Beyond procurement: Anchor institutions and adaptations for resilience

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Abstract
According to prior research, local food purchases at anchor institutions (AIs) support community development and food system resilience. AIs are placed-based organizations, such as schools, universities, and hospitals, that support their communities by virtue of their mission. The COVID-19 pandemic presents a unique opportunity to examine how these institutions can support food system resilience during a period of increasing food insecurity and supply chain disruptions. This study uses mixed methods, including interview and survey data, to investigate how foodservice operations at

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New England AIs adapted to COVID-19 and supported local food systems throughout the pandemic. The findings demonstrate that AIs experienced shortages of everyday food items among their broadline distributors—large, national distributors that carry a wide variety of food products. However, AIs adapted to these shortages and found alternate sources for these products thanks to mutually beneficial relationships with local producers. Having relationships with both local and national distributors was an important source of functional redundancy within institutional food supply chains, reducing institutions' reliance on a single supplier and enhancing their resilience. This finding suggests that local purchasing relationships help AIs adapt to systemic disruptions, further incentivizing farm-to-institution programs. This study also found that AIs engaged in a wide array of food access initiatives during the pandemic, including pop-up grocery stores and serving free or reduced-price meals. These initiatives supported staff members and communities through food shortages and increased food insecurity. We suggest that these diverse food access initiatives, some of which were created in response to COVID-19 and many of which were in place before the pandemic, are an accessible way for AIs to support food system resilience in capacities beyond procurement.

Keywords
Anchor Institutions, Local Foods, COVID-19, Pandemic, Food Access, Food System Resilience, Food Shortages, Farm-to-Institution

Introduction
Anchor institutions (AIs) are organizations, typically nonprofits, that are rooted in place and committed to supporting their communities (Birch et al., 2013). The most common examples of AIs are universities, schools, and hospitals. They have been touted for their potential and realized contributions to community development and resilience (Birch et al., 2013). Many of these institutions include community health and development as a fundamental component of their mission statement, making them "natural allies" in community development work (Schildt & Rubin, 2015, p. 3). Extant litera-

ture has identified three primary avenues for AIs to contribute to community development: by providing employment opportunities to community members, through real-estate development, and by considering community development goals in their procurement choices (Living Cities, 2013).

Using survey and interview data from a wide range of New England AIs, this research investigates how AIs supported their local communities and contributed to food system resilience during the first nine months of the COVID-19 pandemic, a time of supply chain disruptions, food shortages, and increased food insecurity (Leddy et al., 2020; Smith & Wesselbaum, 2020). Specifically, this study seeks to answer the following research questions: (1) how did AIs adapt to the food system disruptions caused by COVID-19? and (2) did AIs support local food systems and communities throughout the first nine months of the COVID-19 pandemic, and if so, how?

Local food procurement is a cornerstone of foodservice operations at many New England AIs. A survey of colleges throughout New England found that universities spent nearly US$57 million on local foods in 2016, accounting for, on average, 21% of annual food budgets (Farm to Institution New England, 2017). Furthermore, as of 2020, 70 hospitals throughout New England (out of approximately 250 facilities) had committed to local procurement by signing the Healthy Food Pledge developed by Health Care Without Harm (Health Care Without Harm, 2019).

Interview participants in this study represent a wide range of AIs, including schools, hospitals, and universities. In contrast, the survey portion of this research was conducted in partnership with Health Care Without Harm and provides hospital-specific data. The research team used a concurrent nested triangulation strategy to corroborate results and identify themes relevant to all AI types. These results are complemented by the hospital-specific findings, which provide a greater level of detail about the experience of hospitals throughout the pandemic.

Literature Review
Studies examining the role of AIs in food systems have primarily focused on the impacts of institu-

tions' purchasing and hiring practices (Becot et al., 2016; Kane et al., 2011; Roche et al., 2016). AI foodservice operations spend billions annually; in 2010, foodservice operations at hospitals and schools spent an estimated US$11 billion nationwide (Institute for a Competitive Inner City, 2014). Thus, when AIs leverage their purchasing power and hiring practices to support local food systems, they can have significant economic and employment effects. Farms with local sales spend a higher percentage of their budgets in the regional economy, meaning that money spent on purchases from these farms circulates locally longer (Christensen et al., 2017; Christensen et al., 2019; Henneberry et al., 2008; Jablonski & Schmit, 2016). An input-output model of local food purchases at the University of Vermont Medical Center (UVMMC) found that in 2012 UVMMC contributed as much as US$2.75 million to the local economy (Becot et al., 2016). This number includes both the US$1.64 million UVMMC spent directly on local foods as well as its ripple effects; the local expenditures of its vendors and jobs created as a result of this initiative generated between US$625,000 (lower bound estimate) and US$1.11 million (upper bound estimate) (Becot et al., 2016).

Farm-to-institution (FTI) programs can also create employment opportunities within local communities. In the UVMMC example, the hospital added two full-time positions to manage and coordinate the increased volumes of local foods, representing over US$95,000 in labor income (Becot et al., 2016). The total employment effect was 14.3 new jobs spread throughout the region, a multiplier effect of 1.72 (Becot et al., 2016). Case studies looking at the employment effect of farm-to-school (FTS) programs have shown similar results; various studies have found that FTS programs have an employment multiplier effect ranging from 1.27 to 3.30, demonstrating that local food purchases can create new employment opportunities within a region (Becot et al., 2016; Kane et al., 2011; Roche et al., 2016). Farms with local sales typically have a higher reliance on local labor, accounting, in part, for these significant effects (Jablonski & Schmit, 2016).

Institutional markets are of particular benefit to midscale farmers, offering consistent bulk mar-

kets while requiring less time and energy than selling directly to consumers. Kirschenmann et al. (2004) explained that midsized farms struggle because "they are too small to compete in the highly consolidated commodity markets and too large and commoditized to sell in the direct markets" (p. 1). Alarmingly, the number of midsized farms in the U.S. has consistently declined since the 1950s, leading to a parallel decline in the community benefits associated with them (Kirschenmann et al., 2004). Stahlbrand (2019) sees institutional markets as a possible solution to the plight of midsized farms, arguing that AIs can offer "infrastructure of the middle" through relationship-focused local procurement that allows producers to scale up. Institutional markets also allow producers to diversify their sources of revenue, a crucial component of both farm and food system resilience (Lin, 2011). Typically, institutions source products from a broadline distributor—large, national distributors that carry a wide variety of products. When institutions divert purchases from broadline distributors to local producers, they diversify and shorten their supply chains, supporting these crucial components of food system resilience.

Contributions to Resilience

Food system resilience describes the capacity of a food system to withstand or overcome disturbances (Tendall et al., 2015; Worstell & Green, 2017). This systems-level approach to resilience examines shock's direct and indirect impacts on the entire food supply chain, including production, transportation, processing, and consumption, which have all been adversely impacted by the COVID-19 pandemic (Béné, 2020). Food systems are complex and dynamic, making it challenging to develop one cohesive measure of resilience. However, commonalities between different conceptual models of resilience suggest that resilient systems promote connectivity, demonstrate experimentation and learning, and include diversity and functional redundancy (Fardkhales & Lincoln, 2021; Ungar, 2018). Furthermore, Ungar (2018) asserts that the capacity to withstand shocks is not a trait of the food system itself but rather the result of interactions between its components "that make it

possible for a system or its parts to function well during and after a disturbance" (p. 22). This research will focus on how interactions between AIs, producers, and communities hindered or supported food system resilience during the COVID-19 pandemic. We address two primary shocks to the food system: supply chain disruptions and challenges to food access (Béné, 2020).

Four markers of food system resilience identified in the extant literature are fundamental to understanding the novel context of COVID-19: (1) functional redundancy, (2) experimentation and learning, (3) farm diversity, and (4) connectivity (Fardkhales & Lincoln, 2021; Ungar, 2018). A participatory action research study by Fardkhales & Lincoln (2021) of food hubs in Hawaii during the first nine months of the COVID-19 pandemic serves as an example of how these concepts contribute to food system resilience. This study highlighted that when the island experienced shortages of stable carbohydrates like rice, the food hubs adapted by sourcing locally grown breadfruit (Fardkhales & Lincoln, 2021). This creative thinking is an example of experimentation and learning because the food hubs learned new skills and applied new practices to adapt to the novel context of COVID-19.

The food hubs were a small part of the more extensive food distribution system in Hawaii, and their existence among larger national and regional vendors contributed to functional redundancy and diversity in the state. Functional redundancy exists when multiple system actors perform the same or similar functions, so if one actor fails, there are still others to fulfill that role (Fardkhales & Lincoln, 2021). In this case, when there were challenges with larger distributors, the food hubs were able to source and distribute an alternative carbohydrate. The food hubs' success was due not only to functional redundancy but also to diversity. Hawaii's local supply chains did not experience the same transportation disruptions as national supply chains during the first months of the COVID-19 pandemic. When a food system has a diverse array of local and national food suppliers, it is more likely that parts of the system will continue to function well during a shock. However, in a system lacking diversity, a major disturbance can completely wipe

out the capacity of an essential role within the system (Bullock et al., 2017; Ungar, 2018).

Another key contributor to food system resilience is the existence of short supply chains, often characterized by direct relationships with local producers (Hardesty et al., 2014; Thilmany et al., 2020). There is some evidence that during the global upset at the start of the COVID-19 pandemic, short local and regional supply chains were more resilient than their national and international counterparts (Fardkhales & Lincoln, 2021; Food and Agriculture Organization of the United Nations [FAO], 2020; Litchen & Kondo, 2020; Perrin & Martin, 2021). This resilience is partly due to the nimble, connected, and flexible nature of short supply chains and the direct, personal relationships between local producers and buyers (Thilmany et al., 2020). By building diverse relationship networks, short supply chains foster connectivity, diversity, and other critical aspects of resilience (Hardesty et al., 2014; Ungar, 2018).

Institutional Benefits

While the majority of literature on AIs focuses on institutions' contributions to local food systems, institutions receive numerous benefits from FTI programs. Due to AIs' embedded, place-based nature, these institutions have a vested interest in supporting their local communities and economies. AIs indirectly reap the benefits of robust local food systems and economies due to the "bi-directional and self-reinforcing" nature of the relationships between communities and AIs (Alexander et al., 2017, p. 1; The Common Market, 2014; Koh et al., 2020). AIs indirectly benefit from strong local economies, which make institutions, like hospitals and universities, more accessible to local customers (The Common Market, 2014; Jablonski & Schmit, 2016). A theoretical model of the role AIs play in local food systems, developed by The Common Market (2014), demonstrate the indirect benefits institutions gain from supporting the local food system, stating institutions benefit from "healthy, nourished constituents and a robust regional economy [that] supports anchor institutions" (p. 4).

Many institutions also use FTI programs to encourage healthy eating among their students, staff, or clientele. FTS programs, in particular, are

used to promote healthy eating behaviors and are associated with a higher intake of fruits and vegetables (Bontrager Yoder et al., 2014; Graham et al., 2004; Joshi et al., 2008; Ohmart & Feenstra, 2004). Other types of institutions have seen similarly promising health effects with FTI programs. For example, a survey of over 2,000 marketgoers at 37 farmers markets on Kaiser Permanente hospital campuses found that 74% of respondents reported eating more fruits and vegetables due to their visit to the market (Cromp et al., 2012). Many FTS programs also have an educational component, teaching students about the environment, nutrition, and the food system (Parmer et al., 2009; Roche et al., 2016). Additionally, FTS programs are associated with an improvement in students' enjoyment of school and increased academic engagement (Wien, 2017).

COVID-19 Disruptions

The COVID-19 pandemic created significant challenges for the food system. The related disruptions provide an opportunity to better understand food system resilience or lack thereof in a unique and unprecedented context. Three critical issues that impacted AIs and the communities they support were the increase in food insecurity, the widespread supply chain disruptions that led to shortages of everyday food items, and a rapid decrease in demand for institutional foodservice (Fardkhales & Lincoln, 2021; Feeding America, 2020; Katz et al., 2021; Ramsey et al., 2020). In addition, many institutions experienced a precipitous decline in demand for their products as hospitals closed to the public and educational courses transitioned online (American Hospital Association, 2021; Katz et al., 2021).

In addition, COVID-19 caused employment disruptions for thousands of families, making food insecurity an increasingly relevant concern (Feeding America, 2020; Leddy et al., 2020; Smith & Wesselbaum, 2020). At the national level, the number of food-insecure individuals grew by 17 million in 2020 (Feeding America, 2020; Gundersen et al., 2021). These spikes in food insecurity impacted the regions covered in this study. For example, Vermont showed a 32.3% increase in food insecurity in the early months of the pandemic (Niles et al.,

2020). In Maine, which already had the highest level of food insecurity in New England, there has been a 25% increase (Han, 2021). Nationally, these effects disproportionately fell on communities of color, exacerbating existing racial disparities (Wright & Merritt, 2020).

COVID-19 simultaneously led to supply chain disruptions and product shortages (Fardkhales & Lincoln, 2021; Ramsey et al., 2020). These disturbances worsened individuals' food access, as many products were widely unavailable at grocery stores during the early months of the pandemic. Institutional buyers experienced similar shortages and could not source common food products from their distributors (B. Williams, personal communication, June 30, 2021). The meatpacking industry experienced particularly significant disruptions; wholesale meat prices fluctuated and increased significantly, affecting institutions' ability to source and pay for these products (Ramsey et al., 2020).

Applied Research Methods

This mixed-methods study is intended to facilitate a greater understanding of how New England AIs' foodservice operations adapted to the COVID-19 pandemic, with a specific focus on local food systems and communities. Interviews included the most common types of AIs, including universities, schools, and hospitals, while survey data focused solely on hospitals. The authors worked closely with two partner organizations, Health Care Without Harm (HCWH) and Farm to Institution New England (FINE), to develop and implement the survey portion of this research. Due to the widespread disruptions related to COVID-19, especially in the healthcare sector, the research team predicted a low survey response rate. Therefore, the research team applied a concurrent nested triangulation strategy to integrate, confirm, corroborate, and cross-validate study findings (Terrel, 2012). Concurrent nested triangulation prioritizes one data collection method, in this case, the qualitative data, which reflects the experiences of a wide variety of institutions. An advantage of this method is that it allows researchers to gain a broad perspective of an issue; in this study, it allowed for an understanding of AIs experiences during COVID-

19 while providing some hospital-specific insights (Terrel, 2012).

Interviews

To develop an in-depth understanding of institutions' experiences during COVID-19, the research team conducted interviews from September to December of 2020. Interview questions focused on the changes in various aspects of institutions' management and operations (Appendix A). A team comprised of faculty and extension educators from the University of Vermont recommended research subjects based on the subjects' interests and efforts in local food systems. Interviews with five AIs (hospitals or educational institutions) and two mid-scale New England intermediaries that regularly conduct business with AIs serve as the basis of the qualitative portion of this research. Researchers interviewed one foodservice administrator from each facility. Researchers chose to interview administrators based on their detailed knowledge of the institutions' foodservice operations and purchasing habits. Interviews lasted approximately 45 minutes to an hour. Since interviews were not audio-recorded, a minimum of two researchers, typically three, collected independent notes and quotes from the interview sessions. To compensate for the lack of audio recordings, notes from multiple independent notetakers were compiled and compared for accuracy to increase the reliability of the findings. These notes served as the basis of the qualitative analysis portion of this research.

Thematic analysis identified themes and patterns in the qualitative data. Each stage of the analysis was conducted independently by two researchers to enhance the quality and reliability of the findings while reducing subjectivity. First, following the principle of emergent thematic analysis, coders read the interview notes, compared them for accuracy, and combined the multi-sets of notes into a single coding document. After this process was complete, researchers uploaded the documents into NVivo for analysis.

Once coders had familiarized themselves with the data, open coding began. Open coding refers to the process of coding every passage with adequate themes. This iterative coding process continued independently until strong and recurrent themes emerged. The coders then met to discuss their codes, identifying the similarities and differences before collapsing related codes and expanding others. Next, the coders re-read and re-coded the data independently before meeting again to develop a single, consistent description of coding categories to aid in the collective coding process. The iterative process repeated until saturation when no new themes emerged from the data. At this point, interviews and analysis ceased. The following process was axial coding, which involves reviewing open codes for recurrent and forceful themes or categories to identify the broader themes within the dataset. While more extensive quotes were challenging to include without interview transcripts, the results include short quotes to represent and honor participants' voices and support the identified themes (Owens, 1984).

Survey

In collaboration with HCWH and FINE, the research team developed a survey instrument consisting of 34 open and closed-ended questions in SurveyMonkey. This new iteration of the Healthy Food in Health Care Survey, first conducted in 2009 by HCWH, facilitated a better understanding of hospitals' dining programs, procurement choices, and how they had changed in response to COVID-19. This biennial survey tracks metrics related to food purchases and helps HCWH make informed decisions about where to focus its resources and efforts to best support local food purchases at hospitals.

The 34 survey questions focused on hospitals' local food purchases, the impact of COVID-19 on their dining services, and the organization's role as an AI in their community, reflecting similar themes as the interview questions. However, while the interview questions were opened-ended, the survey consisted primarily of closed-ended questions to provide quantitative assessments of the research topics, complimenting the nuanced and longer qualitative responses. The survey was piloted and adjusted as necessary by the research team and an advisory group of Health Care Without Harm partner organizations.

The sampling frame included all healthcare facilities with a dining component located within

the six New England states to be congruent with past iterations of this survey. Although the Healthy Food in Health Care Survey had always surveyed healthcare facilities in New England, this was the first iteration of the survey open to all hospitals in the region, regardless of their involvement with HCWH. Researchers sent invitations to organizations via email and phone to participate in the study. The survey collected data from October to December 2020.

Given the challenges in the healthcare sector, the response rate was understandably low; 30 participants completed the survey, representing around 12% of the 256 healthcare institutions in the region identified by HCWH (Table 1). Due to the low response rate, findings from this survey were not generalizable. Researchers used SPSS to analyze survey data, calculating basic descriptive statistics like mean, frequency, and standard deviation. For the more detailed analysis, institutions that responded that "anchor institution was a new concept" or they "had not taken steps to become one" were considered not engaged in the AI role. On the other hand, institutions that responded that the AI role was "fundamental to their mission" or that they "had taken steps to become one" were considered engaged in the AI role.

Table 1. Facility Locations

State	Respondents	Contacted Facilities
Connecticut	1	37
Maine	10	42
Massachusetts	4	113
New Hampshire	8	33
Rhode Island	1	13
Vermont	5	25

Note: 1 non-response.

Triangulation Strategy

Researchers applied a concurrent nested strategy to cross-validate study findings (Terrel, 2012). Thus, both the interview and survey phases of data collection occurred simultaneously. The concurrent nested strategy prioritizes one data collection method. This study prioritized interview findings

because they encompassed a wide range of AIs. After analyzing the qualitative data, survey findings were integrated and used to corroborate, expand upon, or contradict interview findings. This method increases the reliability of findings and allows researchers to gain a "broader perspective than could be gained from using only the predominant data collection method" (Terrel, 2012, p. 270). In this case, the concurrent nested strategy provided a broad understanding of AIs' roles within their communities and more detailed specifics about hospitals' roles during COVID-19 (Terrel, 2012).

Results

This study aimed to expand on the current understanding of AIs. The themes identified by this research were (1) that relationships between AIs and local farmers contributed to resilience and adaptability, (2) institutions supported local food systems in roles beyond procurement, and (3) institutions supported staff throughout COVID-19 in novel ways. The result section presents the themes identified from the in-depth interviews, with information on how the survey results corroborate or expand upon the themes. These themes are followed by a more in-depth analysis of the survey results and hospital-specific findings.

Local Food Relationships: Reducing Supply Chain Disruptions

The COVID-19 pandemic caused widespread supply chain disruptions and panic-buying leading to shortages of everyday food items. Interviewees experienced shortages of food items like meat, potatoes, and pre-packaged foods. According to interviewees, most of these disruptions affected institutions' ability to get products from their broad-line distributors, with minimal disruptions to the local supply chain. The survey also corroborated that many institutional buyers faced shortages of common food items. For example, of the hospitals surveyed, 67% reported having experienced shortages, primarily of meat and dairy products.

The interviews found that to adapt to COVID-19 shortages, institutions leveraged their relationships with local farmers to source food items they could not procure from their primary distributor.

Interviewees worked with local farms and intermediaries, like food hubs, from throughout New England to source local food products. In New England, products are considered local if they come from or within 50 miles of any New England state. AIs' reliance on multiple suppliers was a crucial source of functional redundancy, reducing institutions' reliance on a single food distributor and the impact of COVID-19 disruptions.

The ability to source local products that were otherwise unavailable increased the stability of these institutions throughout the pandemic. For example, a hospital administrator explained the importance of relationships with local farmers during COVID-19: although 40 to 50 items per week were unavailable through their primary distributor, U.S. Foods, they never felt like they were in a *"pinch"* because of their reliance on and relationship with local producers. This hospital also highlighted its purchases of local meats as a particular source of resilience. Since it sourced all its meat locally, it was not dependent on the large meatpacking plants and did not experience the shortages in meat products or exorbitant price increases that many buyers did. This is a prime example of how institutions capitalized on existing relationships with local producers to adapt to the supply chain disruptions caused by COVID-19.

Other institutions adjusted to supply chain disruptions by establishing new relationships with local suppliers for food items they could no longer reliably get from their primary distributor. One institution applied this method to source root vegetables, like potatoes, when it experienced a shortage. The relationship established with this new local producer is one the institution plans to continue beyond COVID-19. This foodservice director stressed the benefits of having a *"short supply chain"* which is less prone to systemic disruptions. One interviewee summarized this sentiment by expressing how thankful they were for their *"relationships with local farms"* and how much they had supported and helped their institution adapt to the challenges of COVID-19.

Food Access Initiatives: Beyond Procurement

For many interview subjects, local food purchases were still a priority. However, due to the substantial and sudden changes in many institutions' business models, maintaining local procurement levels may not have been financially viable. For example, an interviewee working at a Vermont hospital explained that cafeterias that were previously open to the public were closed, limiting their customer base to employees and patients. Hospitals also only offered essential and emergency care during the first months of the pandemic, further reducing their customer base. Many universities and schools also experienced a significant decline in the number of on-campus students as classes transitioned online, reducing their customer base as well. These changes led many institutions within our sample to reduce their local and overall food purchases.

Even though some institutions within the sample did reduce local purchases, most of them still maintained a strong commitment to purchasing as much local food as was financially viable for their organization. One university explained how COVID-19 had really *"solidified [the institution's] commitment to sustainability and local purchasing,"* demonstrating the values of the university and its strong support for local foods. According to interview subjects, the overall decline in local food purchases was proportionally much smaller than the total decline in food purchases. The experience of a Vermont hospital shows just how committed these institutions are to supporting local agriculture; although the hospital started serving free meals and the foodservice generated no revenue, the hospital maintained its local purchasing relationships sourcing local meats, baked goods, seafood, and cheese products, among others. The survey data also demonstrated hospitals' commitment to local food purchases. For example, although 87% of hospitals reported a decrease in food sales, 40% of the institutions maintained about the same level of local purchases during the pandemic as in 2019. This finding suggests that the decrease in local food purchases was minimal proportional to the overall decline in food purchases.

Although some institutions in our interview sample maintained local purchasing levels, food purchases declined at many institutions. Still, AIs found ways to support their food system in capacities beyond their typical role as purchasers. For example, institutions adopted various initiatives to

support food access by identifying challenges with food access and growing food insecurity in many communities. These initiatives included offering or distributing free and reduced meals, making food donations to nonprofits, and creating pop-up grocery stores.

AIs were highly engaged in these efforts, with all interviewees participating in a new initiative to support food access during the pandemic. For example, the aforementioned hospital that started serving free meals adopted this initiative to support food access among its staff and patients. An elementary school foodservice director summarized the importance of these efforts by explaining that the school is the *"largest restaurant in town,"* meaning that it regularly feeds more people than any other organization in the community. When classes transitioned online, every student became eligible for free meals. This experience expanded how schools thought about and addressed food insecurity in their community. One school explained that it targeted its efforts to have the most significant impact by including more culturally appropriate language and foods, offering more staple food items, and having teachers and paraeducators encourage the use of this program.

Many of these programs, like pop-up grocery stores, were new solutions to the unique challenges COVID-19 presented. Institutions engaging in these innovative new programming efforts to support their communities demonstrate a crucial component of food system resilience: experimentation and learning. While many new programming efforts were temporary, institutions learned valuable lessons for future crises. For example, the

school mentioned above that switched to including more staple food items said this experience has caused it to rethink how it will address issues like food insecurity in the future, applying the valuable lessons it learned throughout the pandemic.

The survey also revealed that many hospitals engaged in food access work. In fact, 87% of respondents had adopted at least one new food access initiative since the start of the COVID-19 pandemic, and 53% had launched at least two. The two most common new programs were pop-up grocery stores (53%) and free or reduced meals for staff, patients, or community members (37%). As shown in Table 2, a wide range of programs was adopted in response to COVID-19.

The survey also demonstrated that many hospitals had food access and local food initiatives in place prior to the pandemic. Before COVID-19, hospitals had an average of 2.2 (SD=1.4) food access programs. Over half of the hospitals conducted food insecurity screenings with patients (53%), just under half hosted an on-site CSA (47%), and 27% used their community benefit program to perform food-based interventions. Table 3 shows the range of food access initiatives that were in place at hospitals prior to the pandemic.

Supporting Staff: Beyond Employment

Many institutions' foodservice employees were considered essential workers, working in person during the most challenging times during the COVID-19 pandemic. Interviewees highlighted how the pandemic caused anxiety among staff, who had fears of not only contracting the virus but potentially losing their jobs. To assuage these fears,

Table 2. Food Access Initiatives Adopted in Response to COVID-19 (*n*=25)

Pop-up Grocery Store	Free or Reduced Meals	CSA Program	Donated Surplus Products	Summer Meals (National School Lunch Program)	Drive-up Food Box Distribution
64%	44%	24%	20%	12%	8%

Table 3. Food Access Initiatives in Place Prior to COVID-19 (*n*=26)

Food Insecurity Screenings	On Site CSA	On-site Farm or Garden	On-site Farm or Garden	Food Access via Community Benefit Program	Fruit and Vegetable Prescription	Off-site Farm or Garden
62%	54%	31%	31%	27%	23%	19%

institutions took various actions to support their foodservice and other employees.

An issue for essential workers was access to common food items. Interviewees reported that during the early months of the pandemic, it was challenging for essential workers to visit grocery stores, which also had issues keeping products stocked. Employers took various steps to address this issue; for example, while some of the food access initiatives outlined above intended to support the greater community, initiatives like pop-up grocery stores, especially at hospitals, were typically intended to support staff's food access. Other organizations also started offering free or reduced meals to staff. These efforts were intended to provide employees with access to healthy, nutritious meals and improve staff morale. The survey portion of this research demonstrated that the most commonly adopted food access initiatives at hospitals were pop-up grocery stores and offering free or reduced meals to staff and patients. Hospitals were not open to the public during the survey period, indicating that these initiatives were primarily designed to support staff.

Efforts to support and retain staff were seen as consequential by institutions and administrators, many of whom felt they could successfully transition their business models because of the exceptional efforts of their staff. For example, when asked what they were proud of about their approach to addressing the pandemic, one hospital foodservice director simply responded that he was *"thankful for the staff at his disposal,"* and he *"couldn't have done it without them."* Other participants echoed these sentiments throughout the interviews; a university administrator explained that having an existing team with established relationships made a huge difference in helping *"get things off the ground."* Knowing the benefits of having a cohesive staff

and good morale, these institutions prioritized supporting staff throughout the COVID-19 pandemic using novel approaches, another example of institutions engaging in experimentation and learning.

Employers also took steps to help address the discomfort and stress of foodservice employees by restructuring how they did business. Institutions varied in their approaches to addressing staff concerns and adapting to COVID-19. For example, some institutions allowed employees to work in reduced shifts with full pay to limit employee exposure; others offered voluntary furlough for employees who were uncomfortable coming to work in the first months of the pandemic, all of whom returned to work by midsummer. At one hospital, which was required to close its cafeteria to the public, causing a significant decrease in revenue, upper management took a pay cut and awarded additional pay to the lowest-earning employees.

Survey Results

Although the survey was distributed to hospitals only, the results largely corroborate the themes identified by the interviews with multiple types of AIs. However, the survey results expand on the interview themes and demonstrate some interesting hospital-specific findings. For example, survey respondents had varying levels of familiarity with the term "anchor institution": 23% responded that it was a new concept, 27% had heard the phrase before, but their institution had not taken steps to become one, and 50% answered that their institution had taken steps to become an AI or that AI activities were fundamental to their mission. As shown in Table 4, engaged AIs had more food access initiatives before COVID-19 and adopted more new initiatives in response to the pandemic. Interestingly even though some hospitals did not consider themselves an AI, they engaged in some

Table 4. Adoption of Food Access Initiatives

Engagement in AI Role	During COVID-19		Prior to COVID-19	
	Average	Standard Deviation	Average	Standard Deviation
Engaged in AI Role	1.87	0.99	2.53	1.19
Not Engaged in AI Role	1.27	1.16	1.80	1.52

Note: During COVID-19: *n*=25. Prior to COVID-19: *n*=26.

critical AI roles. Another interesting way these groups varied was in size. Engaged AIs tended to be smaller, averaging 83 hospital beds, while unengaged institutions had an average of 116 hospital beds.

The survey results also provide some interesting insights into local food purchases at hospitals. Over half of the institutions surveyed (53%) had made regional farm purchases in 2019. Of the 87% of hospitals that reported a decrease in overall food sales in 2020, 40% maintained about the same levels of local food purchases throughout the pandemic as in 2019. This finding shows that a core group of hospitals prioritized local purchasing even when their foodservice operations experienced a significant decline in demand.

Discussion

This mixed-method research highlights the numerous ways AIs contributed to food system resilience throughout the first nine months of the COVID-19 pandemic: engaging in local procurement, leveraging relationships with local farms to address food shortages, and creating programs to improve food access for institutional staff and the broader community. Although most of the literature on AIs and food systems focuses on how foodservice purchases can support local producers, this research demonstrates that the relationships established by local procurement efforts also enhance institutional resilience. In the first wave of the COVID-19 pandemic, the short supply chains and direct relationships that characterize FTI programs enabled institutions to source the products they needed in the face of widespread disruptions to global supply chains. Other studies demonstrating that shorter food supply chains were more resilient than longer ones during the early stages of the COVID-19 pandemic corroborate these findings (Fardkhales & Lincoln, 2021; Marocchino et al., 2020; Thilmany et al., 2020). In addition, when AIs establish purchasing relationships with local farmers and national vendors, they build diversity and functional redundancy into their food supply chain, which are critical components of resilience.

AIs also benefit from the secondary, indirect effects of strong local procurement programs, among them more robust local food systems and economies. The literature upholds the idea that relationships between communities and AIs are bidirectional and mutually enhancing (Alexander et al., 2017; The Common Market, 2014; Koh et al., 2020). Yet, the returns on food system investments identified by prior literature are largely indirect and conceptual. The Common Market's (2014) theoretical model of the mutually beneficial relationship between AIs and local producers demonstrates this, stating that institutions benefit from "the development of farm, processing, and distribution infrastructure that make the region—and thus the institution—more successful" (p. 4). Other studies point to the fulfillment of institutional goals like encouraging healthy eating (Bontrager Yoder et al., 2014; Cromp et al., 2012; Joshi et al., 2008). Our findings suggest that institutions reap a more direct benefit from supporting their local food system; the strong mutually beneficial relationships AIs develop with local producers enhance the resilience of their food supply chains.

While the COVID-19 pandemic is unique in many ways, the frequency and severity of shocks are likely to increase worldwide as a result of climate change, making it increasingly vital to develop food system resilience in a variety of contexts (Botzen & Van Den Bergh, 2009). Our findings suggest that FTI programs enhance the resilience of institutional supply chains while providing the numerous other benefits identified by prior literature. Furthermore, the shortages most institutional buyers experienced during COVID-19 may motivate nascent AIs to establish relationships with local producers and diversify their supply chains.

This study also highlights how AIs supported their communities beyond procurement during the COVID-19 pandemic, specifically through initiatives to support food access. Because AIs are community hubs and many serve as emergency feeding sites, they are well-positioned to provide food to their communities. While some institutions, like K-12 schools, were compelled to distribute food, others voluntarily took on the role. While much of the current literature focuses on how AIs contribute to regional economies by purchasing local foods, the overwhelming adoption of food access programs during COVID-19 highlights an important way AIs contribute to the resilience of their local food sys-

tems, which has not been widely discussed or emphasized in the existing literature on AIs as a group.

AIs are well-suited to hosting food access programs in times of crisis since both schools and hospitals, the most common AIs, often act as community hubs and emergency feeding sites. Experience as emergency feeding sites during natural disasters provided some AIs with valuable experiences to draw on in this novel and challenging situation. While these institutions had past experiences to draw on, the COVID-19 pandemic inspired many AIs to create new food access initiatives. However, many institutions also engaged in this work before the pandemic. For example, although the most common pre-pandemic initiatives among surveyed hospitals were hosting CSAs and conducting food insecurity screenings, at least 25% of survey respondents also hosted farmers markets, community gardens, or community benefit programs that included food-based interventions. This diverse array of programming efforts demonstrates that AIs can support food access in a myriad of ways, allowing institutions to choose programs appropriate to the available resources and community needs.

Many food access programs at AIs, like CSAs and farmers markets, also support local farms. Several new COVID-19 programs had similar dual benefits; for example, some hospitals highlighted local products at their pop-up grocery stores. We suggest that incorporating local products into existing food access initiatives may be a good way for institutions that have not previously engaged in local procurement to start developing relationships within their local food economy. For hospitals, in particular, using community benefit programs to support initiatives that address food insecurity and support local farms is a promising avenue to build relationships within the local food system without straining the hospital dining budget.

Both the interview and survey stages of this study demonstrate that AIs took an active and creative approach to problem-solving in the face of a severe and systemic shock. Ais' eagerness to adopt new food access programs to address dramatic increases in food insecurity and challenges with food access suggests that AIs contribute to food system

resilience through experimentation and learning, a common indicator of resilience identified by Ungar (2018). AIs also used new food access programs to support and retain essential workers during the early months of the pandemic. Retaining staff, particularly in foodservice, is critical due to the ongoing and pre-existing shortages of workers and high turnover rate in the foodservice industry (Choi & Sneed, 2006; Fickenscher, 2021; Ryan et al., 2015). Beyond retaining staff, these efforts to support employee food access improved morale and allowed institutions to show appreciation for essential workers during the pandemic.

This article relies on mixed methods to examine study findings. A limitation of the interview data is the lack of audio recordings. However, the use of multiple independent notetakers helped enhance the accuracy of interview notes and provided some short, direct quotes from participants. Additionally, given the low response rate, survey findings are not generalizable to the entire New England hospital population. Survey results were not used in isolation but rather to confirm or contradict interview findings. While the concurrent triangulation strategy used to integrate study findings increases reliability, this process also has some limitations. The Healthy Food in Health Care Survey included one specific type of AI, hospitals. Therefore, this research likely overemphasizes hospital-specific findings, while themes relevant to educational institutions may be under-emphasized.

Additional research is necessary to better understand how AIs support local food systems and communities as both purchasers of local products and hosts of food access initiatives during periods of calm and crisis. Specifically, future research should examine what new or temporary programs are most successful in the context of acute need and what longstanding initiatives best enhance the resilience of AIs and their communities. In the face of increased food insecurity during the COVID-19 pandemic, even institutions that did not consider themselves an AI supported their communities through food access initiatives. The widespread adoption of these programs suggests that food access work is an accessible entry point for institutions to begin acting as anchors for their communities.

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Appendix A. Interview Questions

1. Briefly describe your business/operation.

2. How would you describe the changes to your operation under COVID 19?

3. How did COVID19 impact the following aspects (specifically):

    a. Volume of business (sales)

    b. Profitability/viability

    c. Items sold or served

    d. Supply chains/where you bought or sold goods

    e. Labor/employee knowledge, skills or capacity (and ability to adapt)

    f. Labor/employee health and well-being, staffing levels

    g. Your/managers' knowledge, skills, well-being, etc.

    h. Building, Equipment, Supplies, or Infrastructure needed

    i. Policies, Handbooks, Checklists, and Standard Operating Procedures

    j. Communication systems (e.g., with customers and/or with employees)

    k. Other

4. How prepared were you in response to these changes? What was relatively easy? What caught you off guard?

5. What resources, internal and/or external, did you find particularly helpful in your transition?

6. What kinds of resources would have helped you to be better prepared?

7. Finish this sentence:

    a. "I wish I knew then what I know now . . ."

    b. "One thing I am really pleased with or proud of regarding our approach has been . . ."

    c. "One thing we definitely wouldn't do again is . . ."

8. If there anything important we missed?