An Assessment of Food Safety Practices and Training of Food Truck Employees: Initiating a Specialized Food Safety Training Manual

by

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Abstract

Major cities and smaller locations around the United States are seeing a dramatic increase in the number of food trucks. The influx of food trucks has been so overwhelming that several cities have found the regulations governing the operation of these vehicles to be outdated. Current regulations and guidelines vary around the United States and lack uniformity in the policies governing the operation of these foodservice vehicles.

The purpose of this study is to investigate food safety knowledge and current training methods of food truck managers/owners through the lens of the Social Cognitive Theory concepts. A mixed method approach was used to examine food safety knowledge and practices, training methods, attitudes towards food safety training, and the implementation of food safety training methods all relating to the food truck sector. A survey instrument was developed post literature review, examination of laws and regulations, focus group data, and interview contributions. The participants surveyed in this study included 271 food truck managers/owners who were members of state food truck associations. Associations were chosen to represent a national sample from across the United States.

This study discovered a significant lack of knowledge in food safety, as only 27.4% of the surveyed respondents showed acceptable knowledge in the areas of personal hygiene, food preparation, cleaning and sanitizing, and safe chemical handling. The results indicated that the respondents who acknowledged their previous food safety training via studying a manual and computer-based instruction tended to yield higher food safety knowledge scores.

Results of this study partially supported the use of Social Cognitive Theory to predict positive food safety scores. Behavior intention was seen to be the best predictor of a passing food safety knowledge score. Based on the findings, the study proposes training methods influenced by the SCT concepts that food truck managers/owners can incorporate into their training programs. In addition, a food truck food safety manual was developed based on the SCT concepts, providing training activities suited to the needs of a food truck operation. The qualitative results revealed that managers/owners have an overall positive attitude towards food safety training. Similar findings were revealed by the survey results. The study discovered a significant lapse in the number of inspections of food trucks taking place around the country, as 60% of the interviewees indicated that they have yet to be inspected.

Research in this sector of foodservice is in an infancy period. Future research is needed to determine the rationale behind this lapse as the safety of the public is at risk. The laws and regulations throughout the nation are unstable as many cities/counties continue to change their rules. Future studies may assess the reliability of nationally accredited certification programs and determine if these programs should be adjusted to meet the challenges of food safety training in the mobile food sector.

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Chapter 1. Introduction

Background

A major priority for all retail foodservice operations is to make certain that the food served to customers is safe for consumption. Food safety is a critical issue that must be implemented and monitored in all aspects of food delivery to the public. Consumers at restaurants, banquet halls, and food vending vehicles are at risk if the proper food safety measures are not applied, thereby shouldering a great responsibility for foodservice management to oversee and carry out food safety procedures in their establishment.

Foodborne illness is a very serious problem in the United States, causing significant morbidity and mortality as well as a substantial drain on economic resources. The CDC estimates that each year 48 million people get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases (CDC, 2011). The CDC also reports that three pathogens, S*almonella*, *Listeria*, and *Toxoplasma* are the main pathogens responsible for 75 percent of the reported illnesses and 1,500 deaths (CDC, 2010). The USDA's Economic Research Service (ERS) reports an even higher incidence of these types of illnesses. Per the ERS, there are 6.5 to 33 million estimated cases of illnesses related to microbial foodborne pathogens with 9,000 deaths linked to foodborne pathogens each year (ERS, 2012). While the impact of foodborne illness can cause considerable health issues to the general public, these dangerous illnesses can also create tremendous economic costs. The ERS estimates the direct medical and productivity loss generated by foodborne pathogens are from $2.9 to $6.7 billion dollars annually (ERS, 2012)

The methods of food delivery are so varied in today's lifestyle that it does pose a problem to health and food safety monitoring systems. The typical food delivery means, restaurants and fast food enterprises are now competing with a significant escalation of mobile food vendors or food trucks. Mobile food businesses are growing at an unprecedented rate (McLaughlin, 2009). In 2016, food truck revenue reached $870 million dollars in the United States (IBISWorld, 2016). This is expected to grow 7.9 percent annually until 2020 (IBISWorld, 2016). Indeed, street vending is a bustling industry with over 3,703 street vending businesses operating in the United States with 13,501 employees (U.S. Census Bureau, 2012). The popularity of food trucks around the United States including major cities such as Austin, New York, San Francisco, Atlanta, and Los Angeles is soaring. Smaller locals in Michigan, Oklahoma, and Florida are also reporting a rapid increase of all types of food truck vendors. They are becoming so popular in fact, a survey conducted by the National Restaurant Association found that 19 percent of fast casual restaurants say they are very or somewhat likely to launch a truck in the next year or two (NRA, 2017). While food trucks are usually known to serve inexpensive lunches and snacks, gourmet food trucks are now targeting a new clientele of consumers who may be interested in unique desserts or specialty foods (McLaughlin, 2009). Similar to off-site catering, food trucks can serve large amounts of people at one-time. The popularity of the novel gourmet food truck coupled with the rise of traditional mobile food eateries presents a growing concern that food safety issues may not be adequate to meet the needs of the public.

According to the NRA (2011), 54 percent of consumers surveyed out of 1,004 American adults stated that they selected a food truck from an area where food trucks typically gather. In many cities across the United States, especially in the Northeast and West (NRA, 2011), hundreds of people congregate at food truck parks and events to sample the different offerings.

Vendors are potentially serving extremely high volumes of people at once which can also lead to lower standards of food safety practices as shown by previous research (Hertzman & Barrash, 2007; Ghezzi & Ayoun, 2013).

While restaurants and fast food eateries are regulated by specific food safety guidelines, the nature of a food truck lends itself to distinctive policies adapted to the unique way the food is prepared and served. However, there is no uniform policy in the United States that stipulates how food truck management secures licensing, food safety certification, or the extent of food safety training for the parties involved. In Washington D.C., an on-site manager is required to pass a nationally recognized food certification course such as ServSafe® in a class setting (D.C. Department of Consumer and Regulatory Affairs, 2013). But most localities around the nation including California, accept food certification by passing a short online course for a minimal fee. StateFoodSafety.com (2013) is one such provider that offers a food certification online course that can be taken in just a few hours. Since there are over 2,000 different state and local agencies in the United States inspecting food trucks, the standards imposed throughout the United States are not consistent (FDA, 2012). This lack of uniformity coupled with inadequate and outdated guidelines throughout the United States (Sullivan, 2013), weakens food safety safeguards indicating a need for improving food safety training and certification matters in the food truck sector.

The Social Cognitive Theory (Bandura,1977), has been used successfully as an underlying theory for behavior change in several health-related areas (NCI, 2005). The Social Cognitive Theory (SCT) involves a dynamic process in which cognitive factors, environmental factors, and human behavior interact. A major premise of the theory is that people learn not only from their experiences, but by observing the actions of others and the benefits of those actions.

Included in Bandura's Social Cognitive Theory model is the concept of self-efficacy, which is described as confidence and attitude in one's ability to take action and overcome barriers (Bandura,1997). The SCT describes how individuals gain and retain specific behavior patterns and provides a foundation for intervention strategies (Galloway, 2003). Bandura's theory presents a learning model that can be used in training initiatives.

Training foodservice workers to become knowledgeable about food safety and to correctly practice food safety skills is critical in the prevention of foodborne illness. Since food truck enterprises in many cities across the United States have significantly increased, an investigation regarding the types of training methods that are employed, the frequency and reinforcement of these methods, and the effectiveness of these programs may indicate an inadequacy in the deterrence of such a critical public health concern. The certified food manager of a food truck becomes the responsible party obligated to train the rest of the staff on proper food handling (FDA, 2009). Many of these new managers/owners of food trucks may have a difficult time passing on the correct instruction in food safety to their employees. An umbrella of deterrents may create a potential breakdown in carrying out the proper training to the staff, including time restraints, access to appropriate resources, poor attitude, and a lack of knowledge (Roberts, Barrett, Howells, Shanklin, Pilling, & Brannon 2008; Sobaih, 2011; Bush, Paleo, Baker, Dewey, Toktogonova, & Cornelio, 2009). A training manual geared specifically to instruct food truck personnel in food safety may serve as a helpful resource to aid management. At the present time, a food safety training manual exclusive to food trucks does not exist. Therefore, it is the contention of the researcher that a food safety training manual adapted to the specialization of the food truck means of food delivery can aid on-site managers in their undertaking of food safety instruction. Such a manual focusing on food safety techniques in the

preparation, serving, and storage of foods on a food truck can offer immediate support for the instructor. By developing a food safety-training manual that can be functional and valid nationwide, food truck managers will be able to deliver training to their staff with a thorough program designed to meet the unique needs of a food truck operation.

Furthermore, an applied training manual in food safety should offer an approach that will not only build knowledge in food safety but will incorporate practiced skills to reinforce learning and retention. Per Medeirosa**,** Cavallia, Salayb, and Pronencaa *(*2011), the mode of delivery in which the food safety training is presented to the foodservice personnel by management may influence the extent of the retention of the information they have processed, their continuous practice of food safety methods, and their attitude in the practices of these behaviors. Today most training in the foodservice business is done individually, utilizing such methods as the buddy system, cross training, computer training, or by video (Medeirosa et al., 2011). A food safety-training manual that employs teaching strategies researched to provide successful results and retention of the material should prove to be a valuable resource for food truck trainers. As the current expansion of food trucks across the nation continues to grow in numbers, managers/owners of this type of food operation need appropriate resources to train their food service personnel and to reinforce their own knowledge in food safety.

Purpose of the Study

The purpose of this study is to investigate food safety knowledge and current training methods of food truck managers/owners through the lens of the Social Cognitive Theory concepts. The researcher examined current food safety knowledge and practices of food truck managers/owners, in addition to food safety training methods, the attitudes of managers/owners toward food safety training, the implementation of food safety training methods, and what

specific food safety measures are unique in the food truck sector. A mixed method approach was used in the methodology of the study. The results will be utilized to create a food safety training manual, which attends to the training techniques supported by the Social Cognitive Theory. The food safety training manual will be specific to the needs of a food truck operation.

Research Questions and Hypotheses

This research study sets out to determine the effectiveness of the Social Cognitive Theory as a supportive base in the development of a food truck food safety training manual. In order to investigate this objective, the following research question and supporting hypotheses will be addressed:

RQ1-Does the Social Cognitive Theory lend itself to understand effective food safety training practices?

H1 The Social Cognitive Theory is positively associated with training methods and food safety knowledge.

Additionally, the food truck sector should be examined to determine the current state of the food safety culture with the current training environment. By investigating the current training utilized in this foodservice sector and the current food safety knowledge of managers/owners it may be determined there is a shortfall in the current training process. Therefore, in order to assess the need for such improvement the following hypotheses will be investigated:

H2 Food truck managers and owners lack food safety knowledge.

H3 Food truck managers and owners have a positive attitude towards food safety training.

H4 Food truck managers and owners implement accepted food safety training.

H5 The types of training methods implemented into a food truck operation are associated with food safety knowledge.

The end goal of this study will be the construction of a food safety food truck training manual. In order to construct such a manual it will be necessary to investigate the specific food safety measures that compliment a food truck operation. This second research question will be answered qualitatively by current food truck manager/owners with significant experience in the food truck industry.

RQ2-What specific food safety measures should be the focus in a food truck food safety manual?

Problem Statement

As the growing number of mobile food establishments increase around the United States, many cities and counties are observing the need to adjust their present regulations and guidelines specific to this sector of the foodservice industry. Of concern is the focus of food safety knowledge and the implementation of food safety practices of management and/or food handlers preparing and dispensing food from mobile trucks. This sector of foodservice is more susceptible to potential foodborne illness outbreaks due to the nature of preparing food outdoors and the transportation of raw and cooked foods in a mobile vehicle (Vanschaik & Tuttle, 2014).

Concepts of the Social Cognitive Theory are used in the framework of this study. These concepts- self-efficacy-attitude, behavioral intentions, situation, social support, and outcome expectancies and expectations are included in each component of the research design (focus groups, interviews, survey instrument). For the purpose of the development of a food truck food safety manual, exclusive to the needs of the food truck sector, other topics will be investigated in the study:

- Current food safety knowledge of food truck managers.
- How food truck managers are implementing food safety practices in their operation.
- The training methods utilized in a food truck operation.
- An assessment of management attitudes towards food safety training.
- The specific food safety measures vital in a food truck environment.

According to Milhem, Abushamsieh, and Arostegui (2014), it is important to choose the right method of training delivery related to the nature of work and organization objectives. Various learning theories have been explored to support training methods in health and food service areas. In particular, the CDC (2015), has recommended the Social Cognitive Theory as a theoretical support in the delivery of training to employees. Therefore, this study will investigate the appropriateness of the SCT as the main foundation from which to develop training methods to be used in a specialized food truck food safety manual. The manual will recommend appropriate training methods in which food safety measures can be taught and practiced in a food truck setting. Safeguarding the public from improper food safety measures is an on-going process. Adapting appropriate training techniques that will improve food safety knowledge and practice in the food truck sector may serve as a beneficial service to the public.

Significance of the Study

According to the NRA (2011), convenience is a major driver in restaurant growth and food trucks are certainly a convenient option by essentially bringing the restaurant to the consumer. The emergence of gourmet food trucks around the nation has also added to the tremendous growth of this unique breed of food delivery. As the number of food trucks continue to increase in the United States, food safety concerns cannot be ignored and should be addressed. The mobile foodservice lends itself to special attention when considering food safety

preventions. Food is prepared in a mobile vehicle, outdoors, and in a very small space. Food truck operators may transport prepared food to various locations during the day. The prepared food must be cooled properly, wrapped and stored in a clean environment at the correct temperature. It may be necessary to re-heat the food before serving. Food truck vendors can serve large groups of people, which may lead to lower standards of food safety practices (Ghezzi & Ayoun, 2013). The food truck operation is quite different when compared to the restaurant setting where food is prepared on the premises and delivered in a timely manner to the guests.

The current increase in food trucks around the nation has also drawn attention to the inconsistency in rules and regulations impacting the operation of these trucks. Since there is a lack of uniformity especially in the obtainment of food safety certification and food safety implementation for food truck vendors, the reassurance that all food safety practices are in place diminishes. The food truck sector can then benefit from a training manual specific to the food safety training associated with the special needs of this type of foodservice. The research conducted in this study will support the content and methodology to be used to develop a food safety training manual that can be utilized by owners and operators of this exploding sector of foodservice.

Structure of the Dissertation

This study is divided into five chapters and an appendix section. Chapter one provides an introduction to the food truck sector and the significance of researching food safety in this rising sector of foodservice. Chapter one also provides the research questions in which the study sets out to answer as well as the proposed hypotheses which will be addressed. Chapter two shows a comprehensive review of relevant literature pertaining to food safety, food truck laws, food safety workplace training, and several learning theories including the Social Cognitive Theory.

Chapter three provides the research methods: a mixed method approach with phase one, consisting of interviews with food truck managers/owners and focus groups with food truck managers and personnel and phase two consisting of an online survey distributed to members of food truck associations across the country which will then be analyzed through a regression model. Chapter four presents the results in two phases, phase one consisting of focus groups and interview coding and phase two consisting of the quantitative results of the survey. Chapter five provides the discussion of the results followed by references and appendices.

Chapter 2. Literature Review

Importance of Food Safety Prevention

Protecting the general public from foodborne illness is a complex obligation demanding the work of federal, state, and local agencies. Even with the vigilance of these many government agencies, foodborne illness outbreaks have claimed 9,000 deaths in 2012 (ERS, 2012). Several recent foodborne illness epidemics reported in the news help to further demonstrate the extent of the food safety problem in the United States. In 1998, Salmonella agona sickened 209 individuals in eleven states. In the same year, an outbreak of cyclosporiasis was reported at diners and hotels in Toronto traced back to raspberries used in a dessert. In the 1990s thousands were infected with Hepatitis A. The outbreak was linked to ill food workers who failed to wash their hands while working and to the lack of washing fruits and vegetables before service (CDC, 1990; 1996). In 2010 there were a total of 19,089 infections, 4,247 hospitalizations, and 68 deaths reported in the United States due to foodborne pathogens (CDC, 2011). The issue of food safety should not be taken lightly. Foodborne illness is a critical health concern that can impose substantial consequences. The food service industry is one of the largest business enterprises in America. It represents over four percent of the gross domestic product in the United States. Per the NRA, food service sales continue to trend steadily upward and in the first quarter of 2012 totaled $129.4 billion dollars in eating and drinking sales (NRA, 2012).

An outbreak of foodborne illness is defined as two or more people becoming ill from a common food eaten at the same time or place (CDC, 2012). Most foodborne illnesses attack the gastrointestinal tract and display symptoms that result in nausea, vomiting, abdominal cramps,

diarrhea, and fever. Some agents of foodborne illness may also attack other body organs or body systems such as botulism, which can create harm to the nervous system.The three principal types of agents causing foodborne illness are biological, chemical, and physical in nature (FDA, 2013). While biological agents produce most of these types of illnesses, chemical and physical agents should also be taken into consideration. One of the more common forms of chemical agents that may induce illness can come from cleaning agents. A common physical agent that may bring about a foodborne illness is the contamination of hard metal fragments from a can opener (Latta, 1999). The cause of foodborne illness then varies, but the concern of public health authorities is consistently the same, which of course is prevention.

Three bacteria cause the most common foodborne infections: Campylobacter, Salmonella, and E. coli 0157:H7 (FDA, 2013). A group of viruses called calicivirus or norovirus are also strong contributors to these types of infections. Campylobacter is a common bacterium that lives in the intestines of healthy birds. Most raw poultry meat has this bacterium on it, and passage of this bacterium can easily take place by eating undercooked chicken or other food that has been contaminated with dripping poultry juices. The Salmonella bacteria widespread in the intestines of birds, reptiles, and mammals can pose serious health consequences including damage to the human immune system. Undercooked food and improper storage of food may provide passage of the bacteria. E. Coli 0157:H7 is found in cattle and other similar animals. The bacterium is usually spread after the consumption of food or water that has been contaminated with microscopic amounts of cow feces. The Calicivirus or norovirus causes acute gastrointestinal illness. The virus can be harbored in animal reservoirs or can be passed from person to person. Each of these pathogens may also be transmitted from the lack of handwashing or improper handwashing techniques (FDA, 2013).

The American public has experienced nationwide alarm as outbreaks of toxic E. coli O157:H7 have been discovered in spinach. In 2006 two hundred and five individuals were infected in 26 states and three people died in the outbreak (FDA, 2007). In the summer of 2008 a salmonella outbreak sickened over 14,000 people in the United States. The FDA first cited that tomatoes were the source of the illness but later discovered that Serrano peppers were to blame (FDA, 2008). The threat of these pathogens in the American food base is disturbing and becomes another critical reason why food service establishments need to practice methods to reduce and prevent the passage of foodborne pathogens.

Food Service Employees and Food Safety

The food service worker may contaminate food either in the preparation phase or the service phase. Personal hygiene with strong emphasis on handwashing is one of the most important practices in the prevention of foodborne illnesses. Poor hand hygiene has been identified as a significant risk factor in spreading foodborne illnesses (Guzewich, 1995; Kilgore, Belay, Hamlin, Noel, Humphrey, Gary, Ando &, Rosenthal 1996; Kassa, 2001). Per the Centers for Disease Control and Prevention (CDC, 2013), poor personal hygiene of food handlers, along with improper temperature control are the two most significant factors leading to foodborne illness. Research conducted by Redmond, Griffith, Slader, and Humphrey (2004), further demonstrates that improper food handling practices can lead to dangerous contamination especially from raw foods. Further research in a laboratory setting (Daniels, Bergmire-Sweat, Schwab, Hendriks, Reddy, Rowe, & Atmar 2000; Olsen, Hansen, Bartlett, Fitzgerald, Sonder, Manjrekar, & Kim, 2001), emphasizes that if food handlers become infected and/or equipment becomes contaminated with pathogens, poor hand hygiene could transmit the pathogens to customers.

Lucey (2006) provides guidelines for proper handwashing procedures for food handlers. Employees should wash hands thoroughly with soap and hot water for at least 20 seconds. The handwashing facility should have liquid soap, hot water that is at least 100 degrees F and able to run for at least 20 seconds at that temperature. Employees must wash and sanitize their hands thoroughly in a handwashing facility before starting work, especially if the employee has direct contact with food. The hands should also be washed after each absence from the work area, after visiting the restrooms, after eating, drinking, smoking, chewing gum, chewing tobacco, coughing, using a handkerchief or tissue, and any other time when hands have become soiled or contaminated (U.S. Department of Health and Human Services, 2013).

Foodservice personnel who are in good health and practice proper personal hygiene help to mitigate the risks of foodborne illness. However, food handlers may be trained and learn the correct measures in what needs to take place in the implementation of proper food safety, but their actual behaviors may not be consistent with learned preventative measures (Chapman, Eversley, Fillion, MacLaurin, & Powell, 2010; Roberts et al., 2008). An employees' attitude and recognition of the importance of practicing food safety in the workplace should also be considered. Janz and Becker (1984) suggest that individuals evaluate the perception of risk by determining whether or not they are liable to a threat or perceived susceptibility, and whether or not the threat is truly severe or a perceived severity. Therefore, even if an individual acknowledges the importance of good hand hygiene they may not practice the activity consistently. Employees who perceive a stronger severity and/or a weaker barrier may be more likely to practice protective health action (Janz & Becker, 1984). Proper training practices in the importance of personal hygiene and the enforcement of these practices can improve food safety for the public.

Management plays a significant role in the food safety culture of a foodservice establishment. Managers must exhibit proper food safety practices to their employees, serving as role models, providing training, and extending the necessary resources to follow correct food safety practices. Arendt and Sneed (2008) stipulate that the involvement of management has been found to be a vital importance to motivate foodservice employees to follow safe food handling behaviors, such as handwashing, cleaning and sanitizing, and monitoring food temperatures.

Food Handling and Equipment

The role of food workers in foodborne outbreaks has been clearly noted by several research studies (Todd, Greig, Bartleson, & Michaels, 2009). According to the World Health Organization (WHO, 2013), 25 percent of foodborne outbreaks are closely associated with cross-contamination events involving poor hygiene practices, contaminated equipment, incorrect food processing, inadequate storage, and direct contamination by foodservice workers. Cross-contamination risks associated with different locations and surfaces depend not only on the occurrence of likely harmful pathogens, but also on the probability of transfer from those sites (Bloomfield & Scott, 1997). According to Jackson, Blair, McDowell, Kennedy, and Bolton (2007), food pathogens might survive on refrigerated surfaces and pose a cross-contamination risk. It has been reported that Salmonella can survive air drying in food for at least 24 hours and therefore, when cells are released from perishable foods on cutting boards, they may be viable for long periods of time (Mattick, Durham, Domingue, Jorgensen, Sen, & Schaffner 2003). Improper washing procedures of foods can also create the danger of cross-contamination. Cross-contamination and transfer rates of Salmonella enterica from chicken to lettuce were assessed by Ravishankar, Zhu, and Jaroni (2010). The study showed that washing or rinsing with only water

is not enough to remove S. enterica, however washing procedures including soap, hot water, and vigorous mechanical scrubbing are suitable to reduce cross-contamination.

Significant outbreaks of foodborne illness in the United States have been associated with improper cooling, lapses of twelve or more hours between preparation and eating, inadequate reheating of foods, improper holding of foods, purchasing and receiving foods from unsafe sources, improper cleaning of equipment and utensils, and inadequate cooking of foods (Bean & Griffin, 1990). Reports from the CDC (1977-1982) show that 40 percent of the foodborne outbreaks were due to improper cooling of foods and 25 percent were due to intervals of twelve or more hours between prep time and eating of such foods. Proper temperature regulation is a critical practice in the prevention of bacterial growth in prepared foods.

The World Health Organization (2013) with an intended mission to prevent the incidence of foodborne illness provides a simple guide to follow when preparing and serving food to others. The steps known as the "Five Keys to Safer Food" are: Keep clean; Separate raw and cooked; Cook thoroughly; Keep food at safe temperatures; Use safe water and raw materials. With proper training in commitment to all five segments, food handlers can reduce the incidence of foodborne illness.

Food Trucks: Food Safety Concerns

The environment of a mobile food establishment may not lend itself to the best situation in providing personal hygiene accommodations. The facilities on a food truck may impede the correct handwashing technique due to lack of hot water at the 100-degrees F mark, or there may not even be a suitable sink for handwashing. Another consideration is whether the employees have access to a restroom. Regulations in Southern California require vendors who operate more than an hour no matter where the location, must have access to a bathroom within 200 feet travel

distance. The 200 feet is measured from the bathroom to the entrance of the building where the bathroom is located. Cal Code 113941 states that the bathroom must have warm water, 100-degree F, single use dispensing soap, and be kept in clean working order (SoCalMFVA, 2017). The health department does not recognize "jay walking" as a part of travel distance. There is a difference between warm water (100º F), which is required for handwashing sinks and hot water (120º F), which is required for ware washing sinks (SoCalMFVA, 2013). The regulations for the operation of a mobile food vehicle as issued by the Georgia Department of Agriculture (2013) does not stipulate an actual measurement between the vendor truck and the restroom facilities, but instead states, "toilet and lavatory facilities must be available and conveniently located". Georgia regulations also "suggest" that mobile food unit operators should follow the sanitation procedures for restroom use and handwashing (Foodservice Resource Associates, LLC, 2012). The Dallas city requirements for restroom use mandate even different instruction, here, "the owner must maintain a written agreement with one or more businesses to provide toilet facilities for use by employees of the mobile food preparation vehicle at locations where the unit is stopped for vending" (Dallas City Hall, 2013). Inconsistencies in regulation of mobile food units present concerns when addressing the prevention of foodborne illness. The lack of restroom facilities, the inconvenient distances to walk to a restroom facility from a food truck, and the prospect that correct temperature for handwashing does not exist on the food truck or a nearby restroom are very important issues to consider.

The environment in which mobile food vendors prepare or sell food can create a favorable situation for bacterial growth. A hot climate or dusty streets in which food trucks may be parked provide the perfect atmosphere for bacterial pathogens to grow. El-Shenawy, Manes, and Soriano (2011) completed a study in Egypt that revealed out of 576 samples of sandwiches

and traditional foods, 24 percent were found to be contaminated with Listeria species, L.monocytogenes and L. innocua. Sandwiches were made from canned fillings such as salmon and tuna, which were free from pathogens. Food items that were stored in the food trucks such as processed cheese and eggs were exposed to incorrect temperature levels and therefore showed a positive rate of contamination. The study also concluded that the possibility of cross-contamination was quite high as the vendors were not careful in washing utensils and dishes, and did not change the water to clean such items. The information gathered from this study clearly shows the need for consistent food safety regulation and the enforcement of these regulations by inspection authorities. Careful handling and preparing of foods, washing utensils, and the correct practice of personal hygiene is imperative to safeguard the consumer.

In addition, the same study (El-Shenawy et al., 2011), determined that the vendors stored unsold food items in their homes and then proceeded to sell those foods the next day. The chances of bacterial growth increase as food is transported and then re-heated for serving, putting the potential consumer at great risk. The Florida guidelines for mobile food establishments as posted by the Florida Department of Agriculture and Consumer Services (2011), mandate that food products and supplies must be stored at approved commissaries and not in private residences. The Montgomery Alabama County Health Department Mobile Food Guidelines (2010) specifically state that, "all foods sold from the mobile unit must be from a permitted facility and that no foods can be stored or prepared in a private home, or in any facility not permitted by the local health department". Foods prepared at an off-site location that must be transported to the selling location may not be stored at proper storage temperatures and therefore become a potential hazard.

Food protection including shelter from contamination during storage, preparation, display, service, and transportation is very specific for the operation of a food truck. New York

City specifications include that, “the temperature of potentially hazardous food is to be 45 degrees F (7.2 degrees Celsius) or below, or 140 degrees F (60 degrees Celsius) or above at all times, except during necessary times of preparation” and that “packaged food is not to be stored in contact with water or undrained ice” (New York State Department of Health, 2013). The food protection guidelines of the city of Memphis, Tennessee (2013) state, “all food shall be protected from contaminants and the elements while being stored, prepared, and displayed”, does not provide precise restrictions in following this decree. Yet again the variance in the rules and guidelines concerning the operation of food trucks differs greatly from one location to another.

The close quarters and limited storage space on a food truck may inhibit correct methods of storage for cleaning agents or other types of chemicals. The Chesapeake Health Department operational guide for mobile food establishments advises that chemicals such as detergents and sanitizers should be stored below and separate from the food and utensils. The items should be labeled and maintained in appropriate containers (Chesapeake Health Department-Virginia, 2013). The city of Memphis, Tennessee does not permit food truck vendors to store any types of hazardous non-food items including detergents (City of Memphis Code of Ordinances- 5394, 2013). This is yet another example of discrepancy in the regulations governing food truck operation around the United States.

Food Truck Laws and Regulations

The umbrella of mobile food service establishments includes a variety of moving devices that serve food to the public including food trucks, hot trucks, push carts, and food carts. City and state laws around the country extend specific regulations and guidelines concerning the licensing and operation of these types of food delivery. Per the city of Raleigh, North Carolina’s governing regulations, a food truck is defined as a "licensed, motorized vehicle or mobile food

unit which is temporarily stored on a privately-owned lot where food items are sold to the general public" (Raleigh City Government, 2013). New York State's Department of Health and Mental Hygiene defines a mobile food service establishment as a "self-contained food service operation, located in a vehicle or a movable stand, self- or otherwise propelled, used to store, prepare, display or serve food intended for individual portion service" (New York City Department of Health and Mental Hygiene, 2013). A typical description of a food truck is a mobile, miniature commercial kitchen that must meet state sanitation requirements of a brick-and-mortar restaurant as well as be in compliance with additional local ordinances (D.C. Food Truck Association, 2012). The low startup costs to begin a food truck service and the utilization of social media have been key factors in the success of the business. The estimated cost of opening a new restaurant business is about $750,000, while the startup cost of a food truck ranges from $25,000 to $30,000 (Myrick, 2013). Another factor in the success in the selling of goods from food trucks is the use of social media. Vendors announce their current location via Facebook or Twitter and keep their fans up-to-date of their whereabouts. Many food truck vendors have become very creative in their marketing approaches such as the Dallas based company, *Two Trucks LLC. Two Trucks* launched its own food truck brand, 'The Butcher's Son", led by CEO Jonathan Wagner, son of Johnsonville Sausage founder Ralph Stayer. This enterprise has an obvious advantage in showcasing a brand name food as the use of Twitter and Facebook is used to spread the word where the truck will be located. The use of social media has helped to create a fan base for the *Two Trucks* company thereby increasing sales and a loyal following (Miller, 2012).

As with any food delivery business food trucks are governed with regulations. However, confusing and outdated regulations in some regions have posed challenges for potential vendors and consumers. The drastic increase in the appearance of mobile food vendors has forced some

localities to review their regulations and rewrite the rules. The Columbus Department of Public Safety in Ohio is making changes to the present regulations regarding food truck vending because of the recent upsurge in the number of vendors on the Columbus streets (Seman, 2013). Added confusion in the regulation of food trucks is location access. In large cities, such as Chicago or New York City, entire areas are off limits to vendors, often including popular desirable commercial districts (Norman, Frommer, Gall, & Knepper, 2011). Duration restrictions vary in regulation around the country forcing some vendors to spend resources moving rather than selling their goods, or as in Fresno, California vendors are not permitted to stop unless they are flagged down by a customer (SoCalMFVA, 2013).

Since the food truck market has expanded so rapidly, some cities have found themselves without many regulations that are directly applicable to the operation of a food truck (Stensson, 2011). Because of the lack of specific food truck regulations these cities (Boston, Philadelphia), often simply require that mobile vendors meet the city's basic sanitation requirements. Indianapolis, Indiana is one such city that fits this mold. According to the Indianapolis Department of Code Enforcement, food trucks must comply with the Food Vending Vehicle ordinance, Section 611-500 of the Revised Code for the Consolidated City of Indianapolis (Indianapolis Department of Code Enforcement, 2012). This regulation was geared for the initial purpose of selling ice cream by mobile vendors. From 2010 to 2012 the number of food trucks in Indianapolis has increased to 47 vehicles (VisitIndy.org, 2012). It is speculated that the lack of stringent regulations has attributed to the growing number of these vehicles. The lack of specific requirements and regulations in cities such as Indianapolis, suggests that food truck operators know what is required of them and therefore can run their business with significant freedom and flexibility which could raise concern with food safety issues.

Several cities are very concerned with what some are calling a virtual food truck revolution. Local governments have been pressured to issue regulations appropriate to the mobile food business in cities such as Jersey City, New Jersey (New Jersey Rev. Ordinances 175-8 to 15, 2011), and Washington D.C. (Restaurant Association of Metropolitan Washington, 2012). In fact, Washington D.C., has received significant media attention regarding its impending changes to food truck regulations. In January of 2012 the mayor of Washington D.C. proposed rules to update the 35-year-old regulations which have been governing mobile food vendors. The older regulations were basically intended for ice cream trucks and did not foresee social media playing such a vital role in the current food truck businesses (D.C. Food Truck Association, 2012). Cities such as Austin, Texas and Denver, Colorado with longer histories of food trucks have had more time in adjusting their ordinances to reflect the new and unique changes in the mobile food industry. These cities have proposed and adopted regulations treating food trucks as small portable kitchens and restaurants, instead of relying on ice cream truck regulations (Norman et al., 2011).

The management of food safety with regards to the food truck mode of food service is of critical concern. Since there are over 2,000 different state and local agencies in the United States inspecting food trucks, the standards imposed throughout the United States are not consistent (FDA, 2012). State regulations vary from state to state. In New York City, for example, before submission of an application, an applicant must first pass the health-department's Food Protection Course (New York City Department of Health, 2013). In Dallas, Texas home-based operations are not allowed, instead vendors must operate from a commissary and vehicles must report daily for food from the commissary (Dallas City Hall, 2013). This rule is also true in

Florida, and Florida vendors may only prepare items that cook quickly on the unit (Florida Department of Health, 2013). Securing a permit to operate a mobile food establishment does not necessarily satisfy the requirements in another state. However, consistent requirements of most areas include in their regulations that mobile food trucks must have hot and cold running water, a refrigerator, and a means to dispose of waste materials properly. Currently, there are no national standards for how food is handled and stored on food vending trucks. Without uniform standards, the public is at risk as the frequency of foodborne illness may well increase due to the lack of consistent regulations and standards governing mobile food vending.

Workplace Training

Food safety training has been identified to increase proper food handling practices within a foodservice operation (Kassa, 2001). The way a training course is presented to the trainee may influence the overall success of the mastery of the knowledge and skills imparted, and even the period of retention in which the learner maintains and practices the subject matter. Hislop and Shaw (2009) suggest that decision makers at local levels should not only ensure that staff and resources are available to meet the increased demand for food safety training courses, but that the issues regarding the format and the teaching style of the courses should be addressed. In addition, the Hislop and Shaw (2009) study recommended that many food safety courses might require modifications to suit the needs of food handlers that face language issues. New teaching approaches and changes to both the style and format of the courses provided should be explored to ensure that information is understood and retained by food handlers.

Workplace training typically takes place in one of four ways, that being formal training, informal training, embedded learning, and innovation (Stern, Song, & O'Brien, 2004). Formal training can be defined as classroom learning, where a trainer usually delivers material to the learner. Informal training, which is the most common type of training, is defined as on the job

training, where co-workers or supervisors coach the learner while doing their work. Embedded training takes place when the learner is forced to learn on their own using training manuals, trial and error, and a very common approach that is used today through computer software programs. Innovation is a form of learning where the employee develops a new process or technique that improves performance or productivity that was not known before (Stern et al., 2004).

Research focused on training in the workplace has shown that there is a positive relationship between the size of a business and the amount of formal training conducted. The size of the business affects who executes the training. It has been found that larger businesses often have more capital to hire trainers for formal training, while smaller businesses generally rely on managers or supervisors to conduct the training (Bishop, 1996). Bishop (1991), determined that formal training increases in large unionized manufacturing businesses, in jobs requiring the operation of machinery, at operations with multiple establishments, and in jobs where the skills learned are not useful within the community. Very little research has been published about hospitality training when compared to general businesses (Barrows, 2000).

Bush et al. (2009), developed and assessed a program designed to help small business owners and or managers conduct short training sessions with their employees. The study noted that short interactive health and safety workshops and easy to use training materials can help owners and managers of small restaurants improve workplace safety. It was also noted that participating managers/owners did appear to adopt a philosophy of employee involvement in their health and safety programs, and demonstrated this by conducting training for employees, discussing workplace hazards and solutions with employees, and in some cases, making changes in the workplace or in work practices to improve workers' health and safety. The workshop setting (formal training), promotes a positive training method allowing management to transfer

not only knowledge, but in some cases a compromise of employee involvement in the health and safety issues of the workplace.

Mixing online (embedded learning) and face to face learning (formal training) modes known as blended learning, have been adopted as a workplace training method with the anticipation that it will help solve transfer problems and will lend educational benefits (Lee, 2008). Transfer is defined as the on-the-job application of skills and knowledge gained in the training (Baldwin & Ford, 1988). Several researchers have claimed that many training programs are not designed for transfer, and instructional strategies or theories for enhancing transfer and instructional strategies are not integrated into the design (Broad & Newstrom, 1992; Holton, 1996). Blended learning is expected to serve as an alternative to traditional training for transfer issues (Eddy, Tannenbaum, Lorenzet, & Smith-Jentsch, 2005).

A cost-effective training method that has become the preferred means of training employees by management is via e-learning (Safar, 2012). Online training programs are less expensive than traditional delivery methods. The administrative and academic expenses including trainer's costs, training materials' costs, booking training facilities, travel costs, and time away from the job site can be considerably reduced when utilizing e-learning methods (Ozturan & Kutlu, 2010; Chen, 2008). Large corporations converting from traditional training methods to e-learning have saved overwhelming resources. IBM Corporation in 1999 saved approximately $200 million dollars by making such a change over. Rockwell Collins affirmed in 2000 that it had reduced training costs by 40 percent with only a 25 percent conversion rate to online training (Strother, 2002). Online training has the potential to deliver and disseminate contents in ways that benefit all types of learners, that is visual, verbal and auditory, reflective and observational, and kinesthetic learners from a wide scope of backgrounds and skill levels. Web-based training helps people pick and choose what to learn, where, and whenever they need

it (Bonk & Zhang, 2008). With the constant emergence of computers, smart phones, simulations, the Internet, and other ICT tools, e-learning continues to be a very popular choice of training.

According to Bryan (1990), training initiatives in the hospitality sector are usually short in duration and the information is used only to the degree that the foodservice worker understands it, and is motivated to use it. Many times, the trainee goes back to work with people who do not understand and do not accept the new skills or procedures that the trainee has gained from the original class instruction. Burke, Sarpy, Smith-Crowe, Chan-Serafin, Salvador, and Islam, (2006) states that as training methods become more engaging, that is as trainees become more active in the training initiative, their knowledge acquisition increased and the incidence of accidents, illnesses, and injuries on the job were reduced. Therefore, training in food safety simply by completing an online software instruction or from a prescribed textbook may not be an adequate method of reinforcement.

According to the Learning Pyramid (Lalley & Miller, 2007), participatory learning provides a substantial gain in the retention of subject matter. The learner will improve their retention by 50 percent if they are involved in a discussion group, 75 percent if they are actively "doing" and practicing the intended skills, and they may improve by 90 percent if they are teaching the material to others. Training involving behavioral modeling, ample practice, and dialogue has been found to be much more effective than passive methods such as computer-based and distance training methods when dealing with safety and health training (Burke et al., 2006). Foodservice employees may experience greater success as they process and apply acquired knowledge and skills about food safety with a more engaging training approach.

A large segment of foodservice employees are considered "part-time" employees. Sobaih (2011) notes limited research on part-time employees and their needs in the hospitality industry,

and that these workers continue to be treated and managed inappropriately by their employers. In particular, Sobiah (2011) researched management's perception of training part-time employees and sought to identify the obstacles for providing such training. The findings revealed that management was less likely to invest in training part-time employees because of an expected lower return on investment. In addition, other obstacles that played a role in the decision to limit training to these food handlers included:

- Time of training and availability of part-time employees.
- Working of irregular shifts.
- Working background of part-time employees.
- Low enthusiasm of part-time employees.
- High turnover of part-time employees.
- Lack of resources, knowledge, and training program.

The study also determined that most owners/managers held erroneous assumptions that part-time employees are not interested in training and view their job as a short-term commitment.

Reducing the incidence of foodborne illness in the food truck sector of foodservice is a viable and worthwhile effort. The types of training methods that are used to license food truck vendors may not be sufficient in verifying that these individuals can carry out proper food safety measures. Even more troubling is the fact that these licensed managers or owners are now responsible to train their employees in food safety as dictated by many local and state mandates.

The food truck explosion may certainly entice first time entrepreneurs to begin a mobile food vending venture, but at the same time these first-timers may not have any experience or knowledge about food safety. Part-time employees may not be given food safety training or a

quality training regime that satisfies a proficiency and knowledge of proper food safety. An investigation of the types of training methods that are used to license potential operators of a food truck, and the methods of training that are used by the licensee to instruct employees on the service vehicle, may prove to be valuable in the study of reducing food related illnesses.

Learning Theories

According to Bass and Vaughn (1968), learning can be defined as "relatively permanent change in behavior produced by experience". Ahmad, Jehanzeb, Alkelabi (2012), contend that understanding learning theories and utilizing them can help in the analysis and selection of effective training methods.

Behaviorism focuses on observable behaviors and discounts any independent activities of the mind. Strict behaviorists believed that any person can potentially be trained to perform any task, regardless of genetic background, personality traits, and internal thoughts within the limits of their physical capabilities (Cherry, 2016). Behaviorism is primarily concerned with observable behavior, as opposed to internal events such as thinking and emotion. In this model, learning is nothing more than the acquisition of new behavior based on environmental conditions. The theory maintains that conditioning is a universal learning process. Through classic conditioning a natural reflex responds to a stimulus or in operant conditioning, a response to a stimulus is reinforced. Therefore, a reward or punishment system of reinforcement can be used in the learning process. In a study by Hinken and Schrieshriem (2004), it was found that employees who received feedback whether positive or negative showed improved performance. Their study also found that omission of commentary on good performance diminished worker effectiveness and reduced worker satisfaction thus supporting the theory of operant conditioning.

Huit (1994), found that operant conditioning has been applied in clinical settings using behavior modification practices, in classroom management, and for instructional development.

Behaviorism does have several drawbacks. Many critics argue that behaviorism is a one-dimensional approach to understanding human behavior (Cherry, 2016). It is suggested that behavioral theories do not account for free will and internal influences such as moods, thoughts, and feelings. It does not account for other types of learning that occurs without the use of reinforcement and punishment. The usual modes of instruction related to behaviorism are lecture and highly structured settings. The responsibility of learning rests with the instructor. Positive reinforcement can foster motivation and may be influential in morale, but the concept of behaviorism is not enough to support the intricacies of cognition and reasoning (McLeod, 2007).

Gagné's Conditions of Learning Theory is a prescriptive method. In its original formulation, special attention was given to military training (Gagné, 1962). The theory promotes five major types of learning - verbal information, intellectual skills, cognitive strategies, motor skills, and attitudes. The importance behind this system of classification is that each learning level requires different internal and external conditions. According to Kearsley (1994), each of these learning levels requires different types of instruction. When learning new tasks for intellectual skills, a hierarchy is organized according to the complexity of the item to be introduced. The hierarchy provides the direction in which instruction can be introduced at each level. The learning hierarchy provides a basis for sequencing instruction and identifies prerequisites that should be completed to facilitate learning at each of the levels. A total of nine instructional events and corresponding cognitive processes are utilized in the theory:

- Gaining attention (reception)
- Informing learners of the objective (expectancy)

- Stimulating recall of prior learning (retrieval)
- Presenting the stimulus (selective perception)
- Providing learning guidance (semantic encoding)
- Eliciting performance (responding)
- Providing feedback (reinforcement)
- Assessing performance (retrieval)
- Enhancing retention and transfer (generalization)
  (Gagné, 1962)

Gagné's learning theory has been used in training curriculum design, in the private business sector, and in the non-school sector of governmental agencies. Most notably military and defense related settings have utilized the Gagné learning concepts (Fields, 1996). While Gagné's theoretical framework covers all aspects of learning, the focus of the theory is mainly on intellectual skills.

Gagné (1989) is also known for studying the transfer of training. His early research examined positive and negative transfer. The research was done with training subjects on complex motor tasks using multiple trials and observing them for periods of little or no improvement (plateaus) in learning. In the study, the control group performed better than the group with too few trials (negative transfer). The control group was out-performed by the group having optimal trials (positive transfer). Positive transfer occurs when learning one task assists in the performance of another, or when a previously learned task enhances the ability or performance in another task or control group. Negative transfer occurs when the learning of one task impairs the learning of another or previously learned task is an impediment to performance.

Gagné (1965), explains that external events and the conditions of learning indicate the need for what has been learned to be transferable to new and different situations where it might

be applied. Gagné (1971), says that capabilities learned in school should provide students with the background and skills to accomplish practical things in their lives or in occupations. He identifies this concept as lateral transfer. In addition, he proposes that students should be able to learn more complex things as a result of their previous learning. He identifies learning of more advanced or complex tasks based on concepts as vertical transfer.

According to Fields (1996), the most important aspect of Gagné's criteria to transfer learning is the dependency on what has already been learned and the necessity to vary the situations and possibilities in the training environment. In some types of training it is important to learn the correct behaviors in the environmental setting. The Gagné's theory does not account for ambiguity in the training situation. This poses a problem since the learner may have to use their judgment in situations that are new or problem-solve on their own. The rigidness of the learning design does not attend to creative input in the application of the instruction. In the Gagné's learning theory, the teacher is the instrument through which knowledge and understanding are reached. Since the instruction is more teacher oriented, the learner becomes very dependent on the teacher (Gagné & Driscoll, 1988). Independent or unassisted exploration in the learning process is not stressed in this model. The means of instruction may not adhere to the best interest in the adult learning style as explained by Knowles (1970).

The Bruner's Constructivist Theory (1961) is primarily based on the study of cognition. A constructivist learning perspective implies that knowledge and skills can be improved in different ways without any one ideal solution (Jonassen, 1991). Bruner (1961), proposes that important outcomes of learning include those items invented by our culture, that is concepts, categories, and problem-solving procedures. But more so, Bruner takes this one step further and

contends that a very important outcome of learning is the ability for one to be able to invent these things for oneself (Takaya, 2008).

A major theme in his theory is that learning is an active process whereby learners construct new ideas or concepts based on their current or past knowledge (Kearsely, 1994). Bruner (1961) proposes that learner's construct their own knowledge and do so by organizing and categorizing information using a coding system. This concept proposes that the most effective way to develop a coding system is for the learner to discover it rather than be told by the instructor. This approach known as the constructivist approach relies on the concept of discovery learning, thus students construct their own knowledge for themselves (McLeod, 2008).

Bruner (1966) proposed three modes of representation, enactive representation (action-based), iconic representation (image-based), and symbolic representation (language-based). The modes of representation are the way in which information or knowledge are stored and encoded in a person's memory. The modes are integrated and loosely sequential as they translate into each other. The theory suggests that it is effective with new material when following a progression from enactive to iconic to symbolic representation. Bruner (1966) also stresses that the role of the teacher is not to teach by a rote process, but rather act as a facilitator of the learning process. Good teaching would involve the design of lessons that help the learner discover the relationships between fragments of information. The instructor would only give out the information that the student would need, and would not organize it for them. According to Kearsely (1994), the instruction process should be concerned with experiences and contexts that make the student willing and able to learn. The process would be structured so that it can be easily grasped via a "spiral organization", and should be designed to facilitate extrapolation.

The lack of structure is a disadvantage when following the constructivist theory. In a workplace training initiative, skills and practices may be very defined in how they are carried out. The "active learning engagement" of the student in the learning process does lend itself to the requirements of adult learners (Knowles, 1990). However, students must consolidate previous knowledge and integrate the new information to make connections. The learning strategies need to be adapted to the student's level of skill or knowledge. Therefore, the trainer would have to take longer time in preparing lessons to meet the needs of each individual (HR Development Info, 2016).

Andragogy also known as adult learning, is a learning theory proposed by Malcolm Knowles (1973). The theory ascertains differences between adult learners and child learners. Knowles uses five assumptions to describe the adult learner, this individual:

- Has an independent self-concept and can direct his or her own learning.
- Has accumulated a reservoir of life experiences that is a rich resource for learning.
- Has learning needs closely related to changing social roles.
- Is problem-centered and interested in immediate application of knowledge.
- Is motivated to learn by internal rather than external factors.

(Merriam, 2001)

In addition to the five assumptions that Knowles describes in the adult learning theory, four additional principles are suggested when instructing adults. Knowles (1973) theorizes that adult learners need to be involved in the planning and evaluation of their instruction. Their experience provides a basis for the learning activities. Adults are more likely to be interested in learning subjects that have immediate relevance to their job or personal life. Adult learning is problem-centered as opposed to content-oriented (Knowles, 1984). In andragogy, the instructor becomes more of a facilitator or catalyst in the learning activity.

Andragogy is very self-directed and allows the learner to take control of his or her learning. The principles of andragogy make learning relevant and meaningful which brings a positive engagement to the learning process. A drawback to andragogy is that there is confusion in how it should be classified. Andragogy has been referred to as a learning theory but also as a technique of adult education.

The Social Cognitive Theory (SCT) is an interpersonal level theory developed by Albert Bandura that emphasizes the dynamic interaction between people (personal factors), their behavior, and their environments. Bandura (1977) explains that observing and modeling behaviors, attitudes, and emotional reactions of others is important in acquiring knowledge. The Social Learning Theory (Bandura, 1977), maintains that most human behavior is learned through observation and modeling: "by observing others the learner forms an idea of how new behaviors are performed and then later this coded information serves as a guide for action" (Bandura, 1977). The Social Learning Theory (SLT) explains human behavior in terms of reciprocal interaction between cognitive, behavioral, and environmental influences. The theory stresses four processes that are fundamental in observational learning which are attention, retention, motor reproduction, and motivation. Since these processes, attention, retention, motor reproduction, and motivation are all included in the premise of the theory, the cognitive and behavioral frameworks are bridged. Bandura (1977) determined that there are three basic models of observational learning. These models include: (1) a live person performing a behavior, (2) a verbal instruction model which involves telling details and descriptions of a behavior, (3) a symbolic model which uses a real or fictional character to demonstrate a behavior. The symbolic model may deliver information via movies, books, television, radio, online media, or other media sources (Sincero, 2011).

Bandura (1977) also proposed that the state of mind is crucial to learning. Intrinsic reinforcement which can be described as a form of internal reward or a better feeling after performing a behavior may have an effect on an individual's learning. The concept of self-efficacy, an individual's beliefs about whether they can achieve a given level of success at a particular task became part of Bandura's Social Cognitive Theory (1997). The Social Cognitive Theory (SCT) rooted from Bandura's original SLT premise can be used to explain how people acquire and maintain behavioral patterns while also providing a basis for intervention strategies. The theory deals with cognitive, environmental, and motivational aspects in understanding behavioral change. The Social Cognitive Theory has roots from the 1941 Miller and Dollard theory of social learning (Miller & Dollard, 1941). Later it was broadened by Bandura and Walters with added emphasis on observational learning and reinforcement (Bandura & Walters, 1963). Bandura also promoted his concept of self-efficacy into the SCT as he continued to determine his theory for understanding learning (Bandura, 1997). The model for this theory asserts that evaluating behavioral change depends on three factors which are environment, people, and behavior.

The Social Cognitive Theory has been frequently used in health-related research. In a study completed by McAuley, Lox, and Duncan (1993), male and female individuals with a median age of 54 years completed graded exercise testing at the end of nine months after cessation of an exercise program. Self-efficacy assessments were conducted prior to and following each graded exercise test and in the last week of the program. The results of the study demonstrated that after significant declines of efficacy brought about by a nine-month absence of a formal exercise program, acute bouts of activity that provide salient and accurate information can elevate strength of self-efficacy beliefs to the levels reached after five months of exercise. In

this study, self-efficacy has been shown to be a reliable predictor of exercise maintenance or a desirable behavior.

Compeau, Higgins, and Huff (1999) used Bandura's SCT model to test the influence of self-efficacy on outcome expectations and anxiety in computer usage. The researchers tested the model using longitudinal data gathered from 394 participants over a one-year interval. The results of the study found significant relationships between computer self-efficacy and outcome expectations, and between computer self-efficacy with respect to affect, anxiety and use. Again, self-efficacy was found to play a significant role in behavioral outcomes. Harrison, Rainer, Hochwarter, and Thompson (1997) completed a similar study on self-efficacy perceptions and performance. While many studies analyzing self-efficacy and performance have been conducted in a laboratory setting, the Harrison et al. (1997) study tested the self-efficacy performance model found in Bandura's Social Cognitive Theory in a work setting. A sample of 776 American university employees took part in the study that examined the relationship of self-efficacy perceptions to task-specific performance in a work setting. The results of the study found that increased performance with computer-related tasks to be significantly related to higher levels of self-efficacy, while decreased performance with computer-related tasks to be significantly related to lower levels of self-efficacy. The results of this study lend support to the application of Bandura's SCT to the work environment.

Several studies have seen the benefits of adopting the Social Cognitive Theory in developing a training program or learning curriculum. The CDC states that an effective health education curriculum includes strategies that are theory driven; the Social Cognitive Theory is one premise which the CDC recommends (CDC, 2015). The CDC best practices also states that the most promising training goes beyond the cognitive level and includes health determinants, social factors, attitudes, and norms (CDC, 2015). In addition to basic health knowledge, the CDC

also recommends including social pressures and influences, self-efficacy, behavioral outcomes, and attitudes which are all concepts of the theory used in the present study.

The SCT has been used to develop curriculum for training in other areas of education, including nutrition programs. The basic concepts of SCT have been used to develop a survey for elementary nutrition education programs (Hall, Chai, Koszewski, & Albrecht, 2015). Concepts used in the development of the survey included, knowledge, self-efficacy and behavioral questions. The researchers used a previous survey to develop specific questions that better addressed elementary nutrition knowledge and behavior. Knowledge and behavior are very important concepts of SCT and the social support of these situations has been seen to greatly affect the action taken (U.S. Department of Health and Human Services, 2015).

Another study entitled, "Development and Evaluation of Social Cognitive Measures Related to Adolescent Dietary Behaviors", utilized the SCT to train and develop adolescents to improve their dietary behaviors (Dewar, Lubans, Plotnikoff, & Morgan, 2012). In the study, the major SCT concepts were applied - self-efficacy, intentions/behavioral strategies, social support, and outcome expectation and expectancy. The concepts were used to examine the use of the Social Cognitive Theory to explain and change dietary behavior in children and adolescents. While a current study that incorporates the SCT to explain changes in behavior in food safety training methods does not exist, the present study sets out to pull from related health education literature, to apply the theory to the development of focus groups and face-to-face interviews, as well as in the construction of the survey instrument. Leading experts in the field of health education have outlined recommendations for operationalizing SCT concepts for the purpose of designing behavior change (Glanz, Lewis, & Rimer, 1997). Therefore, the SCT will be a beneficial theoretical base from which to determine the weaknesses and strengths regarding the

training approaches used by the surveyed food truck respondents. The SCT considers a person's past experiences which factor into if a behavior will occur and is learned. The SCT places focus not only on initiating behavior, but also on the maintenance of behavior (Bandura, 1998), which is a pertinent goal of public health.

The Social Cognitive Theory promotes three factors that must be considered to promote behavioral change in a work setting, which are the environment, people, and behavior. This SCT model, as seen in Figure 1, emphasizes that learning occurs with an emphasis on the acquisition of social behaviors.

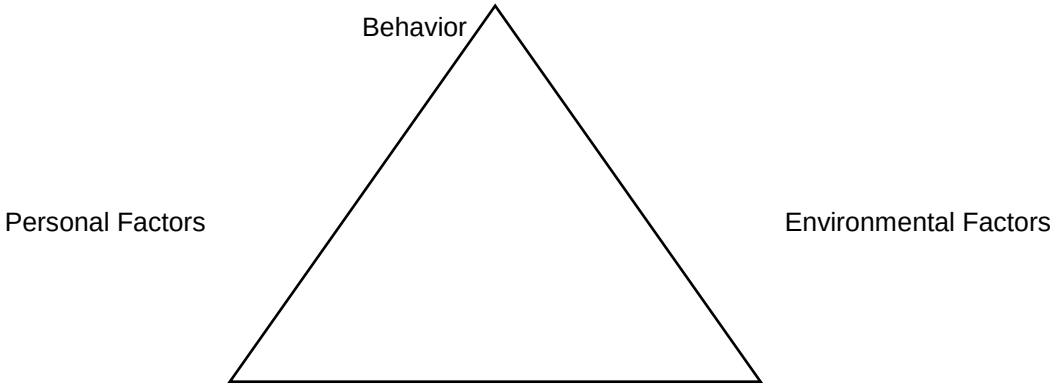


Figure 1. Social Cognitive Theory Model by Pajares (2002)

SCT also emphasizes that learning occurs in a social context and that much of what is learned is gained through observation (Pajares, 1996). The SCT model emphasizes that a person's functioning is a product of a continuous interaction between cognitive, behavioral, and contextual factors. The environment influences learning due to physical and social situations. Another way to think of this is that learning is shaped by factors within the environment, and is reinforced by personal experiences from oneself and by others. A belief within SCT is that people have an ability to influence their own behavior and the environment in a purposeful, goal directed manner (Bandura, 2001). SCT contends that the environment is very important in

determining behavior but also that people can through forethought, self-reflection, and self-regulatory processes exert substantial influence over their own outcomes and the environment. The theory also professes that learning can occur without an immediate change in behavior or more broadly that learning and the demonstration of what has been learned are distinct processes.

The SCT lends several concepts into its framework for understanding human functioning. These core concepts include observational learning or modeling, outcome expectations, perceived self-efficacy, goal setting, and self-regulation. Observational learning or modeling contends that people learn through observation. Learning can result from watching the behavior and from consequences of models in the environment. Outcome expectancies and expectations reflect an individual's beliefs about what consequences are most likely to take place if behaviors are performed. In the SCT model outcome expectations are important because they shape the decisions people make about what actions to take and which behaviors to suppress. The frequency of a behavior should increase when expected outcomes are valued and behaviors associated with unfavorable or irrelevant outcomes will be avoided.

Self-efficacy reflects an individual's' beliefs about whether they can achieve a given level of success at a particular task (Bandura, 1997). As an individual gains greater self-efficacy, they become more confident in their attitudes and abilities to be successful when compared to others with lower self-efficacy. Goals also are related to an individual's outcome expectation and self-efficacy.

Self-Regulation is essential in the learning process. The individual uses their own thoughts and actions to achieve a goal. In this concept, self-monitoring, feedback, self-reward, self-instruction, and enlistment of social support can influence learning. The SCT models of self-regulation assume that self-regulation is dependent on goal setting such that an individual is

thought to manage their thoughts and actions in order to reach outcomes (Schunk, 2001; Zimmerman, 2000).

SCT is a relevant model that can be used to understand an individual's capabilities for self-direction and self-motivation (Bandura, 1988). An individual may seek self-satisfaction from fulfilling valued goals and they may be motivated by discontent with a substandard performance. Therefore, discrepancies between behavior and personal standards can generate self-motivating results. Thus, the goal of SCT is to explain how people regulate their behavior through control and reinforcement to achieve goal-directed behavior that can be maintained over time. Developing a training manual instructing food truck personnel about proper food safety measures that adheres to the SCT concept would promote a positive learning outcome. The following components of Bandura's modeling concept provide a sequence of events that should take place to instill learning. These steps would be taken into consideration as lessons are constructed:

(1) Attention: SCT contends that in order to learn a new behavior, the learner must pay attention to the vehicle of instruction whether it is a person that demonstrates the behavior, an animation, book passage, computer model and so forth. The manner in which the material is presented has a strong impact on maintaining the learner's attention. Capture attention by making it interesting.

(2) Retention: Without retention, the new behavior cannot be established or learned. Therefore, exercises that repeat the new information must be delivered to the learner. Repetition can be completed in a variety of ways to continue maintaining interest and motivation to learn. It is vital for the learner to store information about the behavior.

(3) Reproduction: This step requires the learner to demonstrate the behavior. Again, there should be practice of the behavior to maintain retention. Practice should be happening with meaningful activities.

(4) Motivation: In order to keep on performing the learned behavior, the learner must be motivated to continue. With rewards or punishment, the mastery of the correct behavior can be reinforced. Self-motivation in mastering a new behavior is also considered due to intrinsic reinforcement. (Adapted from Sincero, 2011).

People are self-organizing, proactive, self-reflecting, and self-regulating (Bandura, 1977). Their learning is influenced by their own internal and external behaviors and outside environmental factors. By adapting training methods to the concepts of the SCT, learning becomes a part of the social environment. Training techniques that require modeling another individual's skills and behaviors becomes a suitable fit in the food truck training needs. Examples of training techniques that foster this type of application are shadowing, role playing, and mentoring. This theory provides a logical answer in how to motivate and instill the needs of the adult learner as described by Knowles, (1984). By observing others, individuals acquire knowledge of skills, strategies, and attitudes that can benefit themselves and their prospective employers. Engaging self-efficacy and social support in the work setting are very helpful in achieving goals. The Social Cognitive Theory appears to be a suitable model in which to tailor training methods to meet the needs of the food truck sector.

Chapter 3. Methods

Research Goals

The overall goal of the research endeavor in this study was to utilize the Social Cognitive Theory concepts in understanding the most effective training methods to be applied in a food truck food safety manual. These concepts were employed in all three data collection methods of the study. Due to the limited research available concerning food safety training, and knowledge in the food truck sector, the researcher used a mixed method approach. The study was conducted in two phases. The major goal of phase I was to explore the current training methods and the implementation of those methods in the current environment of acting food truck managers/owners. Also, the attitudes of practicing managers towards food safety training and their perspective in what types of food safety measures should be the focus of a food truck food safety manual was included. Focus groups were conducted with the intention to bring together food truck experts to discuss their experience in this sector. One of the main benefits of using focus groups to gather information is that the setting provides the opportunity for brainstorming. When one participant's comment feeds off of another comment and so on, the group dynamics are more in depth as they approach the subject (Hagglund, 2017). Interviews were also conducted with the objective to gather more detailed information about the food truck industry. As per Gill, Stewart, Treasure and Chadwick (2008) these two qualitative research methods are best utilized in conjunction when investigating a new subject area. The food truck industry is a

relatively new sector of foodservice that has not been investigated. Additionally, this portion of the study aimed to identify themes for the development of an online survey instrument.

In phase II the researcher comprised a survey instrument with the intention to analyze the same research questions presented in phase I, with the addition of examining current knowledge of food safety in the food truck sector. By comparing the association between the Social Cognitive Theory concepts and the food safety knowledge scores, the higher scores will indicate the suggestive training method that should be incorporated into the food safety training manual. This quantitative component of the study was completed in order to bring a wider national perspective. The final goal of this study was to make use of the training methods associated with high food safety knowledge scores. These identified training methods were then implemented into a food safety training manual geared specifically for the food truck sector.

Research Hypotheses

Bandura (1977) explains that observing and modeling behaviors, attitudes, and emotional reactions of others is important in acquiring knowledge. According to Bandura (2005), the social cognitive theory takes on an "agent-like perspective" to change development and adaptation. Individuals "function as contributors to their own motivation, behavior, and development within a network of reciprocally interacting influences" (Bandura, 1999). According to Crothers, Hughes, and Morine (2008), the theory emphasizes that cognitive, behavioral, personal, and environmental factors interact to determine motivation and behavior. Employee performance, a behavioral factor is influenced by how the individual, (the cognitive factor), is affected by organizational strategies which are the environmental factors (Wood & Bandura, 1989). The SCT promotes observational learning which is managed by the processes of attention, retention, production, and motivation. Through attention an individual has the ability to selectively

observe the actions of a model. As the individual is engaged in the observed behavior they are motivated to adopt the behavior and repeat it in the future (Bandura, 1977). Individuals learn by watching others. Not only are physical skills realized and learned through observational learning, but behaviors commonly related to attitudes are affected by observing how others behave. According to Ross-Gordon (1998), training strategies consistent with Bandura's learning model are mentoring, on-the-job training, and internships. The experienced trainer models the proper skills and behaviors to the learner.

Bandura (1977) also proposed that the state of mind is crucial to learning. Intrinsic reinforcement which can be described as a form of internal reward or a better feeling after performing a behavior may influence an individual's learning. An individual's beliefs about whether they can achieve a given level of success at a particular task is known as self-efficacy (Bandura, 1997). The self-efficacy component suggests that employee motivation and performance may be improved by increasing their self-efficacy. Accordingly, Bandura (1977), and Gist and Mitchell (1992), contend that employers can develop and improve the self-efficacy of their employees by focusing on performance outcomes, vicarious experiences, goal setting, and performance on specific tasks. Feedback is another way to improve self-efficacy in the workplace. Various studies exploring feedback and its role on self-efficacy and performance, indicate that higher, more detailed levels of performance feedback is positively related to subsequent performance (Beattie, Woodman, Fakehy & Dempsey, 2015). Graham and Weiner (1996), contend that self-efficacy can be used as a predictor of behavioral outcomes.

The social and physical aspects of the environment affect a person's behavior. The SCT explains that the environment provides models for behavior. These can be factors that are physically external to the person or a situation that provides opportunities and social support in

the learning process. Promoting an environment that incorporates a culture management in the work setting that motivates, provides performance feedback, and establishes a measure of performance in the culture of the work setting, are influential in gaining positive outcomes (McAleese & Hargie, 2004). Griffith, Livesey, & Clayton (2010), propose that developing and maintaining a food safety culture in the work setting can positively impact the practice of food safety. A reciprocal model based on the theoretical framework of Bandura's SCT, (Cooper, 2000), has been suggested as an appropriate tool to assess the food safety culture of food delivery establishments. Food safety management style and leadership, food safety communication, food safety commitment, the food safety environment, and decisions about training and remedial actions relating to training can all be included in such as assessment (Griffith, Livesey, & Clayton 2010).

The SCT (Bandura, 1977) necessitates that self-regulation is essential for the learning process. One's thoughts and actions to achieve a goal can influence success. In addition, outcome expectancies and expectations come about due to reinforcement or punishment. The SCT (Bandura, 1977) proposes that reinforcement and punishment cause individuals to form expectations about consequences that are likely to result from various behaviors.

Leading experts in the field of health education have outlined recommendations for operationalizing SCT concepts for the purpose of designing behavior change (Glanz, Lewis, & Rimer, 1997). Hypothesis H1 is now presented.

H1 The Social Cognitive Theory is positively associated with training methods and food safety knowledge.

Several factors contribute to the spread of foodborne outbreaks by food service workers. Among these factors are improper practices and the low level of knowledge of service workers

(Sharif, Obaidat, & Al-Dalalah, 2013). Angelillo, Viggiani, Rizzo, and Bianco (2000), point out that food handlers need training and education because of their low knowledge concerning microbiological food hazards, cross-contamination, proper temperature, and personal hygiene. The majority of foodborne illness outbreaks originate in foodservice establishments (Olsen, Mackinon, Goulding, Bean, & Slutsker, 2000). In a study of 95 food trucks in California, critical risk factors (poor hygiene, improper temperatures, unsanitary food handling practices), were observed while in operation (Vanschaik & Tuttle, 2014). The growing number of food truck operations around the country may contribute to a weakened food safety environment. This now leads to hypothesis H2.

H2 Food truck managers and owners lack food safety knowledge.

Food handlers participating in a food knowledge assessment study in a tourist locale, demonstrated positive attitudes with respect to food safety training as reported by Liu, Liu, Zhang, Lu, Liang, and Huang (2015). Even though food handlers admit there are barriers to carry out correct food safety behaviors, the respondents in a study conducted by Mitchell, Fraser, and Bearou (2007) agreed that they must exhibit a positive attitude on handling safe food. The involvement of management has been found to be a vital importance to motivate foodservice employees to follow safe food handling behaviors such as handwashing, cleaning and sanitizing, and monitoring food temperature (Arendt & Sneed, 2008). Hypothesis H3 is now presented.

H3 Food truck managers and owners have a positive attitude towards food safety training.

Some cities throughout the United States have written clear and specific ordinances regulating food trucks operation (Portland, Oregon and Los Angeles, California), while others have worked to update regulations (Washington D.C. and Jersey City, New Jersey) for food

truck operation in their locations. Here, the consensus is that food safety certification is very likely a requirement, mandated by the governing city/municipality in order to secure necessary permits and licenses. National providers offer certification courses such as ServSafe® or the Food Safety Manager Certification for these individuals, easing the situation for them.

Management in most scenarios is required to train their employees in food safety. The ultimate responsibility of a food truck operation to provide safe food to the public rests with the manager/owner. The risk, as defined by Dillion and Griffith (1996), "the probability of an adverse event in conjunction with the seriousness or severity of that event", would be taken into consideration when to pass on proper training to employees. Businesses identified as a source of food poisoning outbreaks can suffer significant damage in brand identity and financial losses (Griffith, 2000). Therefore, it seems unlikely that management would risk their business and reputation with an unfortunate foodborne illness outbreak. Food truck managers/owners are also responsible for passing inspections by their governing authorities and the local health department. Passing on appropriate food safety training to employees would be a proper strategy to avoid a failing inspection.

Food safety training has been identified to increase proper food handling practices within a foodservice operation (Kassa, 2001). According to Singh (2004) and Nieto-Montenegro, Brown, and LaBorde (2008), for management to ensure there is an execution of training activities that have been taught, someone must be assigned to supervise these activities after the initial training. A report conducted by Hedberg, Smith, Kirkland, Radke, Jones, and Selman (2006), stated that food service establishments that provide food safety training to their employees have less risk of causing food-borne diseases. This now leads to hypothesis H4.

H4 Food truck managers and owners implement accepted food safety training.

Food safety training has been identified to increase proper food handling practices within a foodservice operation (Kassa, 2001). According to Milhem, Abushamsieh, and Arostegui (2014), it is important to choose the right method of training delivery relative to the nature of the work and organization objectives. Some forms of training have been found to be more effective in health and safety. Training that involves behavioral modeling, sufficient practice, and dialogue are supported in the health and safety areas as opposed to passive training methods (Burke et al., 2006). The use of computer programs as a training method has been found to be positively associated with higher food safety knowledge (Fenton, LaBorde, Radhakrishna, Brown, & Cutter, 2006). Research by Bowman (2002), also maintains that active participation in the learning or training process will yield greater retention. Active training methods such as role-playing and one-on one instruction force the trainee to actually do something, as opposed to just sitting and listening to someone lecture. Fanning (2011), also acknowledges that engaging and active training strategies are successful methods in the retention of knowledge. According to DiPietro (2006), in-class training has an advantage in food safety training because it brings many people together at the same place but, in-service training allows the trainee to see what is taught as they work, allowing them to engage during the process (Medeirosa et.al., 2011). MacAuslan (2001) and Sprenger (1999), suggest that food hygiene courses should be shorter and more focused on the needs of the participant.

Rennie (1994), suggests that improvements in food safety practices could be increased if the training activities implemented, are associated with a physical and social environment that supports the application of appropriate food handling behaviors. The results of a meta-analyses of food safety training on hand hygiene knowledge (Soon, Baines, & Seaman, 2012), confirmed the benefits of efficacy of food safety training for increasing knowledge and improving attitudes

about good hand hygiene. The same study determined that managers should emphasize the positive outcomes of hand washing while creating an environment that encourages hand washing through the display of posters and reminders. The Soon et. al. (2012) study, recommended that management should practice positive role modeling as a contributor to a safe food service. Malhotra, Lal, Krishna, Prakash, Daga, and Kishore (2008) suggests that training in food service workplaces should be an on-going process, with periodic assessments in order to support the implementation of food safety practices. Hypothesis H5 is displayed below.

H5 The types of training methods implemented into a food truck operation are associated with food safety knowledge.

Ethical Considerations

Research was constructed to meet standards required for conducting human research. The researcher is CITI trained and certified as well as all members of the committee. The Institutional Review Board of Auburn University approved this study in February of 2013. All ethical considerations were met and approved for conducting research in this study. Please refer to (Appendix F) for IRB paperwork.

Research Design

The methodology of the study is depicted in research Figure 3, a research framework flowchart. The framework for the design in this research study has been adapted from the following questions derived by Crotty's (1998) framework.

1. What epistemology-theory of knowledge embedded in the theoretical perspective-informs the research?
2. What theoretical perspective-philosophical stance-lies behind the methodology in questions?
3. What methodology of action that links methods to outcomes-governs our choice and use of methods?

4. What methods and procedures we propose to use?

The above model was followed in the development of the dissertation methodology. In response to question one, the epistemological perspective in the study design reflects the constructionist approach. This approach best fits the study as it employs the concept of understanding the world in which people live and work (Crotty, 1998). The Social Cognitive Theory is used to satisfy the second question of the framework. As leading experts in the field of health education have utilized the SCT, the theory suits a solid base in understanding how to improve behavioral change in training food truck employees. A mixed method approach answers questions three and four in the framework design. In this mixed method research approach, a type of triangulation, namely methodological triangulation, was conducted. Denzin (1978) defines methodological triangulation as the use of multiple methods to study a research problem. Methodological triangulation entails combining both quantitative and qualitative data collection methods (Banister, Bruman, Parker, Taylor, & Tindall, 1994). By combining quantitative and qualitative methodologies, triangulation proposes to strengthen the research design, since a single method can never adequately solve the problem of rival causal factors (Denzin, 1978; Patton, 1990). This rationale supports the use of multiple methods in the present study, as a single data means of collection may not be sufficient to provide adequate and accurate research results. Crotty (1998) also states that approaching a problem from a constructionist epistemology means the researcher can apply triangulation methods.

Morse (1991) contends that methodological triangulation can be outlined as two different types, simultaneous or sequential. Simultaneous triangulation represents the simultaneous use of qualitative and quantitative methods in which there are limited interaction between the two sources of data during the collection stage. Sequential triangulation is a tactic in which the results of one

approach is necessary for planning the next method. The application of the sequential triangulation method is suitable in the design of the present study, since the researcher seeks to elaborate on/or expand the findings of one method with another method. The qualitative data collection will precede the quantitative data collection making the study a two-phase project. This type of approach exhibits the major characteristics of "exploratory sequential design" (Creswell & Plano Clark, 2004). As seen in Figure 2, Creswell and Plano Clark (2004) contend that this approach is appropriate in a research design when the researcher wishes to explain the quantitative results in more depth with qualitative data, that is statistical differences among groups or individuals who scored at extreme levels.

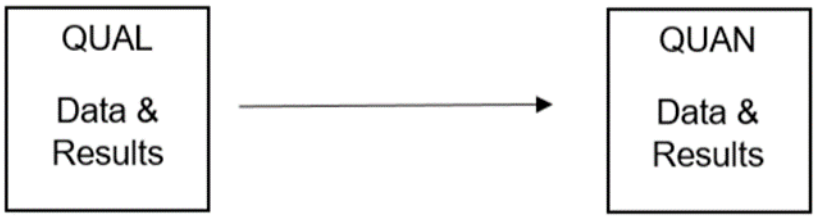


Figure 2. Exploratory Mixed Methods Design (Creswell & Plano Clark, 2004)

Furthermore, this technique is helpful in the development of an instrument when one is not available, and proves to be useful in the identification of the most important variables to study quantitatively, when these variables are unknown. The triangulation approach starting with a qualitative method for exploratory purposes can then be followed quantitatively with a larger sample, such that the researcher can generalize results to a population (Creswell, 2003). Lastly the use of triangulation presents added benefits in the research design. According to Creswell (2003), these benefits include the opportunity for additional sources of information that may give more insight into a topic, extend the obtainment of more comprehensive data, provide stronger

validity while complementing similar data since multiple sources are utilized, make it easier to analyze data to draw conclusions since the data are supported in multiple types of research, and additionally the inadequacies found in one-source data are minimized when multiple sources confirm the same data. The projected benefits of a mixed method approach including the triangulation of data sources is then a productive means for seeking convergence across qualitative and quantitative methods (Jick, 1979).

The methodology used in the study consists of focus groups and interviews to satisfy the qualitative portion. A survey instrument fulfills the quantitative segment of the investigation. The final goal of the research study will be the development of a manual from which the food truck industry may utilize as a guide in the training initiatives of food truck personnel. The manual will emphasize proper food safety knowledge and best practices to be used and reinforced in training procedures. The elements of this inquiry are represented in Figure 3.

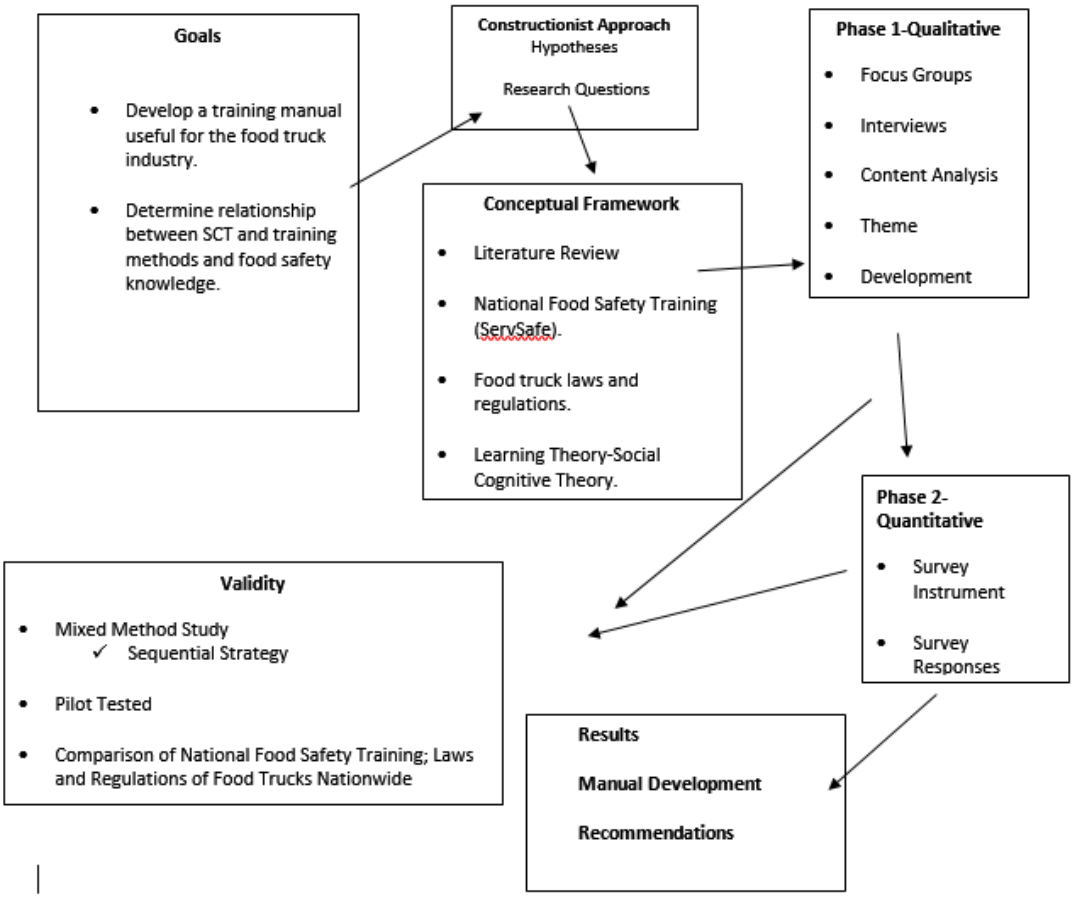


Figure 3. Research Framework Flow Chart

The above framework displays the mixed method approach which has been adopted. This approach includes focus groups and interviews with food truck owners/managers that make up phase I of the study. The use of focus groups and interviews have been used in training studies examined through the Social Cognitive Theory lens (McAlearney, Garman, Harrison, Song, & McHugh, 2011). The qualitative data was analyzed using content analysis. Content analysis is a research method that has come into wide use in various health studies in previous years (Hsieh & Shannon, 2005). The second phase of the study includes a survey instrument developed from previous literature, current food truck laws and regulations, the SCT concepts, and applicable themes developed from phase I. The alternating forms of data collection begins

with exploratory qualitative data compilation which then leads to a questionnaire development and collection of data. As per Miles and Huberman (1994), triangulation methodology has been used in academic research. In addition, this research process has been used in other food safety training studies as evidenced by Angelillo et al. (2000) and Worsfold and Griffith, (2003).

Mixed method studies have been used in current literature (Muskat, Blackman, & Muskat 2012). In social science research, the mixed method approach brings about more complete knowledge necessary to inform theory and practice. This is due to the mix or combination of qualitative and quantitative research methods in a single study (Johnson & Onwuegbuzie, 2004). Per Greene, Caracelli, and Graham (1989), there are five approaches for conducting mixed method research, with one of the approaches termed as triangulation. This approach will be used in the consideration of research questions items two through five, regarding focus groups, interviews, and the survey instrument. Studies by Cleland, Johnston, Walker, and Needham (2012) and Martin, McCaughtry, Flory, Murphy, and Wisdom (2011), employed the mixed method approach as a viable mechanism in gathering qualitative data through focus groups and interviews with a survey instrument. This approach was adapted to first use the qualitative data to construct the survey instrument and also compare the results of each phase of the study.

Phase I Qualitative Study

Sampling-focus groups. Food truck managers/owners in the southeast portion of the United States were approached for participation in the focus group interviews. Through county websites the location of 150 food trucks were identified in Alabama, Georgia, and Florida. To be considered as part of the focus group, the food truck operation needed to be in business for a span of five years, thereby demonstrating sufficient experience in the food truck sector. A random cluster sampling approach was used to narrow the sample to fifty food truck managers/owners. Information letters were sent via email to the fifty food truck

managers/owners. The researcher received twenty-seven responses back with willingness to participate. Out of the twenty-seven responses, twenty-one participants could meet on viable dates and times.

Interviews. The sample for the face-to-face interviews included managers/owners of food trucks who were in the food truck business with at least five years of operational experience. A random cluster sampling approach, a sampling technique in which a select a group of subjects for a study from a larger group (Easton & McColl, 1997) was used in narrowing down the sample. Participants in the face-to-face interviews represented the following major cities: Atlanta, Georgia; Miami, Florida; San Francisco, California; and Birmingham, Alabama. The majority of these cities were chosen due to their close proximity to the researcher. San Francisco was also included because the city is an established food truck municipality. Each of these cities were represented by a food truck association which maintains a website. Websites included information on the association's mission, sponsored events, and the contact information concerning the food truck members. The following table lists the participating cities and the affiliated association websites.

Table 1: Interview Locations

City	Website	Number of Food Trucks
Birmingham	http://bhmstreetfoodcoalition.com/food-trucks/	5
San Francisco	http://friskyfoodtrucks.com/bay-area-mobile-food-vendors-association/	5
Atlanta	http://www.atlantastreetfood.com/	10
Miami	http://www.miami-food-trucks.com/	5

Each food truck was emailed an information letter outlining the study, and proceeded to invite willing participants. A total of fifty responses were received. Due to travel and availability, a total of twenty-five interviews were conducted. The interview process took approximately one year to complete.

Phase II Quantitative Study

The sample for this phase included food truck managers/owners and employees operating or performing duties on a mobile food truck in the United States. A random cluster sampling approach was used in selecting the following locations: Atlanta, Georgia; Miami, Florida; Orlando, Florida; Washington D.C; Denver, Colorado; Southern California, Bay Area; New York, New York; Minneapolis, Minnesota, and Austin, Texas. Currently a nationally recognized food truck association in the United States does not exist. Each location selected in the sampling has a food truck association webpage affiliated with its specific metropolitan area. The information presented on each webpage included a mission statement, a list of vendors, contact information of the food truck vendor, and updates on future events and locations of operation. The websites were chosen based on site location in the United States, membership (providing that a minimum of twenty-five vendors belong to the participating website association), and the contact information listed on the association website regarding the food truck vendors. The total sample size was one thousand food trucks from across the United States. This total amount was calculated based on the number of food trucks that belonged to the associations that met the above criteria. Please refer to Table 2.

Table 2: Participating Food Truck Associations

City	*Web Address*	*Number of vendors*
Atlanta, GA	http://www.atlantastreetfood.com/	96
Orlando, FL	http://www.orlandosfoodtrucks.com/	58
Miami, FL	http://www.miami-food-trucks.com/	78
Denver, CO	http://denfoodtrucks.com/	213
Washington D.C.	http://www.dmvfta.org/	46
Southern California	http://socalmfva.com/	156
Bay Area, CA	http://friskyfoodtrucks.com/bay-area-mobile-food-vendors-association/	203
New York, New York	http://www.nycfoodtrucks.org/	118
Minneapolis, MN	http://mnfoodtruckassociation.org/	74
Austin, TX	http://austinfoodcarts.com/	28

Phase I Qualitative Data Collection

Focus groups. Academia has seen an increasing use of focus group interviews in research (Kvale & Brinkman, 2009). Focus groups usually consist of at least four to ten subjects led by a moderator (Chrzanowska, 2002). This style of interviewing is well suited for studies in a new domain, since the interaction may bring forward spontaneous and expressive views on the subject at hand (Kvale & Brinkman, 2009). The focus group methodology was chosen for the present study to gain information from which food truck managers/owners may discuss concerning the training programs they have implemented, the training methods they presently utilize in their food truck operation, their personal attitudes related to the issue of food safety,

and their outlook on specific food safety measures that are needed in the food truck sector. The goal of the focus group style is to bring forth different viewpoints on the subject. This is a nondirective style of interviewing that is primarily concerned to encourage a variety of viewpoints (Kvale & Brinkman, 2009). Questions used during the focus groups were open-ended and were developed from extensive review of the literature, the SCT concepts, and current food truck laws. Please refer to (Appendix C). The focus groups set out to promote discussion of the food truck managers/owners to explore the current training practices that they have in place, and how they implement food safety training into their operation. Participants were asked about their thoughts towards food safety training and specific food safety measures that they would deem useful in a food truck setting. Please refer to (Appendix A) for focus group data. The following research questions and hypotheses represent the main goal of the qualitative section of the study.

RQ1-Does the Social Cognitive Theory lend itself to understand effective food safety training practices?

H1 The Social Cognitive Theory is positively associated with training methods and food safety knowledge.

H3 Food truck managers and owners have a positive attitude towards food safety training.

H4 Food truck managers and owners implement accepted food safety training.

H5 The types of training methods implemented into a food truck operation are associated with food safety knowledge.

RQ2-What specific food safety measures should be the focus in a food truck food safety manual?

Managers/owners that operate food trucks comprised the five focus groups. An initial information letter was sent out to fifty food truck managers/owners in the southeast region of the United States. The individuals were asked to reply to participate in the study, and if so would be available on the following dates, January 5th to June 30th, 2014. The participants who responded and agreed to continue were sent several emails to confirm their availability. The five focus group sessions included four participants in group one, five participants in group two, four participants in group three, four participants in group four, and four participants in group five. Each session lasted between thirty and forty-five minutes. The focus groups took place at a neutral location in a boardroom setting. The managers/owners were asked questions concerning the following topics: current food safety practices in which they conduct that are specific to a food truck environment, current food safety training procedures in which they currently use, what if any accepted food safety training programs they are implementing, and their attitudes towards food safety training.

The focus groups were transcribed by the researcher. The method of analyzing the data and developing text into themes was conducted through content analysis. This method of analyzing qualitative data has been used in research, dating back to the 18th century in Scandinavia (Rosengren, 1981). Content analysis goes further than counting words to examine language for classifying large amounts of text into an efficient number of categories that represent similar meanings (Weber, 1990). In essence, it seeks to analyze data within a specific context in view of the meanings (Krippendorff, 1989).

Interviews. The second aspect of the qualitative portion included face-to-face interviews. Interview questions sought to gather themes from the subjects' own perspective concerning current food safety practices, current food safety training procedures, accepted food

safety training programs, and attitudes towards food safety training. A study involving food safety management in a meat plant in Canada utilized a qualitative approach in determining major themes to be identified in the data. The study by Ball, Wilcox, and Aung (2009) utilized focus groups and interviews to explore factors that influence training. In the present study, interviews were conducted using a semi-structured approach which has been seen to deliver a good picture of a subject's perspective (Kvale & Brinkman, 2009). From May through February of 2015, fifty food trucks were approached for face-to-face interviews. Information letters outlining the study were given to food truck managers/owners at the location of their food truck. These locations included the following areas: Atlanta, Georgia, Miami, Florida, San Francisco, California, and Alabama. The interviews set out to answer the following research questions and hypotheses:

RQ1-Does the Social Cognitive Theory lend itself to understand effective food safety training practices?

H1 The Social Cognitive Theory is positively associated with training methods and food safety knowledge.

H3 Food truck managers and owners have a positive attitude towards food safety training.

H4 Food truck managers and owners implement accepted food safety training.

H5 The types of training methods implemented into a food truck operation are associated with food safety knowledge.

RQ2-What specific food safety measures should be the focus in a food truck food safety manual?

The semi-structured interview questions were gathered using the same process as applied in the focus group segment and subsequently were used to conduct the interviews. The interviews lasted an average of eighteen minutes. The interviews were then transcribed and coded. The following is an example of coding system, food truck 1 was labeled T1, food truck 2, T2 and so forth. Content analysis technique was used to analyze the data produced through the interviews. Please refer to (Appendix B).

Survey Instrument

An online survey was developed through several stages. The online survey system, Qualtrics, was utilized for the online survey. Internet-based surveys via email have advantages such as reduction in costs, time, and resource management (Schaefer & Dillman 1998; Oppermann 1995). The development of the survey instrument followed the sequence below:

(1) The collection and review of pertinent literature in order to assess the main focal points previously studied, and the type of survey instruments which have been used in other food safety training studies was examined. After careful analysis, it was concluded that no literature exists that has surveyed the food safety training practices of food trucks.

(2) A literature review was conducted concerning the current food truck city/county regulations and laws from the targeted locations in the United States.

(3) Themes from the qualitative portion of the study, focus groups, and the interviews conducted with the current food truck managers/owners was used in the construction of the survey.

(4) Concepts from the Social Cognitive Theory regarding learning and training development was utilized.

(5) A pilot study was conducted that included participants from the focus and interview groups. These members had senior experience in the food truck sector.

Please refer to (Appendix E) for the online survey.

Demographic information. Demographic questions were constructed using open-ended and multiple-choice formats. These questions were included to gather demographic characteristics of food truck employees, and to compare the effects on the concept measurements

based on age, educational level, years of experience, employment status, food safety certifications, and the location in which the business is conducted. Other questions such as "How many employees currently work in your food truck operation?" and "Do you currently operate more than one food truck?" were included. This section included a total of eleven questions, three of which were open-ended and the remaining eight representing a multiple-choice format.

Food safety knowledge. Knowledge based questions were developed by reviewing organizations considered to be the leading authorities in the food safety sector. These noted organizations include: The Food and Drug Administration Food Code (FDA, 2009), ServSafe®, and the Partnership for Food Safety Education. According to Egan, Raats, Grubb, Eves, Lumbers, Dean, and Adams (2007), the four main categories of food safety knowledge recognized by these national outlets include: personal hygiene, food preparation, cleaning and sanitizing, and equipment. A total of sixteen questions comprised this section, including four questions referencing the aforementioned categories. According to Egan et al. (2007), a collective group of food safety studies have shown it to be suitable to measure knowledge with multiple-choice formatted questions within a range from eight to fifty questions. In the present study, sixteen questions were used in the survey instrument. All questions in the survey instrument were multiple-choice. Participants were asked to choose the correct answer or the "Don't Know" option if they were unable to respond to the question. This section of the survey sets out to test H2. A survey format was chosen to answer this research question since it has been seen to be a principal measure of knowledge in food safety studies (Egan et al., 2007).

Training programs and methods. The survey consisted of twenty-five questions with reference to the implementation of food safety training programs and training methods.

Statements regarding the specific techniques in how respondents were trained with respect to food safety were addressed. Responses were specifically rated if the respondent answered that they received their training through a fellow employee, an electronic program software, a manual to study, or by the observation of others. In addition, respondents were asked if they completed any accredited food safety programs. Responses were rated by using a five-point Likert scale, ranging from 1, "Strongly Disagree" to 5, "Strongly Agree".

Social Cognitive Theory Concepts

Self-efficacy-attitudes. This scale measures the respondent's belief in their capability to perform and execute food safety practices. The concept included five items in which respondents were asked to rate statements using a five-point Likert scale, ranging from 1, "Strongly Disagree", to 5, "Strongly Agree". Statements such as, "providing training to my employees" were rated using a five-point Likert-type scale, ranging from 1, "Very Difficult", to 5, "Very Easy". Respondents were asked if they felt that their training increased their skills and if they could apply the learned duties on the job. Respondents were asked to evaluate themselves based on their confidence level and motivations in food safety.

Behavioral/intentions. Using a five-point Likert-type scale, ranging from 1, "Strongly Disagree", to 5, "Strongly Agree", statements were addressed regarding individual intentions to conduct training and the person's ability to perform a behavior through essential knowledge and skills. Providing tools, resources, or environmental changes that make new behaviors easier to perform, and the intentions to perform them was used in evaluating statements in this concept, *(e.g. best describes your training, I choose to make time for food safety training, and able to apply what you have learned to your duties).* A statement was asked if materials used for training were being kept up-to-date *(e.g. ...presented materials were current*

and up-to-date). Respondents were asked to respond using a five-point Likert-type scale, ranging from 1, “Excellent”, to 5, “Poor”.

Situation. This portion of the survey referred to the perceptions of the environment (Dewar et al., 2012). These nine statements used a five-point Likert-type scale, ranging from 1, “Strongly Disagree”, to 5, “Strongly Agree”. Examples included such statements as “access to training materials” and “organization of the training”.

Social support. In this portion, linkages between people that may or may not provide social support, or may serve to function other than providing support were addressed (U.S. Department of Health and Human Services, 2015). A sample statement in this section is as follows, (*e.g. I ensure training has taken place before working without supervision, my employees have adequate time to attend food safety training).*

Outcome expectancies and expectations. Outcome expectations derive from previous experience and focus on value placed on the outcome. Example statements in this section are “have your skills and knowledge about food safety increased” and “lack of interest”. In total six statements were included under this concept.

Pilot Study

The pilot study consisted of thirty-seven participants (managers/owners of food trucks) were asked to rate the clarity of directions, by examining the wording and clarity of each statement included in the questionnaire. Each manager/owner was emailed an invitation to participate in the pilot study. Participants were timed while completing this survey. The average time of the participants completing the survey was fifteen minutes. Participants were asked to complete the questionnaire using a smartphone or tablet in order to critique any formatting issues. After receiving feedback from the participants, their responses were taken into

consideration which prompted some statements to be revised and/or deleted. The inter-item reliability of multi-item scales was tested by using Cronbach Alpha. The desirable goal is $\alpha \geq 0.7$ (Cronbach, 1951). It has been seen in studies that $\alpha \geq .6$ is also an accepted internal consistency reliability (Sim & Wright, 2000; Cortina, 1993; Field, 2005). Question 30, asking if providing training to employees was difficult and question 44, if training can keep customers safe was removed from the self-efficacy-attitude concept to allow an acceptable alpha score. The results of the Cronbach Alpha test are shown in Table 3.

Table 3: Results of Cronbach's Alpha Test

Categories	Cronbach's Alpha
Knowledge	.815
Training Methods	.746
Self-Efficacy-Attitudes	.780
Intentions/Behavioral	.657
Outcome Expectations	.689
Situation	.937
Social Support	.731

Phase II Quantitative-Data Collection

The final questionnaire was recorded into the Qualtrics survey system. An information letter was emailed individually to each food truck's contact email which was pulled from each city's association website. The email outlined the study in detail and directed willing participants to access the survey by clicking the link at the end of the email (Appendix E). A total of 1,000 emails were sent out. Follow-up emails were sent out at one-week intervals to respondents, a practice that has been seen to increase response rate (Dillman, 2000). The following table outlines the emailing schedule and the total number of responses.

Table 4: Email schedule for Online Survey

	Date	Responses
Initial emails	June 18, 2015	85
First reminder email	June 25, 2015	114
Second reminder email	July 2, 2015	104
Third reminder email	July 9, 2015	67
Total responses at cutoff date	August 30, 2015	370
Incomplete responses		99
Responses for data analysis		271

Reliability and Validity

In this mixed-method study, triangulation has been used to obtain data through several avenues. These avenues included focus groups to interview food truck managers/owners in a group setting, face-to-face interviews with food truck managers/owners, and by surveying a large national population of managers/owners of food trucks. Greene et al. (1989), defines triangulation as seeking convergence and corroboration of results from different methods and designs studying the same phenomenon. Triangulation is a major source of reliability and validity used in mixed methodology research (Creswell, 2003).

The development of the survey followed the principles of *Mail and Internet Surveys* proposed by Dillman (2000). This method outlines how to administer online surveys of excellent quality and procedures in order to gain high response rates, thereby increasing reliability. Survey constructs were then verified using Cronbach's (1951) alpha statistic which is used to measure internal consistency. Cronbach's (1951) alpha is used as a measure for reliability in social science research. Debate over which value is considered to be acceptable has been discussed. Typically, Cronbach alpha greater than or equal to seven is deemed to be the acceptable value, but research has shown that Cronbach alpha greater than or equal to six is acceptable and can be used as a reliable indicator in research (Sim & Wright, 2000; Cortina, 1993; Field, 2005).

A pilot study was conducted that included experts in the food truck industry. The participants in the pilot study gave their input in the revision of the questions and statements of the survey. This is a procedure used to avoid measure error. A common method to assess nonresponse bias is to compare characteristics between early respondents and late respondents. If no significant differences are found, then the survey results are likely to be more general to the population. The sample in this study was split between those that answered before the reminder emails, and those that answered after the final reminder email. No significant differences were found in the data.

The response rate of the survey was 31.1% (*N*=311). Per Dillman (2000), this value would be acceptable. However, those that indicated Not Applicable to the survey questions were removed from the analysis of the study. This left a total of (*N*=271) useable surveys for analysis. Regarding this study, validity was established using multiple forms of interview questions and survey questions which allowed for the data to be gathered from multiple groups of participants. The results of the qualitative data and quantitative data were gathered for comparison.

Data Analysis

Phase I qualitative study. Content analysis was the chosen method of analysis for the qualitative section of this study. This method of analysis has been used in evaluating focus group and interview data transcripts, and is specifically defined as "any technique for making inferences by objectively and systematically identifying specified characteristics of messages" (McAlearney, Robbins, Kowalczyk, Chisolm, & Song, 2012; Aliakbari, Bahrami, Aein, & Khankeh, 2014; Pype, Mertens, Wens, Stes, Van den Eynden, & Deveugele, 2015). Weber (1990) offers a detailed definition of content analysis as follows "a systematic, replicable

technique for compressing many words of text into fewer content categories". Per Krippendorff (1980), six steps are needed to define the analysis:

1) Define- To define the context, what the researcher wishes to know?
2) Unitizing- Phase of defining identifying units of analysis.
3) Sampling- Sampling units become representative of the organization under investigation.
4) Coding- The step of describing the recording units in terms of the categories.
5) Drawing Inferences- How the viable accounts of coded data are related to the phenomena the researcher wants to know about.
6) Validation- Validating evidence to bear on its findings

The data gathered from focus group and interviews were transcribed by the researcher. The information was then uploaded to the computer software program, ATlas.ti which is a program used for qualitative data analysis. Miles and Huberman (1994) point out that computer aided analysis can make procedures more systematic, ensure completeness, refinement, and increase reliability. In the present study, ATlas.ti was used in assigning open codes of the transcripts. A set of open codes was assigned and followed, developed from the research questions. This step is common in qualitative research to avoid data overload and allow a greater focus on answering the targeted research questions (Miles & Huberman, 1994). The "families" editing option then created axial codes at the second level of coding. Axial codes are defined as "passages identified by a user-defined set of codes representing concepts from the data that were in common" (Gibbs, 2002). From this point, coding sub-themes were developed by consolidating second level codes.

Phase II-Quantitative Analysis

Prior to analysis, dummy coding was used to code several variables to zeros and ones. This was used in the knowledge section of the survey to code correct answers to one and incorrect answers to zero (Webb & Morancie, 2015; Anandappa, 2013). Several demographic questions were also recoded, including the following: the city in which the most revenue is generated, years of experience, training programs participated in, and current work title/position. (Table 5). Independent sample t-tests and analysis of variance with post hoc analysis (ANOVA), were used to compare mean scores of knowledge and different demographic characteristics such as age, experience, city of revenue, gender, education, employment status, and prior food safety education. Frequencies of knowledge questions were examined to determine how many of the respondents answered the questions correctly or incorrectly. Multiple regression was conducted to predict knowledge score by the SCT concepts. Further examination led to regression models for the fail group and the pass group.

Table 5: Recoded Data in SPSS

Questions Recoded in SPSS	Code
What city is the majority of your food truck's revenue made in?	Atlanta-1 Orlando-2 Miami-3 Denver-4 Washington D.C.-5 Los Angeles-6 San Francisco-7 New York City-8 Minneapolis-9 Austin-10
How many years of experience do you have working in the food truck sector?	0-1 year-1 <1-2 years-2 <2-3 years-3 <3-4 years-4 <4-5 years-5 <5 years-6
Please list your current work title/position	Owner-1 Manager-2 Food truck park manager-3 Operator-4 Cook-5 No title-6
Please list any food safety training programs in which you have participated or completed. If you have not participated or completed in any food safety training programs, please write not applicable.	ServSafe®-1 HACCP-2 Food handler card-3 Certified manager-4 Not applicable-5

Chapter 4. Results

Qualitative Results-Focus Groups

Participants. A total of twenty-one participants were included in the focus group interview sessions. Each participant had at least five years of experience managing or owning a food truck. Fifteen participants (71.4%) were owners of their own food truck and six were managers (28.4 %) of a food truck. Each respondent has also worked in other areas of the food and beverage sector, including restaurants, catering, and dining services in hospitals.

Current practices of food truck managers/owners. Accredited training programs accounted for (n=17, 80.9%) of the current practices utilized by managers/owners of food trucks as a training source. ServSafe® was the most utilized programming as disclosed by eleven of the participants. ServSafe® can be offered in a classroom setting or via an online format. Twelve of the participants were instructed in a classroom setting while six received their training through a computer or online format.

Each participant acknowledged that they have had prior food safety training. When training new employees, in addition to the use of accredited programs, respondents noted the use of incorporating shadowing (23%) and training of specific cooking methods (14.2%). These methods are in addition to any city or county requirements. While participation in an accredited program is important and fulfills many city/county requirements, only seven (33.3%) participants took an examination to finish the program and test their knowledge retention.

The participating mangers/owners stated that it is not their duty to keep up to date with training. Four participants (19%) mentioned that it should be up to the city to provide notification as to when certification for training is necessary, and when to attend appropriate training

initiatives. Time was mentioned as a hindrance when trying to keep up with training requirements (9.5%). Recertification was viewed as an important aspect of training, and that maintaining an up to date certification process is important in a responsible food truck business.

Table 6: Selected Quotes: Current Practices of Food Truck Managers/Owners

Current Practices	Selected Quotes
Accredited Programs	T6:"ServSafe online" T18:"ServSafe certification course" T10:"…the day class that ServSafe puts on is time consuming its losing a whole day" T12:"A ServSafe app would be useful and save a lot of time"
Cooking Methods	T25:"Trained at culinary school on how to cook" T21:"I train my staff on cooking techniques and how to cook my food"
City/County Notification	T9:"I agree that once we take the required training then city/county officials need to inform us when to do it again" T7:"City would let me know" T20:"I don't have time to research that, county should notify…" T16:"The city is on top of being up to date" T2:"I'm notified when time to renew"

Attitudes of food truck managers/owners. The respondent's attitude regarding food safety was viewed as a necessary aspect of the industry. Participants who received training or participated in a training course remarked how the training boosted their confidence in their ability to provide safe food to their guests. Managers/owners (*n*=3, 14.2%), remarked that they have confidence in their chefs and their personal skills to perform proper practices. The confidence instilled from their training in such programs as ServSafe®, initiates a setup for success.

Training was viewed as an essential phase of the operation of a food truck business, even though a few respondents indicated it could be regarded as something that is not "enjoyable". Several responses reflected the attitude that just reaching a certification is all that should be required and nothing more. It should be noted that managers/owners are aware and feel that part of their job is to keep people safe.

Table 7: Selected Quotes: Attitudes of Food Truck Managers/Owners

Attitudes	Selected Quotes
Confidence	T1:"The training I have received from ServSafe is researched and proven so I am confident they taught me what I need" T22:"I am confident in my chefs and handpicked them they also feel their culinary school experience has trained them properly" T14:"I am confident in my culinary school experience" T11:"Our customers have confidence in our ability to keep food safe"
Training Necessity	T13:"…not interested but the training is a necessary evil" T25:"The training is needed because everyone thinks running a food truck is the new money maker" T16:"Needed to keep guest's safe from people with no training" T18"Keeps consumers safe from non-educated cooks"
Violations	T19:"All my inspections have had no violations and I am confident in my staff to keep it up"

Food truck food safety measures. This section pertains as to what participating managers view as important aspects of food safety specific to the mobile food environment. Equipment was discussed (n=14, 66.6%), with particular attention to temperature equipment (n=5, 23%) and modifying equipment (n=2, 8%). In the discussion, participants mentioned that depending on the type of food served or the previous use of the truck, a need for equipment

change could be required. Typically, food service food grade equipment must meet NSF standards. According to the FDA (2011), modifying or changing equipment would infringe on the NSF standard. One example brought up in the discussion was an old ice cream truck that needed an equipment modification due to a required upgrade in order to serve hot food items.

Cleaning and handwashing were found to be critical measures. Cleaning (n=12, 57%) was an important aspect due to the mobile nature of the food service and the occasional storage of food outdoors. A specific issue addressed was that of pests. Trucks that are not properly cleaned after each service and leave food residue about will draw pests. Insects and pests were discussed on three occasions. The cleaning of cooking equipment (n=9, 41.6%) can be a challenge. In some instances, the appropriate room for a dishwasher is not available or the power supply to support a dishwasher is lacking. Another hindrance is the lack of time to wash pots/pans by hand. If guests are outside of the truck ready to eat and only two people are working the food truck, stopping to wash pots/pans is not a feasible option. One solution brought up was to have extra equipment on board and to perform cleaning pots/pans back at a commissary kitchen. However, it should be noted that executing that scenario could result in cross-contamination issues since dirty contaminated pots/pans can be in close proximity to food being served.

Handwashing is always an important topic related to food safety. Hands can be considered culinary tools and thus keeping them clean is vital in the practice of executing proper food safety. A major issue with the food truck sector is handwashing (n=13, 61%). Issues include: water temperature, time to wash hands, having only the use of public restrooms, using hand sanitizer instead of soap, and running out of water or soap on the truck. Two managers discussed an example of their circumstances. In their service location, the law states that food

trucks are only required to park within two hundred feet of a public restroom, and are not required to have a handwashing sink on the truck. Therefore, this particular regulation poses a challenge to park close enough to a public restroom and allow employees ample time to be able to walk off the truck, and wash their hands. Some managers (n=3, 14%) have come up with another solution. They have their employees use hand sanitizer. According to ServSafe® (2010), while hand antiseptics can be used to reduce the number of pathogens on the skin, if used in a food delivery service their use must comply with FDA (2009) standards. The standard states that the use of hand sanitizers should be applied after handwashing and never be used in place of handwashing.

Table 8: Selected Quotes: Food Truck Food Safety Measures

Food Truck Safety Measures	Selected Quotes
Cleaning • **Pest Problems** • **Dishwashing** • **Contact Surfaces** • **Storage of Cleaners/Chemicals**	T23:"The layout and space of the truck makes it difficult to properly store chemicals and a lot of the times I keep them off the truck" T17:"After we open I clean the outside of the truck so that we are always ready and I think this will keep pests away"
Handwashing • **Water Temperature** • **Time to Wash Hands** • **Public Restrooms** • **Hand Sanitizer** • **Out**	T25:"If I am busy with a line I can't walk off the truck to wash my hands" T19:"The good areas to sell usually not within the 200-ft. requirement to use public restrooms"
Equipment • **Modify Equipment** • **Temperature Equipment** • **Ensure Equipment Works Properly** • **Power/Gas**	T3:"We serve crepes so we had to modify the electric to have enough power to operate with the coolers since our truck was an old ice cream truck" T8:"Generator at certain sizes can't run a cooler, flat top and water heater for handwashing"
Permits • **Parking** • **Up to Date** • **Posting Permits**	T17:"Bypass some ridiculous fees, permits and move on to more accommodating areas of the city"
Inspections • **Fire Department Inspections** • **Commissary Inspections** • **Find the Truck to Be Inspected**	T24:"Trucks need to be inspected and not just the commissary kitchen"
Manager Presence	T21:"If the person in charge isn't there during inspection or not certified that's a major problem so I am always on my truck while it's serving food"

Training method*s*. The manager/owners who participated in accredited training programs viewed these programs as a time hindrance. It was mentioned by two managers that having a smartphone or tablet application would be something that they could incorporate into their menu or cooking training. One manager stated "time is valuable since everyone has a smartphone or tablet; it makes sense for us to have an App. That would make life easier; they could log on take the exam and done". Time was discussed (*n*=5, 23%), and was determined to be a major issue. Managers related that utilizing ServSafe® was a hindrance, stating "time consuming and it loses a whole day". Another manager stated, "if certified they are certified who has time to put training into the schedule". Time saving solutions for training is needed so that managers/owners implement training on a regular basis.

Managers discussed the use of visual aids on the food truck. It was stated by a respondent, "pictures can remind staff of what to do", especially during busy times these friendly reminders help staff members to keep it on the brain. Posters and visual aids are available to promote food safety awareness and the proper food safety practices. Several government agencies such as the FDA (2011), and USDA (2013), provide a battery of visual aids for the purpose of food safety awareness. Ten managers discussed ways of demonstrating safe practices including the use of role playing and shadowing. Both methods are reliable techniques to increase retention of proper food safety practices (CVO, 2017). By and large, the focus groups' managers rely on the requirements of their county and city to fulfill the training of their staff in food safety. Extra effort to achieve continued instruction and training is not applied.

Table 9: Selected Quotes: Training Methods

Training Methods	Selected Quotes
Smartphone App	T20:"An App of some sort from ServSafe would be useful and save time" T2:"Time is valuable since everyone has a smartphone or tablet it makes sense for us to have an app. That would make life easier they could log on take the exam and done"
Visual Aids	T5:"Visualize processes like handwashing" T9:"I think visual charts are helpful for temperatures, I use them to remind them if I'm not there for plating"
Demonstration/Role Play	T18:"I role play as if I'm the inspector" T5:"We have meetings and Ill role play or ask questions" T3:"We role play on communication it's vital in the tiny environment"

Qualitative Results-Interviews

Participants. The interviewees came from the cities of Birmingham, AL (*n*=5); San Francisco, CA (*n*=5); Atlanta, GA (*n*=10); and Miami, FL (*n*=5). This sample included managers (*n*=15) and owners (*n*=10) that have been in the food truck industry for at least five years of operation. Trucks in operation by these managers/owners were part of a franchise (*n*=15, 60%), or independently owned (*n*=10, 40%). Sixty percent of managers/owners have other food service experience in addition to the food truck sector, while forty percent have worked exclusively in the food truck sector. No other identifiable information was taken to maintain the anonymity of the participating food truck operations. A total of twenty-five interviews were conducted.

Current practices of food truck managers/owners. Of the twenty-five conducted interviews, respondents were asked to discuss any current practices that they presently have in

place. None of the managers conduct additional training in addition to city/county requirements. All the managers stated that they follow requirements set forth in their city, and if inspected they would pass the training portion. In each of the cities represented by the interviewees, a manager on duty is required to complete ServSafe® or the Certified Food Safety Manager program. Each of these programs are nationally recognized food safety certification curriculum.

The respondents acknowledged that their current practice of training is the participation and completion of an accredited program such as ServSafe®. The ServSafe® course was completed and passed by twenty managers/owners. Each manager that participated in ServSafe® completed their certification in a face-to-face classroom setting which was a total of eight hours. The Certified Food Safety Manager course was completed by five interviewees. This program is administered by the National Registry of Food Safety Professionals. Each of the five managers stated that they enjoyed the ease of taking the course online at their own pace at times when it is convenient for them.

In addition, respondents discussed the rise of food truck events and the opening of food truck parks. These latest options allow managers/owners to alleviate the hassle of finding the correct zone to park and conduct business. Taking advantage of these options also reduces the likelihood of receiving a parking violation. Food truck parks and events are pre-approved areas for the operation of a food truck by the city/county.

Table 10: Selected Quotes: Food Truck Parks and Events and Training

Current Practices	Selected Quotes
Food Truck Parks and Events	T13: "The food truck events around here have become a much better option for me due to the area where I setup started giving parking tickets to us. These events guarantee guests and I don't have to worry about where I am parking and if I'm going to get a ticket or not." T25: "…but when at large events such as these it is impossible to have everything ready before hand because you never know if you're going to get slammed so we have fully cooked on the truck due to running out of prep. It is hard to plan perfectly at the commissary and sometimes we have ran out to the store to get more to cook" T22: "The events have become very popular in our area and it gives people a chance to sample several trucks and make an evening together" T18: "Some places allow people to bring their own alcohol so it is good for us because people stay longer and buy more food from us"
Minimum Training	T1: "My employees have all gone through a very basic food handling safety course but that is book work, when we are busy it is hard to correct things I see wrong because I am busy taking care of the guests in the front" T10: "…we have never been given a violation so I don't feel the need to spend money and time on training when we have not had any violations" T6: "My truck follows the required regulations in the areas we operate and none of those areas state we have to do extra training"

Attitudes. A rather interesting finding was that (n=15, 60%), managers/owners mentioned that they have yet to be inspected by a county or city health official. When discussing reasons why this would be the case, several managers/owners noted that the constant mobility of the vehicle makes it difficult for an inspector to find the truck. Managers/owners feel that it is not their responsibility to make it convenient for county/city officials to communicate where their

truck will be located each day. However, while several of the physical trucks were not inspected, each manager/owner stated that each of their commissary kitchens have all been inspected by a county health official.

Table 11: Current Attitudes of Food Truck Managers/Owners

Current Attitudes	Selected Quotes
Lack of Inspections	T17: "…I know in my company's case we are in a different city or community every week sometimes every day, I even travel out of state depending on where the business is at"
	T22: "I travel mostly to food truck events and take care of the permits and most of the time inspectors are not going to come out during very busy periods or they might not even know that the event is happening"
	T6: "I think more attention is given to restaurants and other facilities and inspectors are not as concerned with food trucks."
	T8: "I know with my truck being in a different area everyday it is difficult to hold an inspection but there is no law that requires us to stay in the same spot…"

Food Truck Food Safety Measures

Equipment. When discussing the section of equipment with food truck managers/owners, respondents (*n*=8, 32%) spoke about modifications made to their kitchen equipment in order conform to their own operation. The cleanliness of equipment was discussed by five interviewees (20%). The cleanliness surrounding the outside immediate area of a food truck was deemed an important consideration as well. It was noted by one respondent that consumers view the cleanliness of the outside of the truck when choosing which truck to purchase food from, just as a consumer would not choose a restaurant with an undesirable appearance.

Table 12: Food Truck Food Safety Measures

Food Truck Food Safety Measures	Selected Quotes
Equipment	T6: "every time after we are open I clean the outside of the truck so that we are always ready. I think that this will also help keep pests away…" T1: "Since we serve crepes we had to modify the electric so that we could have enough power to operate along with the coolers since we bought our truck from an old business that served ice cream" T9: "the biggest modification was making our fryer able to fit inside of our truck. It was hand welded together and works perfect" T17: "Power safety is important since I personally have been cited by the fire department. They inspect trucks in my area"
Permitting	T3: "…I see it as the communities making money off of us, there is only a need in my opinion to have one permit per county. Too many different regulations to follow and to be at certain events in certain areas you have to have these permits." T19: "it is unfortunately the nature of the business all the different permits for different areas are not necessarily but it's what we have to deal with. It is our responsibility as owners to keep up with the ever-changing laws" T9: "The beauty in our business is that we can bypass some of these ridiculous fees and move on to more accommodating areas of the city"
Fire Department	T25: "The fire department regularly inspects our gas and electric to ensure safety" T21: "…fire inspectors have checked us out with no violations"

The discussion further emphasized the issue of permits and licenses by five of the participants (*n*=5, 20%). The respondents stated that it is a struggle meeting the regulations while operating within multiple municipalities. Several cities and communities within a county have different criteria in permitting, therefore making it difficult to operate while obeying all mandated legalities. Many communities have enforced heavy fines when food truck operators disobey permitting regulations, thereby making certain communities less desirable due to the need to obtain additional permits. This is discouraging to owners, however in order to avoid this detriment, managers/owners strategize to conduct business in communities that do not enforce extra permits in addition to state or county permits. Although several respondents discussed the lack of city/county health officials regularly inspecting their food trucks, the fire department was mentioned by managers/owners (*n*=5, 20%), as an entity that does inspect trucks on a more regular basis.

Challenges in training procedures. The need for monetary resources was discussed by four (*n*=4, 16%) managers/owners as a barrier to train employees on a monthly basis. The lack of adequate facilities is an additional setback that hinders training on a monthly schedule. It was mentioned by fifteen (71.4%) food trucks managers/owners that the physical layout of the truck also added to the problem of conducting training sessions. The managers/owners that prep in a commissary kitchen stated that they do not want to pay to use the kitchen for training purposes.

Training methods. Food truck managers/owners were asked about preferred training methods they would incorporate in order to train their staff on food safety. Managers/owners (*n*=10, 40%), discussed completing the required training in their individual city. None of the participants discussed going above and beyond the minimum training requirements set forth by their city/county.

Table 13: Training Methods of Food Truck Managers/Owners

Training Methods	Selected Quotes
Challenges	T5: "A problem that I face is unlike others who also have a restaurant to have training sessions in, I have no location to have my staff all be in the same place. I would love to have training sessions to keep everyone up to date on food safety as well as training on how to continually cook good food" T9: "…The layout of a food truck makes it a problem to train, it's way too tight for employees to be cramped in there to train but employees need to be trained in the environment that they will be working in. It's hard to train staff for the actually working conditions inside of a food truck if they have not worked in that kind of situation. It's a kind of learn as you go process.
Required Training	T6: "since time is always valuable and everyone has a smartphone or tablet, I'm surprised there is not a food safety app. This would make life a lot easier have my employees log on take the exam and complete the certification" T8: "I know basic food safety training is important and most of the cooks I interview have been trained, but working in a food truck environment is different than working in a large kitchen. Proper storage is something I constantly preach and extra training should be enforced for food trucks. It is something overlooked but in our area I think it is very important" T7: "Communication is something that should be focused on, in that tight of an environment something can go wrong if staff is not trained. A mock situation in my experience works well when training movement and communication in a kitchen" T8: "when cooking anything the basics should all be focused but specifically to a food truck I would say checking temperature and storage since we are always on the move" T22: "I think since it is hard for me to always be on the truck proper maintenance of equipment and enforce a schedule such as checking the temperatures of the coolers every hour. I started enforcing this because I was cited on my cooler not being at the proper temperature. This is something that cooks might think is the manager's job but its everyone's responsibility" T3: "I think my staff should have training topics every day. This will keep them always thinking about food safety. I show them new recipes and I think throwing in a little lesson weekly would keep them informed"

Quantitative Results

Demographic data. Table 14 presents a summary profile of participants in the study. Of the 271 respondents, the majority (*n*=210, 77.5%) were male, while females accounted for 22.5% of the total responses. Many of the respondents (*n*=113, 41.7%), comprised the age group of 40-49. College graduates accounted for 43.5% of the responses, followed by some college/technical school, (*n*=91, 33.6%). The vast majority of participants (*n*=221, 81.5%) considered themselves in a management position, as well as considering themselves full-time employees comprising 80.8% of the total sample size. Each of the participating locations/cities in which the food trucks operated were comparable in total responses with the exception of Austin, TX which had zero responses. Most of the participants worked in Denver, CO, (*n*=56, 20.7%), New York City, (*n*=35, 12.9%), Washington D.C. (*n*=34, 12.5%), and Minneapolis (*n*=34, 12.5%) respectively. Participants responding in the study having one truck in operation apprised 64.2% of the total responses. Those individuals operating two trucks contributed to 12.5% of the responses, while 23.2% of the responses were collected from those that operated three trucks.

Table 14: Demographic Profile of Respondents

	Item	*FREQUENCY*	PERCENT (%)
Gender	Male	210	77.5
	Female	61	22.5
Age	Younger than 20 years	0	0
	20-29 years	35	12.9
	30-39 years	84	31
	40-49 years	113	41.7
	50 years or over	39	14.4
Education	None/some high school	0	0
	High School Graduate	17	6.3
	Some College/Technical School	91	33.6
	College Graduate	118	43.5
	Graduate School	45	16.6
	Military	0	0
Management Position	Yes	221	81.5
	No	50	18.5
Employment Status	Part-time	52	19.2
	Full-time	219	80.8
Experience	0-1 year	17	6.3
	<1-2 years-2	80	29.5
	<2-3 years-3	63	23.2
	<3-4 years-4	17	6.3
	<4-5 years-5	67	24.7
	<5 years-6	27	10
City	Atlanta	33	12.2
	Orlando	17	6.3
	Miami	33	12.2
	Denver	56	20.7
	Washington D.C.	34	12.5
	Los Angeles	11	4.1
	San Francisco	18	6.6
	New York City	35	12.9
	Minneapolis	34	12.5
	Austin	0	0
Trucks in Operation	One	174	64.2
	Two	34	12.5
	Three	63	23.2
TOTAL		271	

The role of the participants in the study included owners, managers, and cooks with the majority representing owners (*n*=106, 39.1%). Participants who were managers accounted for 24.7% of the responses, whereas 16.7% of the responses were given by cooks. Approximately 81.2% (*n*=220) of the participants stated that they have completed previous food safety training. Most of the respondents (*n*=100, 36.9%), stated that their training was completed through ServSafe® certification, followed by Certified Professional Food Manager (*n*=64, 23.6%), and HACCP (*n*=45, 16.6%) certification programs.

Testing of Research Hypotheses

The following section will address several research hypotheses. Several different types of statistical analyses will be conducted in order to support, or reject each of the different hypotheses.

H1 The Social Cognitive Theory is positively associated with training methods and food safety knowledge.

Regression analysis was conducted to address the relationship between the SCT concepts and the respondent's knowledge score. This was conducted to examine H1. As seen in Table 15, survey items pertaining to each concept were dummy coded into the variables below. Item 37 "I found my food safety training easy" and 59 "Overall food safety training experience" were both removed from the self-efficacy-attitudes concept in order to exhibit a reliable Cronbach alpha score. The situational concept also had two items removed to improve the Cronbach alpha score. These items were "the majority of my training on food safety was done by receiving a manual to study" and "the majority of my training on food safety was done by using an electronic software program".

Table 15: Regression Independent Variable Coding

Item	SCT Concepts
If I make a mistake in food safety practices, no one will know	Self-efficacy-Attitudes (α=. 780)
I can reduce foodborne illness outbreaks because of my food safety training	
If I make a mistake, I correct and keep working	
I'm confident in my food safety knowledge	
My employees have adequate time to attend food safety training	Social Support (α=. 819)
I can overcome challenges that provide food safety training	
When training new employees, I ensure that they have been trained in food safety before working without supervision	
I encourage the type of food safety training I received to others who will be involved in food handling	
I encourage my staff to learn about food safety	
I encourage members of my staff to keep up-to-date with food safety training	
I intend to discipline employees on not following proper food safety practices	Behavior Intentions (α=. 705)
I intend to have all my employees successfully trained in food safety	
I intend to keep up to date with my food safety training	
I intend to evaluate my employees on their food safety practices	
Do not conduct food safety training because lack of time	
The extent to which the presented materials were current and up-to-date	
As a manager, I ensure I evaluate the food safety practices of my employees	Situational Concept (α=. 687)
During operation at busy periods of time, food safety is the number one concern	
The training resources to implement a food safety training program in my operation are easily accessible	
I have adequate funds to conduct food safety training	
The organization of the training experience was	
I as trained in food safety by observing other employees at work and shadowing them.	
I was trained in food safety on how to cook specific food items	
The majority of my training on food safety was given to me a fellow employee or manager	
The level at which instructor met your expectations	Outcome Expectancies and Expectations (α=. 720)
The level of instruction was	
The training activities were	
My employees show a lack of interest to learn Food safety	
Overall level of knowledge and skill to food safety before training	

Table 16 displays the descriptive statistics for the regression analysis with the mean scores for each of the SCT concepts.

Table 16: Descriptive Statistics of Regression Analysis of Knowledge Score and SCT Concepts (N=271)

Item	Mean	S.D.
Knowledge	9.11	4.10
Social Support	3.62	.952
Situational Concept	2.94	.933
Outcome Expectancies and Expectations	3.37	.954
Behavior Intentions	3.84	.835
Self-efficacy	3.45	.470

The result of regression analysis, shown in Table 17, reveals that the SCT concepts have significant relationships with future knowledge scores, R= .683. The adjusted R^2 of this model is .456, which indicates that 45.6% of the variation in participants' future knowledge scores was explained by the SCT concepts. Thus, the goodness-of-fit of the model is satisfactory.

The following concepts were found to be significant predictors: social support (p<.000), situational (p<.000), outcome expectancies and expectations (p<.000), and behavioral intentions (p<.000) were found to be significant predictors affecting future knowledge output of managers/owners. The beta coefficient of each predictor variable is used to evaluate the impact of each variable on the future knowledge score. According to Table 17, the variable, social support (B=2.62), was the most important determinant of overall knowledge score. Outcome expectancies and expectations (B=-2.15) was the second important variable predictor influencing future knowledge scores while self-efficacy-attitudes was not found to be significant (p<.565).

Table 17: Regression Analysis of Knowledge Score and SCT Concepts (N=271)

Independent Variables	**β**	**Standard beta**	**T**	***P*-Value**
Constant	2.33		1.583	.115
Social Support	3.62	.841	9.90	.000
Situational Concept	-1.04	-.237	-3.69	.000
Outcome Expectancies and Expectations	-2.15	-.500	-7.70	.000
Behavior Intention	1.36	.276	3.15	.002
Self-efficacy-Attitudes	-.350	-.040	-.576	.565

a. Dependent Variable: knowscore

Further investigation into hypothesis H1, led to the examination of the separate groups of participants, that is those that passed and those that failed the knowledge section from the survey. Table 18 indicates the descriptive statistics of the passing group.

Table 18: Descriptive Statistics of SCT Concepts and Passing Knowledge Scores (N=271)

Item	**Mean**	**S.D.**
Knowledge	13.88	1.17
Social Support	4.19	.634
Situational Concept	3.00	1.04
Outcome Expectancies and Expectations	3.44	1.01
Behavior Intentions	4.29	.712
Self-efficacy-Attitudes	3.60	.500

The result of the regression analysis pertaining to those that passed the knowledge section is shown in Table 19. This regression model indicates that the SCT concepts have significant relationships with future knowledge scores, R= .950. The adjusted R^2 of this model is .897, which indicates that 89.7% of the variation in participants' future passing knowledge scores were explained by the SCT concepts.

All concepts of SCT (social support, situational, outcome expectancies and expectations, and behavioral intentions, and self-efficacy-attitudes) were found to be significant (p<.000) predictors affecting future passing knowledge output of managers/owners. According to Table 19, the variable, behavior intention (B=6.43), was the most important determinant of overall knowledge score. Situational concept (B=-4.58) was the second most important predictor variable influencing future knowledge scores while social support (B=.438) was the least influential.

Table 19: Regression Analysis of SCT and Passing Knowledge Scores (N=271)

Independent Variables	**B**	**Standard beta**	**T**	***P*-Value**
Constant	3.643		3.28	.001
Social Support	.438	.238	2.66	.009
Situational Concept	-4.58	-4.10	-20.0	.000
Outcome Expectancies and Expectations	-.722	-.626	-4.30	.000
Behavior Intention	6.43	3.93	16.26	.000
Self-efficacy-Attitudes	-.832	-.357	-5.10	.000

a. Dependent Variable: knowscore

Table 20 displays the descriptive statistics for the failing knowledge group of participants.

Table 20: Descriptive Statistics of SCT Concepts and Failing Knowledge Scores (N=271)

Item	**Mean**	**S.D.**
Knowledge	13.88	1.17
Social Support	4.19	.634
Situational Concept	3.00	1.04
Outcome Expectancies and Expectations	3.44	1.01
Behavior Intentions	4.29	.712
Self-efficacy-Attitudes	3.60	.500

The result of regression analysis for the failing group, shown in Table 21, reveals that the SCT concepts have significant relationships with future failing knowledge scores, R= .650. The adjusted R^2 of this model is .406, which indicates that 40.6% of the variation in participants' future failing scores were explained by the SCT concepts. The goodness-of-fit of the model is satisfactory.

SCT concepts including social support (*B*=1.22), self-efficacy-attitudes (*B*=-1.53, p<.017), and situational were found to be significant (*p*<.000) predictors affecting future failing knowledge output of managers/owners. According to Table 21, the variable, situational concept (*B*=1.76, *p*<.000), was the most important determinant of overall knowledge score. In the failing group, outcome expectancies and expectations (*B*=-*.183, p*>.487) and behavior intentions (*B*=-.433, *p*>.248) were found to be insignificant. Further explanation of these results will be discussed in chapter five.

Table 21: Regression Analysis of SCT and Failed Knowledge Scores (N=271)

Independent Variables	**B**	**Standard beta**	**T**	***P*-Value**
Constant	4.782		3.27	.001
Social Support	1.22	.440	3.55	.000
Situational Concept	1.76	.581	6.19	.000
Outcome Expectancies and Expectations	-.183	-.064	-.697	.487
Behavior Intention	-.433	-.130	-1.16	.248
Self-efficacy-Attitudes	-1.53	-.251	-2.41	.017

a. Dependent Variable: knowscore

H2 Food truck managers and owners lack food safety knowledge.

The second hypothesis (H2), will now be examined. Table 22 displays the participant's scores on their knowledge of widely acceptable food safety practices. Frequencies were calculated based on correct responses. The correct answer was coded in SPSS as a 1 and the incorrect answers were coded as a 0. The table indicates the percentage of respondents that answered each question correctly. None of the participants answered every question correctly.

Table 22: Percentage of Participants with Correct Answer for Each Knowledge Question

Category	Question *Correct Response*	Correct *Frequency* (%)
Personal Hygiene	What must food handlers do after touching their hair, face, or body? *Wash their hands*	156(57.6%)
	Before putting on disposable gloves you should, *Wash your hands*	206(76%)
	How hot should the water at a handwashing station get? *At least 100°F*	169(50.8%)
	When are disposable gloves required to be worn? *Handling ready to eat foods*	148(47.6%)
Food Preparation	To prevent cross-contamination, *Use color coded cutting boards for different food items*	182(58.5%)
	Hot food can be held without temperature control for a maximum of_____hours before being sold, served, or thrown out. *4*	160(67.5%)
	When reheating food, the internal temperature should be indicated with a thermometer at____degrees. *165°F*	148(47.6%)
	To safely chill food you should, *Divide into shallow covered dishes and then place in the refrigerator*	220(70.7%)
Cleaning and Sanitizing	If food contact surfaces are in constant use, how often must they be cleaned and sanitized? *Every 4 hours*	88(32.5%)
	What is the correct way to clean and sanitize a prep surface? *Wash, Rinse, Sanitize, Air-dry*	182(46.9%)
	If a dishwasher is not able to fit on a food truck, what is required? *A three-compartment sink with drain boards*	164(52.7%)
	Which is a source of potable water? *Untested private water sources*	129(47.6%)
	Foodservice equipment that has been certified as meeting certain standards may be stamped with the _____mark. *NSF*	183(67.5%)
Safe Chemical Handling	If pesticides are stored in the operation, where should they be kept? *In a secure location, away from food*	169(54.3%)
	Which of the following is an approved chemical sanitizer? *Chlorine*	178(65.7%)
	All potable water tanks and waste water tanks should be thoroughly flushed and ____before food service operation begins. *Sanitized*	147(47.3%)

The following table focuses on the total number of correct responses from the knowledge section of the survey, which pertains to widely accepted food safety practices. Other studies emphasizing food safety knowledge scores consider a passing score at seventy percent (Waggoner, 2004; Hertzman & Barrash, 2007; Liu et al., 2015). Using these previous studies as a guide, a total of twelve correct answers would be needed to be considered a passing score in the current study. Therefore, only 27.4% of the total respondents in the present study passed the food safety knowledge section of this survey.

Table 23: Number of Correct Knowledge Scores

Total Correct Answers Out of 16	*Frequency*	*Percentage of Total Respondents (%)*
1	**0**	**0**
2	**11**	**6.5**
3	**17**	**6.3**
4	**17**	**6.3**
5	**11**	**4.1**
6	**28**	**10.3**
7	**33**	**12.2**
8	**17**	**6.3**
9	**0**	**0**
10	**34**	**12.5**
11	**11**	**4.1**
12	**17**	**6.3**
13	**17**	**6.3**
14	**18**	**6.6**
15	**40**	**14.8**
16	**0**	**0**

A total of 243 participants stated that they have participated in previous food safety training (*n*=220, 81.2%), while 51 participants stated that they have not completed food safety training (*n*=51, 18.8%). Many of the participants (*n*=100, 36.9%), that completed a training program did so with the ServSafe® certification, while 23.6% completed the Certified Professional Food Manager in food safety certification. These results are in accordance with the

qualitative results that stated managers were trained by an accredited program (*n*=17, 80.9%), with the majority of those participants completing ServSafe®. It should be noted that out of the 68 respondents who have had no previous training, eleven respondents answered not applicable on the questions pertaining to which training program they received. These participants were removed from the analysis due to answering not applicable.

Table 24 presents the difference in the knowledge scores pertaining to the demographics of the study. A significant difference is shown between males and females in this study, (*t*=8.78, *p*<.000), with males scoring an average of ten correct answers out of sixteen. Participants that held management positions also scored significantly higher on the knowledge portion of the survey (*t*=7.22, *p*<.000). No significant difference was found between part-time employees and full-time employees. Participants that have had previous food safety training did score significantly higher, (t=5.66, *p*<.000) on the basic food safety knowledge questions.

Table 24: *t*- test Analysis on Knowledge Scores and Demographics

Item			**Mean**	**S.D.**	***t*-value**	**Sig.**
Knowledge Score	***Gender***	Male	10.15	4.00	8.78	.000
		Female	5.12	1.74		
	Management Position	Yes	9.89	4.06	7.22	.000
		No	5.64	1.91		
	Employment Status	Part-time	8.12	4.62	-1.96	.051
		Full-time	9.35	3.94		
	Previous Training	Yes	9.75	4.07	5.66	.000
		No	6.33	2.89		

Table 25 presents knowledge scores compared with the participants age, education, position title, experience in the food truck sector, and city of operation. Statistical significant differences were found between age and the knowledge score. Respondents aged 20-29 showed a significantly higher knowledge score (*F*=5.25, *p*<.000). Respondents in this age range scored a mean knowledge score of 11.09±3.04. The educational level of the participants showed a significant difference, (*F*=29.80, *p*<.000), with high school graduates scoring the lowest with a

mean score of 3.00, and college graduates scoring the highest with a mean score of 10.83±3.40 on the knowledge portion of the survey. A very interesting finding was discovered pertaining to the differences in the knowledge score when addressing the position title of the participants, (F=20.07, p<.000). Participants that did not list their title scored a mean score of 15.00, while owners and managers scored a mean score of 9.41±4.24 and 8.2±2.51 respectively. Experience was also shown to have a significant difference, (F=12.42, p<.000). Participants with <2-3 years and <5 years had the highest mean scores of 10.23±4.33 and 10.26±4.01 respectively. Noteworthy findings were found when comparing knowledge scores and the cities in which the food trucks functioned, (F=71.66, p<.000). The cities that scored the highest mean scores were San Francisco, Minneapolis, and New York City. Overall, this study has indicated a poor knowledge performance with only 27.4% of participants exhibiting a passing score.

Table 25: ANOVA Analysis Knowledge Score and Age, Education, Title, Experience and City

Item		Mean	Sum of Squares		Df	Mean square	*F*	p value
Knowledge Score	**Age**		Between Groups	252.86	3	84.29	5.25	.002
	20-29	11.09	Within Groups	4289.8	267	16.07		
	30-39	8.036						
	40-49	9.44						
	50 or older	8.69						
	Education		Between Groups	1139.66	3	379.89	29.80	.000
	High School Graduate	3.00	Within Groups	3403.02	267	12.75		
	Some College/Technical School	8.93						
	College Graduate	10.83						
	Graduate School	7.27						
	Title		Between Groups	1247.52	5	249.50	20.07	.000
	Owner	9.08	Within Groups	3295.16	265	12.44		
	Manager	9.28						
	Food Truck Park Manager	2.00						
	Operator	10.00						
	Cook	8.12						
	No title	15.00						
	Experience		Between Groups	862.55	5	172.51	12.42	.000
	0-1 year	3.00	Within Groups	3680.13	265	13.87		
	<1-2 years	9.59						
	<2-3 years	10.40						
	<3-4 years	10.00						
	<4-5 years	8.19						
	<5 years	10.26						
	City		Between Groups	3117.79	8	389.72	71.66	.000
	Atlanta	11.67	Within Groups	1424.88	262	5.438		
	Orlando	3.00						
	Miami	5.45						
	Denver	6.73						
	D.C.	7.00						
	Los Angeles	11.00						
	San Francisco	15.00						
	New York City	12.06						
	Minneapolis	12.50						

The next research goal was to discover management and owner's attitudes towards food safety. Qualitative results will also be discussed in chapter 5 to further examine H3.

H3 Food truck managers and owners have a positive attitude towards food safety training.

Self-efficacy-attitudes were examined in the previous regression model that indicated a significant influence on passing knowledge scores (B=-.832, p<.000). Respondents feel that they can keep customers safe 3.97±1.22, reduce foodborne illness outbreaks because of their training 3.25±1.33, and if they make a mistake they correct it and continue working 3.80±1.30. Phase I results discovered a theme of confidence that respondents have in the training they received. They feel confident going through accredited training programs and feel that they learned what they need to know. Further discussion merging phase I and II results will be in chapter 5.

Survey results indicated that 16.4% (n=51) of food trucks have never been inspected. However, 32.8% (n=102) indicated that they have been inspected at least four times since the opening of service. Respondents also recognized the importance of inspections 3.09±1.51, with 44.1% (n=137) strongly agreeing that they are necessary. Respondents also indicated that one annual inspection is important and sufficient (n=136). Those participants that use a commissary kitchen have had their facility inspected within the last year 2.14±1.24. However, participants indicated that as part of their commissary kitchen, 37.5% (n=118) have five or more food trucks using that facility. Pinpointing the source of a foodborne outbreak would become more difficult if several food trucks are using the same facility for food preparation. These facilities are more likely to be inspected by county health inspectors more so than the actual food truck. This finding is important to note, since managers/owners revealed a high level of confidence as indicated from the qualitative results. However, only 16.4% of these food truck operations have

yet to be inspected. Respondents feel confident that they will be able to pass an inspection, yet some have never been inspected.

H4 refers to the topic of the implementation of food safety training in the food truck sector. This hypothesis was tested by frequencies of survey data and by examining the qualitative data. Results will be further discussed in chapter 5.

H4 Food truck managers and owners implement accepted food safety training.

The majority of the participants (*n*=34, 74.6%) in phase I of the study, stated that they have met food safety training requirements in their city, and 14.5% of the respondents stated they have not completed the requirement. Additionally, 10.9% of respondents do not know if they have successfully completed the required training. Phase II results showed that 81.2% (*n*=220), of the participants stated that they have completed previous food safety training. Most of the respondents (*n*=100, 36.9%), stated that their training was completed through ServSafe® certification, followed by Certified Professional Food Manager (*n*=64, 23.6%), and HACCP (*n*=45, 16.6%) certification programs. Programs such as ServSafe® are national accredited programs (FDA, 2013), and are required in certain municipalities (D.C. Department of Consumer and Regulatory Affairs, 2013). Overall it can be concluded that managers/owners are implementing training programs into their operation.

H5 will be examined by conducting a regression analysis pertaining to which training methods can predict knowledge scores. Descriptive statistics can be seen in Table 26.

H5 The types of training methods implemented into a food truck operation are associated with food safety knowledge.

Training methods including: ServSafe®, HACCP, Certified Professional Food Manager of food safety, as well as training practices. Those training practices are one-on-one instruction,

shadowing, asking questions, role playing, study of a written manual, and computer software. The analysis used dummy coding that applied a 1 to those that received that training and a 0 to those that did not receive that form of training.

Table 26: Descriptive Statistics for Regression Analysis of Training Methods and Knowledge Score (*N*=271)

Item	**Mean**	**S.D.**
Knowledge Score	9.12	4.11
ServSafe®	.370	.484
HACCP	.166	.373
Certified Manager	.185	.389
One-on-One	.652	.477
Shadowing	.437	.497
Asking Questions	.333	.472
Role Playing	.270	.445
Study Written Manual	.293	.455
Computer Software	.263	.441

Table 27 shows the results of the regression analysis pertaining to the training method predicting knowledge score. The analysis reveals that the training methods have significant relationships with future knowledge scores, R= .911. The adjusted R^2 of this model is .824, which indicates that 82.4% of the variation in knowledge scores explained by the training methods.

All training method variables were found to be significant predictors. High beta coefficient of predictor variable ServSafe® (*B*=-5.85, *p*<.000) and HACCP (*B*=-11.94, *p*<.000)

were displayed to have a negative association with knowledge score. This shows that these training programs are not working to properly train employees. Training by answering questions as they come along was seen to have a negative influence on future knowledge scores (*B*=-9.68, *p*<.000). It was also seen that using a manual to study, showed a highly significant relationship (*B*=16.84, *p*<.000) to predict a positive knowledge score. This would indicate that this is the best training method to predict a high food safety knowledge score.

Table 27: Regression Analysis of Training Method and Knowledge Score (N=271)

Independent Variables	**B**	**Standard beta**	**T**	***P*-Value**
Constant	6.72		14.652	.000
ServSafe®	-5.85	-.688	-19.139	.000
HACCP	-11.94	-1.09	-17.84	.000
Certified Manager	-6.88	-.651	-17.29	.000
One-on-One	7.19	.834	16.65	.000
Shadowing	1.25	.151	2.86	.005
Asking questions	-9.69	-1.11	-10.05	.000
Role-playing	-3.46	-.375	-3.44	.001
Study Manual	16.84	1.87	22.95	.000
Computer software	6.94	.745	16.05	.000

a. Dependent Variable: knowscore

Further discussion of the previous results will be discussed in the next chapter. Implications will also be discussed along with the direction of future research.

Chapter 5. Discussion and Implications

Discussion of the Results

As the number of food truck operations continue to increase throughout the United States, while the individual city/county regulations governing these operations falter in consistency, a growing need for a proactive approach in the awareness and prevention of foodborne illness in this sector of the food service industry should be addressed. This study set out to determine if the Social Cognitive Theory lends itself to understand effective food safety training practice. The analysis of the total sample indicated that the situational concept and the outcome expectancies and expectations concept was negatively associated with knowledge. The respondents scoring high in these SCT concepts should have attained a high knowledge score but the opposite occurred. These individuals projected a high expectation of their previous training outcome. This reversal in expectation and actual knowledge score may indicate an ineffective training method, giving them a false confidence in their food safety knowledge and practice. The situational concept found the same relationship, that is the respondents scored high in this concept but scored low in their food safety knowledge. Respondents in this concept indicated that they have adequate funds and resources to implement and evaluate food safety training in their operation. If they are following through and utilizing a commitment to honor food safety training, the knowledge transfer should be taking place with an acceptable knowledge score.

The social support and the behavioral intention concepts in the total sample yielded a positive association with food safety knowledge. The respondents related in these concepts meaningful phrases such as, “working as a team”, “ensuring my employees have been trained”,

and “encouraging staff to stay up-to-date with their training”. The supportive environment indicates Bandura’s (1997) concept of verbal persuasion. Encouragement and discouragement pertaining to an individual’s performance or ability to perform may enhance their willingness to be trained and practice the food safety procedures. Aspects of the environment or setting that influence the individual's ability to successfully complete a behavior is an important aspect of the SCT model. A significant positive relationship was found between behavioral intentions and knowledge. Bandura (1997), interjects that individuals are not just shaped by the environment alone, but inner forces such as self-regulation can bring about an active decision. The intentions of respondents in their remarks, “I intend to evaluate my employees on their practices” and “choose to make time to train”, indicates intentionality to follow through with training.

The self-efficacy-attitude concept was not found to have a significant relationship with the total sample. However, upon further investigation of those groups that passed or failed the knowledge questions, it was discovered that self-efficacy-attitude had a negative association with the respondents that passed.

In addition to the investigation of the SCT model as a theoretical support in the design of training methods to be applied in the food truck sector, the study set out to explore the following: the food safety knowledge of food truck employees, how managers are implementing food safety practices in their operation, the training methods utilized in a typical operation, management attitudes towards food safety training, and the specific food safety measures that are vital in a food truck environment. The major findings of the study indicate that overall the food safety knowledge of the respondents was below average. Although the majority of the participants in the study acknowledged that they have been trained by means of national programs such as ServSafe®, Certified Professional Food Manager in food safety, and HACCP, their ability to maintain their food safety knowledge was inadequate. This finding is in agreement with Ko

(2013). It was found that food safety practices with regards to pest control, storage of food, power equipment, and basic observances were insufficient. Overall, management did express that practicing proper food safety was an important aspect of their business, and a positive attitude toward the implementation of food safety training was popular in the outcome. This was also seen in other studies conducted by Ko (2013) and Angelillo et al. (2000). The results also found that certain training methods including, the use of a manual to study, shadowing/ role playing, the use of computer software programs, and one-on-one instruction are predictors of higher food safety knowledge.

Discussion of the Hypotheses

H1 The Social Cognitive Theory is positively associated with training methods and food safety knowledge.

As previously discussed in the regression model of the total sample (N=271), each of the SCT concepts were analyzed with their relationship to predict food safety knowledge. The results indicated a partial support of hypothesis H1, when examining the total sample (both passing and failing groups). The social support and behavioral intention concepts did indicate a positive association with food safety knowledge. The outcome expectancies and expectations concept and the situational concept did not indicate a positive relationship with the knowledge scores. The self-efficacy-attitude concept did not indicate a significant relationship.

The social support concept indicated a positive relationship with food safety knowledge. The SCT explains that the environment provides models for behavior. Building teamwork and conducting a work setting that promotes motivation, performance feedback, and leadership in practicing food safety, are examples of social support that can impact training and learning. Another contention of the SCT model is that learning is reinforced by personal experiences from oneself and by others. Management projecting a positive approach in the work setting can

become role models that others are inspired to emulate. A supportive food safety culture (Griffith, Livesey, & Clayton, 2010), may strengthen food safety knowledge and practice in a food truck operation.

Social support can also impact training. A mentor that encourages and motivates the trainee can instill a successful realization. The SCT model maintains that motivation to learn can come from external reinforcement. Training methods that employ mentoring, immediate feedback in whether a skill was correctly accomplished, and praise when appropriate, fall in line with this aspect of the SCT model. Observational learning employs modeling of behavior. Modeling another individual with their guidance and support can lead to successful learning. The results of the study indicate that social support can be an influential medium in the improvement of food safety knowledge and training.

The behavioral intention concept indicated a positive relationship with knowledge in the total sample as well as the passing group sample in the regression analysis. A belief within the SCT, is that people have an ability to influence their own behavior and the environment in a purposeful, goal directed manner (Bandura, 2001). Through self-reflection and self-regulatory processes, an individual can exert substantial influence over their own outcomes. Through self-regulation an individual can set goals for themselves. The results indicated that several respondents made remarks about their intentions to ensure training would take place, or that they would continuously evaluate training in their operation. This mindset parallels the SCT model with respect to the behavioral intention concept. It then seems reasonable that such goal-setting would lead to higher knowledge scores and an involvement in the initiation and continued training of employees.

After dividing the sample into a pass group and fail group to examine the differences between these two models, it was noted that social support had a positive influence on both

groups. Examination of these two groups with reference to the behavioral intention concept, indicated a significant positive influence on those that passed the knowledge section. A non-significant association was found in the group that failed. The passing group performance indicates agreement with the SCT model, in that their intended behaviors to evaluate training, monitor training, and maintain success in training are goals and beliefs they can put into play. Their proactive approach brings awareness and value to their intended behavior which in turn reinforces success in learning (Bandura, 1977). The failing group did not exhibit descriptors of self-regulation. These individuals do not identify goals or maintain their own strategies for reaching goals in food safety knowledge or the training of these practices. They may not see value or a self-reinforcement to strengthen their knowledge (Bandura, 1977).

The expectancies and expectations concept was negatively associated with food safety knowledge. Outcome expectations reflect an individual's beliefs about what consequences are most likely to take place if behaviors are performed (Bandura, 1977). Respondents stated that their previous training was at a level in which they expected to successfully learn food safety. However, their practical knowledge assessment was not at a passing level. The discrepancy in this expectation does not support hypothesis H1. Management indicated that they have an expectation, if employees have completed a training program, they should be able to exhibit basic food safety knowledge. This disconnect with the expectation and the unsatisfactory knowledge score may be attributed to respondents' lackadaisical attitude toward the threat of foodborne illness. Consideration of this negative consequence in the outcome expectancy may not have influenced respondents to be more committed in their learning process. The disconnect in the relationship with these areas may be due to a failure in retention of the subject matter. In addition, a lack of feedback and motivational influences may impact the quality of learning. Several respondents agreed with the statement, "there is a lack of interest in food safety

training", which does indicate an unfavorable outcome. Outcome expectations are important because they shape the decisions people make about what actions to take. The pass and fail groups in this concept both indicated a negative association with food safety knowledge. Therefore, no significant difference was found between the pass and fail groups in this concept of the SCT.

The situational concept presented an overall negative association with food safety knowledge in the total sample. However, a difference was discovered upon further examination between the pass group and the fail group. The pass group indicated a negative association with the knowledge score, while the failing group exhibited a positive association with knowledge and the situational concept. According to the SCT, aspects of the environment can influence an individual's ability to successfully complete a behavior (Bandura, 1977). Appropriate support and necessary materials make the learning environment more favorable. Respondents did acknowledge in their responses that adequate funds and resources were available to implement food safety training in their operation, and that the training programs to be utilized were easily accessible. These constructive benefits to the working environment could explain why some of the respondents performed slightly better than others. Another explanation could come from the response, "during operation of busy periods of time, food safety is a number one concern". During extremely busy periods, attention and focus is vital to the successful operation of the food service. At these peak times, employees may perform better in their food safety practice because of their intensified focus.

The negative association between the situational concept and food safety knowledge may be explained by certain situations that hinder the learning process. For example, if management or a fellow employee is conducting food safety training to another employee, but are not

sufficient in their knowledge, the transfer of information will also be insufficient and inadequate. A lack of social support in the work setting can be a hindrance as well.

The overall model of self-efficacy – attitudes was found to be insignificant. However, when examining the pass vs. the fail group, the finding was significant in both groups indicating a negative association with knowledge. This finding is not in agreement with the self-efficacy-attitudes concept of the SCT. Self–efficacy is the extent to which an individual believes that they can master a skill (Bandura, 1997). Bandura contends that an individual's self-efficacy and attitude plays a major role in how one approaches goals and tasks. The regression model did not indicate that self-efficacy-attitude was a strong predictor in future knowledge score (*B*=-1.53).

Hypothesis H1 can be given partial support in determining if the Social Cognitive Theory concepts and training methods positively influence future food safety knowledge scores. The behavioral intention concept was found to have the strongest influence on the respondent's passing food safety knowledge score.

H2 Food truck managers and owners lack food safety knowledge.

The results of the study support hypothesis H2. One objective of this endeavor was to examine the knowledge of food truck employees with regards to commonplace food safety practices. Out of the 271 participants in the study, only 27.4% would be considered to have passed the food safety knowledge section as per in agreement with other current research, in the food safety sector evaluating food handler's knowledge (Angelillo et al., 2000; Webb & Morancie, 2015; Samapundo, Climat, Xhaferi, & Devlieghere, 2015). Therefore, the results of the study indicate the extent to which food truck employees are knowledgeable in widely-accepted food safety practices is not at an acceptable level. Each knowledge section was consistently scored as inadequate, only one of the presented sixteen questions was answered correctly by 76% of the respondents. The section with the poorest scores included cleaning and

sanitizing, safe chemical handling, and food preparation and personal hygiene questions. Similar findings were concluded by Webb and Morancie (2015), in that the above food safety measures are frequently stated incorrectly. In the personal hygiene section, this question referenced the use of disposable gloves. This finding is consistent with the results of a food safety study conducted by Nee and Sani (2011), noting that respondents score slightly higher in their knowledge concerning the practice of personal hygiene. However, when respondents were asked about the correct time to wear disposable gloves, they received a failing mark, only 76% of respondents answered this question correctly. A significant finding in the cleaning and sanitizing segment of the survey depicts the lack of knowledge demonstrated by the respondents. The respondents scored the lowest in questions related to potable water sources (47.3%), and cleaning food contact surfaces (32.5%). With the constraints of working on a food truck, having clean potable water at the correct temperature is vital for the safety of the food being served to consumers. Those that work in a brick and mortar setting do not need to concern themselves with the potable water source as much as a food truck operator.

According to Samapundo et al. (2015), and Bruhn and Schutz (1999), women score higher on food safety knowledge assessments. In the present study, males correctly responded on an average of 10.15 questions compared to the female average of 5.12 correct responses. One possible explanation is that the male participants have more experience in a management role in this study compared to the female participants. The female participants (n=31, 10.2%) indicated that they currently hold a management position. However, the passing rate of each gender was so poor that neither gender presented adequate knowledge in food safety. The employment status of the respondents did not indicate significant findings in their knowledge of the subject which contradicts other studies (Ghezzi & Ayoun, 2013; Webb & Morancie, 2015). A possible explanation for this reasoning is the unique nature of the food truck sector. In this sector of

foodservice, managers/owners are typically employed in other positions while their food truck operation is managed on the side (Vanschaik & Tuttle, 2014).

Respondents' knowledge was significantly different based on their educational level. Those participants with a high school diploma scored the poorest on the survey instrument with an average score of 3.00 correct responses. The highest average was scored by college graduates with 10.83 correct responses. The higher score of college graduates could be explained by their experience in taking assessments. When analyzing the respondent's years of experience in operating a food truck set-up, those in operation between <1-2 years and <2-3 years showed the highest average knowledge score of 9.59 and 10.40, respectively. The participants with limited years of experience showing the higher knowledge score could be explained by the likelihood that these respondents may have recently took part in a training exercise.

The respondent's knowledge scores differed, depending on the locations of their food trucks. The cities in which respondents scored the highest in food safety knowledge were San Francisco (15.00 correct responses), Minneapolis (12.50 correct responses), and New York City (12.06 correct responses). These higher scores may indicate that these particular cities have training initiatives in place that are more successful. In New York City, more stringent regulations are in place. Food truck managers/owners in New York City are mandated to pass a preliminary food protection course before they can apply for a food truck business license (New York City Department of Health and Mental Hygiene, 2013)

The results of the present study indicate a definite need for improving food safety knowledge by those involved in the food truck sector. Protecting the public from foodborne illness should not be taken lightly, and every effort should be considered to maintain a safe environment. Based on the results of the basic food safety knowledge questions provided in the survey instrument, it is evident that significant improvement needs to take place in the food truck

sector. The results of this study are also in accordance with other studies that have addressed the food safety issue, that being an acute need to improve food safety knowledge and practices in the food industry (Webb & Morancie, 2015; Angelillo et al., 2000; Samapundo et al., 2015; Liu et al., 2015; Ko, 2013). Based on the results of the study, hypothesis H2 is supported.

H3 Food truck managers and owners have a positive attitude towards food safety training.

The attitude of managers/owners towards food safety is a vital mindset that may impact their employees in the work environment to truly practice food safety. Past research has shown that positive management attitudes towards food safety training gives employees assurance to perform their job correctly for the safety of consumers (Nee & Sani, 2011; Angelillo et al., 2000; Ghezzi & Ayoun, 2013; Liu et al., 2015; Ko, 2013). It should be noted that in a previous study conducted by Clayton, Griffith, Price, and Peters (2002), it was discovered that food handlers might be aware of the food safety attitudes they should have performed, but 63% of the respondents in the study indicated that they rarely practice positive attitudes. Attitude has been found to be a critical aspect of the food safety dilemma. Therefore, it is important to answer the question - What are the food truck manager's attitudes towards food safety training?

In this study, the majority of the respondents have a positive attitude towards food safety 3.97±1.22. Respondents indicated that they are confident in keeping their customers safe. The respondents acknowledged that they can reduce foodborne illness outbreaks by training their employees. When and if an employee makes a mistake, the respondents noted that they do recognize the mistake and will purposely take the time to seize corrective action.

The qualitative results indicated that the lack of food truck inspections and the difficulties associated with inspections is a problem. Brick and mortar restaurants have a permanent address which simplifies the monitoring of mandated inspections by health officials. Unlike a food truck

operation, inspectors can easily locate the facility during working hours to complete the process. Results from the data indicated that 60% of food truck managers/owners interviewed stated that they have yet to be inspected, along with 16.4% of surveyed participants. Recent research has shown that the lack of official inspections of food trucks is quite common (Mercer, 2017). Vanschaik and Tuttle (2014), found that not only are food trucks difficult to locate while they are in business serving food, many times when trucks have been located they are empty of food and water making the inspection useless. California, for example, has implemented a law stating food trucks must share their route to be inspected while in business. Even in this case, it is difficult for inspectors to keep up with the route while finding the exercise very time consuming (Vanschaik & Tuttle, 2014). This precarious situation has evoked a negative attitude among managers/owners who have been trained, but then not held accountable for inspection by authorities in their city/county. One respondent stated that "I think more attention is given to restaurants and other facilities and inspectors are not as concerned with food trucks". Managers/owners remarked that it is not their problem to be in the right place at the right time for inspection, stating, "….difficult to hold an inspection but there is no law that requires us to stay in the same spot". The negative responses in the data show a significant finding as several respondents profess an unenthusiastic attitude toward the inspection process. Moreover, managers/owners stated that they feel they should only do what is required of them to stay in business and nothing more. Respondents stated that at times the fire department takes on the role of inspecting their food truck. This was confirmed by the statement, "fire department regularly checks gas and electric lines" in the interview segment.

Managers/owners stated that one annual inspection is sufficient to maintain a legal operation. There was a general consensus that an annual inspection holds value in the industry, but the respondents strongly agreed that a better process should be devised that benefits both

parties. The participants that use a commissary kitchen stated that their facility had been inspected within the last year. Respondents agreed that it would be more likely that their commissary kitchen would be inspected rather than their food trucks. From this group, 37.5% indicated that their operation functions with five or more food trucks working out of the same commissary kitchen. This finding suggests that health inspectors typically observe the commissary kitchen before seeking out the food trucks operating from that source. The managers/owners stated that inspection violations can be viewed as a learning opportunity. On average, the respondents agreed receiving a violation notice can be a useful training tool, with this approach management can help employees learn from their mistakes and take responsibility in correcting the infractions.

An underlying theme projected from the qualitative results was that of confidence. On average, the respondents stated that their food truck would pass an inspection immediately. Those participants acknowledging their confidence in passing inspection strongly agreed with the statements, "I am confident in my chefs and handpicked them" and "they also feel their culinary school experience has trained them properly". However, several of these respondents have not experienced an inspection of their food truck as of yet, and therefore are not fully aware of their status.

Food truck managers/owners appear to have a positive attitude regarding the training of their employees. Training is considered to be a necessary element in the prevention of foodborne illnesses and a requirement mandated by governing agencies. The qualitative data revealed themes of self-efficacy. Managers/owners of food trucks stated they were confident in their training from accredited programs such as ServSafe®. The results from Phase 1 and Phase 2 of this study, support hypothesis H3, that is food truck managers and owners have a positive attitude towards food safety training.

H4 Food truck managers and owners implement accepted food safety training.

Food safety training programs are a key part of instructing employees in performing correct food safety practices. In the present study, research was conducted to determine if food truck managers were implementing accepted food safety training programs. The majority of the respondents were trained in a national program adhering to the recognized standards in food safety practices. The results of the study indicated that ServSafe® was utilized by 39.5% of the respondents followed by Certified Professional Food Manager (20.6%), and HACCP (19.9%). The remaining participants (20%), did not indicate the use of any certified program from which they gained training in food safety. The conducted interviews and focus group meetings showed that managers/owners (80.9%), have completed previous food safety training by means of an accredited program. The ServSafe® program was the most popular instructive means in which managers/owners completed their training.

The managers/owners related in the survey instrument that they intended to keep abreast of proper training in food safety, and to make sure that their employees were successful in their knowledge and execution of these practices. Further, the managers/owners indicated that they actively evaluate their employees concerning food safety practices. It appears from this information that managers/owners are following city/county guidelines of mandatory training in their location of business. However, according to Webb and Morancie (2015), if the majority of respondents have had previous food safety training, they should be deemed competent in their ability to answer basic food safety questions accurately. The results in the present study contradict that premise. Further, their poor performance in answering the knowledge survey questions is concerning, since they are the key players to pass on proper information to employees and evaluate them correctly.

According to the survey results, managers/owners responding that they have intentions to keep training up-to-date and actively evaluate employees concerning their food safety practices, performed at a higher rate than those managers/owners who did not indicate they will continue to keep up-to-date or evaluate training. The slightly stronger performance by these individuals perhaps is due to the fact that they conduct ongoing evaluation of their employees, and may also initiate disciplinary action if their employees do not practice proper food safety measures.

The food safety knowledge scores in the present study present a red flag, there appears to be a disparity in the knowledge with the training component. Possibly the accredited food safety knowledge certification methods are not effective or managers/owners are not following through on their commitment. Hypothesis H4 is supported by the examined results in this study. The survey results indicated that the majority of the respondents (n=220) have completed previous food safety training.

H5 The types of training methods implemented into a food truck operation are associated with food safety knowledge.

The survey instrument and the qualitative data indicated that managers/owners utilize a variety of training strategies in addition to the national accredited programs. A variety of methods were revealed from the data sources. According to the results, the training strategies that were associated with higher food safety knowledge scores included: shadowing, one-on-one instruction, a manual to study, and computer-based instruction. The respondents related that these methods were the most user-friendly and presented the most convenient means of completing the process. Computer programs were positively associated with higher food safety knowledge scores as seen in accordance with similar findings (Fenton, LaBorde, Radhakrishna, Brown, & Cutter, 2006). Research by Bowman (2002), maintains that active participation in the learning or training process will yield greater retention. Fanning (2011), acknowledges that these

types of training strategies are successful methods in the retention of knowledge, since they all provide a setting in which the learner can "see, hear, say, and do". Active training methods such as shadowing/ role playing, and one-on one instruction force the trainee to actually do something, as opposed to just sitting and listening to someone lecture.

Results gathered from focus groups and interviews revealed that managers/owners were very interested in a computer software training application that could be used via a smartphone or tablet in the form of an App. Due to the mobile nature of the food truck operation, such an App would allow managers/owners greater flexibility to train their employees at their convenience. Such a potential App would not only alleviate the issue of time restraint, but also extend the opportunity for employees to refresh their food safety knowledge on the job.

ServSafe® is a commonly used program for gaining or renewing certification in food safety. Several municipalities do offer the ServSafe® certification process online. However, the majority of municipalities only accept the ServSafe® course certification administered in a classroom setting (D.C. Department of Consumer and Regulatory Affairs, 2017). The course takes approximately eight hours to complete and must be completed in one day with a follow-up exam taken the next day. Respondents noted that the manner in which this certification process must be administered is not only an inconvenience but a hardship taking away business revenue.

Once the traditional ServSafe® class has been successfully completed with an exam score of seventy percent, it remains in effect for five years. Employees can therefore complete the course, and not be legally bound to study or update their certification for five years until renewal is necessary (FDA, 2013). According to research conducted with emphasis on food safety training by da Cunha, Stedefeldt, and Vera de Rosso (2014), food handlers did not show adequate retention of food safety training after a one-year lapse. They went on to further recommend training updates every six months to one year, in order for food handlers to maintain

adequate success in their food safety knowledge and practice. Research conducted by Walter, Cohen, and Swicker (1997), determined that food safety training in the workplace should be a consistent on-going practice. Based on these findings, the present five-year certification renewal regulation should be reviewed.

Role playing was discussed as a successful training strategy. In the survey and focus group/interview results, managers/owners discussed how they implement this strategy. For example, a manager/owner could take on the role of an inspector and create a scenario in which they play out a walk-through inspection with a trainee. Managers/owners also discussed the importance of utilizing the role model technique before each shift or lineup. Performing the technique prior to beginning a shift brings greater awareness and reinforcement in the execution of safety practices by the employees according to management. Role playing/demonstration was also discussed as a means of instructing employees in how to protect themselves from personal injury. In the tight quarters of a food truck, typical injuries due to burns and cuts are common. As referenced in the qualitative results, "communication is vital in a tiny environment" indicative of the necessary need to maintain a safe workplace. The results indicated a positive prediction with higher food safety knowledge scores and the use of shadowing training scenarios.

The results indicated that one-on-one instruction was associated with higher food safety knowledge scores. In this form of training, direct communication engages the trainer and trainee. As the trainee is given instruction, immediate feedback allows the trainee to determine if they are correctly performing the activities. Employees are able to ask questions and a direct dialogue builds reinforcement of the subject matter. One-on-one instruction was a very common method of training utilized by the respondents.

Respondents stated that they train their staff on cooking specific items by utilizing the technique of shadowing. In this way, they may teach their employees the exact manner in which

they wish their food selections to be cooked and presented to the consumer. Statements, "observed how to cook meat" and "shadowed a chef before I opened", point to the use of the shadowing method. The nature of the food truck environment usually constraints menu options allowing employees in some cases to only need to cook one to two items (Vanschaik & Tuttle, 2014).

Additionally, participants used visual aids to emphasize and reinforce food safety awareness and practice with their employees. Several of the respondents (32.5%), strongly agreed that the use of visual aids was important in helping their employees stay focused in their food safety practices. Visual aids were also discussed in the qualitative results, "pictures can remind staff of what to do, they are helpful to remember temperatures, they also visualize handwashing and remind employees", further stressing the importance of their use. In a restaurant setting, visual signs stating employees must wash hands is a requirement and must be in view of all employees (FDA, 2013; CVO, 2017).

The regression model indicated that the particular methods of training that predicted higher knowledge scores were: a manual to study, one-on-one, shadowing, and computer software programs. The strongest training method revealed by the regression model was the use of a manual to study. In answering hypothesis H5, there is an indication that certain training methods found in this study are associated with higher food safety knowledge.

Discussion of the Research Questions

RQ1-Does the Social Cognitive Theory lend itself to understand effective food safety training practices?

As the results indicated, partial support was given to H1, The Social Cognitive Theory is positively associated with training methods and food safety knowledge. The strongest predictors

of a positive passing knowledge outcome were the situational and behavioral intention concepts of the theory.

The study indicated a significant relationship between the behavioral intention concept and knowledge scores. The SCT proposes that an individual has the ability to influence their own behavior and through self-regulatory processes, they can exert influence over their own outcomes (Bandura, 2001). The intended behavior as stated by respondents to ensure training would take place or that they would continue to evaluate training in their food truck operation reinforces a goal-setting mindset. Goal-setting is an important part of Bandura's self-regulatory concept. The passing group performance in the behavioral intention group indicates agreement with the SCT model, in that their intended behaviors to evaluate training, monitor training, and maintain success in training are goals and beliefs they can put into play. Their proactive approach brings awareness and value to their intended behavior which in turn reinforces success in learning (Bandura, 1977). Trainers who model behavior intentions that express the importance of practicing food safety procedures can transfer this perception to the trainee. By modeling proper behavior intentions, trainers can inspire and motivate the trainee to perform proper food safety practices. Observational modeling not only applies to learning skills and new knowledge, but also the modeling of appropriate attitudes. Trainers who model behavioral intentions that stress the importance of food safety and its implementation are contributing to a food safety culture (Griffith, Livesey, & Clayton 2010), that is a work setting in which all stakeholders are aware of the importance in practicing food safety and do so. This study found the concept of behavioral intention to be a strong predictor of food safety knowledge.

The situational concept reflected from the passing group indicated a negative association with knowledge. Managers/owners in the study noted that they do evaluate their employee's

performance in their food safety practice. However, the study did not find this as a positive indicator of the participant's knowledge score. Therefore, the social or physical environment in which the employees are performing their food safety knowledge and practice may not be a positive learning atmosphere. The SCT model stresses the importance of an environment that supports learning. The physical conditions, the available resources, and the social support from co-workers and management is influential in gaining knowledge and skills according to the theory (Bandura, 1997).

The regression model indicated that the particular methods of training that predicted higher knowledge scores were: a manual to study, one-on-one, shadowing, and computer software programs. Shadowing and one-on-one techniques reinforce the social support concept. The results found a slight indication in that the social support concept was a predictor of knowledge. Building teamwork and conducting a work setting that promotes motivation, performance feedback, and leadership in practicing food safety, are examples of social support that can impact training and learning. The manual to study predicted the highest knowledge score in the study. Therefore, developing a manual that attends to teaching food safety in a food truck operation is a worthwhile effort. In addition, incorporating the findings from the SCT concepts in this study into the design of the training activities may influence an improvement in food safety and knowledge in the food truck sector. The results from this study suggest that specific concepts in the SCT model can help to understand effective food safety training practices in the food truck sector.

RQ2-What specific food safety measures should be the focus in a food truck food safety manual?

The results of this study indicate that basic food safety practices demand attention in the training of food truck employees. Safe food practices including personal hygiene, food preparation, cleaning and sanitizing, equipment, and safe chemical handling are an integral part of safe food delivery to the public (FDA, 2009; Partnership for Food Safety Education, 2017). Food truck operations must also abide by these basic practices in order to safeguard the public's health.

Managers/owners who participated in the interview and focus group segments of this study indicated that attention needs to be paid to several other issues because of the unique situation of the food truck operation. Special attention should focus on pest issues, equipment modification, storage of materials, water storage and temperature, and power. Responses to the statements, "clean the outside of the truck after each service" and "keep pests away", reinforce the relevance of these additional details that must be observed. Several cities/counties have taken extra effort to prevent issues with pests. The city of Denver, Colorado, Los Angeles, California, and the District of Columbia require food trucks to have a permanent sliding screen on their serving window in order to keep pest from entering the truck (Denver Food Trucks, 2013; County of Los Angeles Public Health, 2017; D.C. Department of Consumer and Regulatory Affairs, 2017).

Equipment modification is another unique area essential to the food truck sector. While 52.7% of the respondents indicated that they modified equipment for use in their truck, 49.2% were not aware if NSF international commercial food equipment certifications were required in their city/county. According to the FDA Food Code (2009), the National Sanitation Foundation requires all cooking equipment to meet the regulatory standards. In the interview and focus group segments, several respondents discussed their individual situations with regard to equipment issues. A few participants openly admitted that they modify their own equipment to

meet the needs of their own situation, even though the modification may not satisfy the approved standards. In certain localities for other participants, in order for a food truck operation to receive a business permit, the manager/owner must have the fire department inspect their food truck, including the equipment. The fire department will take notice to any defects in the modified equipment.

Powering equipment is another challenge unique to the food truck operation. Managers/owners in the interview and focus group settings stated that providing power to a food truck is a crucial part of the operation, but at times cannot be a given. Unlike the restaurant setting, power cannot be taken for granted, there is no guarantee that power will be available due to moving from place to place. One respondent stated, "enough power to equipment" and "checking the ventilation fan is very important". Having sufficient power is quite important in many of the features in the operation from cooking to keeping food stored at the correct temperature.

The storage of materials and placement of items is another critical facet of food safety. Food trucks have limited space thereby posing a dilemma in finding adequate storage for necessary materials. Chemical substances used for cleaning and maintenance must be stored away from food. One respondent stated, "the layout of the truck and space make storing of chemicals important" and "unlike a restaurant that can have a dedicated room, we have to ensure it is safe on the truck".

Maintaining the proper temperature for handwashing and dishwashing can be another issue. Many food truck operations depend on an electric generator to power equipment and to heat water to the necessary temperature for the requirements in food preparation. One respondent stated, "generator at certain sizes can't run a cooler, flat top and water heater for

handwashing". Satisfying this requirement can be a challenge for food truck managers/owners, but is a critical part of meeting cleanliness standards.

Hand sanitizer is not a suitable substitute for not having the appropriate water temperature for handwashing. The FDA Food Code (2009), states that hands must be washed at a temperature of 100ºF, and specifies that the use of hand sanitizer may be applied in the addition to handwashing, but may not be used in place of. Respondents discussed the use of hand sanitizer as a replacement of handwashing with reference to the statement, "only hand sanitizer is required". Outdoor environments do create a problem when addressing the handwashing requirement, however according to Hertzman and Barrash (2007), and Ghezzi and Ayoun (2013), the importance of this necessary food safety procedure should be emphasized for its value in reducing foodborne illness.

Implications

The food truck sector of the United States foodservice industry continues to grow. This means of foodservice shows no signs of slowing down as it has become quite popular. In 2015, food trucks had a total revenue of $1.2 billion (Myrick, 2016). Although the food truck industry continues to increase, few research studies have been conducted concerning food safety in this sector. Past studies have continued to point out the need for improvement in food safety practices, and greater resources to conduct inspections to safeguard the public (Vanschaik & Tuttle, 2014; Ghezzi & Ayoun, 2013). The food truck industry cannot be overlooked, in fact food safety in this sector has been recognized as a serious concern. In large metropolitan areas such as Boston, Massachusetts, food safety issues have been reported at an alarming rate. In 2016, nine of the city's 96 licensed food trucks were closed due to "on the spot" inspections. By comparison, two of every one hundred brick and mortar restaurants in Boston were suspended in the same year (Woolhouse & Rocheleau, 2017).

The present study is the first investigation that specifically sets out to research the current food safety knowledge of managers/owners in this segment of food service, while also examining the current food safety training practices that managers/owners apply in their food truck setting. The main goal of this research was to determine if the SCT could be used as a theoretical base to investigate the adaptation of training methods to improve food safety knowledge in the food truck sector. By utilizing the most effective training methods, managers/owners should be able to improve their employees' knowledge and performance in correct food safety practices as they execute their duties in the preparation of food, the delivery of food to the consumer, and the general maintenance of the food truck. Confusing and outdated regulations in various regions about the United States have posed challenges for potential vendors (Hawk, 2013; Vanschaik & Tuttle, 2014; Williams, 2013). Since the food truck market has expanded so rapidly, some cities have found themselves without many regulations that are directly applicable to the operation of a food truck (Mercer, 2017). The food truck industry finds itself lacking in a means to support conscientious attention to food safety (Williams, 2013). A national training manual is needed to bring consistency and awareness of recognized training methods that may be used in food safety. Such a unified training manual would serve as a standard example. Food truck managers/owners around the United States could use the manual as a tool from which they could gather recommended food safety curricula, and discover suggested training methods that are proposed to be the best strategy in which to carry out the instruction of specific food safety practices. In addition, such a manual would help to reduce the burden newcomers face as they initiate a food truck enterprise.

Although the majority of the participants in both the qualitative and quantitative portion in the present study have received accredited food safety training, there is an evident shortfall in their retention of basic food safety knowledge. According to the FDA (2009), the ServSafe®

program has been recognized to be the most popular certification program utilized by food services across the board. In the present study, survey respondents who acknowledged their certification was completed by means of the Certified Professional Food Manager out-performed the respondents who used the ServSafe® program. It is concerning that the most widely used certification program whose main purpose is to qualify food employees in food safety practices is not showing strong reliability. Moreover, the general deficiency in food safety knowledge exhibited by the respondents in the present study, indicates a need for further research to determine if these programs are suitable to certify food handlers, and managers/owners for a maximum of five years before recertification is mandated. The overall deficiency in food safety knowledge found in the present study strongly suggests that improvements can be made to make managers/owners more competent in their training role.

The behavioral intention concept of the SCT points to the importance of setting goals and adopting strategies to reach those goals. Modeling the intention to practice food safety and maintain the implication of these practices may strengthen the food safety culture in the food truck setting. Further investigation is needed to uncover why the self-efficacy-attitudes concept had a negative prediction on the passing knowledge scores. Although management indicated that they have a positive attitude and confidence in their abilities this was not found as a predictor of positive knowledge outcome. The SCT has uncovered shortfalls in training initiatives of food truck management. Further investigation of food safety practices and training in the food truck sector is recommended.

The proper training of employees is one of the most important aspects managers/owners can achieve in order to secure a successful food truck operation. When staff members project confidence they tend to be more successful. Managers/owners who possess this trait can pass on a positive attitude to those they train. The study indicated that training techniques that provide

support and praise to fellow employees is an important feature in the work setting. Building social support between the trainer and the trainee will transcend higher learner achievement. As management contributes feedback and support in the workplace, research (Frash, Binkley, Nelson, & Almanza, 2005), has shown that trainees are more motivated in the learning process while this helpful attitude from management stimulates a positive transfer of knowledge. Providing useful resources to guide and assist managers/owners in their training endeavors can encourage a supportive environment.

Certain training methods may be more applicable to achieve successful food safety practices. Shadowing/ role playing and employing situational questions in training predicted higher food safety knowledge in the study. These types of training practices promote a greater awareness or perception of the immediate environment. Assisting employees during peak busy periods of service is a training practice that allows the employee to model correct behaviors (Howton, Keifer, Murphy, Sirsat, O'Bryan, Ricke, Crandall, & Neal, 2016). Play acting scenarios are also effective training methods. For example, the trainer may play out a scenario in which a fellow colleague is severely behind on orders. The trainer asks the employee what they would do if they notice that this person is not taking the temperature of the meat they are cooking. Studies have indicated that these modes of training often correlate with greater gains in knowledge as opposed to lecturing or just presenting information (CVO, 2017). Role playing, play acting, and shadowing keep the material fresh and interesting which also promotes positive outcomes in learning. It is also important to note that any form of training should include the support and validation of positive effort and/or correct follow through of procedures. Visual aids are inexpensive and convenient tools that can have a positive impact to promote correct food safety initiatives. These visual aids are easily ordered from several of the nationally accredited organizations, such as the Partnership for Food Safety Education, State Food Safety, and the

United States Department of Agriculture. As stated by one of the respondents, “keeping a sign that says no violations in five months will encourage employees to continue to use the right practices”.

Our modern world is a technological domain. It is not surprising that a general consensus from the qualitative data is that more computer based formats should be used in the training of food truck employees. Quantitative results indicated that computer software programs are a strong predictor of high knowledge scores. The participants expressed that the use of computer based formats would extend greater convenience and save time as they instruct their employees. An online App would be an efficient means for food service employees to download and use to take a certification exam. The Certified Professional Food Manager in food safety currently offers a free downloadable App at no cost that is appropriate for a person cooking in the home setting. Modifying this App to fit the exclusive requirements of a food truck would be a great option for training use.

The apparent lack of food truck inspections in the industry is quite significant. Cities/counties in the United States are requiring training in food safety in the food truck sector, yet the follow-up procedures are greatly lacking. Boston, Massachusetts and New York City have drawn negative attention to this plight as the media has reported on investigated food truck violations. Reporters found through their investigation that the very first time several trucks had been inspected they were immediately shutdown due to significant violations (Woolhouse & Rocheleau, 2017; Mercer, 2017).

While the inspections of commissary kitchens appear to take place more often and with more regularity, there still is the issue of multiple food trucks operating out of just one designated kitchen. If a foodborne illness outbreak were to occur, it would be very difficult to pinpoint which food truck business was the culprit. The Florida Department of Business and

Professional Regulations Division of Hotels and Restaurants requires food trucks and theme park food carts to have a commissary kitchen, even when these vehicles are fully self-sufficient. However, Florida is reconsidering this rule, at the present time state officials are investigating the possible removal of the requirement and allow self-sufficient trucks to store, prep, and cook directly on the truck (Mobile Cuisine, 2017).

Food Trucks Food Safety Training Manual

The respondents participating in the study demonstrated poor knowledge scores in the basic foundations of food safety principles. These critical food safety principles, which include personal hygiene, cleaning and sanitizing, storage, and cooking methods, are essential in the prevention of foodborne illnesses. Many of these individuals stated that they have had training in food safety by accredited programs. However, the overall knowledge scores presented in the study did not reflect an acceptable level of knowledge in these basic areas of food safety. Moreover, many of the respondents stated that they manage or own a food truck operation. As the central figure in a food truck enterprise, these individuals take on the role of management and face the responsibility of training their employees. This becomes a troubling situation. Management does not show strong credibility in their knowledge of food safety, and yet these very same individuals are obliged to train their employees in food safety practices.

Hence, the results of the present study indicate a significant need to improve basic food safety knowledge of all stakeholders involved in this form of foodservice. A food truck food safety manual that promotes training exercises in the fundamentals of food safety can assist managers/owners in their perspective roles. Such a proposed manual based on the results of the present study is offered to support food truck personnel in their efforts to train others. Food trucks also afford special consideration to other safety issues specific to the nature of their operation. These areas -including pest issues, equipment modifications, storage, water

temperature, and power issues - are included in the food truck food safety manual because of their importance in the operation (See Appendix 1). The proposed manual as influenced by several concepts of the Social Cognitive Theory, utilizes the premise that learning takes place through observation and modeling behaviors and attitudes of others. The training methods that are promoted in the manual adhere to social engagement. Examples are shadowing and one-on-one instruction. These are all methods that promote social support which is part of the Social Cognitive Theory. By coordinating a variety of training exercises that promote the mastery of each of the food safety fundamentals, the proposed food safety manual assists management in their training duties. The manual serves as a useful model that can be used throughout the food truck sector which promotes necessary learning and reinforcement of food safety.

Training techniques that are utilized in the food truck food safety manual include role playing, one-on-one interaction, demonstrating/shadowing, and visual aids. These training methods authenticate the strategic modes of observational learning while emphasizing active learning methods. In the majority of these techniques the trainee is engaged with the trainer. There is consistent interaction which keeps the trainee's attention.

Another important aspect generated from the results of the present study is an agreement with Bandura's (1977) concepts of behavioral intention and social support. The training activities that were created in the training manual are such that they provide the opportunities for learners to build self-confidence in their everyday tasks. Employees are engaged with managers/owners, becoming part of the team. As they practice and learn new skills they are able to ask questions and gain immediate feedback. The nature of the training exercises, role-playing, one-on-one, and demonstrations foster stronger communication between trainer and trainee. These types of exercises also help to build social support from others in the workplace.

Study Limitations and Future Research

The study set out to survey a national sample of food truck managers/owners in the quantitative phase of the study. However, a major limitation in the study was the absence of a national food truck association. Currently a national food truck association in the United States does not exist. A national sample was not feasible for the qualitative portion due to the travel restraints of the researcher. It should be noted that the majority of the respondents for the qualitative portion of the study, were from the southeastern region of the United States. Since the qualitative phase only targeted a regional sample, the results of the study may not apply to the food truck sector on a national level. The laws and regulations of food trucks in the sample cities may have also posed a limitation to the study. The inconsistencies in these laws and regulations vary from strict enforcement to only basic sanitation guidelines. This also poses a limitation in fully understanding how the food truck sector is monitored for safety requirements at a national level.

The current study presented a 31.1% response rate for the survey portion, and a 50% response rate for the qualitative portion. The low response rate in the study may have been due to the fact that some food truck operators did not provide their correct contact information, or that they may have suspended business during the data collection period. It should be noted that Austin, Texas yielded a zero-response rate in the study. The regression model of the pass and fail group exhibited a disparity in the sample size of those that passed. This was due to the low percentage of those that passed the knowledge section of this study.

Social desirability may have had an influence on this study. Participants may have answered favorably to some questions since they did not want to truthfully answer that they did

not correctly follow food safety practices, or admit that they have not met all required laws and regulations. Self-reporting should also be included as a limitation in this study.

Research in this sector of foodservice is in an infancy period. The laws and regulations throughout the nation are unstable as many cities/counties continue to change their rules. There is a disconnect between city and county regulations throughout the country. These noticeable gaps in the laws and regulations throughout the nation should be examined. Excessively cited violations in targeted municipalities, should be studied and investigated in conjunction with the current laws and regulations accountable for those infractions.

Since the food truck industry has emerged, limited research has been conducted to examine this form of foodservice. Future studies can assess the reliability of nationally accredited certification programs, and determine if these programs should be adjusted to meet the challenges of food safety training in the mobile sector. The ServSafe® certification training program, should be investigated to determine if the five year certification period is adequate in maintaining food safety knowledge, and proper practices for licensed operators. Respondents in the present study who received their food safety training from the HACCP certification program, did not present adequate food safety knowledge. Future research needs to be conducted to determine the effectiveness of these nationally accredited programs as instruments in food safety instruction.

The present study discovered that routine inspections in the food truck sector are not being performed at an acceptable rate, in fact respondents in the study stated that they have yet to be inspected by health officials. Routine inspections are necessary in order to protect the general public from health risks. Investigations should take place to determine the root cause of this situation. Recommendations to correct and solve this matter is vital to those affected communities. A review of current food truck violations by comparing city/county health

departments, can uncover which types of violations tend to be the most persistent in the food truck sector. A qualitative study can investigate current violations since these reports are considered public record and available to everyone.

As a final point, the training methods and the food safety training manual proposed in this study, can be implemented in food truck businesses and monitored for success rates. The training manual can be tested for its effectiveness in the instruction of food safety. Food handlers would be assessed in their food safety knowledge with a pre-test, post-test format. The training manual would be the major tool for the food safety instruction for the investigation, As the food truck industry continues to grow, future research is recommended to investigate the food safety climate in this sector.

Appendix 1

FOOD TRUCKS FOOD SAFETY TRAINING MANUAL

A Resource for Management

Table of Contents

INTRODUCTION

INTRODUCTION

The food truck sector should regard food safety and concern for public health as its number one priority. Effectively training employees is an essential part of any food delivery service. Managers/owners of food truck operations play a significant role in the effective training of their employees. These individuals must also serve as good role models in the practice of food safety, knowledgeable in the rules and regulations, while maintaining a safe environment. Training employees takes time and effort, and at times it may seem challenging to keep employees motivated. The following manual takes into consideration the main components of a food safety training initiative to fit the needs of a food truck trainer. The main components addressed in the manual include the following:

Personal Hygiene

Cleaning and Sanitizing

Equipment

Storage

Cooking Methods

With each component of food safety, resourceful activities are offered to keep the trainee interested, encouraged, and most importantly engaged to learn and practice food safety. These suggestive activities should help the trainer stay organized and save time as they extend the basic food safety practices to their employees.

Personal Hygiene

HANDWASHING

Handwashing is vital to the safety of your guests. According to the Partnership for Food Safety Education, hands should be washed after any of the following tasks.

- Before eating food.
- Before, during, and after preparing food.
- Before and after treating a cut or wound.
- Before and after caring for someone who is sick.
- Before putting on disposable gloves.
- After handling uncooked eggs, raw meat, poultry, or seafood (or their juices).
- After blowing your nose, coughing or sneezing.
- After touching an animal or animal waste.
- After touching garbage.
- After using the restroom.

Training Exercise

1. *Role Play Scenario*

While taking the employee through the food truck preparing food for service, ask the employee to note every task and when the employee washed his/her hands. Discuss with the employee if their actions met the requirements.

PROPER HANDWASHING

- Wet your hands with warm running water and apply soap.
- Rub your hands together to lather and scrub the backs of your hands, between your fingers and under your nails.
- Continue rubbing hands for at least 20 seconds.
- Sing the “Happy Birthday” song twice.
- Rinse your hands well under warm (100°F) running water.
- Dry your hands using a clean cloth or paper towel.

http://food.unl.edu/free-handwashing-materials-spanish (University of Nebraska–Lincoln, 2017)

Important to note the following:

Hand sinks must have 100°F running water, dispensed soap, paper towels, handwashing sign, and waste basket. No jewelry should be worn with the exception of a plain wedding band.

Training Exercises

1. *Visual Exercise*
   Watch the following public video from the Centers for Disease Control (CDC, 2016).

   Click Here to Watch How to Wash your Hands

2. *Display posters to reinforce and remind employees to wash hands when appropriate. See free sample above which displays information in English and Spanish.*
   http://food.unl.edu/free-handwashing-materials-spanish

3. *Model the proper handwashing protocol.*

DISPOSABLE GLOVE USE

Gloves are required when working with or handling ready-to-eat foods. Single use gloves also are worn when handling raw meat. Disposable gloves provide another barrier between potentially dangerous pathogens and the food the worker is preparing. Hands must be washed before putting on disposable gloves and gloves must be changed every four hours. Cuts must be covered with a finger cot or bandage with a disposable glove over the impermeable cover.

(State Food Safety, 2017)

Training Exercises

1. *Visual Exercise*
   Posters will remind and reinforce the action of wearing gloves at the appropriate time. Visual aids such as above should be displayed in the truck.

2. *Question and answer interactions in short intervals can check knowledge and encourage the use of gloves at the appropriate times.*

   An example scenario:

   What kinds of foods may not be touched with bare hands?
   Acceptable responses are:

   prepared fresh fruits and vegetables served raw
   salads and salad ingredients
   cold meats and sandwiches
   bread, toast, rolls and baked goods
   garnishes such as lettuce, parsley, lemon wedges, potato chips or pickles on plates
   fruit or vegetables for mixed drinks
   ice served to the customer any food that will not be thoroughly cooked or reheated after it is prepared
   http://www.health.ny.gov/environmental/indoors/food_safety/washin
   (New York State, 2017)

EMPLOYEE HEALTH

All employees should have clean outer garments or aprons on at all times while engaging in handling of food, utensils, or food contact equipment.

One should never handle food if experiencing any of the following:

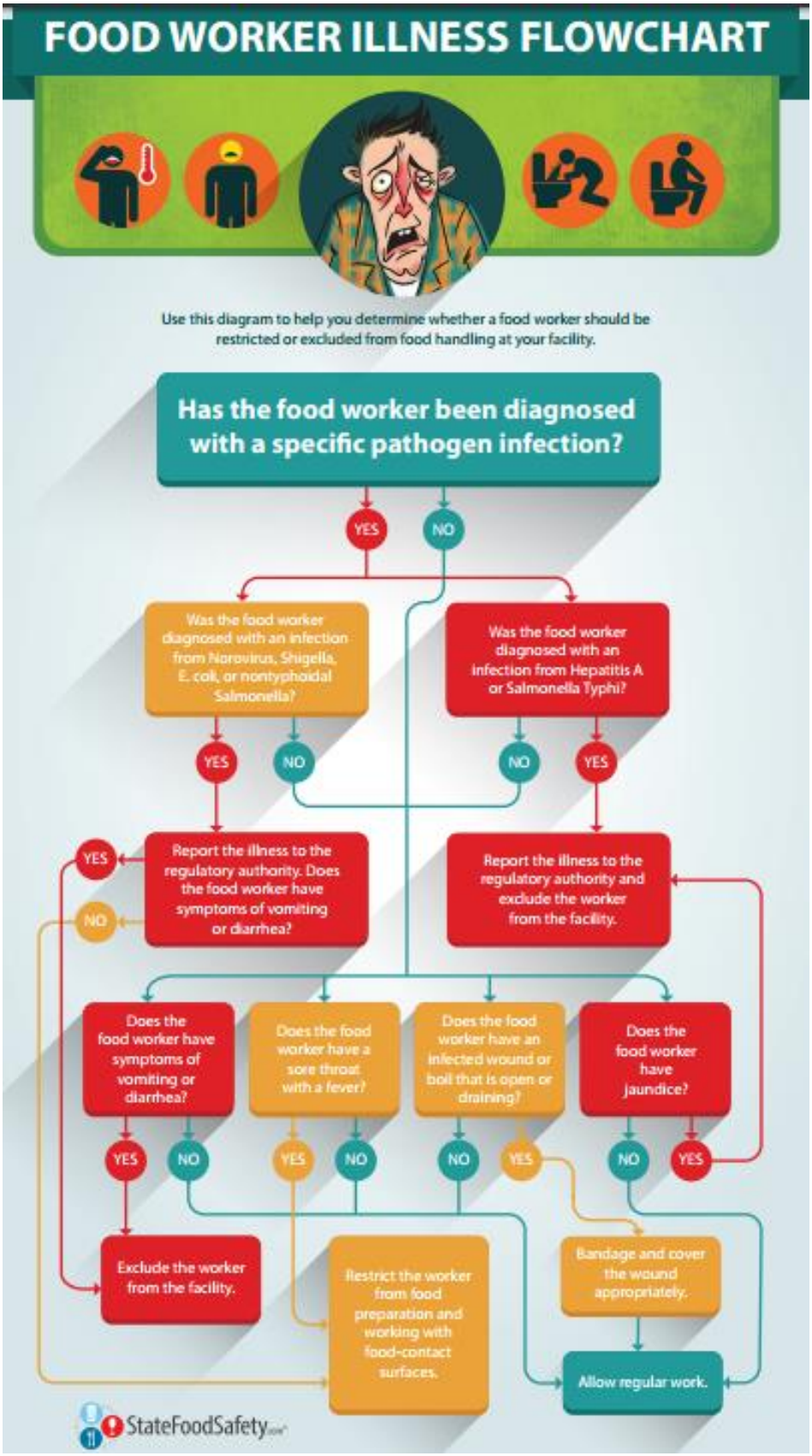
- Vomiting
- Diarrhea
- Sore throat with a fever
- Yellowing of skin or eyes

As a manager/owner it is your responsibility to ensure any sick employee does not work with food and clean equipment. You are responsible for having an employee health policy.

Training Exercises

1. *The following URL from the state food safety website presents a flowchart to help managers/owners to decide if a food handler is fit to work.*

   https://assets.statefoodsafety.com/resources/media/Flowchart_for_managers.pdf

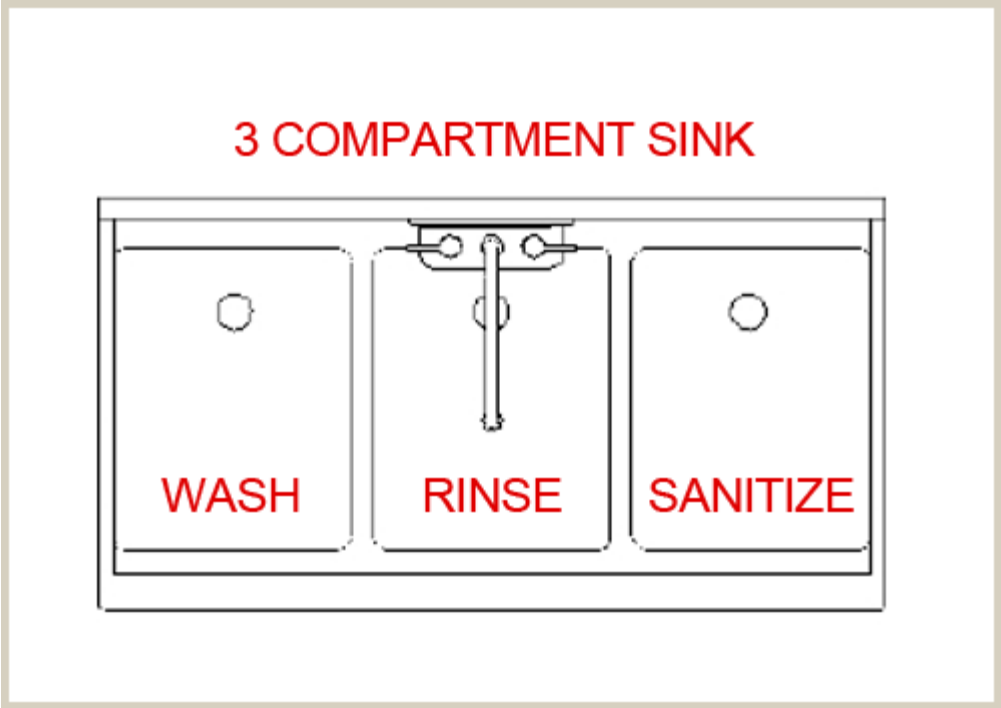


(State Food Safety, 2017)

CLEANING AND SANITIZING

DISHWASHING

The use of a three-compartment sink with drain boards is required. You will need to research additional requirements in your location of business with information regarding waste water tanks, back flow prevention, and grease trap requirements as these vary from county to county.



Pre-rinse, wash, rinse, sanitize, air dry

The following procedure should be utilized:

- Scrape and/or pre-rinse food from dishes and utensils.
- Wash with detergent and hot (120°F) water in the first sink.
- Rinse with clean, hot water to remove any soap or food in the middle sink.

- Sanitize, in the third sink, for at least 1 minute to kill any bacteria.
- Air dry the dishes and utensils.

Approved chemical sanitizers:

- Chlorine Bleach
- Quaternary Ammonium Compounds
- Iodine

Use test strips to test the strength of the solution. If the test indicates less than 50 parts per million (ppm), make a new solution. Other chemical sanitizers may be used if they are approved by the Health Department in your area.

Training Exercise

1. *Role Playing Scenario*

Have employee setup the three-compartment sink based on the diagram and use a test strip to test the sanitizing solution. Ensure the correct ppm is displayed and that the employee performs the task correctly. Discuss with employee what went well and what needs to be improved on.

SAFE CHEMICAL HANDLING

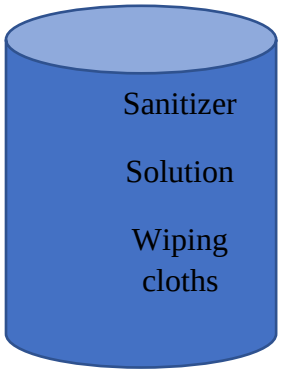
Points to consider and follow to ensure that surfaces are clean for food preparation and serving are:

- All food contact surfaces are required to be cleaned and sanitized EVERY four hours.
- Use test strips to ensure the mixture is the sufficient ppm.
- Sanitize food contact surfaces after contamination of raw meat and potentially hazardous food to prevent cross-contamination.

Have the employees who make the solution write the time the solution needs to be thrown out and a new mixture of sanitizer added. Always use cloths for sanitizing and never use sponges. All sanitizers stored on the food truck must be stored away from food and food contact surfaces.

Training Exercises

1. *Using posters can help to remind employees of the correct procedure.*
2. *Have a sign-in sheet posted. Employees and management should write in when the solution should be replaced.*



3. Employees can watch a video on the prevention of cross contamination presented by the Denver Department of Environmental Health (Goodwin, 2014).
https://www.youtube.com/watch?v=gTitbP5_FtY

4. Have the employee teach and walk you through in how to clean and close a shift. Have the employee walk you through and explain why each area is supposed to be cleaned.

PEST CONTROL

Cockroaches, flies, mice, rats and birds are considered pests. These pests can carry disease and contaminate food. It is imperative that they stay out of your food truck!

To prevent pest infestations, follow these steps:

- Ensure no opening greater than ¼ inch exists to the outside of your food truck.
- Ensure your insect screens have no holes or tears and that they are always in use.
- Screen or cap all vent and pipe openings.
- Clean and sanitize the inside of the food truck after each service.
- Wash the outside of the truck after each service.
- Remove all water from water tanks after each service.
- Do not leave any open food on the truck after service.
- Spills and accidents should be cleaned immediately.
- Have a routine for garbage removal.

Training Exercises

1. *Role Playing Exercise*

   Develop an opening and closing checklist that includes cleaning and maintenance. Include pictures of what each clean area should look like as a guide for the employee. Have the employee do a walk through using the checklist. Discuss with the employee any issues found and proceed to correct the situation with the aid of the employee. A direct hands-on interaction is recommended.

2. *Model the Proper Routine*

   Develop a consistent routine in how to dispose of food waste and other garbage at the end of a service shift. Also maintain a checklist of the proper end of service routine. Model this routine for the employee as a one-on-one activity.

EQUIPMENT

POWER EQUIPMENT

All equipment on the food truck must be sufficiently powered according to wattage. The truck's power source must be able to safely power all equipment on board. If using a generator, one must assure that all cords are not a hazard to the consumer. It is recommended that you work with your fire department in your municipality on all safety standards and pass inspection according to your city's laws and regulations. It is imperative that managers/owners ensure that their truck operation is up-to-date with all required permits and licenses in order to operate a food truck in their municipality. It is also the responsibility of management to be aware of all basic fire safety regulations. These regulations include the operation of a generator and the use and transportation of propane cylinders. A sample checklist and other food truck safety information is provided by the National Fire Protection Association (NFPA, 2017). The United States Department of Transportation outlines regulations with regard to the transportation and inspection of propane cylinders (US DOT, 2017). The resource list in the appendix provides fact sheets and contact information for each of these national organizations.

Training Exercise

1. *Role Play Scenario*
   Invite the local fire department to work with employees in order to teach or review critical rules in fire prevention and what to do in case of an actual fire. Ask the fire department to take the employees on a "mock inspection" so that employees are aware and prepared to act accordingly if a real inspection occurs while in operation.

Modifying Equipment

Equipment should not be modified or changed without consulting your city/county health inspector or fire department. Whenever possible purchase appliances that have the National Sanitation Federation certification. This certification guarantees that the product is food grade and safe for use. The minimum equipment requirement for a truck is refrigeration/ steam tables that can keep food safe and maintain power to keep the equipment running. All connections must be ground fault protected.

Training Exercises

One-On-One Instruction

1. *Coach employees on the operation of each piece of equipment.*
2. *Hold a question and answer session after each lesson.*
3. *Have employees perform a practice operation of each piece of equipment under several different scenarios. For example, point out there is water on the floor. Ask them where it might be coming from, and what they would do to try to correct the problem. Or ask the employee if they smell gas and what they should do.*
4. *Point out to the employee where the certification logo is located on each piece of equipment. They will need to know this in case an actual inspection takes place*.

FOOD STORAGE

- All foods must come from a U.S.D.A. approved source.
- No food products are to be prepared or stored in a private location such as a residence.
- All food and utensils are required to be stored at least six inches off of the floor.
- Food is to be stored in approved food grade containers that are covered and labeled at all times.
- All food must be labeled using the following guidelines:
    - Label with the earliest use-by date of its ingredients.
    - Food must be eaten, sold, or discarded within 7 days of being prepared.
    - Follow First-in/First-Out (FIFO) when working with thawed, prepared, or opened foods.
    - The following label is an example of what must be displayed on all foods.
- Keep ready-to-eat foods away from raw foods. Do not store raw foods above ready-to-eat foods.
- Keep garbage in sealed containers away from all foods at all times.
- All storage must be protected from public access.

Example Food Label

Training Exercises

1. *Role Play Scenario*
   Show the employee several food expiration labels and ask them if the item is acceptable for use.
2. *Review the steps of FIFO (First-in/ First-Out), and then have the employee demonstrate how to properly pack up and label left-over cooked food.*

CHEMICAL STORAGE

- Properly label ingredients of all chemicals.
- Store chemicals and sanitizers below and separate from food and food utensils.

Training Exercises

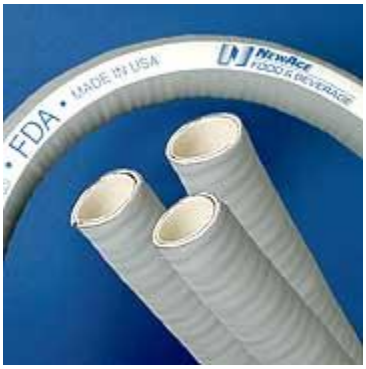
1. *Discuss with the employee the dangers of placing food and food utensils near any types of chemicals, including cleaners and sanitizing agents. Point out the proper locations of the storage of chemicals and sanitizing agents.*

2. *Role Play Scenario*
   Before a shift takes place, put a few empty bottles labeled as cleaning agents in an improper storage location. Observe the employee to see if they move the chemicals to the proper storage area. If they follow through correctly, be sure to acknowledge the achievement, if they do not correct the situation be sure to discuss the issue and its importance.

WATER STORAGE

- All water used by the food truck must come from an approved public water system or a commercial bottle water source.
- Water tank and accessories must be safe, durable, corrosion resistant, and smooth (surfaces that can be easily cleaned).
- No leaks or punctures should be detected.

- Hoses to fill water tanks must only be used for that purpose and must be labeled "FOOD GRADE". The hose should be white with a blue stripe. See the example below.



(FDA. 2017)

- The wastewater tank in a food truck is required to be 15% larger in capacity than the clean potable water tank. The wastewater tank must be sloped to a drain that is one-inch in diameter and contains a shut-off valve.

Training Exercise

1. *One-On-One Instruction*

   Show the employee the correct hose to use for filling the water tank. Make sure they know how to attach the hose and have them practice in front of you. Also show them where to store each of the hoses in order for this form of equipment to stay clean for use.

COOKING METHODS

Certain foods are much more liable to harbor and grow pathogens that cause foodborne illness. Management and employees must ensure following the proper storage, handling, and cooking of these food items. Time-temperature control must be implemented.

The FDA Food Code (2013) recognizes the following as potentially hazardous foods:

Milk & Milk Products	**Baked or Boiled Potatoes**
Tofu	**Cooked Rice & Cooked Beans**
Poultry	**Other Heat-Treated Plant Foods**
Raw Sprouts & Seeds	**Soy-Protein Foods**
Shellfish	**Sliced Melon**
Meats-Pork, Lamb, Beef	**Sliced Tomatoes**
Garlic in Oil Mixtures	**Fish**
Shell Eggs	

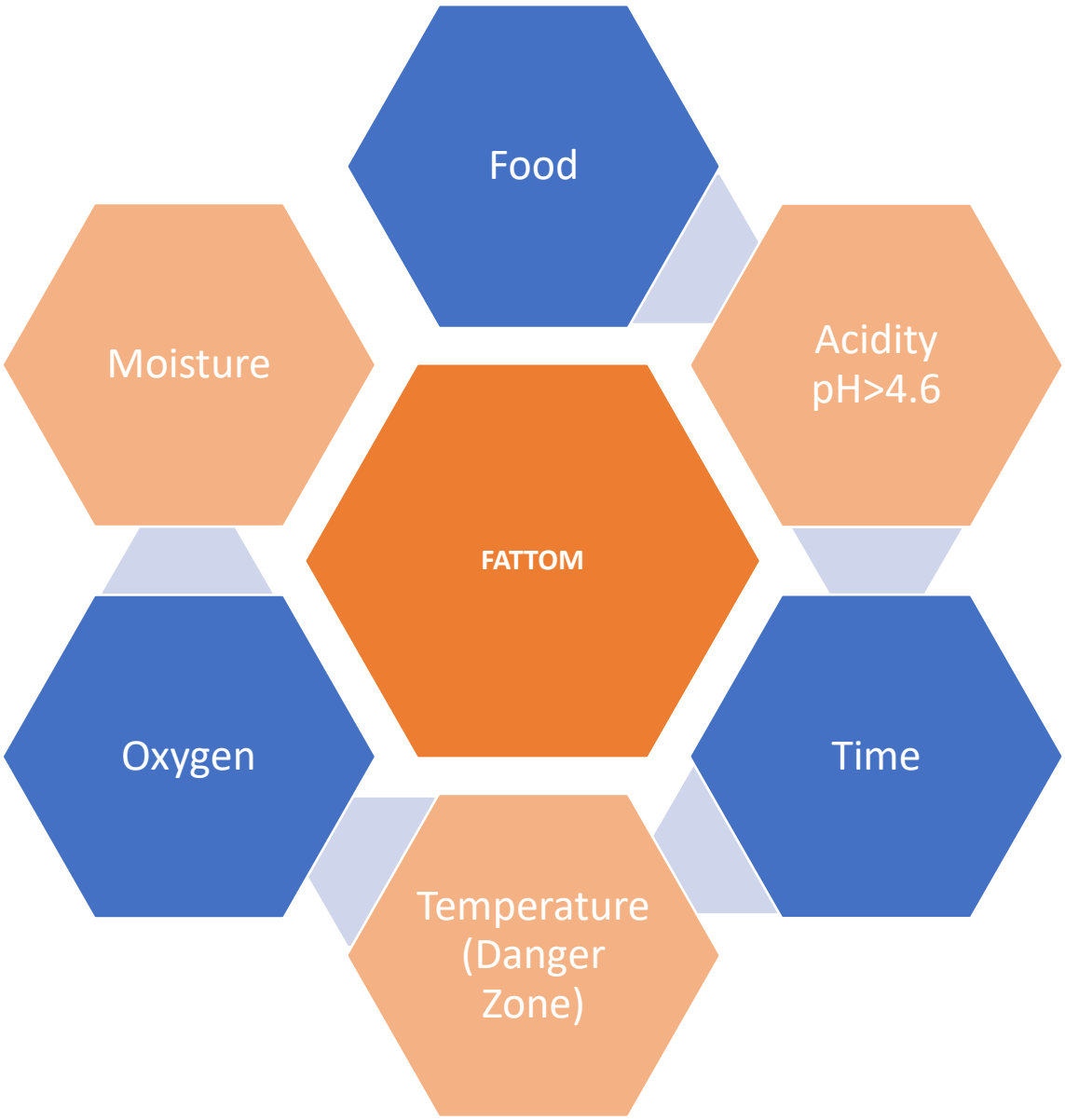
TIME-TEMPERATURE CONTROL

The food samples listed in the above table must be handled properly to prevent foodborne illness. These foods only require one of the FATTOM elements in order for pathogens to multiply. Special attention must be taken into consideration with each of the FATTOM properties when preparing, cooking, serving, and storing food items in order to avoid possible food pathogen growth. In addition, other important guidelines to follow include:

- Potentially hazardous foods must be kept below 41°F when cooling.

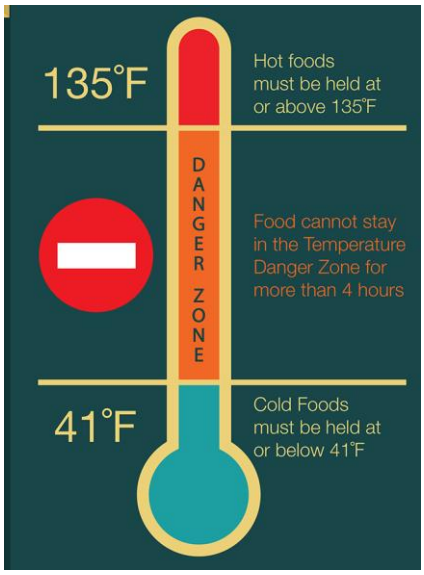
- Potentially hazardous foods must be kept above 135°F when heating.
- Do not use open flames or sternos to keep food hot.
- Only use refrigerators to keep food items cold.
- If using ice, the ice must come from an approved source and must be able to drain away from food as it melts. Ice must be replenished as it melts for the duration of use.

FATTOM DIAGRAM



Training Exercises

1. *Visual Exercise*
   Display a visual aid to remind employees to always follow correct temperature control in order to keep food out of the danger zone.



(State Food Safety, 2017)

2. *One-On-One Instruction*
   Review with the employee which recipes from the menu have potentially hazardous food ingredients and review the cooking process for each. Provide a check sheet for each recipe indicating the proper cooking and holding temperature to be attained.

3. *Role Play Scenario*
   Practice various scenarios with the employee that test their knowledge on time-temperature control. An example: After realizing raw chicken has been left on the counter, ask them what they would do. Is the chicken safe to cook and sell, or does it need to be thrown away?

THAWING FOODS

Following the proper procedures to thaw food is also important in the prevention of foodborne illness. While in the thawing process, food can enter the danger zone (41° F to 135°F) which can allow the growth of dangerous pathogens. Therefore, only approved FDA Food Code (FDA, 2017) methods of thawing should be utilized.

- Approved Thawing Methods:
    - Refrigeration.
    - Under cool running water.
    - Microwave if cooking immediately.
- Cooling Hot Foods:
    - Food must be cooled from 135°F to 70°F within two hours.
    - If food takes longer to reheat to 165°F within two hours or takes longer to drop down from 70°F to 41°F, the food must be thrown away and not used for consumption.
- Reheating Foods
    - Must be reheated to 165°F within two hours before hot holding the food for service.

Training Exercises

1. *One-On-One Instruction*

Demonstrate the proper method of cooling down food. In the demonstration teach how to cool, move the food item into the correct storage container, and how to properly wrap and label the food item. Indicate in the demonstration when to take the temperature of the food item in order to determine if the food has been in the danger zone for more than two hours.

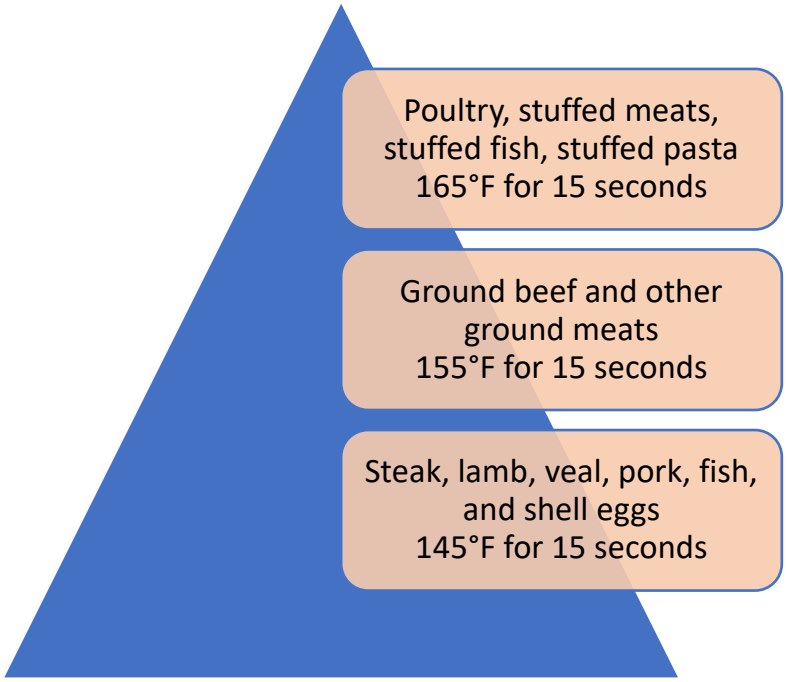
2. *Role Play Scenario*

Have the employee act out a scenario in which they are asked to re-heat a pot of chili within four hours. Ask them if this is the correct method, why or why not? Ask them if there are any ingredients in the chili that might be potentially hazardous if heating this food item in a four-hour time frame.

COOKING FOODS

All potentially hazardous foods must be sufficiently cooked to the correct temperatures. Each raw animal product must reach the following internal temperatures:

INTERNAL COOKING TEMPERATURES FOR MEAT PRODUCTS



Training Exercise

1. *Role Play Scenario*

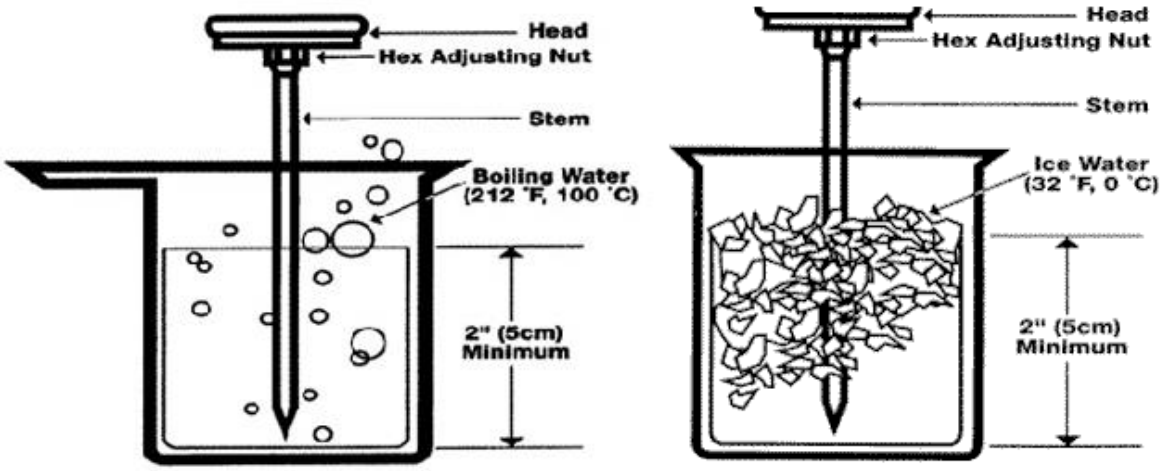
   Place a piece of chicken, ground beef, and a shell egg in front of the employee. Have the employee place the food items in order of the correct finished cooking temperature - which food item should be 165°F, 155°F, and 145°F?

THERMOMETER CALIBRATION

Temperature needs to be measured in cooked foods to ensure food safety. The FDA (2017), recommends that a metal stemmed probe thermometer is the best tool for measuring internal temperature of food items. Appropriate thermometers for this use should have the NSF label which means that the thermometer is food safe. Please see the example below.

(FDA, 2017)

The thermometer must be calibrated to work accurately. The U.S.D.A. recommends two methods for calibrating a thermometer for food use. In the first method, place crushed ice into a 4-inch container and add water. The water and ice mixture or slush must be at least 2 inches deep. Insert the thermometer into the slush and wait 30 seconds until the dial on the thermometer stops moving. At this point the dial should read 32°F. The second process of calibration is completed with boiling water. In this process, the thermometer dial must read 212°F. See the diagram below for both methods.



(USDA, 2017)

Training Exercises

1. *Role Play Scenario*

Have employee calibrate their thermometer before each shift. Keep a log of calibrations and rotate using the boiling water and slush method of calibration.

2. *Visual Exercise*

Employees can watch the following video provided by the USDA titled "The Importance of Cooking to a Safe Internal Temperature and How to Use a Food Thermometer" https://youtu.be/-2KkV2yFiN0 (USDAFoodSafety, 2015). The video reviews the importance using a thermometer to determine the correct food temperatures for a variety of food items.

3. *Check Knowledge*

Use flash cards to quiz knowledge on proper cooking temperatures of foods such as ground beef, eggs, pork, poultry etc. Have the employee demonstrate where to properly insert the thermometer on different food items to ensure accurate temperatures.

Useful Resources

National Fire Protection Association

http://www.nfpa.org/public-education/by-topic/property-type-and-vehicles/food-truck-safety

United States Department of Transportation

https://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/propane_en_v3.pdf

University of Nebraska–Lincoln

http://food.unl.edu/free-handwashing-materials-spanish

Partnership for Food Safety Education

http://www.fightbac.org/food-safety-basics/the-core-four-practices/

References

Afzan, S., Aziza, A., & Dahan, H. (2013). Food in school canteens. *Procedia - Social and Behavioral Sciences,* 105, 220-228.

Ahmad, A., Jehanzeb, K., & Alkelabi, S. (2012). Role of learning theories in training while training the trainers. *International Journal of Academic Research in Business and Social Sciences,2*(11), 181-189.

Aliakbari, F., Bahrami, M., Aein, F., & Khankeh, H. (2014). Iranian nurses' experience of essential technical competences in disaster response: A qualitative content analysis study. *Iranian Journal of Nursing and Midwifery Research, 19*(6), 585-592. doi:10.4103/2277-9531.139247

Anandappa, M. (2013). Evaluating food safety systems development and implementation by quantifying HACCP training durability. (Doctoral dissertation). University of Kentucky, Lexington, KY, Retrieved from https://www.researchgate.net/publication/254872657_Evaluating_Food_Safety_Systems_Development_and_Implementation_by_Quantifying_HACCP_Training_Durability

Angelillo, I. F., Viggiani, N.M.A., Rizzio, L., & Bianco, A. (2000). Food handlers and foodbourne diseases: Knowledge, attitudes and reported behavior in Italy. *Journal of Food Protection, 63*(30), 381-385. doi:10.4315/0362-028X-63.3.381

Arendt, S., & Sneed, J. (2008). Employee motivators for following food safety practices: Pivotal role of supervision. *Food Protection Trends*, *28*(10), 704-11.

Atlanta Street Food Coalition. (n.d.). Retrieved July 1, 2013 from http://www.atlantastreetfood.com/

Austin Food Carts (2013). Retrieved July 2, 2013 from http://austinfoodcarts.com/

Baldwin, T. T., & Ford, K.J. (1988). Transfer of training: A review and directions for future research. *Personal Psychology, 41*(1), 63-105. doi:10.1111/J.1744-6570.1988.tb00632.x

Ball, B., Wilcox, A., & Aung, M. (2009). Factors influencing workers to follow food safety management systems in Ontario, Canada. *International Journal of Environmental Health Research, 19*(3), 201-218.

Bandura, A. (1977). *Social learning theory*. New York, NY: General Learning Press.

Bandura, A. (1982). Self-efficacy mechanisms in human agency. *American Psychologist*, 37, 122-147.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall, Inc, Retrieved from http://search.proquest.com.ezaccess.libraries.psu.edu/docview/617099314?accountid=13158

Bandura, A. (1988*). Self-regulation of motivation and action through goal systems*. V. Hamilton, G.H. Bower, & N.H. Frijda (Eds.), Cognitive perspectives on emotion and motivation. Dordrecht, Netherlands: Kluwer Academic Publishers.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*(2), 248-287.

Bandura, A. (1995). Exercise of personal and collective efficacy in changing societies. In A. Bandura (Ed.), *Self-efficacy in changing societies*. New York: Cambridge University Press.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman.

Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health, 13*(4), 623-649. doi:10.1080/08870449808407422

Bandura, A. (1999). Social cognitive theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed.). New York: The Guilford Press.

Bandura, A. (2001). Social cognitive theory: An agentive perspective. *Annual Review of Psychology*, 52, 1-26. doi:10.1146/annurev.psych.52.1.1

Bandura, A. (2005). The evolution of social cognitive theory. In K.G. Smith & M.A. Hitt (Eds.) *Great Minds in Management*. Oxford, England: Oxford University Press.

Bandura, A., & Walters, R.H. (1963). *Social learning and personality development.* New York, NY: Holt, Rinehart & Winston.

Bandura, A., Adams, N. E., & Beyer, J. (1977). Cognitive processes mediating behavioral change. *Journal of Personality and Social Psychology, 35*(3), 125-139. doi:10.1037/0022-3514.35.3.125

Banister, P., Bruman, E., Parker, I., Taylor, M., & Tindall, C. (Eds.) (1994). *Qualitative methods in psychology: A research guide*. Buckingham, England: Open University Press.

Barrows, C.W. (2000). An exploratory study of food and beverage training in private clubs. *International Journal of Contemporary Hospitality Management, 12*(3), 190-197. doi:10.1108/09596110010320751

Bass, B. M., & Vaughn, J. A., (1968) *Training in industry: the management of learning*. London, England: Tavistock Publications Ltd.

Bay Area Mobile Food Vendors Association. (2013). Retrieved July 4, 2013 from http://friskyfoodtrucks.com/bay-area-mobile-food-vendors-association/

Bean, N.H., & Griffin P.M. (1990). Foodborne disease outbreaks in the United States, 1973-1987: Pathogens, vehicles, and trends. *Journal Food Protection, 53*(9), 804-817. doi:10.4315/0362-028X-53.9.804

Beattie. S., Woodman, T., Fakehy, M., & Dempsey, C. (2016). The role of performance feedback on the self-efficacy - performance relationship. *Sport, Exercise, and Performance Psychology, 5*(1), 1–13.

Bishop, J. (1991). On the job training of new hires. D. Stern & J. M. M. Ritzen (Eds.). *Market failure in training?* New York, NY: Springer-Verlag.

Bishop, J. H. (1996*). What we know about employer-provided training: A review of literature*. Ithaca, NY: Cornell University School of Industrial and Labor Relations.

Bloomfield, S. F., & Scott, E. (1997). Cross-contamination and infection in the domestic environment and the role of chemical disinfectants. *Journal of Applied Microbiology,* 83, 1–9. doi:10.1046/j.1365-2672.1997.00199.x

Bonk, C. J., & Zhang, K. (2008). *Empowering online learning: 100+ activities for reading, reflecting, displaying, and doing*. San Francisco, CA: Jossey-Bass, A Wiley.

Bowman, S. (2002). *Preventing death by lecture.* Glenbrook, Nevada: Bowperson Publishing Co.

Broad, M., & Newstrom, J. W. (1992). *Transfer of training: Action-packed strategies to ensure high payoff from training investments*. Reading, MA: Addison-Wesley Publishing Company.

Bruhn, C.M., & Schutz, H.G. (1999). Consumer food safety knowledge and practices. *Journal of Food Safety*, 19, 73-87.

Bruner, J. S. (1961). The act of discovery. *Harvard Educational Review*, 31, 21-32.

Bruner, J.S. (1966). *Toward a theory of instruction*. Cambridge, MA: Harvard University Press.

Bryan, F.L. (1990). Hazard analysis critical control point (HACCP) system for retail food and restaurant operations. *Journal of Food Protection*, 53, 978-983. https://doi.org/10.4315/0362-028X-53.11.978

Burke, M.J., Sarpy, S. A., Smith-Crowe, K., Chan-Serafin, S., Salvador, R. O., & Islam, G. (2006). Relative effectiveness of worker safety and health training methods. *American Journal of Public Health, 96*(2), 315-324. doi:10.2105/AJPH.2004.059840

Bush, D., Paleo, L., Baker, R., Dewey, R., Toktogonova, N., & Cornelio, D. (2009). Restaurant supervisor safety training: Evaluating a small business training intervention. *Public Health Reports, 124*(1), 15-160. doi:10.1177/00333549091244S117

Center for Disease Control and Prevention. (1997-1982). Retrieved from the Center for Disease Control Archives website: http://www.cdc.gov/

Center for Disease Control and Prevention. (1990). Retrieved from http://www.cdc.gov/

Center for Disease Control and Prevention. (1996). Retrieved from http://www.cdc.gov/

Center for Disease Control and Prevention. (2010). Retrieved from http://www.cdc.gov/

Center for Disease Control and Prevention. (2011, June 10). Retrieved from http://www.cdc.gov/

Center for Disease Control and Prevention. (2012). Retrieved from http://www.cdc.gov/

Center for Disease Control and Prevention. (2013). Retrieved from http://www.cdc.gov/

Center for Disease Control and Prevention. (2015). Retrieved from http://www.cdc.gov/

Centers for Disease Control and Prevention. (CDC). (2016, October 13). *Fight Germs. Wash Your Hands!* [Video File]. Retrieved from https://youtu.be/lhmYLwDdPuE

Chapman, B., Eversley, T., Fillion K., MacLaurin, T., & Powell, D. (2010). Assessment of food safety practices of food service food handlers: Testing a communication intervention. *Journal of Food Protection, 73*(6), 1101-7. https://doi.org/10.4315/0362-028X-73.6.1101

Chen, E.T. (2008). Successful e-learning in corporations. *Communications of the HMA, 8*(2), 45-54.

Chesapeake Health Department. (2013). Mobile food unit operation guide, guidelines for food service. Retrieved July 12, 2013 from http://www.vdh.state.va.us/

Chrzanowska, J. (2002). *Interviewing groups and individuals in qualitative market research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Clayton, D.A., Griffith, C.J., Price, P., & Peters, A.C. (2002). Food handlers' beliefs and self-reported practices. *International Journal of Environmental Health Research 12*(1), 25-39. doi:10.1080/09603120120110031

Cleland, J., Johnston, P.W., Walker, L., & Needham, G. (2012). Attracting healthcare professionals to remote and rural medicine: Learning from doctors in training in the north of Scotland. *Medical Teacher*, 34, 476-482. doi: 10.3109/0142159X.2012.668635

Compeau, D., Higgins, C. A., & Huff, S. (1999). Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS Quarterly*, *23*(2), 145-158. doi:10.2307/249749

Cooper, M.D. (2000). Towards a model of safety culture. *Safety Science*, 36, 111-136.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology*, 78, 98-104. doi:10.1037/0021-9010.78.1.98

County of Los Angeles Public Health. (2017). Mobile food facility information packet operational guidelines. Retrieved March 3, 2017 from http://publichealth.lacounty.gov/

Creswell, John W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches.* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Creswell, John W., & Plano Clark, V.L. (2004). *How to design a mixed methods study* [PowerPoint slides]. Retrieved from https://www.andrews.edu/leaderpart/RoundTable/2004/.../1a/AU-MM-Slides-jwc.ppt

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of test. *Psychometrical,* 16, 297-334. doi:10.1007/BF02310555

Crothers, L. M., Hughes, T. L., & Morine, K. A. (2008). *Theory and cases in school-based consultation: A resource for school psychologists, school counselors, special educators, and other mental health professionals*. New York, NY: Routledge Taylor & Francis Group.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process* (2nd ed.). Thousand Oaks, CA.: Sage Publications.

CVO Food Safety Knowledge Center. (2017). Establishing a food safety training program. Retrieved from the http://gov.mb.ca/agriculture/food-safety/at-the-food-processor/establishing-a-training-program.html

Da Cunha, D.T., Stedefeldt, E., & Vera de Rosso, V. (2014). The role of theoretical food safety training on Brazilian food handlers' knowledge, attitude and practice. *Food Control*, 43, 167-174. http://dx.doi.org/10.1016/j.foodcont.2014.03.012

Dallas City Hall. (2013). Requirements mobile food vendor. Retrieved July 3, 2013 from http://dallascityhall.com/

Daniels, N.A., Bergmire-Sweat, D.A., Schwab, K.J., Hendriks, K.A., Reddy, S., Rowe, S.M., & Atmar, R.L. (2000). A foodborne outbreak of gastroenteritis associated with Norwalk-like viruses: First molecular trace back to deli sandwiches contaminated during preparation. *Journal of Infectious Disease*, 181, 1467-1470. https://doi.org/10.1086/315365

D.C. Food Truck Association. (2012). Current issues. Retrieved from http://dcfoodtrucks.org/

Denver Food Trucks. (2013). Retrieved July 3, 2013 from http://denfoodtrucks.com/

Denzin, N. (1978). *The research act: A theoretical introduction to sociological methods*. New York, New York: McGraw-Hill.

Dewar, D., Lubans, R., Plotnikoff, C., & Morgan, P.J. (2012). Development and evaluation of social cognitive measures related to adolescent dietary behaviors. *International Journal of Behavioral Nutrition and Physical Activity, (9)*36. doi:10.1186/1479-5868-9-36

Dillon, M., & Griffith, C.J. (1996). *How to HACCP: An illustrated guide*. (2nd ed.). Grimsby, England: M.D. Associates.

Dillman, D.A. (2000). *Mail and internet surveys: The tailored design method*. (2nd ed.). New York, NY: John Wiley & Sons, Inc.

DiPietro, R.B. (2006). Return on investment in managerial training: Does the method matter? *Journal of Foodservice Business Research, 7*(4), 79-96.

Easton, V.J., & McColl, J.H. (1997). Statistics glossary. Retrieved from http://www.stats.gla.ac.uk/steps/glossary/index.html

Eddy, E.R., Tannenbaum, S.I., Lorenzet, S.J., & Smith-Jentsch, K.A. (2005). The Influence of a continuous learning environment on peer mentoring behaviors. *Journal of Managerial Issues, 17*(3), 383-395. http://www.jstor.org/stable/40604508

Egan, M.B., Raats, M.M., Grubb, S.M., Eves, A., Lumbers, M.L., Dean, M.S., & Adams, M.R. (2007). A review of food safety and food hygiene training studies in the commercial sector. *Food Control* 18, 1180-1190. doi:10.1016/j.foodcont.2006.08.001

El-Shenawy, M., Manes, J., & Soriano, J.M., (2011). Listeria spp. in street-vended ready-to-eat-foods. *Interdisciplinary Perspectives on Infectious Diseases*, 1-6. doi:10.1155/2011/968031

Fanning, F.E. (2011). Engaging learners: Techniques to make training stick. *Professional Safety, 56*(8), 42-48.

Fenton, G.D., LaBorde, L.F., Radhakrishna, R.B., Brown, L.J., & Cutter, C.N. (2006). Comparison of knowledge and attitudes using computer-based and face-to-face personal hygiene training methods in food processing facilities. *Journal of Food Science Education*, 5, 45-50. doi: 10.1111/j.1541-4329.2006.00001

Field, A. (2005). *Discovering statistics using SPSS*. London, England: Sage Publications.

Fields, D. (1996). Proceedings from National Convention of the Association for Educational Communications and Technology '96: *The Impact of Gagne's Theories on Practice*. Indianapolis, IN.

Florida Department of Agriculture and Consumer Services. (2011). Retrieved from http://www.freshfromflorida.com/

Florida Department of Health. (2013). Facility programs-food managers. Retrieved from http://www.doh.state.fl.us/

Foodservice Resource Associates, LLC. Georgia. (2012). Retrieved from http://www.foodserviceresource.com/

Food Trucks in Indianapolis. (2012). Retrieved May 13, 2013 from http://visitindy.com/

Frash, R., Binkley, M., Nelson D., & Almanza, B., (2005). Transfer of training efficacy in U.S. food safety accreditation. *Journal of Culinary Science & Technology, 4*(2-3), 7-38. doi:10.1300/j385v04n02_02

Gagné, R. M. (1962). The acquisition of knowledge. *Psychological Review*, 69, 355–365.

Gagné, R. (1965). *The conditions of learning*. New York, NY: Holt, Rinehart and Winston, Inc.

Gagné, R. (1971). Instruction based on research in learning. *Engineering Education*, 5, 519-523.

Gagné, R. M., & Driscoll, M. P. (1988). *Essentials of learning for instruction* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Gagné, R. (1989). *Studies of learning fifty years of research*. Tallahassee, FL: Learning Systems Institute.

Gagné, R., Briggs L., & Wager, W. (1992). Principles of instructional design. Orlando, FL: Harcourt Brace College Publishers.

Georgia Department of Agriculture. (2013). Retrieved from http://www.agr.georgia.gov/

Ghezzi, S., & Ayoun, B. (2013). Food safety in the US catering industry: Empirical findings. *International Journal of Contemporary Hospitality Management*, *25*(3), 365-382. https://doi.org/10.1108/09596111311311026

Gibbs, G.R. (2002). *Qualitative data analysis: Explorations with NVivo*. Buckingham, United Kingdom: Open University Press.

Gill, P., Stewart, K. Treasure, E. & Chadwick, B. (2008). Methods of data collection in qualitative research: Interviews and focus groups. *British Dental Journa*l 204, 291-295. doi:10.1038/bdj.2008.192

Gist, M. & Mitchell, T. (1992). Self-efficacy: A theoretical analysis of it determinants and malleability. *Academy of Management Review, 17*(2), 183-211.

Glanz, K., Lewis, F. M., & Rimer, B. K. (Eds.). (1997). *Health behavior and health education*: *theory, research and practice* (2nd ed.). San Francisco, CA: Jossey-Bass.

Goodwin, J. (2014, March 3). *Food safety training series: Cross contamination food safety* (English) [Video File]. Retrieved from https://youtu.be/gTitbP5_FtY

Graham, S., & Weiner, B. (1996). Theories and principles of motivation. In D. C. Berliner & R. C. Calfee (Eds.). *Handbook of educational psychology*. New York, NY: Simon & Schuster Macmillan.

Griffith, C. (2000). *Food safety in catering establishments*. Food Science and Technology- New York- Marcel Dekker-, 235-256.

Griffith, C.J., Livesey, K. M., & Clayton D.A. (2010). The assessment of food safety culture. *British Food Journal*, *112*(4), 439-456. doi:10.1108/00070701011034448

Greene, J.C., Caracelli, V.J. & Graham, W.F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, *11*(3), 255-274. http://www.jstor.org/stable/1163620

Guzewich, J.J. (1995). The anatomy of a glove rule. *Environmental Digest*. Fall, 4-13.

Hagglund, D. (2017). In-Depth interviews, focus groups, or both? Retrieved from http://dimensionalresearch.com/blog/2009/03/02/in-depth-interviews-focus-groups-or-both/

Hall, E., Chai, W., Koszewski, W., & Albrecht, J.A. (2015). Development and validation of a social cognitive theory-based survey for elementary nutrition education program. Paper 33. *International Journal of Behavioral Nutrition and Physical Activity*, 12, 47. doi:10.1186/s12966-015-0206-4

Harrison, A.W., Rainer, R. K., Hochwarter, W. A., & Thompson, K. R. (1997). Testing the self-efficacy-performance linkage of social-cognitive theory. *The Journal of Social Psychology, 137*(1), 79-87. http://dx.doi.org/10.1080/00224549709595415

Harvey, J., Erdos, G., Bolam, H., Cox, M.A.A., Kennedy, J.N.P. & Gregory, D.T. (2002), An analysis of safety culture attitudes in a highly regulated environment. *Work & Stress, 16*(1), 18-36.

Hawk, Z. (2013). *Gourmet food trucks: An ethnographic examination of Orlando's food truck scene*. (Doctoral dissertation). University of Central Florida, Orlando, FL. Retrieved from http://sciences.ucf.edu/anthropology/wpcontent/uploads/sites/19/2013/09/Hawk_Zachart.pdf

Hedberg, C.W., Smith, S.J., Kirkland, E., Radke, V., Jones, T.F., & Selman, C.A. (2006). Systematic environmental evaluations to identify food safety differences between outbreak and non-outbreak restaurants. *Journal of Food Protection*, 69, 2697–2702.

Hertzman, J., & Barrash, D. (2007). An assessment of food safety knowledge and practices of catering employees. *British Food Journal, (109*)7, 562-576. https://doi.org/10.1108/00070700710761545

Hinkim, T. R, & Schriesheim, C. A. (2004) If u don't hear from me you know you are doing fine the effects of management nonresponse to employee performance. *Cornell Hotel and Restaurant Administration Quarterly, 45*(4), 362-372.

Hislop, N., & Shaw, K. (2009). Food safety knowledge retention study. *Journal of Food Protection, 72*(2), 431-5. https://doi.org/10.4315/0362-028X-72.2.431

Holton, E. F. III (1996). The flawed four level evaluation model. *Human Resource Development Quarterly*, 7, 5-21. doi:10.1002/hrdq.3920070103

Howton, J., Keifer, E., Murphy, C.A., Sirsat, S.A., O'Bryan, C.A., Ricke, S.C., Crandall, P.G., & Neal, J.A. (2016). A comparison of food safety programs using the Customizable Tool for Online Training Evaluation. *Food Control*, 59, 82-87.

Hsieh, H.F., & Shannon, S.E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, *15*(9), 1277-88. doi:10.1177/1049732305276687

Huitt, W. (1994). Principles for using behavior modification. Educational Psychology Interactive. Retrieved from http://www.edpsycinteractive.org/topics/behavior/behmod.html

Human Resource Development Information. (2016). The pros and cons of constructivism in modern day education. Retrieved from https://hrdevelopmentinfo.com/pros-cons-constructivism-modern-day-education/

Indianapolis Department of Code Enforcement, (2012), Mobile food regulation. Retrieved from http//: www.indy.gov/

Jackson, V., Blair, I. S., McDowell, D. A., Kennedy, J., & Bolton, D. J. (2007). The incidence of significant foodborne pathogens in domestic refrigerators. *Food Control*, 18, 346–351. doi:10.1016/j.foodcont.2005.10.018

Janz, N.K., & Becker, M.H. (1984). The health belief model: A decade later. *Health Education Quarterly,* 11(1), 1-47. doi:10.1177/109019818401100101

Jersey City, New Jersey. (2011), Rev. Ordinances. 15, 175-8.

Jick, T. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly, 24*(4), 602-611. http://www.jstor.org/stable/2392366

Johnson, B. R., & Onwuegbuzie, A.J. (2004). Mixed methods research: A research paradigm whose time has come source. *Educational Researcher, 33*(7), 14-26. http://jstor.org/stable/3700093

Jonassen, D.H. (1991). Evaluating constructivist learning. *Educational Technology, 28*(11), 13-16.

Kassa, H. (2001). An outbreak of Norwalk-like viral gastroenteritis in a frequently penalized food service operation in Toledo, Ohio: A case for mandatory training of food handlers in food safety and hygiene. *Journal of Environmental Health, 64*(5), 9-33.

Kearsley, G. (1994). Conditions of learning (R. Gagne). Retrieved from http://www.gwu.edu/~tip/gagne.html

Kearsley, G. (1994). Constructivist theory (J. Bruner). Retrieved from http://www.gwu.edu/~tip/bruner.html

Kilgore, P.E., Belay, E.D., Hamlin, D.M., Noel, J.S., Humphrey, C.D., Gary, H.E., Ando, T., & Rosenthal, D.S. (1996). University outbreak of gastroenteritis due to a small round-structured virus: Application of molecular diagnostics to identify the etiologic agent and patterns of transmission. *Journal of Infectious Diseases, 173*(4), 787-793. https://doi.org/10.1093/infdis/173.4.787

Knowles, M.S. (1970). *The modern practice of adult education, from pedagogy to andragogy*. Englewood Cliffs, NJ: Prentice Hall Regents.

Knowles, M.S. (1973). *The adult learner: A neglected species*. Houston, TX.: Gulf Publishing.

Knowles, M.S. (1984). *The adult learner: A neglected species*. (3rd ed.). Houston, TX.: Gulf Publishing.

Knowles, M.S. (1990). *The adult learner: A neglected species* (4th ed.). Houston, TX: Gulf Publishing Co., Book Division.

Ko, W. H. (2013). The relationship among food safety knowledge, attitudes and self-reported HACCP practices in restaurant employees. *Food Control*, *29*(1), 192-197. doi:10.1016/j.foodcont.2012.05.076

Krippendorff, K. (1980). *Content analysis: An Introduction to its methodology*. Newbury Park, CA: Sage Publications.

Krippendorff, K. (1989). Content analysis. E. Barnouw, G. Gerbner, W. Schramm, T. L. Worth, & L. Gross (Eds.), *International encyclopedia of communication* (Vol. 1, pp. 403-407). New York, NY: Oxford University Press. Retrieved from http://repository.upenn.edu/asc_papers/226

Kvale, S., & Brinkman, S. (2009). *InterViews: Learning the craft of qualitative research interviewing*. Thousand Oaks, CA.: Sage Publications.

Lalley, J. P., & Miller, R. H. (2007). The learning pyramid: Does it point teachers in the right direction? *Education.* Fall, *128*(1), 64.

Latta, S.L. (1999). *Food poisoning and food-borne diseases*. Berkeley Heights, N.J.: Enslow Publishers.

Lee, J. (2008). Design of blended training for transfer into the workplace. *British Journal of Educational Technology, 41*(2), 181-198. doi:10.1111/j.1467-8535.2008.00909.x

Liu, S. Liu, Z., Zhang, H., Lu, L., Liang, J., & Huang, Q. (2015). Knowledge, attitude, and practices of food safety amongst food handlers in the coastal resort of Guangdong, China. *Food Control*, 47, 457-461. http://dx.doi.org/10.1016/j.foodcont.2014.07.048.

Lucey, J. (2006). Management should serve as role models for good work habits and acceptable hygienic practices. *Food Quality & Safety Magazine*. Retrieved from Food Quality & Safety Magazine website: http://www.foodquality.com

MacAuslan, E. (2001). Food hygiene training in the UK: Time for a radical re-think? *Perspectives in Public Health, 121*(4), 213-219.

Malhotra, R., Lal, P., Krishna, S., Prakash, M. Daga, K., & Kishore, J. (2008). Evaluation of a health education intervention on knowledge and attitudes of food handlers working in a medical college in Delhi, India. *Asia-Pacific Journal of Public Health, 20*(4), 277-286.

Market Research Reports and Analysis. (2016). Retrieved from https://www.ibisworld.com/industry/food-trucks.html

Martin, J.J., McCaughtry, N., Flory, S., Murphy, A., & Wisdom, K. (2011). Using social cognitive theory to predict physical activity and fitness in underserved middle school children. *Research Quarterly for Exercise and Sport, 82*(2), 247-255. doi:10.1080/02701367.2011.10599752

Mattick, K., Durham, K., Domingue, G., Jorgensen, F., Sen, M., & Schaffner, D. W. (2003). The survival of foodborne pathogens during domestic washing-up and subsequent transfer onto washing-up sponges, kitchen surfaces and food. *International Journal of Food Microbiology*, 85, 213–226. doi:10.1016/S0168-1605(02)00510-X

McAlearney, A.S., Garman, A.N., Harrison, M.I., Song, P.H., & McHugh, M. (2011). High-performance work systems in health care management, Part 1: Development of an evidence-informed model. *Health Care Management Review, 36*(3), 201-213. doi:10.1097/HMR.0b013e318201d1bf

McAlearney, A.S., Robbins, J., Kowalczyk, N., Chisolm, D.J., & Song, P.H. (2012). The role of cognitive and learning theories in supporting successful EHR system implementation training: A qualitative study. *Medical Care Research and Review, 69*(3), 294-315. doi:10.1177/1077558711436348

McAleese, D., & Hargie, O. (2004). Five guiding principles of culture management. *Journal of Communication Management, (9)*2, 155-70.

McAuley, E., Lox, C., & Duncan, T. (1993). Long-term maintenance of exercise, self-efficacy, and physiological change in older adults. *Journal of Gerontology: Psychological Sciences, 48*(4), 218-224. https://doi.org/10.1093/geronj/48.4.P218

McLaughlin, K. (2009). Food truck nation. *Food & Drink*. Retrieved from http://online.wsj.com/

McLeod, S. (2007). B. F. Skinner- Operant Conditioning. Retrieved from http://www.simplypsychology.org/operant-conditioning.html

McLeod, S. A. (2008). Social Identity Theory. Retrieved from www.simplypsychology.org/social-identity-theory.html

Medeirosa, C. O., Cavallia, S. B., Salayb, E., & Pronencaa, R. P. C. (2011). Assessment of the methodological strategies adopted by food safety training programs for food service workers: A systematic review. *Food Control, 22*(8), 1136-1144. doi:10.1016/j.foodcont.2011.02.008

Memphis, Tennessee City Ordinances Amendments. (2013). Retrieved from http://www.cityofmemphis.org/

Memphis Food Trucker's Alliance. (2013). Retrieved July 1, 2013 from http://memphisfoodtruckers.org/

Mercer, M. (2017). To keep on trucking, states streamline food truck Licensing. Retrieved from http://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2017/04/18/to-keep-on-trucking-states-streamline-food-truck-licensing

Merriam, S. B. (2001). Andragogy and self-directed learning: Pillars of adult learning theory. *New Directions for Adult and Continuing Education 2001*, 89, 3-14. DOI:10.1002/ace.3

Miami Food Trucks. (2013). Retrieved July 1, 2013 from http://www.miami-food-trucks.com/

Miles, M.B., & Huberman, M.A. (1994). Qualitative data analysis: A sourcebook of new methods. *Educational Evaluation and Policy Analysis, 8*(3), 329-331.

Milhem, W., Abushamsieh, K., & Arostegui, M. (2014). Training strategies, theories, and types. *Journal of Accounting-Business Management*, 21(1), 12-26.

Miller, D. (2012). How food trucks are advancing business with social media. Retrieved from the Maximize Social Media website: http://maximizesocialbusiness.com/

Miller, N.E., & Dollard, J. (1941). *Social learning and imitation*. New Haven, CT: Yale University Press.

Minnesota Food Truck Association. (2013). Retrieved July 1, 2013 from the http://mnfoodtruckassociation.org/

Mitchell, R. E., Fraser, A. M. & Bearon, L. B. (2007). Preventing food-borne illness in food service establishments: Broadening the framework for intervention and research on safe food handling behaviors. *International of Environmental Health Research, 17(*1), 9-24.

Mobile Cuisine. (2017). Florida food trucks may no longer need to have a commissary. Retrieved from https://mobile-cuisine.com/off-the-wire/florida-food-trucks-may-no-longer-need-to-have-a-commissary/

Montgomery County Health Department. (2010). Mobile food guidelines. Retrieved from July 14, 2013 http://www.adph.org/montgomery/

Morse, J. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing Research, 40*(2), 120-123.

Muskat, M, Blackman, D., & Muskat, B. (2012). Mixed methods: Combining expert interviews, cross-impact analysis and scenario development. *The Electronic Journal of Business Research Methods, 10*(1), 9-21. doi:10.2139/ssrn.2269508

Myrick, R. (2013). How much does it cost to start a food truck business? *Mobile Cuisine*. Retrieved from http://mobile-cuisine.com/business/

Myrick, R. (2016). 2015 food truck industry statistics show worth of 1.2B2. *Mobile Cuisine*. Retrieved from http://mobile-cuisine.com/trends/2015-food-truck-industry-statistics-show-worth-of-1-2b/

National Fire Protection Association. (2017). Food truck fact sheet. Retrieved from http://www.nfpa.org/public-education/by-topic/property-type-and-vehicles/food-truck-safety

National Restaurant Association. (2011). Food trucks gaining momentum, new research finds. Retrieved from http://www.restaurant.org/News-Research/News/Food-trucks-gaining-momentum,-new-research-finds

National Restaurant Association. (2012). ServSafe®. Retrieved from http://www.restaurant.org/

National Restaurant Association. (2017). Manage my restaurant. Retrieved from http://www.restaurant.org/Manage-My-Restaurant/Operations/Alternative-venues/Food-trucks-the-wheel-deal

Nee, O.S., & Sani, A., N. (2011). Assessment of knowledge, attitudes and practices amoung food handlers at residential colleges and canteen regarding food safety. *Sains Malaysiana, 40*(4), 403-410.

New York State Department of Health. (2013). Retrieved from http://www.health.ny.gov/

New York City Department of Health and Mental Hygiene. (2013). Retrieved from http://www.nyc.gov/html/doh/html/home/home.shtml

New York State Department of Health. (2017). Hand Washing & Glove Use for Food Workers - Questions and Answers. Retrieved from https://www.health.ny.gov/environmental/indoors/food_safety/washing.htm

Nieto-Montenegro, S., Brown, J.L., & LaBorde, L.F. (2008). Development and assessment of pilot food safety educational materials and training strategies for Hispanic workers in the mushroom industry using the health action model. *Food Control, 19*(6), 616-633.

Norman, E., Frommer, R., Gall, B., & Knepper, L. (2011). Streets of dreams: How cities can create economic opportunity by knocking down protectionist barriers to street vending. Retrieved from http://www.ij.org/

NYC Food Truck Association. (2013). Retrieved July 3, 2013 from http://www.nycfoodtrucks.org/

O'Donohue, W., & Kitchener, R., (Eds). (1998). *Handbook of behaviorism*. San Diego, CA: Academic Press.

Olsen, S.J., Hansen, G.R., Bartlett, L., Fitzgerald, C., Sonder, A., Manjrekar, R., & Kim, J. (2001). An outbreak of campylobacter jejuni infections associated with food handler contamination: The use of pulsed-field gel electrophoresis. *Journal of Infectious Disease*, 183, 164-167. doi: https://doi.org/10.1086/317657

Olsen, S.J.,MacKinnon, L.C. Goulding, J. S., Bean, N.H., & Slutsker, L. (2000). Surveillance for foodborne disease outbreaks-United States, 1993-1997, *MMWR, 49*(5501), 1-51.

Oppermann, M. (1995). E-mail surveys: Potentials and pitfalls. *Marketing Research*, 7, 28-33.

Orlando's Food Trucks. (2013). Retrieved July 2, 2013 from http://www.orlandosfoodtrucks.com/

Ozturan, M., & Kutlu, B. (2010). Employee satisfaction of corporate e-training programs. Procedía, *Social and Behavioral Sciences, 2*(2), 5561-5565. https://doi.org/10.1016/j.sbspro.2010.03.907

Pajares, F. (1996). Self–efficacy beliefs in academic settings. *Review of Educational Research*, 66, 543–578. doi:10.3102/00346543066004543

Pajares, F. (2002). Overview of social cognitive theory and of self-efficacy. Retrieved from http://www.emory.edu/EDUCATION/mfp/eff.html

Partnership for Food Safety Education. (2017). Retrieved from http://www.fightbac.org/food-safety-basics/the-core-four-practices/

Patton, M.Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Beverly Hills, CA: Sage Publications.

Pype, P., Mertens, F., Wens, J., Stes, A., Van den Eynden, B., & Deveugele, M. (2015). Preparing palliative home care nurses to act as facilitators for physicians' learning: Evaluation of a training programme. *Palliative Medicine, 29*(5), 458-463. doi:10.1177/0269216314560391

Raleigh, North Carolina City Government. (2013). Retrieved from http://www.raleighnc.gov/

Ravishankar, S., Zhu, L., & Jaroni, D. (2010). Assessing the cross contamination and transfer rates of Salmonella enterica from chicken to lettuce under different food handling scenarios. *Food Microbiology*, 27, 791–794. doi: 10.1016/j.fm.2010.04.011

Redmond, D.M., Griffith, C.J., Slader, J., & Humphrey, T. (2004). Microbiological and observational analysis of cross-contamination risks during domestic food preparation. *British Food Journal, 106*(8), 581-597. https://doi.org/10.1108/00070700410553585

Rennie, D.M. (1994). Evaluation of food hygiene education. *British Food Journal, 96*(11), 753-770.

Requirements for mobile food vendors, city of Dallas, Texas. (n. d.). Retrieved July 7, 2013 http://dallascityhall.com/

Roberts, K.R., Barrett, B.B, Howells, A.D, Shanklin, C.W., Pilling, V. K., & Brannon, L.A. (2008). Food safety training and food service employees' knowledge and behavior. *Food Protection Trends, 28*(4), 252-60.

Rosengren, K.E. (1981). *Advances in content analysis*. Thousand Oaks, CA: Sage Publications.

Ross-Gordon, J. M. (1998). What we need to know about adult learners. In P. S. Cookson (Ed.), *Program planning for the training and continuing education of adults: North American perspectives*. Malabar, Florida: Kreiger Publishing Company.

Restaurant Association of Metropolitan Washington. (2012). RAMW supports mobile vending trucks. Retrieved from http://www.ramw.org/

Safar, A. H. (2012). The students' perspectives of online training at Kuwait University. *College Student Journal, 46*(2), 436- 458.

Samapundo, S., Climat, R., Xhaferi, R., & Devlieghere, F. (2015). Food safety knowledge, attitudes and practices of street food vendors and consumers in Port-au-Prince, Haiti. *Food Control,* 50, 457-466. http://dx.doi.org/10.1016/j.foodcont.2014.09.010

Schaefer, D.R., & Dillman, D.A. (1998). Development of a standard e-mail methodology: Results from an experiment. *Public Opinion Quarterly*, 62, 378-397. https://doi.org/10.1086/297851

Schunk, D. (2001). Social–cognitive theory and self-regulated learning. B. Zimmerman & D. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (2nd ed.), (pp. 125–151). Mahwah, NJ: Erlbaum.

Seman, G. (2013). Columbus city council looks at regulating food trucks. *German Village Gazette*. Retrieved from http://www.columbusunderground.com/

Sharif, L., Obaidat, M.M., & Al-Dalalah, M.R. (2013). Food hygiene knowledge, attitude, and practices of food handlers in the military hospitals. *Food & Nutrition Sciences,* 4, 245-251.

Sim, J., & Wright, C. (2000). Research in health care: concepts, designs, and methods. Cheltenham, United Kingdom: Stanley Thornes Ltd.

Sincero, Sarah Mae. (2011). Social learning theory. Retrieved from https://explorable.com/social-learning-theory

Singh, S. (2004). Effect of structured teaching programme on knowledge & practices related to hand washing technique among food handlers. *The Nursing Journal of India, 95*(6), 125-126.

Sobaih, A. E. (2011). Half job—half training? Management perceptions of part-time employee training in the hospitality industry. *Journal of Human Resources in Hospitality & Tourism, 10*(4), 400-420. http://dx.doi.org/10.1080/15332845.2011.588563

Soon, J.M., Baines, R, & Seaman P. (2012). Meta-analysis of food safety training on hand hygiene knowledge and attitudes among food handlers. *Journal of Food Protection, 75*(4),793-804. doi: 10.4315/0362-028X.JFP-11-502.

Southern California Mobile Food Vendors Association. (2013). Retrieved July 14, 2013 from http://socalmfva.com/

Southern California Mobile Food Vendors Association. (2017). Retrieved from http://socalmfva.com/

Sprenger, R. (1999). Hygiene training- is it working. *International Food Hygiene, 10*(2), 31-33.

StateFoodSafety.com (2013), Retrieved from http://www.StateFoodSafety.com.

StateFoodSafety.com (2017), Retrieved from http://www.StateFoodSafety.com.

Stensson, A. (2011). Food Trucks gaining momentum, according to national restaurant association research. Retrieved from http://www.restaurant.org/

Stern, D. S., Song, Y., & O'Brien, B. (2004). Company training in the United States 1970-2000: What have been the trends over time? *International Journal of Training and Development, 8*(3), 191-209.

Strother, J. (2002). An assessment of the effectiveness of e-learning in corporate training programs. *International Review of Research in Open and Distance Learning, 3*(1), 1-17. http://dx.doi.org/10.19173/irrodl.v3i1.83

Sullivan, L. (2013). City will dish up rules on food trucks. *The Columbus Dispatch*. Retrieved from http://www.dispatch.com/

Takaya, K. (2008). Jerome Bruner's theory of education: From early Bruner to later Bruner. *Interchange, 39*(1), 1–19. doi:10.1007/s10780-008-9039-2

The District of Columbia Department of Consumer and Regulatory Affairs. (2013). Mobile food truck licensing information. Retrieved September 4, 2013 from http://www.dc.gov/

The District of Columbia Department of Consumer and Regulatory Affairs. (2017) Mobile food truck licensing information. Retrieved May 25, 2017 from http://www.dc.gov/

Todd, E., Greig, J. D., Bartleson, C. A., & Michaels, B. S. (2009). Outbreaks where food workers have been implicated in the spread of foodborne disease (part 6), transmission and survival of pathogens in the food processing and preparation environment. *Journal of Food Protection*, 72, 202–219. https://doi.org/10.4315/0362-028X-72.1.202

United States Census Bureau. (2012). Retrieved from http://www.census.gov/

University of Nebraska-Lincoln. (2017) Wash your hands! - lávese las manos! Retrieved from http://food.unl.edu/free-handwashing-materials-spanish

U.S. Department of Agriculture. (2013). Food safety education materials database. Retrieved from http://fsrio.nal.usda.gov/nal_web/fsrio/fseddb/fseddbsearch.php

U.S. Department of Agriculture. (2017). Retrieved from https://www.fsis.usda.gov/wps/portal/fsis/topics/food-safety-education/get-answers/food-safety-fact-sheets/appliances-and-thermometers/kitchen-thermometers/ct_index

U.S. Department of Agriculture Economic Research Service. (2012). Retrieved from http://www.ers.usda.gov/

USDAFoodSafety. (2015, July 17). *The importance of cooking to a safe internal temperature and how to use a food thermometer* [Video File]. Retrieved from https://youtu.be/-2KkV2yFiN0

U.S. Department of Health and Human Services. (2013). Healthy people 2020- improving the health of Americans. Retrieved from http://www.healthypeople.gov/2020

U.S. Department of Health and Human Services. (2015). Social and behavioral theories. Retrieved from http://www.esourceresearch.org/eSourceBook/SocialandBehavioralTheories/10Summary/tabid/749/Default.aspx

U.S. Food and Drug Administration. (2007). Retrieved from http://www.fda.gov/

U.S. Food and Drug Administration. (2008). Retrieved from http://www.fda.gov/

U.S. Food and Drug Administration. (2009). FDA food code 2009 edition. Retrieved from http://www.fda.gov/

U.S. Food and Drug Administration. (2011). FDA food code 2009 edition. Retrieved from http://www.fda.gov/

U.S. Food and Drug Administration. (2012). Retrieved from http://www.fda.gov/

U.S. Food and Drug Administration. (2013). FDA food code 2013 edition. Retrieved from http://www.fda.gov/

U.S. Food and Drug Administration. (2013). Hazard analysis & critical control point. Retrieved from http://www.fda.gov/

U.S. Department of Transportation. (2017). Requalification guidance for propane cylinders. Retrieved from https://www.phmsa.dot.gov/staticfiles/PHMSA/DownloadableFiles/Files/propane_en_v3.pdf

Vanschaik, B., & Tuttle, J. (2014). Mobile food trucks: California EHS-net study on risk factors and inspection challenges. *Journal of Environmental Health*, *76*(8), 36-37. Retrieved from https://www.cdc.gov/nceh/ehs/docs/jeh/2014/april-food-trucks.pdf

Virginia Department of Health. (2013). Mobile food unit operation. Retrieved from http://www.vdh.state.va.us/

Waggoner, S. (2004). *Food safety knowledge and practices of food recovery agency workers before and after food safety training* (Unpublished master's theses), Louisiana State

University and Agricultural and Mechanical College, Baton Rouge, LA. Retrieved from http://digitalcommons.lsu.edu/gradschool_theses/3702

Walter, A., Cohen, N. L., & Swicker, R. C. (1997). Food safety training needs exist for staff and consumers in a variety of community-based homes for people with developmental disabilities. *Journal of the American Dietetic Association. 97*(6), 619-625.

Webb, M., & Morancie, A. (2015). Food safety knowledge of foodservice workers at a university campus by education level, experience, and food safety training. *Food Control,* 50, 259-264. doi:10.1016/j.foodcont.2014.09.002

Weber, R. P. (1990). *Basic content analysis* (2nd ed.). Newbury Park, CA: Sage Publications.

Williams, C. (2013). A hungry industry on rolling regulations: A look at food truck regulations in cities across the United States. *Maine Law Review, 65*(2), 706-717.

Wood, R. E., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review, 14*(3), 361-384

Woolhouse, M., & Rocheleau, M. (2017). A major issue for some Boston food trucks? hand-washing. *Boston Globe*. Retrieved from https://www.bostonglobe.com/business/2017/06/04/food-trucks-more-likely-shut-down-for-health-risk-than-restaurants-city-records-show/OL7A7oukeGSB98PkKQiujN/story.html

World Health Organization (WHO). (2013). The five keys to safer food. Retrieved from http://www.who.int/foodsafety/consumer/5keys/en/

Worsfold, D., & Griffith, C.J. (2003). A survey of food hygiene and safety training in the retail and catering industry. *Nutrition and Food Science, 33*(2), 68-79. https://doi.org/10.1108/00346650310466655

Worsfold, D., Griffith, C.J., & Worsfold, P. (2004). A survey of environmental health officer's views of food hygiene training. *British Food Journal, 106*(1) 51-64.

Zimmerman, B. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology* 25, 82–91. doi:10.1006/ceps.1999.1016

Appendix A: Focus Group Codes

Axial Codes **Coding: Responses to Current Practices of Food Safety Training**	
Methods-39 • ServSafe class • Required class training • Online program through county • Training manual to study and examination • ServSafe class had instructor • Required class with teacher • Online certification • Trained at culinary school on how to cook • Apprenticeship with chef • Taught to cook safe food • ServSafe • Observed how to cook meat • Required computer program by state • Food handler card exam • ServSafe certification • Certified food safety manager course • Exam at college • ServSafe manual with exam • ServSafe class • Instructor by city requirements • ServSafe manager course • Culinary school • Studied a book and exam • County requirement I think classroom • Don't remember if ServSafe or certified manager one • Whatever required by law class • HACCP training • Certified food safety online • Course taken online • ServSafe manager training • FDA national program course • On the job training • Shadowed a manager • One hour class with instructor	**Sub-Themes** **Classroom setting-12** • ServSafe class • Required class training • ServSafe class had instructor • ServSafe • ServSafe certification • Certified food safety manager course • ServSafe manual with exam • ServSafe class • County requirement I think classroom • Whatever required by law class • One hour class with instructor • ServSafe class **Accredited program-17** • ServSafe class • ServSafe class had instructor • ServSafe • Food handler card exam • ServSafe certification • Certified food safety manager course • ServSafe certification • Certified food safety manager course • ServSafe manual with exam • ServSafe class • Don't remember if ServSafe or certified manager one • HACCP training • Certified food safety online • ServSafe manager training • FDA national program course • ServSafe online • ServSafe class **Shadowing-5** • Observed how to cook meat • Culinary school • On the job training • Shadowed a manager

• ServSafe online • ServSafe class • Shadowed a chef before I opened • Had to study then take exam for the city • Food handler class and exam	• Shadowed a chef before I opened **Computer software-6** • Online program through county • Online certification • Required computer program by state • Certified food safety online • Course taken online • ServSafe online **Written Manual-2** • Training manual to study and examination • Studied a book and exam **Methods of cooking-3** • Trained at culinary school on how to cook • Apprenticeship with chef • Taught to cook safe food **Examination-7** • Exam at college • Studied a book and exam • Food handler card exam • Training manual to study and examination • ServSafe manual with exam • Had to study then take exam for the city • Food handler class and exam
Frequency-13 • Required every few years • Retake I think five years • Every two years recertification • I'm notified when time to renew • City would let me know • ServSafe holds up every few years • Required to be recertified • I would be notified • I don't have time to research that, county should notify • The city is on top of being up to date • I don't have time to worry about changing laws	**Recertification-5** • Required every few years • Retake I think five years • ServSafe holds up every few years • Required to be recertified • Regulators should be letting us know about recertification **City/County notifications-6** • City would let me know • I don't have time to research that, county should notify • The city is on top of being up to date • I agree that once we take the required training then city/county officials need to inform us

• Regulators should be letting us know about recertification • I agree that once we take the required training then city/county officials need to inform us	• I'm notified when time to renew • I would be notified **Time-2** • I don't have time to worry about changing laws • I don't have time to research that, county should notify •
Coding: Responses to Attitudes	
Confidence-7 • I am confident in the chefs • I have years of experience working with food so I am confident in my abilities • All my inspections have had no violations and I am confident in my staff to keep it up • ServSafe training gave me confidence in keeping food safe • I am confident in my culinary school experience • Our customers have confidence in our ability to keep food safe • The training I have received from ServSafe is researched and proven so I am confident they taught me what I need	**Experience-2** • I have years of experience working with food • I am confident in my culinary school experience **Violations-1** • All my inspections have had no violations and I am confident in my staff to keep it up **Training-2** • ServSafe training gave me confidence in keeping food safe • The training I have received from ServSafe is researched and proven so I am confident they taught me what I need **Ability-3** • I am confident in the chefs • I am confident in my abilities • Our customers have confidence in our ability to keep food safe
Training Necessity-8 • Not interested but the training is a necessary evil • The training is needed because everyone thinks running a food truck is the new money maker • Needed to keep guests safe from people with no training • Keeps consumers safe from non-educated cooks	**Safe-2** • Keeps consumers safe from non-educated cooks • Needed to keep guests safe from people with no training **Owners-2** • Weeds out new owners that get away working in their commissary kitchens • One permit that can shutdown owners with no clue **New-2**

<table>
<tr><td>Weeds out new owners that get away working in their commissary kitchens
One permit that can shutdown owners with no clue
With inspections being difficult this is one permit that can shut idiots down without inspection
We serve food, food safety is needed for anyone who serves and touches food.</td><td>The training is needed because everyone thinks running a food truck is the new money maker
Weeds out new owners that get away working in their commissary kitchens</td></tr>
<tr><td colspan="2">Specific Food Safety Measures for A Food Truck</td></tr>
<tr><td>Cleaning-12
after we open I clean the outside of the truck so that we are always ready and I think this will keep pests away
keep utensils clean
insects
pest problems
when busy being able to clean pots/pans by hand
no dishwasher like a restaurant kitchen so having enough pots and pans can’t really hand wash them when serving
no room on the truck to have a dishwasher
with the layout and space of a truck storing chemicals in the correct place
keeping food contact surfaces clean
contamination of surfaces with collecting money, cards then serve food
dishwashing area
three compartment sink for sanitizing
Handwashing-13
Water temperature for handwashing sink
Hand sanitizer out
No hand soap
No water in the water tank
Enough power to heat water for handwashing
Not parked close enough to restroom
In some areas, only hand sanitizer is required</td><td>Pest Problems-3
insects
pest problems
after we open I clean the outside of the truck so that we are always ready and I think this will keep pests away
Dishwashing-5
when busy being able to clean pots/pans by hand
no dishwasher like a restaurant kitchen so having enough pots and pans can’t really hand wash them when serving
no room on the truck to have a dishwasher
dishwashing area
three compartment sink for sanitizing
Contact Surfaces-2
keeping food contact surfaces clean
contamination of surfaces with collecting money, cards then serve food
Storage of cleaners/chemicals-3
with the layout and space of a truck storing chemicals in the correct place
dishwashing area
three compartment sink for sanitizing
Water Temperature-3
Water temperature for handwashing sink
Enough power to heat water for handwashing</td></tr>
</table>

- You need a handwashing sink and that's what everyone tries to avoid sanitizer doesn't kill salmonella
- Generator at certain sizes can't run a cooler, flat top and water heater for handwashing
- The good areas to sell are usually not within the 200-ft. requirement to use public restrooms
- If I'm busy with a line I can't walk off the truck to wash my hands
- Time to wash hands
- Feasibility of being busy and taking time to wash hands

Equipment-14

- We serve crepes so we had to modify the electric to have enough power to operate with the coolers. Our truck was an old ice cream truck.
- Modify the fryer to fit inside the truck it was hand welded and works perfectly
- Cold food storage is important to keep food at right temperature
- The hot holding line always check that
- Using thermometer to check hot hold
- Inadequate equipment for cold storage
- Ventilation fan not working
- Ensuring all equipment works
- Ensuring equipment checked regularly
- Ensure equipment works
- Enough power to equipment
- Sounds dumb but checking gas before service
- Power to ensure everything can reheat
- Keeping any cooking item the right temperature hot or cold

Permits-8

- The big one is not posting correct permits
- Bypass some ridiculous fees, permits and move on to more accommodating areas of the city.
- Parking
- Parking
- Generator at certain sizes can't run a cooler, flat top and water heater for handwashing

Time to wash hands-3

- If I'm busy with a line I can't walk off the truck to wash my hands
- Time to wash hands
- Feasibility of being busy and taking time to wash hands

Public Restrooms-2

- The good areas to sell are usually not within the 200-ft. requirement to use public restrooms
- Not parked close enough to restroom

Hand sanitizer-3

- You need a handwashing sink and that's what everyone tries to avoid sanitizer doesn't kill salmonella
- In some areas, only hand sanitizer is required
- Hand sanitizer out

Out-2

- No hand soap
- No water in the water tank

Modify Equipment-2

- We serve crepes so we had to modify the electric to have enough power to operate with the coolers. Our truck was an old ice cream truck.
- Modify the fryer to fit inside the truck it was hand welded and works perfectly

Temperature Equipment-5

- Cold food storage is important to keep food at right temperature
- The hot holding line always check that
- Using thermometer to check hot hold
- Inadequate equipment for cold storage
- Keeping any cooking item the right temperature hot or cold

Ensure equipment works properly-4

- Ventilation fan not working
- Ensuring all equipment works
- Ensuring equipment checked regularly
- Ensure equipment works

• Parking permits • Parking • Business license, parking and about fifty other permits you need • Keeping up to date with permits **Inspections-8** • Power safety is important, I personally was cited by the fire department. They inspect trucks in my area. • Fire inspectors have checked us out with no violations • Fire department regularly inspects our gas and electric to ensure safety • Commissary kitchens are inspected and I could get in trouble for something I didn't do • Trucks need to be inspected not just commissary • GPS required in some places to find trucks to be inspected • If not inspected every year its owner's responsibility to let health inspector know where they are located • Truck is more important to be inspected than commissary **Manager Presence-1** • Person there during inspection not certified in ServSafe a major problem so I am always on my truck while its serving food	**Power/Gas Equipment-3** • Power to ensure everything can reheat • Enough power to equipment • Sounds dumb but checking gas before service **Parking Permits-5** • Parking • Parking • Parking permits • Parking • Business license, parking and about fifty other permits you need **Up to date-2** • Keeping up to date with permits • Bypass some ridiculous fees, permits and move on to more accommodating areas of the city. **Posting Permits-1** • The big one is not posting correct permits **Fire Department inspections-3** • Power safety is important, I personally was cited by the fire department. They inspect trucks in my area. • Fire inspectors have checked us out with no violations • Fire department regularly inspects our gas and electric to ensure safety **Commissary Inspections-3** • Commissary kitchens are inspected and I could get in trouble for something I didn't do • Trucks need to be inspected not just commissary • Truck is more important to be inspected than commissary **Find truck to be inspected-2** • GPS required in some places to find trucks to be inspected • If not inspected every year its owner's responsibility to let health inspector know where they are located
Training Methods	
Time-5	**Smartphone APP-2**

- Time is valuable since everyone has a smartphone or tablet it makes sense for us to have an app. That would make life easier they could log on take the exam and done.
- An app of some sort from ServSafe would be useful and save time log on take exam and certified.
- The day class that ServSafe puts on is time consuming its losing a whole day
- I don't train my employees they are required to have a food handler card so saves me time
- If certified they are certified who has time to put training into the schedule

Visual Aids-5

- Pictures can remind staff of what to do
- I think visual charts are helpful for temperatures, I use them to remind them if I'm not there of plating
- Visualize processes like handwashing
- Charts of correct sanitizing
- Schedule of cleaning will keep it in there on the brain so staff is aware

Demonstration-10

- We have meetings and Ill role play or ask questions
- I show my staff correct procedures I was taught
- I teach new recipes so they watch me cook
- I like to show them how to work in the truck because so different than the big kitchen
- We role play on communication it's vital in the tiny environment
- If my other 2 employees aren't on their game, we will go over storage and do a heavy clean/organization around the time we might get inspected
- I role play as if I'm the inspector you never know
- There is only two of us so I feel every day we learn something new

- Time is valuable since everyone has a smartphone or tablet it makes sense for us to have an app. That would make life easier they could log on take the exam and done.
- An app of some sort from ServSafe would be useful and save time log on take exam and certified.

Cooking Methods

- I train my staff on cooking techniques and how to cook my food

Training on their own-3

- The day class that ServSafe puts on is time consuming its losing a whole day
- I don't train my employees they are required to have a food handler card so saves me time
- If certified they are certified who has time to put training into the schedule

Charts-2

- I think visual charts are helpful for temperatures, I use them to remind them if I'm not there of plating
- Charts of correct sanitizing

Reminder to Staff-3

- Pictures can remind staff of what to do
- Visualize processes like handwashing
- Schedule of cleaning will keep it in there on the brain so staff is aware

Role Play-3

- We have meetings and Ill role play or ask questions

- We role play on communication it's vital in the tiny environment
- I role play as if I'm the inspector you never know

Shadow-3

- I show my staff correct procedures I was taught
- I teach new recipes so they watch me cook

• I have worked in restaurants and since I have basically just me training isn't that important to me • I mean I'm certified so I am the truck	• I like to show them how to work in the truck because so different than the big kitchen **Review-1** • If my other 2 employees aren't on their game, we will go over storage and do a heavy clean/organization around the time we might get inspected **New-1** • There is only two of us so I feel every day we learn something new **Singular employee-2** • I have worked in restaurants and since I have basically just me training isn't that important to me • I mean I'm certified so I am the truck

Appendix B: Interview Codes

Axial Codes ***Current Practices of Food Safety Training***	**Theme codes**

• ***Certification***
  • just taken the state certification through the health department
  • The state certification
  • I train my staff on cooking techniques and how to cook my food. My city requires ServSafe certification.
  • Well ServSafe and I know I did the one day class and exam and some of my staff did the online version which actually might not be ServSafe but it still counts.
  • I train him to listen to me
  • We are always looking at the updates and the association has a ton of info and that's a big help
  • valid for five years.
  • We both took it online.
  • very long and the exam was almost an hour
  • Usually if something changes it is a new permit for a new neighborhood so they are good about informing us so they can collect their money.
  • My staff is all up to date.
  • It's a subject I need to learn and pay more attention to. I have struggled
  • I have had a few unforeseen circumstances so I am not worried but need to learn more
  • I have them do the food handler card. I receive the book and read it them and have them take the test
  • I do, I belong to a great association and we have meetings about what's going on. The big thing right now is
	ServSafe
	  • My city requires ServSafe certification.
	  • Well ServSafe and I know I did the one day class and exam
	Events
	  • It's a good way to make money and we can go over any requirements for the event.
	Cooking
	  • I train my staff on cooking techniques and how to cook my food
	Online
	  • some of my staff did the online version which actually might not be ServSafe but it still counts.
	  • We both took it online.
	  • some of my staff did the online version which actually might not be ServSafe but it still counts.
	  •
	State Level
	  • The state certification
	  • very long and the exam was almost an hour
	  • If anyone needs to be renewed I get informed by the state
	  • It's the one required by the city. I provided the training that they outline and then send in the exam so I go over it word for word and then send in the results.
	Association
	  • We are always looking at the updates and the association has a ton of info and that's a big help
	  • I do, I belong to a great association and we have meetings about what's going on.

food truck parks and events. It's a good way to make money and we can go over any requirements for the event. Usually there is not anything specific. • If anyone needs to be renewed I get informed by the state • It's the one required by the city. I provided the training that they outline and then send in the exam so I go over it word for word and then send in the results.	**No Training** • My staff is all up to date. • Usually there is not anything specific. **Struggle** • It's a subject I need to learn and pay more attention to. I have struggled **City Requirement** • It's the one required by the city. **Trainer** • I provided the training that they outline and then send in the exam so I go over it word for word and then send in the results.
Attitude • I don't necessary worry • When I eat out from a food truck or a restaurant if even the parking lot isn't well kept, I am out. • Our area we are all very responsible so I trust our fellow trucks • I would say our customer base speaks for themselves and if they didn't trust us then we wouldn't have had the success that we have had. • In the food safety but not the training. • It has made my husband and I aware of all the possibilities of potential disaster • I would tell them to make sure this is what you want to do and if you don't love it stay where you are at. • Well if you get in trouble or something happens then you don't have a business so yes it is something that is important • Professionals are clean so if the outside is dirty the inside is dirty. • I ensure my customers leave happy and I wouldn't serve unsafe bad food • Not really more interested in new recipes • I know I don't want anyone working who hasn't been trained	**Responsibility** • Our area we are all very responsible so I trust our fellow trucks • It has made my husband and I aware of all the possibilities of potential disaster • Well if you get in trouble or something happens then you don't have a business so yes it is something that is important • I am always working so I keep a good eye on everything. Always checking the equipment etc. • I know I don't want anyone working who hasn't been trained • Everyone can always improve so training is important • Training employees makes them better in every aspect • Learning the different regulations the city makes that easy from the laws • Everyone can always improve so training is important • **Confidence** • I don't necessary worry • In the food safety but not the training • Well for me I just don't feel like I am an authority

• I feel as long as you have the basics time, temp, cross contamination and personal hygiene you can cook in any environment. • With a big business I worry about having correct parking permits, chemical sanitizer and well I guess because I was also fined for our screen being broke on the serving window of the truck. • You can always learn so I feel it is very important in this business • I'll be honest some owners don't follow laws. No commissary kitchen no permits but not here to get anyone in trouble you have good and bad ones • I think there are people who will never eat from a food truck and that's their opinion. • Everyone can always improve so training is important • Training employees makes them better in every aspect • Learning the different regulations the city makes that easy from the laws	• I feel as long as you have the basics time, temp, cross contamination and personal hygiene you can cook in any environment. • I worry about having correct parking permits, chemical sanitizer and well I guess because I was also fined for our screen being broke on the serving window of the truck. • Professionals are clean so if the outside is dirty the inside is dirty. • Learning the different regulations the city makes that easy from the laws **Trust** • Our area we are all very responsible so I trust our fellow trucks • I ensure my customers leave happy and I wouldn't serve unsafe bad food • You can always learn so I feel it is very important in this business • Training employees makes them better in every aspect
Specific food safety measures • I have seen some trucks at the events we participated in dispose of waste and water in the wrong manner. • Just the vendor issue • hit hard for not having the commissary kitchen agreement • several specific permits which were mostly parking and selling at the wrong time. Honestly the best way to avoid that is to be a part of the big events where the people come to you. • I have seen some trucks at the events we participated in dispose of waste and water in the wrong manner. I will say everything we attend an event or festival we see that happening.	**Waste Disposal** • I have seen some trucks at the events we participated in dispose of waste and water in the wrong manner**.** • I have seen some trucks at the events we participated in dispose of waste and water in the wrong manner. I will say everything we attend an event or festival we see that happening. • **Permits** • several specific permits which were mostly parking and selling at the wrong time. Honestly the best way to avoid that is to be a part of the big events where the people come to you. • I travel mostly to food truck events and take care of the permits and most of the time inspectors are not going to

• Keeping the outside clean and checking for potential pests. It is just easier for an infestation. • having the correct power to equipment we had several issues with things not working • Being organized and proper storage might be more important. Oh the proper chemical levels to sanitize because no dishwasher. • Luckily none on my truck I actually haven't been inspected. • The chemical levels and water temperature because the equipment wasn't up to par. • the food truck events around here have become a much better option for me due to the area where I setup started giving parking tickets to us. These events guarantee guests and I don't have to worry about where I am parking and if I'm going to get a ticket or not. • but when at large events such as these it is impossible to have everything ready before hand because you never know if you're going to get slammed so we have fully cooked on the truck due to running out of prep. It is hard to plan perfectly at the commissary and sometimes we have ran out to the store to get more to cook • the events have become very popular in our area and it gives people a chance to sample several trucks and make an evening together • some places allow people to bring their own alcohol so it is good for us because people stay longer and buy more food from us • I would say start with food you are good at cooking. You know don't cook a whole turkey on a truck just use common sense. Don't bring cold food and you don't use a fridge.	come out during very busy periods or they might not even know that the event is happening **Pests** • Keeping the outside clean and checking for potential pests. It is just easier for an infestation. **Power Equipment** • having the correct power to equipment we had several issues with things not working • You know don't cook a whole turkey on a truck just use common sense. Don't bring cold food and you don't use a fridge. • The fire department regularly inspects our gas and electric to ensure safety • fire inspectors have checked us out with no violations **Storage** • Being organized and proper storage might be more important • Storage but honestly permits and working at parks and events with water issues and so forth **Cleaning/Sanitizing** • Oh the proper chemical levels to sanitize because no dishwasher. • The chemical levels and water temperature because the equipment wasn't up to par. **Food Truck Events/Parks** • the food truck events around here have become a much better option for me due to the area where I setup started giving parking tickets to us. These events guarantee guests and I don't have to worry about where I am parking and if I'm going to get a ticket or not. • but when at large events such as these it is impossible to have everything ready before hand because you never know if you're going to get slammed so we have fully cooked on the truck

• Use your instincts. If you can cook food nothing changes. • I travel mostly to food truck events and take care of the permits and most of the time inspectors are not going to come out during very busy periods or they might not even know that the event is happening • A problem that I face is unlike others who also have a restaurant to have training sessions in, I have no location to have my staff all be in the same place. I would love to have training sessions to keep everyone up to date on food safety as well as training on how to continually cook good food • The layout of a food truck makes it a problem to train, it's way too tight for employees to be cramped in there to train but employees need to be trained in the environment that they will be working in. It's hard to train staff for the actually working conditions inside of a food truck if they have not worked in that kind of situation. It's a kind of learn as you go process. • since time is always valuable and everyone has a smartphone or tablet, I'm surprised there is not a food safety app. This would make life a lot easier have my employees log on take the exam and complete the certification • I know basic food safety training is important and most of the cooks I interview have been trained, but working in a food truck environment is different than working in a large kitchen. Proper storage is something I constantly preach and extra training should be enforced for food trucks. It is something overlooked but in our area I think it is very important	due to running out of prep. It is hard to plan perfectly at the commissary and sometimes we have ran out to the store to get more to cook • the events have become very popular in our area and it gives people a chance to sample several trucks and make an evening together • some places allow people to bring their own alcohol so it is good for us because people stay longer and buy more food from us • I travel mostly to food truck events and take care of the permits and most of the time inspectors are not going to come out during very busy periods or they might not even know that the event is happening • Communication is something that should be focused on, in that tight of an environment something can go wrong if staff is not trained. A mock situation in my experience works well when training movement and communication in a kitchen • I know with my truck being in a different area everyday it is difficult to hold an inspection but there is no law that requires us to stay in the same spot • every time after we are open I clean the outside of the truck so that we are always ready. I think that this will also help keep pests away… • Since we serve crepes we had to modify the electric so that we could have enough power to operate along with the coolers since we bought our truck from an old business that served ice cream • the biggest modification was making our fryer able to fit inside of our truck.

• Communication is something that should be focused on, in that tight of an environment something can go wrong if staff is not trained. A mock situation in my experience works well when training movement and communication in a kitchen • when cooking anything the basics should all be focused but specifically to a food truck I would say checking temperature and storage since we are always on the move • I think since it is hard for me to always be on the truck proper maintenance of equipment and enforce a schedule such as checking the temperatures of the coolers every hour. I started enforcing this because I was cited on my cooler not being at the proper temperature. This is something that cooks might think is the manager's job but its everyone's responsibility • I think my staff should have training topics every day. This will keep them always thinking about food safety. I show them new recipes and I think throwing in a little lesson weekly would keep them informed • I've been in business 5 years but definitely no expert • Storage but honestly permits and working at parks and events with water issues and so forth	It was hand welded together and works perfect • Power safety is important since I personally have been cited by the fire department. They inspect trucks in my area • I see it as the communities making money off of us, there is only a need in my opinion to have one permit per county. Too many different regulations to follow and to be at certain events in certain areas you have to have these permits. • it is unfortunately the nature of the business all the different permits for different areas are not necessarily but it's what we have to deal with. It is our responsibility as owners to keep up with the ever-changing laws
Self-Efficacy • No I much rather follow the book • Definitely not • Well in our five years we have only been inspected once • From my culinary school expertise I probably could but the city wouldn't allow that.	

• Well it's hard to train on the actual truck so location • We will pass nothing concerns me or my staff • Always concerned because my problem is some inspectors don't even know the laws so you have an inspector and I know the laws better than them, so a big disconnect	
Intentions • I will most likely not be hiring anyone in the near future. • I prefer to hire people with experience and is a plus if they have been certified already which saves me money. They have to be trained I believe in the first two weeks by law I'm not sure. • I think my staff should have training topics every day. This will keep them always thinking about food safety. I show them new recipes and I think throwing in a little lesson weekly would keep them informed •	
Situation • For us it's just us so we are not looking to get bigger and we went to the class so • The truck is tiny and when it's hot oh my god but when we are busy it can get a little crazy and messy • Busy seasons I mean that's when you make money to survive • Towards the end of a busy period when your just burned out the brain just doesn't work as well.	
Behavioral Strategies • We probably check or research something every month.	

• When coming up with new menu items if we need to try a new technique or something • I actually don't I guess that sounds bad • Yea again I mean I don't go back and study or anything	
Social Support • I think since we are a small team we would just point things out to each other • I wish I could pay myself • Maybe if its slow I tend to have them clean so we are not just standing around • I did not I just had them be certified.	
Outcome Expectations and Expectancies • Yes when compared with someone without any • That's probably why its mandatory • Again, yes • Absolutely	

Appendix C: Focus Group Questions

QUESTIONS-FOCUS GROUP

Introductory

- Would you share some of your thoughts regarding food safety training?
- Have you ever worried about a foodborne illness outbreak due to lack of training?
    - Why or Why not?
- Have you worked in other areas of food service?
    - If yes, which area?
    - What areas of food safety need more attention in a food truck setting?
    - What specific food safety measures are different in a food truck setting?

Current Practices of Food Safety Training

- H4-What kind of training do you provide?
    - How frequent?
- H4-Do you keep up to date with food safety laws and regulations?
    - How often?
- H4-Do you keep up to date with mandatory food safety certifications?
    - How often?
- H4-What type of food safety training do you and your employees participate in?
    - Is this type of training you provide required by law or mandatory?
    - Who provided the training?
    - How long did the training last?
- (if the training was provided themselves)
    - What made you qualified to train your employees on the topic of food safety?
    - What food safety topics did you cover in the food safety training you provided?
    - Where did you receive the information and training materials to conduct the training?

Attitude

- H3-Do you worry about food safety violations in your operation?
    - If so, which violations concern you?
- H3-Is food safety training important to you?
    - Why or why not?
- H3-Are you worried you might get sick eating from another food truck?
    - Why or why not?
- H3-Do you feel confident that your customers are not worried about the safety of your product?
- H3-Are you interested in food safety training?
- H3-Do you feel your training will improve your operation?

    - Why or why not?
- H3-Do you feel that your general food safety training is sufficient for a food truck environment?
    - H5-What specific areas need more attention when compared to general food safety?

Specific food safety measures

- H5-In your experience, which food safety violations have you seen being committed on a food truck?
- H5-Which food safety practices have you spent time correcting?
- H5-If you were to consult someone on operating a food truck what would you suggest the food safety training focus on?
- H5-What do you think are important topics to be included in food safety training when training food truck employees?

Self-Efficacy

- H1-Do you feel competent in providing food safety training to your employees?
- H5-What are food safety training issues that are specific to a food truck?
- H3-Are you confident in passing inspections from country health officials
    - What areas concern you and your staff?
- H4-What training techniques would I witness during your food safety training?

Intentions

- H1-If hiring new employees how important is it to have them trained in food safety?
    - What is the training time frame?

Situation

- H5-What types of work situations hinder or prevent food safety training?
- H5-What type of situations hinder correct food safety practices?

Behavioral Strategies

- H4-How often do you review food safety training with your staff?
- H4-How often do you review food safety training yourself?

Social Support

- H1-As a manager or owner, do you support taking time out of a shift to train on the topic of food safety?
- H1-As a manager or owner, do you pay employees during food safety training?

Outcome Expectations and Expectancies

- H1-Do you believe that ensuring staff is trained in food safety will help prevent foodborne illness outbreaks?

- H1-Do you believe that training helps keep your business safe from a food borne illness outbreak?

Closing

- H5-Any areas of concern for someone opening a food truck?
- H5-What measures in your experience should be focused in a food truck manual?

Appendix D: Interview Questions

INTERVIEW QUESTIONS

Introductory

- Would you share some of your thoughts regarding food safety training?
- Have you ever worried about a foodborne illness outbreak due to lack of training?
    - Why or Why not?
- Have you worked in other areas of food service?
    - If yes, which area?
    - What areas of food safety need more attention in a food truck setting?
    - What specific food safety measures are different in a food truck setting?

Current Practices of Food Safety Training

- H4-What kind of training do you provide?
    - How frequent?
- H4-Do you keep up to date with food safety laws and regulations?
    - How often?
- H1-Do you keep up to date with mandatory food safety certifications?
    - How often?
- H5-What type of food safety training do you and your employees participate in?
    - Is this type of training you provide required by law or mandatory?
    - Who provided the training?
    - How long did the training last?
- (if the training was provided themselves)
    - What made you qualified to train your employees on the topic of food safety?
    - What food safety topics did you cover in the food safety training you provided?
    - Where did you receive the information and training materials to conduct the training?

Attitude

- H3-Do you worry about food safety violations in your operation?
    - If so, which violations concern you?
- H3-Is food safety training important to you?
    - Why or why not?
- H3-Are you worried you might get sick eating from another food truck?
    - Why or why not?
- H3-Do you feel confident that your customers are not worried about the safety of your product?
- H4-Are you interested in food safety training?
- H3-Do you feel your training will improve your operation?
    - Why or why not?

- H3-Do you feel that your general food safety training is sufficient for a food truck environment?
    - RQ2-What specific areas need more attention when compared to general food safety?

Specific food safety measures

- RQ2-In your experience, which food safety violations have you seen being committed on a food truck?
- RQ2-Which food safety practices have you spent time correcting?
- RQ2-If you were to consult someone on operating a food truck what would you suggest the food safety training focus on?
- RQ2-What do you think are important topics to be included in food safety training when training food truck employees?

Self-Efficacy

- RQ2-Do you feel competent in providing food safety training to your employees?
- RQ2-What are food safety training issues that are specific to a food truck?
- H3-Are you confident in passing inspections from country health officials
    - What areas concern you and your staff?
- h3-What training techniques would I witness during your food safety training?

Intentions

- h4-If hiring new employees how important is it to have them trained in food safety?
    - What is the training time frame?

Situation

- H1-What types of work situations hinder or prevent food safety training?
- H1-What type of situations hinder correct food safety practices?

Behavioral Strategies

- H1-How often do you review food safety training with your staff?
- H1-How often do you review food safety training yourself?

Social Support

- H1-As a manager or owner, do you support taking time out of a shift to train on the topic of food safety?
- H1-As a manager or owner, do you pay employees during food safety training?

Outcome Expectations and Expectancies

- H1-Do you believe that ensuring staff is trained in food safety will help prevent foodborne illness outbreaks?

- H1-Do you believe that training helps keep your business safe from a food borne illness outbreak?

Closing

- RQ2-Any areas of concern for someone opening a food truck?
- RQ2-What measures in your experience should be focused in a food truck manual?

Appendix E: Online Survey

Your Gender?

- ○ Male
- ○ Female

Please choose your age range.

- ○ Younger than 20 years
- ○ 20-29 years
- ○ 30-39 years
- ○ 40-49 years
- ○ 50 years or over

What is your highest formal education?

- ○ None/Some High School
- ○ High School Graduate
- ○ Some College/Technical School
- ○ College Graduate
- ○ Graduate School
- ○ Military

Please list your current work title/position.

Is your current work title/position considered a management position?

- ○ Yes
- ○ No

What is your employment status?

- ○ Part-time
- ○ Full-time

How many years of experience do you have working in the food truck sector?

What city is the majority of your food truck's revenue made in?

How many employees currently work in your food truck operation?

- ○ One
- ○ Two
- ○ Three
- ○ Four
- ○ Five
- ○ More than five

Do you currently operate more than one food truck?

- ○
- ○ If you answered yes, how many total food trucks do you operate?

- ○

>>

The following questions are regarding training methods used in your operation. Please answer each question to the best of your knowledge.

Have you had any previous food safety training?

- ○ Yes
- ○ No

Please list any food safety training programs in which you have participated or completed. If you have not participated or completed in any food safety training programs please write not applicable.

Please choose the item or items that best describes your training as a food handler. Please choose all that apply

- ☐ One on one instruction with another employee
- ☐ Shadowing another employee
- ☐ Asking questions when needed
- ☐ Role playing
- ☐ Given written material to study Given
- ☐ computer software to study Other.
- ☐ Please specify.
- ☐ I have no previous food safety training.

Please choose all that apply.

Which of the following best describes the food safety course you participated in?

- ☐ Computer Tutorial
- ☐ Written Manual
- ☐ Class Setting with Instructor
- ☐ Combination of Computer Tutorial and Manual
- ☐ I have not participated in such course

If you were trained in food safety by another employee, was that employee trained through a certified food safety program?

- ○ Yes
- ○ No
- ○ Don't know if he/she was trained
- ○ I was not trained in a food safety course

Please choose one option to indicate how much you agree or disagree with the following statements in regards to your training experience.

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	I did not receive food safety training
The majority of my training on food safety was in a classroom setting with an instructor.	○	○	○	○	○	○
The majority of my training on food safety was given to me by a fellow employee or manager.	○	○	○	○	○	○
The majority of my training on food safety was done by using an electronic software program.	○	○	○	○	○	○
The majority of my training on food safety was done by receiving a manual to study.	○	○	○	○	○	○
I was trained in food safety on how to cook specific food items.	○	○	○	○	○	○
I was trained in food safety by observing other employees at work and shadowing them.	○	○	○	○	○	○

Please choose one option to indicate the quality level of your training experience.

	Exc					Not
The level at which the instructor met your expectations was:	○	○	○	○	○	○
The level of instruction was:	○	○	○	○	○	○
The training activities were:	○	○	○	○	○	○
The organization of the training experience	○	○	○	○	○	○
The extent to which presented materials were current and up to	○	○	○	○	○	○

>>

The following section is in regards to the implementation of training programs into your operation. Please answer accordingly.

Please list any food safety training programs that you have implemented into your current operation to your employees. (If you have not used a training program please put not applicable)

If you have implemented a food safety training course, was this course an accredited program for certification? (Ex. ServSafe)

- ○ Yes
- ○ No
- ○ Don't know
- ○ I have not implemented a food safety training course

To your knowledge, have you successfully completed all food safety training required by law in your city?

○ ○ ○ ○ ○

- ○ Yes
- ○ No
- ○ Don't know

Providing food safety training to all of the employees of my food truck operation is:

Very Difficult	Difficult	Undecided/Neutral	Easy	Very Easy

Please indicate how much you agree or disagree with the following statements.

	Strongly	Dis	Neither Agree Dis	,	Strongly
I don't conduct food safety training because of lack of time.	○	○	○	○	○
I have adequate funds to conduct food safety training.	○	○	○	○	○
My employees have adequate time to attend food safety tra	○	○	○	○	○
My employees show a lack of interest to learn about food s	○	○	○	○	○
The training resources to implement a food safety training program in my operation are easily	○	○	○	○	○
I can overcome challenges to provide food safety training.	○	○	○	○	○

>>

Please choose one option to indicate how much you agree or disagree with the following statements in regards to your training experience.

	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Not Applicable

I found my food safety training easy.	○	○	○	○	○	○
When training new employees, I ensure that they have been trained in food safety before working without supervision.	○	○	○	○	○	○
I intend to evaluate my employees on their food safety practices.	○	○	○	○	○	○
I am confident in my food safety knowledge.	○	○	○	○	○	○
I encourage the type of food safety training I received to others who will be involved in food handling.	○	○	○	○	○	○
I intend to keep up to date with my food safety training.	○	○	○	○	○	○
I choose to make time available for food safety training for my employees.	○	○	○	○	○	○
Food safety training can keep customers safe	○	○	○	○	○	○
If I make a mistake in food safety practices, I correct and keep working.	○	○	○	○	○	○
I intend to have all my employees successfully trained in food safety.	○	○	○	○	○	○
During operation information regarding food safety practices are visible to employees on the food truck.	○	○	○	○	○	○
I can reduce foodborne illness outbreaks because of my training in food safety.	○	○	○	○	○	○
I intend to discipline employees on not following proper food safety practices.	○	○	○	○	○	○
As a manager I ensure I evaluate the food safety practices of my employees.	○	○	○	○	○	○
If I make a mistake in food safety practices, no one will know.	○	○	○	○	○	○
	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree	Not Applicable
During operation at busy periods of time food safety is the number one concern.	○	○	○	○	○	○
I encourage my staff to learn about food safety.	○	○	○	○	○	○
I encourage members of my staff to keep up to date with food safety training.	○	○	○	○	○	○

How would you rate your overall level of knowledge and skill with respect to proper food safety procedures before you were given training?

- ○ Beginner
- ○ Intermediate
- ○ Expert
- ○ I was not given training

After your food safety training was given, do you feel your skills and knowledge about food safety have increased as a result of your training?

- ○ Yes
- ○ No
- ○ Not Applicable

Have you been able to apply what you have learned to your duties on the job?

- ○ Yes
- ○ No
- ○ Not Applicable

Please list any improvements from your food safety training that could be implemented to make you feel more confident in your food handling duties.

How would you rate your overall food safety training experience?

- ○ Very Satisfied
- ○ Satisfied
- ○ Neutral
- ○ Dissatisfied
- ○ Very Dissatisfied
- ○ Not Applicable

>>

The following section includes factors regarding the operation of a food truck. Please choose one option for each question.

In the length of time in which your food truck has been in operation, how many times has an official city/county health inspection occurred?

- ○ No Inspections
- ○ One Inspection
- ○ Two Inspections
- ○ Three Inspections
- ○ Four Inspections
- ○ Five or more Inspections

	Strongly	Dis	Neither Agree Dis		Strongly
I feel city/county inspections are necessary to improve the safety of my consu	○	○	○	○	○
Violations can be used as a learning opportunity for my staff.	○	○	○	○	○
If an inspection were to take place immediately, my food truck operation would pass.	○	○	○	○	○

If your food truck operation uses a commissary kitchen, has the commissary facility been inspected within the past year?

- ○ Yes
- ○ No
- ○ Don't Know
- ○ My operation does not use a commissary kitchen

How often do you feel that your food truck operation should be inspected by a city/county health official per year?

- ○ Zero
- ○ One
- ○ Two
- ○ More than Two

Is NSF international commercial food equipment certification required by your governing city/county?

- ○ Yes
- ○ No
- ○ Don't Know

Was it necessary to modify any of the cooking equipment on the food truck to meet the layout or size of the truck?

- ○ Yes
- ○ No
- ○ Don't know

If your food truck operation uses a commissary kitchen, how many other food trucks or catering operations work out of the same kitchen?

- ○ None
- ○ 1-2
- ○ 3-4
- ○ 5 or more
- ○ My operation does not use a commissary kitchen

>>

The following section includes questions in regards to food safety knowledge. Please choose the correct answer.

If food contact surfaces are in constant use, how often must they be cleaned and sanitized?

- ○ Every 2 hours
- ○ Every 3 hours
- ◉ Every 4 hours
- ○ Don't know

To prevent cross-contamination,

- ○ Use color coded cutting boards for different food items
- ○ Identify minimum internal cooking temperature
- ○ Prepare small batches of food at one time
- ○ Don't know

What is the correct way to clean and sanitize a prep surface?

- ○ Rinse, wash, sanitize, air-dry
- ○ Wash, rinse, sanitize, air-dry
- ○ Sanitize, wash, rinse, air-dry
- ○ Don't know

What must food handlers do after touching their hair, face, or body?

- ○ Wash their hands
- ○ Rinse their disposable gloves
- ○ Use a hand antiseptic
- ○ Don't know

Before putting on disposable gloves you should

- ○ Wash your hands
- ○ Put on gloves and then wash your hands
- ○ Put on the gloves without washing your hands
- ○ Don't know

How hot should the hot water at a hand washing station get?

- ○ At least 70F
- ○ At least 100F
- ○ At least 130F
- ○ Don't know

Hot food can be held without temperature control for a maximum of _____hours before being sold, served, or thrown out.

- ○ 2
- ○ 4
- ○ 6
- ○ Don't know

Food-service equipment that has been certified as meeting certain standards may be stamped with the _____mark.

- FDA
- USDA NSF
- Don't know

If pesticides are stored in the operation, where should they be kept?

- In a plastic container, in any location
- In dry storage, on shelf below food
- In a secure location, away from food
- Don't know

Which of the following is an approved chemical sanitizer?

- Chlorine
- Detergent
- Soap and hot water mixture
- Don't know

If a dishwasher is not able to fit on a food truck, what is required?

- A three compartment sink with drain boards
- A single sink that is not used for hand washing
- A two compartment sink
- Don't know

All potable water tanks and waste water tanks should be thoroughly flushed and _____ before foodservice operation begins.

- Emptied
- Sanitized
- Filled
- Don't know

When are disposable gloves required to be worn?

- ○ Handling ready to eat foods
- ○ Cleaning and sanitizing
- ○ Cutting bread
- ○ Don't know

When reheating food, the internal temperature should be indicated with a thermometer at _____degrees.

- ○ 130F
- ○ 145F
- ○ 165F
- ○ Don't know

To safely chill food you should,

- ○ Divide into shallow covered dishes and then place in the refrigerator
- ○ Cover the large container and then place in the refrigerator
- ○ Leave the food on the counter until it comes down to room temperature and then place in the refrigerator
- ○ Don't know

Which is a source of potable water?

- ○ Collected rain water
- ○ Untested private water sources
- ○ Water transport vehicles
- ○ Don't know

>>

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- ○ A two compartment sink
- ○ Don't know

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- ○ Don't know

Which is a source of potable water?

- ○ Collected rain water
- ○ Untested private water sources
- ○ Water transport vehicles
- ○ Don't know

>>

Thank you for your participation in this survey. If you would like to see the results of this research endeavor please contact Sara Ghezzi at ghezzse@tigermail.auburn.edu. Thank you again for your time.

>>

Appendix F: Institutional Review Board Approval

AUBURN UNIVERSITY

(NOTE: DO NOT AGREE TO PARTICIPATE UNLESS IRB APPROVAL INFORMATION WITH CURRENT DATES HAS BEEN ADDED TO THIS DOCUMENT.)

INFORMATION LETTER
for a Research Study entitled
"An Assessment of Food Safety Practices and Training of Food Truck Employees: Initiating a Specialized Food Safety Training Manual"

You are invited to participate in a research study The purpose of this study is to investigate food safety practices of food truck vendors and training methods conveyed by managers or owners of mobile food trucks to the employees under their direction. By surveying current food safety practices, food safety training methods, attitudes of managers toward food safety training, and implementation of training methods with the accompaniment of interviews of food truck personnel, the results can be compiled to create a food safety training manual explicit to food truck owners and their employees. The study is being conducted by Sara Ghezzi, PhD Candidate, under the direction of Dr. Baker Ayoun, in the Auburn University Department of Nutrition, Dietetics and Hospitality Management. You were selected as a possible participant because you are a food truck employee or manager, specifically an employee that is employed by a business that belongs to one of the following food truck associations located in the United States
http://www.orlandosfoodtrucks.com/
http://www.atlantastreetfood.com/
http://www.miami-food-trucks.com/
http://denfoodtrucks.com/
http://dcfoodtrucks.org/
http://socalmfva.com/
http://austinfoodcarts.com/
http://friskyfoodtrucks.com/bay-area-mobile-food-vendors-association/
http://www.nycfoodtrucks.org/
http://mnfoodtruckassociation,
and are of legal age in the state in which you reside(19 in AL and NE) or older.

Please add this approval information in sentence form to this letter. Send your updated letter to the IRB with a live link to the survey.

The Auburn University Institutional Review Board has approved this document for use from 2/10/14 to 2/9/15 Protocol # 13-407 EP 1402

What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, the link to the survey is located at the end of this letter. Your total time commitment will be approximately ten minutes to complete the survey. The survey will be submitted electronically, you only need to submit online when you are finished.

Are there any risks or discomforts? ? The only possible risk associated with participation in this study could be the risk of breach of confidentiality. To minimize this risk we will not collect any identifiable information from you.

Are there any benefits to yourself or others? To thank you for your time, you will be offered a copy of all results and information on how to improve food safety in the food truck sector that was gathered from this study. If you would like a copy of the results E-mail Ghezzse@auburn.edu with information on where to send the results.

Will you receive compensation for participating? To thank you for your time you will be offered access to the final results and a copy of the training manual at the completion of the study.

If you change your mind about participating, you can withdraw at any time by closing your browser window. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Once you've submitted anonymous data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of nutrition, dietetics, and hospitality management.

Any data obtained in connection with this study will remain anonymous. We will protect your privacy and the data you provide by not having identifiable information present. The information collected through your participation may be used to fulfill an educational requirement specifically for a dissertation.

If you have questions about this study please do not hesitate to ask. Please contact Ms. Sara Ghezzi at (305)-803-1919 or email ghezzse@auburn.edu or contact Dr. Baker Ayoun at bma0002@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334) 844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK ON THE LINK BELOW.
YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

Auburn University Institutional Review Board has approved this document from December ~~17,~~ 2013 to ~~December 16,~~ 2014. Protocol #13-407 EP 1312
Feb. 10, 2014 Feb 9, 2015

Sara Ghezzi, Investigator June 10, 2014

Please add this approval information in sentence form to this letter.
Send your updated letter to the IRB

The Auburn University Institutional Review Board has approved this document for use from 2/10/14 to 2/9/15

AUBURN UNIVERSITY

(NOTE: DO NOT SIGN THIS DOCUMENT UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

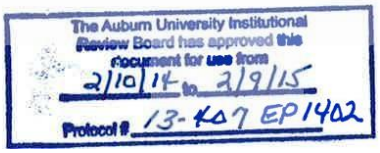
INFORMED CONSENT
for a Research Study entitled
"An Assessment of Food Safety Practices and Training of Food Truck Employees: Initiating a Specialized Food Safety Training Manual"

You are invited to participate in a research study The purpose of this study is to investigate food safety practices of food truck vendors and training methods conveyed by managers or owners of mobile food trucks to the employees under their direction. By surveying current food safety practices, food safety training methods, attitudes of managers toward food safety training, and implementation of training methods with the accompaniment of interviews of food truck personnel, the results can be compiled to create a food safety training manual explicit to food truck owners and their employees. The study is being conducted by Sara Ghezzi, PhD Candidate, under the direction of (Dr. Baker Ayoun,) in the Auburn University Department of Nutrition, Dietetics and Hospitality Management. You were selected as a possible participant because you are a food truck manager. Specifically a manager that is employed by a business that is located in the Southeastern portion of the United States and are of legal age in the state in which you reside(19 in AL and NE) or older.

What will be involved if you participate? If you decide to participate in this research study, you will be asked to meet on Auburn University's campus in Spidle hall and participate in a focus group. The information gathered will be compiled and then e-mailed to all of the participants. The respondents will be asked to add any other factors or beneficial information that they feel would be of value. The information gathered will be compiled and then sent out again to the participants asking for any other factors that they did not mention during the focus group. The mode of questioning to be used in the process is the Delphi Technique, defined as a small group of experts selected from a particular industry that make responses. Responses given are then compiled and repeated. Your total time commitment will be approximately two hours.

Are there any risks or discomforts? We do not anticipate any risks or discomfort to you from being in this study. Even though we will emphasize to all participants that comments made during the focus group session should be kept confidential, it is possible that participants may repeat comments outside of the group at some time in the future. Therefore, we encourage you to be as honest and open as you can, but remain aware of our limits in protecting confidentiality.
Are there any benefits to yourself or others? To thank you for your time, you will be offered a copy of all results and information on how to improve food safety in the food truck sector that was gathered from this study. If you would like a copy of the results E-mail Ghezzse@auburn.edu with information on where to send the results.
Will you receive compensation for participating? To thank you for your time, you will be offered access to the final results and a copy of the training manual at the completion of the study.

Are there any costs? If you decide to participate, you will encounter no costs.
If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University, the Department of the Department of nutrition, dietetics, and hospitality management.
Participant's initials _____



Your privacy will be protected. Every effort will be taken to protect your identity as a participant in this study. You will not be identified in any report or publication of this study or its results. Your name will not appear on any transcripts; instead, you will be given a code number. The list which matches names and code numbers will be kept in a locked file cabinet. After the focus group tape has been transcribed, the tape will be destroyed, and the list of names and numbers will also be destroyed.
If you have questions about this study please do not hesitate to ask. Please contact Ms. Sara Ghezzi at (305)-803-1919 or email ghezzse@auburn.edu or contact Dr. Baker Ayoun at bma0002@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature Date Investigator obtaining consent Date

Printed Name Printed Name

Co-Investigator Date

Printed Name