance tends to be due to the negative stigma attached to using Food Stamps provided by the federal government (Martin et al, 2003). Seniors are one group in particular that frequently use the EFAS because they feel a sense of shame is associated with receiving Food Stamps (A2H Hunger and the Elderly, accessed 2004a).

The goal of the EFAS is to provide all individuals with an adequate, safe, nutritious and reliable food supply. Yet, information on food handling practices in emergency food assistance programs is extremely scarce. A review of the literature reveals that very few studies have been carried out which address the food safety concerns facing food bank clients. Most studies have focused on developing training programs without assessing the staff’s and/or volunteers’ level of

food safety knowledge or preferred methods of obtaining information. However, there is a great need for this information in order to provide safer food to those who are in need. Therefore, in order to assess the food safety knowledge and food handling skills of emergency food providers, a survey was designed and distributed to the staff and volunteers of the member agencies of the Food Bank of Northeast Georgia (FBNEG). Although previous studies have found that the majority of consumers either do not possess needed food safety knowledge or simply do not apply it correctly, at this time the level of food safety knowledge and understanding has not been assessed in the staff and volunteers of member agencies of the FBNEG. This survey was designed to indicate areas in which food safety knowledge is low among the staff and volunteers, so that food safety training can be provided to increase awareness and use of proper food handling practices.

The purpose of this research project was to examine the relationship between selected characteristics of the staff and volunteers of member agencies of the Food Bank of Northeast Georgia (FBNEG) and their adherence to certain food safety practices. More specifically two objectives were assessed. First, food safety knowledge and practices of the staff and/or volunteers of member agencies of the FBNEG were assessed. Second, the best way to effectively provide food safety information to the member agencies was investigated.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### Hunger and Poverty in the United States

Although the United States is a very wealthy, industrialized country it continues to fail to meet all the basic needs of its population. This has resulted in a large population segment facing poverty and hunger. In the past two years, poverty began to rise in the United States after declining for four years in a row (Proctor and Dalaker, 2003). Currently 34.6 million (12.1%) people are considered to be living in poverty and the majority of these are children under the age of eighteen (Proctor and Dalaker, 2003). Due to inadequate income, 12.1 million households were found to be food insecure in 2002; 3.9 million of those were female-headed households (Nord et al, 2003). “Food insecure” is defined as a household that has limited or uncertain access to enough safe, nutritious food for an active and healthy life (American Dietetic Association, 1998). Over 3 million (3.3 million or 3.0%) of food insecure households used a food pantry one or more times in 2001 (Nord et al, 2003). Emergency kitchens were used by 461,000 (0.4%) of households (Nord et al, 2003). The total number of individuals fed by emergency food assistance programs in 2002 was 5.7 million adults and 3.9 million children (Nord et al, 2003).

#### Hunger and Poverty in Georgia

As the incidence of poverty in the U.S. increased between 2001 and 2002, the South experienced the greatest increase in the poverty rate (from 12.8% to 13.8%) and reported the lowest median household income (\$38,904) of any region (Proctor and Dalaker, 2003). The state

of Georgia has also experienced an increase in poverty and hunger. According to the 2002 U.S. Census Bureau, Georgia has a poverty level of 12.7%, which is higher than the national average of 12.1%. A large part of the poverty population consists of children (35.1%) and female-headed households (26.5%) (Proctor and Dalaker, 2003). Of those living in poverty in Georgia, 12.9% are considered to be food insecure and 3.5% are food insecure with hunger (Nord et al, 2003). “Food insecure with hunger” is defined as having insufficient or irregular food intake, which results in periods of hunger defined as an uneasy or painful sensation caused by a lack of food for at least some family members (American Dietetic Association, 1998).

A Georgia hunger study was launched in December 1995 by the Phillip Morris Companies Inc., in partnership with Dr. Doug Bachtel and Dr. Elizabeth Andress of The University of Georgia. The study included: 1) a statewide telephone survey regarding the public’s perception of hunger; 2) an operational profile of Georgia hunger relief; and, 3) focus groups with hunger-relief organizations, those in need and others associated with the issue. The focus groups were conducted in Atlanta, Thomson, and Albany Georgia. In each city there were two focus groups: one focus group with relief service clients and a second group with emergency food providers and other service organization representatives.

Of the four hundred randomly selected adult residents surveyed by telephone, it was found that 76% viewed hunger in Georgia as a problem although 45% considered it to only be a minor problem (Georgia Hunger Study, 1997). A second finding showed that 71% of respondents felt there has been a lack of positive action in the fight against hunger. Most felt that hunger problems were the same or worse in 1996 than they had been in 1991 and 44% expected hunger to become a more serious problem five years into the future. The survey also

found that nearly half (44%) of respondents were totally unaware of available hunger aid programs, indicating a need to increase awareness (Georgia Hunger Study, 1997).

Focus groups revealed that emergency food providers in Georgia found that increasing numbers of individuals in need of assistance made it more difficult to meet clients' needs. The rise in the number of emergency food clients increased the difficulty of addressing concerns of nutrition and food safety. Most of the providers also explained that even if clients received safe food most of them do not know how to store or prepare the food. This is of great concern because 55% of the individuals benefiting from the food given at hunger relief sites are children under age 18, along with an increasing number of elderly, both of which are considered high-risk populations for nutrition related health problems and foodborne illness (Georgia Hunger Study, 1997). This increase in hunger across the nation and within the state is leading to increased need for sustained food assistance.

### Food Banks

Food banks are now considered to be the principle source of charitable food assistance for low-income households (O'Brien and Aldeen, 2001). In an attempt to meet the food needs of hungry Americans, the first food bank was established in 1967 in Phoenix, Arizona to distribute safe, nutritious food to needy individuals (America's Second Harvest, accessed 2004b). A food bank is defined as an organization that collects prepared and/or perishable food, which are either given directly to needy individuals or distributed to charitable human service agencies, which in turn give the food to their clients (O'Brien and Aldeen, accessed 2002). Today food banks have increased in number and size and now 200 (80% of all food banks) compose a nationwide, nongovernmental food distribution system known as America's Second Harvest (A2H), the country's largest hunger relief charity. America's Second Harvest serves 23.3 million people per

year, of which 9 million are children and 2.5 million are seniors. Each year 1.8 billion pounds of food are distributed by A2H (O'Brien and Aldeen, accessed 2002).

The Food Bank of Northeast Georgia (FBNEG) is one of the A2H affiliates and is located in Athens, Georgia. It was established in 1992 by Reverend Ed Ralph and Ron Hamby along with a group of dedicated volunteers as the Food Share of Northeast Georgia. In its first year, the food bank distributed over 300,000 pounds of food to 36 member agencies. Today, the non-profit agency serves twenty-three counties including: Banks, Barrow, Clarke, Dawson, Elbert, Franklin, Greene, Gwinnett, Habersham, Hall, Hart, Jackson, Madison, Morgan, Newton, Oconee, Oglethorpe, Rabun, Stephens, Towns, Walton, Wilkes, and White. A total of 249 different agencies receive food from the Food Bank of Northeast Georgia with the majority (115) located in Clarke County. For the past three years, the FBNEG has been distributing 145,000 to almost 300,000 pounds of food per month. In January 2003 the FBNEG distributed 194,190 pounds of food to needy individuals (Food Bank of Northeast Georgia, unpublished data, 2003).

The FBNEG is funded by financial support from organizations, corporations, foundations and grants, as well as by individuals in the community. Nearly 27% of the food bank's budget comes from the shared maintenance fee paid by member agencies while the remainder is covered by financial contributions. The food distributed by the food bank goes to non-profit agencies that work directly with individuals in need. With the exception of designated programs, no food is given directly to needy people by the food bank. The food bank agencies include food pantries, soup kitchens, shelters, rehabilitation programs and other programs where clients may eat and sometimes live on site (Food Bank of Northeast Georgia, 2002). A large segment of the food bank's clients are foster parents, who are divided into foster parent associations, which consist of groups of five parents with only one shopper per group. By forming an association,

the foster parents are eligible to apply for non-profit status just like any other agency that receives food from the food bank.

The FBNEG has several programs carried out by staff and volunteers that provide food directly to needy individuals including: a Brown Bag program, Help Yourself program, Annual Thanksgiving Boxes and the FEED program. The Brown Bag program distributes bags of food, beverages and necessities every month to over 265 elderly or disabled citizens in Clarke County. The Help Yourself program provides food to individuals on a one-time basis in emergency situations when a referral is provided by the police department, hospitals, department of family and children services, or a social worker. This service is typically provided to individuals who are waiting to be eligible to receive help from a food pantry. Working with area schools, in 2002 boxes of holiday food were delivered to 760 families with children to assist them in providing a nutritious and delicious Thanksgiving meal. The FEED program provides surplus products to twelve feeding sites, which are staffed by local volunteers (Food Bank of Northeast Georgia, 2002). Food preparation and activities at these feeding sites increase the food handling concerns of some member agencies to community foodservice rather than distribution of prepackaged foods. The food bank also provides a Nutritional Education Program composed of quarterly classes that are provided to member agencies on nutritional training and awareness.

#### Foodborne Illness Concerns of Food Banks

Substantial numbers of food bank clients nationwide are members of established groups recognized as being at high-risk for foodborne illness: pregnant women, infants, young children, the elderly and those with weakened immune systems. Individuals in these categories are more susceptible to serious complications including death from foodborne illness (Safe Food for the Hungry, accessed 2004). Nearly half of all food bank clients are children (42%) or elderly (8%)



and the remaining portion tends to be individuals who suffer from chronic illnesses such as AIDS, cancer, or other problems such as alcoholism (Safe Food for the Hungry, accessed 2004). In addition, any individual who does not have adequate nutrient intake is more susceptible to illness (Buzby, 2002). Foodborne illness is a problem that strikes 76 million Americans each year and results in 325,000 hospitalizations and 5,000 deaths (Mead et al, 1999). Illnesses from five main pathogens cost the country 6.9 billion dollars per year in medical costs, productivity, and premature deaths (Mead et al, 1999). Viruses and bacteria that can be transmitted via people, pests and cross contamination cause the majority of foodborne illnesses (Mead et al, 1999). Some public health officials indicate foodborne illness may become more of a problem in the future due to emerging pathogens, improper food preparation and storage practices among consumers, insufficient training of retail employees, an increasingly global food supply, and an increase in the number of people at risk because of aging and compromised ability to fight foodborne illness (Medeiros et al, 2001b). Therefore, Medeiros and others have recommended 5 major pathogen control factors that should be emphasized in consumer food safety education. The factors are: practice personal hygiene, cook foods adequately, avoid cross-contamination, keep food at safe temperatures, and avoid foods from unsafe sources. These address the top five factors identified by the Centers for Disease Control and Prevention (CDC) as being responsible for foodborne illness (Food and Drug Administration, 2001).

### Foods Donated to Food Banks

Most of the food donated to a food bank is a result of surplus production -- supply greater than demand, cosmetic damage, discontinued items, change in label, or short code, which applies to foods such as dairy products that must be moved quickly due to their short shelf life (Food Bank of Northeast Georgia, 2002). Therefore, unlike retail or foodservice providers, the food

bank agencies' food comes from varying sources and there is very little information available as to how the food was stored or the length of time it has been in storage. These unknowns about product history increase the possibility of a food safety risk. This emphasizes the need for staff and volunteers to have the ability to identify the difference between cosmetic damage and a true safety risk. However, achieving a skilled, knowledgeable food bank staff, whether paid or volunteer, is a commonly identified problem due to constant turnover of workers in this field (Safe Food for the Hungry, accessed 2004).

Similar concerns were revealed in a recent Minnesota study. The Department of Food Science and Nutrition at the University of Minnesota conducted a study to determine attitudes and behaviors of food donors as well as the perceived wants and needs of food shelf users (Verpy et al, 2003). The researchers were interested in the types of foods being donated and their distribution channels, as well as determining what education might be useful for clients, donors and staff of emergency food relief centers.

Focus groups (5 client and 7 donor) were conducted with food shelf clients (n=31) and donors (n=64). Four major themes developed from both focus groups: 1) a need for increased food choices; 2) concern regarding safety and quality of food provided; 3) need for non-food items; and, 4) thoughts on how to improve service for clients. Many clients expressed concern about receiving out-of-date products, some of which were up to 5 years past an expiration date. Other frequent complaints included receiving moldy bread, cans with yellow labels, food tasting odd or "tinny," and spoiled milk (Verpy et al, 2003).

Due to undesirable quality and food safety concerns, the clients' food supply was reduced. This shows that donors need to be educated to throw out expired food rather than

donate it and staff need to be trained to check for expiration dates on the products received by the food bank. Clients also need to be educated to discard potentially unsafe food.

Many of the workers may feel a need to provide as much food to their clients as possible without realizing the food safety risks that may be associated with damaged products. The possibility of developing a foodborne illness is further increased by the fact that so many Georgians in the high-risk category are dealing with hunger and have to rely on food banks to make ends meet. Therefore, there is a need to address the food safety practices that are used in these agencies to ensure that individuals are receiving safe, nutritious food products.

#### Previous Attempts at Food Safety Outreach

One program that has been developed by the Department of Food Science at Cornell University in Ithaca, NY for emergency food center workers is “Soup Up Food Safety In Your Kitchen.” This program has two main objectives: 1) train leaders to provide food safety education and 2) evaluate the effectiveness of program materials for delivering food safety information. During the pilot trial in 1999, sixteen educational programs reaching a total of 445 participants were evaluated. The participants were made up of soup kitchen workers (62.2%), food bank or pantry workers (27.4 %), and other agency workers (10.4%). An average knowledge increase of about 5.7% was measured based on pre- and post-tests completed by the participants (Scott and Gravani, undated).

“SAFE AID” is another food safety training program that has been developed by the Montana State University Extension Food & Nutrition Service for use in food banks (Paul, accessed 2002). The program consists of five booklets that are to be used to train volunteers and staff of food banks in the areas of: 1) Foodborne Illness; 2) Sanitary Surroundings: Setting Up for Safe Food; 3) Risk Management; 4) Safe Food Handling; and 5) Re-packaging Bulk Foods.

Along with teaching basic food safety practices such as hand washing, temperature control and food preparation, the program also emphasizes the importance of checking foods for damage or spoilage, food storage times and appropriate methods of repackaging foods, which should all be common practices in a food bank setting.

“Safe Food for the Hungry” is another program developed by Purdue University to provide practical, application-based food safety and nutrition instruction to volunteers and staff who handle food in non-profit emergency food organizations. “Safe Food for the Hungry” was intended to address the educational needs of emergency food workers. These include: directors, full and part-time workers, volunteers, and other interested individuals or groups. Health officials, Cooperative Extension Educators, and other people who work with food assistance organizations or limited resource audiences were considered other potential users of the program. Due to the variety of potential audiences the educational material was developed to address multiple knowledge levels of workers (Safe Food for the Hungry, accessed 2004).

Safe Food for the Hungry started as a video teleconference workshop designed to teach the basics of food safety and nutrition. Two more annual teleconferences were produced in subsequent years, along with other workshops and many other print and web materials. Today there is a “Safe Food for the Hungry” website with a directory of non-profit food assistance programs in Indiana and a Safe Food for the Hungry Newsletter, which provides essential information to individuals working with emergency food organizations. All of this information together is meant to serve as a framework for individual organizations to use in evaluating their programs and solving specific problems (Safe Food for the Hungry, accessed 2004).

These three outreach programs in other states focus on many of the same topics included in the survey instrument for this study, which is intended to assess both knowledge and behavior

among participants. It is apparent that there are commonly recognized areas of content understood to be important for emergency food assistance program workers. The projects described above did not include needs assessment instruments and findings with their curricula. There is currently no evaluation instrument available that has been tested for reliability and validity with this audience. The goal of this study in Northeast Georgia was to start with a needs assessment for a particular audience that can be used to develop targeted programs in the future.

### Instrument Reliability and Validity

A unique questionnaire was developed specifically for the current survey of emergency food workers. Therefore, reliability and validity of the instrument needed to be determined. Reliability is the extent to which an instrument provides reproducible results. A reliable instrument administered any number of times will show highly similar results every time. There are two methods used in measuring reliability, stability measures and equivalence measures (Kingery et al, 1989).

Equivalence measures assess reliability by comparing responses obtained at the same point in time on multiple measures, which give the same information. In parallel-form reliability respondents complete two separate instruments containing very similar items on the same topics. The statistical comparison of responses for the instruments indicates their reliability. Equivalence techniques are more commonly assessed by separating a single instrument into two or more parts made up of equal numbers of items, which are compared statistically. This is known as split-half reliability. Although an effective method it is logical that reliability estimates will differ slightly depending on which items are included in each half. Therefore, when this method is used the ideal solution is considered to be using the average of all possible

calculations to produce a coefficient known as Cronbach's alpha, which represents the best estimate of internal consistency (Kingery et al, 1989).

Stability measures indicate reliability by comparing scores obtained from respondents at one point in time with scores obtained from the same respondents at a later time using the same instrument. This is also known as test-retest reliability. When instruments address information that does not change, stability measures can be an appropriate choice.

An instrument is considered valid if it measures what it was intended to measure. There are two types of validity that can be assessed: external validity and internal validity. External validity addresses whether the results of a measurement can be generalized to a population or groups beyond the study group. Internal validity determines if an instrument measures what it was intended to measure. The two types of internal validity indicators generally used are content validity and construct validity. The validity indicators need to be used in combination because no one indicator can prove that a measure is valid (Kingery et al, 1989).

Content validity is concerned with the content of a measure. It is established by the judgment of experts in the domain of interest, through an item-by-item review of the instrument. Two criteria must be met to determine content validity 1) the existing items must apply to the underlying domain of interest, and 2) all pertinent areas of the domain of interest must be addressed by the questionnaire. Content validity is the most often used approach in survey research, due to its simplicity and requirement of little time and money.

Construct validity is based on the existence of an underlying psychological or sociological variable that is hypothesized to exist. It answers the question: To what extent does the instrument measure the hypothesized variable of interest? Construct validity cannot be measured directly since it refers to something that only theoretically exists. Content validity

supports construct validity in that an expert has judged the instrument to represent the area of interest (Kingery et al, 1989).

#### Rationale, Specific Aims, and Hypothesis

Specific Aim 1 addressed the question, “Do staff and/or volunteers of member agencies of the Food Bank of Northeast Georgia have a low knowledge of food safety practices?” The rationale for this is supported by consumer data that show many individuals have a low knowledge of safe food handling practices. It could be expected that individuals who do not work in foodservice as a career choice would have food safety knowledge more similar to consumers.

Audits International conducted two surveys of consumer food handling practices in the late 1990's. Although improvements were revealed in the second survey, the situation still needs improvement. Based on the consumer food safety survey conducted in 1999, it was found that households receiving one critical violation decreased from 96% in 1997 to 69% in 1999. A critical violation is one that by itself can cause a foodborne illness or injury and instantly deems a household unacceptable. Therefore in order for a home to be considered acceptable, zero critical violations were allowed in the six areas of high concern: ingredient cooking, hand washing, cross contamination, chemical storage, handling of leftovers, and cold ingredient handling. The number of violations reveals that over half of all households continue to fail to meet all appropriate criteria for safe food handling (Audits International, accessed 2002). The improvement from 1997 to 1999 may represent an increase in food safety awareness, but the overall results show there is still a need for more and better consumer education.

There is no government or federal mandate in place to require food bank workers to complete a food safety course. Therefore, the majority of individuals who staff and volunteer at

the FBNEG's member agencies would be considered to have the same general understanding of food safety as the consumers surveyed by Audits International. This means that potentially over half of all of the staff and volunteer workers would be in need of appropriate training.

The consumer home food safety survey results also showed that individuals do not always apply the food safety knowledge they have (Audits International, accessed 2002). Seventy-nine percent of consumers reported knowing the proper food safety procedure for a particular question, but on observation only 59% of consumers were shown to follow through on using that knowledge in the kitchen (Audits International, accessed 2002). Therefore, questions have been formulated to address individual practices used as well as general knowledge questions. For the knowledge section, questions have been asked that address knowledge of proper techniques for food handling and storage. In order to identify the practices actually used, respondents have been asked to list and/or describe how food safety practices are carried out in their individual facilities and to list which workers are assigned to these tasks.

Another study done by Anderson et al (2004) asked 99 participants (92 women, 7 men) to agree to be videotaped preparing a single entrée and salad in their home along with completing a food handling survey. The subjects were all residents of one county in the western United States and identified themselves as the primary person responsible for food preparation. The food preparation behaviors were compared to FightBAC!® recommendations (Partnership for Food Safety Education, 2004). FightBAC!® is a public awareness campaign promoted by the Partnership for Food Safety Education. Recommended practices for safe food handling are grouped into four categories with the themes of clean, separate, cook and chill. Overall, the participants failed to meet the recommended FightBAC!® guidelines. Most participants lacked appropriate hand washing skills, inadequately cleaned surfaces and handled food in a manner



that promoted cross-contamination. Very few participants used a food thermometer.

Participants also did not meet recommendations for chilling and marinating practices.

Specific Aim 2 addressed the question, “What is the best way to effectively reach the staff and/or volunteers of member agencies of the Food Bank of Northeast Georgia with food safety information?” The rationale for identifying this information is based on consumer food safety survey results that indicate a need for food safety education. Currently no data have been collected from FBNEG agencies to determine the interest in food safety education or the best way to provide the information. This study was designed to determine the level of interest in obtaining food safety knowledge and whether training courses are needed to increase food safety knowledge in FBNEG member agencies.

Based on consumer food safety survey results, it was expected that a need for food safety education in the member agencies would be demonstrated. The goal of the survey was to identify the type of food safety information that is most needed by the agencies and develop educational materials that address the food safety problems. In order to assess the agencies’ interest in learning more about food safety, participants were asked to indicate their willingness to participate in food safety training. The survey questionnaire has been used to help determine the best location for providing food safety training by assessing whether onsite training, community training, or training at the FBNEG would be the most convenient for participants. Additionally, member agencies were asked if they would access food safety information if it was made available to them on the FBNEG website in order to determine their interest in receiving information via the internet. Together, these pieces of information allow for the determination of the best methods for communicating food safety information to all member agencies.

The overall hypothesis of this study was that there is a substantial lack of food safety knowledge among the staff and volunteers of the Food Bank of Northeast Georgia's member agencies, which will indicate a need for the implementation of food safety programs that emphasize safe food handling practices.

### **CHAPTER 3**

## **FOOD SAFETY KNOWLEDGE AND PRACTICES FOLLOWED BY MEMBER AGENCIES OF A REGIONAL FOOD BANK<sup>1</sup>**

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## **ABSTRACT**

Objective	To determine (1) food safety knowledge and practices and (2) interest in proposed services including food safety programs among staff and volunteers with member agencies of the Food Bank of Northeast Georgia (FBNEG).
Design	A cross-sectional survey conducted by mail.
Setting	All 249 member agencies of the FBNEG in twenty-three northeast Georgia counties.
Participants	96 responses (a return rate of 39%).
Variables Measured	Food safety knowledge and practices used for temperature control, food storage and cleaning; level of interest in proposed food bank services.
Analysis	Descriptive statistics for findings and cross tabulation to determine the percent agreement between Test I and Test II for reliability; $p < .05$ .
Results	The survey data identified food safety problem areas in emergency food assistance programs and indicated on-site training and website-based information as the best way to reach staff and volunteers.
Conclusions and Implications	Food safety knowledge and practices in these agencies need improvement to decrease potential risks for foodborne illness to their clients. Various educational intervention strategies should be developed.

## INTRODUCTION

The need for emergency food assistance has continued to rise since the 1980's and has become a necessity rather than a temporary means of obtaining food (Paulhamus, 1998). This increased need is due to the rising number of Americans that are facing food insecurity, which includes millions of children. In 2002 alone, 12.1 million households (10.7% of all U.S. households) were food insecure at some time during the year (Nord et al, 2003). This means that that the household did not always have access to enough food for active, healthy living for all household members because they lacked money or other resources for food. Only a small percentage of households experience food insecurity frequently or chronically, but it tends to be a recurring condition, not just a single episode. In 2002, single mothers with children had the highest rate of food insecurity (31.9%), while households with elderly members were less likely to be food insecure than those without elderly (Nord and Andrews, 2003). According to Guthrie and Lin (2002), elderly individuals are more likely to turn to private assistance due to their affiliation with church programs that make food much more accessible, as well as the fact that they often associate shame with using government aid programs.

When households cannot meet their food needs, they often turn to federal food assistance programs or emergency food providers. The three largest federal food programs include the National School Lunch Program, the Food Stamp Program, and the Supplemental Nutrition Program for Women, Infants, and Children (WIC). Although federal programs provide a large amount of aid, many individuals turn to community food assistance, which includes food pantries, emergency kitchens and homeless shelters. In 2002, 3.3 million households (4.0% of all U.S. households) obtained food from food pantries at least once during the year. Most of the households used the food pantries sporadically, yet 20% reported using them almost every month

(Nord et al, 2003). The increased use of private assistance can be attributed to the personalized aid offered and the loose eligibility requirements in comparison to the government Food Stamp program (Daponte, 2000).

Due to the increased reliance on community food assistance programs, there is a need for information about food handling practices among agency staff and volunteers. In order to assess the food safety knowledge and skills among local emergency food providers, a survey was designed and distributed to the staff and volunteers of the member agencies of the Food Bank of Northeast Georgia (FBNEG). The employees of many of these agencies are not trained to be foodservice workers; it is expected that their knowledge will be similar to the general consumer population. Previous studies have found that the majority of consumers either do not possess needed food safety knowledge or simply do not apply it correctly, (Anderson et al, 2004; Audits International, accessed 2002; Bryan, 1998; Cody and Hogue, 2003; Mead et al, 1999) The survey results are needed to help develop appropriate food safety education programs to increase awareness and use of proper food handling practices.

## **METHODS**

### **Instrument Development and Distribution**

An original survey instrument to assess food handling and related practices was developed in collaboration with the staff of the FBNEG and faculty in the Department of Foods and Nutrition at The University of Georgia. After approval by the Institutional Review Board on Human Subjects at the University of Georgia, the survey and cover letter were mailed to all 249 member agencies of the FBNEG located in twenty-three counties: Banks, Barrow, Clarke, Dawson, Elbert, Franklin, Greene, Gwinnett, Habersham, Hall, Hart, Jackson, Madison, Morgan,

Newton, Oconee, Oglethorpe, Rabun, Stephens, Towns, Walton, Wilkes, and White. Each agency received a cover letter, a survey, and a stamped, addressed reply envelope to simplify the mailing process and increase the rate of return. Each agency was also given an incentive of one hundred pounds free food for returning the survey within a requested time period. The cover letter served as a consent form (Appendix A) for participation in the study, so no signature was required for informed consent. Three weeks after mailing the original survey, a post card reminder (Appendix A) was mailed to ensure that all agencies received the survey and to allow agencies to request a second copy if it was misplaced or not received. A total of 96 responses were received for a return rate of 39%.

The survey required participants to answer questions based on food safety knowledge and practices related to the individual agency in which they work. The survey was a seven-page questionnaire made up of approximately twenty-three food safety practice questions and eight food safety knowledge questions (Appendix A). All questions were multiple choice, open ended, or yes/no. The reliability of the survey was assessed through test/re-test procedures; the survey was mailed a second time (Appendix B) to 90 of the original 96 respondents. Six of the original respondents were not contacted due to either an inability to locate a current address after relocation or inactive status with the food bank. As with the first mailing, a follow-up post card (Appendix B) was sent three weeks after mailing to thank those who had already responded and remind those who had not. Telephone calls were made to agencies that had not responded to the second postcard. Of the 90 re-test surveys mailed (Appendix B), 50 were returned to compare with the original 96 received, for a participation rate of 56%. Agencies that returned the survey a second time within a requested time period received a ten-dollar food credit at the FBNEG.

Content validity was determined based on evaluation by subject matter specialists, consisting of a panel of experts from the Food Bank of Northeast Georgia and faculty members of the Department of Foods and Nutrition at The University of Georgia. Panel members were chosen based on their familiarity with testing food safety knowledge in a variety of settings.

### Analyses of Findings

Four separate scores were developed for each respondent based on how they answered questions regarding food safety knowledge, temperature control, cleaning, and food storage practices. A “food safety knowledge score” was developed based on answers to the nine questions numbered 26, 35, 36, 37, 38, 39, 40, 41 and 42. These questions assessed workers’ knowledge of correct thawing methods for food, proper ways to check food temperatures and amount of time needed to properly clean one’s hands. Proper storage and cleaning techniques were also addressed with questions included in this score. A maximum score of 11 points could be received by each respondent depending on the number of correct answers provided.

A “temperature control score” was developed based on questions numbered 15, 16, 17, 36, and 37. These questions addressed the agencies’ practices such as monitoring the air temperature of the refrigerator and freezer and monitoring the temperatures of refrigerated and frozen meat and poultry. This score also represented the participants’ knowledge of proper thermometer use and re-heating temperatures. Each participant could receive a maximum of 7 points if all questions were answered correctly.

The third score was a “cleaning score” based on answers provided to questions numbered 18, 19, 20, and 22. These questions address the agencies’ use of appropriate pest control, cleaning practices, record keeping of cleaning activities, and appropriate garbage disposal. The



cleaning score consists of a maximum of 12 points, which are assigned based on frequency and appropriateness of cleaning methods used as indicated by the answers provided on the survey.

The fourth score is a “food storage practice score,” which is made up from answers to questions numbered 24, 25, 27, 29, 30, and 31. These questions address the participants’ knowledge of how to properly store food, the importance of proper labeling on all items, and package integrity. The score also includes the agencies’ knowledge of the “first in-first out” (FIFO) rule and their removal of out of date foods so that agency clients receive food of the best possible quality. The storage practice score is worth a maximum of 7 points based on the number of correct answers given on the survey.

The four food safety knowledge and practice scores were developed to determine the respondent’s overall level of knowledge and skill in each area. This is critical to the determination of areas that have the greatest need for improvement. Based on these results, educational programs can be implemented to encourage improvements in these areas so that emergency food assistance participants receive safe, high quality food.

To determine if geographic location and/or type of community might influence consumers food safety knowledge for some analyses, the survey respondents were divided into four categories based on the county in which the agency is located. These categories were developed from the Four Georgias concept, which was created by Dr. Doug Bachtel, professor of Housing and Consumer Economics at the University of Georgia, based on county population growth between 1980 and 1990 (Bachtel, 1997). The four classifications used are metropolitan, suburban, rural growth and rural decline. The majority of counties served by the Food Bank of Northeast Georgia turn out to be classified as rural growth (14) or suburban (6), while Clarke

County is the only metropolitan county included in this service area. This food bank does not have counties considered to be in rural decline areas in its membership.

Based on the Four Georgias concept, metropolitan counties are those with city populations of over 50,000 and a total population of 100,000 or more. A significant number of individuals in these counties possess the education and income needed to take advantage of available opportunities, but there is an equally large number of individuals that are young, poorly educated, and live near or below the poverty level. The suburban counties are also metropolitan, but they obtain this status due to the number of residents that commute into the core cities to work. These counties tend to be predominately white and affluent with many residents having attained a high level of education and income. The growing rural counties are characterized as having a scenic beauty or some type of physical landscape that makes them popular places for tourism to flourish. Also, they tend to be located near a military base or possess a regional growth center capable of sustaining economic growth; they are not distinguished by a particular level of educational attainment (Bachtel, 1997).

### Data Analysis

The responses to the food safety survey were analyzed using the Statistical Analysis System, Version 8.2 (SAS Institute, Cary, NC) at a p value less than or equal to .05 to determine food safety baseline knowledge, the interest level for receiving food safety education and the most preferred method for obtaining the education. The interest level for receiving food safety education and the most preferred method for obtaining the education were examined based on frequencies. Correlations between the food safety knowledge score and each of the three practice scores were measured by calculating the Pearson product moment correlation coefficient. Finally, the reliability of the Food Bank Member Agency Survey Instrument was

tested by administering it twice (Test I and Test II). For all categorical variables, a cross tabulation of the questions was performed to determine the percent agreement between Test I and Test II.

## **RESULTS**

Of the 249 food safety surveys mailed out, 96 (39%) were completed and returned in the Test I phase. Thirty-eight (40%) of the agencies that replied were located in Athens. Forty-two percent of respondents came from Athens-Clarke County, the only metropolitan county, 21% were located in suburban counties, and 38% were from counties characterized as experiencing rural growth. Participant characteristics can be seen in Table 1. The majority of respondents classified themselves as a director (38%) or manager (31%) of the agency. Larger percentage of food pantries (35%) and congregate meal sites (33%) were represented in the survey responses than other agency types. Slightly more than half (53%) of all survey participants indicated receiving 40% or less of their food from the FBNEG.

### Interest in Services

When participants were asked to indicate their interest in receiving food safety and nutrition training workshops, nearly 50% indicated not being interested in either type of training, while 20% remained uncertain of the need for training. This left only 30% to show an interest in training. Although there was a lack of interest in direct training, 73% indicated a willingness to access information if it were made available on the FBNEG website. Most participants indicated wanting to receive workshops either at their agency (35%), in their community (31%), or at the FBNEG (24%). Table 1 also contains responses to questions about member agencies' interests

in additional services the FBNEG would consider providing. These questions were added to the food safety survey at the request of the FBNEG.

### Food Safety Practices of Concern

Table 2 addresses temperature-monitoring procedures used by the participating agencies. Based on the data collected, 12.8% (n=11) of participants who indicated having both a refrigerator and freezer said they do not monitor the air temperature of either the refrigerator or freezer. Overall, the majority of participants indicated properly monitoring the air temperature of the refrigerator and/or freezer in their agency. While this is an excellent practice to maintain awareness of properly operating equipment, it alone is not sufficient to monitor the safety of stored food.

In considering the use of thermometers to measure the food temperature of stored meat and poultry, fresh meat and poultry should be monitored at least daily. Frozen food should be checked upon receiving and placing in storage and then should be checked on a periodic basis of every few days if the storage equipment is operating properly. An initial review of the data reveals that there is low compliance with daily monitoring of fresh meat and poultry temperatures (Table 3). However, a closer look reveals differences among the types of member agencies. An extremely high percentage of foster homes never use thermometers to monitor meat and poultry temperatures. Ninety percent do not monitor fresh meat and poultry; 83% do not monitor frozen meat and poultry temperatures. A much higher percentage of food pantries and congregate meal sites use thermometers at least sometimes or daily to monitor the temperature of meat and poultry. However, 29% of food pantries and 9% of congregate meal sites do not use thermometers to monitor fresh meat and poultry temperatures daily, while 31% of food pantries and 8% of congregate meal sites do not use thermometers to monitor frozen

meat and poultry temperatures. Improvements should be made in both of these practices, especially in the daily monitoring of refrigerated meats and poultry.

The assessment of home canned food use by agency indicated that foster homes tended to be more likely (56.2%) than other agencies to accept and use home canned foods (Table 4). Home canned foods are used less frequently by other agency types, for example only 30% of soup kitchens or shelters, and 21% of food pantries accept and/or use them. Congregate meal sites reported the lowest percentage of home canned food use (7.4%). However, the use of home canned foods in any foodservice situation should not be permitted at all (Food and Drug Administration, accessed 2004).

Congregate meal sites and food pantries also reported being more likely than any other type of agency to give food safety and/or storage information with the food they provided (20% (n=6) of food pantries and 29% (n=8) of congregate meal sites). Paid coordinators were also found to be more likely than volunteer coordinators to give information on food safety and/or storage (33% vs. 13%).

When asked who is responsible for monitoring food safety, no clear trend emerged among agency types. Food pantries, soup kitchens/shelters and congregate meal sites all report that volunteers and/or paid staff are responsible for this activity. Congregate meal sites do report the greatest frequency of paid staff being responsible. Food pantries are most likely to identify both volunteer and paid staff as responsible parties.

### Food Safety Scores

Overall, the participants' mean scores for food safety knowledge and practice were as follows: food safety knowledge = 5.7 (maximum 11 points), storage practices = 3.9 (maximum 7 points), temperature control = 1.5 (maximum 7 points), and cleaning practices = 3.8 (maximum

12 points) (Table 6). The mean food safety knowledge score represents obtaining only 52% of the possible points. The lowest mean score (21%) was obtained in the area of temperature control. The mean score on the cleaning scale was the next lowest (32%). The highest temperature score among all participants was 5 points out of the possible 7, which was only obtained by three participants, while 76% of participants scored 2 points or less (29%). Sixty percent of respondents scored 2 points or less (17%) on the cleaning score. Sixty-seven percent of participants scored 4 points or less on the storage practice scale with the mean score being 3.8 (56%).

When the mean scores were evaluated by agency type, the only significant difference found was that congregate meal sites scored significantly higher on the cleaning score than food pantries (Table 7). The mean food safety knowledge and practice scores were compared with interest in attending sanitation and safe food handling workshops (Table 8). The data showed that individuals not likely to use sanitation and food handling training workshops scored significantly lower on food safety knowledge than those very likely to attend. Individuals very likely to attend a food handling and sanitation workshop scored significantly higher on the cleaning and temperature scores than those not likely to attend a workshop. The mean scores were also assessed based on the percent of food received from the FBNEG. These data showed no significant difference in scores based on amount of food received other than those receiving 61-80% of food received a higher temperature score than those receiving 81-100% of food from the food bank.

Food safety knowledge and practice scores were also compared with training provided and the monitoring of food brought into the agencies. There was no significant difference found in the mean scores based on prior training except for the storage score, which showed that those

requiring prior training scored significantly higher than agencies not requiring any prior training (Table 9). Individuals working in agencies that provided food handling/sanitation training in the past year had significantly higher temperature score. There were no other significant differences in mean scores based on training provided in the past year (Table 10). With the exception of the cleaning score, all of the mean food safety knowledge and practice scores were lower when no one was assigned to monitor the safety of the food brought into the agency (Table 11). The highest mean scores were obtained when participants indicated having a paid staff member involved in monitoring the safety of the food.

Correlations among food safety knowledge and practices were measured to determine if greater food safety knowledge was reflected in better practices. Food safety knowledge was correlated with storage practices ( $r=.52$ ,  $p<.0001$ ). A weaker correlation was found between food safety knowledge and temperature practices ( $r=.23$ ,  $p<.05$ ). There was no correlation between food safety knowledge and cleaning practices ( $r=.11$ ,  $p>.05$ ).

Finally, food safety knowledge and practice scores were examined based on the county population characteristics under the Four Georgias concept. The data showed no significant difference in scores based on county type.

### Reliability

The percent agreement between Test I and Test II for the survey is listed in Table 13. An agreement of 90 to 100% was seen for 10 variables; 6 variables had an agreement of 80-89%; 16 variables had a agreement of 70 to 79%; and 14 variables had an agreement of less than 60%. Overall, 38% of the variables had a percent agreement of 80% or more.

## **DISCUSSION**

The results show that although there was a low interest in sanitation and food handling training workshops among this population, it was not any lower than the interest in nutrition education. These results are comparable to a study based on in-person interviews of 24,000 American Second Harvest (A2H) agencies. The study found that 27% of agencies were interested in nutrition education and only 18% wanted additional training in food handling (American Second Harvest, accessed 2004a). These combined findings would indicate that the agencies feel the way things have been done in the past are working for them and there is no need to change their way since they have not experienced any problems thus far. Perhaps most participants' feel that their greatest priority is obtaining food and supplies to pass on to their clients as best they can. Even though interest in workshops was low, 73% did indicate a willingness to access information if it were made available on a FBNEG website. Therefore, developing food safety information to place on the Internet is something that could be done to reach a large portion of this target audience. As expected, most agencies that might attend workshops prefer to have them provided at their agency or in their community. It is easy to understand that convenience and saving time are important factors that the agencies consider when thinking about attending training sessions.

Foster homes could be expected to have different degrees of food safety knowledge and types of food handling behaviors than foodservice operations. The responses to this survey indicate that their practices are more like those revealed in consumer surveys than those used in the other agency types. For example, a high percentage (90%) of foster homes do not use food thermometers to monitor meat and poultry storage temperatures. Recent surveys show that the number of consumers using thermometers is not very high. Anderson et al. (2004) found that



only 5 of 99 home food preparers indicated using a food thermometer to determine doneness of meat, poultry or seafood. While 30 participants indicated owning a thermometer, only 6 indicated using it on a regular basis. The most common methods indicated for checking meat, poultry and seafood doneness were cutting the food with a knife ( $n = 40$ ) or poking it with a utensil ( $n = 36$ ) (Anderson et al, 2004). In another study to identify key behaviors associated with major pathogen control, thermometer use was ranked the number one behavior to make sure that meat and poultry are cooked to safe temperatures (Medeiros et al, 2001b). Our data also show an obvious need for more education on thermometer use for various tasks. Emphasizing recommended cooking temperatures, for example, would be most critical for locations where food is prepared and served, such as the congregate meal sites, soup kitchens and foster homes.

There were a high percentage of foster homes (56.2%) that indicated using home canned foods. This can be risky if a person is not aware of proper canning procedures and the risks from improperly canned foods. A nationwide survey of consumer home food safety practices by Williamson et al. (1992) revealed that only 69% of home food preparers knew that botulism was associated with improperly processed canned foods. Findings from this survey and the Williamson and others survey indicate that many people may not have a clear understanding of basic foodborne illness risks. Unacceptable numbers of soup kitchens, food pantries and congregate meal sites in northeast Georgia accept and/or use home canned foods. Many consumers are unaware of the dangers of improperly handling food, which emphasizes the need for food safety education among all types of food handlers.

Very few participants reported providing food safety and/or storage information to their clients. The Georgia Hunger Study (1997) found that most of the food providers felt that even if clients received safe food, most of them did not know how to store or prepare the food. This

would suggest that more effort needs to be put into providing clients with recipes and safe food handling instructions in order to eliminate waste and promote safe food handling practices.

The food safety knowledge and practice scores show that participants scored higher on the food storage practice questions (average of 3.9 points out of 7) and the food safety knowledge questions (average of 5.7 points out of 12) than on the temperature control and cleaning practices questions. This supports the theory that individuals tend to have knowledge of the right thing to do but do not put their knowledge into practice. Although the food safety knowledge score average was the highest, the results still indicated areas of concern. Only 35% of participants indicated having knowledge of the appropriate way to check the temperature of cooked meat and only 23% knew the internal temperature that must be reached for a food to be safely reheated. Both of these knowledge questions are related to temperature control and show the limited amount of knowledge this population segment has on using food thermometers to determine safe cooking temperatures. Lack of knowledge in this area may explain why the average temperature control score was so low among survey participants. If the participants do not have a working knowledge of proper thermometer use, it is unlikely they will be able to properly use thermometers to monitor food temperatures.

Another area where education was found to be lacking was in the importance of recognizing can defects that pose a food safety risk. Only 57% of participants indicated knowing that a can dented at the junction of the side or end could pose a safety risk. This illustrates the need for education on can defects so that volunteers and employees will be able to recognize potentially dangerous cans before they reach the clients.

The mean storage practice score was the highest of the four scores because the majority of participants knew that food should not be stored under plumbing and should always be

appropriately labeled in intact packages. Yet, few participants were aware of the importance of using product “use by” dates to determine the safety of food. Only 10% of participants indicated having an employee date packages upon arrival and only 58% used the manufacturer’s pre-stamped date to determine “use by” dates for their stock. Also only 57% indicated following the “first in first out” (FIFO) procedure. These findings coincide with a recent Minnesota study in which many food bank clients expressed concern about receiving out-of-date products, some of which were up to 5 years past an expiration date (Verpy et al, 2003). This emphasizes the need to educate staff and volunteers on the importance of observing use by dates on foods before distributing them and the use of the FIFO procedure to prevent clients from receiving out of date products that could lead to foodborne illness. Staff and volunteers also need to be educated on the importance of having trained individuals monitor the safety of food in storage because other frequent complaints noted in the Minnesota study included receiving moldy bread, cans with yellow labels, food tasting odd or “tinny,” and spoiled milk (Verpy et al, 2003).

When analyzing contributions to the cleaning score, there were a wide variety of practices reported on individual items in the scale. However, the average score was definitely lowered by the high report of respondents not maintaining cleaning logs (77% of respondents) and not keeping garbage covered (48% of respondents). Improvements can also be made in cleaning of floors and work surfaces. Eighteen percent of respondents reported washing tile and stainless steel surfaces only on an “as needed” basis instead of as a scheduled practice and only 57% indicated cleaning these surfaces on a daily basis. Thirty percent of respondents indicated sweeping storage room floors on an “as needed” basis and 29% reported sweeping on a weekly basis, while only 32% followed the most desirable practice of sweeping daily. The greatest frequencies of desired practices were reported for using an approved pest control operator (76%)

and storing garbage away from food preparation areas (73%). The wide variation in cleaning practices could be due to the fact that the U.S. Food Code does not specify a required frequency of cleaning, but only states that “the physical facilities shall be cleaned as often as necessary to keep them clean” (Food and Drug Administration, accessed 2004).

The lack of proper temperature control practices demonstrated in this survey by the temperature control score average of 1.5 points out of a possible 7 points (21% correct) is similar to that of the general population. A nationwide survey showed that 18% of respondents would have no concern about leaving cooked meat or poultry at room temperature for more than four hours (Williamson et al, 1992). This nationwide survey also showed that 14% of respondents said that they would store leftover stew in the container they cooked it in and 54% would store it in a deep container, while only 32% said they would store it in a shallow container. These practices as well as other findings from our survey indicate that respondents are unaware of the importance of monitoring the temperature of food throughout the cooking process to make it safe for consumption and the role of proper cooling procedures to keep food safe to eat at a later time. When factors contributing to outbreaks of foodborne disease were identified for the U.S. from 1977 to 1982, it was found that inadequate cooling was associated with the largest number of outbreaks (Bryan, 1998).

The fact that individuals very likely to attend a food handling and sanitation workshop had significantly higher food safety knowledge scores and scored significantly higher on the cleaning and temperature scores shows that having a mentality of wanting to gain new knowledge may have a positive effect on the amount of food safety knowledge put into practice. Research has found that individuals who are aware of and have some knowledge of health risks associated with certain behaviors are more likely to take preventative actions (Cody and Hogue,

2003). Therefore, individuals who are willing to attend training workshops may have a more realistic view of their level of susceptibility to foodborne illness. This finding emphasizes the fact that in order for food safety education to be effective, it must both increase awareness about risks and motivate individuals to change their food handling behaviors (Medeiros et al, 2001a).

There were very few significant differences seen in the food safety knowledge and practice scores based on the provision of prior training either in the last year or before employment. These results may indicate that the trainings offered or required do not address the most critical areas of food safety for preventing foodborne illness. This supports the need for more effective educational programs to address the factors that lead to the highest incidences of foodborne illness, which have been identified as practicing personal hygiene, cooking foods adequately, avoiding cross-contamination, keeping foods at safe temperatures, and avoiding food from unsafe sources (Medeiros et al, 2001b).

The fact that only 38% of the variables in the survey had a percent agreement of 80% or more calls into question the reliability of this instrument since various sources indicate that 80% or better is needed to indicate high reliability. However, any measurement taken repeatedly is subject to specific types of measurement error. Memory effects, practice effects and even the act of taking the same test twice will affect the scores. The memory effect can be a result of measuring a population two times in a row using the same instrument, because answers given the first time will influence the responses given the second time. Practice effects are evident when there is an overall increase in scores during the second test phase. Therefore, when applying the test-retest method it must be assumed that the behavior being measured stays consistent over time (Welke, 1992). With this survey, it is possible that participants may have gained more knowledge about the subject between time one and time two, resulting in a practice effect.

## **LIMITATIONS**

One limitation of a self-administered survey is that participants could guess the right answers to questions, which would result in an inaccurate representation of the population's baseline knowledge of safe food handling practices. In order to reduce the occurrence of guessing, participants were provided with a choice of "Don't know" on most questions, so they were not forced to select an answer and perhaps guess the correct one. It is recognized that in the self-administered survey, respondents may still have guessed at other answer choices, hoping to be correct.

Although we have designed questions to ensure accurate and reliable responses, the mail survey is based on self-report, meaning that we must rely completely on the individual honesty of our participants to provide us with accurate and truthful information. Secondly, by using a paper survey we are eliminating all contact with the participants so that no information can be provided to help clarify questions. Another limitation is that our survey questions only addressed selected food safety issues. Therefore, the results do not provide a complete understanding of the entire scope of the participants' food safety knowledge and/or practices. Finally, using a mail survey increased the possibility of a lower response rate, especially since many of our participants may have had a lower education and/or literacy level. In order to improve the response rate, an incentive of 100 pounds free food was provided for returning the questionnaire within a specified time period.

The people who received the questionnaire held various roles within the organizations. This means that the amount of direct exposure to food handling and sanitation practices is likely to vary greatly. Therefore, the responses may not reflect the knowledge and practices held or used by others in the organization. Also, due to diversity in the types of member agencies and

the amount and type of food handling conducted in each, a larger sample size would have enabled us to look at the data in more detail by agency type and/or the role of the participant within the agency.

There were also limitations associated with the re-test phase of this study. There is the possibility that the same person did not answer the questionnaire both times, either due to the person no longer working there or the survey may not have been received by the same person each time even though the survey was addressed to the same person each time it was mailed. Also, the second phase of the survey was administered after a longer time period than normally recommended, which would have allowed participants to learn additional information prior to completing the survey the first time, leading to a practice effect.

## **IMPLICATIONS FOR RESEARCH AND PRACTICE**

This instrument can be the basis for a reliable and valid survey instrument to measure food safety knowledge and practices of emergency food providers that can be used in other areas of the state of Georgia and in other states. The questions with low percent agreement need to be refined before using again, but many questions are reliable enough to use as they are written. In repeating the survey with another population, it is also recommended that the survey be completed by food handlers instead of program administrators. Administering the instrument by personal interviews could also help with response rates and clarification of questions.

It is apparent that many clients of the FBNEG and therefore other emergency food assistance programs need to improve temperature control practices, thermometer use, cleaning and storage practices. Various approaches will need to be employed in addition to the traditional workshop approach in order to reach the majority of this population segment. Further work with

this audience is needed to determine the roles of both knowledge and motivation in adherence to recommended food handling practices.

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**Table 1. Characteristics of Member Agencies Participating in the Survey (n=96)**

<b>Variable</b>	<b>n*</b>	<b>% responding to each question</b>
Job title of person completing the survey (or describe your role)		
Director	36	38
Manager	29	31
Foster Parent	14	15
Cook	1	1
**Other	15	16
Which of the following best describes your agency?		
Food Pantry	30	35
Soup Kitchen	4	5
Shelter	7	8
Congregate Meal Site	28	33
Foster Home	17	20
What percent of the food in your feeding programs comes from the Food Bank of Northeast Georgia (FBNEG)?		
0-20%	29	32
21-40%	19	21
41-60%	16	18
61-80%	11	12
81-100%	15	17
Number of different cities surveyed	27	
Provide information on food safety and/ or storage to consumers or recipients with the food		
Food Pantry	6	21
Soup Kitchen/Shelter	4	40
Congregate Meal Site	8	33
Foster Home	3	20
Are food handlers required to have any training prior to employment?		
Yes	22	29
No	55	71

\* Total n for each variable does not equal 96 due to missing responses.

\*\* "Other" includes: secretary, pastor/clergy, volunteer, assistant teacher, treasurer, and principal

<b>Variable</b>	<b>n*</b>	<b>% responding to each question</b>
In the past year was any training in food handling/sanitation provided for you employees?		
Yes	32	42
No	44	58
<b>Interest in Additional Services</b>		
Interest in Sanitation Workshops		
Not very likely	31	35
Not likely	15	17
Uncertain	13	15
Likely	13	15
Very Likely	17	19
Interest in Nutrition Education Workshops for Staff and Volunteers		
Not very likely	28	31
Not likely	14	16
Uncertain	20	22
Likely	11	12
Very Likely	17	19
Interest in Nutrition Education Workshops for Clients		
Not very likely	38	43
Not likely	7	8
Uncertain	14	16
Likely	12	13
Very Likely	18	20
Interest in Menu Planning Workshops		
Not very likely	38	43
Not likely	7	8
Uncertain	18	20
Likely	10	11
Very Likely	16	18

<b>Variable</b>	<b>n*</b>	<b>% responding to each question</b>
Interest in Special Dietary Needs Workshops		
Not very likely	38	43
Not likely	13	15
Uncertain	17	19
Likely	5	6
Very Likely	15	17
Where would you prefer the services you are interested in to be offered?		
In Community	26	31
At Agency	29	35
At FBNEG	20	24
In Community and at Agency	3	4
At Agency and at FBNEG	1	1
In Community and at FBNEG	3	4
None of the Above	2	2
If nutrition information were made available on the FBNEG website would you access this information?		
Yes	69	73
No	25	27
How likely would you be to use suggested uses for food bank products?		
Not very likely	17	18
Not likely	10	11
Uncertain	22	24
Likely	15	16
Very Likely	28	30
How likely would you be to use legislative action information?		
Not very likely	31	34
Not likely	18	20
Uncertain	17	19
Likely	13	14
Very Likely	12	13

<b>Variable</b>	<b>n*</b>	<b>% responding to each question</b>
How likely would you be to use information on additional food assistance programs?		
Not very likely	36	39
Not likely	6	7
Uncertain	15	16
Likely	16	17
Very Likely	19	21
Would your agency be interested in a delivery service?		
Yes	25	27
No	36	40
Yes, to agency only	29	32
Maybe	1	1
Would you be interested in picking up your food from a central delivery site in your county or would you only be interested in direct delivery to your agency?		
Yes	24	61
No	37	39

**Table 2. Identification of temperature monitoring procedures for participating agencies**

<b>Type of Storage</b>	<b>Facility has:</b>		<b>Monitor air temperature of:</b>							
			Refrigerator		Freezer		Both refrigerator & freezer		Neither refrigerator or freezer	
			n	%	n	%	n	%	n	%
Refrigerator/cooler	7	8	5	71.4	0	0	2	2.3	0	0
Freezer	2	2.3	0	0	2	2.3	0	0	0	0
Both refrigerator & freezer	77	89.5	2	2.3	2	2.3	62	72.1	11	12.8

\*Percents do not equal 100 due to rounding

**Table 3. Frequency of thermometer use to monitor temperatures of fresh and/or frozen meat and poultry based on agency type.**

Agency Type	Thermometer Use for fresh meat and poultry						Thermometer use for frozen meat and poultry					
	Do not use		Sometimes Use		Use Daily		Do not use		Sometimes Use		Use Daily	
	n	%	n	%	n	%	n	%	n	%	n	%
Food Pantry	2	29	0	0	5	71	5	31	2	13	9	56
Soup kitchen/Shelter	1	14	4	57	2	29	1	13	4	50	3	38
Congregate Meal Site	1	9	3	28	7	64	1	8	3	25	8	67
Foster Home	9	90	0	0	1	10	10	83	1	8	1	8
Totals	13	37	7	20	15	43	17	35	10	21	21	44

**Table 4. Frequency of acceptance and use of home canned foods by agency type and coordinator status**

	Agency Type							
Accept &/or use home canned food	Food Pantry		Soup Kitchen/Shelter		Congregate Meal Site		Foster Home	
	n	%	n	%	n	%	n	%
Yes	6	20.7	3	30.0	2	7.4	9	56.2
No	23	79.3	7	70.0	25	92.5	7	43.8

**Table 5. Identity of responsible party for monitoring the safety of food brought into the agency**

	Type of Monitor:							
Agency Type	Volunteer		Paid staff		Both		No one	
	n	%	n	%	n	%	n	%
Food Pantry	14	48.3	8	27.6	7	24.1	0	0
Soup kitchen/Shelter	4	36.4	7	63.6	0	0	0	0
Congregate Meal Site	2	7.4	21	77.8	2	7.4	2	7.4
Foster Home	5	33.3	2	13.3	0	0	8	53.3

**Table 6. Mean overall food safety knowledge and practice scores for all participants.**

Type of Score	Mean Score:	% Correct	Range of Scores
Food Safety Knowledge Score (Range 0-11)	5.7	52	0-10
Temperature Score (Range 0-7)	1.5	21	0-5
Storage Score (Range 0-7)	3.9	56	0-6
Cleaning Score (Range 0-12)	2.2	32	0-7

**Table 7. Mean food safety knowledge and practice scores by agency type.\***

Agency Type	Food Safety Knowledge Score	Cleaning Score	Storage Score	Temperature Score
Food Pantry	6.0 ± 2.0a	3.6 ± 2.2a	3.9 ± 1.8a	1.6 ± 1.3a
Soup Kitchen/Shelter	6.4 ± 1.3a	4.0 ± 3.1ab	4.4 ± 0.7a	1.7 ± 1.0a
Congregate Meal Site	5.9 ± 2.3a	5.6 ± 2.6b	4.1 ± 1.0a	1.6 ± 1.4a
Foster Home	5.6 ± 1.2a	4.2 ± 2.3ab	3.8 ± 1.4a	1.1 ± 1.2a

\*p ≤ .05; Means in the same column followed by the same letters are not significantly different

**Table 8. Mean food safety knowledge and practice scores based on interest in sanitation and safe food handling workshops.\***

Level of Interest	Food Safety Knowledge Score	Cleaning Score	Storage Score	Temperature Score
Not likely at all	5.7 ± 1.9ab	1.9 ± 1.7ab	4.0 ± 0.8ab	1.2 ± 0.9a
Not likely	5.1 ± 2.1a	1.7 ± 1.5b	3.7 ± 1.4b	0.9 ± 0.9a
Uncertain	5.5 ± 2.2ab	2.7 ± 1.7ab	3.5 ± 1.3b	1.6 ± 1.5ab
Likely	6.5 ± 2.0ab	1.8 ± 1.8ab	3.6 ± 1.4b	1.7 ± 1.6ab
Very likely	6.8 ± 1.7b	2.9 ± 1.9a	4.7 ± 0.8a	2.5 ± 1.4b

\*p ≤ 0.05; Means in the same column followed by the same letters are not significantly different

**Table 9. Mean food safety knowledge and practice scores based on requirement of training prior to employment.\***

<b>Training Prior to Employment</b>	<b>Food Safety Knowledge Score</b>	<b>Cleaning Score</b>	<b>Storage Score</b>	<b>Temperature Score</b>
Required	6.2 ± 1.5a	2.4 ± 1.5a	4.5 ± 0.6a	1.8 ± 1.2a
Not required	6.0 ± 2.0a	2.5 ± 1.8a	3.9 ± 1.1b	1.6 ± 1.4a

\*p ≤ .05; Means in the same column followed by the same letters are not significantly different

**Table 10. Mean food safety knowledge and practice scores based on training provided in food handling and sanitation in the last year.\***

<b>Training in Last Year</b>	<b>Food Safety Knowledge Score</b>	<b>Cleaning Score</b>	<b>Storage Score</b>	<b>Temperature Score</b>
Provided	6.2 ± 1.7a	2.8 ± 1.7a	4.2 ± 0.9a	2.2 ± 1.3a
Not provided	5.9 ± 2.0a	2.1 ± 1.6a	3.9 ± 1.1a	1.5 ± 1.2b

\*p ≤ .05; Means in the same column followed by the same letters are not significantly different

**Table 11. Mean food safety knowledge and practice scores based on presence of a monitor responsible for checking the safety of food brought into the agency.\***

<b>Type of Monitor</b>	<b>Food Safety Knowledge Score</b>	<b>Cleaning Score</b>	<b>Storage Score</b>	<b>Temperature Score</b>
Volunteers	6.1 ± 1.7ab	3.2 ± 2.1b	4.1 ± 1.1ab	1.3 ± 1.0b
Paid Staff	5.9 ± 2.0ab	5.6 ± 2.6ab	4.2 ± 0.9a	1.8 ± 1.3ab
Both volunteers and paid staff	7.2 ± 1.8a	4.2 ± 2.4ab	4.3 ± 0.8a	2.3 ± 1.5a
No one	5.5 ± 1.5b	4.0 ± 2.4ab	3.5 ± 0.7b	1.2 ± 1.4b

\*p ≤ .05; Means in the same column followed by the same letters are not significantly different

**Table 12. Mean food safety knowledge and practice scores based on county type.\***

<b>Training in Last Year</b>	<b>Food Safety Knowledge Score</b>	<b>Cleaning Score</b>	<b>Storage Score</b>	<b>Temperature Score</b>
Metropolitan	5.6 ± 2.2a	2.0 ± 1.8a	3.9 ± 1.5a	1.5 ± 1.3a
Suburban	5.9 ± 2.2a	2.3 ± 1.8a	4.1 ± 1.3a	1.4 ± 0.9a
Rural Growth	5.8 ± 2.3a	2.2 ± 1.7a	3.8 ± 1.2a	1.6 ± 1.5a

\*p ≤ .05; Means in the same column followed by the same letters are not significantly different

**Table 13. Percent Agreement between Test I and Test II for Categorical Variables**

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
1. My facility has:				39	87
A cooler/refrigerator	1	4	4	3	
A freezer	2	1	4	1	
Both a cooler/refrigerator and a freezer	3	40	36	35	
2. Do you or your employees monitor the air temperature of your cooler/refrigerator and/or freezer?				34	74
We monitor the cooler/refrigerator only	1	3	3	2	
We monitor the freezer only	2	3	3	2	
We monitor both cooler/refrigerator and freezer	3	31	32	27	
No, we do not monitor the cooler/refrigerator or freezer	4	7	7	3	
3. Do you or your employees use a food thermometer to monitor the temperature of fresh meat and poultry in the refrigerator/cooler?				32	73
We don't have food thermometers	1	5	5	2	
We have one but don't use it	2	0	1	0	
We have one and sometimes use it	3	4	2	1	
We have one and use it daily or several times daily	4	9	6	5	
We do not handle fresh meat and/or poultry	5	26	28	24	



Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
4. Do you use a food thermometer to monitor the temperature of meat and poultry in the freezer?				25	57
We don't have food thermometers	1	6	12	5	
We have one but don't use it	2	1	1	0	
We have one and sometimes use it	3	8	5	1	
We have one and use it daily or several times daily	4	12	9	5	
We do not handle fresh meat and/or poultry	5	17	15	14	
5. Please describe your pest control system. Specify who carries out the pest control maintenance i.e. an outside pest control company or self-administered from within the agency.				30	79
Outside pest control company	1	26	28	25	
Self Administered	2	8	6	5	
6. Indicate how often each of the following is done:				14	45
A. Tile and stainless steel surfaces are cleaned by spraying or sponging with a detergent solution					
Daily	1	14	16	11	
Weekly	2	7	2	0	
Monthly	3	1	1	0	
As needed	4	8	7	2	
Don't know	5	1	1	1	
continues next page					

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
6. Indicate how often each of the following is done: (cont.)				20	53
B. Ceilings and light fixtures are checked for cobwebs, dust, dirt or condensation and if found are wiped or rinsed with a sponge or cloth					
	1	2	2	0	
Daily	2	10	11	7	
Weekly	3	5	7	4	
Monthly	4	15	15	8	
As needed	5	5	1	1	
Don't know					
C. Storage room floors are swept/vacuumed				19	50
Daily	1	11	24	8	
Weekly	2	10	14	5	
Monthly	3	2	1	0	
As needed	4	13	11	6	
Don't know	5	2	1	0	
D. Storage room floors are mopped or pressure sprayed				14	44
Daily	1	5	5	2	
Weekly	2	11	10	6	
Monthly	3	3	1	0	
As needed	4	10	10	5	
Don't know	5	3	2	1	
7. Is there a cleaning/maintenance log kept in the facility?				34	77
Yes	1	8	10	6	
No	0	32	30	28	

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
8. Is fresh produce kept in clean, well-maintained bins/containers?				29	83
Yes	1	25	28	24	
No	0	4	0	0	
9. How are garbage cans located within your facility?					
Stored away from food storage and handling areas				33	73
Yes	1	31	29	24	
No	0	14	12	9	
Stored near or within food storage/handling areas				34	76
Yes	1	11	7	5	
No	0	34	34	29	
Kept covered at all times				35	73
Yes	1	20	20	16	
No	0	25	21	19	
Usually not kept covered				35	78
Yes	1	9	10	6	
No	0	36	31	29	
10. Are ceiling lights shielded to protect against broken glass falling into unpackaged foods?				31	79
Yes	1	31	30	28	
No	0	4	4	2	
I do not know or I am not sure	2	4	2	1	

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
11. Is any food stored under plumbing pipes or other types of pipes?				43	96
Yes	0	0	0	0	
No	1	45	43	43	
12. Are all products clearly labeled with product name, contents and expiration date?				37	82
Yes	1	43	39	37	
No	0	2	3	0	
13. Are any home canned foods accepted and/or used in your facility?				36	80
Yes	0	12	9	6	
No	1	33	35	30	
14. Are all inner packages of boxed dry goods intact and sealed?				43	91
Yes	1	44	42	41	
No	0	1	1	0	
Do not handle boxed dry goods	2	2	1	2	
15. Are safety seals and safety strips on bottles and medicine containers checked to see if they are intact?				32	71
Yes	1	37	33	29	
No	0	1	1	0	
Do not handle any bottles or medicine containers	2	7	8	3	
16. Are leaking containers discarded and surrounding containers checked for contamination?				35	78
Yes, but other containers are not checked	1	3	4	1	
Yes, other containers are checked	2	42	36	34	
No	0	0	0	0	

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
17. How do you determine use by dates on your stock of food?				29	64
Employee of agency dates foods upon arrival	1	4	3	1	
Go by manufacturers pre-stamped dates	2	30	30	22	
Third party provided chart	3	0	0	0	
Go by appearance	4	7	7	4	
I do not know or I am not sure	5	4	4	2	
18. Are you familiar with FIFO (first in first out) rule for the order in which foods should be used?				30	65
Yes, but do not follow this procedure	1	2	1	1	
Yes, sometimes follow this procedure	2	11	13	5	
Yes, always follow this procedure	3	25	25	20	
No, I am not familiar with this procedure	4	8	5	4	
19. Do you provide any of the following information to consumers or recipients with the food?					
Recipes				34	79
Yes	1	9	10	6	
No	0	34	31	28	
Information on nutrition and health				29	67
Yes	1	13	15	8	
No	0	30	26	21	
Information on food safety and/or storage				34	79
Yes	1	9	10	6	
No	0	34	31	28	
continues next page					

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
19. Do you provide any of the following information to consumers or recipients with the food? (cont.)					
None of the above				27	63
Yes	1	26	20	15	
No	0	17	21	12	
20. Who is responsible for monitoring the safety or integrity of food brought into your agency?				32	70
Volunteers	1	15	13		
Paid staff member	2	18	18		
Both volunteers and paid staff	3	7	9		
No one is designated with this duty	4	6	3		
21. Who is responsible for maintaining the safety or integrity of stored items?				34	76
Volunteers	1	14	13	9	
Paid staff member	2	19	20	19	
Both volunteers and paid staff	3	6	5	3	
No one is designated with this duty	4	6	4	3	
22. What is the acceptable way to thaw food?				36	88
In the refrigerator at 41°F or lower	1	39	38	36	
Under hot running water	2	1	0	0	
At room temperature on the counter	3	0	0	0	
I do not know or I am not sure	4	1	0	0	

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
23. To check the temperature of a piece of meat, insert the thermometer:				22	58
½ inch deep	1	2	0	0	
Close to the bone	2	8	8	3	
In the thickest part and in more than one spot	3	13	17	10	
At a 45° (degree) angle	4	1	1	0	
I do not know or I am not sure	5	14	11	9	
24. To safely re-heat food, you should heat it:				20	56
To 165°F for 15 seconds within 2 hours	1	11	9	7	
For 4 hours in a steam table at 140°F.	2	0	0	0	
To 155°F and then cover	3	5	0	0	
Until it is hot to the touch and then serve it immediately	4	5	7	2	
I do not know or I am not sure	5	15	16	11	
25. If you or your employees found cans with the following conditions which ones would you discard?					
Dented at junction of side and end				28	61
Yes	1	26	32	20	
No	0	20	14	8	
Sharp dent or dent on seam				35	76
Yes	1	37	38	32	
No	0	9	8	3	
Swollen				45	98
Yes	1	45	44	44	
No	0	1	2	1	
continues next page					

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
25. If you or your employees found cans with the following conditions which ones would you discard? (cont.)					
Pitted rust or leaking				45	98
Yes	1	1	2	1	
No	0	45	44	44	
Bulging top or bottom				46	100
Yes	1	45	45	45	
No	0	1	1	1	
I do not know or I am not sure				45	98
Yes	1	1	2	1	
No	0	45	44	44	
26. If you or your employees found jars in the following conditions which ones would you discard?					
Inner seal or tamper resistant tape missing or broken				43	96
Yes	1	45	43	43	
No	0	0	2	0	
Crooked lid, vacuum button raised, other evidence that the cap has been opened				44	98
Yes	1	45	44	44	
No	0	0	1	0	
continues next page					



Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
26. If you or your employees found jars in the following conditions which ones would you discard? (cont.)					
Leaking, cracked or chipped, product discolored				45	100
Yes	1	45	45	45	
No	0	0	0	0	
I do not know or I am not sure				45	100
Yes	1	0	0	0	
No	0	45	45	45	
27. Hands should be washed with soap and water for at least how long?				21	46
One minute	1	15	21	11	
30 seconds	2	12	17	6	
20 seconds	3	10	5	4	
10 seconds	4	9	2	0	
28. In a refrigerator, a package of raw ground beef should be stored:				27	68
In the door shelf	1	3	0	0	
Above cooked foods	2	1	2	1	
Below cooked foods	3	27	35	25	
Next to the lettuce	4	0	0	0	
I do not know or I am not sure	5	9	2	1	

Variable	Response	Test I Frequency	Test II Frequency	Number of Pairs	Percent Agreement
29. You have only one ceramic cutting board available for food preparation. You have just sliced some chicken breasts for cooking and now need to prepare a green salad. What should you do to the cutting board before you use it for preparing the salad?				34	81
Scrub it with hot water and soap and then sanitize.	1	38	38	34	
Dry it with a paper towel.	2	0	0	0	
Rinse it under very hot water.	3	0	1	0	
Turn it over and use the other side.	4	0	2	0	
I do not know or I am not sure.	5	4	0	0	

## **CHAPTER 4**

### **SUMMARY AND CONCLUSIONS**

#### Overall Purpose

This study was conducted to 1) assess the level of food safety knowledge and practices of the staff and/or volunteers of member agencies of the FBNEG, and 2) determine the best way to effectively provide food safety information to the member agencies and 3) test the reliability and validity of the Food Bank of Northeast Georgia Agency survey instrument developed for this project.

#### Major Findings

Overall it was found that the staff and volunteers of the member agencies of the FBNEG have a low level of food safety knowledge and practices. All four areas of food safety knowledge and practice assessed by this survey need to be addressed in educational programs based on the fact that 56% was the highest mean score obtained for any given area. Special emphasis needs to be placed on the importance of temperature control and proper thermometer use, due to the extremely low level of knowledge (21% correct) measured. Furthermore, training needs to be used to educate employees and volunteers on the importance of recognizing can defects that pose a safety risk and observing use by dates on foods.

The low level of compliance indicated for most of the food safety practices indicates that these agencies would fall into a “high risk” category. It was found that adherence to food safety practices was higher if there were actual written out or established procedures or policies to be followed, than if the knowledge had to be obtained or applied on their own. This would suggest

a need to provide member agencies with written food safety guidelines to be followed on a regular basis.

Participants indicated a low level of interest in food handling training workshops, but 73% indicated a willingness to access information if it were made available on the FBNEG website. This survey data indicates that this audience will need to be reached by methods other than the traditional workshop due to their need for convenient time-saving trainings. Therefore, effort needs to be put into developing useful food safety training tools that can be placed on the web to provide education to this audience.

The Food Bank of Northeast Georgia Agency Survey questionnaire was found to be a valid instrument and 38% of the questions showed good reliability. The questions with a low percent agreement would need to be refined for use with other audiences.

### Implications

The results of the study suggest that if food handling practices are specifically described in a written set of rules, they are likely to be followed. This indicates there may be a need to develop written guidelines to be distributed to all agencies. Second, the results show that various approaches will need to be employed in addition to the traditional workshop approach in order to reach the majority of this population segment. Third, the data from this research can be used with additional work to produce a reliable and valid survey instrument to measure food safety knowledge of emergency food provider workers. That instrument should then be used in other areas of Georgia as well as in other states to develop and implement comprehensive food safety educational programs for this audience. Overall, it is apparent that many clients of the FBNEG and therefore other emergency food assistance programs need to improve food handling especially temperature control practices, thermometer use, cleaning and storage practices

### Limitations

The major limitation of this study is that it was based completely on self-report. Direct observation of food handling practices may provide a more accurate description of the participants' practices. Also the fact that the individuals who completed the survey were not necessarily directly involved in food preparation would indicate the survey results do not provide a true picture of what is known and done by food handlers in these agencies.

### Future Direction

In order to get a more complete picture of the actual practices followed by these agencies, data needs to be collected from the actual food handlers within each agency. Also direct observation of practices should be included to protect against self-report bias. Plus, more convenient methods such as web-based tools need to be developed to reach this population with food safety information.

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## **APPENDIX A**

### **FIRST SURVEY**

Date

Member Agency Address

Dear (Member Agency Representative),

Holly Garner, a graduate student in the Department of Foods and Nutrition at the University of Georgia, is collaborating on a project with the Food Bank of Northeast Georgia, Inc. (FBNEG) to provide food safety education and healthy eating information to FBNEG staff, volunteers and member agencies. Of course, we want to provide you with the most useful information possible in a format that you can easily access and use at your agency. We would like you to complete and return the enclosed survey.

As you complete the survey, feel free to obtain input from your staff for questions 1-13. However, we would like you to answer questions 14 through the end by yourself. The entire survey should take less than 1 hour to complete. When you are finished, please return the survey using the self-addressed, stamped envelope that is included. The FBNEG will provide each agency that returns the survey by May 4, 2003 with a coupon for \$15.00 of free food.

By completing and returning this survey, you agree to take part in a research project titled Food Bank Member Agency Needs Assessment, which is being conducted by Holly Garner and her advisor, Elizabeth Address (706-542-3773) from the Department of Foods and Nutrition, The University of Georgia, 208 Hoke Smith Annex, Athens, GA 30602. The survey is to identify services your agency would be interested in, related to food safety and healthy eating, and to understand current food safety practices in place at your facility. The results also may be published so other educators can learn how to be helpful to similar agencies or organizations.

Your name will not be on this survey, so the information you provide cannot be associated with you and therefore your participation is anonymous. If any questions make you feel uncomfortable, you can leave them blank. You can choose not to return the survey and you may decide at any time that you no longer want to participate in this project. You do not have to explain your decision; if you decide you are no longer interested in participating, we will remove your information and destroy or return your records if you so desire. Most importantly, your decision to participate will not affect the services you receive from the FBNEG.

If you have any questions do not hesitate to ask now or at a later date. You may contact Holly Garner, graduate student, or Elizabeth Address, Extension Foods Specialist, at (706) 542-3773.

Food Bank Survey  
Date  
Page 2

Thank you in advance for your help with this project and making sure we spend our time on information that will be the most helpful to you. If you would like a copy of the results of this survey, you will be able to obtain them from Elizabeth Andress or the FBNEG.

End Hunger,

Pam White

Elizabeth Andress

Heather Bowen

Holly Garner

Agency Name: \_\_\_\_\_

City/Town: \_\_\_\_\_

Name (optional) and Job Title of person completing this survey:

- 67

6. Would you be more interested in the above services if they were offered (check one):  
 a. in your community? \_\_\_\_\_  
 b. at your agency? \_\_\_\_\_  
 c. at the Food Bank of Northeast Georgia? \_\_\_\_\_
7. If nutrition and food safety information were made available on the FBNEG website would you access this information?  
 \_\_\_\_\_Yes\_\_\_\_\_No
8. How likely would you be to use the following information?  
 5-----4-----3-----2-----1  
 very likely not likely at all  
 \_\_\_\_\_Suggested uses for food bank products  
 \_\_\_\_\_Legislative action information  
 \_\_\_\_\_Information on additional food assistance programs (Example: Food Stamp Program)  
 \_\_\_\_\_Other (please specify)\_\_\_\_\_
9. Would your agency be interested in a delivery service?  
 \_\_\_\_\_Yes \_\_\_\_\_No \_\_\_\_\_Yes, but only if you delivered directly to our agency
10. Currently, we are delivering to a central site in a county and having agencies meet us there. If you are interested in a delivery service, would this work for you, or would you only be interested if we delivered directly to your agency? \_\_\_\_\_  
 \_\_\_\_\_
11. Are food handlers required to have any training prior to employment?  
 A. Yes Describe \_\_\_\_\_  
 B. No
12. In the past year was any training in food handling/sanitation provided for your employees?  
 A. Yes Describe \_\_\_\_\_  
 B. No
13. Please write other comments below.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

14. My facility has:
- A. A cooler/refrigerator
  - B. A freezer
  - C. Both a cooler/refrigerator and a freezer
15. Do you or your employees monitor the air temperature of your cooler/refrigerator and/or freezer?
- A. We monitor the cooler/refrigerator only.
  - B. We monitor the freezer only.
  - C. We monitor both cooler/refrigerator and freezer.
  - D. No, we do not monitor the cooler/refrigerator or freezer temperatures.

16. Do you or your employees use a food thermometer to monitor the temperature of fresh meat and poultry in the refrigerator/cooler?

If you do not handle fresh meat and/or poultry check here \_\_\_\_\_ and go to question 17

- A. We don't have food thermometers.
  - B. We have one but don't use it.
  - C. We have one and sometimes use it.
  - D. We have one and use it daily or several times daily to monitor fresh meat and poultry temperatures.
17. Do you use a food thermometer to monitor the temperature of meat and poultry in the freezer?

If you do not handle frozen meat and/or poultry check here \_\_\_\_\_ and go to question 18

- A. We don't have food thermometers.
  - B. We have one but don't use it.
  - C. We have one and sometimes use it.
  - D. We have one and use it daily or several times daily to monitor frozen meat and poultry temperatures.
18. Please describe your pest control system. Specify who carries out the pest control maintenance i.e. an outside pest control company or self-administered from within the agency.

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19. Indicate how often each of the following is done by writing in the appropriate letter in front of each statement for the answer that applies.  
A=Daily, B=Weekly, C=Monthly, D=As needed, E=Don't know
- \_\_\_\_\_ Tile and stainless steel surfaces are cleaned by spraying or sponging with a detergent solution.  
\_\_\_\_\_ Ceilings and light fixtures are checked for cobwebs, dust, dirt or condensation and if found are wiped or rinsed with a sponge or cloth.  
\_\_\_\_\_ Storage room floors are swept/vacuumed  
\_\_\_\_\_ Storage room floors are mopped or pressure sprayed
20. Is there a cleaning/maintenance log kept in the facility?
- A. Yes  
B. No
21. Is fresh produce kept in clean, well-maintained bins/containers?
- A. Yes  
B. No
22. How are garbage cans located within your facility? (Mark all that apply)
- A. Garbage cans are stored away from food storage and handling areas  
B. Garbage cans are stored near or within food storage/handling areas  
C. Garbage cans are kept covered at all times  
D. Garbage cans are usually not kept covered  
E. Other \_\_\_\_\_
23. Are ceiling lights shielded to protect against broken glass falling into unpackaged foods?
- A. Yes  
B. No  
C. Don't know
24. Is any food stored under plumbing pipes or other types of pipes?
- A. Yes  
B. No
25. Are all products clearly labeled with product name, contents and expiration date?
- A. Yes  
B. No

26. Are any home canned foods accepted and/or used in your facility?

- A. Yes
- B. No

27. Are all inner packages of boxed dry goods intact and sealed?

- A. Yes
- B. No

If you do not have any boxed dry goods, check here \_\_\_\_ and go to question 28

28. Are safety seals and safety strips on bottles and medicine containers checked to see if they are intact?

- A. Yes
- B. No

If you do not have any bottles or medicine containers check here \_\_\_\_ and go to question 29

29. Are leaking containers discarded and surrounding containers checked for contamination?

- A. Yes, but other containers are not checked
- B. Yes, other containers are checked
- C. No

30. How do you determine use-by dates on your stock of food?

- A. Employee of agency dates foods upon arrival
- B. Go by manufacturers pre-stamped dates examples of foods dated this way: milk, yogurt, cereal, chips, etc.
- C. Third party provided chart
- D. Go by appearance (examples of foods: fresh produce, cheese, bread)
- E. Don't know

31. Are you familiar with FIFO (first in first out) rule for the order in which foods should be used?

- A. Yes, but do not follow this procedure
- B. Yes, sometimes follow this procedure
- C. Yes, always follow this procedure
- D. No, not familiar with this procedure



32. Do you provide any of the following information to consumers or recipients with the food? (Mark all that apply)
- A. Yes, recipes
  - B. Yes, information on nutrition and health
  - C. Yes, information on food safety and/or storage
  - D. None of the above
33. Who is responsible for monitoring the safety or integrity of food brought into your agency?
- A. Volunteers
  - B. Paid staff Member
  - C. Both Volunteers and paid staff
  - D. No one is designated with this duty
34. Who is responsible for maintaining the safety or integrity of stored items?
- A. Volunteers
  - B. Paid staff Member
  - C. Both Volunteers and paid staff
  - D. No one is designated with this duty
35. What is an acceptable way to thaw food?
- A. In the refrigerator at 41°F or lower
  - B. Under hot running water
  - C. At room temperature on the counter
  - D. Don't know
36. To check the temperature of a piece of meat, insert the thermometer:
- A. ½ inch deep
  - B. Close to the bone
  - C. In the thickest part and in more than one spot
  - D. At a 45° (degree) angle
  - E. Don't know
37. To safely re-heat food, you should heat it:
- A. To 165°F for 15 seconds within 2 hours after taking it from the refrigerator.
  - B. For 4 hours in a steam table at 140°F.
  - C. To 155°F and then cover.
  - D. Until it is hot to the touch and then serve it immediately.
  - E. Don't know

38. If you or your employees found cans with the following conditions which ones would you discard? (Mark all that apply)
- A. Dented at junction of side and end
  - B. Sharp dent or dent on seam
  - C. Swollen
  - D. Pitted rust or leaking
  - E. Bulging top or bottom
  - F. Don't know
39. If you or your employees found jars in the following conditions which ones would you discard? (Mark all that apply)
- A. Inner seal or tamper resistant tape missing or broken
  - B. Crooked lid, vacuum button raised, other evidence that the cap has been opened
  - C. Leaking, cracked or chipped, product discolored
  - D. Don't know
40. Hands should be washed with soap and water for at least how long?
- A. One minute
  - B. 30 seconds
  - C. 20 seconds
  - D. 10 seconds
41. In a refrigerator, a package of raw ground beef should be stored:
- A. In the door shelf
  - B. Above cooked foods
  - C. Below cooked foods
  - D. Next to the lettuce
  - E. Don't know
42. You have only one ceramic cutting board available for food preparation. You have just sliced some chicken breasts for cooking and now need to prepare a green salad. What should you do to the cutting board before you use it for preparing the salad?
- A. Scrub it with hot water and soap and then sanitize.
  - B. Dry it with a paper towel.
  - C. Rinse it under very hot water.
  - D. Turn it over and use the other side.
  - E. Don't know

April 28, 2003

Last week a questionnaire (survey) seeking information regarding the food safety practices carried out in your agency was mailed to you. You were selected to participate based on your membership with the Food Bank of Northeast Georgia.

If you have already completed and returned the survey please accept our sincere thanks and know that your account at the food bank will receive a \$15.00 credit for free food. If you have not returned the survey, please do so today. It is very important that you return the survey so that any materials developed will meet the needs of your agency.

If by some chance you did not receive the survey, or it was misplaced, please call (706-542-3773), email (haslamh@uga.edu) or write (208 Hoke Smith Annex, Athens, GA 30602-4356) and I will get another one in the mail to you today. Thank you very much.

Sincerely,

Holly Garner, Graduate Student

Dept. of Foods and Nutrition, The University of Georgia

## **APPENDIX B**

### **REPEATED SURVEY**

October 30, 2003

Member Agency Address

Dear (Member Agency Representative),

Last spring, you were asked to complete a survey for Holly Garner, a graduate student in the Department of Foods and Nutrition at the University of Georgia, who is collaborating on a project with the Food Bank of Northeast Georgia, Inc. (FBNEG). Our goal is to provide food safety education and healthy eating information to FBNEG staff, volunteers and member agencies. We now would like you to complete and return the survey enclosed with this letter. We need some information a second time in order to ensure the accuracy of our survey instrument.

Please fill out the survey in the same manner you did the first time. This time you should answer all the questions by yourself. The entire survey should take less than 30 minutes to complete. When you are finished, please return the survey using the self-addressed, stamped envelope that is included. The FBNEG will provide each agency that returns the survey by (date) with \$10.00 free food.

By completing and returning this survey, you agree to take part in a research project titled Food Bank Member Agency Needs Assessment, which is being conducted by Holly Garner and her advisor, Elizabeth Andress (706-542-3773) from the Department of Foods and Nutrition, The University of Georgia, 208 Hoke Smith Annex, Athens, GA 30602. The survey is to identify services your agency would be interested in, related to food safety and healthy eating, and to understand current food safety practices in place at your facility. The results also may be published so other educators can learn how to be helpful to similar agencies or organizations.

Your participation will remain confidential unless required by law. If any questions make you feel uncomfortable, you can leave them blank. You can choose not to return the survey and you may decide at any time that you no longer want to participate in this project. You do not have to explain your decision; if you decide you are no longer interested in participating, we will remove your information and destroy or return your records if you so desire. Most importantly, your decision to participate will not affect the services you receive from the FBNEG.

If you have any questions do not hesitate to ask now or at a later date. You may contact Holly Garner, graduate student, or Elizabeth Andress, Extension Foods Specialist, at (706) 542-3773.

Food Bank Survey  
Date  
Page 2

Thank you in advance for your help with this project and making sure we spend our time on information that will be the most helpful to you. If you would like a copy of the results of this survey, you will be able to obtain them from Elizabeth Andress or the FBNEG.

End Hunger,

Pam White

Elizabeth Andress

Holly Garner

Additional questions or problems regarding your rights as a research participant should be addressed to Chris A. Joseph, Ph. D. Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address: [IRB@uga.edu](mailto:IRB@uga.edu).

## Food Bank of Northeast Georgia Agency Survey

Agency Name: \_\_\_\_\_

City/Town: \_\_\_\_\_

FBNEG Agency Code (if known) \_\_\_\_\_

Job Title of person completing this survey (Or describe your role):

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Which of the following best describes your agency? (Circle the answer)

- A. Food pantry (you put together boxes or bags of food for clients to prepare at home)
- B. Soup kitchen
- C. Shelter
- D. Congregate Meal Site
- E. Foster Home

1. My facility has:

- A. Cooler/refrigerator
- B. A freezer
- C. Both a cooler/refrigerator and a freezer

2. Do you or your employees monitor the air temperature of your cooler/refrigerator and/or freezer?

- A. We monitor the cooler/refrigerator only.
- B. We monitor the freezer only.
- C. We monitor both cooler/refrigerator and freezer.
- D. No, we do not monitor the cooler/refrigerator or freezer temperatures.

3. Do you or your employees use a food thermometer to monitor the temperature of fresh meat and poultry in the refrigerator/cooler?

If you do not handle fresh meat and/or poultry check here \_\_\_\_\_ and go to question 4

- A. We don't have food thermometers.
- B. We have one but don't use it.
- C. We have one and sometimes use it.
- D. We have one and use it daily or several times daily to monitor fresh meat and poultry temperatures.

4. Do you use a food thermometer to monitor the temperature of meat and poultry in the freezer?

If you do not handle frozen meat and/or poultry check here \_\_\_\_\_ and go to question 5

- A. We don't have food thermometers.
- B. We have one but don't use it.
- C. We have one and sometimes use it.
- D. We have one and use it daily or several times daily to monitor frozen meat and poultry temperatures.

5. Please describe your pest control system. Specify who carries out the pest control maintenance i.e. an outside pest control company or self-administered from within the agency.

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6. Indicate how often each of the following is done by writing in the appropriate letter in front of each statement for the answer that applies.

A=Daily B=Weekly C=Monthly D=As needed E=Don't know

\_\_\_\_\_ Tile and stainless steel surfaces are cleaned by spraying or sponging with a detergent solution.

\_\_\_\_\_ Ceilings and light fixtures are checked for cobwebs, dust, dirt or condensation and if found are wiped or rinsed with a sponge or cloth.

\_\_\_\_\_ Storage room floors are swept/vacuumed

\_\_\_\_\_ Storage room floors are mopped or pressure sprayed

7. Is there a cleaning/maintenance log kept in the facility?

- A. Yes
- B. No

8. Is fresh produce kept in clean, well-maintained bins/containers?

- A. Yes
- B. No

9. How are garbage cans located within your facility? (Mark all that apply)

- A. Garbage cans are stored away from food storage and handling areas
- B. Garbage cans are stored near or within food storage/handling areas
- C. Garbage cans are kept covered at all times
- D. Garbage cans are usually not kept covered
- E. Other \_\_\_\_\_



10. Are ceiling lights shielded to protect against broken glass falling into unpackaged foods?

- A. Yes
- B. No
- C. Do not know or I am not sure

11. Is any food stored under plumbing pipes or other types of pipes?

- A. Yes
- B. No

12. Are all products clearly labeled with product name, contents and expiration date?

- A. Yes
- B. No

13. Are any home canned foods accepted and/or used in your facility?

- A. Yes
- B. No

14. Are all inner packages of boxed dry goods intact and sealed?

- A. Yes
- B. No

If you do not have any boxed dry goods, check here \_\_\_\_ and go to question 15

15. Are safety seals and safety strips on bottles and medicine containers checked to see if they are intact?

- A. Yes
- B. No

If you do not have any bottles or medicine containers check here \_\_\_\_ and go to question 16.

16. Are leaking containers discarded and surrounding containers checked for contamination?

- A. Yes, but other containers are not checked
- B. Yes, other containers are checked
- C. No

17. How do you determine use-by dates on your stock of food?
- A. Employee of agency dates foods upon arrival
  - B. Go by manufacturers pre-stamped dates examples of foods dated this way: milk, yogurt, cereal, chips, etc.
  - C. Third party provided chart
  - D. Go by appearance (examples of foods: fresh produce, cheese, bread)
  - E. I do not know or I am not sure
18. Are you familiar with FIFO (first in first out) rule for the order in which foods should be used?
- A. Yes, but do not follow this procedure
  - B. Yes, sometimes follow this procedure
  - C. Yes, always follow this procedure
  - D. No, I am not familiar with this procedure
19. Do you provide any of the following information to consumers or recipients with the food? (Mark all that apply)
- A. Yes, recipes
  - B. Yes, information on nutrition and health
  - C. Yes, information on food safety and/or storage
  - D. None of the above
20. Who is responsible for monitoring the safety or integrity of food brought into your agency?
- A. Volunteers
  - B. Paid staff Member
  - C. Both Volunteers and paid staff
  - D. No one is designated with this duty
21. Who is responsible for maintaining the safety or integrity of stored items?
- A. Volunteers
  - B. Paid staff Member
  - C. Both Volunteers and paid staff
  - D. No one is designated with this duty
22. What is an acceptable way to thaw food?
- A. In the refrigerator at 41°F or lower
  - B. Under hot running water
  - C. At room temperature on the counter
  - D. I do not know or I am not sure

23. To check the temperature of a piece of meat, insert the thermometer:
- A. ½ inch deep
  - B. Close to the bone
  - C. In the thickest part and in more than one spot
  - D. At a 45° (degree) angle
  - E. I do not know or I am not sure
24. To safely re-heat food, you should heat it:
- A. To 165°F for 15 seconds within 2 hours after taking it from the refrigerator.
  - B. For 4 hours in a steam table at 140°F.
  - C. To 155°F and then cover.
  - D. Until it is hot to the touch and then serve it immediately.
  - E. I do not know or I am not sure
25. If you or your employees found cans with the following conditions which ones would you discard? (Mark all that apply)
- A. Dented at junction of side and end
  - B. Sharp dent or dent on seam
  - C. Swollen
  - D. Pitted rust or leaking
  - E. Bulging top or bottom
  - F. I do not know or I am not sure
26. If you or your employees found jars in the following conditions which ones would you discard? (Mark all that apply)
- A. Inner seal or tamper resistant tape missing or broken
  - B. Crooked lid, vacuum button raised, other evidence that the cap has been opened
  - C. Leaking, cracked or chipped, product discolored
  - D. I do not know or I am not sure
27. Hands should be washed with soap and water for at least how long?
- A. One minute
  - B. 30 seconds
  - C. 20 seconds
  - D. 10 seconds

28. In a refrigerator, a package of raw ground beef should be stored:
- A. In the door shelf
  - B. Above cooked foods
  - C. Below cooked foods
  - D. Next to the lettuce
  - E. I do not know or I am not sure
29. You have only one ceramic cutting board available for food preparation. You have just sliced some chicken breasts for cooking and now need to prepare a green salad. What should you do to the cutting board before you use it for preparing the salad?
- A. Scrub it with hot water and soap and then sanitize.
  - B. Dry it with a paper towel.
  - C. Rinse it under very hot water.
  - D. Turn it over and use the other side.
  - E. I do not know or I am not sure
30. Do you have any comments about or requests for food safety and nutrition services that you would like to share with us?

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December 1, 2003

You should have recently received a questionnaire (survey) seeking information regarding the food safety practices carried out in your agency. You were selected to participate based on your membership with the Food Bank of Northeast Georgia.

If you have already completed and returned the survey please accept our sincere thanks and know that your account at the food bank will receive a \$10.00 credit for free food. If you have not returned the survey, please do so today. It is very important that you return the survey so that any materials developed will meet the needs of your agency.

If by some chance you did not receive the survey, or it was misplaced, please call (706-542-3773), email (haslamh@uga.edu) or write (208 Hoke Smith Annex, Athens, GA 30602-4356) and I will get another one in the mail to you today. Thank you very much.

Sincerely,  
Holly Garner, Graduate Student  
Dept. of Foods and Nutrition, The University of Georgia

## **APPENDIX C**

### **RAW DATA FREQUENCIES**

### FREQUENCIES FOR ALL SURVEY QUESTIONS

#### Location of agencies:

CITY	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Monroe	4	4.17	4	4.17
Social Circle	1	1.04	5	5.21
Athens	38	39.58	43	44.79
Royston	3	3.31	46	47.92
Hartwell	3	3.13	49	51.04
Jefferson	5	5.21	54	56.25
Bogart	1	1.04	55	57.29
Crawford	2	2.08	57	59.38
Nicholson	2	2.08	59	61.46
Toccoa	3	3.13	62	64.58
Cornelia	3	3.13	65	67.71
Commerce	2	2.08	67	69.79
Snellville	2	2.08	69	71.88
Hull	2	2.08	71	73.96
Winder	6	6.25	77	80.21
Hiawassee	1	1.04	78	81.25
Homer	2	2.08	80	83.33
Elberton	1	1.04	81	84.38
Greensboro	2	2.08	83	86.46
Flowery Branch	2	2.08	85	88.54
Clayton	2	2.08	87	90.63
Watkinsville	4	4.17	91	94.79
Mt. Airy	1	1.04	92	95.83
Lavonia	1	1.04	93	96.88
Lawrenceville	1	1.04	94	97.92
Statham	1	1.04	95	98.96
Madison	1	1.04	96	100.00

#### Job title of respondent:

JOB TITLE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Director	36	37.89	36	37.89
Manager	29	30.53	65	68.42
Foster Parent	14	14.74	79	83.16
Cook	1	1.05	80	84.21
Other	15	15.79	95	100.00

Frequency Missing = 1

**Indicate the type of agency you work for**

AGENCY TYPE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Food Pantry	30	34.88	30	34.88
Soup Kitchen	11	12.79	41	47.67
Shelter\Congregate Meal Site	28	32.56	69	80.23
Foster Home	17	19.77	86	100.00

Frequency Missing = 10

**Percent of food in feeding program that comes from the FBNEG**

PERFBNEG	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
0-20%	29	32.22	29	32.22
21-40%	19	21.11	48	53.33
41-60%	16	17.78	64	71.11
61-80%	11	12.22	75	83.33
81-100%	15	16.67	90	100.00

Frequency Missing = 6

**Who coordinates agency food program?**

COORDINATOR	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Paid	47	51.65	47	51.65
Volunteer	33	36.26	80	87.91
Other	10	10.99	90	98.90
Both	1	1.10	91	100.00

Frequency Missing = 5

**Specify who coordinates if chose other**

OTHER COORDINATOR	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Foster Parent Resource Coordinator	5	55.55	5	55.56
Each Individual	1	11.11	6	66.67
Family	1	11.11	7	77.78
Pastor	1	11.11	8	88.89
Member of Board	1	11.11	9	100.00

Frequency Missing = 87



### Who shops at FBNEG for your agency?

WHO SHOPS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Paid	46	48.94	46	48.94
Volunteer	29	30.85	75	79.79
Both	13	13.83	88	93.62
Other	6	6.38	94	100.00

Frequency Missing = 2

### Specify who shops if chose other

OTHERS WHO SHOP	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Foster Parent	7	87.50	7	87.50
Special Ed. Class	1	12.50	8	100.00

Frequency Missing = 88

### How likely would you be to use sanitation and food handling workshops?

SANITATION AND FOOD HANDLING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	31	34.83	31	34.83
Not Likely	15	16.85	46	51.69
Uncertain	13	14.61	59	66.29
Likely	13	14.61	72	80.90
Very Likely	17	19.10	89	100.00

### How likely would you be to use Nutrition education workshops for staff and volunteers?

NUTRITION ED. FOR STAFF	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	28	31.11	28	31.11
Not Likely	14	15.56	42	46.67
Uncertain	20	22.22	62	68.89
Likely	11	12.22	73	81.11
Very Likely	17	18.89	90	100.00

Frequency Missing = 6

**How likely would you be to use Nutrition education workshops for clients?**

NUTRITION ED. FOR CLIENTS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	38	42.70	38	42.70
Not Likely	7	7.87	45	50.56
Uncertain	14	15.73	59	66.29
Likely	12	13.48	71	79.78
Very Likely	18	20.22	89	100.00

Frequency Missing = 7

**How likely would you be to use Menu planning workshops?**

MENU PLANNING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	38	42.70	38	42.70
Not Likely	7	7.87	45	50.56
Uncertain	18	20.22	63	70.79
Likely	10	11.24	73	82.02
Very Likely	16	17.98	89	100.00

Frequency Missing = 7

**How likely would you be to use a special dietary needs workshop?**

SPECIAL DIET WORKSHOP	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	38	43.18	38	43.18
Not Likely	13	14.77	51	57.95
Uncertain	17	19.32	68	77.27
Likely	5	5.68	73	82.95
Very Likely	15	17.05	88	100.00

Frequency Missing = 8

**How likely would you be to use other information?**

OTHER INFORMATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	7	63.64	7	63.64
Not Likely	1	9.09	8	72.73
Uncertain	1	9.09	9	81.82
Very Likely	2	18.18	11	100.00

Frequency Missing = 85

**Specify other services you would be likely to use**

TYPE OTHER	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Budget & Money Management	1	50.00	1	50.00
Food Allergies	1	50.00	2	100.00

Frequency Missing = 94

**Where would you prefer the services you are interested in to be offered?**

SERVICE LOCATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
In Community	26	30.95	26	30.95
At Agency	29	34.52	55	65.48
At FBNEG	20	23.81	75	89.29
In Community & at Agency	3	3.57	78	92.86
Agency & FBNEG	1	1.19	79	94.05
In Community & FBNEG	3	3.57	82	97.62
None of the Above	2	2.38	84	100.00

Frequency Missing = 12

**If nutrition information were made available on the FBNEG website would you access this information?**

WEB ACCESS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	69	73.40	69	73.40
No	25	26.60	94	100.00

Frequency Missing = 2

**How likely would you be to use suggested uses for food bank products?**

PRODUCT USE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	17	18.48	17	18.48
Not Likely	10	10.87	27	29.35
Uncertain	22	23.91	49	53.26
Likely	15	16.30	64	69.57
Very Likely	28	30.43	92	100.00

Frequency Missing = 4

**How likely would you be to use legislative action information?**

LEGISLATIVE INFORMATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	31	34.07	31	34.07
Not Likely	18	19.78	49	53.85
Uncertain	17	18.68	66	72.53
Likely	13	14.29	79	86.81
Very Likely	12	13.19	91	100.00

Frequency Missing = 5

**How likely would you be to use information on additional food assistance programs?**

ADDITIONAL INFORMATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	36	39.13	36	39.13
Not Likely	6	6.52	42	45.65
Uncertain	15	16.30	57	61.96
Likely	16	17.39	73	79.35
Very Likely	19	20.65	92	100.00

Frequency Missing = 4

**How likely would you be to use other types of information from the FBNEG?**

OTHER INFORMATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Not Likely at All	6	85.71	6	85.71
Very Likely	1	14.29	7	100.00

Frequency Missing = 89

**Specify other information you would use if provided by FBNEG**

TYPE OF OTHER INFORMATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Recipes	1	100.00	1	100.00

Frequency Missing = 95

**Would you be interested in a delivery service?**

DELIVERY SERVICE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	36	39.56	36	39.56
No	25	27.47	61	67.03
Yes, Deliver to Agency	29	31.87	90	98.90
Maybe	1	1.10	91	100.00

Frequency Missing = 5

**Would you be interested in picking up your food from a central delivery site in your county or would you only be interested in direct delivery to your agency?**

DELIVERY LOCATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	24	39.34	61	39.34
No	37	60.66	37	100.00

Frequency Missing = 35

**Are food handlers required to have any training prior to employment?**

PRIOR TRAINING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	22	28.57	77	28.57
No	55	71.43	55	100.00

Frequency Missing = 19

**Describe prior training required**

DESCRIBE TRAINING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Provide Workshop	2	13.33	2	13.33
Ongoing Training	1	6.67	3	19.99
Manager Oversees Training	1	6.67	4	26.67
Extension Workshop On the Job With	1	6.67	5	33.34
Previous Employer	1	6.67	6	40.00
Sanitation & Food Safety	2	13.33	8	53.34
Pre-Service Food & Nutrition (OSHA)	1	6.67	9	60.01
Red Cross Training	1	6.67	10	66.68
Infection Control, Handwashing	2	13.33	12	80.01
Health & Safety	1	6.67	13	86.68
Certificate Program	1	6.67	14	93.35
Orientation	1	6.67	15	100.00

Frequency Missing = 81

**In the last year was any training in food handling/sanitation provided for your employees?**

LAST YEAR TRAINING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	32	42.11	76	42.11
No	44	57.89	44	100.00

Frequency Missing = 20

**Describe any food handling/sanitation training provided in the last year**

DESCRIBE TRAINING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Orientation for Summer Program School Office Training	1	5.56	1	5.56
DFCS Training	3	16.67	3	22.23
Pre-Service Nutrition Training	1	5.56	4	27.78
Food Bank Orientation	2	11.11	6	38.89
Health Department Information	2	11.11	8	50.00
Extension Workshop	1	5.56	9	55.56
Infection Control, Proper Food Storage	3	16.67	12	72.23
Food Handling & Sanitation by RDC	3	16.67	15	88.90
ServSafe Seminar	1	5.56	16	94.46
	1	5.56	17	100.00

Frequency Missing = 79

**Please write any comments about service below**

OPEN	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Training Very Helpful to Agency	1	10.00	1	10.00
Want Training on How to Stock Boxes to Better Serve Clients' Needs	1	10.00	2	20.00
Why are USDA Reports Needed	1	10.00	3	30.00
Attended Food Bank Seminars	2	20.00	5	50.00
Food Safety & Sanitation Is Very Important	2	20.00	7	70.00
USDA Sometimes Not Available Leaving Little Elderly Can Choose	1	10.00	8	80.00
Why Is There Not More Variety in Food Boxes	1	10.00	9	90.00
Want to Be Able to Utilize Food for Special Events	1	10.00	10	100.00

Frequency Missing = 86

**My facility has:**

STORAGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Cooler/ Refrigerator	7	7.95	7	7.95
Freezer	2	2.27	9	10.23
Both	79	89.77	88	100.00

Frequency Missing = 8

**Do you or your employees monitor the air temperature of your cooler/refrigerator and/or freezer?**

AIR TEMPERATURE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Cooler/ Refrigerator	7	8.14	7	8.14
Freezer	4	4.65	11	12.79
Both	64	74.42	75	57.21
Neither	11	12.79	86	100.00

Frequency Missing = 10

**Do you or your employees use a food thermometer to monitor the temperature of meat and poultry in the cooler/refrigerator/freezer?**

REFRIGERATOR MEAT	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Do Not Have	14	16.47	14	16.47
Do Not Use	8	9.41	22	25.88
Sometimes Use	17	20.00	39	45.88
Do Not Handle	46	54.12	85	100.00

Frequency Missing = 11

**Do you use a food thermometer to monitor the temperature of meat and poultry in the freezer?**

FREEZER MEAT	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Do Not Have	17	20.73	17	20.73
Do Not Use	11	13.41	28	34.15
Sometimes Use	23	28.05	51	62.20
Do Not Handle	31	37.80	82	100.00

Frequency Missing = 14



**Please describe your pest control system. Specify who carries out the pest control maintenance.**

PEST CONTROL SYSTEM	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Outside Company	55	76.39	55	76.39
Self-Administered	17	23.61	72	100.00

Frequency Missing = 24

**Indicate how often tile and stainless steel surfaces are cleaned by spraying or sponging with a detergent solution.**

CLEAN SURFACES	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Daily	38	56.72	38	56.72
Weekly	14	20.90	52	77.61
Monthly	1	1.49	53	79.10
As Needed	12	17.91	65	97.01
Do Not Know	2	2.99	67	100.00

Frequency Missing = 29

**Indicate how often ceilings and light fixtures are checked for cobwebs, dust, dirt or condensation and detergent solution.**

CHECK LIGHTS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Daily	2	2.63	2	2.63
Weekly	27	35.53	29	38.16
Monthly	10	13.16	39	51.32
As Needed	28	36.84	67	88.16
Do Not Know	9	11.84	76	100.00

Frequency Missing = 20

**Indicate how often storage room floors are swept/vacuumed.**

SWEEP/VACUUM FLOORS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Daily	25	31.65	25	31.65
Weekly	23	29.11	48	60.76
Monthly	3	3.80	51	64.56
As Needed	24	30.38	75	94.94
Do Not Know	4	5.06	79	100.00

Frequency Missing = 17

**Indicate how often storage room floors are mopped or pressure sprayed.**

MOP FLOORS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Daily	10	14.30	10	14.30
Weekly	25	35.71	35	50.01
Monthly	5	7.14	40	57.15
As Needed	25	35.71	65	92.86
Do Not Know	5	7.14	70	100.00

Frequency Missing = 26

**Is there a cleaning/maintenance log kept in the facility?**

CLNLOG	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	19	22.89	83	22.89
No	64	77.11	64	100.00

Frequency Missing = 13

**Is fresh produce kept in clean, well-maintained bins/containers?**

CLNBINS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	59	93.65	63	93.65
No	4	6.35	4	100.00

Frequency Missing = 33

**Garbage cans are stored away from food storage and handling areas.**

AWAY	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	61	73.49	83	73.49
No	22	26.51	22	100.00

Frequency Missing = 13

**Garbage cans are stored near or within food storage/handling areas.**

NEAR	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	14	16.87	83	16.87
No	69	83.13	69	100.00
Frequency Missing = 13				

**Garbage cans are kept covered at all times.**

KEPT COVERED	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	43	51.81	83	51.81
No	40	48.19	40	100.00
Frequency Missing = 13				

**Garbage cans are usually not kept covered.**

KEPT UNCOVERED	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	12	14.46	83	14.46
No	71	85.54	71	100.00
Frequency Missing = 13				

**Garbage cans are kept in another area or way than indicated in statements given.**

KEPT IN ANOTHER AREA	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	8	9.89	81	9.89
No	73	90.12	73	100.00
Frequency Missing = 15				

**Specify how garbage cans are located within your facility.**

SPECIFY OTHER AREA	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Uncovered While Cooking	1	10.00	1	10.00
Garbage Drums Away from Food	1	10.00	2	20.00
Food Placed in Garbage & Taken Out Daily	3	30.00	5	50.00
All Emptied & Cleaned Daily	2	20.00	7	70.00
Food Preparation Not Done at Agency	3	30.00	10	100.00
Frequency Missing = 86				

**Are ceiling light shielded to protect against broken glass falling into unpackaged foods?**

LIGHT SHIELD PRESENT	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	63	80.77	70	80.77
No	7	8.97	7	89.74
Do Not Know	8	10.26	78	100.00
Frequency Missing = 18				

**Is any food stored under plumbing pipes or other types of pipes?**

FOOD STORAGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	87	98.86	88	98.86
No	1	1.14	1	100.00
Frequency Missing = 8				

**Are all products clearly with product name, contents and expiration date?**

LABELING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	81	94.19	86	94.19
No	5	5.81	5	100.00
Frequency Missing = 10				

**Are any home canned foods accepted and/or used in your facility?**

HOME CANNED FOOD	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	66	75.00	88	75.00
No	22	25.00	22	100.00

Frequency Missing = 8

**Are all inner packages of boxed dry goods intact and sealed?**

INTACT PACKAGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	85	94.44	86	94.44
No	1	1.11	1	95.55
Do Not Handle	4	4.44	90	100.00

Frequency Missing = 6

**Are safety seals and safety strips on bottles and medicine containers checked to see if they are intact?**

SAFETY SEAL CHECKED	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	69	79.31	71	79.31
No	2	2.30	2	81.61
Do Not Handle	16	18.38	87	100.00

Frequency Missing = 9

**Are leaking containers discarded and surrounding containers checked for contamination?**

LEAKS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes, Other Containers Not Checked	10	11.63	10	11.63
Yes, Other Containers Checked	76	88.37	86	100.00

Frequency Missing = 10

**How do you determine use by dates on your stock of food?**

USE BY DATE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Employee Dates Food upon Arrival	10	11.63	10	11.63
Go by Manufacturer's Pre-Stamped Date	56	65.12	66	76.75
Third-Party Chart	12	13.95	78	90.70
Go by Appearance	8	9.30	86	100.00

Frequency Missing = 10

**Are you familiar with FIFO (first in first out) rule for the order in which foods should be used?**

FIFO	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Familiar, But Do Not Follow	3	3.45	3	3.45
Familiar, Follow Sometimes	20	22.99	23	26.44
Familiar, Always Follow	50	57.47	73	83.91
Not Familiar with Procedure	14	16.09	87	100.00

Frequency Missing = 9

**Do you give recipes to your participants?**

GIVE RECIPES	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	16	19.28	83	19.28
No	67	80.72	67	100.00

Frequency Missing = 13

**Do you give information on nutrition and health?**

HEALTH INFORMATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	22	26.51	83	26.51
No	61	73.49	61	100.00

Frequency Missing = 13

**Do you give information on food safety and/or storage?**

SAFETY/STORAGE INFORMATION	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	21	25.30	83	25.30
No	62	74.69	62	100.00

Frequency Missing = 13

**Do not provide any of the above information to consumers or recipients with the food**

NONE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	51	61.45	83	61.45
No	32	38.55	32	100.00

Frequency Missing = 13

**Who is responsible for monitoring the safety or integrity of food brought into your agency?**

MONITOR	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Volunteers	25	28.41	25	28.41
Paid Staff	42	47.73	67	76.14
Both	10	11.36	77	87.50
No One	11	12.50	88	100.00

Frequency Missing = 8

**Who is responsible for maintaining the safety or integrity of stored items?**

MAINTAIN	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Volunteers	24	28.24	24	28.24
Paid Staff	44	51.76	68	80.00
Both	9	10.59	77	90.59
No One	8	9.41	85	100.00

Frequency Missing = 11

**What is an acceptable way to thaw food?**

THAW METHOD	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Refrigerator	70	86.42	70	86.42
Under Hot Running Water	1	1.23	71	87.65
At Room Temperature	3	3.70	74	91.36
Do Not Know	7	8.64	81	100.00

Frequency Missing = 15

**To check the temperature of a piece of meat, insert the thermometer:**

CLNBINS	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
½ Inch Deep	4	5.26	4	5.26
Close to Bone in Thickest Part	11	14.47	15	19.74
More Than One Spot	27	35.53	42	55.26
At 45 Degree Angle	4	5.26	46	60.53
Do Not Know	30	39.47	76	100.00

Frequency Missing = 20

**To safely re-heat food, you should heat it:**

REHEAT	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
To 165°F for 15 Seconds within 2 Hours of Taking out of Refrigerator	17	23.29	17	23.29
For 4 Hours in a Stream Table at 140°F	1	1.37	18	24.66
155°F & Cover	9	12.33	27	36.99
Until Hot to Touch	10	13.70	37	50.68
Do Not Know	36	49.32	73	100.00

Frequency Missing = 23

**If you or your employees found cans with the following conditions which ones would you discard? (Mark all that apply)**

DENTED AT JUNCTION OF SIDE & END	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	51	56.67	90	56.67
No	39	43.33	39	100.00

Frequency Missing = 6

DENT ON SEAM	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	67	74.44	90	74.44
No	23	25.56	23	100.00

Frequency Missing = 6



SWOLLEN CAN	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	85	94.44	90	94.44
No	5	5.56	5	100.00

Frequency Missing = 6

PITTED RUST OR LEAKING	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	86	95.56	90	95.56
No	4	4.44	4	100.00

Frequency Missing = 6

BULGING TOP OR BOTTOM	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	85	94.44	90	94.44
No	5	5.56	5	100.00

Frequency Missing = 6

DO NOT KNOW	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	4	4.44	90	4.44
No	86	95.56	86	100.00

Frequency Missing = 6

**If you or your employees found jars in the following conditions which ones would you discard? (Mark all that apply)**

INNER SEAL OR TAMPER RESISTANT TAPE MISSING OR BROKEN	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	86	97.73	88	97.73
No	2	2.27	2	100.00

Frequency Missing = 8

EVIDENCE CAP HAS BEEN OPENED	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	86	97.73	88	97.73
No	2	2.27	2	100.00

Frequency Missing = 8

LEAKING, CRACKED OR CHIPPED	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	87	98.86	88	98.86
No	1	1.14	1	100.00

Frequency Missing = 8

I DO NOT KNOW	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Yes	1	1.14	88	1.14
No	87	98.86	87	100.00

Frequency Missing = 8

**Hands should be washed with soap and water for at least how long?**

HAND WASH	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
One Minute	25	28.41	25	28.41
30 Seconds	34	38.64	59	67.05
20 Seconds	15	17.05	74	84.09
10 Seconds	1	1.14	75	85.23
Do Not Know	13	14.77	88	100.00

Frequency Missing = 8

**In a refrigerator, a package of raw ground beef should be stored:**

BEEF STORAGE	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
In The Door Shelf	5	6.25	5	6.25
Above Cooked Foods	2	2.50	7	8.75
Below Cooked Foods	59	73.75	66	82.50
Do Not Know	14	17.50	80	100.00

Frequency Missing = 16

**You have only one ceramic cutting board available for food preparation. You have just sliced some chicken breasts for cooking and now need to prepare a green salad. What should you do to the cutting board before you use it for preparing the salad?**

CUTTING BOARD	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
Scrub It w/ Hot Water and Soap, Then Sanitize	77	93.90	77	93.90
Turn It Over and Use The Other Side	1	1.20	78	95.12
Do Not Know	4	4.88	82	100.00

Frequency Missing = 14