

INVESTIGATION AND ANALYSIS OF FOOD HUB OPERATIONS

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ABSTRACT

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Food hubs are a relatively new business typology with the most basic function of acting as a regional food aggregator and distributor. Many see them as having great potential to scale up regional food production and sales from small-volume, direct markets to larger-volume, wholesale ones. Food hubs also operate within their own expressed value sets, and these values guide any additional activities that a food hub may undertake. However, due to the nascence of most hubs, little research has been undertaken to understand the operating structures of food hubs, the range of values hubs embody and how these values affect the financial success of food hub businesses. This research offers initial exploration of these facets through a national survey of food hubs and their practices. Findings from this survey are used to explore the financial viability of food hubs and to develop a new definition for food hubs that more accurately encapsulates their role in values-based, regional food systems. Together, this survey and further analysis contributes to a better understanding of the context food hubs operate within, the social roles they fill and are implicated in filling, and the effects these community roles have on the financial health of a food hub businesses.

The following pages are dedicated to all the food hub builders, managers, customers and others devoted to relentless, positive action within our food system.

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TABLE OF CONTENTS

LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
CHAPTER 1: Food Hubs: Definitions, Expectations and Realities.....	1
ABSTRACT.....	1
INTRODUCTION.....	1
ARTICULATING THE “PLUS”.....	3
TENPERING EXPECTATIONS.....	6
A NEW DEFINITION.....	7
CHAPTER 2: Findings of the 2013 National Food Hub Survey	11
INTRODUCTION.....	11
BACKGROUND.....	11
2011 Food Hub Survey.....	13
2013 National Food Hub Survey.....	13
FINDINGS: OPERATIONAL CHARACTERISTICS.....	16
Years in Operation.....	16
Geographic Location.....	17
Operational Structure.....	19
Employees and Volunteers.....	20
Management.....	22
Producers and Suppliers.....	23
Beginning Producers.....	26
Small and Mid-sized Producers.....	26
Producer Practices.....	27
Changes in Producer Practices.....	29
Types of Products Sold.....	30
Infrastructure.....	31
Food Hub Customers.....	32
FINDINGS: FINANCES.....	34
Food Hub Customers.....	34
Sales.....	36
Revenue Sources to Begin Operations.....	37
Revenue Sources for 2012.....	38
Perceived Reliance on Outside Funding.....	39
Expenses.....	45
FINDINGS: VALUES.....	46
Mission Statement Analysis.....	47
Mission Analysis: Another View.....	49
Local and Regional Aspects: Different Definitions.....	50
Local and Regional Aspects: Producers, Customers, Products and Expenditures.....	51
FINDINGS: SERVICES AND ACTIVITIES.....	54

Operational Services and Activities.....	55
Producer-Oriented Services and Activities.....	56
Packing/Boxing of Product.....	57
Community Services and Activities.....	59
FINDINGS: CHALLENGES, OPPORTUNITIES AND BARRIERS TO GROWTH.....	60
Challenges.....	60
Year-Round versus Seasonal Operations.....	62
Opportunities.....	63
Barriers to Growth.....	64
FINDINGS: COMPARISONS WITH 2011 SURVEY.....	65
Sales.....	66
Full-Time Employees.....	66
Number of Producers.....	67
DISCUSSION.....	68
CHAPTER 3: Food Hub Financial Viability.....	73
ABSTRACT.....	73
INTRODUCTION.....	73
METHODS.....	76
The 2013 National Food Hub Survey.....	76
Defining financial viability.....	77
Measures.....	78
Analysis.....	79
RESULTS.....	80
Food Hub Characteristics.....	80
Predictors of Financial Viability in Food Hubs.....	84
DISCUSSION.....	86
Limitations.....	87
Expenditure Profiles	87
Annual Revenue.....	88
Revenue Sources....	89
CONCLUSION.....	91
REFERENCES.....	93

LIST OF TABLES

Table 2-1: Food Hubs by County Type.....	19
Table 2-2: Food Hub Employees.....	22
Table 2-3: Food Hub Volunteers.....	22
Table 2-4: Business Efficiency Ratios by Food Hub Type.....	35
Table 2-5: Business Efficiency Ratios by Years in Operation.....	35
Table 2-6: Food Hub Reliance on Outside Funding by Years in Operation.....	41
Table 2-7: Value Themes in Food Hub Mission Statements.....	49
Table 2-8: Value Themes in Food Hub Mission Statements by Age Group.....	49
Table 2-9: Food Hub Sales, 2011 and 2013.....	66
Table 2-10: Food Hub Full-time Paid Employees, 2011 and 2013.....	66
Table 2-11: Food Hub Producer Numbers, 2011 and 2013.....	67
Table 3-1: Business Efficiency Ratios by Food Hub Characteristics.....	81
Table 3-2: Characteristics of Food Hubs that are Financially Viable and Not Financially Viable.....	82
Table 3-3: Factors Associated with Financial Viability of Food Hubs.....	85

LIST OF FIGURES

Figure 2-1: Food Hubs by Years in Operation (N=106).....	17
Figure 2-2: Location of 2013 National Food Hub Survey Respondents.....	18
Figure 2-3: Food Hubs by Operational Structure (N=107).....	20
Figure 2-4: Food Hubs by Number of Full-Time Employees (FTEs) (N=82).....	21
Figure 2-5: Food Hub Manager’s Experience by Area (N=91)	23
Figure 2-6: Food Hubs by Number of Producers/Suppliers (N=79).....	24
Figure 2-7: Percentage of Food Hub Producers/Suppliers Owned or Operated by Women (N=60)	25
Figure 2-8: Percentage of Food Hub Producers/Suppliers Owned or Operated by People of Color (N=47).....	25
Figure 2-9: Percent of Food Hub Producers that are Small and Midsized (N=79).....	26
Figure 2-10: Food Hub Required and Preferred Producer Practices (N=74).....	28
Figure 2-11: Changes in Food Hubs’ Producers and Supplier Enterprises (N=78).....	30
Figure 2-12: Food Hub Products by Average Number of Hubs that Carry them and by their Percentage of the Food Hub’s Total Gross Sales (N=81).....	31
Figure 2-13: Types of Infrastructures Used by Food Hubs (N=75).....	32
Figure 2-14: Food Hub Customers by Average Number of Hubs Selling to them and by Average Percent of Total Hub Sales (N=82).....	33
Figure 2-15: Food Hubs Revenue for 2012 Calendar Year (N=104).....	34
Figure 2-16: Food Hub Total Gross Sales for 2012 Calendar Year (N=86).....	36
Figure 2-17: Primary Revenue Sources to Begin Food Hub Operations (N=91).....	37
Figure 2-18: Average of Individual Food Hub Revenue Sources as a Percent of their Total Revenue (N=100).....	39
Figure 2-19: Food Hub Reliance on Grant Funding (N=88).....	40
Figure 2-20: Food Hub Reliance on Outside Funding by Mission Statement (N=88).....	42

Figure 2-21: Food Hub Reliance on Outside Funding by Community Activity (N=88).....	43
Figure 2-22: Food Hub Reliance on Outside Funding by Producer-related Activity (N=88).....	44
Figure 2-23: Food Hub Reliance on Outside Funding by Operational Activity (N=88).....	45
Figure 2-24: Food Hub Expenses as a Percent of Revenue (N=78).....	46
Figure 2-25: Value Themes in Food Hub Mission Statements (N=107).....	48
Figure 2-26: Local Products Carried by Food Hubs (N=80).....	52
Figure 2-27: Location of the Majority of Food Hub Customers (N=83).....	53
Figure 2-28: Percent of Food Hub Expenditures in the Same State as the Food Hub (N=77).....	54
Figure 2-29: Operational Services Offered by Food Hubs (N=83).....	56
Figure 2-30: Producer-oriented Services Offered by Food Hubs (N=84).....	57
Figure 2-31: Food Hub Involvement in Packing/Boxing Product (N=71).....	58
Figure 2-32: Community-oriented Services Offered by Food Hubs Selling Retail to Customers (N=84).....	59
Figure 2-33: Top Challenges of Food Hubs (N=79).....	61
Figure 2-34: Expansion Opportunities by Food Hub Customer Type (N=81).....	63
Figure 2-35: Food Hub Barriers to Growth (N=76).....	64

CHAPTER 1:

Food Hubs: Definitions, Expectations and Realities^a

ABSTRACT

There is general agreement that food hubs are principally regional food aggregators/distributors well-positioned to fill a number of social roles and services not traditionally provided by wholesale food companies. However, there is little agreement among stakeholders about what these roles and services should be, or an understanding of how they affect food hub financial viability. This article uses 2013 National Food Hub Survey data to highlight the current divergence between expectations and realities of these food hub roles. A definition for food hubs is also proposed that is inclusive enough to embrace different types of food hubs yet prescriptive enough to provide clarity on the roles food hubs play.

INTRODUCTION

Food hubs are a relatively new business typology with the most basic function of acting as a regional food aggregator and distributor. However, beyond this basic function, there is not agreement about what additional key facets set food hubs apart from small-scale food distributors, or if businesses operating only as small-scale distributors are also food hubs. Arguably, the most widely used definition of a food hub developed by the National Food Hub Collaboration (hereafter referred to as the Collaboration) recognizes the basic, regional food aggregation and distribution function of food hubs: “A regional food hub is a business or

^a This chapter was submitted March 31, 2014 as a research brief to the Journal of Hunger and Environmental Nutrition.

organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand” (Barham et al., 2012).

The Collaboration notes their definition as a working one, intentionally broad to allow many different business arrangements to identify as food hubs. Rightfully so, as the 2013 National Food Hub Survey (the 2013 Survey) detailed a large range of scales and structures that food hubs embody (Fischer et al., 2013). For example, some hubs were traditional, for-profit companies and corporations while others were organized as non-profit entities or cooperatives. Some sold product into wholesale and institutional markets while others sold food products strictly through their own retail outlets.

The food hub concept is evolving and using a broad definition allows for innovation. It has been suggested that too strictly defining food hubs could inhibit their flexibility to emerge and evolve in response to their particular locale and goals (Blay-Palmer, Landman, Knezevic, & Hayhurst, 2013; Horst et al., 2011). This flexibility could be demonstrated in divergent priorities, for example, between a non-profit food hub with a primary mission to increase access to healthy food in an underserved community and those of a producer-owned cooperative food hub with a primary mission to increase profit for their producer members. As such, the appeal and utility of a broad definition of food hubs is apparent, as it encapsulates the many different structures, goals and activities that current food hubs employ, while remaining open to new food hub innovations.

However, defining food hubs too broadly may lead to a meaningless concept that creates difficulty in understanding impacts. Assuming the only common end goal among food hubs, as indicated by the Collaboration’s definition, is to serve the demand for source-identified food,

how are we to compare the wide variety of different businesses that already do this? Should we compare the purchasing and distribution businesses that serve multi-national Whole Foods to a three-farm community-supported agriculture operation? If we were to compare the two only on the basis of the Collaborations’ definition of aggregating and distributing regional food, then wouldn’t Whole Foods’ distributors be deemed more successful than the CSA because of the volume of regional food they work with?

Perhaps the answer is yes—food hubs should be judged, at least in part, on the volume of local and regional food handled. However, there is a strong narrative in the (albeit scant) food hub literature that to earn the title of ‘food hub’ (as opposed to ‘regional food distribution business’) an entity needs somehow to do more than just conduct this type of business—that they need to be a regional food distribution business “plus” (Anselm, 2013; Barham et al., 2012; Blay-Palmer et al., 2013; Horst et al., 2011; Matson & Thayer, 2013; Stroink & Nelson, 2013). It is the meaning of “plus” that has proven difficult to distinguish or categorize.

ARTICULATING THE “PLUS”

Findings from the 2013 Survey show that, in addition to acting as regional food distributors, self-identified food hubs generally exhibit values beyond achieving financial goals. These values fundamentally affect how a food hub operates and vary widely among hubs and are what we identify as the “plus” that sets food hubs apart from other regional food distribution businesses.

Perhaps the most intuitive values-based role food hubs play is actively helping grow regional food systems. Food hubs do this through commitments to source and sell within specific regions, and to increase the volume of food produced and consumed within that area. This is in

contrast to other regional food distributors that buy and sell food products within a region as a matter of circumstance and opportunity. USDA emphasized the role that food hubs play in growing regional food systems in its seminal 2012 Regional Food Hub Resource Guide (Barham et al., 2012). That guide used the Collaboration’s definition for food hubs, but further detailed USDA’s version of the “plus” nature of hubs as the shared, additional business practices hubs employ when working with their producers.

Data from the 2013 Survey showed that 52% of hubs had language in their mission statements regarding supporting farmers and 49% had language about local food. Seventy-one percent of hubs working with small and midsized producers indicated that they worked with an increasing number of these producers since the hub’s inception. Fewer food hubs reported growth in their producers operations as a result of working with a food hub—25% reported all or most had hired additional people and 23% reported all or most had increased their acreage for example. This information suggests that most self-identified food hubs are, as USDA suggests, committed to buying from small to midsized local producers whenever possible. However, food hubs are currently playing a less significant role in actively growing these producers’ operations (as opposed to passively, through simply conducting business with them).

Others have suggested that food hubs have the opportunity to play a substantial role in increasing healthy food access, especially in underserved communities (Barham et al., 2012; Barham, 2011; Community Development Studio, 2012; Glaza, 2013; Public Health Law Center, 2012). For example, the Healthy Food Access Portal, a website collaboration of PolicyLink, The Food Trust, and The Reinvestment Fund states that “food hubs present an opportunity for communities to make healthy food sourcing a profitable enterprise for producers, distributors,

and retailers simultaneously, while improving access to local foods.”^b This commitment to access seems to ring true for a portion of food hubs. From the 2013 Survey, 22% of food hubs showed themes of food access in their mission statements and 60% of hubs indicated that their mission was strongly related to improving human health. Further, 56% of hubs indicated they offered some sort of education to the public about food systems issues, and 47% of food hubs indicated that they offered some sort of nutrition or cooking education.

The ability to increase healthy food access is often dependent on the food hub’s business structure and the type of customers it serves. Many food hubs strictly aggregate, distribute and market food products to wholesale markets such as restaurants and independent grocery stores. For most of these hubs, the impact they can have on healthy food access is limited to specifically seeking these types of customers in limited-resource communities. However, nearly half (49 of 107 from the 2013 Survey) of food hubs also market at least some of their food products through their own retail outlets and these food hubs may have a more direct impact in increasing healthy food access. Of the food hubs selling retail, 49% indicated they accepted SNAP (Supplemental Nutrition Assistance Program) benefits, 27% accepted WIC (Women, Infants and Children) or FMNP (Farmers Market Nutrition Program) benefits and 14% indicated they offered some sort of matching program for SNAP benefits.

Along with growing regional food systems and increasing healthy food access, stakeholders have made assumptions about the positive impact that food hubs can have on their local economies (Blay-Palmer et al., 2013; Matson & Thayer, 2013). For example, a 2012 article in Rural Connections magazine, former USDA Deputy Secretary Kathleen Merrigan wrote that “[a]ccess to the infrastructure that it takes to carry out [food hub] functions can open up

^b <http://healthyfoodaccess.org/retail-strategy/food-hub?destination=node/321>. Accessed March 9, 2014.

tremendous opportunities for the local economy”(Merrigan, 2012, p. 5). Regional food hubs will likely have positive impacts on their local economies as they hire people, rent space and vehicles, and focus on buying/selling within a specific region. Schmidt, Jablonski and Kay have undertaken initial work to quantify this impact, finding that every \$1 increase in demand for food hub products resulted in an additional \$0.63 generated in related industrial sectors (2013). However, this measure of magnitude of food hubs’ economic impact should not be confused with the absolute effect of food hubs on their local economies. Most hubs, after all, are very small (but growing) businesses. The majority of hubs surveyed generate annual sales of \$500,000 or less and have five or fewer full-time employees. The financial impacts of food hubs will not be insignificant to the hub’s local customers nor the small and mid-sized farmers that depend on the hub as a market outlet. But in absolute terms, the local economic impact of food hubs at present may be small but should grow as the hub grows (Gunter & Thilmany, 2012).

TEMPERING EXPECTATIONS

Our intention is to highlight that there is currently a divergence between expectations and realities of the roles food hubs are playing in the food system. We argue that in large part this divergence is fueled by both the nascence of food hubs, and by less than specific food hub definitions.

There are examples of food hubs that are accomplishing all three of the objectives outlined above and more (see USDA’s 2012 Food Hub Resource Guide for examples). However, these hubs are generally more mature than average and are all recipients of significant outside funding from either public or private sources and this funding has had effects ranging from increasing the rate at which an individual food hub has grown more small and mid-sized

producers (Barham et al., 2012, p. 30) to funding additional social services (Barham et al., 2012, p. 31) There are also a small number of hubs that are operating at significantly larger scales—the largest identified in the 2013 Survey had \$75 million in annual sales and over 100 full-time employees. These very large hubs are atypical, and often had been acting as food distributors for decades before the term “food hub” came into common parlance. Both their maturity and ability to secure outside financing has allowed these few hubs to escape the “poverty trap” that Stroink and Nelson identify as common to burgeoning food hubs (Stroink & Nelson, 2013). In short, these highly successful hubs are exceptional examples of what can be possible, but not indicative of what generally is.

There are reasons why many food hubs are not meeting or working to fill social roles as fully as some expect. For one, many “plus” activities compete with a food hub operating as a financially viable entity. Information from the 2013 Survey showed food hubs that undertook activities such as offering nutrition/cooking education or operating a demonstration/incubator farm had a significantly higher reliance on outside funding than those that did not. Another reason could be that not all food hubs are interested in playing all suggested social roles. The 2013 Survey indicates some food hubs were interested in increasing food access in their communities while others focused their mission statements more on supporting local farmers. Still others prioritized dealing in food they saw as being produced in environmentally friendly ways such as certified organic produce or grass-fed meat.

A NEW DEFINITION

So the question remains: How do we define food hubs in a manner that encourages innovation but bounds it sufficiently to be discrete? How do we describe food hubs in a way that

is inclusive of multiple business practices, does not place unrealistic burdens to solve all food system issues and yet still allows for comparison and evaluation between food hubs? Also, how do we make such descriptions while still recognizing that many food hubs are very young and likely need time to fully grow into filling their self-described social and economic roles?

Authors have recently attempted to find this balance between breadth and depth. Blay-Palmer et al. suggested an even broader definition for food hubs than the Collaboration's in order to reflect the relative nascence of Canadian food hubs to those in the U.S: "We define food hubs as networks and intersections of grassroots, community-based organisations and individuals that work together to build increasingly socially just, economically robust and ecologically sound food systems that connect farmers with consumers as directly as possible"(2013, p. 524). Horst et al. similarly formed a different, but still broad food hub definition, then further identified nine general business models that food hubs may take: "A food hub serves as a coordinating intermediary between regional producers and suppliers and customers, including institutions, food service firms, retail outlets, and end consumers. Food hubs embrace a spectrum of functions, purposes, organizational structures, and types, each of which can be tailored to achieve specific community-established objectives. Services provided by a food hub may include and are not limited to aggregation, warehousing, shared processing, coordinated distribution, wholesale and retail sales, and food waste management. Food hubs contribute to strengthening local and regional food systems as well as to broader community goals of sustainability and health" (2011, p. 224).

Neither of these definitions solves the issue of properly articulating the "plus" of food hubs, though both recognize it. As such, we suggest a new, succinct definition of food hubs that recognizes the core operations of food hubs but is broad enough to include self-identified food

hub structures and is descriptive enough to credibly evaluate their impacts: *Food hubs are, or intend to be, financially viable entities that demonstrate a significant commitment to place through aggregation and marketing of regional food.*

The roles “aggregation and marketing” are used rather than distribution to note that the types of customers food hubs sell to (wholesale versus retail) are a less defining feature of a food hub than is the fact that it aggregates food from multiple producers for those customers. The words “are, or intend to be, financially viable” are used to recognize that many food hubs are small businesses or entities and need time to achieve financial stability, often before they are able to undertake additional activities related to their social goals. Food hubs need to be financially viable within some reasonable period of time – if they are unable to achieve this they will likely close and have minimal positive economic or social impact.

We use the term “commitment to place” to articulate the “plus” nature of food hubs. This term uses Hudson’s idea of *place* as a construct composed of both the production and consumption of material objects as well as social relations within a region (2001). In comparison to simple, geographic space “place is the location of social life. Places create attachments to a community as the location of the socialization process and as a shaper of identity” (Johnstone & Lionais, 2004, p. 219). As such, demonstrating a commitment to place means that food hubs are conducting business in a way that values, builds and upholds the social and material integrity of the community (the place). Moreover, the success of food hubs with a commitment to place should contribute to the tangible success of their community and business partners—customers, producers and neighbors alike. For example, food hubs with a commitment to place would treat producers as partners in discovering appropriate price for products, rather than just price takers.

Further, food hubs with a commitment to place would not consider local customers a secondary market for lesser quality products.

As an idea, commitment to place does little to quantify the positive impacts that food hubs can and are having, however. In response, we include the words “demonstrate significant” as a qualifier of commitment to place in our definition. Including the words “demonstrate significant” demands that the food hubs’ commitment to place be revealed in tangible ways and be a core business principle rather than a promotion strategy. For example, food hubs with a mission to grow resilient, regional food systems should be able to show how they have increased the number and viability of their small and mid-sized farms and ranches. More generally, food hubs should have accounting systems to know that they are meeting value goals in the same way they know they are meeting their financial ones.

This is not to place an undue burden of evaluation on resource-strapped food hubs. Rather, to contend that the “plus” nature of food hubs is more than stated good will—it is real impact within the food system. In part, this impact will be unveiled organically through appropriate market scrutiny as food hubs mature. Those hubs with unsuitable business plans will leave the industry while others will thrive. Through retrospection, a better understanding will develop of the circumstances that result in each, including how food hubs balance business viability with social mission. In the meantime, however, without demonstrating how their stated values result in measureable change, food hubs continue to run the risk of underperforming in relation to social expectations. Conversely, better measurement of the social, economic and financial impact food hubs have as they mature will result in better solidification of the roles food hubs play in regional food systems and justify past and future investments that are so critical to their success.

CHAPTER 2:

Findings of the 2013 National Food Hub Survey^c

INTRODUCTION

This report presents results of a national survey of food hubs conducted in early 2013. The purpose of the survey was to collect a breadth of information regarding food hub financial viability, operational activities, characteristics, challenges and emerging opportunities. This information was gathered to inform a large pool of food systems stakeholders, including food hub operators, policy makers, academics and advocates.

BACKGROUND

Several experts in the field of sustainable agriculture have called for a more diverse agricultural landscape, with a continuum of production at all scales of operation (Lyson, Stevenson, & Welsh, 2008; National Research Council, 2010; Stevenson & Pirog, 2008; Tagtow & Roberts, 2011). This diversity of production scale is regarded as a critical building block of a resilient food system, “much like various sized stones produce a firm roadbed” (Clancy & Ruhf, 2010). However, American agriculture is bifurcated, with relatively few large farms producing much of the agricultural output and a great number of very small farms producing a relatively small amount of food products, mostly to direct and/or niche markets (Low & Vogel, 2011).

Between these two extremes is a disappearing sector of midsize agricultural producers. These farms are defined as producing too little to actively compete in most commodity markets

^c This chapter was published as a report through the Michigan State University Center for Regional Food Systems. See Fischer et al. (2013).

but producing too much for direct sales at farmers markets or through community-supported agriculture shares (Agriculture of the Middle Initiative, 2012; Gray, 2011).

According to the USDA, “a regional food hub is a business or organization that actively manages the aggregation, distribution and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand” (Barham et al., 2012, p. 4). This definition is necessarily flexible and incorporates food hubs that employ a number of business strategies. For example, food hubs that may not aggregate or distribute food but only participate in the coordination of these activities would fit into this definition.

In theory, food hubs have great potential to meet the needs of midsized agriculture, in part due to the localized scale on which they operate, compared to most conventional, large-scale food distribution businesses. Sourcing products from multiple producers, food hubs aggregate (or coordinate the aggregation of) local foods, making them available to customers in wholesale-scale volumes. Food hubs, by definition, accomplish this while also retaining identification of the food’s origin, including any special practices or circumstances under which the food was grown. Retaining this information is important, not only for food chain transparency but also because it carries a value that food hubs and producers can potentially use to realize premium prices for their products (Bloom & Hinrichs, 2011).

In addition to acting as food distributors, food hubs generally exhibit values beyond achieving financial goals. These values vary widely among food hubs and fundamentally affect how a food hub operates. They may include, for example, sourcing food from within a defined area or food that is grown in ways that the food hub defines as healthy and/or environmentally

friendly. Food hubs also commonly aim to sell food at a price that ensures a fair return to producers. Other food hubs also operate with specific commitments to their communities—by providing access to healthy food in underserved areas, for example.

The 2013 National Food Hub Survey was developed to better understand these values and to collect a breadth of information on the elements of “successful” food hubs, including the social and environmental conditions that aid their development. Understanding these elements will be key for researchers, investors and other stakeholders of local and regional food systems to inform food system investment strategies and, where appropriate, to create environments in which food hubs can thrive.

2011 Food Hub Survey

In 2011, the National Good Food Network’s (NGFN’s) Food Hub Collaboration—a project of the Wallace Center that coordinates networking between and dissemination of information to food hubs across the US—conducted an initial survey of 45 food hubs to gather information about the “scope and scale” of their operations (Barham et al., 2012, p. 74). This survey was undertaken in part to satisfy a growing desire to more fully understand how food hubs operate within values-based regional food chains. The 2013 National Food Hub Survey was developed to uncover similar operational details that would act as both follow-up to the initial findings of the 2011 survey and as the first data set of a larger, longitudinal database of food hub activities.

2013 National Food Hub Survey

The 2013 National Food Hub Survey was conducted in cooperation with the Wallace Center at Winrock International. Representatives from U.S. Department of Agriculture (USDA)

also assisted in survey development. The intention is to repeat the survey biennially so that a data set of food hubs' attributes can be built and monitored as existing hubs continue to mature and new hubs begin operations.

To gather information about food hubs on a wide variety of subjects, researchers assembled a national sample of food hub managers and e-mailed them a link to an Internet-based survey, which was built and administered using Qualtrics Research Suite software (Qualtrics Labs, Inc., Provo, UT). Before administering the survey, experts at USDA, Michigan State University's Center for Regional Food Systems and the Wallace Center at Winrock International reviewed the survey questions for suitability. The survey also underwent a pre-test with four volunteer food hubs to determine the duration of the survey and to ascertain its overall functionality. A PDF copy of the full 2013 National Food Hub Survey can be found on Michigan State University's Center for Regional Food Systems' website at <http://foodsystems.msu.edu>.

The surveys were sent out in the first week of February 2013 to 222 food hubs identified by representatives of the National Good Food Network's (NGFN) Food Hub Collaboration. At the time, the Collaboration's list represented the only comprehensive list of food hubs in the country. The Food Hub Collaboration is a project coordinated by the Wallace Center that encourages networking between and dissemination of information to food hubs across the US. Food hubs were identified by the Collaboration both through direct contact with the individual hubs or through other channels such as news releases. Since October 2011, the Collaboration has used a questionnaire to gather additional information about new food hubs before including them

on its larger food hub list.^d This questionnaire is used to determine whether a new food hub meets the Collaboration's criteria of a regional food hub. These criteria include the use of local food and the verification of products' sources. These questionnaires are reviewed by Collaboration staff at a periodic meeting, and hubs meeting the criteria are then added to the list.

The survey was also open to any operations outside the NGFN that self-identified as a food hub through an anonymous link, however no food hubs utilized this link. The survey remained open through the last week of March 2013. Utilizing a modified Dillman method (Dillman, Smyth, & Christian, 2009) for survey follow-up, non-responding food hubs were sent reminders about the survey weekly while the survey remained open. Overall, 125 surveys were returned for a 56.3% effective response rate. Of these 125, 18 responses were not used because respondents did not answer a majority (more than 90%) of the survey questions. This left a usable response set of 107, a 48.2% response rate.

Quantitative analysis of survey responses was carried out using IBM's Statistical Package for Social Sciences (SPSS), version 19.0 for Windows (SPSS Institute, Chicago, Illinois). Due to the nature of the data returned from the food hub survey, all statistical tests utilized are non-parametric. Spearman's rho was used to measure correlations between continuous and ordinal variables. Qualitative coding of food hubs' mission statements was carried out using NVivo (QSR International Pty Ltd. Version 10, 2012).

In this report, survey results are presented in five sections: operational characteristics, finances, values, services and activities and challenges, opportunities and barriers to growth. Thirty food hubs that responded to this survey also responded to the 2011 National Food Hub

^d The questionnaire can be found on NGFN's food hub website at <http://www.surveymonkey.com/s/79HDYDV> (retrieved April 17, 2014).

Collaboration's survey. Aggregate information from both surveys is explored following the 2013 survey findings. Finally, recommendations for further food hub research and outreach are discussed.

The findings of this survey may prove useful to a wide array of individuals, businesses and organizations interested in food hubs. For example, individuals interested in initiating or managing food hubs or in providing assistance to existing food hubs, as well as individuals in the community and economic development sector, should all be able to find relevant information here. The authors have provided the survey findings in a format that will hopefully assist as many food hub stakeholders as possible. It is the hope of the 2013 survey authors that the data gathered will be useful for those exploring the conditions necessary to build robust regional food systems.

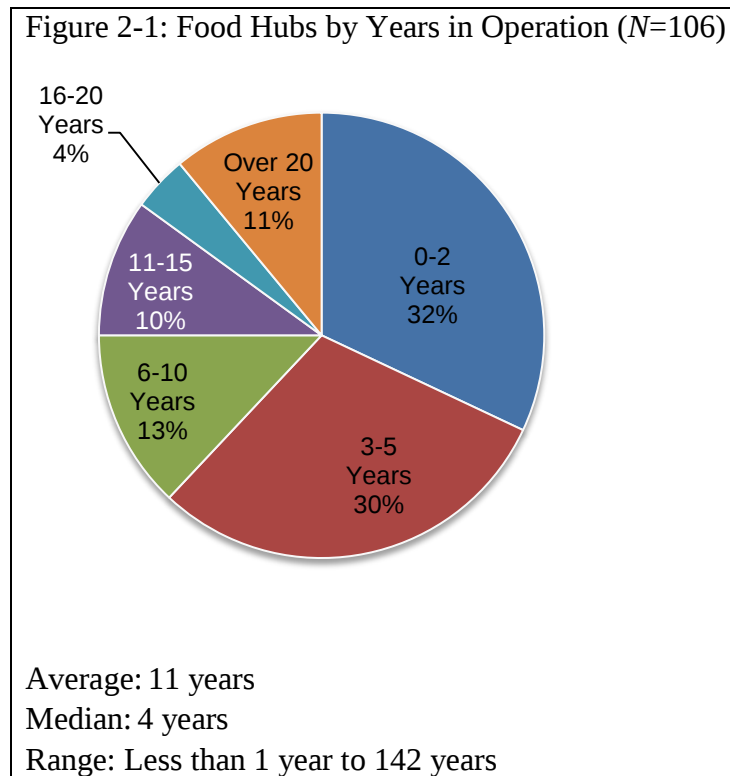
FINDINGS: OPERATIONAL CHARACTERISTICS

The 2013 National Food Hub Survey gathered information on a number of descriptive facets of food hubs, including the hubs' years in operation, location, producers and customers and infrastructure use. These topics provide a useful look into the operations of existing food hubs and a basis for the exploration of factors that may make for successful food hubs.

Years in Operation

Nearly one-third of ($N=106$) responding food hubs began operations within the last 2 years, and most had been in operation for 5 years or less (66 hubs, or 62%). Of the remainder, 26% had been in operation between 6 and 20 years and 11% for more than 20 years. Of these

new hubs (in operation 2 years or less), more than half (55.6%) were for-profit businesses, compared to 47% of all food hubs. The number of years a food hub has been in operation was found to be significantly correlated with the hub's annual revenue for 2012 ($r_s = .42$, $p < .01$)^{e, f}, with older hubs tending to have larger total revenues than younger hubs.



Geographic Location

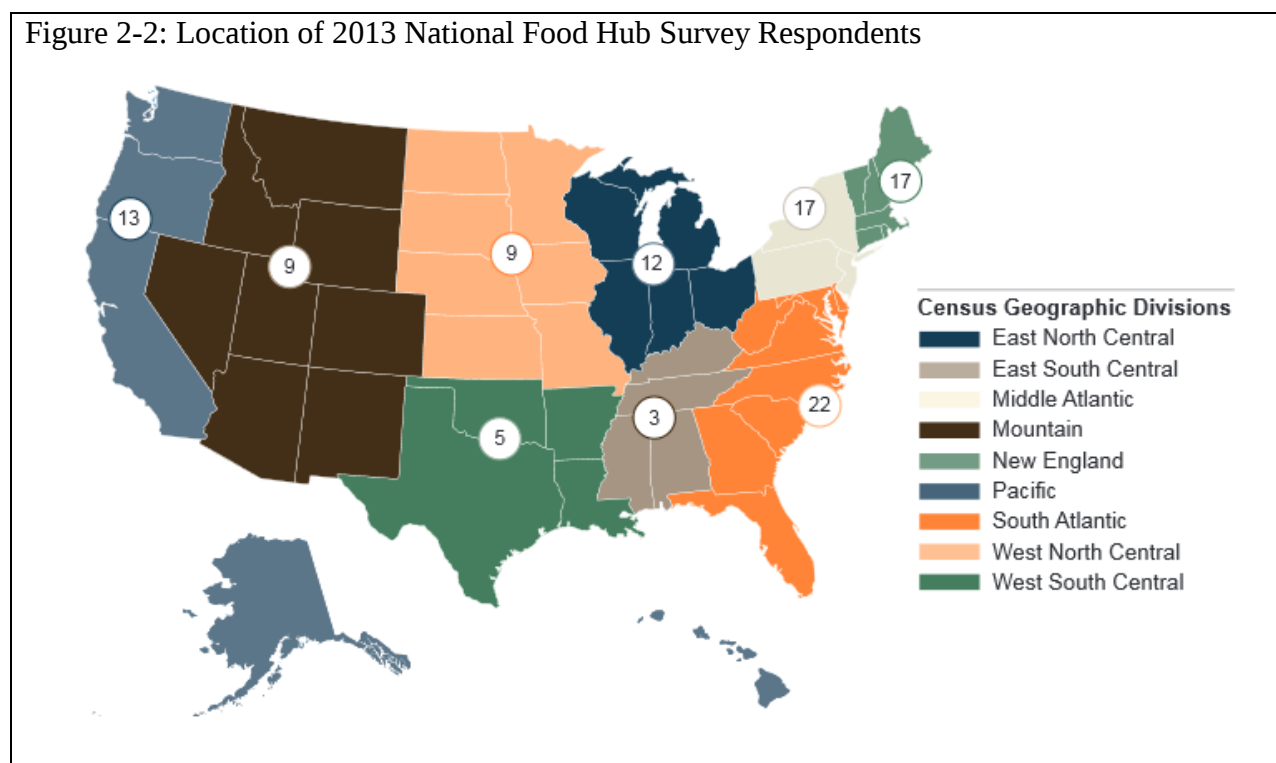
Geographic dispersion of the hubs was comparable to that of the National Food Hub Collaboration's 2011 survey, with 21% (of $N=107$) in the two Western regions of the U.S., 20%

^e Spearman's rho statistic was used to measure correlation between variables in this report. With Spearman's rho, a perfect positive correlation between two variables would have a measure (r_s) of 1.00, while a perfect negative correlation would have a measure of -1.00.

^f Significance of correlation is represented by the p -value. In this report, p -values less than .10 were considered significant, although many measures were significant at the .05 and .01 levels.

in the two North Central regions, 7% in the two South Central Regions, 21% in the South Atlantic and 32% in the Middle Atlantic and Northeast regions.^g See the map in Figure 2-2 for a finer breakout by Census Geographic Divisions. Seventy-five percent of food hubs were located in metro counties, as defined using USDA’s 2013 Rural-Urban Continuum Codes data set (see Table 2-1).^h

Figure 2-2: Location of 2013 National Food Hub Survey Respondents



There was no statistically significant relationship between the type of county in which a food hub was located and the hub’s reported reliance on grant funding to carry out operations. However, the proportion of a region’s food hubs that reported being “highly dependent” on grant funding was much higher for the regions that included nine food hubs reporting a location in

^g Regions as defined by the U.S. Census Bureau. See https://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf for more information (retrieved April 17, 2014).

^h See USDA’s 2013 Rural-Urban Continuum Codes data set at <http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx#.UcnQ85wmydk> for more information (retrieved April 17, 2014).

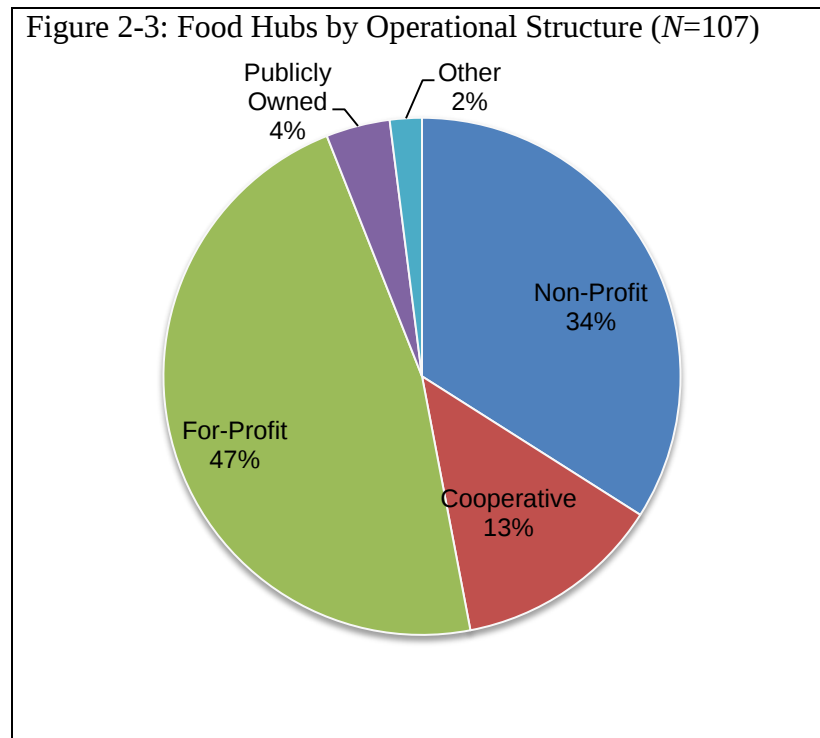
nonmetropolitan counties and not adjacent to a metro area (33%) than for the average region (17%). This suggests that proximity to a highly populated area may be important for the financial success of food hubs.

Table 2-1: Food Hubs by County Type			
	N	Percent of hubs	County type
Metropolitan counties	51	48%	Counties in metro areas of 1 million population or more
	18	17%	Counties in metro areas of 250,000 to 1 million population
	11	10%	Counties in metro areas of fewer than 250,000 population
Nonmetropolitan counties	8	7%	Urban population of 20,000 or more, adjacent to a metro area
	3	3%	Urban population of 20,000 or more, not adjacent to a metro area
	8	7%	Urban population of 2,500 to 19,999, adjacent to a metro area
	6	6%	Urban population of 2,500 to 19,999, not adjacent to a metro area
	2	2%	Completely rural or less than 2,500 urban population, adjacent to a metro area
	0	0%	Completely rural or less than 2,500 urban population, not adjacent to a metro area

Operational Structure

Eleven distinct legal operating structures for food hubs were identified. For clarity, these were classified into five categories: nonprofit, for-profit, cooperative, publicly owned, and other. Of the 107 food hubs, most were either nonprofit (37, or 34%) or for-profit (50, or 47%) in structure. Of the remaining 20 hubs, 14 were cooperative in structure, 4 were publicly owned and 2 did not fall into any of these categories. This is comparable to the findings of the 2011 National Food Hub Collaboration's survey, where 36% of food hubs identified as nonprofit, 33% as a type

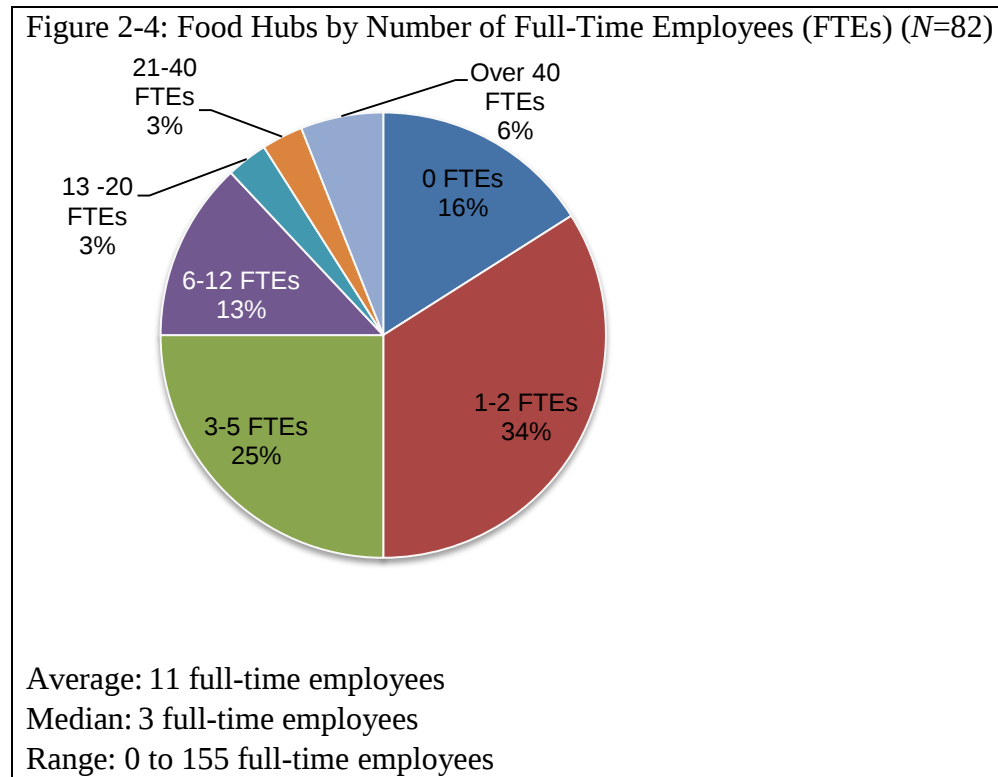
of for-profit organization and 27% as cooperative. The average age of food hubs in each structural category varied, with for-profit food hubs being generally the youngest (6 years), followed by cooperatives (8 years), nonprofits (11 years) and publicly owned food hubs (84 years).



Employees and Volunteers

The 82 food hubs that responded to the question about numbers of employees had, in sum, 787 full-time, year-round workers. Most food hubs had five or fewer full-time employees. However, there were also a small number of very large food hubs, with the largest reporting 155 full-time employees. The number of years a food hub had been in operation was highly correlated to the number of full-time employees it had ($r_s = .30$, $p < .01$) with newer hubs more likely to have fewer or no full-time employees compared to older hubs. Many hubs also utilized

part-time or seasonal staff, with 58 hubs indicating they had at least one part-time employee and 33 hubs at least one seasonal employee.



Many food hubs indicated that they struggled with increasing staff; 41 food hubs indicated that this was a barrier to growth for their operations. Further, 23 food hubs indicated that they had at least one regular volunteer. This is important because when asked about the operational challenges they faced, 11 food hubs indicated that “finding reliable seasonal and/or part-time staff” was one of their top three challenges.

Table 2-2: Food Hub Employees

	N	Number of Employees					
		Full-time year-round		Part-time year-round		Seasonal	
		Average	Median	Average	Median	Average	Median
All sales sizes	104	11	3	3	2	5	1
\$500,000 or less	50	2	1	2	2	3	1
\$500,001 to \$2,000,000	23	5	4	4	4	2	2
\$2,000,001 to \$5,000,000	4	6	6	—*	—	—	—
\$5,000,001 to \$10,000,000	4	42	16	3	4	—	—
Over \$10,000,000	5	106	117	—	—	—	—

*Dashes in Tables 2 and 3 indicate that fewer than three hubs responded to the number of employees or volunteers they had in this category. Therefore, an average and median could not be reliably computed.

Table 2-3: Food Hub Volunteers

	N	Number of Volunteers					
		Cooperative Member*		Regular		Occasional	
		Average	Median	Average	Median	Average	Median
All sales sizes	104	17	1	4	2	14	3
\$500,000 or less	50	26	7	4	2	12	3
\$500,001 to \$2,000,000	23	—	—	4	2	23	4
\$2,000,001 to \$5,000,000	4	—	—	—	—	—	—
\$5,000,001 to \$10,000,000	4	—	—	—	—	—	—
Over \$10,000,000	5	—	—	—	—	—	—

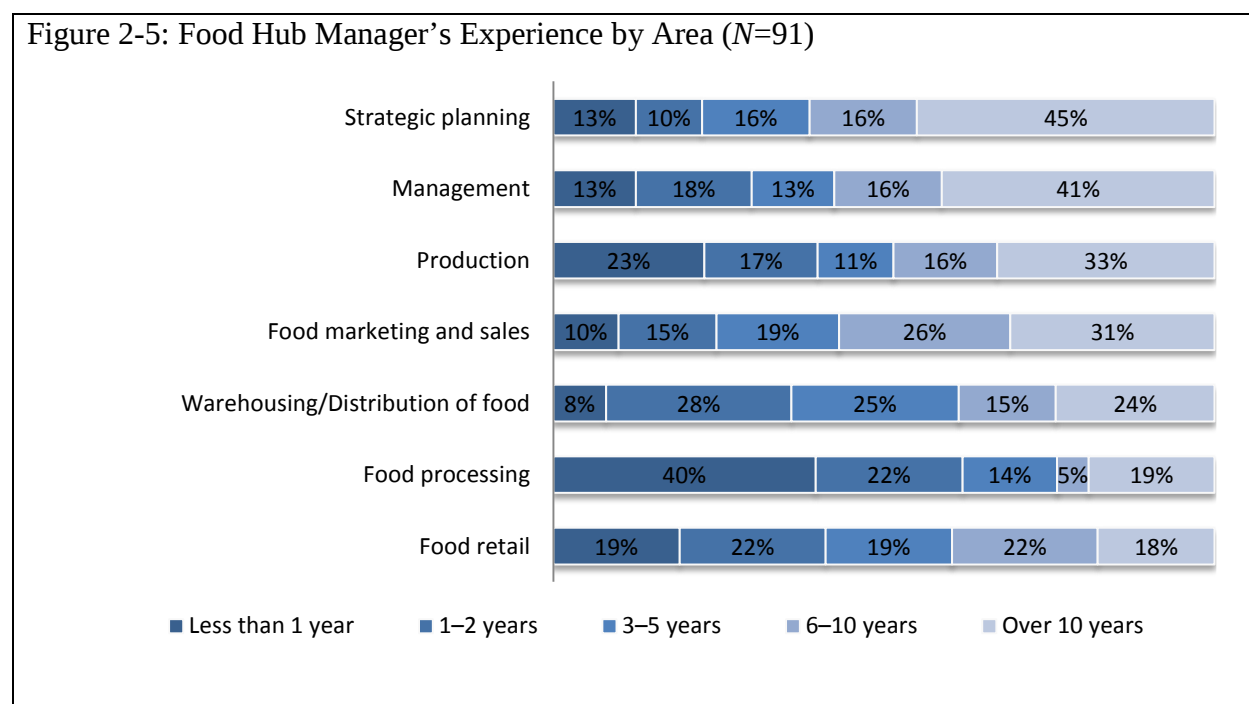
*Cooperative member volunteers are an important workforce for many food hubs organized as cooperatives, and volunteering may be a requirement of belonging to the cooperative.

Management

Effective management of a food hub stands to be important for the hub's success.

However, on average, food hubs reported that their senior managers only had between 1–5 years of experience in all of the seven experience areas outlined in Figure 2-5. Of these areas, food hub managers tended to have less experience (between 1–2 years) in food retailing, processing and warehousing/distribution. Food hub managers tended to have slightly more experience (between

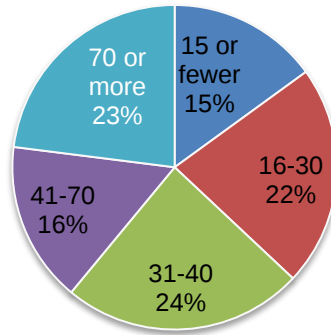
3–5 years) in strategic planning, management, production, food marketing and sales. The average age of the food hubs' most senior manager was 46, with ages ranging from 25 to 67.



Producers and Suppliers

Because of the important role food hubs may potentially have in marketing food from small and mid-sized producers, several aspects of the producers that food hubs work with were explored. These aspects include the size and type of producers' operations and the diversity of producers that food hubs chose to work with. It is possible that the food hub operators filling out the survey may not have precise knowledge of producer characteristics, such as how long each producer had been in operation. The authors note that the findings regarding food hub producers and suppliers would benefit from further direct investigation.

Figure 2-6: Food Hubs by Number of Producers/Suppliers (N=79)

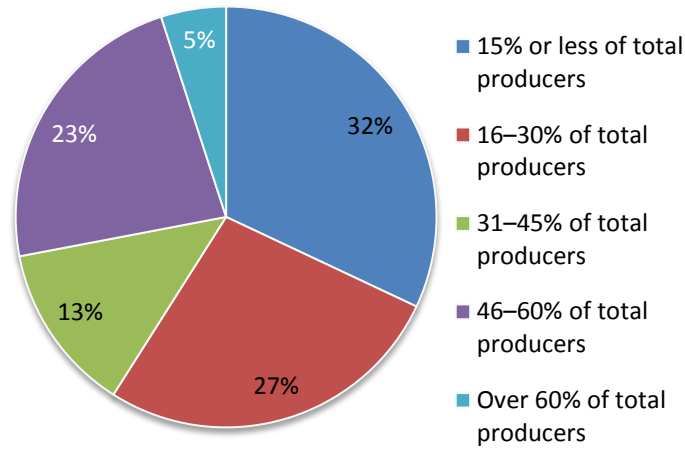


Average: 80 producers/suppliers
Median: 36 producers/suppliers
Range: 5 to 2,000 producers/suppliers

Overall, food hubs worked with a large range of suppliers, with the majority (61%) working with 40 producers or fewer. These producers tended to be slightly more often women or people of color than the national averages for primary operators of farms (see Figures 2-7 and 2-8). Fifty-eight food hubs responded to the question about the percentage of producers who were women and, on average, 19% of the total of these hubs' producers/suppliers were owned or operated by women (compared to a 14% national average). For the question about producers of color, 44 food hubs responded, and 29% of the total of these hubs' producers/suppliers were people of color (compared to a 17% national average)ⁱ (National Agricultural Statistics Service, 2007).

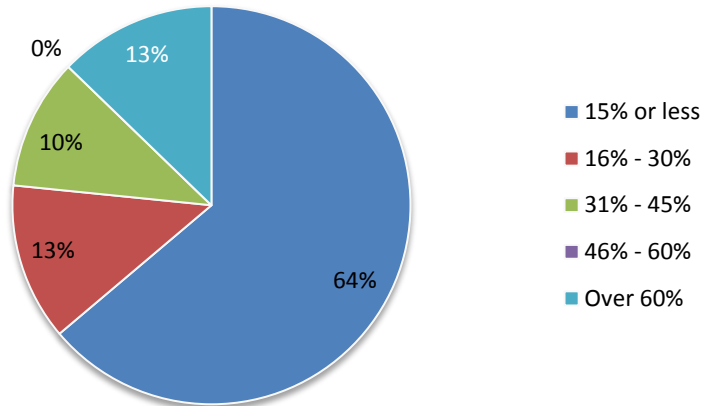
ⁱ The number of producers/suppliers for each hub who were women of color was back-calculated using the percentage of producers food hubs indicated were women, the percentage who were people of color, and the total number of producers a food hub indicated it purchased or procured from.

Figure 2-7: Percentage of Food Hub Producers/Suppliers Owned or Operated by Women (N=60)



Average: 29%
Median: 25%
Range: 1% to 63%

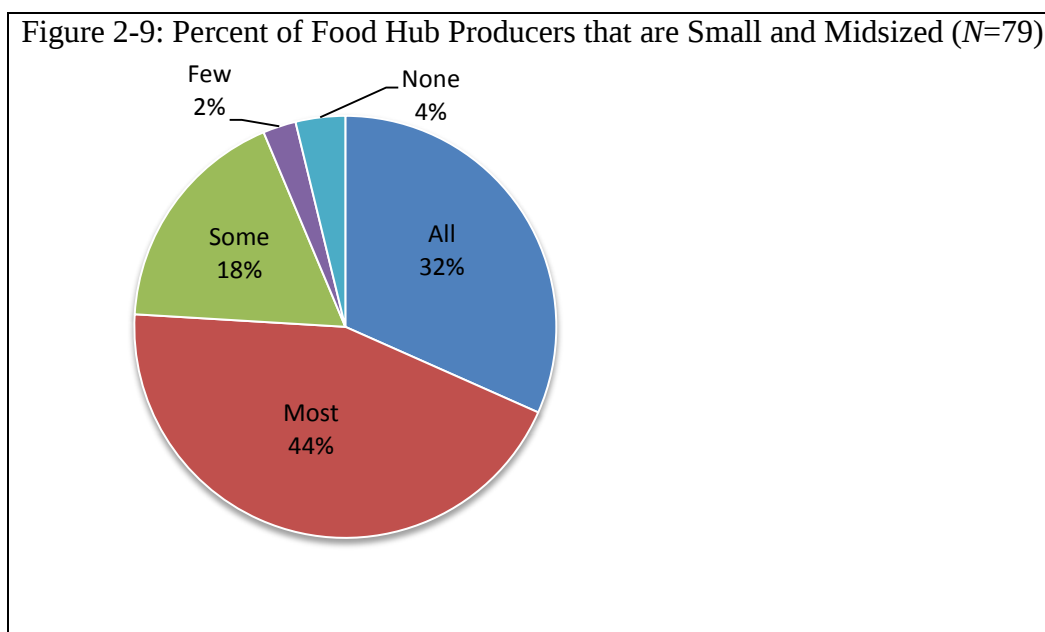
Figure 2-8: Percentage of Food Hub Producers/Suppliers Owned or Operated by People of Color (N=47)



Average: 21%
Median: 8%
Range: 0% to 100%

Beginning Producers

On average, 26% of producers that all food hubs purchased or procured products from had been in operations for less than 10 years. This percentage equals the national proportion of beginning farm operators^j (National Agricultural Statistics Service, 2007). When looking at this information from the individual hub perspective, food hubs reported that, on average, 47% of their producers had been in operation for less than 10 years.



Small and Midsized Producers

Food hubs were asked to estimate the number of small and midsized producers that they worked with (generally speaking, farms and ranches with gross annual sales less than \$500,000).

^j The number of producers/suppliers for each hub that had been in operations for less than 10 years was back-calculated using the percentage of producers a food hub indicated had been in operations for that amount of time and the total number of producers a food hub indicated it purchased or procured from.

Seventy-six percent of food hubs indicated that all or most of their producers fit this small to midsized category. Further, 71% of these hubs working with small and midsized producers (at any level) indicated that they worked with an increasing number of these producers over the lifetime of the hub.

The value of the products purchased from small and midsized producers was compared to the food hubs' reported annual gross sales. On average, 60% of a food hub's total gross sales came from small and midsized producers' products. Eighty percent of food hubs also indicated that the proportion of sales from small and midsized producers' products had increased over the life of their food hub.

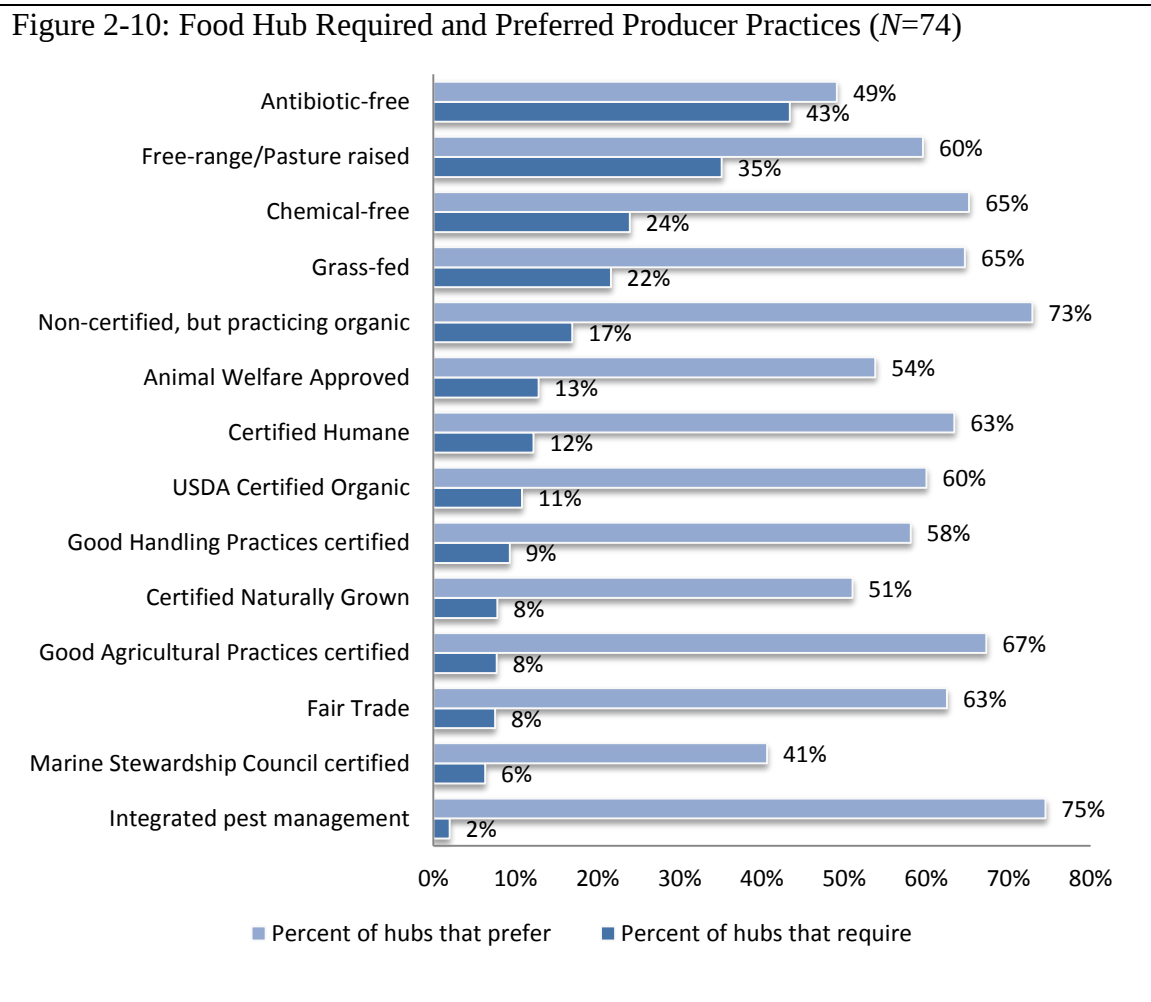
Both years in operation ($r_s = .30, p < .01$) and revenue ($r_s = .36, p < .01$) were significantly correlated to the amount of a food hub's producers that were small or midsized. Food hubs that had been in operation for 2 years or less and were earning an annual revenue of \$100,000 or less were the most likely to have indicated that all of their products were purchased or procured from small and midsize producers. Including farmer support language in a food hub's mission statement did not significantly correlate to the percentage of a food hub's producers that were small or midsized. For more information, see the section on mission statement analysis.

Producer Practices

Food hubs were provided with a list of producer certifications and practices and asked if they required them, preferred them or if they had no preference (see Figure 2-10). On average, the hubs most often cited "no preference" to Marine Stewardship Council Certified, Certified

Naturally Grown, Good Handling Practices Certified and Animal Welfare Approved certifications/practices.

None of the practices listed in Figure 2-10 were required by more than half of food hubs, although antibiotic-free, free range/pasture raised, chemical-free and grass-fed were practices that were required the most, by between 43% and 22% of hubs. However, more than half of all food hubs indicated that they preferred all but two of the listed practices (Marine Stewardship Council certified and antibiotic-free), with three-quarters of hubs indicating that they preferred their producers to be noncertified but practicing organic and/or using integrated pest management techniques.



Several food hubs also noted that their close relationships with producers and their localized operating area neutralized the need for outside certifications of producers' products and practices. "These relationships supplant the need for certifications," one hub wrote. "Although we do not require any of the outside certifications listed above—or any others, for that matter—we do require that our vendors be local enough to be at the hub on a regular basis to talk with customers about their practices," wrote another.

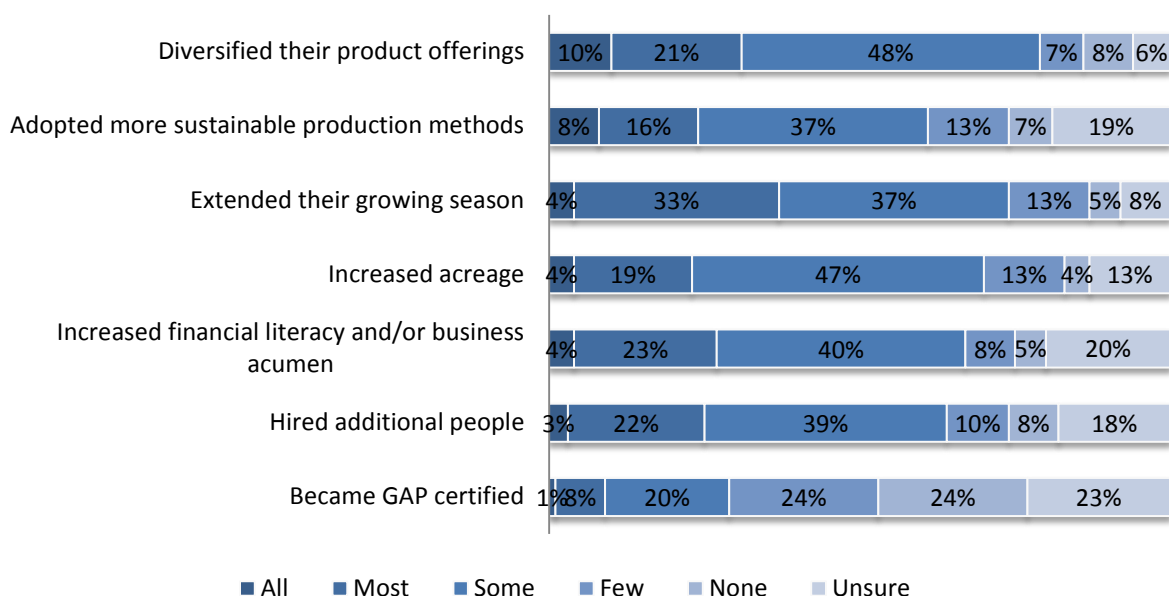
Changes in Producer Practices

Each food hub was provided with a list of options and asked if all, most, some, few or none of its producers had changed in specific operational practices since working with the food hub. The practices and results are displayed in Figure 2-11. Extending the growing season and diversifying product offerings were the top two ways in which food hubs indicated that their producers had changed their enterprises. In detail, 37% of hubs ($N=29$) reported that all or most of their producers had extended their growing season, and 31% of food hubs ($N=24$) reported that all or most of their producers had diversified their product offerings. Twenty-seven percent of hubs ($N=21$) reported that all or most of their producers had increased their financial literacy and/or business acumen, 25% ($N=19$) reported all or most had hired additional people, 24% ($N=19$) reported all or most had adopted more sustainable production methods and 23% ($N=18$) reported that all or most had increased their acreage since beginning to work with their food hub.

Food hubs indicated very few of their producers had become Good Agricultural Practices (GAP) certified. Only one hub reported that all of their producers had become GAP certified, and six food hubs reported that most had become GAP certified since working with their hub. Nearly

a quarter of hubs reported that none of their producers had become GAP certified as a result of working with their hub or that they were unsure if producers had become certified or not.^k

Figure 2-11: Changes in Food Hubs' Producers and Supplier Enterprises (N=78)



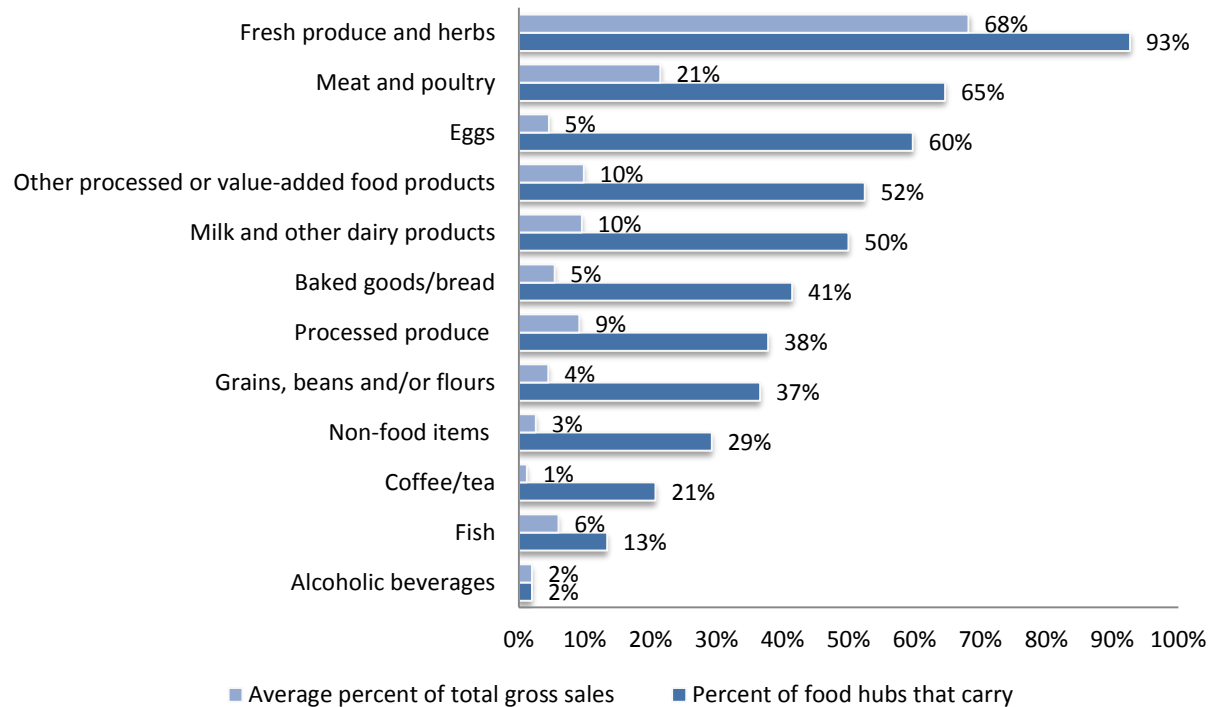
Types of Products Sold

Food hubs worked with a wide range of products, with the average hub carrying items from five different product categories, outlined in Figure 2-12. The size of a food hub's annual revenue was not significantly correlated to the breadth of product types the hub carried. This is most likely due to a majority of food hubs focusing on only fresh produce and herbs. Twenty-two hubs (of N=81) concentrated their sales almost solely (95% or more) on fresh produce and herbs, while three hubs focused their sales almost solely on meat and poultry. Figure 2-12 shows

^kThe survey was conducted before rules were finalized to implement the FDA Food Safety Modernization Act. Under the Act, increased food safety practices will be required of food hubs and their producers. As such, there will likely be changes in the levels of GAP certification observed from future surveys after food hubs and their producers are required to come into compliance with the rules.

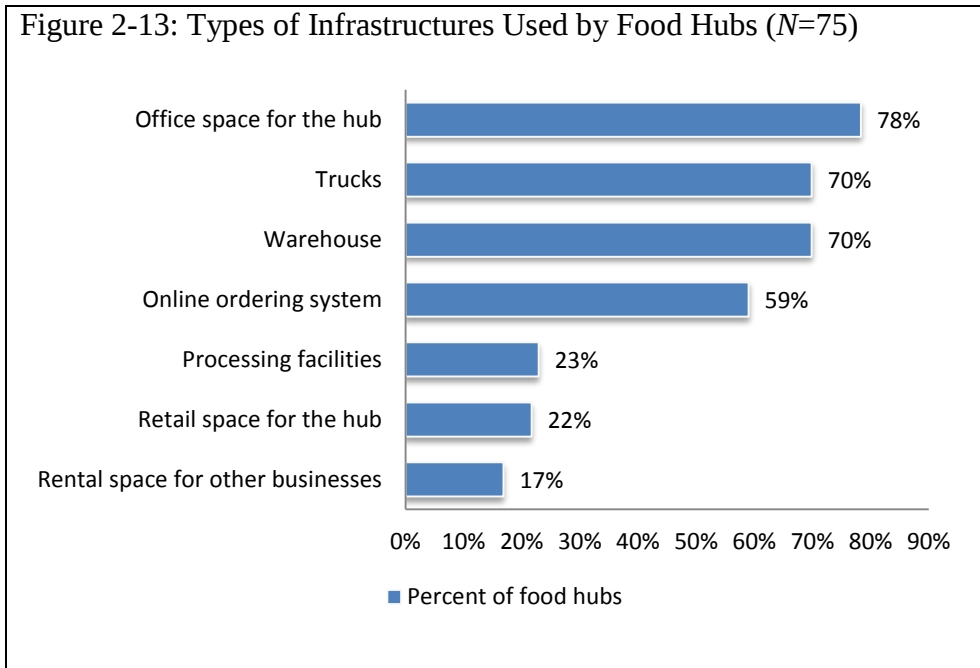
that while many other food hubs carried products beyond fresh produce and meat and poultry, these products generally constituted a minimal amount of that food hub's overall sales compared to produce and meat.

Figure 2-12: Food Hub Products by Average Number of Hubs that Carry them and by their Percentage of the Food Hub's Total Gross Sales (N=81)



Infrastructure

Seventy-five food hubs indicated that they utilized (either owned, rented or leased) some sort of physical space or assets, such as a warehouse facility, office space or trucks (see Figure 2-13 for the various types of infrastructure used by food hubs). Most food hubs made use of office space (78%), while rental spaces for other businesses were used by food hubs the least (17%).



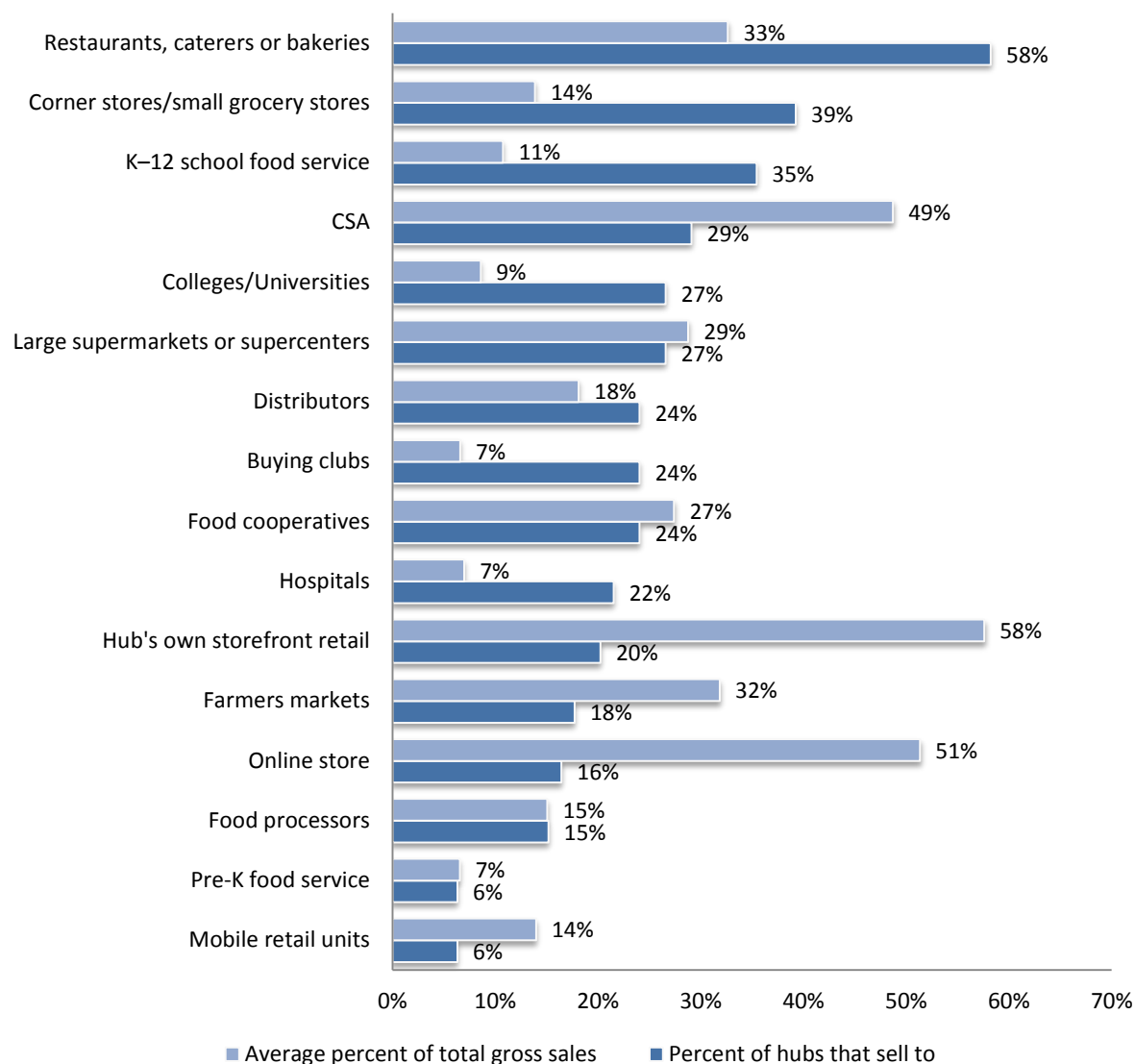
Food Hub Customers

Food hubs' three most commonly reported customer types were restaurants, small grocery stores and kindergarten through 12th grade school food service. Food processors, pre-K food service and mobile retail units were the three least common. Community-supported agriculture (CSA, a weekly distribution of food to individual customers that have typically pre-paid for it over the course of a season), the food hub's own retail and/or online stores all accounted for around half of the sales of the food hubs that utilized them. In other words, food hubs that utilize these three outlets for their products seem to rely on them for a larger portion of their sales than do other food hubs that work with other types of customers.

There was no correlation between the revenue size of a food hub and the individual types of customers they worked with. However, the revenue size of a food hub was significantly correlated with number of customer types that food hub worked with ($r_s = .41$, $p < .01$). Food

hubs with smaller overall revenues (less than \$500,000 annually) were more likely to only work with one or two types of customers than those with larger revenues, which tended to have a more diverse customer base.

Figure 2-14: Food Hub Customers by Average Number of Hubs Selling to them and by Average Percent of Total Hub Sales (N=82)

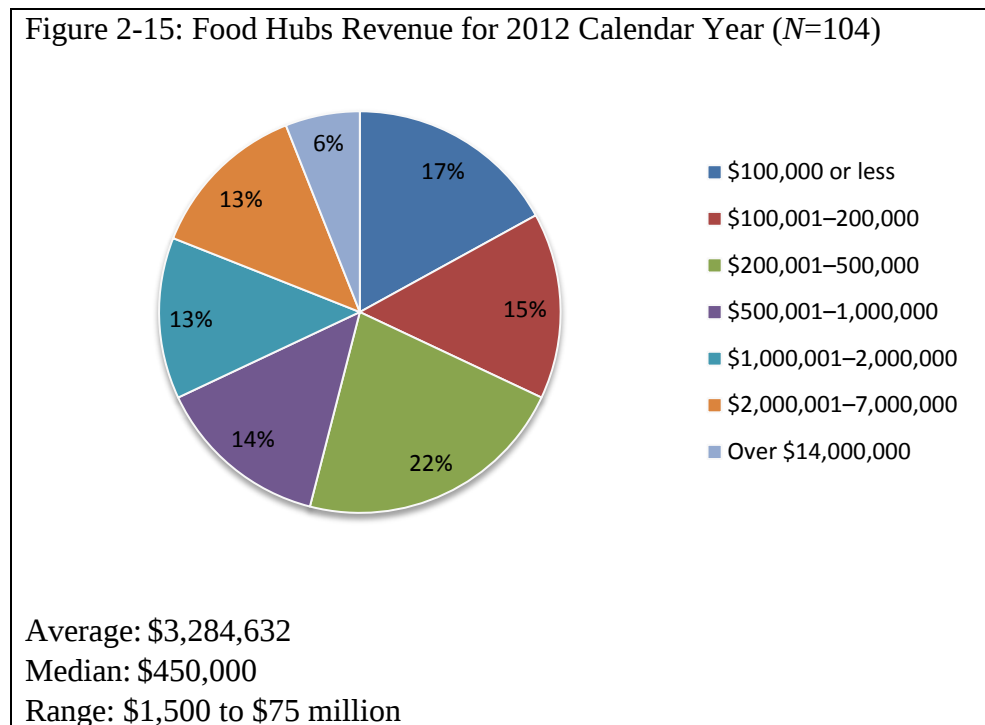


FINDINGS: FINANCES

Financial solvency is of utmost importance to the continuing operations of any business, and food hubs are no exception. This section reveals findings regarding revenue, sales, reliance on outside funding and other factors that are key to a food hub's financial viability.

Revenue and Sales

For many food hubs, revenue is representative of a mix of income from food hub operations and outside funding sources. The range of revenue reported for the 2012 calendar year varied widely among the food hubs surveyed, with \$450,000 as the median amount. Revenue was significantly correlated with years in operation ($r_s = .42$, $p < .01$), with older hubs tending to have larger total revenue than younger hubs. To illustrate, 8 of the 12 hubs in operation for over 20 years had revenue of more than \$2 million for 2012, and 10 of the 33 hubs in operation for 0–2 years had revenue of \$100,000 or less.



A business efficiency ratio was calculated for food hubs that were able to enumerate their revenue and all operating expenses. An efficiency ratio measures the proportion that total expenses are of total revenue. Operations with an efficiency ratio less than 1.00 have revenues that exceed their expenses (in other words, are likely profitable), while operations with an efficiency ratio greater than 1.00 have expenses that exceed their revenues. On average, the business efficiency ratio was 1.07 and the median was 1.00 for all hubs. In general, cooperatives and food hubs that had been in operation for more than 10 years had the lowest efficiency ratios and therefore brought in the most revenue in relation to their expenses. See Tables 2-4 and 2-5 for more details.

Table 2-4: Business Efficiency Ratios by Food Hub Type*

	N	Avg.	Median	Range
All hubs	75	1.09	1.00	0.04–6.79
Nonprofits	29	1.20	1.00	0.04–6.79
Cooperatives	12	0.94	1.00	0.11–1.85
For-profits	34	1.06	1.00	0.33–3.53

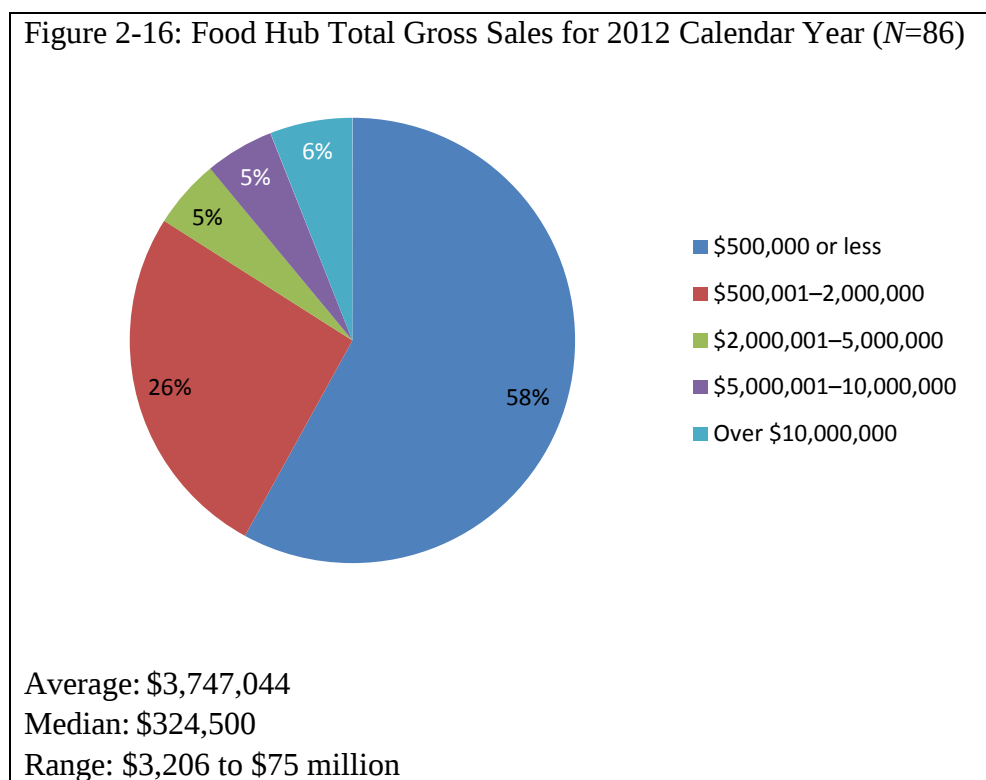
*Neither publicly owned nor “other” types of food hubs are displayed because there were less than three hubs in each category available for analysis.

Table 2-5: Business Efficiency Ratios by Years in Operation

	N	Avg.	Median	Range
All hubs	77	1.09	1.00	0.04–6.79
0–2 years	24	1.14	1.00	0.11–4.21
3–5 years	24	1.03	1.00	0.04–3.53
6–10 years	8	1.68	1.05	0.29–6.79
11–15 years	7	0.89	1.00	0.09–1.10
16–20 years	4	0.82	0.96	0.33–1.01
Over 20 years	10	0.74	0.94	0.17–1.00

Sales

As with revenue, the range of food hubs' total gross sales for 2012 varied widely, with \$324,500 the median amount. The average sales amount for all food hubs was \$3,747,044, and the range was \$3,206 to \$75 million. Most food hubs were on the small side of the sales spectrum, with more than half of food hubs moving \$500,000 or less in 2012.

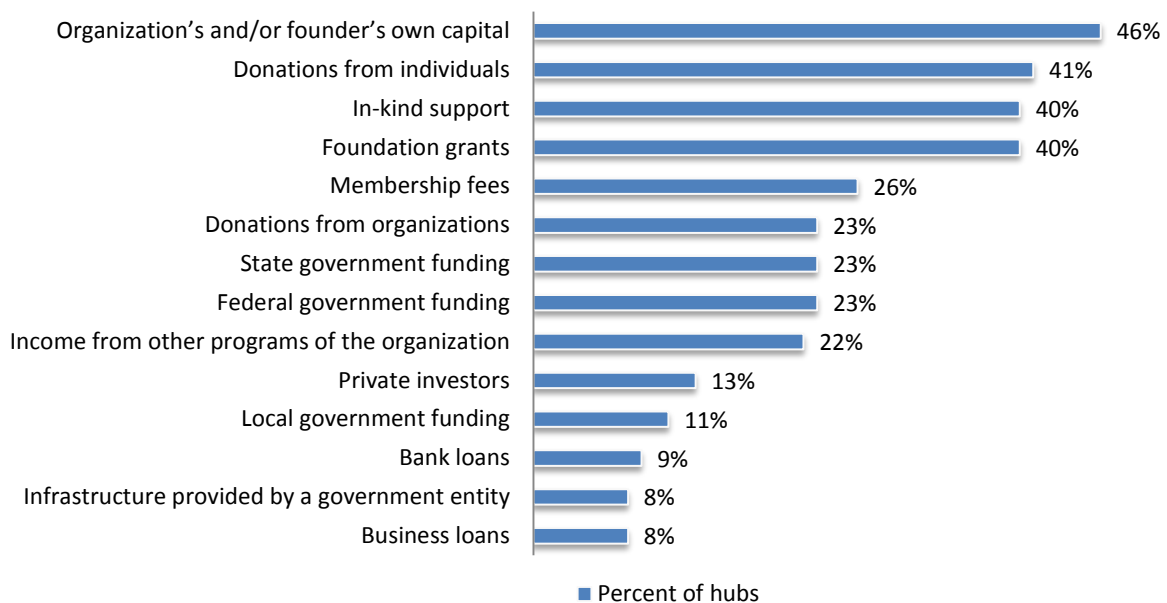


For most food hubs (69%), total gross sales represented between 90–100% of the hub's annual revenue. Nine food hubs had sales that exceeded their reported revenue by amounts ranging from 2% to 8,400%. These vast differences could be attributed to some hubs not taking ownership of food products and, therefore, not accounting for sales in their revenue, although the survey did not directly ask about this. The 26 remaining hubs had sales that represented between less than 1% and 89% of their revenue, with an average of 60% and a median of 74%.

Revenue Sources to Begin Operations

Food hubs were asked to identify the different types of capital that they used to begin their operations and the revenue streams their hub used during the 2012 calendar year. Capital from the food hubs' parent organizations and/or founders was the most common source of revenue used to begin operations, with 46% of hubs indicating that they used this source. Loans, revenue from private investors and infrastructure provided by the government were the three least cited sources of revenue, each used by 15 or fewer food hubs. The food hubs were not asked to provide the amount of funding from each source to begin operations, so while relatively few hubs may have used certain types of revenue streams, there is a possibility that these streams' contribution to starting those food hubs may have been relatively large.

Figure 2-17: Primary Revenue Sources to Begin Food Hub Operations (N=91)



Revenue Sources for 2012

Current revenue sources offered in the survey belonged to one of two categories: “inside sources,” which included funding streams that stemmed from activities of the hubs and debt equity such as bank loans, and “outside sources,” which included funding streams stemming from grants or donations from individuals or groups outside of the food hub. Income from services and/or operations provided by the food hub represented the vast majority of revenue for most food hubs, representing on average 86% of total revenue sources. No other source accounted for more than 5% of total revenue sources.

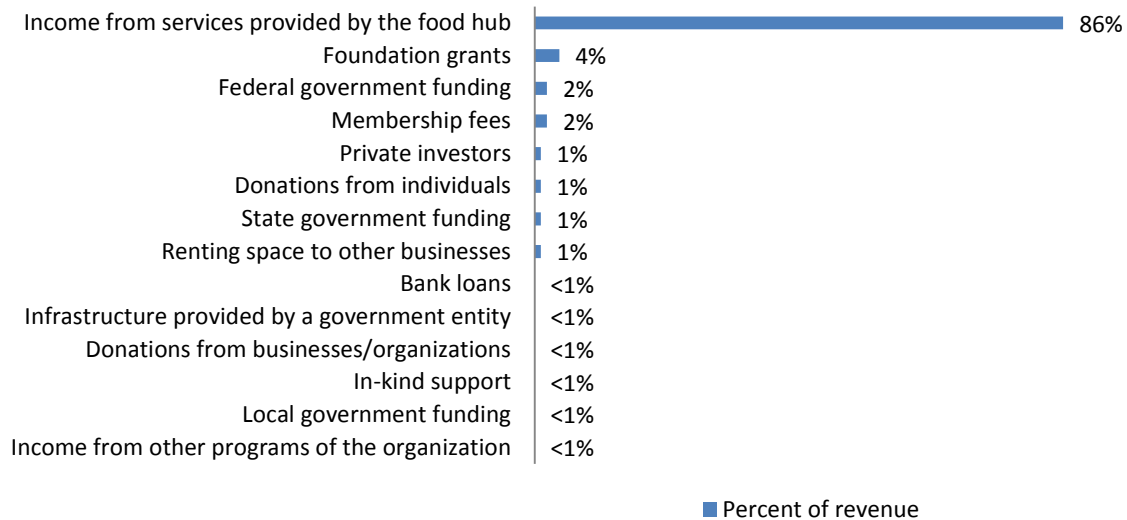
Inside sources:

- Income from services and/or operations provided by the food hub
- Income from renting space to other businesses
- Bank loans
- Income from any membership fees
- Income from other programs of the food hub’s organization
- Private investors

Outside sources:

- Federal state and/or local government funding
- Foundation grants
- In-kind support
- Donations
- Infrastructure provided by a government entity

Figure 2-18: Average of Individual Food Hub Revenue Sources as a Percent of their Total Revenue (N=100)

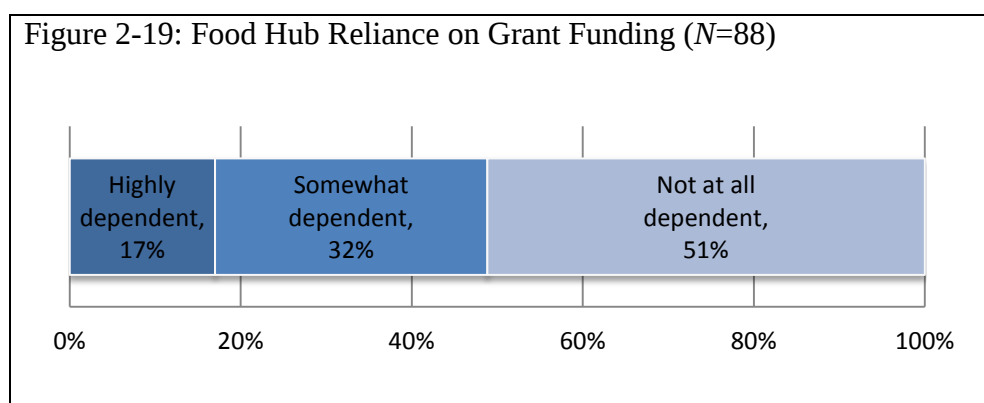


For all food hubs (N=86), inside funding represented an average of 92% of average food hub revenues. Sixty-six percent of food hubs (57) reported not receiving any funding from outside sources. Food hubs with mixed inside and outside revenue sources (29 hubs) reported an average of 77% of their funding coming from inside sources. Only 6 of the 87 food hubs had more than half of their funding stemming from outside sources. This is surprising, considering that 35% of responding food hubs were nonprofits.

Perceived Reliance on Outside Funding

Food hubs were given three choices to indicate how dependent they were on grant funding from public and/or private sources (outside sources) to carry out core food hub functions (aggregation, distribution and marketing of local food products). The three answer choices were 1) highly dependent: we could not carry out these core functions without considerable grant funding; 2) somewhat dependent: we could carry out these core functions without grant funding

but would need to scale back certain aspects of our operation (e.g., not working with certain producers or not serving a particular market/customer base); 3) not at all dependent: we do not require any grant funding to carry out these core functions. The majority of hubs (51%) indicated that they were not at all dependent on outside funding.



These results corroborate the finding that 66% of food hubs reported not receiving any funding from outside sources. Further confirming this measure, the perceived dependence on grant funding was substantially correlated ($r_s = .63$, $p < .01$) with the actual percent of inside funding, where hubs with a relatively smaller proportion of funding from inside sources are more likely to have indicated that they were somewhat or highly dependent on grant funding to carry out core food hub functions.

No significant relationship between reliance on outside funding was found for a number of variables, including location, total sales amount, types of products sold, number of full-time employees, number of producers, percentage of beginning producers, percentage of small and midsized producers and percent of sales from products of small and midsized producers. Types of physical infrastructure used, location of customers, requirements for particular growing

practices and certifications and customer types also showed no significant relationship to a food hub's reliance on outside funding.

Table 2-6: Food Hub Reliance on Outside Funding by Years in Operation

		Highly dependent	Somewhat dependent	Not at all dependent
	N	Number of hubs (%)		
0–2 years	27	5 (19%)	10 (37%)	12 (44%)
3–5 years	26	6 (23%)	5 (19%)	15 (58%)
6–10 years	11	2 (18%)	7 (64%)	2 (18%)
11–15 years	9	1 (11%)	5 (56%)	3 (33%)
16–20 years	4	0	0	4 (100%)
Over 20 years	10	1 (10%)	1 (10%)	8 (80%)
Total	87	15 (17%)	28 (32%)	44 (51%)

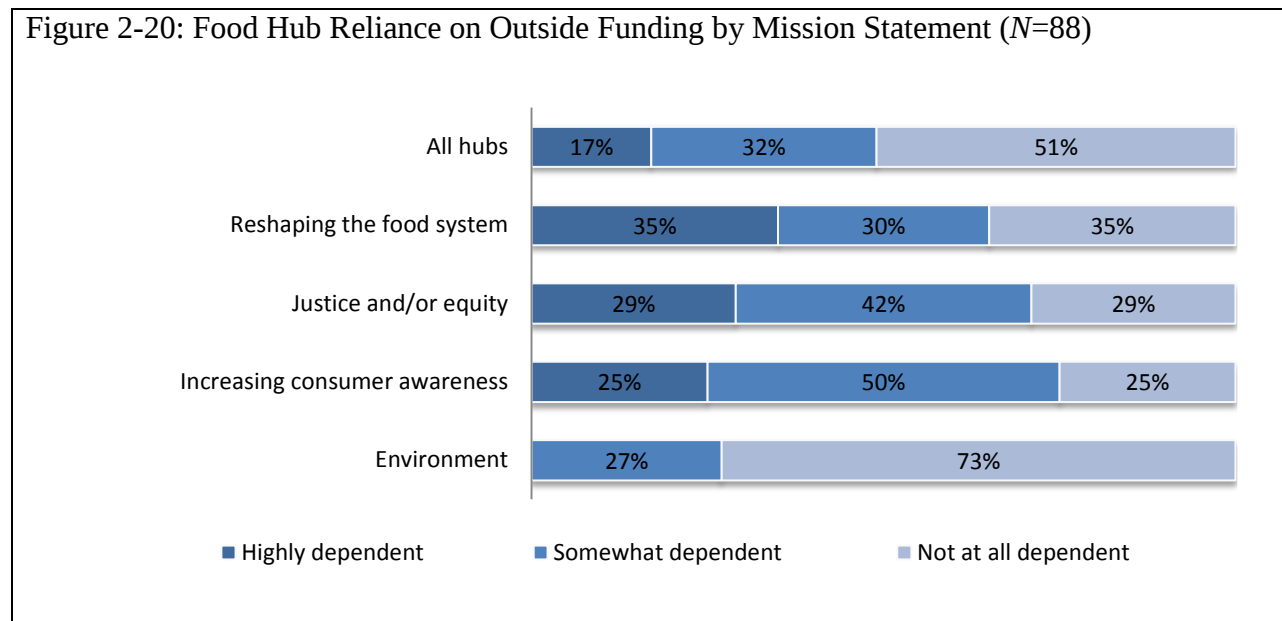
Statistically, the age group of a food hub was not significantly related to its perceived reliance on outside funding. However, it is interesting to note that among all age groups, more of the food hubs in operation for 6–10 years and 11–15 years indicated they were somewhat dependent on outside funding than indicated they were not at all dependent. See Table 2-6 for more details.

Operating structure was, unsurprisingly, significantly related to hubs' dependence on outside funding ($r_s = .45$, $p < .01$), with nonprofit food hubs much more likely to have indicated they were highly reliant on outside funding (38% of nonprofits) and other types of food hubs more likely to have indicated that they were not at all reliant on outside funding (64% of cooperative hubs, 69% of for-profit hubs and 100% of publicly owned hubs.)

The number of producers a food hub had was slightly correlated with a hub's reliance on outside funding ($r_s = .20$, $p < .10$). Food hubs that had larger numbers of producers were more likely to have indicated that they were not at all dependent on outside funding.

Four of the value themes identified in food hub mission statements were slightly correlated to a hub's dependence on grant funding.¹ Food hubs that had language related to the environment in their mission statement were more likely than hubs in the whole group to have indicated that they were not at all reliant on grant funding and, further, no food hubs in this environment group indicated that they were highly dependent on outside funding. On the other hand, food hubs with language in their mission statements related to consumer awareness, justice and/or equity or reshaping the food system were more likely to have indicated that they were highly dependent on grant funding than the larger group. See Figure 2-20 for more details.

Figure 2-20: Food Hub Reliance on Outside Funding by Mission Statement (N=88)



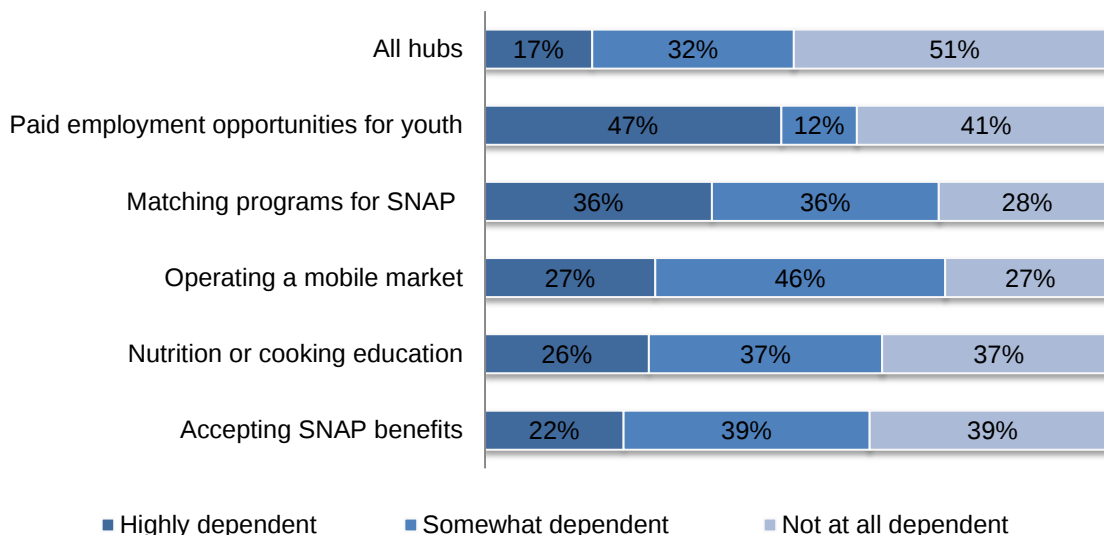
Five community-related activities (out of 10) had slightly significant relationships with reliance on grant funding.^m Hubs undertaking any one of these five activities were more likely to

¹ The four value themes were the environment ($r_s = .19$, $p < .10$), increasing consumer awareness ($r_s = -.19$, $p < .10$), justice and/or equity ($r_s = -.20$, $p < .10$) and reshaping the food system ($r_s = -.21$, $p < .10$).

^m The five community-related activities with significant relationships to reliance on grant funding were paid employment opportunities for youth ($r_s = -.22$, $p < .05$), accepting SNAP benefits ($r_s = -.19$, $p < .10$), matching programs for SNAP ($r_s = -.22$, $p < .10$), nutrition or cooking education ($r_s = -.28$, $p < .05$) and operating a mobile

have indicated that they were also highly dependent on outside funding than those in the larger group. See Figure 2-21 for more details.

Figure 2-21: Food Hub Reliance on Outside Funding by Community Activity (N=88)



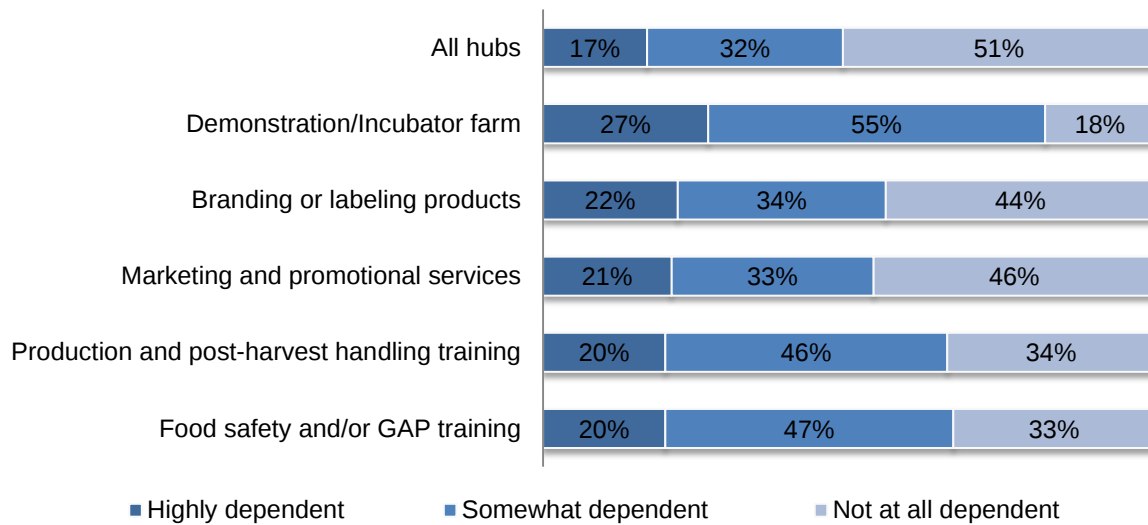
Five producer-related activities (out of 9) had slightly significant relationships with reliance on grant funding.ⁿ Hubs undertaking each of these five activities were very slightly more likely to have indicated that they were also highly dependent on outside funding than hubs in the larger group. See Figure 2-22 for more details.

market ($r_s = -.18$, $p < .10$). The other five with no significant relationships were accepting WIC or FMNP benefits, offering transportation services for consumers to access the hub, offering subsidized farm shares, providing education about community and food systems issues and food donation to local food pantries/banks.

ⁿ The five producer-related activities with a significant relationship to reliance on grant funding were food safety and/or GAP training

($r_s = -.26$, $p < .05$), production and post-harvest handling training ($r_s = -.25$, $p < .05$), marketing and promotional services for producers ($r_s = -.22$, $p < .05$), branding or labeling products to indicate origin of product or other attributes ($r_s = -.19$, $p < .10$) and operating a demonstration or incubator farm ($r_s = -.24$, $p < .05$). The four activities with no significant relationship to reliance on grant funding were actively helping producers find new markets, offering business management services or guidance, offering liability insurance to producers and offering transportation services for producers.

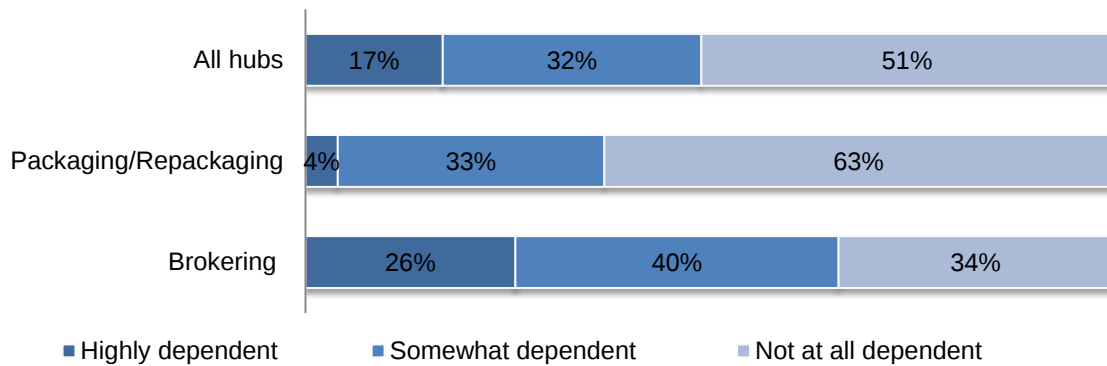
Figure 2-22: Food Hub Reliance on Outside Funding by Producer-related Activity (N=88)



Only two of 13 food hub operational activities had slightly significant relationships with reliance on grant funding.^o Food hubs that participated in packaging or repackaging of products were far less likely to have indicated they were highly dependent on grant funding. On the other hand, food hubs that offered brokering services were much more likely to have indicated that they were highly dependent on grant funding. See Figure 2-23.

^o The two operation-related activities that were significantly related to reliance on grants were packaging/repackaging ($r_s = .21$, $p < .10$) and offering brokering services ($r_s = -.28$, $p < .05$). The other 11 operation-related activities that were not significantly related to reliance on grants were aggregation, production such as operating a farm or ranch, distribution services, selling wholesale to consumers, selling retail to consumers, operating a shared-use kitchen, product storage, canning, freezing, cutting and other processing.

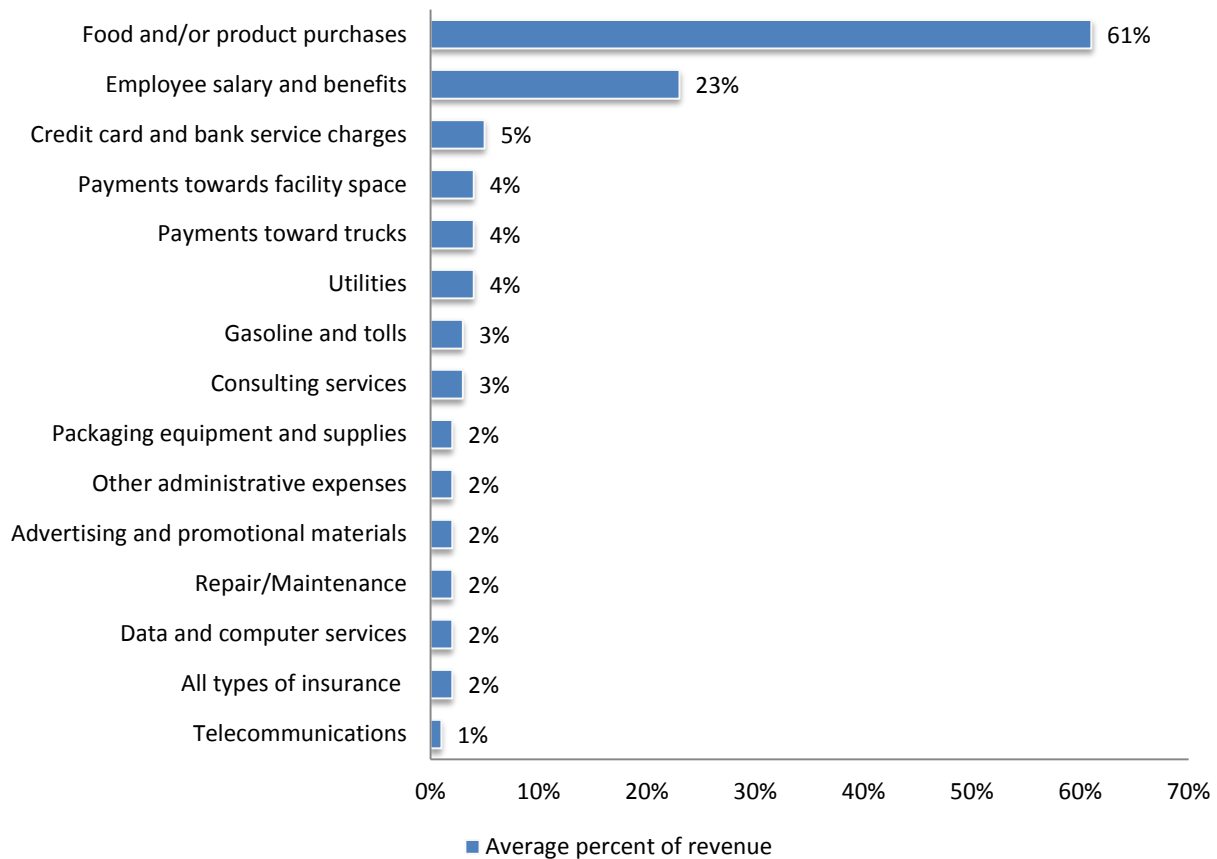
Figure 2-23: Food Hub Reliance on Outside Funding by Operational Activity (N=88)



Expenses

Food and other product purchases from producers was most food hubs' major expense. These purchases represented, on average, 61% of the hub's total revenue. Salaries occupied the second largest expense for most hubs, at a 23% average of total revenue. All other expense categories averaged 5% or less of food hub revenue.

Figure 2-24: Food Hub Expenses as a Percent of Revenue (N=78)



FINDINGS: VALUES

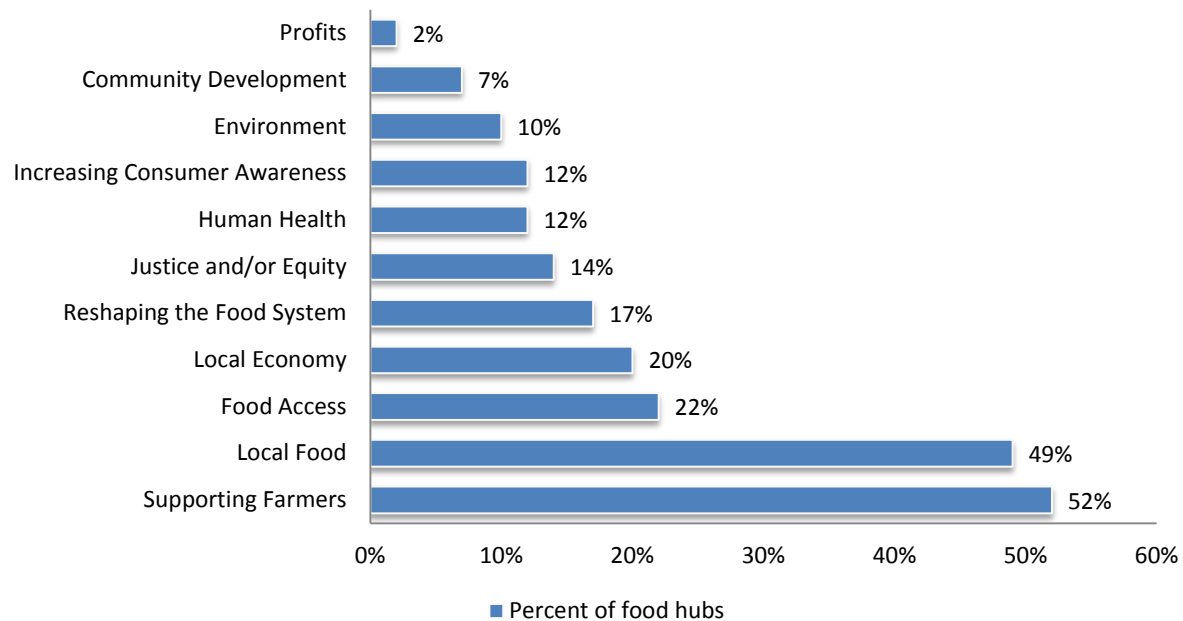
The set of values that each individual food hub embraces shapes the hub's business structure and the services the hub offers. These values may also affect how food hubs define success. Importantly, these values define the relationships a food hub has with its producers, its customers and the community within which it operates. The following section is an overview of survey findings regarding these values.

Mission Statement Analysis

Mission statements are an obvious first choice to explore the operational values of food hubs. These mission statements should give some insight into the purpose and guiding principles that undergird each food hub's goals. Mission statement analysis should be taken with a grain of salt, however. It is almost certain that the values reflected in a food hub's mission statement language are not inclusive of all the values and aspirations of the leadership of the food hub. Furthermore, it is likely that as food hubs grow, their values may also change due to circumstance and, thus, mission analysis should not be considered to reflect concrete characteristics of food hubs. However, mission statement analysis can be very useful when used as a snapshot of the issues food hubs prioritized at the time of the survey. It is within this context that the mission statements were examined.

To identify these priority issues, the mission statement language for each food hub was coded using qualitative data analysis software to see if it included any of the following nine themes: supporting farmers, local food, food access, local economy, justice and/or equity, consumer awareness, human health, environment and community development. Of these themes, supporting farmers and local food were by far the most common themes found in food hubs' mission statements.

Figure 2-25: Value Themes in Food Hub Mission Statements (N=107)



The nine chosen themes were then compared to food hub operating structures and age groups. The results can be seen in Tables 2-7 and 2-8 below. Interestingly, no cooperatives had language about food access in their mission statements; however, of all types of operating structures, cooperatives had the highest amount of language regarding consumer awareness and the environment.

Except for the theme of supporting farmers, few of the hubs in operation for over 20 years included mission statement language that fit the nine chosen themes. This could be because the term “food hub” came into common parlance sometime in the last five years. Many smaller food aggregating and distributing businesses that had been in operation for several decades before the idea of a “food hub” came into existence are included in this “over 20 years” age

group. These businesses fit the food hub definition (aggregation and distribution of food from producers within their region) but were not necessarily founded with goals similar to those of younger food hubs, such as increasing food access or human health.

Table 2-7: Value Themes in Food Hub Mission Statements

	Nonprofit (N=37)	For-profit (N=50)	Co-op (N=14)	Publicly owned/ Other (N=6)
	Percent of food hubs			
Supporting farmers	62%	42%	57%	67%
Local food	46%	50%	50%	50%
Food access	27%	26%	0%	17%
Local economy	24%	16%	29%	0%
Justice/ equity	19%	14%	7%	0%
Consumer awareness	16%	6%	29%	17%
Human health	19%	10%	7%	0%
Environment	8%	8%	29%	0%
Community development	11%	2%	14%	0%

Table 2-8: Value Themes in Food Hub Mission Statements by Age Group

	2 years or less (N=34)	3–5 years (N=32)	6–20 years (N=28)	Over 20 years (N=12)
	Percent of food hubs			
Supporting farmers	41%	47%	68%	58%
Local food	59%	53%	43%	17%
Food access	24%	22%	25%	17%
Local economy	12%	22%	29%	17%
Justice/ equity	12%	16%	18%	8%
Consumer awareness	9%	16%	18%	0%
Human health	6%	16%	21%	0%
Environment	6%	9%	18%	8%
Community development	3%	6%	11%	8%

Mission Analysis: Another View

As an alternative to mission statement analysis, food hubs were asked the extent to which their mission was related to improving human health in their community or region. Three choices

were given: not related, somewhat related and strongly related. All 107 hubs responded, with 60% indicating that their mission was strongly related to improving human health and 36% indicating that it was somewhat related. These results contrast with the mission statement analysis, which found that only 13 of the 107 mission statements contained specific language related to human health.

One hundred two food hubs gave written examples showing how the hub was engaged in improving human health. However, many of these responses simply indicated that the food hub was providing healthy food to its customers. This, while admirable, is the function of most produce-focused food hubs. A number of hubs did offer examples other than providing healthy food, though. For example, some hubs wrote about nutrition and education classes they offered and others about their commitment to working in “food deserts” and/or underserved areas. These broad interpretations illustrate the difficulty in teasing out meaning from the stated values of food hubs. These values, whether explicit or not, may not represent the issues a food hub prioritizes, nor will they always account for the types of services that a food hub offers outside of food aggregation and distribution.

Local and Regional Aspects: Different Definitions

The food hubs were asked to volunteer any specific definitions they had for local or regional. Twenty-six food hubs identified a specific radius in miles for what they considered local or regional. These radii ranged from 30 to 250 miles, with an average of 130 miles and a median of 110 miles. Forty-one other food hubs defined local or regional more qualitatively. Eighteen hubs answered that local included multiple states or a region. Fourteen hubs defined local products as originating within their state. Eight hubs defined local as within a multi-county

or watershed area. One limited the definition of local to the hub's home county, and another reported that it let its customers define local or regional.

Local and Regional Aspects: Producers, Customers, Products and Expenditures

Sixty-two (of 76) food hubs indicated that they obtained all of their products from producers within 400 miles of the hub. The food hub's number of years in operation was significantly correlated with the percent of producers that were local ($r_s = .33$, $p < .01$), with newer hubs being more likely to source all of their products from producers within 400 miles of the hub. To illustrate, 42 of the 62 food hubs that indicated all of their producers were within this range had been in operation for 5 years or less. Further, annual revenue was also significantly correlated with the percent of producers that were local ($r_s = -.37$, $p < .05$), with smaller hubs more likely than larger hubs to utilize product from producers within 400 miles of the hub.

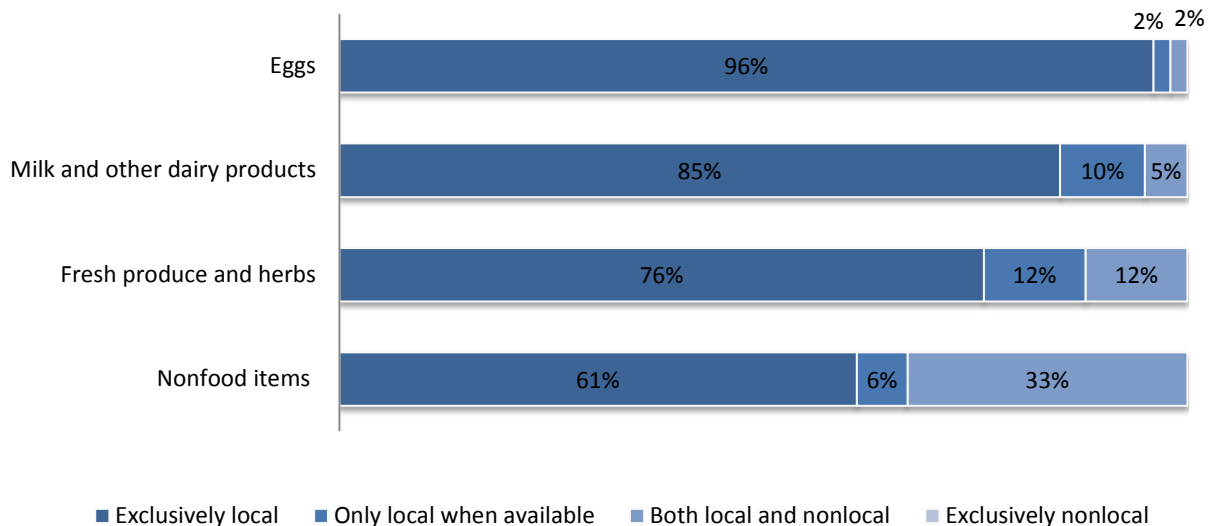
A food hub's reliance on grant funding was also slightly, but significantly, correlated with the percent of producers that were local ($r_s = -.25$, $p < .05$). All six food hubs indicating that fewer than 90% of their producers were located within 400 miles of the hub also indicated that they were "not at all" dependent on grant funding. Also, all but one of the 13 hubs indicating that they were "highly dependent" on grant funding also indicated that all of their producers were located within 400 miles of the hub.

Again using the 400-mile radius definition of local, the survey asked if the products food hubs carried were exclusively local, only local when available, both local and nonlocal or exclusively nonlocal.^p Figure 2-26 below shows food product categories by the average reported

^p Any processed products were eliminated in the analysis on this question. The results for these products were potentially not valid because the question did not delineate whether *local* meant that all ingredients of the products

level of “localness.” No food hubs that carried fish responded to this question. More than 75% of food hubs indicated that they carried exclusively local versions of fresh produce and herbs, milk and other dairy products and eggs.

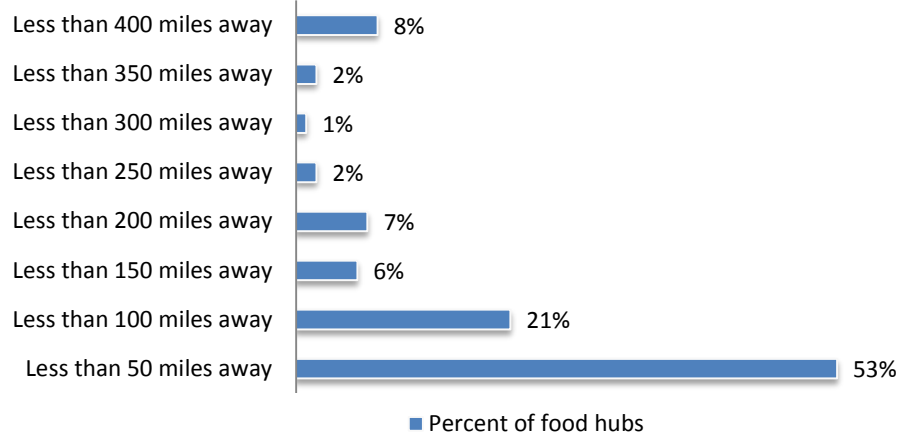
Figure 2-26: Local Products Carried by Food Hubs (N=80)



Regarding the localness of food hub customers, 44 hubs (53% of N=83) responded that the majority of their customers (at least 75%) lived less than 50 miles away from the food hub. Twenty-one percent of hubs responded that the majority of their customers lived within 100 miles of the food hubs, and no more than 10% of hubs responded affirmatively to any of the other distance categories.

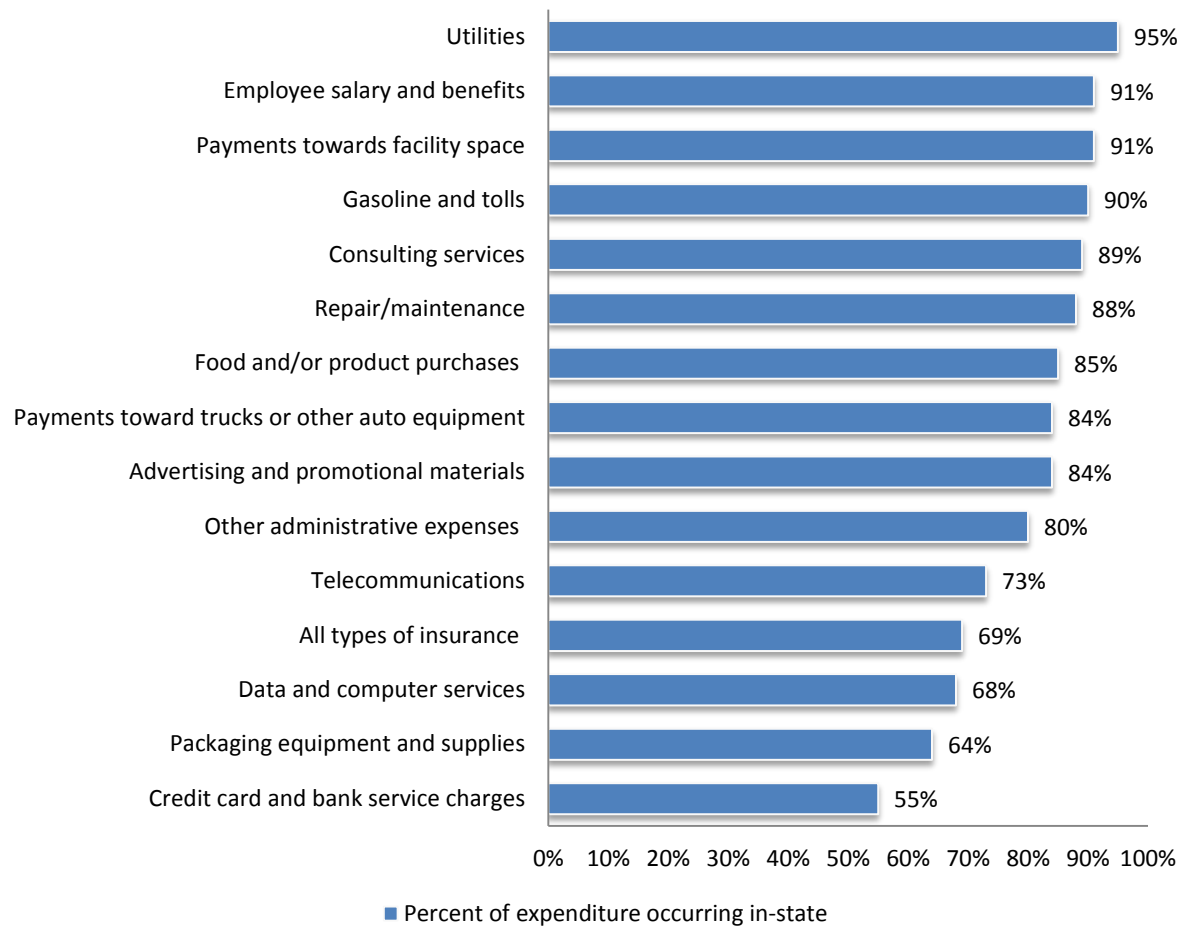
were produced within 400 miles of the hub or that only the last step in processing occurred within 400 miles. These processed products included coffee and tea, flours, any processed produce, other processed or value-added food products, baked goods, meat and poultry and alcoholic beverages.

Figure 2-27: Location of the Majority of Food Hub Customers (*N*=83)



Food hub expenditures were also analyzed for the amount of each expenditure purchased in the same state as the food hub. The averaged results are displayed in Figure 2-28. The ranges for each expense category were large, with each spanning from less than 5% to 100%. As Figure 2-28 shows, however, no expenditure averaged less than 50% spent in-state. This information may be useful for those interested in the economic impact that food hubs have on the state in which they operate.

Figure 2-28: Percent of Food Hub Expenditures in the Same State as the Food Hub (N=77)



FINDINGS: SERVICES AND ACTIVITIES

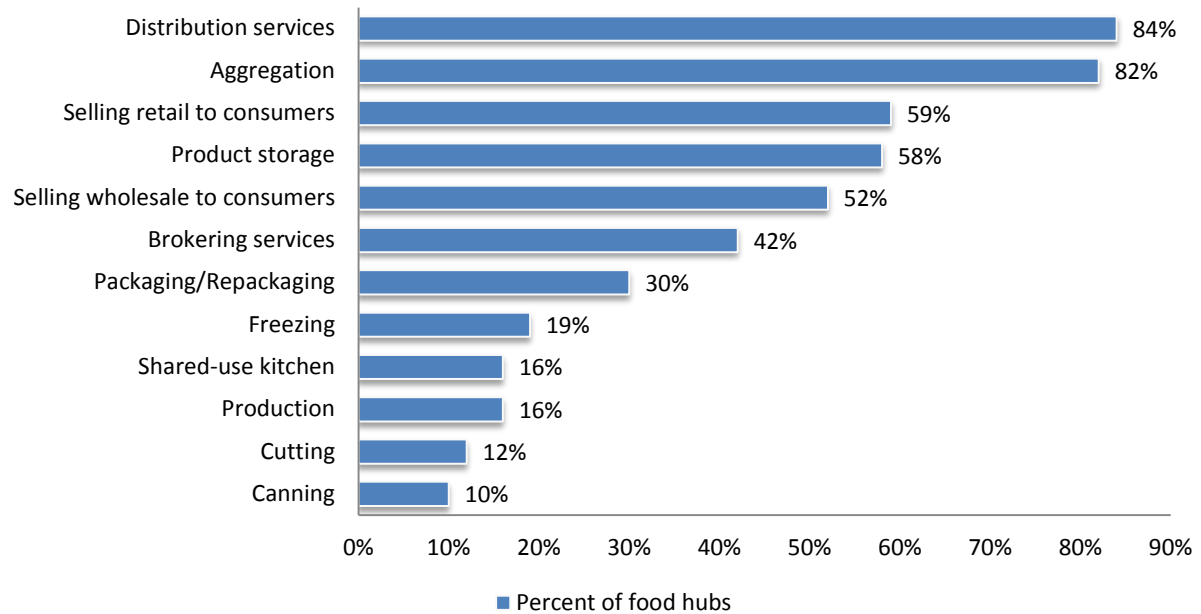
Food hubs vary greatly in the scope of services and activities that they provide to their customers, producers and communities. The survey did not go as far as asking why the food hubs offered some services rather than others, however, and so the findings in this section only represent a snapshot of the activities and services food hubs are currently offering.

Operational Services and Activities

The majority of food hubs offered aggregation and distribution services, and more than half of all food hubs indicated that they sold wholesale and/or retail to consumers. On the other hand, very few food hubs offered any types of food processing, with less than 20% of hubs offering canning, cutting or freezing services. More than half of the food hubs indicated that they offered product storage.

Seven food hubs indicated that they did not perform aggregation or distribution—two functions that many would consider to be primary to a food hub. However, two of these seven food hubs indicated that they performed brokering services between producers and customers, and the other five indicated that they sold retail and not wholesale to customers. By not aggregating, distributing or offering brokering services, these five hubs stretch the idea of what many consider a food hub to be. However, the language “actively manages” and “marketing” in the Food Hub Collaboration’s definition of a food hub may cover the food chain coordination activities these five operations are undertaking that are outside of traditional aggregating, distributing or brokering services. Because the definition of a food hub is ever-evolving, we opted to include these five hubs in our analysis.

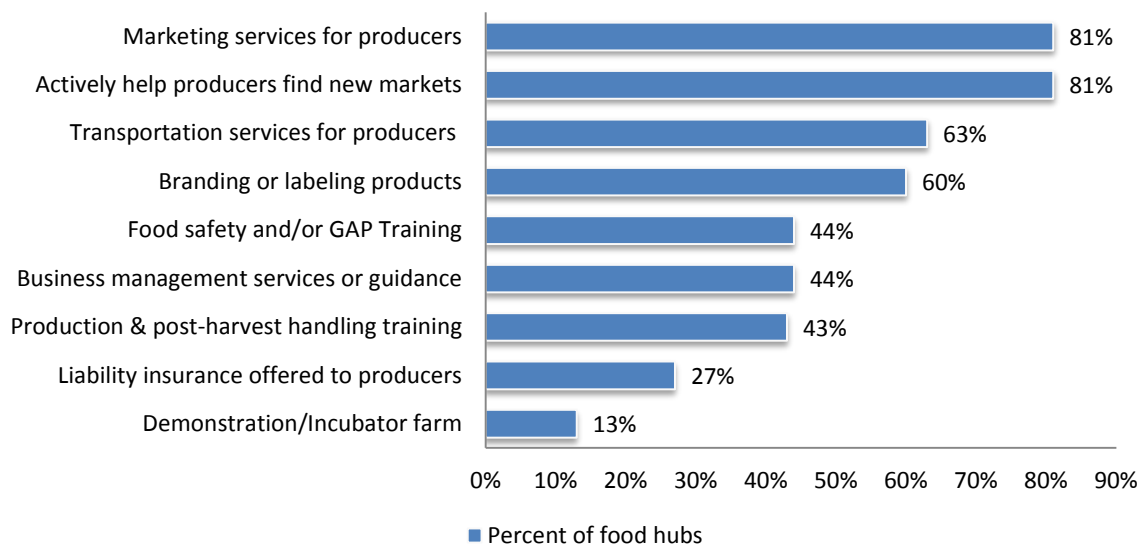
Figure 2-29: Operational Services Offered by Food Hubs (N=83)



Producer-Oriented Services and Activities

The majority of food hubs indicated that they offered marketing and promotional services to their producers and that they actively help producers find new markets. However, less than a third of food hubs operated a demonstration or incubator farm or offered liability insurance to their producers.

Figure 2-30: Producer-oriented Services Offered by Food Hubs (N=84)

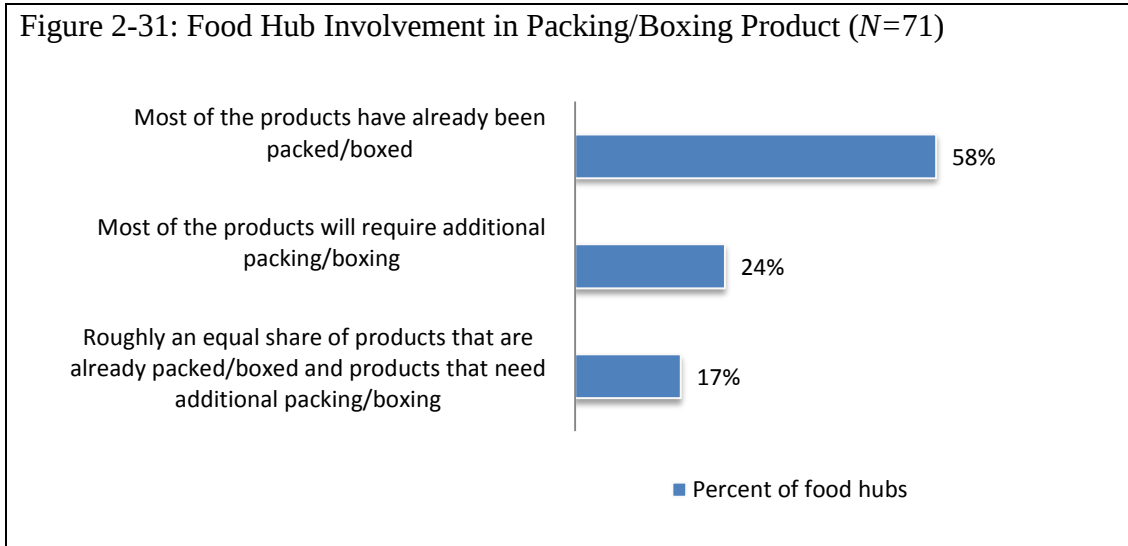


Packing/Boxing of Product

Some hubs offer food product packing services for farmers and other producers. This service can come with a substantial cost of time and money for either party, so the level of packing that a food hub takes part in was explored separately from other producer-oriented services. Food hubs were given three choices to indicate their level of involvement in packing/boxing the products of their hub:

- Most of the products received or picked up by the food hub have already been packed/boxed on farm in accordance with buyer specifications.
- Most of the products received or picked up by the food hub require additional packing/boxing to occur at the food hub facility in order to meet buyer specifications.

- The food hub facility handles roughly an equal share of products that are already packed/boxed and products that need additional packing/boxing to meet buyer specifications.

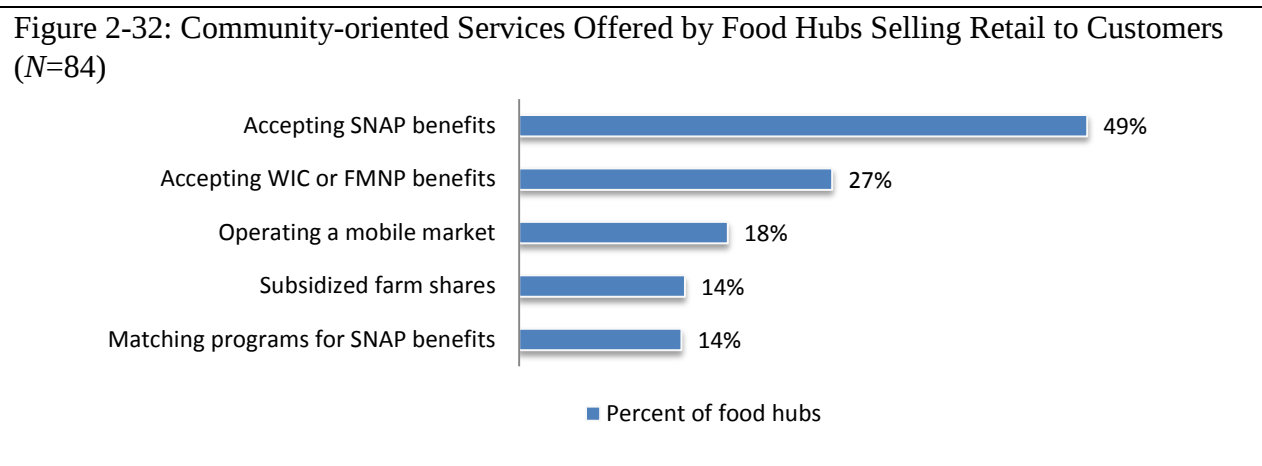


Of these choices, 58% of responding food hubs indicated that most of their products had already been packed at the farm level. This is potentially a large cost savings for the hubs (and an added cost for producers). Several hubs wrote in the comments section that they provided boxes and other packing materials. However, when it came to the actual act of packing, a few hubs raised concerns. “This is a huge thorn in our side right now,” wrote one hub. “Packaging (bagging of greens) is time-consuming for farmers, who are not interested in doing it for wholesale buyers. Some of the groups we work with, however, don’t want to take on the food safety liability of doing the bagging when filling their CSA-style weekly boxes.” Another hub wrote that most of their products “still require repacking simply because we’re new and the training takes a long time, but the goal is to not have to repack anything.”

Community Services and Activities

Most community services that food hubs offered are only relevant to food hubs that sell to retail customers. These services and the percentage of food hubs selling retail to consumers that are performing them are displayed in Figure 2-32 below.

Of the food hubs that sold retail ($N=49$), the largest amount (49%) indicated that they accepted SNAP (Supplemental Nutrition Assistance Program) benefits, and fewer than half of those hubs had matching programs for SNAP benefits. Twenty-seven percent of food hubs that sold to retail customers accepted WIC (Women, Infants, and Children) or FMNP (Farmers Market Nutrition Program) benefits. Fewer than 20% of these retail hubs indicated that they operated a mobile market or offered subsidized farm shares.



Food donation to local food pantries/banks and education about community and food systems issues were the two most common community-oriented services offered by food hubs, whether the hubs sold to retail or wholesale customers. Respectively, 75% and 56% of hubs ($N=84$) offered these services. Food hubs were asked about three other services that could be performed by hubs working with both retail and wholesale customers. These services and the

percent of food hubs offering them were nutrition and cooking education (47%), paid employment opportunities for youth (21%) and transportation services for customers (8%). Health screenings were also an option that food hubs could have chosen as a community-focused activity, but no food hubs indicated such programs in use.

FINDINGS: CHALLENGES, OPPORTUNITIES AND BARRIERS TO GROWTH

Despite their growing popularity, food hubs identified a number of current operating challenges. They also noted barriers to meeting the growing demand for their products and services. This section explores those challenges and barriers as well as some potential avenues for growth.

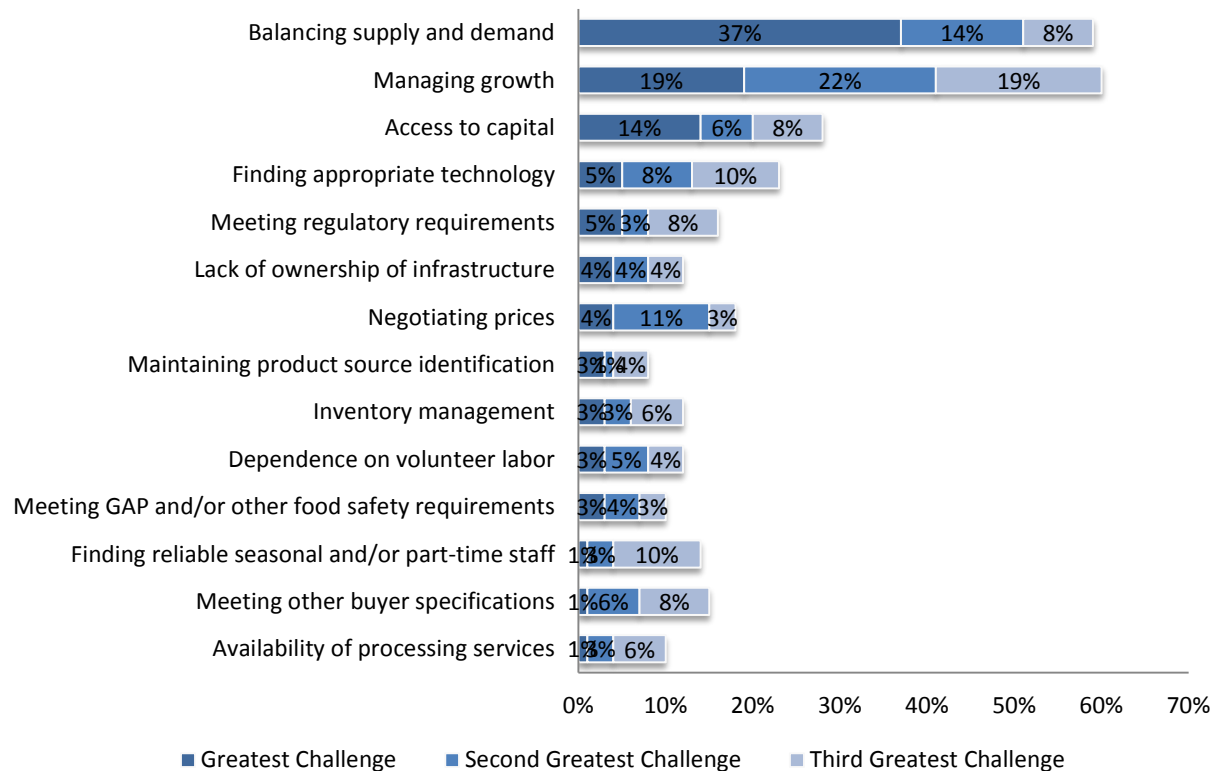
Challenges

Food hubs were given a list of potential operational challenges and asked to identify their greatest, second greatest and third greatest operational challenges. Six challenges were identified by at least 10 hubs:

- Managing growth
- Balancing supply and demand
- Access to capital
- Finding appropriate technology to manage operations
- Negotiating prices with producers and/or customers
- Finding reliable seasonal and/or part time staff

Eight other challenges were all reported by fewer than 10 food hubs each.^q Managing growth and balancing supply and demand were both challenges frequently selected by hubs. However, balancing supply and demand was picked as a top challenge more often than managing growth.

Figure 2-33: Top Challenges of Food Hubs (N=79)



Only slightly more than 20 hubs identified access to capital as a challenge, but these hubs tended to rank it as their greatest challenge. Further analysis of those 20 hubs revealed that their population characteristics were similar to the rest of the survey respondents. They were mostly

^q These challenges were inventory management, issues resulting from the lack of ownership of infrastructure, dependence on volunteer labor, availability of processing services, meeting GAP and/or other food safety requirements, meeting regulatory requirements, meeting other buyer specifications and maintaining product source identification.

less than 5 years old and brought in less than \$1 million in revenue in 2012. Unlike the larger group, however, these 20 hubs were mostly for-profit or cooperative in operational structure ($N=15$).

Year-Round versus Seasonal Operations

It has been suggested that it is less than optimal for food hubs to aggregate and/or distribute food only seasonally (Barham et al., 2012). From the survey, 94 of the 107 responding food hubs indicated that they aggregate or distribute food year-round. Of the 13 hubs not operating year-round:

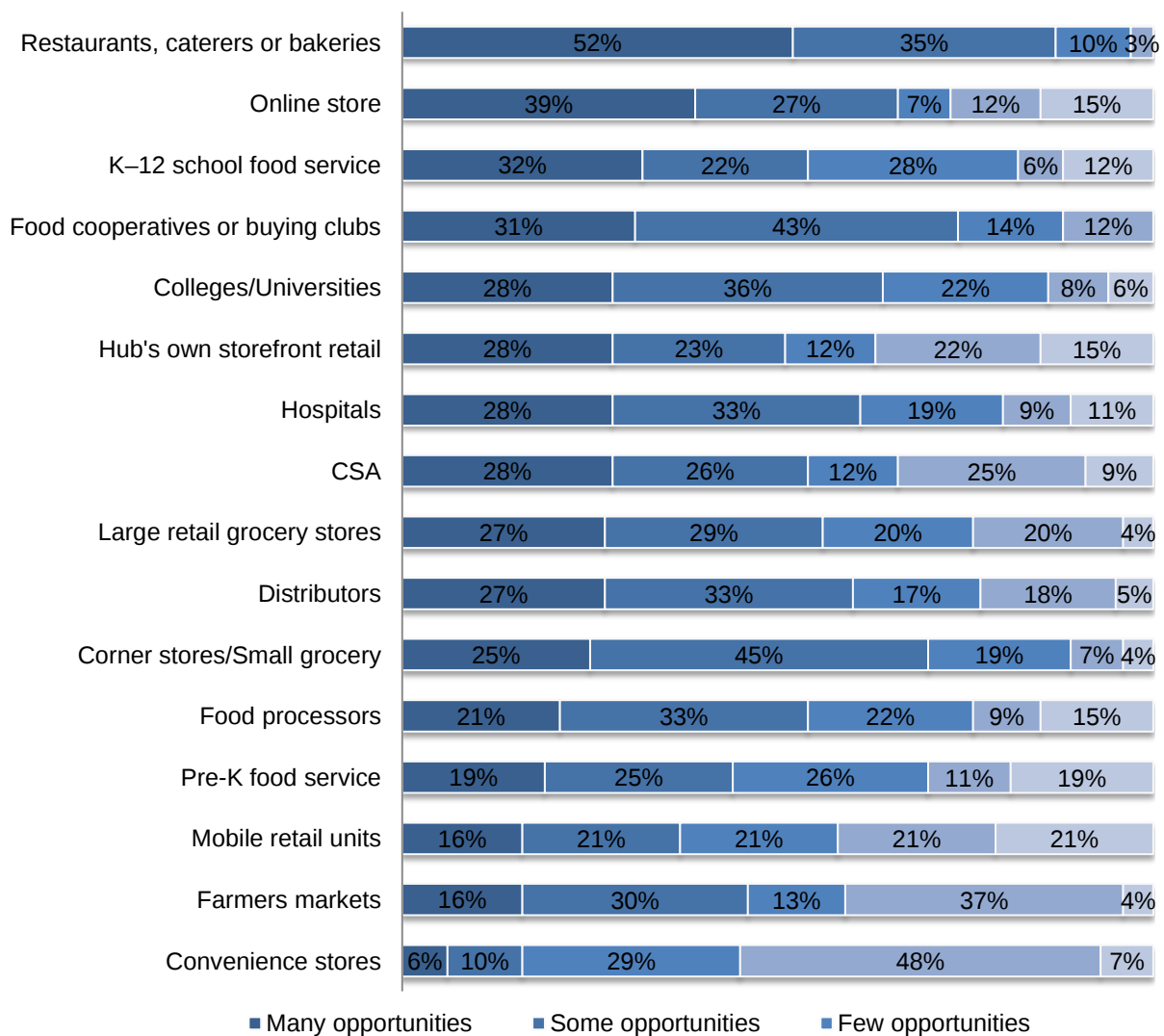
- Nearly 70% had been in operation for five years or less.
- Nearly 70% were nonprofits.
- Three indicated they were “not at all reliant” on grant funding for their core operations, and four indicated that they were “highly reliant” on funding.
- Four indicated that they had no full-time paid employees.

These results suggest that food hubs that do not aggregate and distribute food year-round are also potentially not operating as efficiently as they could be. However, that does not suggest that operating year-round is without challenges. Of note, one hub that operated year-round wrote that they were forced to occasionally source their products nonlocally. “We strive for and always select the most sustainable product, but we also do want to operate year-round, which means that sometimes the most sustainable choice will be citrus from Florida.” This food hub is not alone in its need to source some nonlocal products. For more information, see the section on local and regional aspects of food hubs.

Opportunities

Ninety-six percent of food hubs (of $N=83$) indicated that demand for their hubs' products and services was growing. When asked about the types of customers with whom they saw expansion opportunities, 50% or more of hubs indicated that they saw "many" or "some" expansion opportunities with 12 different customer types (see Figure 2-34 for more details).

Figure 2-34: Expansion Opportunities by Food Hub Customer Type ($N=81$)

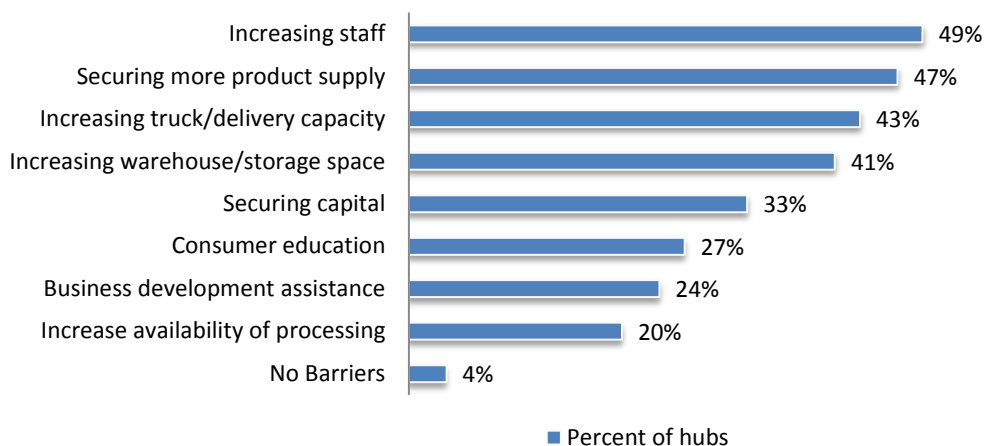


Food hubs were also given a chance to write in any potential customers not listed in the survey. In that space, eight of 13 hubs noted that they saw expansion opportunities with elder-care programs, such as retirement communities or the Meals on Wheels program.^r

Barriers to Growth

Some food hubs indicated that the demand for their hubs' products and services was growing. Those hubs were provided with a list of potential barriers to achieving that growth and asked to check all the barriers that applied to them. The results are shown in Figure 2-35.

Figure 2-35: Food Hub Barriers to Growth (N=76)



Increasing staff was the barrier to growth that the most food hubs noted (41 hubs, or 54%). Of these, 19 hubs estimated the amount of money it would take to increase their staff to an appropriate level. These hubs estimated costs ranging from \$10,000 to \$250,000, with an average

^r The Meals on Wheels program is administered by the Meals on Wheels Association of America (MOWAA) and delivers food to seniors in need. According to the Association's website, "there are some 5,000 local Senior Nutrition Programs in the United States. These programs provide well over one million meals to seniors who need them each day." See <http://www.mowaa.org/about> for more information.

of nearly \$67,000. The 41 hubs had a wide range of sales, from \$17,000 to \$45,000,000 annually, with an average of \$3,000,000 and a median of \$300,000. This suggests that simply increasing cash flow will not be enough to assist food hubs with their staffing challenges. Rather, it may be that food hubs need to find ways to increase their revenue in proportion to their expenses in order to afford hiring appropriate numbers and types of staff people. Another possibility is that rather than hiring more staff, food hubs need to find more efficiencies within their current staff, such as better training or streamlining workloads.

Further, when asked about the operational challenges they faced, 11 food hubs indicated “finding reliable seasonal and/or part-time staff” was one of their top three challenges (see Figure 2-33). In addition, eight other food hubs indicated “dependence on volunteer labor” in their top three. Of these eight hubs, the average ratio of full-time employees to regular volunteers to occasional volunteers was 1 to 6.4 to 8. These hubs had a much higher reliance on volunteers than the overall survey population, with ratios of 2.75 to 1 to 3.5.

Food hubs also noted securing more product supply and increasing delivery capacity as top barriers to growth. The food hubs were asked to estimate a cost to overcome each of these barriers. Fifteen hubs estimated a cost for increasing truck/delivery capacity at an average of \$79,000 per hub. Only three hubs were able to estimate a cost for securing more product supply, so a reliable average cost could not be computed.

FINDINGS: COMPARISONS WITH 2011 SURVEY

Thirty food hubs responded to both the 2013 National Food Hub Survey and a similar survey by the National Food Hub Collaboration in 2011. Questions on each survey were similar

enough for comparisons on three major topics: sales, full-time employees and number of producers. The questions from each survey and comparisons of the surveys' results are presented below.

Sales

Table 2-9: Food Hub Sales, 2011 and 2013		
	2011 Sales	2013 Sales
Median	\$580,000	\$914,700
Average	\$4,562,558	\$4,895,410
Range	\$24,000 to \$40,000,000	\$185,323 to \$41,325,000

The questions regarding sales differed slightly between the 2013 and 2011 surveys. In 2013, the hubs were asked, "Please indicate (in dollars) the total gross product sales for your food hub during the 2012 calendar year." In 2011, the food hubs were asked, "Please describe the volume of business your organization does, such as the number of orders per week/month or sales in dollar amount." Seventeen of the 30 food hubs provided sales figures for both years, and 15 indicated an increase of sales between the two surveys by an average of 109%. The median, average and range of sales amounts reported are displayed in Table 2-9.

Full-Time Employees

Table 2-10: Food Hub Full-time Paid Employees, 2011 and 2013		
	2011 Full-time employees	2013 Full-time employees
Median	4.0	4.0
Average	14.9	13.9
Range	0 to 112	0 to 114

Twenty-four food hubs responded to a question about the number of full-time employees on both surveys. Of these 24 hubs, seven had lost between 1 and 10 full-time paid employees, nine had neither lost nor gained any full-time paid employees and eight had increased their number of full-time paid employees by between 1 and 4 employees. Of the seven hubs that lost employees between the two surveys, four still managed to increase their overall sales. While the causes of changes in employment numbers were not asked about in the 2013 survey, the increasing sales and decreasing employee numbers for these latter four hubs may indicate gains in efficiencies of operations. Overall results are reported in Table 2-10.

Number of Producers

Table 2-11: Food Hub Producer Numbers, 2011 and 2013

	2011 Producers	2013 Producers
Median	50.0	41.0
Average	66.3	75.0
Range	26 to 225	15 to 400

Eighteen of the 30 hubs provided an answer on both years' surveys to the question asking how many producers they worked with. Six food hubs increased the number of producers they worked with by between 6 and 175 producers (an average of 120% increase in the number of producers), one hub neither increased nor decreased its number of producers and eleven hubs reported working with fewer producers by between 6 to 72 producers (an average of 39% decrease in the number of producers).

DISCUSSION

The 2013 National Food Hub Survey sought to observe the operations and impacts of food hubs across the United States. Findings from the survey showed that food hubs are growing to meet the need for distribution infrastructure for local food, but they are growing in a wide variety of ways and with varying degrees of financial success.

From the survey, 62% of food hubs began operations within the last five years, 31% of food hubs had \$1,000,000 or more in annual revenue and the majority of food hubs were supporting their businesses with little or no grant assistance—including food hubs that identified as nonprofits. Financially, the most successful food hubs tended to be for-profit or cooperative in structure, in operation for more than 10 years, and working with a relatively large number of producers. The values-based nature of food hubs makes it hard to judge many of them solely on their financial success. The survey also revealed a number of persistent challenges and barriers to growth that even the most financially successful food hubs faced. For example, many food hubs indicated a need for assistance in managing growth and in identifying appropriate staffing levels for their hubs. They also often pointed to a need for capital and other resources to increase their hub's trucking and warehousing capacity.

Key findings include the following:

- Food hubs exhibit a great deal of variety in their individual business models and core values. Responding food hubs did show some commonalities, such as their nascence. More than half of responding food hubs began operations in the past five years. Also, the majority of food hubs were located in or near metropolitan areas, suggesting reliance on a nearby highly populated center for customers.

- Beyond aggregating and distributing food, many food hubs offer a number of additional services through their operations to their producers, customers and communities. For example, more than 50% of food hubs indicated that they participated in product storage, marketing services for producers and food donation to local food banks. However, for many hubs (but not all), offering these services correlated with an increased reliance on outside sources of funding.
- Although grant funding remains important for many new and growing food hubs, most are able to sustain their core food aggregation and distribution functions without substantial outside grant funding. Food hubs of all ages and operational structures (including nonprofits) generated a positive cash flow, and most hubs that were observed in both the 2011 and 2013 surveys grew in their annual sales.
- Challenges still exist for food hubs. In particular, food hubs struggle in the areas of managing growth and balancing supply and demand. These issues are not limited to food hubs, and potentially, that struggle could be alleviated for many hubs through increased technical assistance with management and logistics.
- Almost all food hubs believe that the demand for their products and services is growing. However, very few food hubs indicated that they had no barriers to keep them from meeting this demand. Most often, food hubs indicated that they needed assistance overcoming operational barriers, such as accessing capital.

These findings give a snapshot of the food hub landscape from 2012 and serve as a natural springboard for further investigative work on food hubs' role in existing and emerging local food systems. While outside the scope of this survey, better measurement of the impacts (financial and otherwise) that food hubs are having on local food systems is a natural next step for further

investigation. Based on the findings from this survey, the authors offer this and the following as suggestions for future research outreach and technical assistance related to food hubs:

- While these food hubs were in the minority of respondents, some hubs relied heavily on outside funding. A few hubs also brought in less revenue in 2012 than they did two years earlier. Teasing out the roots of these food hubs' struggles could provide valuable "lessons learned" for those planning to open new food hubs in the future.
- More research is needed to identify practices that lead some food hubs to more success than others—specifically, better understanding of practices that lead to gains in food hubs' operational efficiency would be useful. Further, the survey did not explore relationships that food hubs may have with other organizations whose goals align with theirs. There is a chance that, through these partnerships, more services and activities are being offered to food hubs' producers, customers and communities than was captured by the survey. A better understanding of the existence and impact of these partnerships will be crucial for getting a more holistic picture of many food hubs' local impacts.
- The 2013 survey relied on food hubs to provide information regarding their producers, suppliers and customers. However, these producers and patrons will need to be directly engaged in order to inform more valid conclusions about the impacts that food hubs have on growing, purchasing and business practices.
- A need for effective management skills appears to be at the root of many of the challenges noted by food hubs (managing growth, balancing supply and demand and planning for appropriate staffing levels). While traditional sources of technical assistance through university extension and nonprofit organizations have been helpful in starting many food hubs, these sources may not have the knowledge and skills that food hubs

need to expand beyond the start-up phase. Consultants, university partners and others with small business experience should be identified as potential partners for food hubs seeking to grow the size and efficiency of their businesses.

- Further, as training programs specifically for food hub managers emerge, these programs should focus on building the skills that will help managers overcome problems identified as common to many food hubs and on issues specific to the individual hub the managers will oversee.
- Many food hubs also identified accessibility to capital as a challenge to their current operations. This indicates the need for either more funding opportunities or for better outreach around existing opportunities. Given the need for increased management skills, new funding sources for food hubs could also come with requirements for increased management trainings that may help the food hub grow beyond the life of the funding.
- Increased investigation of how food hubs affect local economies is needed, since further investment will be predicated, at least partially, on the ability of food hubs to create jobs and increase income.

The increasing demand for local food explains the large numbers of food hubs that have recently emerged. But moving forward for these new hubs will necessarily mean going beyond simply providing local food. They will need to take steps to grow their businesses in ways that allow for financial viability as well as a continued commitment to the values under which the food hubs operate. As one food hub noted in its survey response, “We are now in a situation of deciding how much more to grow, not because of supply or demand, which we have plenty of both, but because of time, inclination, processes/systems, etc.” As observed from the survey responses overall, food hubs have indicated that they are looking for guidance on their growth decisions.

Helping food hubs reach these next stages of operation will open many doors for new and renewed partnerships between food hubs, the government, universities and nonprofits. These relationships could be key to realizing expanded impacts from food hubs, such as increased accessibility for healthy and local food for those who demand it and better business opportunities for the small and midsized producers who wish to provide it.

CHAPTER 3:

Predictors of Food Hub Financial Viability^s

ABSTRACT

There are few studies that examine the financial viability of food hub businesses. This research attempts to identify key differences between food hubs that appear financially viable and those that do not by examining operational characteristics and spending profiles in food hubs studied in the 2013 National Food Hub Survey. Findings suggest that the most important predictors of financial viability are the absolute amount of annual gross revenue the hub generates and the expenditure profile of the food hub. Based on these findings, recommendations are suggested for those planning new hubs.

INTRODUCTION

Improving dietary quality in the United States is a key desirable public health outcome. This has dovetailed with developments around re-localizing the domestic food supply in a number of areas that have largely concerned direct market relations between farmers and consumers of various types. Most recently there has been increasing emphasis on developing strategies for aggregation and distribution of local, healthy food in a manner to efficiently supply larger markets (such as retail) – one manifestation of this is the development of food hubs. Food hubs are a relatively new typology of business that has garnered much interest and support from

^s This chapter was submitted February 13, 2014 as a research article to the Journal of Hunger and Environmental Nutrition.

regional food systems advocates. To these stakeholders, food hubs play a unique role in supporting alternative food systems by working with food products sourced from a certain geographic area, and playing a specific market role necessary for scaling up those food systems. Food hubs often do this by serving small and mid-size producers. Small and mid-size farms and ranches are often characterized as producing too little to actively compete in most commodity markets but producing too much for exclusively selling via direct sales (e.g. at farmers markets or through community-supported agriculture shares) (Agriculture of the Middle Initiative, 2012; Gray, 2011).

Sourcing products from multiple producers, food hubs aggregate and distribute (or coordinate the aggregation and distribution of) foods from a particular locale, making them available to customers in wholesale-scale volumes. In addition to acting as food distributors, food hubs often exhibit mission-driven values as well as financial goals. These values vary widely and affect a food hub's operations. They may include, for example, sourcing food from within a defined area or food grown in ways that the food hub defines as healthy and/or environmentally friendly. Some food hubs also operate with specific commitments to their communities; one example is providing access to healthy food in historically marginalized communities (Barham et al., 2012; Diamond & Barham, 2011).

The impact of food hubs has only recently been investigated, and few studies have addressed the financial functions of food hub businesses (Matson & Thayer, 2013). Much existing research has been case study based and examined the financial operations of a single hub (Gunter & Thilmany-McFadden, 2011; Barham et al., 2012; Schmidt, Kolodinsky, DeSisto, & Conte, 2011). In recent years, multiple feasibility studies for emerging food hubs have also been made public, many of which contain case study-centered examinations of other, existing

food hub operations (Dion, Shugart, Hale, & Saavedra, 2013; familyfarmed.org, University of Wisconsin Extension, & Wisconsin Department of Agriculture, Trade & Consumer Protection, 2011; Ryan & Mailler, 2011; Van Dis, 2012).

However, two studies have gathered and examined financial information from groups of food hubs and both suggest that some, but not all food hub businesses have healthy financial operations. The first was a 2011 survey of food hubs conducted by the U.S. Department of Agriculture (USDA) (Barham, 2012; Barham, 2011). Barham included a follow-up phone interview with 20 hubs, of which 10 identified themselves as financially viable “i.e., presently covering their operating costs (breaking even) or turning a profit” (Barham, 2012) The second study was an unpublished 2013 financial benchmarking study (National Good Food Network, 2013) in which researchers gathered financial information from 15 hubs and found an average current ratio^t of 1.6:1 (National Good Food Network, 2013, p. 21). Both the USDA survey interviews and the benchmarking study relied on a relatively small number of food hubs for information and, as such, neither was able to identify the different operational characteristics correlated with financial viability.

Despite a relative lack of performance metrics, agencies within state and federal government as well as philanthropic foundations have made financial assistance available to support the development and growth of food hubs through numerous grant and loan programs (Barham et al., 2012; National Good Food Network, 2011). Continuance of these funding programs may be dependent on their ability to support food hubs that have potential to operate as

^t The current ratio measures the worth of a business’s assets against its liabilities.

financially viable businesses (i.e. businesses that can cover their own operational expenses) (Anselm, 2013).

While some food hubs are repeatedly cited as success stories by funding entities, there are also examples of food hubs that struggle financially (Brannen, 2013) and ones that have gone out of business (Downs, 2013). While the closure of some emerging food hubs would not be surprising—only about half of all small businesses survive for more than five years (U.S. Small Business Administration, 2012)—insights into the key differences between food hubs that survive and those that don’t are critical for food systems grant makers wishing to tailor their funding strategies and to practitioners wishing to begin new, successful food hub operations.

This research attempts to clarify those key differences between food hubs that are financially viable and those that are not. In this study, we examine this question by inspecting trends in operational characteristics and spending profiles in food hubs that responded to the 2013 National Food Hub Survey (the “2013 survey”) conducted by the authors in cooperation with the Wallace Center at Winrock International.

METHODS

The 2013 National Food Hub Survey

The 2013 survey was sent to 222 food hubs identified by members of the National Good Food Network’s (NGFN) Food Hub Collaboration the first week of February 2013. At the time, the Collaboration’s list represented the only comprehensive list of food hubs in the country. The survey was also open to any operations outside the NGFN that self-identified as a food hub

through an anonymous link, however no food hubs utilized this link. The survey was Internet-based, built and administered using Qualtrics Research Suite Software (Qualtrics Labs, Inc., Provo, UT). The survey included 90 questions on nine topics: background information, 2012 calendar year financial information, employees and volunteers, producers and suppliers, local and regional aspects, operations activities and services, infrastructure, challenges and opportunities. The survey was drafted with input from food hub practitioners and stakeholders including academics, food-system consultants, food hub managers and non-profit and USDA representatives to ensure clarity and appropriateness. Safeguards were put in place to ensure the confidentiality of individual respondents. Additionally, the survey was piloted by four volunteer food hub managers and revisions were made from their suggestions. The survey instrument was approved by Michigan State University's Institutional Review Board (IRB No. x12-1251e).

In total, 107 usable surveys were returned for a 48.2% effective response rate. A report of the overall survey findings and copy of the survey instrument can be found on the webpage of the Michigan State University Center for Regional Food Systems at <http://foodsystems.msu.edu/activities/food-hub-survey>. Data from the 2013 survey was analyzed using IBM's Statistical Package for Social Sciences (SPSS), version 19.0 for Windows (SPSS Institute, Chicago, Illinois).

Defining financial viability

As part of the 2013 survey analysis, a business efficiency ratio was calculated for food hubs that were able to enumerate their total revenue and all operating expenses. An efficiency ratio measures the ratio of total annual expenses to total annual revenue. Operations with an efficiency ratio less than 1.00 have revenues that exceed their expenses (i.e., profitable), while

operations with an efficiency ratio greater than 1.00 have expenses that exceed their revenues. Seventy-eight surveys included all the data necessary to calculate an efficiency ratio. On average, the business efficiency ratio was 1.07 and the median was 1.00 for all hubs.

We anticipated food hubs that were financially viable would have an efficiency ratio less than 1.10. We chose this measure rather than a more strict measure of less than 1.00 for two reasons. First, we wanted to account for the likelihood that food hubs responding to the 2013 survey filled in estimates for their 2012 revenue and expenses. Second, the business efficiency ratio as measured only represents the revenue and expenditures for one year (2012). It is unlikely that food hub revenues and expenditures remain static from year to year—especially for newly established hubs making initial capital investments in infrastructure. Therefore, food hubs that had only a small amount of over-expenditures (less than 10%) in 2012 were considered financially viable for the purposes of this analysis.

Measures

We chose a series of organizational characteristics measured in the 2013 survey that we expected *a priori* to be associated with a food hub's financial viability. These characteristics included the categorical variables such as operating structure, marketing model and the ordinal variable measuring the food hub's reliance on grant funding from public and/or private sources to carry out core functions (aggregation, distribution and marketing of local food products). The possible operating structures were non-profit, for-profit and cooperative. The possible marketing models were wholesale only, retail only, or wholesale and retail. Food hubs were given three choices to indicate how dependent they were on grant funding to carry out core food hub functions. The three answer choices were 1) highly dependent: we could not carry out these core

functions without considerable grant funding; 2) somewhat dependent: we could carry out these core functions without grant funding but would need to scale back certain aspects of our operation (e.g., not working with certain producers or not serving a particular market/customer base); 3) not at all dependent: we do not require any grant funding to carry out these core functions.

All other characteristics were measured as ratio variables—the number of years the food hub had been in operation, its total revenue for the 2012 calendar year, its total gross sales for the 2012 calendar year, the number of producers/suppliers the food hub sourced from, the number of full- and part-time employees, the average salary and benefits per paid employee and the number of volunteers the food hub utilized. We also compared the expenditure profiles for food hubs that were not financially viable to those that were using expense categories that individually represented more than 2% of all hubs' average revenue for the 2012 calendar year (see Figure 2-24).

Analysis

We first calculated the mean, standard deviation and median measures of business efficiency ratios for each of the three categorical and ordinal variables (Table 3-1). We then generated the mean and median measures of each ratio variable to describe the entire survey population as well as the financially viable and not financially viable food hubs groups (Table 3-2). Median measures were included because food hubs responding to the 2013 survey tended to vary greatly in structure and scale. This led to non-normal distribution of the data and high standard deviations on most measures. As such, within the context of this data set, median

measures are likely better measures of central tendency than averages for most operational measures.

We then conducted binary logistic regression analysis to determine good predictors of a food hub's financial viability using the operational characteristics and expenditures as potential predictors. In this analysis, the estimated unadjusted odds ratios were calculated to provide the odds that an increase in the operational characteristic variable is more likely in food hubs that were financially viable than those that were not. An odds ratio greater than 1.00 indicates this is true. Conversely, an odds ratio less than 1.00 indicates that a decrease in the operational characteristic is more likely in food hubs that were financially viable than those that were not. An odds ratio of exactly 1.00 indicates that the variable measure is equally likely in food hubs that were both financially viable and those that were not.

RESULTS

Food Hub Characteristics

As shown in Table 3-1, mean efficiency ratios varied among food hubs of different operating structures, marketing models and reliance on grants. However, median measures for all groups were either at or slightly below 1.00. Food hubs organized as non-profits had slightly higher average efficiency ratios than either for-profit or cooperative food hubs. Hubs that undertook both wholesale and retail functions tended to have slightly higher efficiency ratios. And finally, food hubs that were highly reliant on grants had higher average efficiency ratios than those that were somewhat or not at all reliant on grant funding.

Table 3-1: Business Efficiency Ratios by Food Hub Characteristics

	N	Business Efficiency Ratio*		
		Mean	Median	SD
Operating structure				
Non-profit	29	1.20	1.00	1.27
For-profit	34	1.06	1.00	0.49
Cooperative	12	0.94	1.00	0.43
Marketing model				
Wholesale only	25	1.00	1.00	0.29
Retail only	22	1.12	0.99	1.30
Wholesale and retail	22	1.22	1.00	0.91
Reliance on grants				
Highly	13	1.31	0.95	1.18
Somewhat	24	1.29	1.00	1.21
Not at all	37	0.88	0.99	0.27

*The business efficiency ratio measures the proportion that total expenses are of total revenue. Operations with an efficiency ratio less than 1.00 have revenues that exceed their expenses, while operations with an efficiency ratio greater than 1.00 have expenses that exceed their revenues.

Table 3-2: Characteristics of Food Hubs that are Financially Viable* and Not Financially Viable

	All Food Hubs (N = 107)		Financially Viable (N = 63)		Not Financially Viable (N = 15)	
	Mean (SD)	Median	Mean (SD)	Median	Mean (SD)	Median
Years in operation	10.65 (21.60)	4.00	12.98 (24.64)	4.00	4.13 (3.66)	4.00
2012 revenue (\$100,000's)	32.85 (108.71)	4.50	43.79	6.00	1.99 (1.42)	2.00
2012 total gross sales (\$100,000's)	37.47 (119.24)	3.43	47.3 (141.1)	4.80	2.22 (2.05)	1.37
Number of producers	79.67 (229.76)	36.00	91.04	35.00	40.31 (30.54)	31.00
Salary per paid employee (\$1,000's)	21.84 (22.39)	15.19	23.91 (24.35)	15.37	15.2 (9.08)	14.56
Number of full-time employees	9.82 (28.73)	2.00	10.04 (29.81)	2.00	1.46 (1.39)	1.00
Number of part-time employees [†]	4.97 (8.44)	2.00	3.21 (3.33)	2.00	5.38 (8.68)	2.00
Number of volunteers	12.56 (33.04)	2.00	12.09 (30.96)	2.00	6.00 (10.50)	2.00
Expenditures as a percent of 2012 revenue						
Food/product purchases	60.56 (22.97)	66.56	60.16 (23.77)	67.67	62.12 (20.30)	63.16
Payments for warehouse or facility	4.06 (4.13)	2.92	3.81 (4.01)	2.22	4.94 (4.6)	4.21
Payments for trucks and equipment	3.67 (4.31)	2.09	3.03 (4.11)	1.56	6.20 (4.42)	5.37
Gasoline and tolls	3.40 (3.65)	2.32	2.80 (2.23)	2.15	5.17 (5.99)	2.32
Utilities	3.65 (6.63)	1.33	2.46 (4.03)	1.25	8.63 (12.19)	3.28
Credit card and bank service	4.70 (9.12)	1.68	3.80 (7.43)	1.67	8.83 (15.22)	3.00
Employee salary and benefits	22.72 (16.82)	17.90	19.42 (12.45)	14.79	31.00 (23.00)	25.33
Consulting services	2.72 (3.62)	1.45	2.55 (3.99)	1.35	3.20 (2.51)	2.43

*Financially viable food hubs are those with an efficiency ratio under 1.10. Those that are not financially viable have an efficiency ratio of 1.10 or more.

Mean and median values for efficiency ratios by operational characteristic are shown in Table 3-2. The median number of years in operation was the same for financially viable and not financially viable groups (4 years.) However, the average number of years in operation was much higher for financially viable hubs, indicating that there were a few very mature food hubs represented in that group. Indeed, the 21 food hubs that had been in operation for over 10 years were all identified as financially viable, with all but one having efficiency ratios under 1.10.

Some of the most dramatic differences between food hubs that were financially viable and those that were not were seen by comparing measures of 2012 revenue and total gross sales. Financially viable food hubs had median 2012 revenues of \$600,000 and total gross sales of \$450,000 while those that were not financially viable had median revenues and sales of much less—\$200,000 and \$137,000 respectively. Notably, all food hubs from the 2013 survey that were classified as not financially viable had 2012 revenues under \$500,000.

Financially viable food hubs also had different expenditure profiles. Food hubs that were not financially viable tended to spend nearly twice the proportion of their 2012 revenue on overhead costs—payments for warehouse or other facility space, trucks and equipment, gasoline and tolls, utilities, credit card and bank service charges and consulting services—than did financially viable hubs. This finding is to be expected as food hubs that were not financially viable were usually paying these fixed costs with less total revenue. Conversely, food hubs that were not financially viable tended to spend less of their 2012 revenue on food and/or product purchases—with a median measure of 68% and 63% respectively. This measure is also referred to as the cost of goods sold (COGS) which is, simply put, the direct cost attributable to goods sold.

Financially viable and not viable food hubs recorded similar per-employee salary. This measure includes full-time, part-time and seasonal employees. Financially viable hubs had a median salary per paid employee of \$15,370 while food hubs that were not financially viable had a median of \$14,560. With similar median amounts of full and part-time employees, it is not a surprise to see that the median percent of revenue spent on total employee salaries and benefits is 71% more for food hubs that are not financially viable than for food hubs that are (25.33% versus 14.79%).

Predictors of Financial Viability in Food Hubs

From the logistic regression analysis results, we find that even though differences were seen in the average and median business efficiency ratios for food hubs of different years in operation, operational types, market models and reliance on grants (Table 3-1), none of these measures was significantly related to the viability of a hub. There indeed are financially successful food hubs that are non-profits as well as those selling both retail and wholesale, or a combination of both. Rather than specific business models, we find that the most important predictors of a food hub's financial viability are the absolute amount of annual revenue, the absolute amount of a food hub's sales and the expenditure profile of the food hub itself (see Table 3-3).

Table 3-3: Factors Associated with Financial Viability of Food Hubs				
	Unadjusted OR [†]	95% CI		P Value
Years in operation	1.09	0.97	1.22	0.13
2012 revenue (\$100,000's)	1.38	1.04	1.82	0.02
2012 total gross sales (\$100,000's)	1.26	1.01	1.58	0.045
Operating structure				
Non-profit	1.24	0.35	4.44	0.74
Cooperative	0.78	0.17	3.66	0.75
For-profit	Ref.			
Market model				
Wholesale only	1.18	0.29	4.76	0.82
Retail only	1.32	0.30	5.77	0.71
Wholesale and retail	Ref.			
Reliance on grants				
Highly dependent	0.52	0.11	2.57	0.42
Somewhat dependent	0.38	0.10	1.38	0.14
Not at all dependent	Ref.			
Number of producers	1.01	1.01	0.99	1.02
Salary per paid employee (\$1,000's)	1.03	1.03	0.98	1.08
Number full-time employees	1.23	1.23	0.91	1.66
Number part-time employees*	0.97	0.97	0.83	1.04
Number volunteers	1.01	1.01	0.97	1.06
Expense categories as a percent of 2012				
Food/product purchases	1.00	0.97	1.02	0.78
Payments for warehouse or facility	0.94	0.81	1.09	0.43
Payments for trucks and auto.	0.87	0.74	1.02	0.09
Gasoline and tolls	0.85	0.71	1.03	0.09
Utilities	0.89	0.78	1.03	0.11
Credit card and bank service charges	0.96	0.88	1.04	0.29
Employee salary and benefits	0.96	0.93	0.99	0.02
Consulting services	0.96	0.78	1.18	0.66
*Includes seasonal employees.				
†OR indicates odds ratio; CI, confidence interval.				

Both 2012 revenue and total gross sales were good predictors of financial viability with every \$100,000 increase in revenue representing a 38% increased odds of being financially viable (OR, 1.38; 95% CI, 1.04-1.82; $P = <.05$). Likewise, a \$100,000 increase in total gross

sales represented a 26% increased odds of being financially viable (OR, 1.26; 95% CI, 1.01-1.58; $P = <.05$).

Food hubs' expenditure profiles were found to be important, with larger proportions of a food hub's overall expenditures on trucks and automotive equipment, gasoline and tolls and employee salary and benefits being good predictors of it not being financially viable. Each 1% increase in the proportion of revenue spent on trucks and automotive equipment corresponded with a 15% increased odds that a food hub would not be financially viable (OR, 0.87; 95% CI, 0.74-1.02; $P = <.10$). Likewise, each 1% increase in the proportion of revenue spent on gasoline and tolls corresponded with 17% increased odds that a food hub would not be financially viable (OR, 0.85; 95% CI, 0.71-1.03; $P = <.10$). And finally, each 1% increase in the proportion of revenue spent on employee salaries and benefits corresponded with a 4% increased odds that a food hub would not be financially viable (OR, 0.96; 95% CI, 0.93-0.99; $P = <.05$).

DISCUSSION

Findings from this 2013 survey analysis show that there were food hub examples of all ages and operational types that were financially viable. This suggests that food hubs can be flexible, adapting their business to their specific location and goals and still function in such a way so that their revenue exceeds their expenses. Instead of maturity and operating structure, findings from this study suggest that the most important predictors of a food hub's financial viability are the absolute amount of annual revenue the hub generates and the expenditure profile of the food hub. These findings are in line with two of the highly cited reasons why small

businesses fail (insufficient capital and overinvestment in fixed assets) in Ames and Wellsfry's seminal textbook *Small Business Management* (Ames & Wellsfry, 1983).

Limitations

The 2013 survey was available to managers of food hubs that were operating during the 2012 calendar year and therefore did not include information from food hub businesses that had gone out of business or otherwise ceased operations. Without the opportunity to include information about these failed food hubs' operations, this study potentially misses key data points that could further inform the discussion about food hub financial viability.

Another limitation of this study is that it does not account for the impacts of any partnerships that food hubs may have with other businesses or organizations. Many food hubs are initiated by or otherwise associated with outside organizations that share common goals with the hub. Responses to open-ended comment boxes of the 2013 survey suggest that in some cases these organizations may be providing significant services and/or expertise. However, it is likely that hubs receiving these services may not be accounting for their value as part of annual financial recordkeeping. The 2013 survey did not inquire about these partnerships, however, and as such, their impact could not be measured as a factor of financial viability.

Expenditure Profiles

The increases in the two fixed-cost expenditure categories (trucks and automotive equipment, gasoline and tolls) corresponding with movement away from financial viability could be attributed to the notoriously low profit margins to which all food businesses, including food hubs, are subject. In the case of food hubs, relatively larger expenditures on operational expenses

such as trucks and gasoline may limit the food hub's ability to purchase the food products from suppliers it uses to generate sales revenue.

The median COGS found in this study for financially viable food hubs (61%) is close to the COGS value that Schmit, Jablonski, and Kay (2011) found in a single food hub case study (62%). However, it is lower than the 65% average COGS reported by Whole Foods Market for their stores between the 2008 and 2012 fiscal years (2012), the 71% average COGS reported for food retailers by the Food Marketing Institute (2008) or the 84% average COGS found from a survey of 133 general line grocery merchant wholesalers (Sageworks ProfitCents Suite, 2013). While food hubs may be dealing in differentiated, values-based foods that command a higher price point than conventional grocery wholesalers, our findings still suggest that the most financially viable food hubs are emulating these more traditional food distribution businesses in their expenditure patterns, spending closer to 15% of their revenue on employee salaries and benefits and closer to 70% on food and product purchases.(Food Marketing Institute, 2008)

Annual Revenue

In a 2008 Forbes article, James Nolen, a finance professor at the University of Texas at Austin McCombs School of Business, said “[t]he only people making money in the food chain are big corporations, because scale is the only driver of profits in that industry” (Maureen Farrell, 2008). While Professor Nolen was most likely speaking of a more conventional food chain than those food hubs participate in, the findings of our study do suggest the need for most food hubs to reach a certain threshold of revenue in order to be financially viable.

While scale should not be confused with efficiency, differences between the mean and median amounts of revenue and sales between food hubs that were financially viable and those

that were not suggests that for most hubs, there is a certain threshold of annual revenue that needs to be secured to cover basic operating costs. Our data suggests the average annual revenue needs to be about \$600,000 or more for financial viability. However, differences in infrastructure use, regional price fluxes and dependence on volunteer labor are just three of many factors that could sway the amount of revenue needed for financial viability for any specific food hub.

As an example, a theoretical food hub generating \$600,000 in annual revenue with an expenditure profile of 70% COGS and 15% salaries would be spending \$420,000 annually on food and products purchases and \$90,000 on employee salaries and benefits. That would leave the hub with its last 15% of revenue (again, \$90,000) to cover its annual, fixed operating costs of packaging, warehouse payments, utilities, equipment, trucks, gas and computers in addition to funding any additional, mission-driven services. From the 2013 survey, these services could include the potentially costly services providing nutrition and cooking education (reported by 47% of hubs), offering food safety and/or Good Agricultural Practices training to producers (44% reported) or processing food^u (30% reported). For a food hub that generates smaller revenues, funding these types of additional services from sales-based revenues may decrease the food hub's ability to pay for its fixed operating costs.

Revenue Sources

Food hubs working with relatively low annual revenue will probably find it difficult to keep salaries to 15% of revenue and still employ adequate staff. Nearly half of all survey respondents indicated growing staff numbers was a barrier to growth. Paired with the other study findings suggests that acquiring additional revenue from purely sales-generated income can leave

^u Food processing methods included canning, freezing cutting or otherwise preparing whole, raw foods.

the food hub business in a paradoxical trap, needing to obtain additional revenue to increase sales-based revenue.

The salary spent per paid employee was not statistically significant between food hubs that were financially viable and those that were not, nor was the number of paid employees between the two groups. However, the proportion of revenue spent on salaries and benefits was significantly different between financially viable and non-financially viable hubs, indicating that there is a simple need for sufficient revenue to support an adequate size workforce in order for a food hub to be financially viable. This could indicate that food hubs that are not financially viable need to increase their total revenue to pay additional employees to move more products to make more sales revenue. However, it also could indicate that those food hubs need to increase their revenue so that they can make operational investments to increase employee efficiency. Either way, food hubs need to increase their total revenue to move more products to make more sales revenue.

Due to food hubs' need to keep COGS high, fixed cost low and avoid the revenue trap issues mentioned above, obtaining outside sources of capital beyond sales revenue may be necessary if a food hub wishes to provide additional, non-fee based services beyond food aggregation and distribution, to hire additional staff or to otherwise expand their businesses. Food hubs are not anomalous in their need for additional financial capital access. The U.S. Small Business Administration stated that “[a]ccess to capital for small businesses is one of the biggest policy issues in the United States today” and that “[e]nsuring that these firms have adequate access to financial capital enables them to continue to drive innovation, growth, and job creation in the U.S. economy” (Robb, 2013, p. 4).

When looking only at 2012's revenues and expenses, reliance on grant or other outside funding sources was not a good predictor of financial viability. While food hubs that were "not at all" reliant on grant funding tended to have lower efficiency ratios than hubs that were "somewhat" or "highly" reliant on grant funding, this difference was not statistically significant. This in combination with the identifying financially viable hubs that were non-profits and/or highly reliant on grant funding suggest that there are feasible options for food hubs to secure some of their revenue from philanthropic or other, non-sales based sources. While there are serious questions regarding the resilience of businesses that rely on long term grant funding as a major revenue source, grant funding could be an important factor in covering the short-term expenses.

CONCLUSION

In summary, food hubs may be an important mechanism to supply healthy, nutritious local and regional food to a wide variety of markets. Two key differences exist between food hubs that are financially viable and those that are not – the total revenue generated and the expenditure profile. Clearly, food hubs can be financially viable businesses, but need to operate at a minimal threshold of revenue and structure their expenditures in a way that is proximate to that of conventional food distributors. However, if a food hub is operating at a level of revenue that is only enough to break even, and wish to provide additional, non-fee based services to its producers or community, then they may need to turn to other sources of funding in order to cover the costs of these services.

With these findings in mind, we recommend that burgeoning food hubs strive to meet a revenue goal of \$600,000 annually as early in their development as possible or have plans for generating non-sales based revenue sources that will allow them to scale up to the \$600,000 mark. Further, we suggest that managers of both emerging and existing food hubs may need to reevaluate their expenditure patterns/plans if too little emphasis is placed on purchasing revenue generating food and/or products and too much emphasis is placed on salaries, fixed costs and funding additional services. Finally, we recommend that future tailoring of grant and other funding programs articulate the role that grants can play in funding food hub growth and in their offering additional, mission driven services.

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