

Local Foods in Ohio Hospitals:  
Systemic Issues Advancing or Impeding Foodservice Participation

DISSERTATION

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By

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## Abstract

Hospitals and healthcare services comprise a significant segment of the U.S. economy. Their implicit mission of improving overall health positions them as key leaders in initiating conversations around food. The American Medical Association notes that a large predictor of hospital patient and general public health is the quantity and quality of food intake. Hence, a hospital's stance on food (both delivery *of* and communication *about*) is of critical importance to positively affect patient, employee, and community health. As standard institutionalized foodservice evolves, some hospitals have introduced local foods as a means of improving health and wellness. Hospitals engaged in local foods procurement have: helped circulate more dollars in the local economy; provided fresher, healthier foods picked at the height of ripeness with higher nutritional values; stimulated hospital staff and patient awareness of and interest in healthy, nutritious eating via local foods (know your farmer programs); and increased positive community relations and media exposure. However, investigation into the hospital foodservice literature leaves it unclear as to what percentage of hospitals actually participate in procuring, serving, or promoting local foods to patients and employees. This may indicate a significant opportunity. The purpose of this study was to investigate what factors (independent variables) contributed to hospital foodservice directors (FSDs) purchasing or not purchasing local foods for their operations. A census of Ohio hospital FSDs

(population frame n = 155) was undertaken in which 67.8% responded. The broad research questions asked about how much knowledge Ohio hospital FSDs had of the local food movement, to what extent they currently used local foods (or had interest in purchasing local foods in the future), what systemic issues advanced or impeded their use of local foods, and what relationships existed between demographic variables and the use of local foods. The study also explored to what extent Ohio hospital FSDs had awareness of Extension, or interest in participating in programs on local foods. Overall, findings suggested that the majority (approximately three-fourths of the respondents) had knowledge of and interest in the local food movement. However, only 57.7% were currently using local foods in their operations; and even fewer were implementing local food-related programs (hospital gardens, know your farmer, local food seminars, composting). The major reasons for *not* incorporating local foods into operations were based on concerns over inconsistent supply levels, liability insurance, refrigeration, and other food safety issues. Lastly, the findings showed that FSDs do not have a broad awareness of Extension or its ability to offer programs and solutions to these issues. FSDs were, however, interested in programming to learn more about how to incorporate local foods into their operations. Though not generalizable, these findings can help Extension workers at Land Grant universities nationwide identify intersections at which they may begin new, or expand existing programming around local foods in the health care arena. In addition, these findings provide insight into how to help hospitals, local farmers, and food production/distribution operations coalesce in triple bottom line results that deliver positive social, environmental, and economic outcomes.

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## Selected Publications

[Extension education and local food focus]

Raison, B. (2014). Doing the work of Extension: Three Approaches to Identify, Amplify, and Implement Outreach. *Journal of Extension*. Vol. 52, no. 2: 2FEA1.

<http://www.joe.org/joe/2014april/a1.php>

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Remley, D., Raison, B., Griffith, M. (2013). The Farm to School Movement and Childhood Obesity: Opportunities and Questions. *Journal of the National Extension Association of Family & Consumer Sciences*. Vol. 8, 2013. pp. 56-64.

<http://www.neafcs.org/journal-of-neafcs>.

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- Raison, B. (2012). Great Teaching: 8 Strategies to Immediately Engage Your Audience. *Journal of Youth Development*. Vol. 7, no. 2: Article 120702PA002, pp. 48-54. [http://nae4a.memberclicks.net/assets/documents/jyd\\_0702final.pdf](http://nae4a.memberclicks.net/assets/documents/jyd_0702final.pdf).
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- Raison, B. (2010). Educators or Facilitators? Clarifying Extension's role in the emerging local food systems movement. *Journal of Extension*. Vol. 48, no. 3.: comm1. <http://www.joe.org/joe/2010june/comm1.php>
- Raison, B. (2010). Local Food: A new curriculum for engaging youth. *Journal of Youth Development*. Vol. 5, no. 2. [http://data.memberclicks.com/site/nae4a/JYD\\_100502\\_finalx.pdf](http://data.memberclicks.com/site/nae4a/JYD_100502_finalx.pdf)

## Field of Study

Major Field: Agricultural and Extension Education

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## Chapter 1: Introduction

### Introduction and Significance of the Problem

Over the past 10 years, the local food movement has significantly expanded across the country (Johnson, Alison & Cowan, 2013; NSAC, 2013; Worley & Strobbe, 2012; Martinez, et al, 2010; Sanger & Zenz, 2004). This was a result, in part, of the disconnection of people from the “sources of their sustenance” (Feenstra, 2002, p. 99). Along with the culmination of decades-old grass roots efforts, new USDA programs such as “Farm to School,” “Know Your Farmer, Know Your Food,” and Center for Disease Control (CDC) healthy food programs have intensified and bolstered efforts (Johnson, Alison & Cowan, 2013; United States Department of Agriculture [USDA], 2013; Centers for Disease Control and Prevention [CDC], 2013, 1996; Ritchie & Chen, 2011). Academic institutions have given support as well by procuring and serving local foods (Sacks, 2013; Gustafson, 2012; Ritchie & Chen, 2011; Sanger & Zenz, 2004), and by developing beginning farmer programs at numerous universities including Iowa State (2013), Missouri, South Carolina, Nebraska, Ohio State, and others. The national Land Grant university system’s Extension service now offers a myriad of research, programming and partnerships around local food systems in individual counties nationwide (eXtension, 2013). New farms with non-traditional proprietors are emerging

to sell in local markets (Inwood & Sharp, 2012; Sharp, Clark., Davis, Smith, & McCutcheon, 2011; Low & Vogel, 2011); and entrepreneurial gardens are flourishing (Feenstra, McGrew & Campbell, 1999). In Ohio, the number of farmers markets has doubled since 2008 (USDA, 2012; Sylvester, 2011). A brief scan of the Internet will return numerous academic journals and the popular press posts brimming with new research reports and feature stories on local food.

In the midst of this conversation, a generic construct of “farm to institution” has emerged (USDA, 2013; Ritchie & Chen, 2011). The phrase is applied to schools, hospitals, businesses, non-profits, and other large sized, institutional purchasers (Sachs, 2011). In theory, if institutional purchasers engage in increased local foods procurement, more money will circulate in the local economy (Cosgrove & Maring, 2006; Beery & Vallianatos, 2004; Feenstra, 1997), environmental footprints may be lessened (fewer “food miles”) (NRDC, 2007), and people will enjoy fresher and implicitly healthier foods because it is picked at the height of ripeness which often results in the highest nutritional value possible (Firth 2007; Halweil, 2007; Saha & Nath, 2006; Matheson, 2012; Lee & Kader, 2000; Harris & Karmas, 1988).

The U.S. health care industry, by virtue of its implicit mission to improve the nation’s health, lies at the heart of this conversation. In *Healthy Hospital Choices* (2011), the CDC notes that hospitals, due to their large food procurement/purchasing power, have the potential to be powerful community leaders “by providing the healthiest food venues possible for their employees and community” (p. 4). They call specifically for serving locally-produced foods as well. In conjunction with these examples and the growing

interest by federal agencies, non-profits and national foundations (e.g., Robert Wood Johnson; Kellogg; Winrock), there seems to be increased potential to support “social solutions that address problems at the intersection of food, environment, and health” (Sachs, 2011, p. 100). These ideas can have a major impact on increasing local food use while at the same time, promoting wellness among employees (Matheson, 2012).

In 2009 for example, the American Medical Association’s Council on Science and Public Health prepared a report outlining health effects of the industrial food system. This prompted the adoption of a California Medical Association resolution on sustainable food systems calling for “practices and policies to support ‘healthy and ecologically sustainable food systems,’ legislative advocacy at the federal level, and patient education efforts” (Sachs, 2011, p. 101). The Healthy Food in Health Care (HFHC) initiative emerged from Health Care Without Harm (HCWH) in 2005 to help hospitals improve the sustainability of their food services. A key focus of the program included education, tools, and support for local and sustainably sourced food procurement, linking it to an institution’s patients, staff and community. The sheer size of the nation’s health care system places it in a position to participate and impact this local food movement. But what issues, systemic to the health care industry, advance or impede their participation?

The focus of this research project was on one segment of the health care industry—hospitals—and their engagement with this highly visible local food movement. Sachs (2011) noted that sustainable food efforts had gained ground in the K-12 and higher education sectors, but had not advanced as rapidly in health care. Hospitals have an inherent mission focused on health and wellness for not only patients but also their

employees (Crompa et al, 2012; Matheson, 2012; Mitchell, 2009; Gaby, 2008). So in theory, they should be central in the conversation. The American Medical Association (2012) notes that a large predictor of hospital patient and the general public's health is the quantity and quality of food intake. Hence, a hospital's stance on food (both communication *about* and delivery *of*) is of critical importance. Herein, wellness and nutrition education/training programs and in-house foodservice should arguably be as important as medical treatment for overall patient and employee health (Cohen, 2013; Denton, 2013).

The healthcare foodservice industry is changing. This project focused on one segment of healthcare—hospitals—and aimed to discover if and how they participate in one narrow segment of foodservice—local food procurement. As noted, the sheer number and size of hospitals (including patients *and* staff) provides great potential to impact market demand for local foods.

One critical aspect that must be considered is healthy eating in hospital dining facilities. Across the country, fast food restaurants which once dominated hospital lobbies (Lesser, et al., 2012; Physicians Committee for Responsible Medicine, 2011; Lesser, 2006; Cram, Brahmjee, Fendrick & Saint, 2002) have been removed (Gordon, 2012; Lawrence, Boyle, Craypo & Samuels, 2009). In some, establishments serving more healthy and local foods are taking their place. There have been some opponents of this change noting that comfort food may be therapeutic in some manner; however, the physical health implications outweighed these arguments.

Farmers markets have shown up on some hospital campuses as well. MacVean (2009), states that Kaiser Permanente was perhaps the first hospital to utilize farmers markets “to put nutrition within reach” (no page number) of employees, visitors, patients, and the community. In Ohio, the Cleveland Clinic has operated a local farmers market at their main campus for six years (Cleveland Clinic, 2013). They too aim to bring healthy, locally grown and produced foods to not only hospital employees and guests, but also to the local community.

Across the country, hospitals conduct employee wellness training and programming. These often cover exercise, diet, mental health (e.g., stress reduction), and other wellness issues. Most hospitals also conduct community outreach programming on health matters; and many provide volunteers and leadership to community improvement efforts. Could these all be tied together via local food systems thinking?

As documented by Louise Mitchell, University of Maryland, in her “Local Foods to Local Hospitals” report (2009), there are numerous anecdotal and popular-press accounts of hospitals that have begun to engage in the local food movement. She provided over 20 examples in her report’s Appendix E (p. 71-100). In addition, Kaiser Permanente (2013), *The Nation* (Klein, 2012), and numerous other articles and news reports have covered the phenomenon as well. However, these publications of popular media articles or informally published reports are backed up by only a very few articles from scientific peer-reviewed journals (Smith II, Kaiser, and Gómez, 2013; Ritchie & Chen, 2011). Thus, there is a need for scholarly work in this area. In a recent review of high priority research approaches for transforming U.S. food systems, Clancy (2013),

included “values-based whole supply chain development” as one example for focused, transformative research that can “show the way to systemic changes that are quite different from the present and dominant system” (no page number). The U.S. health care system—and hospitals in particular—possess the independent elements for a research project aimed at doing just that. That is, they currently utilize a dominant food procurement system which has potential for transforming into the values-based whole supply chain method via inclusion of local foods. Ritchie and Chen (2011) also said “more systematic and peer-reviewed publications are needed in Farm-to-Institution research” (no page number). Of the 150+ citations in their literature review, only eight were focused on hospitals’ use of local foods. Thus, this project undertook a scholarly research approach and focused on discovering why hospitals have or have not engaged in the local food movement.

The general research questions, for example, asked if hospital foodservice directors knew how to purchase local foods? Were they interested in it at all? Had the mere popularity of the movement (touting health benefits, local economy benefits, etc.) moved the needle or decision-making of hospital foodservice directors to take action? Was there capacity for them to participate (purchase local food in bulk)? Was there availability (supply) in the region? Could some programming or networking allow or encourage them to pair up with local farmers who were looking to expand sales locally? What was the potential for impact on patient and employee health, as well as on the community? All of these questions cannot be addressed in one study; but a focus on foodservice directors’ knowledge of and interest in local foods may shed light on the

opportunity to utilize more local food *systems*, an approach that seems to be gaining traction across Ohio and the nation.

### Problem Statement

For the past 40 years, the nation's predominate food supply chain has been rooted in a high volume, large concentration, and heavily conglomerated commodity process that has provided an abundant supply for U.S. citizens and much of the world (Lev & Stevenson, 2013; Matson & Thayer, 2013; USDA, 2012). In comparison to this existing system, the relatively new expansive growth in the local food movement may be described as a new or innovative approach in which we find early adopters, early majority, late majority, and laggards diffusing the idea in various stages of progression (Rogers, 1962).

As the local food movement spreads across the nation, one example of innovative diffusion in local food procurement can be found in the 10 year old Farm to School (F2S) program which is just now beginning to see broad success (Benson, 2013; Benson & Niewolny, 2012, National Farm to School Network, 2013, Ugalde, 2012, Sanger & Zenz, 2004). This success has likely been aided by stimulus programs, direct payments, and extensive publicity from the USDA. A recent study by the Virginia Cooperative Extension Service (Benson & Niewolny, 2012) provided examples of exactly how those programs were making an impact. The Page County Public School system, for example, sourced 37% of the produce they used in the 2012-2013 school year locally. "We hope this percentage will continue to grow so that children receive even more fresh, local produce" (p. 30).

Success in the school system begs one to investigate whether this innovation can penetrate other sectors or institutional systems. As noted, hospitals may constitute a natural fit for this inquiry due to their inherent mission and focus on health and wellness. However, aside from the aforementioned internal hospital newsletters and popular press accounts, investigation into the hospital foodservice literature leaves it unclear as to whether any sizable percentage of hospitals currently participate in procuring, serving and/or promoting local foods to patients and employees. This may indicate a significant opportunity for hospital foodservice directors (FSDs) to engage with this movement. In doing so, they could positively impact the local economy via local food procurement (O'Hara & Pirog, 2013; Low & Vogel, 2011), stimulate hospital staff and patient awareness of and interest in healthy, nutritious eating via local foods, and achieve positive publicity in the community for their institution (Mitchell, 2009).

Incorporating local foods has become a relevant issue for hospitals. As noted, implications exist for social, environmental, economic, political, and public health systems. But what hinders hospital participation or adoption of this innovative movement? Are systemic issues advancing or impeding action? Will the innovation diffuse (Rogers, 1962) through hospital foodservice directors?

#### Purpose of Study

The purpose of this study was to understand, measure, catalogue, and evaluate what factors (independent variables) contributed to hospital foodservice directors (FSDs) purchasing or not purchasing local food for use in their operations. A census of Ohio hospital FSDs (n = 155) was chosen as the boundary for this study.

## Research Questions

To achieve the purpose of this study, research questions were developed. They were rooted in constructs that were created using aggregations of specific questions found in the Survey Instrument located in Appendix E. The construction methods are detailed in Chapter 3. The broad questions were:

1. How much knowledge did Ohio hospital foodservice directors (FSDs) have of the local food movement and its relationship with healthcare?
2. To what extent were FSDs currently using local foods; and were they interested in purchasing local foods in the future?
3. What systemic issues advanced or impeded their use of local foods, and of those, which decision factors (challenges) were perceived as the greatest barriers?
4. What were the relationships between demographic variables and the use of local foods?
5. To what extent were Ohio hospital FSDs aware of Extension and their programs on local foods; and were they interested in participating?

Based on the findings of these exploratory questions, the ultimate question with potential implications for this project was whether Extension could help hospitals fulfill their goals and objectives of improving the health of patients and employees by assisting with local foods procurement or programming. With that stated however, other questions emerged. What if Extension's traditional approach to "farm to institution" does not fit the hospital model? Perhaps there are non-traditional, unobserved, or unknown needs. These issues and their implications will be explored in Chapter 5.

## Definition of Terms

**Local Food:** A constitutive definition of *local food* would suggest any nutritious substance that people or animals eat to maintain life that is related to or occurring in a particular area, city, or town (Merriam Webster, 2013). For the purpose of this project, *local food* was operationally defined as food grown within a specific geographic area or food that was grown within a specific distance from the point of consumer purchase (Buck, 2012). But agreement on the specific geographic area and/or distances for *local* varies greatly. In 2008, the U.S. Congress adopted the Food, Conservation, and Energy Act (2008 Farm Act) which noted the total distance that a product can be transported and still be considered a “locally or regionally produced agricultural food product” is less than 400 miles from its origin, or within the State in which it is produced (Martinez et al, 2010). But many consumers disagree. Most, in fact, consider local to be defined as products produced and sold within county lines (Brain, 2012). In 2008, the Hartman Group conducted a nation-wide survey of consumers that found 50% defined local food as that which was made or produced within 100 miles; and 37% of consumers said it needed to be made or produced in their state (Demeritt, 2008). To clarify the issue for this study, hospital foodservice directors were asked to define local by choosing from a list provided in the questionnaire.

**Local Food Systems:** The *system* designation herein refers to the network that integrates production, processing, distribution, consumption and waste management of food (eXtension, 2013). The *local* designation refers to how food might enhance the environmental, economic and social health of a particular place (UC-Davis, 2013; Garrett

& Feenstra, 1999, p. 2). Some use the term “community food systems” interchangeably. For this study, the operational definition of local food systems is congruent with the constitutive definition.

**Local food movement:** The recent, rapid expansion of local foods has emerged from a movement that has a long history (Feenstra, 1997) dating back in some areas over thirty years (Athens Farmers Market, 2014). Social movements go beyond the increased use or adoption of an idea. They are “consciously formed associations with the goal of bringing about change in social, economic, or political sectors through collaborative action and the mobilization of large numbers of people” (Stevenson, Ruhf, Lezberg, & Clancy, 2007, p. 35). For this study, local foods has been classified as a *movement* in that it is: 1) an organized collective, 2) un-institutionalized, 3) covering a broad geographical area, 4) promoting a change in society norms and values, and 5) encountering opposition in a moral struggle (Stewart, Smith, & Denton, Jr., 2007). Local food advocates have met these criteria.

**Hospital foodservice directors (FSDs):** These individuals are in charge of the procurement of foods for the hospital system. They also must handle complex management issues both within the hospital and in external public contexts (Mohd Nor, 2010; Sullivan & Atlas, 1998). Hartwell, Edwards, and Symonds (2006) note that foodservice directors must also oversee the entire meal process, from kitchen to patient or employee consumption. Gregoire, Sames, Dowling, and Lafferty (2005) cite leadership, along with managerial skills, as the most important competencies needed in hospital

foodservice. For this study, FSDs were operationally defined as the hospital food buyers who were contacted and asked to complete the research survey instrument.

**Institutional food service:** For this study, hospital (institutional) food service was operationally defined as the way the majority of hospitals around the nation procure the majority of their food for patients, employees, and visitors. This prevailing system uses mega-scale, broadline foodservice providers such as Sysco, GFS, or Aramark for most or all of their foods purchases. This food supply chain is the network of related businesses that move the food from initial production through final consumption. It includes the raw material inputs, the producer, intermediate processors, distributors, wholesalers, retailers, and finally the consumer (Steven & Pirog, n.d.).

**Broadline Vendor / GPO:** In this study, Broadline vendors and GPOs (General Purchasing Organizations) were defined as companies that provide food and non-food products to a hospital. They act as an intermediary between food growers and manufacturers (sourcing locally, regionally, nationally, and internationally), and the foodservice director or chef. They also provide delivery of products on a consistent daily or weekly basis.

**Decision factors:** Decision factors were operationalized as the varying independent variables that might contribute to hospital foodservice directors (FSDs) purchasing or not purchasing local food for use in their operations.

**Food-related programs:** In this study, various programs were posited as potential outreach or action-items that hospitals might undertake in their foodservice or wellness operations. These included local food-related activities such as farm to hospital

(in which foods from a local farm are served in the hospital cafeterias), composting, farmers markets, on-site gardens, wellness campaigns using local foods, and Community Supported Agriculture (CSA) opportunities for hospital employees. CSAs are “subscription agriculture programs that allow consumers to purchase shares of a farm’s production in exchange for a weekly allotment of fresh produce during the harvest season” (Bond, Thilmany, & Bond, 2006, p. 1). CSAs in an institutional setting may be set up for individuals; or the institution itself may purchase shares on a larger scale.

**Innovation:** In this context, innovation is posited as a new, inventive approach to institutional food procurement as opposed to the predominate institutional ordering vis a vis national mega-scale, broadline foodservice providers such as Sysco, GFS, or Aramark. Rogers (1995) defined an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (p. 12).

**Cooperative Extension:** The national Cooperative Extension service was formed in 1914 to serve as the link between the Land-Grant Universities and the populace. Their mission was to “extend” the university knowledge and resources in order to help solve public needs through non-formal, non-credit programs (USDA, 2014). Today, Cooperative Extension, a.k.a., Extension, works in four major areas including agriculture and natural resources, family and consumer sciences, youth development, and community and economic development. For this study, the Extension service located within The Ohio State University was the primary entity involved.

### Conceptual Models

This research project is framed by two theory-based conceptual models. The first is found in the diffusion of innovations theory posited by Everett Rogers in 1962 (1995, 5<sup>th</sup> Edition). This theory helps determine if, how, and when an innovation (such as incorporating local foods into hospital foodservice) reaches the “tipping point” for wide scale adoption. In brief, it states that adoption is dependent on several perceptions one holds of the innovation. The second theoretical framework is the theory of reasoned action (Fishbein & Ajzen, 1980, 2010). This approach helps the researcher explore if, how, and when behavioral intentions are adopted, for example, when an Ohio hospital foodservice director decides to act to incorporate local foods into his/her menu. Here, behavior is said to be motivated by an individual’s attitude toward carrying out the behavior, and norms based on what others expect him/her to do. Together, the theories help frame the local food movement and the potential for adoption by hospital foodservice professionals. These theories have been used together to predict utilization/behavior/adoption of other categories (Frambach & Schillewaert, 2002; Moore, 1989; Moore & Benbasat, 1996). Figure 1 below compares the relationship and relative alignment of the two guiding theoretical concepts to explore the intentions and behavior of incorporating local foods into hospital foodservice. Note that the construct of beliefs (as shown in Figure 4), are implicit within the attitudes, controls, and norms as depicted in Figure 1. These will be discussed in more depth pursuant to their related roles in determining outcomes for this study.

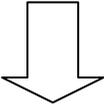
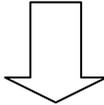
Key Constructs of the Theory of Reasoned Action (Fishbein & Ajzen, 1980, 2010)	Key Constructs of the Diffusion of Innovations Theory (Rogers, 1962, 1995)
Knowledge Past Behavior Attitudes* Perceived Behavioral Controls* Perceived Social Norms*   <i>Helps determine if, how, when behavior is adopted.</i>	Innovation Communication Channels  Time Social System   <i>Helps determine if, how, when innovation reaches "tipping point" for wide scale adoption.</i>
*Beliefs precede each of these constructs.	

Figure 1 - The relationship and relative alignment of guiding theoretical concepts.

### Overview of Diffusion of Innovations Theory

The Diffusion of Innovations Theory seeks to explain how new ideas (innovations) are spread through people, organizations, and even cultures. In brief, Rogers (1995) suggested that innovations are diffused by a process of communicating among the members of a social system over time, eventually resulting in social change. The communication is essential in that members ultimately reach a mutual understanding of the new idea. He noted that four basic elements influence the spread of a new concept or idea and make up the theory: the innovation, communication channels, time, and the social system. Rogers defines each as follows:

**Innovation:** an idea, practice, or object that is perceived as new by an individual or other unit of adoption (1995, p. 12).

**Communication channel:** the means by which messages get from one individual to another (1995, p. 18).

**Time:** The innovation-decision period is the length of time required to pass through the innovation-decision process. The rate of adoption is the speed with which an innovation is adopted by members of a social system (1995, p. 20).

**Social system:** a set of interrelated units that are engaged in joint problem solving to accomplish a common goal (1995, p. 23).

Innovations often spread over time with relatively subjective perceptions guiding the diffusion. Rogers depicted the time-ordered sequence as: knowledge, persuasion, decision, implementation, and confirmation. This is depicted in Figure 2, the innovative-decision process from Rogers (1995), below.

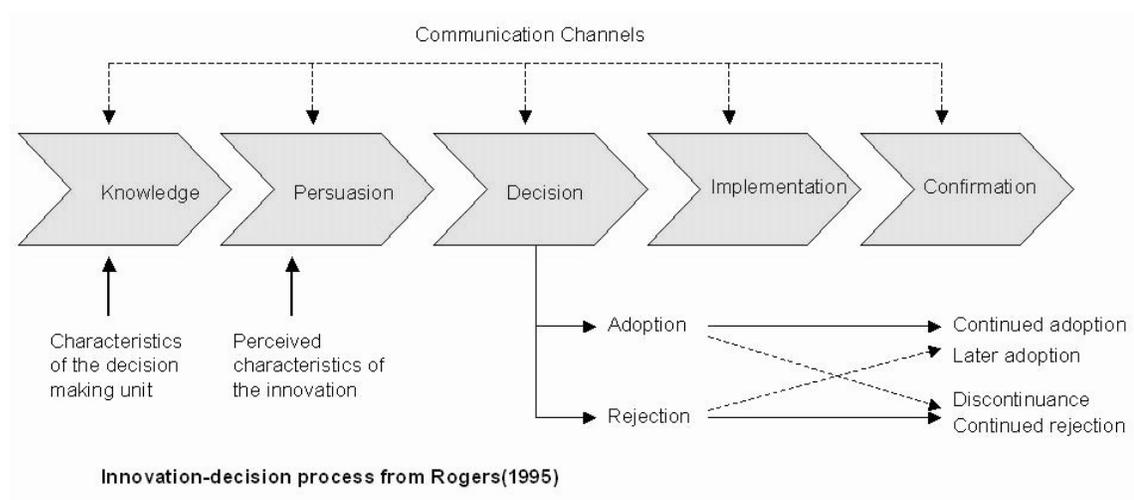


Figure 2 - Innovation-decision process from Rogers (1995)

**Knowledge:** This is the stage in which the individual (or organization) first encounters the new idea or practice (innovation); but at this point, they lack information and are not yet stimulated in seeking to learn more about it (1995, p. 171).

**Persuasion:** After gaining the initial awareness or knowledge, the individual now begins to seek new details or information about the innovation (1995, p. 174)

**Decision:** Armed with the initial interest/knowledge and new information, the decision stage is where the individual considers the advantages and disadvantages, and then decides whether to adopt or reject the new idea or practice (innovation). Rogers notes because individuals are unique and carry a wide variety of experiences, this stage becomes the most difficult stage to acquire empirical evidence (1995, p. 177).

**Implementation:** This is essentially the trial stage. Here, the individual or organization begins to use the new practice to the degree that it fits their situation or need. The innovation's usefulness is now judged (1995, p. 179).

**Confirmation:** This is the final decision stage. Is the innovation kept and adopted? Or is it abandoned? (1995, p. 189).

The people adopting the innovations were originally categorized by Rogers (1958) as: innovators, early adopters, early majority, late majority, and laggards. This is depicted in Figure 3, the diffusion of innovative adopter categories below.

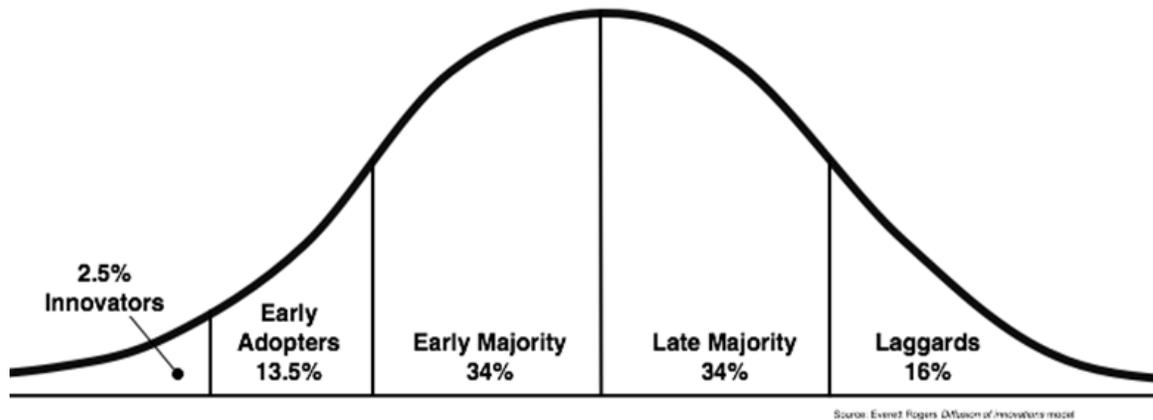


Figure 3 - Diffusion of innovations adopter categories

**Innovators:** These are the first adopters of an innovation. They are often young risk takers of high social class. They frequently have the financial means to try new things. They are closely connected with scientific sources and other innovators. Some innovations will, of course, fail. But most innovators have the capacity to absorb this and move on (1995, p. 282).

**Early Adopters (Respect):** Early adopters are the second wave of individuals who adopt a new idea, procedure or innovation. This group has the highest “degree of opinion leadership among the other adopter categories.” Like innovators, they are often younger risk takers with high social status and financial means. Their adoption pattern is described as more discrete than innovators, noting that their innovative choices are aimed at helping them with communications and positioning (1995, p. 283).

**Early Majority (Deliberate):** The majority category adopt innovations over varying amounts of time, depending on the item. Though slower than the

innovators and early adopters, the Early Majority are still similar with above average social status, but often do not serve as opinion leaders in an organization or system (1995, p. 283).

**Late Majority (Skeptical):** These individuals are essentially the second half of the majority in a society. They are more skeptical of innovation, and thus, slower to respond. They generally do not hold higher social status and/or have great financial means. They also do not hold positions of opinion leadership (1995, p. 284).

**Laggards (Traditional):** This category is comprised of those who are the last to adopt an innovation. Individuals here may be older with lower social status and fewer financial means. They also tend to be change-averse, more focused on tradition, and may have limited contacts beyond family and friends (1995, p. 284).

This theory has been used frequently to explore new programs, interventions, or promotions in the health care industry (Neffa & Brown, 2011; Greenhalgh, Roberts, Macfarlane, Bate & Kyriakidou, 2004; Parcel, Perry & Taylor, 1990). The incorporation of local foods into hospital foodservice may be regarded as innovative because implications exist for social, environmental, economic, political, and public health systems. The key question is to what extent the innovation would diffuse through hospital foodservice directors.

Greenhalgh et al. (2004) note that the diffusion of innovations theory had a number of limitations, namely the erroneous assumptions that any given innovation is better than what has gone before, that the adoption (of the innovation) reflects fixed

personality traits, and that the findings from diffusion research are transferable to new context and settings (p. 589). To this limitation, Greenhalgh et al. (2004) cites the breakaway models of innovation in health care that Potvin, Haddad, and Frohlich (2001) posited which became known as *Health Promotion*. They suggested that good ideas for healthy behaviors and lifestyles stemmed from a developmental agenda where advice (e.g., wellness messages to patients or employees) is not simply a one-way transmission, but now consists of partnerships and models of joint, community development. Further, Greenhalgh et al. (2004) note that “most of the research on the diffusion of innovations focused on simple, product-based innovations, for which the unit of adoption is the individual, and diffusion occurs by means of simple imitation” (p. 600). They note Rogers’ (1995) specification that in reality, there exists a nearly universal, formal decision-making process when organizations (such as health care) are adopting or implementing change. So though the diffusion may begin with one person, there is ultimately a higher level decision that must transpire before the change may be sustained. In this context, one further aim of this study was to see how variables that indicated autonomy, structure, and centralization of a hospital foodservice system would regress against the innovative changes of incorporating local foods into their system.

It is imperative to note that the theoretical terminology, i.e., the definition of diffusion, is nuanced. Greenhalgh et al (2004) noted that innovation in service delivery (e.g. hospital settings) was implemented by planned and coordinated actions. And they specifically distinguished *diffusion* as a passive spreading of the change, while differentiating *dissemination* as “an active and planned effort to persuade target groups to

adopt an innovation,” and *implementation* as the active and planned efforts to mainstream an innovation within an organization (p. 582). Under this nuanced taxonomy, the USDA’s Farm to School program would exemplify the dissemination and implementation categories. But incorporating local foods into the health care industry—and hospitals in particular—would seem to reside in the passive realm of diffusion at this time. Again, the purpose of this study will be to determine the level or rate of diffusion that may be occurring.

#### Overview of the Theory of Reasoned Action

The theory of reasoned action provides a complimentary perspective to the diffusion of innovations pursuant to this investigation of the potential for hospital foodservice directors to incorporate local foods into their menus. As noted, behavior is said to be motivated by an individual’s attitude toward carrying out the behavior, and norms based on what others expect him/her to do. In this case, the question is grounded in what this study defines as an innovation—the use of local foods in hospital operations.

Fishbein and Ajzen (2010) specify that human behavior can be best predicted by understanding intentions. Figure 4 below provides a visual overview of the process in which the background factors explicitly converge at one’s intentions.

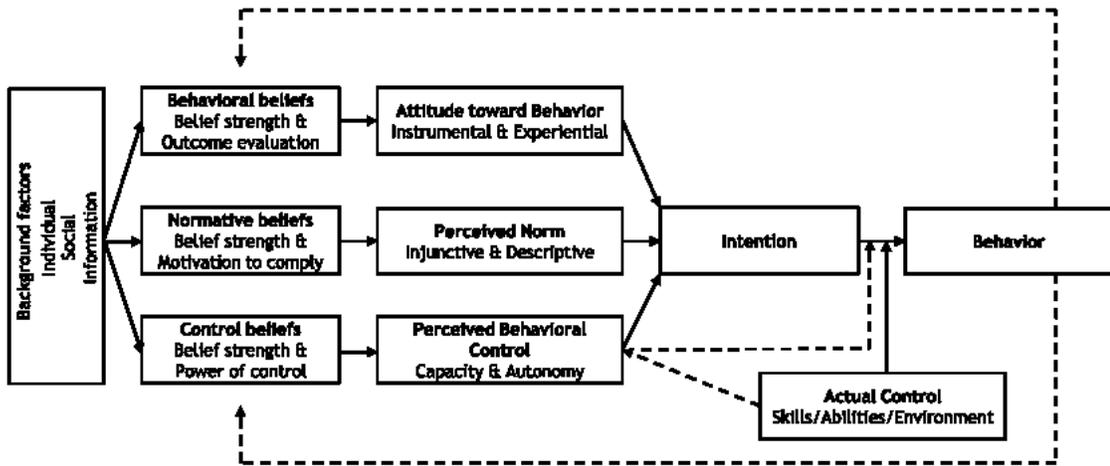


Figure 4 - The theory of reasoned action model (Fishbein & Ajzen, 2010)

Intentions are the critical component. They are influenced by behavioral beliefs, normative beliefs, and control beliefs which each influence attitudes, perceived norms, and perceived behavioral control (Fishbein & Ajzen, 2010). The perceived norm is how an individual sees social pressure to do or not do something. The perceived behavioral control is the belief that they may control the behavioral performance.

As these constructs coalesce in one’s intention toward the event or innovation, the behavior eventually follows. To help measure one’s overall attitude—a key component or predictor—toward a particular behavior, Fishbein and Ajzen (2010) suggest using items (specific survey questions) designed to explore the five major constructs of this theory. This has been done in this project’s instrument in order to further explore the relationship between the intentions and final behavior concerning local food use by the foodservice directors.

In summary, these two conceptual frames work together to allow this research project to explore how hospital foodservice directors consider local food for potential use in their operations. The diffusion of innovations, in conjunction with the reasoned action theory helps frame the local food movement and the potential behavioral responses by hospital foodservice professionals. These conceptual frameworks together allow this study to build on existing literature, adding specific data within the hospital industry which, as a group, has potential to impact the local food movement and employee/patient health nationwide.

#### Limitations of the Study

By design, this research study has planned limits. The research population was contained within the state of Ohio. With this understanding, results for findings from the research may not be generalized outside the state of Ohio or to other institutions in the health care, educational, non-profit, or business/industrial arenas. However, Ohio has a long history of serving as a consumer goods test market for numerous national corporations (Smith, 2012). Product trials, innovative consumer service items, political preferences, and others are said to be able to sell nationally if they are successful in an Ohio first (Kneeper, 2003). Therefore, this study may garner a broad interest outside the state for hospitals that are interested in local foods, and for Cooperative Extension workers who are interested in the topic. This extrapolation was postulated by Benson's (2013) study of the USDA's Farm to School program when he focused on Ohio for the in-depth, qualitative interview section of his national study.

#### Basic Assumptions Related to the Study

This project and its resulting data should be considered within the limitations set forth above, utilizing the definition of terms as guidance for interpreting or assigning meaning to outcomes. Many of the questions will be answered with standard descriptive statistics based on items on the questionnaire (Ary, Jacobs & Sorensen, 2010; King & Minium, 2008). In addition to these, other statistics will be computed to determine correlations or relationships between variables. These are detailed in Chapter 3.

### Summary of Chapter 1

In summary, hospitals and healthcare services comprise a significant segment of the U.S. economy. Their implicit mission of improving health positions them as leaders in initiating or expanding conversations around food. The foodservice directors hold key positions within the hospital and healthcare service industry. As such, they are positioned to lead this discussion and potential action on using local foods. The American Medical Association notes that a large predictor of hospital patient and general public health is the quantity and quality of food intake. Hence, a hospital's stance on food (both delivery *of* and communication *about*) is of critical importance to positively affect patient, employee, and community health.

As standard institutionalized foodservice evolves, some hospitals have introduced local foods as a means of improving health and wellness. Hospitals engaged in local foods procurement have:

- helped circulate more dollars in the local economy (Cosgrove & Maring, 2006; Beery & Vallianatos, 2004);

- provided fresher and implicitly healthier foods picked at the height of ripeness which often results in some of the highest nutritional values (Firth 2007; Halweil, 2007; Saha & Nath, 2006; Matheson, 2012; Lee & Kader, 2000; Harris & Karmas, 1988);
- stimulated hospital staff and patient awareness of and interest in healthy, nutritious eating via local foods, e.g., Know Your Farmer programs (Matheson, 2012; CDC, 2011);
- increased positive community relations and media exposure (CDC, 2011).

However, investigation into the hospital foodservice literature leaves it unclear as to what percentages of hospitals actually participate in procuring, serving and/or promoting local foods to patients and employees. This may indicate a significant opportunity for hospital foodservice directors (FSDs).

The purpose of this study was to investigate what factors contribute to Ohio hospital foodservice directors purchasing or not purchasing local food for use in their operations. A census of FSDs from Ohio hospitals (n=155) was targeted for data collection.

## Chapter 2: Literature Review

### Introduction

The review of literature begins with an overview of hospital foodservice. It has a particular focus on discovering and exploring research-based information around the topic of the use of local foods in those operations (e.g., farm to hospital). Some of the earliest examples date back to introductory work that began in 2007 and coincided with new USDA farm-to-institution funding opportunities. Related farm to school examples dated to 2003. Numerous non research-based examples of health care institution participation in the local food movement—gleaned largely from hospital publications, press releases, and popular press accounts—evidenced some growth in farm to hospital efforts during the ensuing years. (See details and citations in text below.) However, information on large scale examples or wide adoption of local farm to hospital foodservice procurement remained elusive. Further, the literature lacked any major examples of academic research specifically aimed at determining whether hospital foodservice directors (FSDs) were interested in participating in the local food movement, and/or whether they had the permission or capacity to do so if they wished. It also revealed no detailed analysis of issues that may have impeded or encouraged hospital foodservice directors to make purchasing decisions on local foods. Thus, this study was

launched to help fill a void in this area. In December 2013, Smith II, Kaiser, and Gómez published findings from a new study of farm to hospital programs conducted at Cornell. They noted that research in this area was “extremely limited in the agricultural and applied economics literature” (p. 509). They further said that “empirical research on farm to hospital (FTH) programs is nearly nonexistent” (p. 515). This article verifies the lack of literature on this topic, and the subsequent need for this study.

Fortunately, the literature did contain numerous studies on the USDA’s Farm to School (F2S) programs that parallel this inquiry into hospitals. Though the organizational missions of schools and hospitals differ (intellectual capacity building vs. physical healing and wellness), the respective foodservice directors provide a nearly identical service: feeding employees, students, patients, customers. Thus, the F2S literature provided guiding principles for this hospital-focused project.

The primary focus of this review was to find information on hospital foodservice directors’ interest and participation in the local food movement. Again in this specified realm of “FSD interest and participation,” the case studies that emerged were found only in the popular literature and hospital publications. These internal newsletters and external press releases often discussed local food purchasing or partnerships and hinted at the role of FSDs. But again, the academic literature was largely nonexistent. Of the numerous publications on the USDA’s agricultural marketing services web site (<http://www.ams.usda.gov>), many listed hospitals as an institutional buyer for local food growers; but none offered specific research on what may be preventing large scale

adoption or a change and local food procurement policies by hospital foodservice directors.

The tertiary aspects of this review included an overview of the general literature on conventional hospital food service and the use of broadline distributors or healthcare GPOs (group purchasing organizations). It considered the roles of foodservice and nutrition directors and their subsequent hospital employee education and wellness campaigns. It looked at the link between nutrition and local foods. It also considered hospital administration, contracts or outsourcing, and other systemic and historical issues around institutional foodservice and purchasing. It considered the emerging use of local foods, early hospital adopters, and the Healthy Food in Health Care initiative as exemplars or indicators of opportunity. Lastly, it considered Extension's potential role in working with hospital foodservice operations to achieve positive outcomes in both local purchasing (adding to the local economy) and employee wellness (encouraging participation via stimulated interest in local foods) based on studies of Extension involvement in similar work or with parallel industry sectors.

Each of the above-mentioned sections provides insight into hospital foodservice and how they operate; however, none answer the question of whether local food can gain a major inroad into this industry sector. Again, there appears to be only one other major study that details opportunities or impediments hospital FSDs face when interested in purchasing local foods for use in their operations.

## A Review of Local Food Definitions

Before beginning the review of foodservice systems in hospitals, a brief review of the definition of *local food* is in order. Chapter one provided a constitutive definition that posits “any nutritious substance that people or animals eat to maintain life that is related to or occurring in a particular area, city, or town” (Merriam Webster, 2013) as *local food*. Buck (2012) specifies *local food* as items grown within a specific geographic area or within a specific distance from the point of consumer purchase. George (2011) and Martinez, et al (2010) note that definitions and attributes of local food vary greatly; but growers tend to perceive local as 20 to 50 miles from their farm. Buck (2012) lists two key measures that, from a public interest standpoint, define *local*. These include preserving family-scale agriculture and strengthening local and regional economies. In contrast to this viewpoint, the U.S. Congress defined local food in the 2008 Food, Conservation, and Energy Act by saying the total distance that a product can be transported is less than 400 miles from its origin, or within the State in which it is produced. Anecdotally, larger producers tend to use the larger geographic definition while smaller growers would not consider it valid. Most agree that there is no universally accepted definition and little to no independent verification of local claims (Buck, 2012). Questions in this study’s instrument ask respondents to explicitly provide their definitions of local food based on a geographic distance scale. These will be correlated with other variables to determine both attitudes and behaviors around local food use.

## Foodservice Systems in Hospitals: An Overview

Harvard's School of Public Health explicitly notes that, "Hospitals are in the business of helping us get better and helping us stay healthy, so it makes perfect sense that addressing healthy and sustainable food would be part of the hospital's role that they can play in bringing health to their patients, families and employees" (Firth, 2012, p. 1). Hospital foodservice operations are an essential part of the patient healing experience (Mohd Nor, 2010; Hartwell, Edwards, & Symonds, 2006; Gregoire, Sames, Dowling, & Lafferty, 2005; Sullivan & Atlas, 1998). Nutrition has long been linked to health; so the hospital foodservice operation has an important role in patient rehabilitation (Cohen, 2013; Denton, 2013). Recent advancements in research that measure anti-oxidant nutrients and cancer fighting agents in certain foods have increased the emphasis and sharpened the focus on food as medicine—an integral part of the healing process (Firth 2007; Halweil, 2007; Saha & Nath, 2006; Matheson, 2012; Lee & Kader, 2000; Harris & Karmas, 1988). From medical journals to popular press headlines, food has become a focal point for health and wellness in the United States. As such, hospital foodservice operations have come under intense scrutiny to deliver healthy food options for not only patients, but employees and visitors alike (Mohd Nor, 2010; Mitchell, 2009).

One example of this can be seen in the dramatic reduction of the presence of fast food restaurants on many hospital campuses (Gordon, 2012; Lawrence, Boyle, Craypo & Samuels, 2009; Physicians Committee for Responsible Medicine, 2011). Though some hospitals are emphasizing healthier menu options (Chandon & Wansink, 2007), many are at least partially blamed for the United States' obesity epidemic due to their offerings of

mostly non-nutritious, high fat, sodium-laden meals with oversized, unhealthy soft drink accompaniments (Dunn, Sharkey, & Horel, 2012; Jeffery, Baxter, McGuire, & Linde, 2006; Maddock, 2004).

There are other examples of hospital foodservice changes that can be seen in recent modifications to their own internal menu items. Many are removing items that are seen as unhealthy and replacing them with fresh, healthy options (Kaiser Permanente, 2013; Klein, Thottathil, & Sayre, 2013) in hopes of gaining improvements in their own employees' health which, nationally, has "higher rates of heart disease and asthma than workers in all other sectors" (Marill, 2013, p. 9). Some have implemented signage to guide cafeteria patrons to healthy options (Lee, 2013). The stoplight program, for example, labels food "green, yellow, red" to indicate which are healthiest for you (RWJF, 2014). Often, a graduated pricing scheme accompanies the food options in which healthier choices cost less (Lee, 2013).

#### Farm to School

Programs that center on connecting local farms with local schools and institutions have been growing over the past 10 years, largely since the launch of the USDA's Farm to School program and the Know Your Farmer Know Your Food initiatives (Barham, Tropp, Enterline, Farbman, Fisk, & Kiraly, 2012; USDA, 2012). The literature detailing results from these efforts offers compelling evidence of their success and provides parallel case studies that hospitals could use for comparison.

For example, 10 years ago, the National Farm to School Network showed student meal participation increased an average of 9% with farm to school programs (Bellows,

Dufour, Bachmann, Green, & Moore, 2013). The study said this generated more revenue from school meal programs as well. In addition, students who participated in farm to school activities were shown to opt for healthier foods and improved their eating habits (Bellows et al., 2013; Ugalde, 2012). More recently, a Virginia F2S study (Benson & Niewolny, 2013) gave examples of schools in which students have increased consumption of fresh fruits and vegetables as well. A fourth grader at Rappahannock County Public Schools in Virginia said, “I usually don’t eat beets, but these are awesome! I want more leafs. I feel like a brachiosaurus!” (p. 28). At the Arlington County Public Schools, local farmers supplying the elementary school noted a major success in “seeing student’s excitement in going back for two or three servings of lettuce and eating more salad than they thought any student would (or could) consume” (p. 32). From an economic perspective, farmers are selling more produce in these areas. The Rappahannock schools purchased 12.6% of the total produce locally. The Page County Public School system sourced 37% of theirs locally. “We hope this percentage will continue to grow so that children receive even more fresh, local produce” (p. 29-30).

In 2009, the Center for Health Promotion and Disease Prevention at the University of North Carolina at Chapel Hill put together a 36-page “Farm to School Evaluation Toolkit” (UNC, 2010; Joshi, 2009). Their aim was to provide a resource that other farm to school program leaders could use to evaluate the effectiveness of their specific programming efforts. The Toolkit included sample surveys and interview guide templates that could be modified or used in whole. Of specific interest was the *Foodservice Director Interview Guide*. This piece was designed to “help facilitate a

conversation around the motivations for and strategies used to incorporate locally grown foods into school menus, the experiences associated with introducing locally grown goods, and the opportunities and challenges related to implementation of Farm to School programs in the school cafeteria” (p. 14). These topics mirrored the research objectives of this farm to hospital study; and the interview guide questions reinforced the tenor of Benson’s (2013) F2S foodservice director interview guide upon which this study is based. Their questioning line began with basic demographic information, but then moved quickly into the details of how their foodservice operation worked (cost strategies, centralization, staffing, procurement contracts, etc.). But then, it shifted to probe the motivations for why they were participating in the F2S local food procurement program. This line of questioning progressed into questions about administrative support, staffing support, community perceptions, and even state or federal policy implications. Information from inquiries such as this in school systems can potentially inform similar programs in the healthcare industry.

Other studies have probed these questions as well. In 2011, George used a values-based value chain framework to analyze local food procurement in a large public school district in Michigan. She queried farmers, distributors, food service company representatives, and school district representatives to determine how implementing farm to school programs would deal with logistical challenges and budgetary constraints. For example, a school may find that it has to adapt new kitchen practices when new food items are incorporated. She also explored how local food procurement fit into their existing supply chain noting that many schools were simply unable to make major

kitchen or menu modifications to incorporate local food (George, 2011). Her findings suggested that “local food sourcing can coexist with existing distributional infrastructure” (p. 76). Further, she noted that enthusiasm and relationships among the actors played a critical role. There are questions as to whether these can be retained as the local procurement is scaled up. Food safety and budgets are the final hurdles for the school market. She said these may be more difficult to overcome in P-12 schools versus other institutions due to free and reduced-price lunches and food safety certification requirements. She did not, however, explicitly mention hospitals or the healthcare industry, groups which may have similar safety standards and budget constraints.

Overall, farm to school programs across the United States seem to have demonstrated positive impact. USDA studies have found that for every dollar schools invested in local food purchasing, approximately \$2.16 of local economic activity was generated (National Farm to School Network, 2013). So with just over 10 years of effort, numerous evaluations provide evidence for positive outcomes. Mitchell (2009) noted that the health care industry spent nearly \$10 billion per year on food and beverages in 2009. This is projected to increase yearly (Technomic, 2009). If the multiplier effect translates from schools to institutions, the potential impact is tremendous.

#### Farm to Institution

Like farm to school, farm to institution programs hold key variables in parallel; thus, they should be able to provide similar positive outcomes. Bellows, et al. (2013) note that farm to institution programs “provide fresh, nutritious, locally sourced food in cafeterias” (p. 1) while supporting local economies and educating communities about

why it is important to eat healthy, local food. This and other studies also describe how these programs benefit both institutions and farmers (Bellows et al., 2013; Barham et al., 2012; Sanger & Zenz, 2004; Enshayan, 2002). For the latter group, this allows them to: “diversify their customer base; create a stable market for products; and provide opportunities to engage the community in agricultural operations” (Bellows et al., 2013, p. 2). For institutions, buying local foods can: “increase participation in meal programs, improve the quality of the institution’s food service, and earn the institution recognition and increased business for its efforts around local food” (p. 2). While these benefits are significant, they do caution that successful programs take time and “depend heavily on strong relationships among various stakeholders including food-service professionals, producers, community members, administrative staff, county sanitarians and health officials, and others” (p. 3).

One of the early adopters and recognized leaders of local food procurement in the hospital industry is Fletcher Allen Health Care in Burlington, Vermont (Bellows et al., 2013; Lee, 2013). Since 2006, they have instituted programs to provide nutritious, local foods to patients and employees. They recognize that “fresh food is vital to patients’ health and aids in the healing process” (p. 1). Their programs include growing herbs and vegetables on a rooftop garden, maintaining a healing garden, running a beekeeping operation, and a Center for Nutrition to encourage healthier eating behaviors. They source local foods from approximately 70 Vermont producers in part, “to better control food-safety issues” (p. 1). In addition to the local sourcing, Fletcher Allen has asked its broadline food vendor, U.S. Foods, to carry more locally produced items. They

acknowledge that budget restrictions are an obstacle; but they mitigate any increased costs by finding other places to cut costs. This appears doable since food is not a high percentage of a typical hospital's total expenses (Lee, 2013). Fletcher Allen, for example, spent only half a percent (\$4.2 million) on food from their \$956 million total budget in 2012 (Lee, 2013).

Another small hospital in Iowa, Cass County Memorial, has been sourcing local food since 2005. Their produce purchases range between 25 and 50 percent from local farmers (Worley & Strobbe, 2012). They believe “purchasing local produce promotes more vegetable intake” by both patients and employees (p. 28). They also note that the hospital gets positive publicity and it helps the local economy. Mitchell (2009) and others (Cosgrove & Maring, 2006; Beery & Vallianatos, 2004) frequently mention the local economic stimulus as a positive outcome of local food procurement. The community good will is also cited as an important factor.

On the east coast, the Maryland Hospitals for a Healthy Environment (MD H2E) launched a “Local Foods to Local Hospitals” project in September 2007 to encourage healthier local foods in hospitals and to support local farmers (Mitchell, 2009). This early initiative netted a measurable shift as nearly 20 hospitals began or increased their local food purchases. In 2009, the number increased to over 30, or more than one-third of hospitals in the state. Along with the purchasing programs, hospitals also promoted the local foods to employees, patients, and the community. They established the first hospital-based farmer's market, and launched food waste composting programs as well (Mitchell, 2009).

Along with the positive outcomes, challenges to purchasing local foods for hospitals have been noted. Perhaps most significant was the perception that there was not enough produce available at the local level (Worley & Strobbe, 2012). There were conflicting results on whether local foods required added preparation time, unlike with processed or pre-packaged products. And though some said local cost more, Lee (2013) found that larger hospitals can make local food purchases without seeing higher costs because of scale.

#### Other Healthy Food Initiatives

Along with the farm to school (or farm to institution) programs, other healthy food initiatives in healthcare systems have emerged. The Healthy Food in Health Care (HFHC) program was an outcropping of Health Care Without Harm (HCWH) in 2005 aimed at helping hospitals improve the sustainability of their food services. They also focused on encouraging hospitals to use more nutritious local foods. HFHC's specific mission was to provide guidance and expertise to help health institutions develop more sustainable food purchasing systems and encourage prevention-based health based on food consumption (HCWH, 2013). The program also introduced other initiatives including the Healthier Hospitals Initiative (HHI), Balanced Menus, Local & Sustainable Purchasing, and Healthy Beverages (Bellows et al., 2013). To date, HCWH has enrolled approximately 439 hospitals in its healthy food program. However, there are not many hospitals in Ohio participating at this time.

Other farm to hospital type programs have continued to emerge as well. Kaiser Permanente, a recognized national leader in local food procurement in the healthcare

industry, helped form the Partnership for a Healthier America in 2010. They are working to improve the food that hospitals serve patients, visitors and employees. Sodexo, who provides food services at 863 hospitals across the country, has recently launched a free mobile app that allows visitors and employees at its client hospitals to track calories of the foods they consume. Sachs (2011) noted that “despite complex systemic and structural challenges, [some] hospitals have implemented significant sustainable food projects and demonstrated their financial viability” (p. ii).

The Institute of Food Technologists (IFT), a 70-year old international non-profit organization comprised of food scientists, recently summarized trends in healthy food programs at over 200 hospitals around the United States. Their findings suggested that “exciting food innovations” are taking place in hospital cafeterias everywhere. The bullets below are excerpted from their summary findings (IFT, 2012). Hospitals have:

- Increased quantity, quality, and variety of fresh fruits and vegetables
- Improved nutritional and packaging quality of grab-n-go meal and snack options
- Revamped healthy vending options and labeling
- More kitchens with no trans-fat, reduced saturated fats, and more healthful fats
- Expanded offering of high fiber and lean protein options
- Reformulated lower-calorie, sugar, and sodium entrées and snack options
- More cafeterias providing accurate nutritional content data at point of purchase
- More kitchen renovations to increase baking and steaming
- Increased restaurant-style, cooked-to-order items for patients and cafeteria visitors
- Pricing strategies to incentive healthier selections

- Created policies regarding the presence of and offerings by fast food restaurants operating on hospital campuses

Although numerous cases exemplify the growing use of local foods in hospital foodservice operations, these are still relatively few in number and perhaps concentrated in certain geographical areas. Of those who are changing and working to offer healthier, local food options, many “have considerable room for improvement” (Lesser et al., 2012). In addition, the questions remain as to the interest and knowledge of hospital FSDs from a formalized study perspective.

#### Food Procurement: Distribution Systems from Broadline and General Purchasing Organizations (GPO)

The literature indicated that hospital foodservice directors are the primary leaders of the majority of food production processes and food-related programs (Hartwell, Edwards, & Symonds, 2006; Gregoire et al., 2005). However, hospital nutrition directors co-lead these initiatives in some hospitals. Some organizations have only one person who performs both roles. Regardless of title, the lead person over hospital foodservice operations is charged with a critical role: to procure food and oversee its preparation in a healthy, nutritional manner to meet the needs of patients, staff, and visitors. But how is this accomplished?

The conventional method of procuring food for hospital patients and employees has been to rely on broadline distributors or GPOs (Group Purchasing Organizations) who procure, aggregate, warehouse, and often process foods for timely shipments to hospital and other institutional customers (Sanger & Zenz, 2004). Some of the larger,

nationally known broadline foodservice providers include Sysco, GFS, US Foods, Aramark and Morrison. They have built food supply chains that network related businesses together in order to move food from initial production to wholesale delivery and, in some cases, to final sale at the retail counter. This system includes the raw material inputs, the producers, intermediate processors, distributors, wholesalers, retailers, and finally the consumer (Steven & Pirog, n.d.).

Broadline distributors and GPOs offer hospitals and other institutional customers numerous advantages (Jones, 2013; Foodservice Director, 2012; Sanger & Zenz, 2004). They can deliver fixed quantities of all types of food at any time of the year, growing season notwithstanding. This is accomplished by sourcing food from all parts of the United States, as well as from overseas. Hospitals, in particular, have the option of purchasing semi-prepared foods that meet exacting specifications of size, for example, when a chicken breast or hamburger patty needs to meet dietary requirements for a patient. Critics of this system point to lower nutritional value, less taste, and a greater negative environmental impact due to “food miles” that accumulate when moving product over great distances (Feagan, 2007). In addition, hospital food has a long anecdotal history of being exceedingly bland and/or of poor quality, although some studies suggest that this may not be the case (DeLuco & Cremer, 1990).

#### Hospital Foodservice Administration

With the growing interest and popular press accounts of the potential benefits of local foods, hospital foodservice directors (FSDs) have numerous decision factors to consider in purchasing or not purchasing local food for use in their operations. As noted,

these include cost, quality, availability (seasonality), delivery, foodservice operation type (internal or externally contracted), standing purchasing contracts, and even hospital administration (local versus corporate decision-making). The literature indicates that these systemic issues around institutional foodservice are the major determinants in food purchase decision-making. This study aims to determine if there are others, ultimately answering the question of why local foods are or are not utilized.

Some hospital administrations have adopted the philosophy of buying local by writing policies into their Food Service Department's plans (Worley & Strobbe, 2012). Lee (2013) notes that Hospital Sisters Health System, a 13-hospital system based in Springfield, Illinois, designated that a quarter of the system's food must come from local sources when they renewed their broadline contract in 2011. They spend approximately \$9.5 million on food each year.

Some contracts can be limiting; but a study in Virginia found that only 3.5% of local school foodservice directors said their contracts with either a primary or secondary food vendor limited their ability to purchase local foods (Benson & Niewolny, 2012). The Foodservice Director magazine Hospital Census Report (2012) noted that 84% of hospitals make at least some purchases through a group purchasing organization (GPO) and "local" is being included more often. They also noted that although some healthcare facilities outsource their foodservice, approximately 75% of food purchasing in the healthcare sector was done by self-operating hospitals or healthcare facilities—those who performed their food service in-house. Technomic, a food industry data firm, and FoodService Director, a trade magazine for the food-service sector, provide data that

indicate self-operated foodservice is on the rise from only 60% in 2009. That may indicate greater flexibility in securing local purchases (Sanger & Zenz, 2004).

One example of an outsourcing service that has embraced local food objectives is Morrison, the healthcare subsidiary of the Compass Group which is an international food service provider in England. They have enrolled in the Partnership for a Healthier America's healthy hospital food program which parallels Michelle Obama's "Let's Move" campaign. Of Morrison's 550 hospitals and health systems contracts, just over 60% have taken healthy hospital food pledges (Lee, 2013). They note that hospitals and food service providers can provide healthier choices without necessarily increasing overall costs.

In short, hospitals have a great opportunity to shift food procurement away from conventional methods by simply increasing their demand for locally grown and sustainably-managed food (Matheson, 2012). "Many sustainable foods are already available through their purveyor, they just need to ask" (p. 1).

#### Hospital Employee Wellness

Along with the implicit mission of patient healing and rehabilitation, hospitals are also concerned with employee health and wellness (Crompa et al, 2012; Matheson, 2012; Mitchell, 2009; Gaby, 2008). Hospital staff members, as part of the general population, suffer from similar health issues as are often cited as top concerns: high blood pressure, obesity, lack of exercise, and other issues (Marill, 2013). To combat these issues, hospitals too have begun implementing employee wellness campaigns to emphasize the importance of healthy eating and living (Matheson, 2012; Mitchell, 2009). The majority

of examples of these programs show up in the hospital literature (internal newsletters and external publicity campaigns); although there are some research-based studies that review their effectiveness.

In Massachusetts, for example, a four-year study looked at how a wellness intervention could impact employees of the six largest hospitals within a local healthcare system (Lemon et al., 2010). Nearly 7,000 full and part-time employees participated. Results indicated that “worksites-based ecologic interventions can succeed in preventing weight gain among employees who engage in offered interventions” (p. 17). The researchers also suggested that future interventions should continue and include leadership support for worker health.

Apart from hospitals and health care operations, the idea of “wellness” has emerged as a buzzword among human resource professionals in industry, education, and other employing sectors of the economy. Much of this is being driven by the increasing cost of health care and research indicating that investing dollars in wellness now can save expenditures on illness later (RWJF, 2013; US Dept. of Health & Human Services, 2003). Among hospital publications, there seems to be a growing number of programs that promote not only physical wellness via exercise and health metric monitoring, but also on diet and nutrition (Kaiser, 2012; Lemon et al., 2010).

The Ohio Health Care Coalition recently formed a working group of human resource professionals who aim to improve employee health while reducing overall healthcare premium costs. The overall Coalition is working to leverage the collective resources of their members in order to influence the cost, quality and access to health care

services in a community or region. The group is active in community health improvement initiatives in various counties through the human resource cohort. They do research, share information and provide networking opportunities. Of particular note, food choices and healthy eating are key components of their programming.

#### The Local Food Movement, Nutrition and Wellness

There is a high correlation between food intake and health for both hospital patients and the general public (AMA, 2012). Thus, it is critically important for hospitals to not only serve healthy foods in their establishments, but also to communicate about healthy eating via wellness and nutrition education and training programs (Cohen, 2013; Denton, 2013). The argument for sourcing and serving local foods is based in the scientific literature that indicates foods picked at the height of ripeness will contain the highest nutritional value possible (Firth 2007; Halweil, 2007; Saha & Nath, 2006; Matheson, 2012; Lee & Kader, 2000; Harris & Karmas, 1988), and that local foods can be picked and delivered at this premium point more easily (and perhaps more cost-effectively) than foods grown farther away. This is a simple logistical issue of time and geographic distance.

An additional bolstering of the higher nutrition standpoint was made by Harris and Karmas (1988) who documented how fresh products with intact skin further protect and prevent nutrient loss. In a Harvard School of Public Health article, Firth (2007) quoted Saha and Nath (2006) who showed that minimal processing (cutting, slicing, chopping, peeling) “while tremendously useful from a food service standpoint, causes injuries to the plant tissues and initiates enzymatic changes, such as ethylene production,

respiration, accumulation of secondary metabolites and water loss from tissues” (p. 3). This additionally increases susceptibility to microbial spoilage. Herein, there is an increased risk or potentially compromised food safety issue.

Proponents of the local food movement have worked to operationalize these findings in order to expand the direct consumption or use of locally grown items in developing processed foods. The research accounts have been combined with popular press articles and full-length books. Michael Pollan’s *The omnivore's dilemma: a natural history of four meals* (2006) created the seminal launch of the modern local food movement (Harrison, 2008), noting that organic and local foods literature dates back to Rodale’s 1940’s *Organic Gardening and Farming* magazine (p. 3). A memoir by Barbara Kingsolver, *Animal, Vegetable, Miracle* (2010) provided a particularly compelling personal argument for returning to local food sources for one’s family as well (Levinson, 2009).

In summary, the argument to use more local foods both personally, and in schools or institutional foodservice operations, has positive nutritional and wellness implications. However, issues of convenience, preparation, availability, price, and other items must be considered when weighing the value proposition of implementing the local food sourcing. Again, this study targeted those exact variables to determine potential responses to the issue.

#### Extension Partnerships: Potential Roles in Hospital Foodservice

The objective of this study was to understand, measure, catalogue, and evaluate what variables contributed to hospital foodservice directors (FSDs) purchasing or not

purchasing local food for use in their operations. It asked if this new, innovative approach to foodservice was being diffused through hospitals. In answering this question, the final objective of the study aimed to determine Extension's potential role in working with these hospital foodservice operations to incorporate local food purchasing into their operations and to assist in employee wellness programs and training that might encourage participation by stimulating interest in local foods. This final section of the literature review considers case studies of Extension involvement in similar work or with parallel industry sectors to determine feasibility of potential in this instance.

As early as 1974, Extension was working with and describing how to assist health care decision makers in being more effective in meeting health care needs in hospital and public health situations (Cordes, Riddick, & Crawford, 1978). They noted the opportunity for Extension to "establish strong linkages with relevant organizations" (p. 19) in order to better meet the needs in the healthcare community. Further, they suggested using surveys to "establish specific educational needs" (p. 19). This was the approach used in this project.

Condo and Martin (2002) and Scutchfield, Harris, Tanner and Murray (2007) provided other examples of Extension's emerging opportunities to partner within the healthcare profession. Mutual benefits were noted as specific, beneficial programs emerged from the work. For example, a 7-state pilot project, "Health Professions and Cooperative Extension: An Emerging Partnership," showed how Extension could bring together university resources and offer community-based service-learning projects for health professionals and students that were mutually beneficial to all involved (Condo &

Martin, 2002). This project also launched a "Healthy People...Healthy Communities" initiative aimed at educating individuals and families to adopt healthy behaviors, and building community capacity to improve health. Results showed positive outcomes on both measures, plus an indication that the project brought higher visibility to Extension within the community. They noted that people who had previously not heard of Extension learned about its value and potential as an educational resource. Scutchfield et al, (2007) found that although many partnerships and coalitions existed to work on health issues of Kentucky's citizens, Extension was "a secret." They noted that the local Extension agents were not thought of by faculty or the major health units at their university center (University of Kentucky); so they were not being utilized in outreach. Since then, they have undertaken numerous successful health programs and have involved Extension in the work (Scutchfield et al., 2007). They are now conducting more activities that cover a wider range of health issues in their work to build healthier communities statewide.

Along with healthcare programs and partnerships, the literature shows that Extension has a role in local food supply area. As is often the case, Extension may again play the role of convener. Knight & Chopra (2013) note that Extension's access to consumption production models can enable institutions to estimate capacities for specific commodities (such as local foods). Further, by working closely with the entire local food supply chain (producers, processors, distributors, and purchasers), Extension can help buyers procure local foods via the value chains (Bloom & Hinrichs, 2010). As noted earlier, the price of local foods can be a perceived barrier to institutional buyers and foodservice management companies. However, by working with Extension, buyers can

learn about successful models that may be adopted to make the program work (O'Hara & Pirog, 2013; Sachs, 2011; Cantrell, 2009).

Extension has also worked in parallel industry sectors that provide examples of potential for the hospital foodservice operation. Wise, Sneed, Velandia, Berry, Rhea, and Fairhurst (2013) report on the most common expectations of local foods among consumers and restaurateurs in a topically related study. They found that people wanted local foods to be environmentally safe and sustainably produced and distributed—all socially-conscious reasons for their purchases (Wise, et al, 2013). Though that study looked at supply and demand for local food products across the distinct groups of producers, restaurateurs and consumers, it today informs Extension educators by providing a snapshot of their interests and concerns that can be shared with hospitals and the healthcare industry.

## Summary of Chapter 2

In summary, the literature review showed sporadic efforts around the farm to hospital topic, with the earliest dating back to 2007 introductory work that coincided with some national USDA funding opportunities. However, large scale or wide adoption of farm to hospital food service procurement seemed to remain elusive.

The literature provided only one example of a major academic, systematic research study specifically aimed at determining whether hospital foodservice buyers are interested in participating in the local food movement, and/or whether they had the permission or capacity to do so if they so choose. Further, the literature did not reveal any detailed analysis of the systemic issues hospital foodservice directors face when

making purchasing decisions on local foods. There were, however, numerous studies on the farm to school programs that paralleled this inquiry into hospitals. These served as guiding principles.

The hospital cases that exemplified the growing use of local foods in hospitals still seemed to “have considerable room for improvement” (Lesser et al., 2012). In addition, the questions remain as to the interest and knowledge of hospital FSDs from a formalized study perspective.

The literature citing studies of Extension involvement in local food systems work indicates that they have a potential role in working with hospitals or other health-care institutions. Dunning, et al (2012) suggested that “Extension educators have the potential to tap both structural and relationship networks to foster collaboration and catalyze institutional change in food systems” (p. 99). Their study posited “institutional entrepreneurs” as the model to adopt so Extension could help communities understand how to create lasting food system change. Again, Extension was seen as a major driver because of their ability to help connect the right people to provide solutions to the issues that roadblock progress. Lastly, and perhaps more importantly, Dunning, et al (2012) saw “the capacity and expertise of county-based field agents to serve as institutional entrepreneurs [could] enable agents to respond to the growing public demand for local foods through partnerships and [could] maintain the Extension Service’s relevance in a challenging budgetary climate” (p. 110). With the continued expected growth in the health care sector, maintaining Extension’s relevance therein could emerge as a stronghold for future programming and financial support.

Therefore, based on available studies and literature on hospital and healthcare sector involvement in local food purchasing and service in their operations, this project sought to fill in some of the blanks surrounding the issue. It particularly investigated how the key players (foodservice directors) viewed participation in this newly emerging movement.

## Chapter 3: Methods

### Research Design

This descriptive, non-experimental study employed quantitative data collection and analysis procedures in order to gain an in-depth understanding of whether hospitals might incorporate local foods into their menu offerings for patients and employees. Quantitative research can be defined as the collecting and analyzing of data in a single study or series of studies (Ary, Jacobs & Sorensen, 2010). The quantitative process was chosen based on the desire to employ a pragmatic approach (Benson, 2013) that would situate the results of the research project within Extension, a university department whose very mission specifies translating knowledge and research in order to strengthen the lives of people and communities (OSU Extension, 2014; Benson, 2013). An exempt application to the OSU Institutional Review Board (IRB) was submitted and approved in May, 2014. Appendix A provides a copy of the approval letter.

### Population and Sampling

The population frame was determined to be a census of Ohio hospital foodservice directors (FSDs). The census was undertaken in an attempt to conduct a complete data collection process and not rely upon inferential statistics for determining outcomes. Ohio has numerous attributes that made it a good geographic frame for study. Since the 1980s,

Ohio has been utilized by national corporations as a test market for many new product trials (Smith, 2012; Knepper, 2003). It has a relatively dense, heterogeneous population that includes both rural expanses and urban centers. From a health care perspective, Ohio has approximately 244 hospitals with 34,000 beds (ODH, 2014). Each year, more than 1.5 million people are admitted to these facilities. In addition, outpatient visits total more than 30 million. Ohio also has approximately 275,000 employees who serve those patients each day (ODH, 2014). These numbers suggest that there is a sizable potential for data gathering, analysis, and the subsequent informing of potential implications and/or programming. The results of this study will be limited however, in their generalizability to other locations across the country. Regardless, the test market conditions of Ohio may make the findings garner interest from other states' growers, food suppliers, hospitals and health care organizations, and Extension organizations. Benson (2013) employed this same argument in his study of the USDA's Farm to School program. There, he singled out Ohio to provide in-depth, qualitative input to his national study on that program.

To start this investigation, a literature review was conducted. See Chapter 2. In addition, several open-ended interviews were held via a small convenience sample of hospital foodservice directors (FSDs). The literature and these discussions helped determine the scope and range of the issue. This led to the development of questions for the quantitative instrument that aimed to obtain input from the industry and from individuals who served directly in the targeted job classification of the study—hospital foodservice directors. This investment of time was made in order to obtain a more

focused and meaningful quantitative instrument that was better aimed at answering the initial research questions. This also helped narrow the focus of the study so that it might provide more meaningful outcome data, resulting in potential end users such as hospitals, local food systems organizations (growers, aggregators, processors, distributors), and even tertiary partners such as the cooperative Extension service having better information and more precise data to guide potential action and outreach in the local food systems movement in the future.

The quantitative approach was employed in order to gain descriptive statistics from the collective group under study. Quantitative research “uses objective measurement to gather numeric data that are used to answer questions or test predetermined hypotheses” (Ary, Jacobs & Sorensen, 2010, p. 22). In this case, along with descriptive data, a correlation inquiry was employed to look for relationships that might exist based on variables in the group (Ary, Jacobs & Sorensen, 2010).

The population frame was constructed from scratch as there was no existing collection of hospital foodservice director contact information publically available. Thus, it was culled from websites and via individual emails and telephone calls. This process was guided utilizing a listing of Ohio’s hospitals downloaded from the Ohio Department of Health’s web site. They listed 244 hospitals including both public and private, and provided the name of the Chief Executive Officer and an email address for contact information. Those email addresses were used to request the specific contact information for the foodservice director. Appendix B provides a copy of the correspondence.

This process initially netted 96 names. These became the first entries in the population frame. Internet searches were then performed to identify the remaining foodservice directors and their contact information (including email address) to conduct the online, electronic survey. During this process, it was discovered that a number of the 244 hospitals listed by the Ohio Department of Health did not have foodservice operations on site. Instead, a number of hospitals function in a health group and share kitchen facilities and/or foodservice operations management. That discovery reduced the list by approximately 20% (down to 197 hospital kitchen locations). To verify details such as this, and to obtain the FSD names and email contact information, personal telephone calls were made to the remaining facilities. When finalized, this process provided a census of Ohio hospital foodservice directors. The final number stood at 155 foodservice directors who oversaw 197 kitchens that serviced Ohio's 244 hospitals. This list was shared with the Healthier Hospital Initiative, a private, not-for-profit organization recommended by the Ohio Department of Health, so it could be checked against their dietitian contact list. Lastly, it was compared to the Ohio Healthy Business Council list, again, to help ensure completeness of the frame.

#### Instrumentation

The instrumentation for this quantitative study was developed after a review of the available literature around local food systems and institutional participation in purchasing these designated foods. As mentioned, it also received input from several informal conversations with persons in the field. The specific focus for the literature review was on hospitals and health care systems. Though few academic references were

found, popular press and corporate newsletters did help to frame the issue. In addition, thematic areas and constructs were gleaned from other studies as an initial step. Those categorized areas then provided a detailed roadmap that served to check and balance the line of questioning and instrumentation for the quantitative census.

The quantitative questionnaire was developed based on two related models described in Chapter 1. It began with an existing instrument that had been utilized by Benson (2013) during his study of Extension's participation in the USDA Farm to School (F2S) program that provides local food for use in school systems. His instrument drew upon the theory of reasoned action (Fishbein & Ajzen, 2010) giving consideration to attitudes and behavioral intentions of Extension professionals' engagement in this work. The instrument was vetted by a panel of experts, tested for reliability and validity, and ultimately defended in a successful dissertation at the Virginia Polytechnic Institute under the direction of Dr. Kim L. Niewolny, a nationally recognized academic expert in food systems research. This instrument had a Cronbach's alpha coefficient of 0.85 for the main constructs, providing a strong indication that the instrument was consistent and internally reliable.

The remaining items on the quantitative questionnaire were developed based on an instrument from Benson and Niewolny (2012) used in their Virginia Farm to School (F2S) Survey. This research project's survey frame consisted of the exact job classification, foodservice directors, as this new Ohio hospital study. In the Benson and Niewolny case, the FSDs were employed by local school systems. In this new study, FSDs were employed by hospitals. As noted in Chapter 1, the similarities of institutional

food purchasing easily overlap among schools, hospitals, or other large institutional buyers. The USDA (2013) in fact, uses the term “farm to institution” to convey the meaning of selling local foods to institutional purchasers. The farm to school designation (Benson/Niewolny focus) simply narrows the denotation to a single institution—the school—and specifies a USDA-branded program aimed at school systems. Thus, the instrument was a theoretical match, asking the same questions to schools that this study wished to ask of hospitals.

It was determined that the adaptation of this second quantitative instrument (Benson and Niewolny, 2012) could consist of simple substitutions of variable names in many cases. For example, this hospital study used “employee” or “patient” in substitution for their “student.” Some questions needed no rewording whatsoever. Though they did not run a Cronbach’s alpha coefficient on their instrument, the final data analysis indicated strong consistency across the frame.

It was observed in the literature that hospital FSDs likely had additional, systemic considerations to their institutional foodservice delivery. Namely, there existed dietary restrictions for patient recovery and potential administrative constraints or corporate policy issues on foodservice. Thus, the Benson/Niewolny instrument was adapted and qualified utilizing the literature to formulate the final quantitative survey instrument. The final step involved ensuring that these systemic hospital-centric items were categorized into constructs so Likert-type scale questions could be developed and used to determine the relative intensity of those constructs (Ary, Jacobs & Sorensen, 2010). All were then blended into the final, new instrument.

In summary, the quantitative instrument combined two existing surveys and incorporated both the theory of reasoned action (Fishbein & Ajzen, 2010) and the diffusion of innovations (Rogers, 1995) in order to build on the literature with a specific look at the innovative concept of local food use in hospitals. The final instrument included three main sections and consisted of 22 numbered questions that included 36 actual items.

#### Instrumentation: Section Detail

Section one of the final instrument asked respondents to provide background information about their hospital. Variables of size, location, foodservice operations, staff, and contractual arrangement provided comparative data in the results. Section two focused on the hospital foodservice director's knowledge, interest, activity, and perception of local food use. For example, Instrument items #7 and #8 were used to gage the initial research question that sought to explore how much hospital FSDs have heard about the local food movement, and about their participation in activities associated with using local foods in hospitals. Then, Instrument item #9 posed a dichotomous categorical variable that would indicate whether or not the hospital FSD currently used local foods in his or her operation. Based on that answer, the electronic survey employed skip-logic to direct respondents to the next series of questions. These sections roughly paralleled each other, but again, were asked based on whether or not their current foodservice operation was using local food. For example, Instrument item #10f asked if a hospital was currently participating in local food-related activities such as farm to hospital, composting, Community Supported Agriculture (CSAs), farm markets, gardens, and wellness

campaigns using local foods. For those who indicated they did not use local foods, a skip-logic program in Lime Survey moved them to a questioning series that probed the extent of their *potential interest* in local food use as well as a ranking of the factors (Item #11b, 11c, and 11d). From here, Instrument item #10e asked what factors were most important to consider when buying local food and in what rank were the most important items. Item #10g asked current users to list any challenges they had encountered with buying local foods in an open-ended question.

In both parallel sections (skip-logic questions), respondents were asked about their perceived norms and perceived behavioral control regarding their involvement or potential involvement in using local foods in hospital operations (Instrument items #14-15), and about potential problems and benefits (Instrument items #12-13). In total, these items worked together to answer this second research question. These questions were aimed at establishing and defining constructs that were derived from the theoretical basis of the study.

After the parallel sections, all respondents returned to the point in section two that explored the remaining constructs. For most of those, the hospital FSDs were asked to provide ratings based on 5-point Likert-type scales (for example, 1 = not at all important, 2 = somewhat unimportant, 3 = neutral, 4 = important, and 5 = very important). These Likert-type items were then aggregated to gain an understanding of the constructs that consisted of factors hospital FSDs considered when making food purchasing decisions. Constructs included knowledge, interest and action, attitudes (perceived problems and

benefits), and likelihood (perceived social norms and behavioral control) of local food purchasing or use.

For example, in the construct of interest and action around local food use, FSDs were asked to respond to statements indicating “yes,” “no,” or “I plan to in the next 12 months.” Some specific questions included: Have you ever sought out information about using local foods in hospital cafeterias? And, have you ever communicated with other hospital food service professionals about serving local foods? And, have you ever asked your broadline distributor/GPO to procure local foods? (See Appendix E: Survey Instrument Questionnaire.) Collectively, these questions constructed an indication of the level of interest and current action FSDs had taken regarding local food use in their operations.

In another example, for the construct of likelihood (perceived social norms and behavioral control) of serving local food to patients and employees, FSDs were asked to respond to 5-point Likert-type scale statements indicating whether they might be likely to purchase and serve local food selections. For example, they were asked if they “had interest in purchasing and serving local food to patients and employees,” if they “had the necessary resources to procure and serve local food,” and if they saw “very many internal barriers to purchasing and serving local food in [their] hospital.” Again, these collectively informed the construct of their likeliness to serve or not serve local foods. The above examples provide a flavor of the line of questioning. Please see Appendix E, survey instrument, for other items, constructs and details.

The third section of the instrument asked respondents about their familiarity with the Extension service and its programming opportunities in communities. The aim here was to obtain background data that might prove useful for Extension educators as they conduct future work with healthcare entities and within food systems. For example, the construct of “familiarity with the OSU Extension service” was developed. In this instance, FSDs were asked to respond to 5-point Likert-type scale statements indicating whether they had knowledge of Extension and its programming (Instrument item #16a). For example, they were asked if they knew that “OSU Extension offered education programs for youth (the 4-H program), for farmers (agricultural practice), for families (health, nutrition, budgeting), and for communities (strategic planning; local government training; economic development).” They were also asked if they knew that “OSU Extension offered education programs for institutions like hospitals, schools, business, government, and non-profits” (Instrument item #16b). Collectively, these questions helped paint a portrait of how familiar FSDs were with Extension. These questions were followed-up by the final construct which asked about hospital FSDs’ interest in engaging with Extension and/or the local food system in their community or region to develop potential programming for the future.

Along with the constructs, the last section of the instrument included brief demographics, again, to provide variables for comparative data on foodservice director individual attributes. Instrument items #18-22 explored personal characteristics such as age, number of years in their position, sex, and racial category. Items #1-6 asked about specific hospital demographics such as location, number of kitchens, level of staffing,

number of meals, and their foodservice contractual status. Again, these provided additional independent variables upon which correlations were constructed to further explain or describe the situation (Ary, Jacobs & Sorensen, 2010).

#### Instrument Reliability & Validity

The first two sections of the survey instrument were designed to gather information about individual hospitals (number of kitchens, staff, etc.), and to focus on *knowledge of* and *interest in* participation (attitudes and behavioral intentions) in local foods procurement by hospital FSDs. They were asked about their opinions of the opportunities or systemic barriers to purchasing local foods for use in their hospital operation. In section three, FSDs were asked about their knowledge of Extension. Lastly, they were asked to supply demographic information about individual characteristics of themselves.

An expert panel was used to review the instrument for validity. It was made up of 12 researchers and practitioners who were familiar with the local food movement and/or Extension's outreach, networking, and programming around the issue of local food use in hospitals or institutions. The expert panel included the following:

Matt Benson, PhD, USDA Farm to School

Charles Carey, Knox Community Hospital (Ohio)

Jill Clark, PhD, Ohio State University Glenn School

Gail Feenstra, PhD, UC-Davis

Julie Fox, PhD, Ohio State University Extension

Julie Jones, Director Hospital Dietetics, OSU College of Medicine

Diva Justice, Our Lady of Bellefontaine Hospital (Kentucky)

Lauren Kleinman, Healthy Food in Health Care, Healthierhospitals.org

Sharon Lezberg, PhD, University of Wisconsin

Kim Niewolny, PhD, Virginia Tech

Kim Osswalt, Miami Valley Hospital System (Premier Health Partners)

Kathleen Reed, Keiser Permanente Health Systems

The questionnaire was designed to minimize time needed for completion. Thus, participants were provided an overview of the study, the purpose, and contact information of the principle investigator in an email with a link to the online questionnaire. The introductory email also provided instructions for completion and a statement of the research protocol as required by the Institutional Review Board. The introductory email and informed consent can be found in Appendix D.

The newly constructed quantitative instrument was sent to the above-mentioned panel of subject matter experts to judge its content validity. Content validity is a determination of how well the instrument measures the variables (Ary, Jacobs & Sorensen, 2010). They also reviewed the instrument for face validity. That is, “the extent to which examinees believe the instrument is measuring what it is supposed to measure” (p. 228), or simply a measure of how well respondents will understand the survey. The instrument was revised based on the panel’s recommendations.

As noted, the majority of the questionnaire items (25 of 30 or 83.3%) of this newly proposed Ohio hospital FSD study were culled and adapted directly from two previously vetted survey instruments. Again, those showed strong internal consistency.

The five added questions on the new instrument consisted solely of demographic/quantity questions that asked for single numeric value responses. That is, they were not the complex multiple-item Likert-type scale questions which can have a significant impact on the internal reliability. Even with these strong indicators of internal consistency from the original studies, it was determined that a pilot study would be undertaken for further instrument verification.

### Pilot Study

A pilot study was designed to provide numeric indicators of consistency which would further confirm the reliability (internal consistency) and validity—does the instrument measure what it intends to measure. Pilot tests are often used in quantitative research to provide feedback from a small number of individuals to evaluate the instrument, preliminarily test the hypothesis, and “give some indication of its tenability, suggesting whether further refinement is needed” (Ary, Jacobs & Sorensen, 2010, p. 95). In this case, a small random sample of 25 names was randomly selected from the population frame. They were asked to take the survey in May, 2014 to obtain instrument evaluation data and to determine tenability. This process also provided an opportunity to compute Cronbach’s alpha coefficients for the constructs of the project. A total of 18 complete and 3 partial responses were received. Coefficients on the constructs ranged from approximately .70 to .90 indicating good reliability or internal consistency. With these pilot project results, the full study moved forward.

For the pilot test, the standard research protocols of the full survey were followed. Participants were invited to complete the survey online in the manner that would later be

used for the full study. Pilot test respondents were also asked to provide feedback via two additional questions that evaluated the clarity of the instrument. The exercise proved valuable in determining that the instrument and line of questioning resonated with the test group and that agreement was reached per the high value potential and high level of interest in the project. Their responses did not indicate that the instrument needed any significant revisions. Thus, the remaining 130 FSDs were contacted via the same protocol and asked to complete the survey.

In summary, this project undertook several steps to ensure major threats to internal validity were considered. First, the internal reliability and consistency of the Niewolny and Benson instruments were reviewed. Next, a pilot test was performed and alpha levels were reviewed on each construct. Finally, other major threats to internal validity were considered. For example, one potential threat in an opinion survey can be found in selection bias. However, results in this case will be reported for the responding group only and not generalized to a larger population. In addition, this research aim was to conduct a census of all Ohio hospital foodservice directors. Thus, selection bias is inherently mitigated.

#### Data Collection

The full quantitative survey instrument was administered to Ohio hospital FSDs via Lime Survey, a secure, online electronic survey web site. This was done for the pilot first, and then sent to the remainder (130) of the full census population frame of 155 Ohio hospital FSDs in June, 2014. Surveys are often used for collecting original data (Ary, Jacobs & Sorensen, 2010). This online survey followed methods recommended by

Dillman, Smyth & Christian (2009), as follows: An initial email letter of introduction was sent several days in advance of the survey announcing the project and asking for their assistance. The actual survey was introduced by an emailed letter (standard informed consent) stating the exact purpose of the study, the number of questions, and the approximate time it would take to complete. It also emphasized confidentiality and the voluntary aspect of the project. This second email also contained the personalized Internet link for them to take the online survey. See Appendix C for the pre-notice of the questionnaire. Appendix D provides the introductory email including the informed consent and survey link. Appendix E contains the survey instrument.

The actual construction of the online survey design was made in accordance with Dillman's suggested format. Pages were designed for gathering responses with minimum scrolling; respondents could go back or skip questions without penalty of forced response. The online system also employed auto logic to skip unrelated questions based on answers provided.

The participants were asked to complete the online questionnaire within 14 days. They received two follow-up messages (Appendix F and G) the day after the deadline and one week later to encourage response. A thank you email was auto generated for those who responded. For the final non-respondents, personalized telephone calls were made to increase the response rate (Dillman, Smyth & Christian, 2009). Data collection ended on July 14, 2014.

Including the pilot test, 155 potential Ohio hospital foodservice directors were surveyed. A total of 105 responses were received for a 67.8% rate. Of those, exactly 100

fully completed all the survey questions and five partial responses were received. Again, Cronbach's alpha coefficients were calculated for each construct in order to verify the indication of good reliability and internal consistency. Table 1 provides a summary of the coefficients.

<b>Construct</b>	<b>Description</b>	<b>Number of Items</b>	<b>Alpha</b>
Knowledge	Construct measuring actual knowledge of the local food movement.	7	.824
Interest and Action	Construct measuring actual past behavior in learning or communicating about local foods.	8	.800
	Current <i>participation</i> in purchasing and serving local foods.	10	.714
	Current <i>non-participation</i> in purchasing and serving local foods.	25	.760
Attitudes	<i>Perceived problems and benefits</i> of purchasing and serving local foods.	6	.890
		9	.745
Likelihood	Construct measuring perceived behavioral control towards purchasing and serving local foods.	6	.765
	Construct measuring perceived social norms towards purchasing and serving local foods.	6	.834
Familiarity	Construct measuring familiarity with OSU Extension.	7	.912
Participation	Construct measuring interest in participating with Extension programming around local foods.	4	.904

Table 1 - Cronbach's alpha coefficients for constructs

## Data Analysis

At the close of the online survey, data were collected via the Lime Survey download function into an Excel file. Data from both the pilot and the main survey were combined (as the questions did not change). The data were coded and exported from the Excel file into the statistical analysis software, Statistical Package for Social Sciences (SPSS 22.0.0.0, 2013). For the initial overview and summary, standard descriptive statistics were used for each item on the questionnaire (Ary, Jacobs & Sorensen, 2010; King & Minium, 2008). This provided a broad analysis of the current situation among Ohio's hospitals and their interest in and use of local foods in their operations. In addition to this, statistics were computed on the themed constructs (i.e., the foodservice directors's knowledge, past behavior, attitudes, perceived behavioral control and perceived social norms). These constructs comprise the five independent variables that frame the Theory of Reasoned Action model. That, in conjunction with the Diffusion of Innovations model, provided the theoretical underpinnings of the project.

Just as items in the survey instrument corresponded with the theoretical basis of the project, each broad research question, subsequently, was answered by one or more survey instrument items as well. Below, each of the five broad research questions is listed with a brief description of the data analysis process that was used to explore the final results.

The research questions were:

1. **How much knowledge did Ohio hospital foodservice directors (FSDs) have of the local food movement and its relationship with healthcare?** This initial research question sought to explore how much hospital FSDs have heard about the local food movement, and about their participation in activities associated with using local foods in hospitals. The Likert-type scale items that comprised this construct were analyzed using descriptive statistics (frequency distributions and percents) to give an indication of the extent that FSDs had knowledge about local foods.
2. **To what extent were FSDs currently using local foods; and were they interested in purchasing local foods in the future?** This research question was designed to determine whether or not the hospital FSDs currently used local foods in their operation. Current users were asked further questions as to the extent of their local food use as well as a ranking of the factors most important to that activity. They were also asked about participation in local food-related activities such as farm to hospital, composting, Community Supported Agriculture (CSAs), farm markets, gardens, and wellness campaigns using local foods. Lastly, they were asked about potential problems and benefits, and about how much perceived control and perceived social norms local food use was afforded. In total, these items worked together to answer this second research question. Descriptive statistics (frequency distributions and percents) were used to provide the analysis. For the Likert scale questions, the individual items were summed to provide information on the construct.

- 3. What systemic issues advanced or impeded their use of local foods, and of those, which decision factors (challenges) were perceived as the greatest barriers?** This research question sought to determine what factors were most important to consider when buying local food and in what rank were the most important items. It also sought to determine what challenges FSDs had encountered with buying local foods in an open-ended question. These responses were extracted and analyzed with descriptive statistics such as frequencies, percents, and rank-order. Examples from the open-ended responses were provided to exemplify their feelings on the challenges.
- 4. What were the relationships between demographic variables and the use of local foods?** This question was concerned with Ohio hospital FSD demographics and personal characteristics such as age, number of years in their position, sex, and racial category. It also asked about specific hospital demographics such as location, number of kitchens, level of staffing, number of meals, and their foodservice contractual status. Correlations were used to determine the relationship between demographic variables and the use of local foods.
- 5. To what extent were Ohio hospital FSDs aware of Extension and their programs on local foods; and were they interested in participating?** These last research questions aimed at determining the level of Ohio hospital FSD knowledge of the OSU Extension service and its programs around local foods. They were also designed to determine if FSDs were interested in participating in existing Extension programs that could help them address issues of using local

food in hospitals. Descriptive statistics such as frequencies and percents were utilized to answer this question.

Table 2 provides a visual representation of the questions and how they correspond with the theoretical frame, particularly with the theory of reasoned action. Research questions one through four were designed to explain if the Ohio hospital FSDs participated in local food procurement and use based on that theory. The diffusion of innovations theory was framed in the implicit data analysis that showed how the innovation (local food use) was perceived and, subsequently, how Ohio hospitals aligned with the categorical denominations of that theory. These are discussed in depth in chapters four and five.

Variable	Description	Question#
<b>Hospital Situation:</b>		
Dummy Rural	Rural location (0=No, 1=Yes)	Q1
Dummy Urban	Urban location (0=No, 1=Yes)	Q1
Dummy Suburban	Suburban location (0=No, 1=Yes)	Q1
Dummy In-house	In-house foodservice (0=No, 1=Yes)	Q2
Dummy Contracted	Contracted foodservice (0=No, 1=Yes)	Q2
Total number of kitchens	Total number of kitchens (Kitchens)	Q3
Scratch vs. Heat/Serve	Scratch cooked vs. heat and serve (percent)	Q3a
Total number of staff	Total number of staff (Staff)	Q4
Average patient meals served per day	Average number of patient meals served per day (Patient-Meals)	Q5
Average cafeteria (staff/guest) meals per day	Average number of cafeteria (staff/guest) meals served per day, Mon. – Fri. (Cafe-Meals)	Q6
<b>FSD characteristics:</b>		
Years in Position	Number of years in position (Years)	Q19
Age	Age of FSD (Years)	Q20
Sex	Sex of FSD (0=Male, 1=Female)	Q21
Race	Race of FSD, 7 categories (0=No, 1=Yes)	Q22
<b>Local Foods Knowledge, Behavior, Attitudes &amp; Perceptions</b>		
<b>Theory of Reasoned Action</b>		
Knowledge of	Construct measuring actual knowledge of the local food movement.	Q7
Past Behavior	Construct measuring actual past behavior in learning or communicating about local foods.	Q8
	<i>Skip Logic Question: User or Non-user</i>	Q9
<i>If user...</i>	Current <i>participation</i> in purchasing and serving local foods.	Q10a-10g
<i>If non-user...</i>	Current <i>non-participation</i> in purchasing and serving local foods.	Q11a-11d
Attitudes	<i>Potential problems and benefits</i> of purchasing and serving local foods.	Q12-Q13

continued

Table 2 - Summary of variables, description, and corresponding survey question

Table 2 continued

Perceived Behavioral Controls	Construct measuring perceived behavioral control towards purchasing and serving local foods.	Q14
Perceived Social Norms	Construct measuring perceived social norms towards purchasing and serving local foods.	Q15
<b>Extension Knowledge:</b>		
Extension	Construct measuring knowledge of Extension's programming around local foods	Q16a
Extension	Construct measuring interest in participating with Extension programming around local foods	Q16b

### Summary of Chapter 3

Chapter three provided detail of the research process employed in this study. It included a description of the initial literature review and informal interviews with a convenience sample of hospital foodservice directors that helped determine the scope, range, and questioning line of the issue. The chapter then provided a detailed analysis of the line of questioning and instrument development based on the theory of reasoned action and the diffusion of innovations literature. The theory of reasoned action variables were designed to help explore if and how hospital foodservice directors might use local foods in their operations. This, together with the analysis of other variables that considered the diffusion of innovations theory, will help quantify and qualify how local foods are presently being used in hospital foodservice, and how they might be used in the future. Lastly, this chapter gave a description of the population frame, sample and data collection process. It concluded with a review of the statistical process and analysis used

to interpret the findings. Appendix A provides a copy of the IRB exempt protocol approval letter for this study.

## Chapter 4: Data Analysis

### Overview

This chapter presents a detailed analysis and discussion of the findings from the quantitative research study conducted with a census (n=155) of Ohio hospital foodservice directors. This chapter is organized according to the five research questions that were designed primarily to examine potential opportunities for using local foods in Ohio hospitals. The five research questions were:

1. How much knowledge did Ohio hospital foodservice directors (FSDs) have of the local food movement and its relationship with healthcare?
2. To what extent were FSDs currently using local foods; and were they interested in purchasing local foods in the future?
3. What systemic issues advanced or impeded their use of local foods, and of those, which decision factors (challenges) were perceived as the greatest barriers?
4. What were the relationships between demographic variables and the use of local foods?
5. To what extent were Ohio hospital FSDs aware of Extension and their programs on local foods; and were they interested in participating?

This analysis reports summary findings using mostly non-parametric, descriptive statistics. It begins with a brief review of the characteristics of the responding hospital FSDs (and their facilities), and then moves into the research question analysis.

Table 3 provides a summary of the demographic characteristics of the responding (105) Ohio hospital FSDs (a 67.8% response rate). Their mean age was 46; their average tenure on the job was 8.6 years; they oversaw between 1 and 13 hospital kitchens; they were 50.5% female; and nearly 94% were white, with approximately 6% Hispanic/Latino, Black/African American, or other.

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percent (%)</b>
Sex		
Male	50	50.5
Female	49	49.5
Race:		
American Indian or Alaska Native	0	0
Asian	0	0
Black or African American	1	1.0
Hispanic / Latino	3	3.1
Native Hawaiian or other Pacific Islander	0	0
White	92	93.9
Other	2	2.0
Age	Mean = 46.0 years	
Length of Service	Mean = 8.6 years	
# Kitchens overseen	Mean = 1.9	

Table 3 - Demographic characteristics of foodservice directors

The hospitals in the study varied greatly in terms of staffing and meal production/output. Table 4 provides a summary of both demographic and foodservice characteristics of the hospitals. In brief, 54% identified as urban or suburban; and, 35% of hospitals contracted out their foodservice. This follows findings from the literature which

indicated fewer hospitals are contracting their operations compared to 10 years ago. Their average staff size (full time equivalent, FTE) was 62 persons. And on average, they served 490 patient meals per day, plus an additional 1,702 cafeteria (staff and visitor) meals per day throughout the week (Monday – Friday). Of those meals, they reported that only 31% are cooked from scratch, versus “heat and serve” which comprised almost 70% of responses.

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percent (%)</b>
Location (This item totals 123 as respondents could choose more than one answer.)		
Rural	57	46.3
Urban	38	30.9
Suburban	28	22.8
Foodservice		
Contracted out	37	35.2
In-House	68	64.8
	Number	
Type of cooking (percent)		
Scratch cooked	31%	
Heat and serve cooked	69%	
FTE staff		
Range	3 to 800	
Average number	61.5	
Mode	Multiple: 6, 9, 10, 25, 35	
Average # meals / day		
Patient	490 (Multiple modes: 45, 100, 300)	
Staff/Visitor (Monday-Friday)	1,702 (Mode = 250)	

Table 4 - Hospital characteristics

Hospitals with contracted foodservice were asked to name their foodservice vendor. Hospitals with non-contracted foodservice were asked to list their three major suppliers. Results indicated a high concentration on a limited number of large, national

broadline food distribution suppliers and group purchasing organizations (GPOs). A quantitative analysis of these responses is detailed in Table 5.

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percent (%)</b>
Contracted Hospitals: Major Vendors:		
Sodexo	14	37.8
Aramark	9	24.3
Morrison	4	10.8
US Foods/Sysco	4	10.8
Other	6	16.2
Total: (approximated due to rounding)	37	100%
Non-Contracted Hospitals: Major suppliers/GPO		
US Foods/Sysco-merged 2013	37	30.1
Gordon Food Service	31	25.2
Novation	14	11.4
Aramark	9	7.3
Other	14	11.4
Total: (approximated due to rounding)	123	100%

Table 5 - Food service vendors and suppliers

The findings reported in Table 5 provide an overview of the types and size of hospital foodservice, the size and production of their operations, where they are located, and the demographic characteristics of their directors. The next section addresses the five research questions concerning use of local foods in hospitals.

#### Research Question Analysis

##### Research Question #1

**Research Question 1: How much knowledge did Ohio hospital foodservice directors (FSDs) have of the local food movement and its relationship with healthcare?**

This initial research question sought to explore how much Ohio hospital FSDs knew about the local food movement. Their *level of knowledge* is the first construct of the theory of reasoned action. This indication of the extent of FSDs knowledge about local foods provides baseline information that can be used to determine an entry point into future discussions and/or potential programming efforts and collaborations. Table 6 provides summary data. For this item, hospital FSDs provided ratings based on 5-point Likert-type scales (1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree). These Likert-type items were then reviewed in total to gain an understanding of the construct of this factor that hospital FSDs considered when making food purchasing decisions. The first variable of knowledge (“I have been hearing about local foods”) was the highest ranked factor with nearly 78% agreeing or strongly agreeing. Knowledge of government programs to help hospitals and the USDA’s support of local food use in hospitals were the least known with only 19.5% and 15.6% respectively choosing the top two agreement categories. The least known variables also had 50.5% and 57.3% respectively choosing “neutral” indicating neither agreement nor disagreement. This could be an indication that the respondents were unsure about how to respond or the interpretation is not clear.

<b>Variable</b>		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
I have been hearing more about local foods (in general) in the past few years.	Percent n=104	0.0%	5.8%	16.3%	25.0%	52.9%
The use of local foods has been increasing among hospitals in the U.S.	Percent n=102	2.0%	9.8%	33.3%	29.4%	25.5%
I know how to find local foods to serve in my hospital.	Percent n=103	7.8%	18.4%	28.2%	26.2%	19.4%
I know how to purchase local foods to serve in my hospital.	Percent n=102	7.8%	21.6%	25.5%	22.5%	22.5%
There are government programs to help institutions learn how to buy local foods.	Percent n=103	10.7%	19.4%	50.5%	11.7%	7.8%
The USDA “Know Your Farmer, Know Your Food” program supports hospital participation in local foods procurement.	Percent n=103	8.7%	18.4%	57.3%	10.7%	4.9%
		Note: total possible n=105				

Table 6 - Level of knowledge of local foods

Respondents also provided information about their participation in activities associated with gaining more information on using local foods in hospitals. This yielded an additional level of information related to their knowledge of the issue. This specific construct measured actual past behavior in learning or communicating about local foods—thus providing an immediate recent indication of their knowledge (by learning their interest and action). For this question, FSDs responded to statements indicating

“yes,” “no,” or “I plan to in the next 12 months.” The first item indicates that only 26% have *not* sought information on using local foods in their operations. The remaining items are split roughly 55% to 45% indicating that just over half of the respondents have done some level of additional investigation on the issue. Table 7 provides summary data of their potential interest and action around local food. Just over 70% of respondents indicated that they had sought out information about using local foods in their hospital cafeterias or planned to in the next 12 months. But only half (approximately) had communicated with other hospitals about local foods, asked their broadline distributors to procure them, asked their administration to support local, and/or assisted with planting a hospital garden or farmers market at their hospital.

<b>Variable</b>	<b>Yes (%)</b>	<b>I plan to within 12 months (%)</b>	<b>No (%)</b>
Have you ever sought out information about using local foods in hospital cafeterias?	55.6	14.8	25.9
Have you ever communicated with other hospital food service professionals about serving local foods?	44.4	8.3	42.6
Have you ever asked your broadline distributor/GPO to procure local foods?	42.6	7.4	45.4
Have you ever asked your hospital administration to support local food use?	39.8	11.1	44.4
Have you ever helped arrange a farmers market or garden at your hospital?	45.4	6.5	43.5

Table 7 - Potential interest and action around local food.

Note: n=105 for each response. Totals do not equal 100% due to missing responses.

## Research Question #2

**Research Question 2: To what extent were FSDs currently using local foods; and were they interested in purchasing local foods in the future?**

This question was designed to explore the current activity and behavioral intentions of hospital foodservice directors towards local food use. Past behavior is the second construct of the Theory of Reasoned Action. Here, hospital FSDs responded to a dichotomous categorical variable that provided an indication of whether or not they were currently used local foods in their operation. Current use is an indicator of the most immediate past behavior. So for those who indicated “yes,” a skip-logic program in Lime Survey moved them to a questioning series that probed the extent of their local food use as well as a ranking of the factors most important to that activity. FSDs indicated that 57.7% utilized local foods in their hospitals, while 42.3% did not. Table 8 shows the results.

<b>Variable</b>	<b>Frequency (n)</b>	<b>Percent (%)</b>
Local food user:		
No	44	42.3
Yes	60	57.7

Table 8 - Current local food users

Continuing in this construct, hospital FSDs provided data about their participation in local food-related activities such as farm to hospital, composting, Community Supported Agriculture (CSAs), farm markets, gardens, and wellness campaigns using local foods. A prior question also provided insight into past behavior and interest by asking to what extent, if any, they were interested in incorporating local foods into their

system. Again, FSDs responded to statements by indicating “yes,” “no,” or “I plan to in the next 12 months.” Please note, this question went only to the 60 respondents who indicated that they were currently a local food user. Thus, the response frequency (n) does not reflect responses from the full 155 person frame. The percentages are calculated on the response (n=60). Table 9 provides a summary of the responses regarding their interest and action around local food. Just over 71% of respondents had conducted and/or planned healthy eating/wellness education using local foods at their operations. But only 30% had conducted or planned a Community Supported Agriculture program.

<b>Variable</b>	<b>Yes (%)</b>	<b>I plan to within 12 months (%)</b>	<b>No (%)</b>	<b>Frequency (n)</b>
Farm market at hospital	34.4	6.9	58.6	58
CSA (Community Supported Agriculture) program at hospital	16.9	13.5	69.5	59
Gardens at hospital (employee or patient)	22.8	12.3	64.9	57
Composting food waste	22.0	15.3	62.7	59
Healthy eating/wellness education using local foods	61.0	10.1	28.8	59
(*totals do not = 100% due to rounding)				

Table 9 - Potential interest and action around local food (*current local food users*)

To more fully determine interest and potential for local food use, the final three constructs of the theory of reasoned action—attitudes, perceived behavioral controls, and perceived social norms—were considered. Here, hospital FSDs responded to inquiries that measured their attitudes about potential problems and benefits of using local foods. They also provided data regarding their perceived behavioral controls and the perceived social norms of using local foods. In total, these worked together to answer the second

research question. Descriptive statistics provide the analysis in the tables. For this query, 5-point Likert-type scales were employed in which 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The Likert-type items were then considered together to gain an understanding of this factor (interest and potential) that hospital FSDs deliberated when making food purchasing decisions. Table 10 provides a summary of the responses of Hospital FSDs' attitudes as measured by inquiring about potential benefits of using local foods. The top ranked item recognized that hospitals could support their local economy and help create jobs by using local foods with 85.1% agreeing or strongly agreeing. Healthier diets for patients and employees, and enhanced hospital public relations also ranked highly.

Variable		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Hospitals can support their local economy and help create jobs.	Percent n=101	2.0%	1.0%	11.9%	36.6%	48.5%
Patients and employees can have healthier diets.	Percent n=101	4.0%	4.0%	18.8%	37.6%	35.6%
The hospital's public relations are enhanced.	Percent n=99	1.0%	4.0%	23.2%	40.4%	31.3%
Rates of overweight and obesity can be reduced via heightened interest in healthy food.	Percent n=101	4.0%	8.9%	19.8%	32.7%	34.7%
Hospitals know more about the source and production of their foods.	Percent n=101	2.0%	11.9%	21.8%	40.6%	23.8%
Patients and employees more likely to choose healthy options when they know it's local.	Percent n=100	4.0%	16.0%	36.0%	22.0%	22.0%
		Note: total possible n=105				

Table 10 - Attitudes as measured by inquiring about potential benefits

Table 11 provides a summary of the responses of Hospital FSDs' attitudes as measured by inquiring about potential problems of using local foods. The greatest perceived problem was seasonal availability issues with 63% indicating agree or strongly agree. Language in food service contracts that limited purchasing of local foods, and the possibility that local foods have little or no support from hospital administration did not seem to be problematic with only 22% and 23% agreeing or strongly agreeing.

Variable		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The seasonal availability issues.	Percent n=100	3.0%	11.0%	23.0%	35.0%	28.0%
Local foods cost too much.	Percent n=100	3.0%	8.0%	40.0%	37.0%	12.0%
There is an inadequate supply / volume.	Percent n=100	5.0%	11.0%	38.0%	32.0%	14.0%
Delivery issues: timing, crate/pallet/box size.	Percent n=99	8.1%	14.1%	39.4%	24.2%	14.1%
Ordering procedures are complicated.	Percent n=98	8.2%	14.3%	44.9%	18.4%	14.3%
Local foods have little or no support from hospital administration.	Percent n=99	19.2%	20.2%	37.4%	18.2%	5.1%
Language in my food service contract limits purchasing of local foods.	Percent n=99	24.2%	21.2%	32.3%	13.1%	9.1%
		Note: total possible n=105				

Table 11 - Attitudes as measured by inquiring about potential problems

Table 12 provides a summary of the responses of Hospital FSDs' perceived behavioral control over using local foods. Having interest in purchasing and serving local food ranked highest in the responses with nearly 72% agreeing or strongly agreeing. Respondents also believed they could help their hospital develop exciting healthy eating programs using local foods with just over 59% in agreement.

Variable		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have interest in purchasing and serving local food.	Percent n=96	0.0%	2.1%	26.0%	37.5%	34.4%
I can help my hospital develop exciting healthy eating programs using local foods.	Percent n=98	0.0%	7.1%	33.7%	40.8%	18.4%
If I serve local food in our hospital, the menu items would be successful.	Percent n=97	0.0%	10.3%	42.3%	33.0%	14.4%
I have the necessary resources to procure and serve local food.	Percent n=98	2.0%	17.3%	46.9%	22.4%	11.2%
I don't have many internal barriers to purchasing and serving local food in our hospital.	Percent n=97	10.3%	19.6%	37.1%	22.7%	10.3%
I don't have many external barriers to purchasing and serving local food in our hospital.	Percent n=98	6.1%	20.4%	45.9%	18.4%	9.2%
		Note: total possible n=105				

Table 12 - Perceived behavioral controls

Table 13 provides a summary of the responses of Hospital FSDs' perceived social norms of using local foods in their operations. Overall, these variables all ranked lower than the perceived behavioral controls. FSDs did rank believing that they will be positively acknowledged for buying locally grown foods as the highest agreement with nearly 62% indicating agree or strongly agree.

Variable		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I believe I will be positively acknowledged for buying locally grown foods.	Percent n=99	3.0%	8.1%	27.3%	40.4%	21.2%
My hospital administration values purchasing locally grown foods.	Percent n=98	7.1%	10.2%	39.8%	29.6%	13.3%
My hospital administration influences my decision to purchase locally grown foods.	Percent n=99	15.2%	22.2%	35.4%	21.2%	6.1%
Other hospital foodservice colleagues expect me to buy locally grown foods.	Percent n=98	10.2%	33.7%	37.8%	13.3%	5.1%
Patients and employees expect me to buy locally grown foods.	Percent n=97	8.2%	30.9%	46.4%	10.3%	4.1%
		Note: total possible n=105				

Table 13 - Perceived social norms

#### Non-Local Food Users:

As noted, approximately 42% (n=44) of respondents were not currently using local foods in their hospital foodservice operation. These FSDs provided input (via a skip-logic program in Lime Survey that moved them to a separate questioning series) that explained the extent of their *potential* interest in local food use as well as a ranking of the factors that would be most important to adopting the local food practice. They also provided information as to what might increase their likeliness to purchase local foods.

Finally, they answered whether they might be interested in participating in local food-related activities such as farm to hospital, composting, Community Supported Agriculture (CSAs), farm markets, gardens, and wellness campaigns using local foods.

The non-local food users provided information on which factors were most important to consider when buying local food and in what rank were the most important items. The hospital FSDs provided ratings based on a 5-point Likert-type scale of 1 = Not Important, to 5 = Very Important. Their answers helped gain an understanding of the construct of the factors that hospital FSDs considered when making food purchasing decisions. Table 14 provides a summary of their responses. The variable of quality was ranked as the most important factor with just over 95% indicating agreement. Price, delivery, availability, and liability insurance all received rankings at or near “very important” as well. Grower/producer liability insurance surpassed 83% agreement. The attributes of pre-processing and/or organic did not rate as important.

Variable		1 = Not Important	2	3 = Neutral	4	5 = Very Important
Quality	Percent n=42	0.0%	0.0%	4.8%	11.9%	83.3%
Price	Percent n=42	0.0%	0.0%	7.1%	26.2%	66.7%
Availability	Percent n=42	0.0%	0.0%	9.5%	28.6%	61.9%
Delivery	Percent n=42	0.0%	0.0%	11.9%	21.4%	66.7%
Grower/producer liability insurance	Percent n=42	0.0%	0.0%	16.7%	14.3%	69.0%
Quantity/volume	Percent n=41	0.0%	0.0%	22.0%	31.7%	46.3%
Attributes such as organic, natural, or antibiotic-free	Percent n=42	4.8%	19.0%	28.6%	28.6%	19.0%
Pre-processing: chopped (size) or portion (weight)	Percent n=42	16.7%	7.1%	35.7%	23.8%	16.7%
Note: total possible n=44						

Table 14 - Factors non-users rank as most important when considering local foods

Current non-local food using hospital FSDs provided additional information on what might increase their *likeliness to purchase* local foods. They indicated what was most important when considering buying local foods based on a 5-point Likert-type scale. Table 15 shows that 75% of FSDs indicated agreement that they would be more likely to purchase and serve local foods if their broadline food distributor offered more local items; and they would buy more if they had a guidebook on how to source and purchase local foods. Approximately 66% said they would be more likely to purchase local foods if they had better food safety information. Only 17% agreed that having different food

preparation facilities and/or equipment would increase their likeliness of using local foods.

<b>Variable</b> <i>I would be more likely to purchase and use local foods if...</i>		<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>
...my broadline/GPO offered more local foods.	Percent n=40	0.0%	7.5%	17.5%	37.5%	37.5%
I had a guidebook on how to source and purchase local foods.	Percent n=40	0.0%	10.0%	15.0%	37.5%	37.5%
I had better food safety information about local foods.	Percent n=41	0.0%	12.2%	22.0%	31.7%	34.1%
I had more info about purchasing experience of other hospitals.	Percent n=41	0.0%	17.1%	24.4%	26.8%	31.7%
...there were more interest from administration.	Percent n=42	2.4%	11.9%	28.6%	26.2%	31.0%
...there were more interest from employees.	Percent n=41	4.9%	14.6%	24.4%	36.6%	19.5%
...there were more interest from patients.	Percent n=41	7.3%	22.0%	19.5%	26.8%	24.4%
I had additional or different food preparation facilities.	Percent n=41	14.6%	26.8%	41.5%	7.3%	9.8%
Note: total possible n=44						

Table 15 - Likeliness factors non-users rank as most important when considering buying local foods

FSDs reported that they *might be interested* in participating in local food-related activities such as farm to hospital, composting, Community Supported Agriculture (CSAs), farm markets, gardens, and wellness campaigns using local foods. FSDs responded by indicating “yes,” “no,” or “Perhaps in the next 12 months” to a number of interest items. This question went only to respondents (44) who indicated they were *not* currently local food users. As seen in Table 16, nearly 86% of the respondents said they did or planned to encourage healthy eating and wellness education programs that used local foods. Only 40% were doing or planning gardens. Interestingly, 38% were interested in composting food waste in the next 12 months.

<b>Variable</b>	<b>Yes (%)</b>	<b>Perhaps in the next 12 months (%)</b>	<b>No (%)</b>	<b>Frequency (n)</b>
Farm market at hospital	29.3	29.3	41.4	41
CSA (Community Supported Agriculture) program at hospital	25.0	27.5	47.5	40
Gardens at hospital (employee or patient)	21.4	19.0	59.5	42
Composting food waste	16.7	38.1	45.2	42
Healthy eating/wellness education using local foods	47.6	38.1	14.3	42

Table 16 - Potential interest in participating in local food-related activities (*non local food users*)

Note: Totals do not = 100% due to rounding.

### Research Question #3

**Research Question 3: What systemic issues advanced or impeded their use of local foods, and of those, which decision factors (challenges) were perceived as the greatest barriers?**

Foodservice directors who currently used local foods (n=60) provided input on what factors were most important to consider when buying local food and in what rank were those most important items. Table 17 provides an overview of their responses based on their rankings using a 5-point Likert-type scale. The responses indicate that hospital FSDs considered quality as the most important item with 100% giving it a “4” or “5” ranking. This was followed closely by availability and delivery. As with the non-local food using FSDs, attributes such as organic or pre-processing did not rank as highly. The variable “quality” was ranked as most important by non-users as well. But the attributes of pre-processing and organic, natural, or antibiotic-free did not rank as important among users or non-users.

<b>Variable</b>		<b>1 = Not Important</b>	<b>2</b>	<b>3 = Neutral</b>	<b>4</b>	<b>5 = Very Important</b>
Quality	Percent	0.0%	0.0%	0.0%	18.6%	81.4%
Availability	Percent	0.0%	0.0%	6.8%	39.0%	54.2%
Delivery	Percent	0.0%	1.7%	8.5%	35.6%	54.2%
Grower/producer liability insurance	Percent	3.4%	1.7%	8.5%	18.6%	67.8%
Price	Percent	0.0%	1.7%	13.6%	37.3%	47.5%
Quantity/volume	Percent	0.0%	1.7%	13.6%	30.5%	54.2%
Attributes such as organic, natural, or antibiotic-free	Percent	5.1%	10.2%	35.6%	22.0%	27.1%
Pre-processing: chopped (size) or portion (weight)	Percent	8.5%	8.5%	33.9%	22.0%	27.1%
						Total n=60

Table 17 - Factors current users find most important to consider when buying local foods

Hospital FSDs who currently used local foods were also asked about challenges they had encountered with buying local foods in an open-ended question. A total of 58 persons responded with 31 (53.4%) saying “yes” they have had issues. Challenges included:

Obtaining the quality that customers expect

Obtaining the quantity we need at the time we need the product

Space for a garden or composting

Grower/Producer liability Insurance

Concern with food safety

Delivery and shipment sizes

Locked into contract with a broadline supplier

Some typical excerpts from these responses were extracted and are quoted here. Two respondents specified details on the liability issue. The first said, *“To take advantage of truly local and/or small farms means potential liability re: sanitation. Have tried to keep majority of produce w/ my local produce company as a compromise.”* The second added, *“Our health inspector recommended no farmers market food unless proof on insurance was obtainable.”*

Conversely, liability insurance, quality and other attributes may not be the only issues with purchasing locally grown foods. One respondent said buying local is not always clear. He/she provided a counter example noting:

*“There is a large grey area that isn't being considered when buying local.*

*For example, should I purchase Ohio tomatoes that need constant*

*irrigation and fertilization to keep growing, and end up getting a final yield of 1000#/acre at \$25/case because they mainly sell to retail markets first. Or should I buy California tomatoes, where the farm is collecting rain water, and recycling irrigation, turning their greenhouse gas emissions into fuel for the harvesting/processing and the final yield is 2500#/acre which I can get for \$15/ case, as they are specifically grown for food service?”*

Another respondent was hopeful that this hospital FSD survey might provide a means to increase his/her purchases, saying:

*“There are a number of challenges to buying local. traceability and liability insurance, the amount of the items available, price of the items.... We are committed to buying local, and increasing the amount of items used, hopefully this process will help us drive those amounts.”*

Another respondent mentioned the proliferation of field corn and soybeans, but the lack of crop diversity. [There is] *“no a good source of fruits and vegetables. I can get apples in the fall and we feature those. We need more growers and coop organization so we have better access to the volume we need.”*

#### Research Question #4

#### **Research Question 4: What were the relationships between demographic variables and the use of local foods?**

The Ohio hospital FSDs provided information on their demographics and personal characteristics such as age, number of years in their position, sex, and racial category.

They also supplied information about specific hospital demographics such as location, number of kitchens, level of staffing, number of meals, and their foodservice contractual status. Statistical tests were used to determine potential relationships or associations among demographic variables and the use of local food.

The key dependent variable in this overall study was determining whether or not Ohio hospital foodservice directors used local foods. It also explored whether non-users might be interested in beginning to use local foods in the future. A brief written analysis on relationships of interest that were discovered is noted here. Again, the independent variables were coded and compared with the dependent variable to determine associations or relationships. Statistical tests for the data analysis were determined based on the number and type of variables.

**Hospital location:** This question compared the hospital's location (a categorical independent variable with three levels: rural, suburban, urban) and local food use (a dichotomous categorical variable with yes/no). A cross-tabulation table was developed to look at associations among variables. Though 104 FSDs responded as to whether their hospital was rural, suburban, or urban, 19 marked a combination of "rural" plus "suburban" and/or "urban" (indicating that they had oversight of multiple hospital locations) giving a total n=124 for the item. Of those 124 locations, 46.8% (n=58) were identified as "rural." Of those rural, over half (53.4%) said they were currently local food users. Just over 22% (n=28) of the total listed "suburban" for their location, with 71.4% indicating current local food use therein. Thirty-eight hospitals (30.6%) were listed as "urban" with a

73.7% “yes” response for local food use. In total, 63.7% of all 124 hospital locations indicated some level of local food use. Note, this is slightly higher (+6%) than the 57.7% of total local food use indicated in Table 8. This is because 18 of the 19 persons who indicated multiple locations in this item were all local food *users*, thus skewing the data upward. A Cramer’s V correlation coefficient was used to measure potential association between the independent variable (location) and the dependent variable (local food user). Table 18 shows only a low association (Davis, 1971) indicating that knowing the hospital location does not provide confidence in determining their local food use.

<b>Correlation Table</b>			
		<b>Local food user</b>	<b>Approx. Significance</b>
Location: Rural, suburban, urban	Cramer’s V n=124	.201	.082
Hospital size: Average cafe meals/M–F	Point-Biserial n=102	.147	.141
Hospital size: Average patient meals/day	Point-Biserial n=102	.229*	.020
Hospital size: FTE staff	Point-Biserial n=102	.238*	.016
FSD age	Pearson Correlation n=94	-.125	.231
FSD years in position	Pearson Correlation n=100	-.043	.671
FSD race: White vs non-white	Phi Coefficient n=104	.124	.450

Table 18 - Correlation Table: Demographic variables

Note: \*Correlations are significant at the 0.05 level (2-tailed).

Table 19 provides the complete descriptions of potential associations by Davis.

	<b>Coefficient Description</b>
.70 or higher	Very strong association
.50 to .69	Substantial association
.30 to .49	Moderate association
.10 to .29	Low association
.01 to .09	Negligible association

Table 19 - Davis convention for interpreting measures of associations

Table 18 also lists coefficients of association among a number of other variables.

These include:

**Hospital size (# meals served):** As the number of patient and cafeteria meals served (continuous independent variables) increased, a slightly positive correlation was seen in the use of local foods. In other words, larger hospitals that served more meals were more likely to use local foods. A Point-biserial correlation coefficient test was used to determine significance for each variable (patient meals and cafeteria meals). The dependent variable (local food use) was coded 1=yes and 0=no. The average café meals per day correlation was not significant ( $p=.141$ ); however, the average patient meals per day was ( $p=.020$ ). The correlation coefficients were .147 for the café meals per day; and .229 for the average patient meals per day. Both merit only a low association according to Davis conventions (1971).

**Hospital size (# FTE staff):** As the number of hospital staff (continuous independent variable) increased, again, a slightly positive correlation was seen in the use of local foods. In other words, hospitals with larger staffs were more likely to use local foods. Again, the Point-biserial correlation coefficient test was used to determine significance. The dependent variable (local food use) was coded 1=yes and 0=no. Table 18 shows the correlation was significant at  $p=.016$ ; however, the coefficient itself was .238, a low association according to Davis conventions (1971).

**Hospital FSD age:** As the FSD age increases, the Pearson's  $-.125$  correlation coefficient indicates that local food use slightly decreases. However, the significance level (.231) indicates the age variable increase does not significantly relate to a local food use decrease.

**Hospital FSD years in position:** Similarly to the age variable, as the FSD's number of years in their position increases, the Pearson's  $-.043$  correlation coefficient indicates that local food use slightly decreases but at a negligible amount. Again, the significance level (.671) indicates the "years in position" variable increase does not significantly relate to a local food use decrease.

**Hospital FSD race:** Because of heavy skewing toward white, the data were coded white=1 and non-white=0 in order to see what associations might exist between race (defined white/non-white) and local food use. This coding created a 2x2 table. Data from a cross-tabulation table from this question indicated that 92 of the respondents were white (88.5%), 8 were non-white (7.7%) and 4 (3.8%) did

not respond. Of the whites, approximately 60% were local food users. The non-white responders were almost exactly the opposite with only 37.5% indicating they also used local foods. (The non-respondents were evenly split.) A Phi coefficient statistic was utilized to examine nominal dichotomous variable association. It showed a .124 correlation coefficient which was not strong.

**Hospital FSD sex:** The other major demographic variable, FSD sex, was nearly evenly divided male at 50.5% and female at 49.5%. Thus, there was no variation to delineate any association of local food user versus non-user by sex.

#### Research Question #5

#### **Research Question 5: To what extent were Ohio hospital FSDs aware of Extension and their programs on local foods; and were they interested in participating?**

Ohio hospital FSD provided information on their level of knowledge of the OSU Extension service. Table 20 shows that they had some knowledge of the four specific programmatic areas (Agriculture, 4-H Youth Development, Family & Consumer Science, and Community Development), with the 4-H Youth receiving the highest acknowledgement at 46.3% indicating familiarity. The least known variable was that OSU Extension can help hospitals source and purchase locally grown foods with only 6.1% being familiar or very familiar. These responses provide raw data on familiarity with Extension so that potential action may be taken in the future around partnering on new local food programming at hospitals.

<b>Variable</b> <i>OSU Extension offers education programs for...</i>		<b>1 = Not familiar at all</b>	<b>2</b>	<b>3 = Neutral</b>	<b>4</b>	<b>5 = Very familiar</b>
...youth (the 4-H program)	Percent n=95	24.2%	15.8%	13.7%	26.3%	20.0%
...families (health, nutrition, budgeting)	Percent n=97	22.7%	20.6%	21.6%	22.7%	12.4%
OSU Extension has an office in every Ohio county (88 in total).	Percent n=98	28.6%	23.5%	17.3%	13.3%	17.3%
...farmers (agricultural practice)	Percent n=96	29.2%	24.0%	17.7%	20.8%	8.3%
...institutions (hospitals, schools, business, government, non-profits)	Percent n=97	29.9%	22.7%	22.7%	17.5%	7.2%
...communities (strategic planning; local government training; economic development)	Percent n=97	30.9%	21.6%	32.0%	10.3%	5.2%
OSU Extension can help hospitals source and purchase more locally grown foods.	Percent n=98	40.8%	32.7%	20.4%	5.1%	1.0%

Table 20 - Ohio hospital FSD knowledge of the OSU Extension service

Table 21 provides responses from FSDs regarding their interest in participating in existing Extension programs that could help them address issues of using local food in their operations. These responses provide insight as to what types of specific programs they might have interest. Just over half of all respondents indicated they were interested or very interested in having Extension help them find and purchase local foods from local farmers, develop signage for local food marketing materials in their cafeterias, and assist

in developing employee wellness programs featuring local foods. It is noteworthy that just over one-fourth (ranging from 25.3% to 30.3%) of the respondents selected “neutral” indicating neither interest nor disinterest.

<b>Variable</b> <i>How interested might you be in participating in an Extension program that would help you...</i>		<b>1 = Not interested</b>	<b>2</b>	<b>3 = Neutral</b>	<b>4</b>	<b>5 = Very interested</b>
...find and purchase local foods from local farmers.	Percent n=99	6.1%	9.1%	30.3%	31.3%	23.2%
...design signage or local food marketing materials for use in your cafeterias.	Percent n=99	9.1%	12.1%	25.3%	33.3%	20.2%
...develop employee wellness programs featuring local foods.	Percent n=99	10.1%	9.1%	30.3%	31.3%	19.2%
...partner with another hospital foodservice director who is experienced with local food.	Percent n=98	10.2%	19.4%	25.5%	26.5%	18.4%

Table 21 - FSDs interested in participating in existing Extension programs

#### Summary of Chapter 4

In summary, this chapter presented a detailed analysis and discussion of the research project findings. The census (n=155) of Ohio hospital foodservice directors (FSDs) returned a 67.8% response rate that provided insight to the five research questions that were designed to examine potential opportunities for using local foods in hospitals. Chapter 5 will look at how these responses fit within the theory of reasoned action and the diffusion of innovations theory to explain or not explain the behavior of the hospital FSDs.

## Chapter 5: Summary, Discussion, Recommendations, and Conclusions

### Overview

The purpose of this study was to understand, measure, catalogue, and evaluate what factors (independent variables) contributed to hospital foodservice directors (FSDs) purchasing or not purchasing local food for use in their operations. A census of Ohio hospital FSDs (n = 155) was undertaken in which 67.8% of the population frame responded. This provided a rich data source from which numerous findings, implications, and opportunities for additional research and programming were discovered. Overall, Ohio hospital FSDs have a definite interest in adopting or increasing the use of local foods in their operations; however, there are several areas of concern that may need to be addressed before wide-scale increases are seen. The data also indicate that there are opportunities for Extension to engage in local food programming with hospitals, and perhaps within the industrial sector that includes other health care operations as well. This is based on findings from the literature review that were outlined in Chapter 2. If these efforts ensue, there may be positive benefits for hospital employees and patients, as well as for farmers and the community.

### Summary and Discussion of Findings

The broad research questions in this study asked about how much knowledge Ohio hospital FSDs had of the local food movement, to what extent they currently used

local foods (or had interest in purchasing local foods in the future), what systemic issues advanced or impeded their use of local foods, and what relationships existed between demographic variables and the use of local foods in their operations. The final question explored to what extent Ohio hospital FSDs had awareness of Extension, Extension's programs on local foods, and potential FSD interest in participating. Findings for each question will be discussed individually.

**Research Question 1: How much knowledge did Ohio hospital foodservice directors (FSDs) have of the local food movement and its relationship with healthcare?**

*Summary:* Overall, 77.9% of hospital FSDs "agreed" or "strongly agreed" that they have been hearing more about local foods in recent years. Just over half (54.9%) felt the use of local foods has been increasing among U.S. hospitals. However, only 45.6% indicated that they knew how to find and purchase local foods to serve in their hospital(s). Knowledge of government programs to help hospitals and the USDA's support of local food use in hospitals were the least known with only 19.5% and 15.6% respectively.

*Discussion:* Findings suggested that though a three-quarter majority of the population had knowledge of and interest in the local food movement, only slightly more than half were participating in it. This was consistent with anecdotal evidence from hospital internal literature (newsletters, communications, web sites) that provided numerous examples of local food connections and programs at hospitals across the U.S., but which often did not detail the extent or reach of the local food programming or use. The

academic literature however, was limited. There has been only one other large-scale study of hospital FSD knowledge of the local food movement and its relationship with healthcare; thus, the data from this study may contribute valuable information for use in the field.

**Research Question 2: To what extent were FSDs currently using local foods; and were they interested in purchasing local foods in the future?**

*Summary:* Only 57.7% were currently using any quantity of local foods in their operations. Even fewer were implementing *local food-related* programs (hospital gardens, know your farmer, nutrition education, on-site farmers markets, composting, etc.). However, FSDs reported that they *might be interested* in participating in local food-related activities such as farm to hospital, composting, community supported agriculture (CSAs), farm markets, gardens, and wellness campaigns using local foods. In fact, nearly 86% said they did or planned to encourage healthy eating and wellness education programs that used local foods. Only 40% were doing or planning gardens. In addition, 38% were interested in composting food waste in the next 12 months.

*Discussion:* Anecdotal evidence from hospital newsletters provided some examples of local food use; however, few studies were available in the literature to give a baseline. Of those that were available, most were very small and geographically concentrated. For example, the Fletcher Allen Health Care in Burlington, Vermont (Bellows et al., 2013; Lee, 2013) has instituted programs to provide nutritious, local foods to patients and employees recognizing that “fresh food is vital to patients’ health and aids in the healing process” (p. 1). But this was only one hospital. Worley & Strobbe

(2012), described how one other hospital in Iowa, Cass County Memorial, has been sourcing local food since 2005. They believe “purchasing local produce promotes more vegetable intake” by both patients and employees (p. 28). And on the east coast, the Maryland Hospitals for a Healthy Environment (MD H2E) launched a “Local Foods to Local Hospitals” project in September 2007 to encourage healthier local foods in hospitals and to support local farmers (Mitchell, 2009). This early initiative was one of the largest discovered. It netted a measurable shift as nearly 20 hospitals began or increased their local food purchases. Again, findings from this study may indicate an opportunity exists for engaging FSDs who were interested in purchasing (or increasing the use of) local foods.

**Research Question 3: What systemic issues advanced or impeded their use of local foods, and of those, which decision factors (challenges) were perceived as the greatest barriers?**

*Summary:* The major reasons for *not* incorporating any (or additional) local foods into operations were based on supply availability (lacking significant quantity that could be delivered when needed), and potential safety concerns (lacking liability insurance, washing, refrigerated delivery). Of those FSDs who were not currently using local foods, 75% said they would be more likely to purchase and serve local foods if their broadline food distributor offered more local items; and they would buy more if they had a guidebook on how to source and purchase local foods. Approximately 66% said they would be more likely to purchase local foods if they had better food safety information.

Only 17% agreed that having different food preparation facilities and/or equipment would increase their likeliness of using local foods.

*Discussion:* It is noteworthy that some of the concerns expressed in these findings have been addressed already by a few hospital operations in other parts of the country. For example, the Healthy Food in Health Care program provides guidance and expertise to help hospitals develop more sustainable food purchasing systems, including local foods (HCWH, 2013). Other initiatives including the Healthier Hospitals Initiative (HHI), Balanced Menus, Local & Sustainable Purchasing, and Healthy Beverages (Bellows et al., 2013) are also working to remove barriers to participation. More recently, broadline distributors or GPOs (Group Purchasing Organizations) who procure, aggregate, warehouse, and often process foods for hospitals (Sanger & Zenz, 2004; Steven & Pirog, n.d.) are beginning to offer hospitals some local food options.

In addition, some hospital administrations have begun to increase local food purchasing by writing policies into their Food Service Department's plans (Worley & Strobbe, 2012). Lee (2013) notes that Hospital Sisters Health System, a 13-hospital system based in Springfield, Illinois, designated that a quarter of the system's food must come from local sources when they renewed their broadline contract in 2011. Overall, findings suggest that many of these barriers may be quite surmountable in Ohio as has been seen in other parts of the nation.

**Research Question 4: What were the relationships between demographic variables and the use of local foods?**

*Summary:* As noted in Chapter 4, the independent variables of a demographic nature did not provide anything above a “low association” with local food use. Of the responding (105) Ohio hospital FSDs (a 67.8% response rate), the mean age was 46; their average tenure on the job was 8.6 years; they oversaw between 1 and 13 hospital kitchens; they were 50.5% were female; and nearly 94% were white, with approximately 6% Hispanic/Latino, Black/African American, or other. Their average staff size (full time equivalent, FTE) was 62 persons. And on average, they served 490 patient meals per day, plus an additional 1,702 cafeteria (staff and visitor) meals per day throughout the week (Monday – Friday). The data analysis indicated that demographic variables did not appear to have any significant impact on local food use. Many of the independent variables did not have enough variation in the data set (e.g., race was 95% white; sex was nearly evenly divided male at 50.5% and female at 49.5%) to show any association with local food use.

*Discussion:* Neither studies in the literature nor anecdotal stories from industry newsletters and bulletins provided any significant level insight or data on demographic characteristics and local food use at hospitals. The analysis from this study did give very slight indications that suburban and urban hospitals may be more likely to use local foods, and that younger and less tenured FSDs may be slightly more inclined to use local foods in their operations. Additional research would be helpful and would add to the conversation and the literature.

**Research Question 5: To what extent were Ohio hospital FSDs aware of Extension and their programs on local foods; and were they interested in participating?**

*Summary:* Local foods programming is a specialty area of Extension. This final research question explored the potential interest of Ohio hospital FSDs to participate in Extension's programs on local foods. It returned very favorable data. This was determined by two survey questions. The first asked what level of familiarity they had with Extension's four specific programmatic areas (Agriculture, 4-H Youth Development, Family & Consumer Science, and Community Development), and if they knew of Extension's capabilities to assist in local food procurement. The 4-H Youth program received the highest acknowledgement at 46.3%. The least known variable was that OSU Extension can help hospitals source and purchase locally grown foods with only 6.1% indicating familiarity. The second survey instrument item asked FSDs about their interest in participating in existing Extension programs that could help them address issues of using local food in their operations. Just over half (54.5%) indicated they were interested in having Extension help them find and purchase local foods from local farmers; 53.5% said they would like help to develop signage for local food marketing materials in their cafeterias; and 50.5% indicated they would like assistance in developing employee wellness programs featuring local foods. But as noted in Chapter 4, just over one-fourth of the respondents selected "neutral" indicating neither interest nor disinterest. Though this is a significant percentage of any population, the low-interest

(selecting 1 or 2) is still much lower, again pointing to a majority who are interested in participating in an Extension program.

*Discussion:* A recent study by Smith II, Kaiser, and Gómez (2013) found hospitals would indeed benefit from assistance by Extension personnel who could work with farmers to find better ways to market their products through farm to hospital (FTH) type programs. However, they also called for additional research to encourage development of new networks that might help link hospitals and farmers together to establish or expand such programs and business transactions. Findings from this project should, likewise, encourage the building of relationships to expand more sustainable local food systems for serving the hospital and healthcare industry. These networks would subsequently encourage discussion and action among Extension workers, hospital/healthcare foodservice, farmers, policymakers, and advocates for local food systems. These actions could then have the multiplier effect of improving local economies as well as health of participants.

The Institute of Food Technologists, a 75-year old organization that serves the food science community, recently published a summary of trends and innovation around healthy hospital initiatives that posited similar implications as findings from this study (IFT, 2012); although it lacked attitudinal and interest measures. In brief, they found hospitals have the opportunity to increase offerings of fresh fruits and vegetables, increase restaurant-style, cooked-to-order items for patients and cafeteria visitors, and offer pricing strategies to incentivize healthier selections. They also state that hospitals can serve as role models in worksite wellness, noting that the more than 5,750 registered

hospitals in the United States see nearly 37 million patients and employ over 5 million workers. Local foods programming may be an entry point for many of these wellness strategies. And this study confirmed the interest was there.

As noted in Chapter 1, perhaps Extension's traditional approach to farm to institution does not fit the hospital model. Perhaps there are non-traditional, unobserved, unknown, or simply different needs in hospital settings. However, based on the overall findings from this study, it appears there may be numerous opportunities for Extension to initiate discussions and begin working to assist hospitals in the local food procurement realm. FSDs indicated a definite openness and interest in the topic. Though the results from this study may not be generalized outside of Ohio, there are many similarities among the U.S. Land Grant university Extension systems; and there are similarities in healthcare systems across the country as well. Thus, opportunities for action, outreach, and programming certainly exist in other locations based on findings from this study.

Dunning, et al (2012) said "the capacity and expertise of county-based field agents [Extension educators] to serve as institutional entrepreneurs [could] enable agents to respond to the growing public demand for local foods through partnerships and [could] maintain the Extension Service's relevance in a challenging budgetary climate" (p. 110). With the information implied from this study, it appears there are opportunities in the health care industrial sector that could further Extension's relevance and potentially see health care emerge as a stronghold for future partnerships, programming, and financial support.

#### Implications for the Theoretical Framework

Beginning with the theory of reasoned action (Fishbein and Ajzen, 2010), this project included the construction of five composite independent variables that represented the theory by measuring 1.) knowledge of the local food movement, 2.) past behavior in using or not using local foods in their operations, 3.) attitude toward the potential problems and benefits of purchasing and serving local foods, 4.) perceived behavioral control toward purchasing and serving local foods, and 5.) perceived social norms toward purchasing and serving local foods. Reasoned action specifies that human behavior can be best predicted by understanding intentions. The resulting responses on these constructs coalesced in FSD intention toward the event or innovation (using local foods); thus, according to the theory, the behavior will eventually follow. Again, this project's instrument was designed to further explore the relationship between the intentions and final behavior concerning local food use by the foodservice directors.

Based on the summary of data from these composite variables, it appears that the theory of reasoned action can help explain Ohio hospital FSD participation in the local food use/adoption movement. Findings from each construct (composite variable) indicate the potential exists for taking reasoned action on this local food issue. That is, Ohio hospital FSDs who said they possessed knowledge, past behavior, positive attitude, perceived control, and perceived social norms of using local foods appear to be more likely to participate (current non-users), or to continue (current users).

The second theoretical basis of this study was grounded in the diffusion of innovations theory (Rogers, 1962, 1995). This theory too appears to have support based on the results obtained. Ohio hospital FSDs who were currently *not* using local foods

appeared to be interested in adopting this innovation (local food use) across the board. Responses indicated that the innovation (incorporating local foods into hospital foodservice) may be reaching a tipping point for wide scale adoption in Ohio. This response, however, is nuanced because the level or extent of local food adoption—the actual percent of local food purchases by hospital FSDs—remains unfixed and subsequently, unknown.

Though both theories appear to have support, implications within this theoretical perspective must be treated with caution. Greenhalgh et al (2004) said innovation in service delivery (e.g. hospital settings) was implemented by planned and coordinated actions. The terminology must be distinguished in order to correctly consider findings. For example, *diffusion* was defined as a passive spreading of the change (i.e., adopting local foods), while *dissemination* was seen as “an active and planned effort to persuade target groups to adopt an innovation.” Lastly, *implementation* was the active and planned efforts to mainstream an innovation within an organization (Greenhalgh et al, 2004, p. 582). Under this categorizing system, the USDA’s Farm to School program would exemplify the dissemination and implementation categories. But incorporating local foods into the health care industry—and hospitals in particular—would seem to reside in the passive realm of diffusion at this time. Again, an underlying purpose of this study was to determine the level or rate of diffusion that may be occurring. Findings suggest that it is, but again, at unknown levels and rates.

In summary, these two conceptual frames worked together to allow this research project to explore how Ohio hospital FSDs consider local food for potential use in their

operations. The diffusion of innovations, in conjunction with the reasoned action theory helped frame the local food movement and the potential behavioral responses by hospital foodservice professionals. By gaining an understanding of how the use of local foods was associated with measures of knowledge, attitudes, norms, and other constructs, the conceptual frames work together allow this study to build on existing literature, and add specific data within the hospital industry. Implications exist to positively impact the local food movement and employee/patient health.

### Recommendations

New outreach, partnerships, and “Farm to Hospital” (FTH) programming could be conceived and implemented around findings from this project. In Ohio particularly, there are opportunities to fold these potential projects into specific objectives, strategies, and action steps outlined in the newly revised OSU Extension Strategic Plan (2013) which fits within major college and university initiatives. In addition, a major futuring project was undertaken this year by Ohio State University’s College of Food, Agricultural and Environmental Sciences as a part of the Centennial Celebration of the 1914 signing of the Smith-Lever Act, formally establishing the national Extension service. This project, like Extension’s Strategic Plan, outlines a series of actionable items within which local food outreach, partnerships, and programming with health care institutions easily fits.

Outside of Ohio, researchers and educators within the Extension departments of Land Grant universities may use these findings as a baseline upon which to begin new or expand existing programming in the local food system arena. Specifically, these findings provide insight into areas in which one might approach a hospital or healthcare

operation—essentially identifying intersections at which connections and new programming can begin. In addition to Extension departments, partners in other university departments and colleges, and partners outside the university in community-based or non-profit sectors should be sought out and included in constructing new programs and opportunities. Experiential knowledge from outside partners can strengthen Extension work in this area, potentially increasing the positive impact and success of the efforts and ultimate objectives of improving public health while stimulating a local economy by supporting local farmers and food production operations.

#### Topics for Future Research

This project addressed a relatively narrow slice of the topic of using local foods within the healthcare (specifically Ohio hospitals) industry. Additional research is needed to determine if the idea of using local food offerings might be able to have further reaching implications. Some potential questions for future investigation could ask if local foods might:

- *Stimulate* interest and sales in hospital cafeterias.
- *Increase* interest and participation in employee wellness programs (through local foods education, farm tours, CSA memberships, or on-site farmers markets).
- *Provide* hospitals with programming and training on where, how and why employees should access healthy, local foods.
- *Educate* employees on the potential positive economic impact that may be achieved through local foods shopping.
- *Increase* healthier food consumption at both work and home.

The answers to these questions could additionally inform Extension educators across the state and nation, providing insight into *how and why*, thus allowing them to develop new approaches to inform or encourage the process and increase local food use by hospitals and healthcare organizations. Again, this can lead to positive contributions to local economies, public health, and the community as a whole.

As noted in Chapter 2, Smith II, Kaiser, and Gómez (2013) found that research on the adoption of farm to hospital (FTH) programs was “extremely limited” and “nearly nonexistent” (p. 38). Further, they noted that independent factors that might influence a hospital’s decision to adopt local food programs have not been explored. This study has taken one step in that process. Herein, Extension could initiate discussions between, for example, hospital administrators and members of local farming communities in order to begin or expand participation in farm to hospital type programs. The potential for making a positive impact on the local economy lies in wait.

#### Next Steps

Based on the results from this study, the immediate next steps will be to disseminate findings. These will first go to those with the highest potential interest. This includes Ohio hospital foodservice directors and Extension colleagues in both Ohio and across the nation. Some inquiries have been made by Ohio hospital wellness coordinators and nutrition educators, as well as by some administrators. These audiences will be targeted with executive summaries or brief concept papers that outline potential activities, programs, and partnerships that may occur. Funding to initiate new pilot programming will be sought as well. It is hoped that these efforts might lead to long-term partnerships

that increase the number of connections between hospitals and farmers, ultimately leading to increased local food production and consumption which can increase jobs in agriculture. If these events commence, educational campaigns to improve hospital patient and employee health would ensue as well. Ultimately, Extension's existing programs (and the potential newly created classes) will become more widely known to Ohio hospitals so that mutually benefiting partnerships may occur.

#### Summary of Chapter 5

The primary purpose of this study was to understand what systemic factors contributed to hospital foodservice directors using or not using local foods in their operations. It also sought to see if those FSDs had knowledge of Extension and its potential for providing assistance in this area. An underlying purpose of the study was to encourage additional research on related topics and hopefully initiate conversations that will build knowledge, expand the literature, and put into practice effective programming to promote and expand the use of local foods in the hospital and health care industry across Ohio and nationwide. Initiatives such as these can positively impact our nation's health and local economies. They can enhance a hospital's public relations. And they can provide opportunities for Extension educators to expand networks that create new partnerships benefiting hospitals, health care institutions, local farmers, and food production/distribution operations coalescing in triple bottom line results that deliver positive social, environmental, and economic outcomes.

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Appendix A: IRB Approval Letter



*Office of Research*  
**Office of Responsible Research Practices**

Protocol Title: Local Foods in Ohio Hospitals: Systemic Issues Advancing or Impeding Foodservice Participation  
Protocol Number: 2014E0249  
Principal Investigator: Brian Raison  
Date of Determination: 05/14/2104  
Qualifying Category: 2  
Attachments: None

Dear Investigators,

The Office of Responsible Research Practices has determined the above referenced project **exempt from IRB review**.

Please note the following:

- Retain a copy of this correspondence for your records.
- Only the OSU staff and students named on the application are approved as OSU investigators and/or key personnel for this study.
- No changes may be made to exempt research (e.g., personnel, recruitment procedures, advertisements, instruments, etc.). If changes are need, a new application for exemption must be submitted for review and approval prior to implementing the changes.
- Per university requirements, all research-related records (e.g., application materials, letters of support, signed consent forms, etc.) must be retained and available for audit for a period of at least three years after the research has ended.
- It is the responsibility of the investigators to promptly report events that may represent unanticipated problems involving risks to subjects or others.

This determination is issued under The Ohio State University's OHRP Federalwide Assurance #00006378. All forms and procedures can be found on the ORRP website: [www.orrp.osu.edu](http://www.orrp.osu.edu).

Please feel free to contact the Office of Responsible Research Practices with any questions or concerns.  
Thank You,  
Ellen

**Ellen Patricia, MS, CIP**  
Program Director  
HRPP Quality Improvement  
Office of Research Office of Responsible Research Practices  
307 Research Administration Building , 1960 Kenny Road, Columbus, OH 43210  
614-688-5556 Office / 614-688-0366 Fax  
[patricia.l@osu.edu](mailto:patricia.l@osu.edu) [www.orrp.osu.edu](http://www.orrp.osu.edu)



## Appendix B: Initial Email Request to ODH Listed Hospital Contact

**From:** Raison, Louis B. (Brian)

**Sent:** Tuesday, January 28, 2014 10:47 AM

**Subject:** An Ohio State Univ. study of Ohio hospital foodservice – contact info request

**To:** Ohio Hospital CEO contacts (from the Ohio Department of Health)

I am an Assistant Professor at the Ohio State University conducting a survey of Ohio hospitals regarding their interest in (or potential use of) local foods in foodservice operations.

You were listed as a hospital contact from the Ohio Department of Health.  
I am writing to ask your assistance:

Would you be so kind as to **send me the name(s) and contact email of your Food Service Director (or the person in charge of *purchasing food*)** at your hospital(s)?

I have clipped a brief project overview below (scroll down under my signature line). I would be happy to answer any questions regarding the study. My personal cell phone number is below (Dayton area code). Or email me anytime. I am truly appreciative of your assistance.

Brian Raison



**Brian Raison**, Assistant Professor  
Community Development Educator  
Miami County Director & State Urban Team Leader

**Ohio State University Extension**

County Office: 201 West Main Street, Troy, OH 45373

Campus Office: 25 Ag. Admin. Bldg., 2120 Fyffe Road, Columbus, OH 43210

Phone: 937-440-3945 – Fax: 937-440-3551

**Title:** Local foods in Ohio hospitals: Systemic issues advancing or impeding foodservice participation.

**Researcher:** Brian Raison, Assistant Professor, OSU Extension - [raison.1@osu.edu](mailto:raison.1@osu.edu)

**Background:**

Hospitals and healthcare services comprise a significant segment of the U.S. economy. Their implicit mission of improving health positions them as a key leader in initiating conversations around food. The American Medical Association notes that a large predictor of hospital patient and general public health is the quantity and quality of food intake. Hence, a hospital's stance on food (both delivery *of* and communication *about*) is of critical importance to positively affect patient and employee health.

Standard institutionalized foodservice is evolving. Some hospitals have introduced local foods as a means of improving health and wellness. Hospitals engaged in local foods procurement have:

- helped circulate more dollars in the local economy;
- provided fresher and implicitly healthier foods picked at the height of ripeness with the highest nutritional value;
- stimulated hospital staff and patient awareness of and interest in healthy, nutritious eating via local foods (Know Your Farmer programs);
- helped reduce "food miles";
- increased positive community relations and media exposure.

**Problem Statement:**

Investigation into the hospital foodservice literature leaves it unclear as to what percentages of hospitals actually participate in procuring, serving and/or promoting local foods to patients and employees. This may indicate a significant opportunity for hospital Food Service Directors (FSDs).

**Purpose of Study:**

The purpose of this study is to investigate what factors contribute to Ohio hospital Food Service Directors (FSDs) purchasing or not purchasing local food for use in their operations. A census of Ohio hospitals (n=~200) is desired.

**Timeline:**

Ohio State University Institutional Review Board (IRB) research protocol approval – February 2014

Online (SurveyMonkey) questionnaire launch – February 2014

## Appendix C: Pre-notice of Questionnaire / Survey

**From:** Raison, Louis B. (Brian)

**Sent:** Tuesday, June 10, 2014 10:56 AM

**Subject:** an Ohio State University study of hospitals and local food

Hi \_\_\_\_\_,

This spring, I corresponded with numerous Ohio hospital food service directors regarding our upcoming survey on local foods. Our goal is to develop some programs that might benefit both hospitals and local farmers. (A short project summary is below my signature line.)

I am writing to ask if you would participate. I will send a link to an online survey on Thursday. It will take only 10-12 minutes of your time. We will give away \$250 in gas cards (3 @ \$50 and 4 @ \$25) to encourage participation. Your chance to win will be approximately 1 in 15. (Not bad!)

You need not reply to this email unless you have questions. Watch for my email and survey link this Thursday, June 12 around 9:00 a.m.

Thank you.  
Brian Raison



**Brian Raison**, Assistant Professor  
Community Development Educator  
**Ohio State University Extension**  
2120 Fyffe Road, Columbus, OH 43210  
Phone: 937-440-3945

**Project summary:** Local foods in hospitals: determining foodservice participation.

**Background:**

Hospitals and healthcare services comprise a significant segment of the U.S. economy. Their implicit mission of improving health positions them as a key leader in initiating conversations around food. A hospital's stance on food (both delivery *of* and communication *about*) is of critical importance to positively affect patient and employee health.

Standard institutionalized foodservice is evolving. Some hospitals have introduced *local foods* as a means of improving health and wellness. Hospitals engaged in local foods procurement have:

- helped circulate more dollars in the local economy;
- provided fresher foods picked at the height of ripeness with the highest nutritional value;
- stimulated hospital staff and patient awareness of and interest in healthy, nutritious eating via local foods (Know Your Farmer programs);
- increased positive community relations and media exposure.

**Problem Statement:**

Investigation into the hospital foodservice literature leaves it unclear as to what percentages of hospitals actually participate in procuring, serving and/or promoting local foods to patients and employees. This may indicate a significant opportunity for hospital Food Service Directors (FSDs).

**Purpose of Study:**

The purpose of this study is to investigate what factors contribute to hospital Food Service Directors (FSDs) purchasing or not purchasing local food for use in their operations.

**Research Questions:**

How much knowledge do hospital Food Service Directors (FSDs) have of the local food movement?

To what extent are FSDs currently using local foods; and are they interested in purchasing local foods in the future?

What systemic issues advance or impede their use of local foods, and of those, which decision factors (challenges) are perceived as the greatest barriers?

What are the relationships between demographic variables and the use of local foods?

To what extent are hospital FSDs aware of Extension and their programs on local foods?

Again, watch for my email **with the survey link** this **Thursday, June 12**. Thank you!

Appendix D: Introductory Email & Informed Consent (*auto-sent from Lime Survey*)

**From:** Brian Raison [<mailto:raison.1@osu.edu>]

**Sent:** Thursday, June 12, 2014 9:00 AM

**Subject:** An Ohio State University Extension study of hospitals and local foods

Hi \_\_\_\_\_,

Per my email on Tuesday, June 10, I am sending you a link to my brief survey on local foods. Our goal is to develop some programs that might be beneficial to both hospitals and local farmers.

Would be so kind as to participate? This online survey will take approximately 10-12 MINUTES of your time. We will give away \$250 in gas cards (3 @ \$50 and 4 @ \$25) to encourage participation. Your chance to win is approximately 1 in 15. (Not bad!) All participants are eligible to win (not just those that complete all questions).

Here's the link to participate. You may click the link or copy and paste it into your browser:  
<http://surveys.cfaes.ohio-state.edu/cfaes/index.php/survey/index/sid/482745/token/fm3c4r2n/lang/en>

If you have any questions, feel free to call my cell: 937-440-3948. **If you could, please complete the survey by 5:00 pm on Wednesday, July 2.**  
THANK YOU.

**Brian Raison**

Assistant Professor, Community Development Educator

**The Ohio State University**

College of Food, Agricultural and Environmental Sciences | OSU Extension

2120 Fyffe Road, Columbus, OH 43210

Land: 937-440-3945 | Cell: 937-440-3948

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**Background & Purpose:** The interest and use of local foods—i.e., food grown or produced within a specific distance from the point of consumer purchase—has increased dramatically in recent years. Both individuals and large institutions are looking for ways to obtain fresh, healthy food while supporting local farmers.

The purpose of this study is to investigate whether hospitals are purchasing locally grown foods. You are being asked to participate because of your position in hospital foodservice. Based on findings, we anticipate developing some new programming around local foods that may be helpful to both hospitals and farmers nationwide.

**Confidentiality:** This activity involves research. Your participation is voluntary and you may withdraw at any time without penalty. This study is being conducted via OSU Lime Survey, a secure online survey service. Participation will constitute informed consent. Participants may skip questions they feel uncomfortable answering. Individual responses will be confidential. There are no anticipated risks to you for participating.

**Contact:** This survey is being conducted by Principal Investigator, Brian Raison ([raison.1@osu.edu](mailto:raison.1@osu.edu)), a PhD Candidate in the Department of Agricultural and Extension Education at The Ohio State University under the guidance of Dr. Scott Scheer ([scheer.9@osu.edu](mailto:scheer.9@osu.edu)), Professor and Extension Specialist. For questions, concerns, or complaints about the study, please contact Scott Scheer at (614) 292-6758; or Brian Raison at (937) 440-3945. For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

## Appendix E: Survey Instrument Questionnaire

### 2014 Ohio Hospital Local Food Survey

#### Section 1: Your Hospital

**[[1. How many hospital kitchens do you oversee?**

**[[2. Is (are) your hospital(s)...**

- rural?
- urban?
- suburban?

**[[3. Is your food service...**

- in-house?
- contracted out?

**[[3. Who is your vendor? (if contracted out)**

**[[3. Who are your major suppliers? (if in-house).**

- Broadline Distributor
- Wholesaler
- GPO

**[[3b. What approximate percent is heat-and-serve vs. scratch cooked?**

- Heat and serve
- Scratch cooked

**[[4. Total number of FTE (full-time equivalent) staff?**

**[[5. Average number of patient meals (trays) served per day?**

\_\_\_ meals per day

**[[6. Average number of cafeteria meals (staff/guest transactions) served per day during the week (Monday – Friday)?**

\_\_\_ meals per WEEK-day

**[[After you click on the "next" button below, your responses on this page will be recorded and you will be taken to the next page of the survey.**

## Section 2: Local Foods Knowledge, Interest, Activity

### []7. Knowledge of the local food movement:

Please rate your level of agreement with each item, where 1=Strongly Disagree to 5=Strongly Agree.

- I have been hearing more about local foods (in general) in the past few years.
- The use of local foods has been increasing among hospitals in the U.S.
- There are government programs to help institutions learn how to buy local foods.
- The USDA “Know Your Farmer, Know Your Food” program supports hospital participation in local foods procurement.
- Farm-to-Hospital programs involve more than just serving local food in cafeterias (e.g., farm tours; on-site farm markets; nutrition education; Healthier Hospital Initiative; etc.).
- I know how to find local foods to serve in my hospital.
- I know how to purchase local foods to serve in my hospital.

### []8. Potential interest and actions around using local foods:

Please choose the appropriate response for each item:

**Yes – I plan to in the next 12 months – No**

- Have you ever sought out information about using local foods in hospital cafeterias?
- Have you ever communicated with other hospital food service professionals about serving local foods?
- Have you ever asked your broadline distributor/GPO to procure local foods?
- Have you ever developed purchasing relations with local farmers?
- Have you ever asked your hospital administration to support local food use?
- Have you ever helped arrange a farmers market at your hospital?
- Have you ever helped arrange a garden (employee or patient) at your hospital?
- Have you ever helped develop patient or employee wellness programs featuring local foods?

### []9. Do you CURRENTLY use local foods in your operation? (We'll ask about details in the next few questions.)

Please choose **only one** of the following:

- Yes
- No

[]After you click on the "next" button below, your responses on this page will be recorded and you will be taken to the next page. If you would like to review answers on the previous page, please use the "previous" button below. Please do NOT use your browser buttons to navigate through the survey.

## Section 2: Local Food User

### []10a. How do you define local? Food grown or produced within a:

Please choose **only one** of the following:

- 50 mile radius
- 100 mile radius

- 200+ mile radius
- Defined by broadline vendor
- Other, please describe:

**[[10b. How many years have you served locally grown foods in your hospital operation? \_\_\_\_ years**

**[[10c. From which of the following sources do you purchase locally grown foods?**

Select all that apply:

- Farmer
- Broadline distributor
- Farmers market
- Other, please describe:

**[[10d. Approximately what percent of local vegetables, fruits, and meats do you serve?**

- Vegetables
- Fruits
- Meats

You may make estimates...or you may skip this question if you are not sure.

**[[10e. How important are the following factors to consider when buying locally grown food? Please rate each factor where 1=Not Important to 5=Very Important.**

- Quality
- Quantity/volume
- Availability
- Price
- Delivery
- Pre-processing-chopped (e.g. veggies chopped to size)
- Pre-processing-weight (e.g. meat portion in exact ounces)
- Attributes such as organic, natural, or antibiotic free
- Grower/producer liability insurance
- Marketing support (info to “Know your farmer”)

**[[10f. Does your hospital CURRENTLY participate in Farm-to-Hospital activities such as:**

Please choose the appropriate response for each item:

**Yes – I plan to in the next 12 months – No**

- Farm market at hospital
- CSA (Community Supported Agriculture) program at hospital
- Farm-based field trips for employees/patients
- Gardens at hospital (employee or patient)
- Composting food waste
- Healthy eating/wellness education using local foods

**[[10g. Have you found any challenges, disadvantages, or problems with buying or using local foods?**

Please choose **only one** of the following:

- Yes
- No

**[]If yes, please describe any challenges, disadvantages, or problems you've had with local foods.**

Please write your answer here:

**Section 2: No Local Food Use**

**[]11a. How do you define local? Food grown or produced within a:**

Please choose **only one** of the following:

- 50 mile radius
- 100 mile radius
- 200+ mile radius
- Defined by broadline vendor
- Other, please describe:

**[]11b. How important are the following factors to consider if you begin buying local foods?**

**Please rate each factor where 1=Not Important to 5=Very Important.**

- Quality
- Quantity/volume
- Availability
- Price
- Delivery
- Pre-processing-chopped (e.g. veggies chopped to size)
- Pre-processing-weight (e.g. meat portion in exact ounces)
- Attributes such as organic, natural, or antibiotic free
- Grower/producer liability insurance
- Marketing support (info to “Know your farmer”)

**[]11c. Please rate your level of agreement on these items, where 1=Strongly Disagree to 5=Strongly Agree**

**I would be more likely to purchase and use local foods if...**

- there were more interest from employees.
- there were more interest from patients.
- there were more interest from administration.
- my broadline/GPO offered more local foods.
- I had additional or different food preparation facilities and/or equipment.
- I had more information about local food purchasing experiences of other hospitals.
- I had better food safety information about local foods.
- I had lists of local suppliers and food products from local sources.
- I had a guidebook or manual on how to source and purchase local foods.

**[]11d. Would your hospital be interested in trying Farm-to-Hospital activities such as:**

Please choose the appropriate response for each item:

**Yes – Perhaps in the next 12 months – No**

- Farm market at hospital
- CSA (Community Supported Agriculture) program at hospital
- Farm-based field trips for employees/patients

- Gardens at hospital (employee or patient)
- Composting food waste
- Healthy eating/wellness education using local foods

## Section 2: Benefits and Problems

**[[12. A potential *benefit* of serving local food is: Please rate your level of agreement with each item, where 1=Strongly Disagree to 5=Strongly Agree.**

- Hospitals can support their local economy and help create jobs.
- Patients and employees can have healthier diets.
- Rates of overweight and obesity can be reduced via heightened interest in healthy food.
- Patients and employees are more likely to choose healthy options when they know it's local.
- Hospitals know more about the source and production of their foods.
- The hospital's public relations are enhanced.

**[[13. Potential problems with serving local food include: Please rate your level of agreement with each item, where 1=Strongly Disagree to 5=Strongly Agree.**

- Local foods cost too much.
- Local foods have little or no support from hospital administration.
- There is an inadequate supply / volume.
- Ordering procedures are complicated.
- Payment procedures are complicated.
- Delivery issues: timing, crate/pallet/box size.
- The seasonal availability issues.
- Purchasing local foods might threaten the relationship with my usual vendor(s).
- Language in my food service contract prevents or limits purchasing of local foods.

## Section 2: Attitudes and Perceptions

**[[14. Perceptions of control in serving local foods in hospitals: Please rate your level of agreement with each statement, where 1=Strongly Disagree to 5=Strongly Agree.**

- I have interest in purchasing and serving local food to patients and employees.
- I believe that I have the necessary resources to procure and serve local food.
- I believe that if I serve local food in our hospital, the menu items would be successful.
- I believe I can help my hospital develop exciting healthy eating programs using local foods.
- I don't have very many *internal* barriers to purchasing and serving local food in our hospital.
- I don't have very many *external* barriers to purchasing and serving local food in our hospital.

**[[15. Perceptions of how others value serving locally grown foods in hospitals: Please rate your level of agreement with each statement, where 1=Strongly Disagree to 5=Strongly Agree.**

- I believe I will be positively acknowledged for buying locally grown foods.
- My hospital administration values purchasing locally grown foods.
- Other hospital foodservice colleagues expect me to buy locally grown foods.

- Patients and employees expect me to buy locally grown foods.
- My hospital administration influences my decision to purchase locally grown foods.
- Colleagues expect me to assist with employee wellness programs that feature locally grown foods.

### **Section 3: Knowledge of Extension programs**

**[[16a. In general, how familiar are you with the OSU Extension service? Please rate each statement, where 1=I am not familiar at all to 5=I am very familiar.**

- OSU Extension offers education programs for youth (the 4-H program)
- OSU Extension offers education programs for farmers (agricultural practice)
- OSU Extension offers education programs for families (health, nutrition, budgeting)
- OSU Extension offers education programs for communities (strategic planning; local government training; economic development)
- OSU Extension offers education programs for institutions (hospitals, schools, business, government, non-profits)
- OSU Extension has an office in every Ohio county (88 in total).
- OSU Extension can help hospitals source and purchase more locally grown foods.

**[[16b. How interested might you be in participating in an Extension program that would help you...**

**Please rate each item where 1=Not Interested to 5=Very Interested.**

- find and purchase local foods from local farmers.
- partner with another hospital foodservice director who is experienced with local food.
- design signage or local food marketing materials for use in your cafeterias.
- develop employee wellness programs featuring local foods.

### **Section 3: Demographics**

**[[17. Finally, please share any additional thoughts, information, or needs around this idea of connecting local farm products to hospital cafeterias or developing Farm to Hospital programs.**

Please write your answer here:

**[[18. What is your title?**

Please write your answer here:

**[[19. How many years have you worked in this position?**

Please write your answer here:

**[[20. How old are you?**

Please write your answer here:

**[[21. How do you identify yourself:**

Please choose **only one** of the following:

- Female
- Male

**[122. Please select a racial category that describes you:**

Please choose **all** that apply:

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic / Latino
- Native Hawaiian or other Pacific Islander
- White
- Other:

[ ]After you click on the submit button below, you will receive a confirmation email almost immediately. If you do not click submit, your responses have not been recorded and you will continue to receive reminder emails.

Thank you for responding to the survey.

## Appendix F: Follow-up Reminder Email

Hi \_\_\_\_\_,

Two weeks ago (on June 12), I sent a link to a brief online survey about hospitals and local foods. Today, I am writing to ask again if you would be so kind as to participate. This online survey will take approximately 10-12 MINUTES to complete. We will give away \$250 in gas cards (3 @ \$50 and 4 @ \$25) to encourage participation. Your chance to win is approximately 1 in 15. (Not bad!) All participants are eligible to win (not just those that complete all questions)

Here's the link to participate. You may click the link or copy and paste it into your browser:  
<http://surveys.cfaes.ohio-state.edu/cfaes/index.php/survey/index/sid/482745/token/iwj3t6km/lang/en>

If you have any questions, feel free to call my cell: 937-440-3948. Again, I thank you for your time. **If you could, please complete the survey by July 2.**

Thank you.

**Brian Raison**

Assistant Professor, Community Development Educator

**The Ohio State University**

College of Food, Agricultural and Environmental Sciences | OSU Extension

2120 Fyffe Road, Columbus, OH 43210

Land: 937-440-3945 | Cell: 937-440-3948

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### **Background & Purpose:**

The interest and use of local foods—i.e., food grown or produced within a specific distance from the point of consumer purchase—has increased dramatically in recent years. Both individuals and large institutions are looking for ways to obtain fresh, healthy food while supporting local farmers.

The purpose of this study is to investigate whether hospitals are purchasing locally grown foods. You are being asked to participate because of your position in hospital foodservice. Based on findings, we anticipate developing some new programming around local foods that may be helpful to both hospitals and farmers nationwide.

**Confidentiality:**

This activity involves research. Your participation is voluntary and you may withdraw at any time without penalty. This study is being conducted via OSU Lime Survey, a secure online survey service. Participation will constitute informed consent. Participants may skip questions they feel uncomfortable answering. Individual responses will be confidential. There are no anticipated risks to you for participating.

**Contact:**

This survey is being conducted by Principal Investigator, Brian Raison ([raison.1@osu.edu](mailto:raison.1@osu.edu)), a PhD Candidate in the Department of Agricultural and Extension Education at The Ohio State University under the guidance of Dr. Scott Scheer ([scheer.9@osu.edu](mailto:scheer.9@osu.edu)), Professor and Extension Specialist. For questions, concerns, or complaints about the study, please contact Scott Scheer at [\(614\) 292-6758](tel:6142926758); or Brian Raison at [\(937\) 440-3945](tel:9374403945). For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at [1-800-678-6251](tel:18006786251).

## Appendix G: Second Follow-up (Final) Reminder Email

Dear \_\_\_\_\_,

This is our last reminder about the hospitals and local foods survey. It closes on Monday.

Would be so kind as to participate? This online survey will take approximately 10-12 MINUTES to complete. We will give away \$250 in gas cards (3 @ \$50 and 4 @ \$25) to encourage participation. Your chance to win is approximately 1 in 15. (Not bad!) All participants are eligible to win (not just those that complete all questions)

Here's the link to participate. You may click the link or copy and paste it into your browser:  
<http://surveys.cfaes.ohio-state.edu/cfaes/index.php/survey/index/sid/482745/token/abcd/lang/en>

If you have any questions, feel free to call my cell: 937-440-3948. Again, I thank you for your time. **If you could, please complete the survey by Monday, July 14.**

Thank you.

### **Brian Raison**

Assistant Professor, Community Development Educator

**The Ohio State University**

College of Food, Agricultural and Environmental Sciences | OSU Extension

2120 Fyffe Road, Columbus, OH 43210

Land: 937-440-3945 | Cell: 937-440-3948

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### **Background & Purpose:**

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The purpose of this study is to investigate whether hospitals are purchasing locally grown foods. You are being asked to participate because of your position in hospital foodservice. Based on findings, we anticipate developing some new programming around local foods that may be helpful to both hospitals and farmers nationwide.

**Confidentiality:**

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**Contact:**

This survey is being conducted by Principal Investigator, Brian Raison ([raison.1@osu.edu](mailto:raison.1@osu.edu)), a PhD Candidate in the Department of Agricultural and Extension Education at The Ohio State University under the guidance of Dr. Scott Scheer ([scheer.9@osu.edu](mailto:scheer.9@osu.edu)), Professor and Extension Specialist. For questions, concerns, or complaints about the study, please contact Scott Scheer at (614) 292-6758; or Brian Raison at (937) 440-3945. For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.