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## Adaptations and innovations: Analyzing food system organizations' responses to the COVID-19 pandemic

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### Abstract

During the global COVID-19 pandemic, food systems have been affected by supply-chain disruptions, shifting employment trends, and increasing prices that change organization and business operations, increase food insecurity, and influence the broader economy. Much of the early scholarship regarding pandemic trends pointed to root causes in the corporate food regime and called for seeing the crisis as an opportunity for transformational change. Relying on surveys and in-depth interviews with food system stakeholders, this paper describes the impact of the COVID-19 pandemic on food businesses and organizations in Charlotte, North

Carolina, USA. We examined the challenges created during the pandemic and related responses by stakeholders. Our research found that the pandemic's impacts have been mixed. Most stakeholders identified both barriers and opportunities, reporting great upheaval and disruption but also new opportunities for innovation and collaboration. We argue that, while many positive innovations and quick responses were generated, ongoing challenges are indicative of widespread food system vulnerabilities created by a corporate food regime that produces thin margins while limiting the ability of stakeholders to pursue transformational change. Much of the existing literature considers the pandemic's effects on individual producers and eaters, as well as large-scale structural shifts, yet less attention has been paid to the responses of food system

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### Author Note

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organizations and businesses. This research contributes to food systems literature through its focus on food system actors to better understand how the food system is changing during the pandemic.

### **Keywords**

COVID-19, Pandemic, Corporate Food Regime, Organizations and Businesses, Charlotte, North Carolina

### **Introduction**

Throughout the global COVID-19 pandemic, food and agriculture systems have been disrupted as economic shifts spurred greater rates of hunger and significant supply-chain shortages. These disruptions brought to light the ongoing vulnerabilities of global food systems, including but not limited to the failures of concentrated corporate actors to sufficiently distribute agricultural goods from farms to consumers in ways that promote the health and well-being of producers, consumers, and the environment. The exacerbation of these vulnerabilities during the pandemic spurred quick changes and new innovations by organizations and businesses. This research examines those changes to better understand the pandemic's impacts and what this may portend for food system futures.

Through surveys and in-depth interviews with food system stakeholders across multiple sectors in Charlotte, North Carolina, this research identified the barriers affecting organizations and businesses during the pandemic and examined stakeholder responses. Our research found that the pandemic's impacts were mixed. Most stakeholders argued that lockdowns, mitigation measures, and supply disruptions produced significant operational barriers, but also new opportunities for innovation and collaboration. We argue that this mixed impact is indicative of widespread food system vulnerabilities (described throughout this paper) created by a corporate food regime (McMichael, 2009) that produces thin margins while constraining the pursuit of transformational change.

Much literature has reported on the effects of the pandemic on individuals, families, and farming communities (see Anderson, 2020; Blay-Palmer et al., 2021; Clapp and Moseley, 2020; among others, including a special call for such papers in this

journal [Hilchey, 2021]). These reports are important for identifying how individuals are faring and the need to better support them. But this literature has paid less attention to the organizations and businesses that are responding to the pandemic's impacts. We examined how organizations and businesses responded to pandemic disruptions. The stakeholders in our research were innovative in responding to new challenges, but their ability to foment system-level change while also ensuring their survival is less clear. This research contributes to food systems literature through its focus on organizations and businesses in order to better understand how the food system is changing during the pandemic.

We begin with a brief review of food systems literature regarding vulnerabilities and crises. Then we discuss how these vulnerabilities are evident in the Charlotte context and our mixed-methods research approach, before detailing the research findings. Finally, we discuss what these findings indicate for ongoing food system stakeholders' responses to crisis disruptions and provide recommendations for future research and practice.

### ***Food System Vulnerabilities***

Throughout the pandemic, there were widespread stories of empty grocery store shelves (Hernandez, 2022), wasted food on farms (Mansoor, 2020; Yaffe-Bellany & Corkery, 2020), and increasing demand at food pantries (Silva, 2020). Public health officials and state leaders implemented restrictions on business operations and public gatherings, creating a direct impact on food system actors. For example, restaurants could no longer serve guests indoors and newly unemployed individuals began visiting food pantries for the first time, causing a dramatic rise in demand. Growing demand for food aid was coupled with a disrupted supply of food and increased prices. Food was being produced, but the supply chains were beginning to fragment as distributors were forced to find alternative outlets for foodstuffs (Hobbs, 2020). Hege et al. (2021) describe this as a "perfect storm" (p. 241) where the confluence of many food system impediments forced organizations to innovate quickly. In North Carolina, many specialty-crop producers reported significant damage to their

businesses as a result of the pandemic (Dankbar et al., 2021). The lost or reduced capacity of previously established supply chains required producers to rework their operations and oftentimes sell directly to consumers.

These disruptions were not experienced equally. Food insecurity and coronavirus infections were experienced at higher rates in Black and Latinx communities (O’Hara & Toussaint, 2021; Perry & Harshbarger, 2020). Less supply led to increased prices at grocery stores and other food retail locations, which affected those with limited incomes the hardest and forced many families into difficult choices about spending on groceries, rent, or utilities (Tappe & Meyersohn, 2021). Many of the workers most at risk of unemployment or contracting the virus were low-paid food system workers from marginalized communities (for example, fast food and grocery staff and migrant factory workers). Further, food systems scholars point out that food insecurity intersects with other inequities linked to race, class, gender, immigration status, sexuality, and ability (Bowen et al., 2021).

The disruptions and changes evident during the pandemic are part of a larger context of food system vulnerabilities and injustices (Anderson, 2020; van der Ploeg, 2020). Interdisciplinary food systems literature notes that recent crises are embedded in long-term food injustices and respond to a myriad of connections between food and human society, including issues of food access and insecurity, food justice, the ecological impacts of food production and consumption, and the economic systems of food distribution, among others (Clapp & Cohen, 2009; Rosin et al., 2011). Food system organizations and businesses have been greatly affected by “interlocking dynamics” that characterized current and previous food system crises—supply-chain disruptions, job losses, increasing prices—that had knock-on effects on food security, farm viability, and the economy as a whole (Clapp & Moseley, 2020).

These vulnerabilities are grounded in a corporate food regime focused on producing cheap and plentiful food through industrial methods and specialized markets over the past 70 years (James et al., 2021; Montenegro de Wit, 2021). McMichael (2009) theorized the corporate food regime as

characterized by the shift to industrial agriculture, consolidation of agri-business and food retail industries, and liberalization of trade policies in order to privilege corporate power. These changes marginalize smallholder agriculture, local ecologies, and public health, and lead to food system crises (Hendrickson, 2020; Holt Giménez & Shattuck, 2011; Montenegro de Wit, 2021; Winson, 2010). For example, Holt Giménez and Shattuck (2011) see the 2008 world food price crisis caused by the corporate food regime, explaining that while there were record grain harvests, food prices were simultaneously on the rise and the number of hungry people reached historic levels. Some have argued that this was due in part to short-term causes like higher demand in developing countries, while also being the result of longer-term, structural factors like a growing reliance on imports caused by commodity dumping from wealthier nations (Mittal, 2009).

Similarly, many have pointed to trends in the corporate food regime that laid the foundation for food systems crises experienced during the coronavirus pandemic. This includes seeing a fundamental crisis point in the modern agricultural system with the near absolute reliance on monoculture farming systems to the detriment of our environment and in defiance of smallholder rights (McMichael, 2009). The liberal trade policies of the corporate food regime enable the wide circulation of food products across international borders and the heavy reliance of many economies on others for their food. Trade liberalization (alongside industrial agricultural practices) is seen by some as contributing to the increased incidence of disease spread (IPES-Food, 2020). It also demonstrated the system’s vulnerability to disruptions as the ability to move goods was severely hindered during the pandemic, resulting in food shortages worldwide (Bowness et al., 2020). The increasing reliance on cheap, precarious, and often migrant labor in the corporate food regime was made visible when many food-service workers lost their jobs early in the pandemic, which drove up food-insecurity rates among this low-paid population. Grocery-store and factory workers were deemed essential and required to sacrifice their health (via exposure to a highly contagious virus, often with inadequate protective equipment) in order to keep food circu-

lating through the economy (Bhattarai, 2020). Some temporary foreign workers continued to labor in the fields despite contracting the virus, while other farm owners lamented the limited supply of migrant labor as international borders closed (Berger Richardson, 2020). Many point out that this was simply an exacerbation of existing precarity, danger, and marginalization of food system laborers (Robinson et al., 2021). It is important to note that marginalized food system laborers are more likely to be Black, Indigenous or People of Color (BIPOC) and were disproportionately impacted by COVID-19 (Alkon et al., 2020).

Throughout the pandemic, many food system stakeholders have had to make immediate pivots or pursue innovations in response to changes in demand (e.g., increases for food pantries, decline in customers for restaurants), public health guidance (e.g., distributing food boxes instead of allowing clients to “shop” through pantries, acquiring masks, and shifting to online communications), and supply-chain disruptions (e.g., finding new sources for restaurants, piloting direct-to-consumer programs) (Dankbar et al., 2021; Hege et al., 2021). At the same time, scholars suggested that the crises evident during the pandemic created an opportunity to rebuild food systems that are more just and sustainable (Blay-Palmer et al., 2021; Cox & Beynon-MacKinnon, 2020; Glaros et al., 2021). For example, Blay-Palmer et al. (2021) argue that the food system vulnerabilities exposed during the pandemic demonstrate the need for a City Region Food Systems approach characterized by multi-stakeholder engagement across regions, system-centered planning and policy, and participatory governance. Others argue that there are opportunities for diverse actors to rebuild local food systems and pursue resilience, construct circular economies, and dismantle the corporate food regime (Clapp & Moseley, 2020; Giudice et al., 2020; James et al., 2021). As some researchers have noted, any efforts to devise a more equitable food system must address the roots of injustices in a long history of settler colonialism and structural racism (Lunsford et al., 2021). These conditions producing food system

vulnerabilities were in place in the Charlotte region prior to the pandemic, affecting not only the distribution of food and agricultural goods, labor, and food insecurity rates, but also how organizations and businesses were able to respond to these challenges.

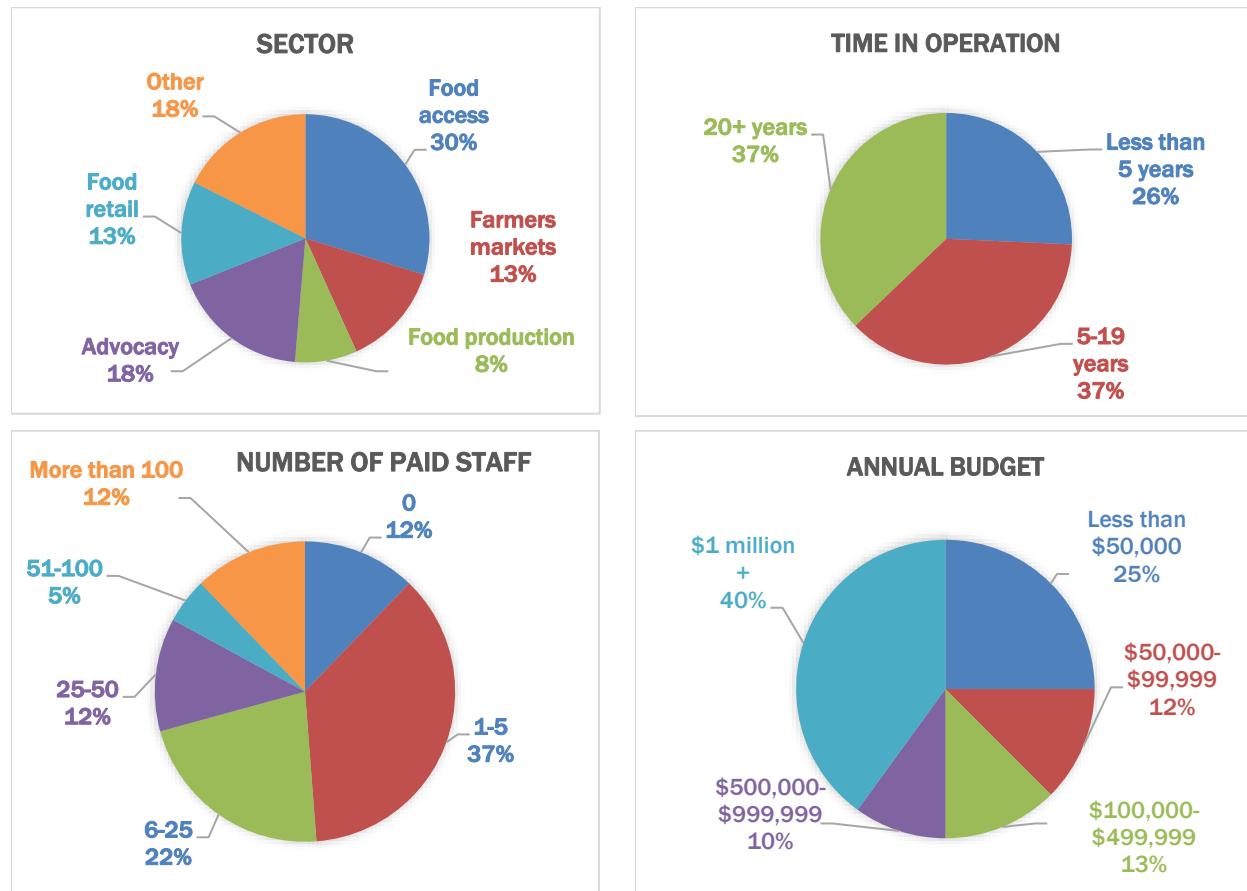
### ***Research Methods and Context***

To understand the pandemic’s effects on food system organizations and businesses, during 2020–2021 we utilized a mixed-methods approach of online surveys and in-depth interviews. The research questions and instruments were developed in collaboration with more than 80 individuals working in the regional food system as part of a larger Charlotte-Mecklenburg Food Policy Council (CMFPC) food system assessment (CMFPC, 2022). The online survey utilized open- and close-ended questions about organization and business demographics, assets acquired, barriers encountered, and the impacts of the pandemic on their operations. Forty-one surveys were completed by stakeholders representing food access (22), advocacy (12), food retail (11), farmers markets (8), food production (6), and other sectors (8) (see Figure 1 for additional survey respondent demographics). We sought responses from diverse sectors in recognition of both the similar and differential impacts faced by food system actors across different areas.<sup>1</sup> Surveys were analyzed in Excel and SPSS to produce summary statistics.

Following survey analysis, 29 in-depth interviews were conducted with stakeholders from local and state government (5), nonprofit leaders focused on food security (5), agriculture (3), farmers markets (2), health and nutrition (6), environmental education (3), and business owners (5). Interviews provided more in-depth explanations and context regarding pandemic impacts and responses identified in surveys. Interviews were transcribed and coded by the research team using NVivo in order to identify emergent themes. While a potential limitation of the research is the small survey sample, this mixed-methods research approach sought in-depth information from a purposive sample of

<sup>1</sup> In order to allow survey and interview respondents to speak freely and in accordance with research ethics guidance from the UNC Charlotte Institutional Review Board, names of organizations and businesses participating in this research are kept confidential.

**Figure 1. Survey Respondent Demographics**



knowledgeable stakeholders in different food system sectors. It was not intended as a survey of the general population, nor as a tool to provide generalizable knowledge about resident experiences. Instead, through both surveys and interviews, we reached levels of saturation that provide important and in-depth insight into the experiences of organizations and businesses in Charlotte.

Charlotte is the largest city in North Carolina, with a population of nearly 900,000 people. It is home to the second-largest banking sector in the U.S. and it is one of the fastest-growing cities in the country (Charlotte Regional Business Alliance, 2021; 2022). The characteristics of the corporate food regime were prevalent in the Charlotte region prior to the pandemic in ways that affected available responses. Like cities across North America, Charlotte's food system has experienced a

consolidation of regional farms in industrial operations, the predominance of a few grocery companies that source their goods through international supply chains, and increasing rates of food insecurity addressed, in part, by a network of corporate-sponsored food banks.

A study of the region's food system commissioned by the City of Charlotte that focused on farmers markets found that the county lost more than one-third of its farms between 1997 and 2012, ranks low in direct-to-consumer sales and marketing, and lacked support for regional producers (KarenKarp&Partners, 2018). North Carolina is the home to several large agriculture industries. Food system consolidation is evident in the grocery store industry where a few brands dominate the market and make decisions that accumulate grocery store access in certain wealthy neighborhoods while

denying such access to others. Additionally, like many cities in the US South, Charlotte has been shaped by a long history of racism and discrimination. The prevalence of food insecurity and inadequate access to healthy foods in certain neighborhoods can be traced to historical policies and practices that have separated people by race and income (Hanchett, 1998). Throughout Charlotte's history, decisions by government, white property owners, and corporate leaders have reinforced patterns of racial segregation that persist in today's built environment and spatial divisions. Such inequality has had a profound impact on the availability and accessibility of food.

Food insecurity rates continue to climb despite the efforts of a robust network of pantries, school feeding programs, and nonprofits addressing food insecurity. According to county estimates, in 2022, approximately 15% of Charlotte families struggled with food insecurity (Mecklenburg County, n.d.). Finally, its restaurant scene has been shifting in the past several decades to appeal to the younger, more diverse population that is moving into Charlotte (Purvis, 2021). As is true in the restaurant industry throughout North America, these establishments rely on low-paid, precarious labor that was ill-prepared to weather the impacts of the pandemic. At a governmental level, food systems decisions are

made by the overlapping City of Charlotte and Mecklenburg County. The CMFPC was founded in 2011 as a nonprofit organization that works in partnership with the city and county in order to support food system innovations.

Many of the pandemic trends reported in the literature were evident in Charlotte. Mecklenburg County issued its first stay-at-home orders in March 2020 requiring residents to remain home except for conducting essential business and limiting restaurants to take-out service. These provisions were gradually lifted over the following two years. However, continued constraints and concerns about spreading the virus, as well as disruptions at other scales, significantly affected food system operations. Farmers experienced challenges reaching customers, grocery stores saw supply chains disrupted, restaurants closed or changed their business models, and rates of food insecurity skyrocketed. The most frequently cited changes experienced by food system organizations and businesses since the start of the pandemic included an increased reliance on technology, increased client or customer demand, new resource needs (for disinfectant supplies, gloves, and masks) and challenges in distributing products (see Table 1).

These impacts can be differentiated according to sector, organization size (via staff and budget),

**Table 1. Changes Experienced During the Pandemic According to Survey Responses**

Type of Change	# (n=39 <sup>a</sup> )	%
Increased reliance on technology during the pandemic	23	59%
Increased client/customer demand	22	56%
New resource needs for more disinfectant supplies, gloves, and masks due to pandemic	21	54%
Challenges in distributing products	17	44%
New opportunities for distributing products	16	41%
Increased time and incentive to focus on different priorities	15	38%
Loss of volunteers due to pandemic	14	36%
Change in demographics of clients/customers	11	28%
New funding streams	11	28%
Decreased client/customer demand	9	23%
Other	2	5%

<sup>a</sup> Respondents could select more than one answer

and length of time in operation (see Tables 2–5). Organizations in food access saw the biggest impacts in increased client demand, while farmers markets faced challenges with distributing their products, new resource needs, and increased time to focus on new priorities. Those in food production saw the greatest impacts in new resource needs, decreased client demand, increased reliance on technology, and new distribution opportunities. Those involved in advocacy identified mixed impacts through increased demand and reliance on technology, increased ability to focus on new priorities, and new funding streams. Differentiating organizations by size (Tables 3 and 4) shows similar patterns to overall findings, with an increased reliance on technology and increased client demand among the most selected impacts for all groups.

Organizations and businesses with budgets less than US\$50,000 and more than US\$1 million annually also reported significant impacts from the need to purchase more resources (Table 4). Finally, organizations and businesses that had been in operation for fewer than 5 years or 20 or more years generally followed overall trends with an increased reliance on technology, increased client demand, and new resource needs representing the most cited impacts (Table 5). Organizations that had been in operation for 6–19 years most frequently identified increased client demand. It is likely that organizations with a budget between US\$50,000 and US\$1 million and time in operation between 6 and 19 years reported differential impacts because those organizations were more frequently involved in food access or farmers markets and thus were directly engaged with clients

**Table 2. Pandemic Impacts According to Sector**

Type of Change	Food access (n=22)		Farmers markets (n=10)		Food production (n=6)		Advocacy (n=13)		Food retail (n=10)		Other (n=13)	
	#	%	#	%	#	%	#	%	#	%	#	%
Increased reliance on technology	11	50%	3	30%	4	67%	7	54%	6	60%	10	77%
Increased client/customer demand	17	77%	5	50%	2	33%	7	54%	4	40%	5	28%
New resource needs for more disinfectant supplies, gloves, and masks	12	55%	6	60%	4	67%	6	46%	6	60%	4	31%
Challenges in distributing products	11	50%	6	60%	3	50%	6	46%	6	60%	3	23%
New opportunities for distributing products	12	55%	1	10%	4	67%	5	38%	1	10%	0	0%
Increased time and incentive to focus on different priorities	10	45%	6	60%	3	50%	7	54%	4	40%	3	23%
Loss of volunteers	8	36%	3	30%	1	17%	4	31%	1	10%	4	31%
Change in demographics of clients/customers	8	36%	3	30%	1	17%	3	23%	2	20%	1	8%
New funding streams	9	41%	2	20%	0	0%	7	54%	1	10%	3	23%
Decreased client/customer demand	3	14%	3	30%	4	67%	1	8%	5	50%	3	23%
Other	1	5%	1	10%	0	0%	0	0%	5	50%	1	8%

and consumers in ways not as easily mediated by technology.

Interviewees reported on the many shifts in how they engaged with clients and consumers, including pivoting to more mobile distribution, providing prepackaged food boxes, and using online sales and events. For example, food pantries began

distributing prepackaged boxes and established delivery and mobile distribution sites. Restaurants shifted to offering more carry out and to-go options, navigated disrupted supply chains, and weathered increased resource demands (sourcing masks, using QR codes for menus, removing condiments from the tables, and sanitizing high-touch

**Table 3. Pandemic Impact According to Staff Size**

Type of Change	Zero (n=5)		1–5 (n=15)		6–50 (n=14)		More than 50 (n=7)	
	#	%	#	%	#	%	#	%
Increased reliance on technology	3	60%	8	53%	8	57%	4	57%
Increased client/customer demand	3	60%	8	53%	7	50%	4	57%
Need for more disinfectant supplies, gloves, and masks	3	60%	6	40%	8	57%	4	57%
Challenges in distributing products	2	40%	4	27%	7	50%	4	57%
New opportunities for distributing products	3	60%	5	33%	5	36%	3	43%
Increased time and incentive to focus on different priorities	3	60%	6	40%	3	21%	3	43%
Loss of volunteers	2	40%	3	20%	6	43%	3	43%
Change in demographics of clients/customers	1	20%	4	27%	5	36%	1	14%
New funding streams	1	20%	5	33%	4	29%	1	14%
Decreased client/customer demand	1	20%	1	7%	5	36%	2	29%
Other	0	0%	0	0%	0	0%	0	0%

**Table 4. Pandemic Impacts According to Organization or Business Budget**

Type of Change	Less than US\$50,000 (n=10)		US\$50,000–US\$999,999 (n=14)		US\$1 million or more (n=16)	
	#	%	#	%	#	%
Increased reliance on technology	6	60%	5	36%	11	69%
Increased client/customer demand	6	60%	7	50%	9	56%
Need for more disinfectant supplies, gloves, and masks	6	60%	5	36%	10	63%
Challenges in distributing products	4	40%	6	43%	8	50%
New opportunities for distributing products	3	30%	7	50%	6	38%
Increased time and incentive to focus on different priorities	5	50%	7	50%	3	19%
Loss of volunteers	3	30%	4	29%	7	44%
Change in demographics of clients/customers	2	20%	4	29%	5	31%
New funding streams	1	10%	5	36%	4	25%
Decreased client/customer demand	2	20%	3	21%	4	25%
Other	2	20%	0	0%	0	0%

points throughout the day). One restaurant owner described their experience with losing a major vendor and source of food, forcing them to pick up products more irregularly (such as on Saturday and Sunday when supplies dwindled), increasing acquisition challenges and costs. Farmers markets had to reorganize to provide more space between vendors or limit the number of vendors that could operate at the market. Despite these challenges, a majority of survey and interview responses indicated that there were positive experiences as well, such as new funding streams, new partnerships, and innovations that will be continued into the future.

### **Results: Mixed Impacts**

We shut down all our dining rooms. So, yeah, we could say that was a barrier I guess, but it just sort of flipped us and now we do home deliveries too, which we didn't do before. ... We launched a website where people can order everything online. These are all things I never would have done if COVID didn't exist. (Business owner, interview participant, 2021)

Food organizations and businesses reported that the effects of the pandemic were mixed. As the

quote from a small business owner above indicates, while there were significant disruptions to their operations that posed challenges, there were also new opportunities to grow and change. The mixed impacts included disconnections and new relationships; greater resource demands alongside new funding streams; and the exacerbation of thin margins at the same time as visibility of food system vulnerabilities and inequities increased. This section considers each of these findings in detail.

*Disconnections yet new relationships and collaborations*  
In March 2020, restaurants began closing their doors, farmers worried about how they would reach their customers, staff of nonprofit organizations started teleworking, and food pantries sent volunteers home as they figured out how to distribute food in a contactless manner. Survey responses identified these disconnects via an increased reliance on technology (59%), challenges in distribution (44%), and loss of volunteers (36%). These actions were taken in the spirit of physical distancing to prevent the spread of COVID-19, but they produced significant disconnections. For example, most pantries in the Charlotte region had adopted a model in which clients could “shop” through the pantry, choosing goods from shelves themselves.

**Table 5. Pandemic Impacts According to Time in Operation**

Type of Change	Less than 5 years (n=9)		5–19 years (n=13)		20+ years (n=13)	
	#	%	#	%	#	%
Increased reliance on technology	7	78%	4	31%	8	62%
Increased client/customer demand	6	67%	8	62%	6	46%
Need for more disinfectant supplies, gloves, and masks	5	56%	6	46%	7	54%
Challenges in distributing products	4	44%	5	38%	5	38%
New opportunities for distributing products	5	56%	5	38%	5	38%
Increased time and incentive to focus on different priorities	3	33%	6	46%	5	38%
Loss of volunteers	3	33%	4	31%	5	38%
Change in demographics of clients/customers	2	22%	5	38%	3	23%
New funding streams	3	33%	4	31%	4	31%
Decreased client/customer demand	2	22%	3	23%	2	15%
Other	0	0%	2	15%	0	0%

During the pandemic, these pantries had to shift to providing prepackaged boxes that could be distributed in drive-thru operations or at mobile delivery sites. Previously, pantry staff and volunteers talked with clients while they shopped for food, providing a welcoming experience and enabling referrals to other services. This sociality could not continue in new distribution models that sought to keep a physical distance between staff, volunteers, and clients. Some research participants expressed concern that such disconnection resulted in missed opportunities for ensuring that food insecure residents knew where and how to access related services.

Similarly, several nonprofit staff members reported that it was harder to foster new partnerships, connect with others, conduct outreach, and build momentum when relationship building occurred solely online. One environmental educator described this disruption:

You wouldn't think that agriculture is relational. But it is. Food, of course, is relational. And so from the growing of it, to the eating of it, it's a social activity. And so, to have been forced to remove the social aspect of it, which is the relational aspect, and to take everything to Zoom has, I would say, just kind of stunted outreach. (Environmental education, interview participant, 2021)

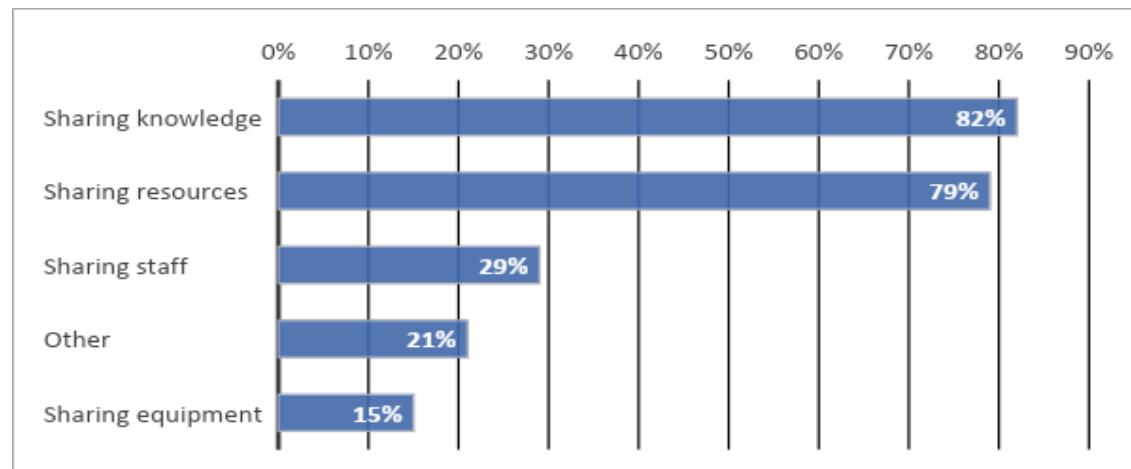
Many research participants lamented the challenges they faced in forming and solidifying

partnerships and connecting with clients without in-person interactions. These challenges were particularly relevant in cases where stakeholders had limited access to or knowledge of technology.

At the same time, the pandemic afforded opportunities to strengthen existing partnerships and build new ones. More than 87% of survey respondents indicated that they partnered with other organizations or businesses during the pandemic, and 44% of these reported that this was a change from their prepandemic relationships (Figure 2). In surveys, those in food access and advocacy most frequently indicated that they made this change (Table 6). Newer and smaller organizations also identified this pandemic-related change more often. This could reflect the more limited partnerships that newer and smaller organizations had before the pandemic. Businesses and organizations that had strong partnerships were able to mobilize their networks to quickly pivot and create new programs as well as more quickly navigate changing resource landscapes.

Collaborations were pursued in order to increase program reach and effectiveness, share space and infrastructure, spur new projects, and create new food distribution channels. Multiple organizations came together to respond to new needs—creating avenues to distribute school lunches to families in need when schools were closed, or forming an online marketplace for several businesses to continue selling their goods when their doors were closed. For example, the

**Figure 2. Partnership Approaches During the Pandemic**



Latin American Chamber of Commerce of Charlotte partnered with Latin American restaurants to provide meals at food drives (WSOCTV.com, 2021). The owner of a local donut shop also organized a market to sell goods from multiple local businesses that were struggling to reach customers early in the pandemic (Swannie, 2020). Other partnerships organized mobile markets and food distribution programs to make sure avenues for getting farm products to those most in need could continue.

For example, one food access professional reflected that their organization was able to build on existing infrastructure to foster collaboration and funnel resources to those addressing food insecurity on the front lines:

We've been at this, I think, for the last four or five years almost. When the pandemic hit last

**Table 6. Survey Respondents Partnering with Other Organizations or Businesses during the Pandemic**

	#	%
<b>Sector</b>		
Advocacy	11	85%
Food access	17	77%
Food production	4	67%
Other	8	62%
Food retail	6	60%
Farmers markets	4	40%
<b>Number of staff</b>		
0	4	80%
1-5	11	73%
6-50	9	64%
50+	4	57%
<b>Annual budget</b>		
Less than US\$50,000	7	70%
US\$50,000-US\$999,999	8	57%
US\$1 million+	12	75%
<b>Time in operation</b>		
Less than 5 years	7	78%
5-19 years	5	38%
20+ years	8	62%

year, we were already in place. So, it is something that we plan to continue, we plan to continue to work with the pantries, continue to work with our local organizations and see what we can do to help. And it's about really helping, helping the businesses, the people that are on the ground that's actually doing the work. (Food access, interview participant, 2021)

Others relied on their networks to exchange information and resources, share infrastructure to deliver food, and otherwise distribute items that became available at uneven intervals (such as diapers or excess produce). One person from a food security–focused nonprofit reflected on their participation in such a network:

That was probably the best thing that came out in 2020. That there was communication between providers, and between people who needed things so that we knew ... there was a sharing of the resources in one place, you knew you could go to that call and get good, reliable information. (Food access, interview participant, 2021)

Many participants (80% of survey respondents) also reported that they formed new partnerships during the pandemic. All of these survey respondents indicated that they would continue those partnerships into the future, as they were perceived to be an important strategy to address some of the vulnerabilities created by the contemporary food regime. For some, this reflected a welcome respite from the historically competitive food system landscape and perhaps made some inroads toward forming the regionally focused food interventions called for in the literature.

*Increased resource demands alongside new funding streams and technological innovations*

The pandemic also had a palpable yet mixed effect on resource demand and supply. Early on, many businesses were forced to close temporarily, leaving many people unemployed. School closures limited the provision of meals to low-income families, contributing to increasing demand at food pantries. This was coupled with a dwindling volunteer labor

force, public health measures that constrained operations, and a hindered supply chain that left many organizations scrambling to find new sources of food and other materials. A majority of both interview and survey participants experienced a significant increase in client need (especially among food access organizations; refer to Table 2), along with a change in the demographics of their clients. One food pantry reported serving approximately 100 people per week before the pandemic. This increased to more than 1,000 people per week in the early months of the pandemic and leveled out to around 300 people per week in 2021.

Many pantry-related respondents also noted the new prevalence of Latinx families seeking out services as a pandemic-related trend. Some organizations and scholars argue that this trend is driven by the already existing precarity of Latinx residents, who are more likely to work in service industries that require their physical presence, are low-paying, and do not provide worker protections (Gamblin, 2020). They are also less likely to have access to governmental assistance programs and health and social services (Cadenas et al., 2022; Partika et al., 2022). In Charlotte, this is exacerbated by a long history of segregation and discrimination toward the Latinx community (Ablon & Robertson, 2022; de la Canal, 2018; Furuseth et al., 2015).

Organizations needed to simultaneously meet the unprecedented rise in demand and rework their distribution models to adhere to public health guidance (Table 7). Those involved in food production, food access, and food retail most frequently identified employing new distribution methods as a change they made during the pandemic. Similarly, organizations and businesses that were smaller and newer more frequently indicated that they made this change (perhaps indicating the nimbleness of smaller organizations). Some facilities shifted to using online platforms so that clients did not need to shop physically for their food. Others moved to delivery services or established mobile markets in communities where the need was most pronounced. Many pantries extended their services to support clients in applying for federal food

assistance programs and to connect to other critical resources, such as health services.

Local food outlets, such as farmers markets and community supported agriculture (CSA) programs, also saw a sharp increase in customer demand. Some customers sought out local food when disrupted supply chains limited grocery store availability. As one interview participant affiliated with farmers markets explained, “as a result of COVID, people are thinking a little more about where food comes from because there were a lot of things that were not available at the grocery store . . . and that’s an experience and a resource that people take for granted.” Other customers were likely attracted to farmers markets because they were perceived as a safer place to shop.<sup>2</sup> Some may have also seen this as an opportunity to close the distance created

**Table 7. Survey Respondents Employing New Distribution Methods During the Pandemic**

	#	%
<b>Sector</b>		
Food production	5	83%
Food access	16	73%
Food retail	7	70%
Advocacy	7	54%
Farmers markets	5	50%
Other	4	31%
<b>Number of staff</b>		
0	4	80%
1–5	8	53%
6–50	8	57%
50+	2	29%
<b>Annual budget (US\$)</b>		
Less than \$50,000	7	70%
\$50,000–\$999,999	8	57%
\$1 million +	7	44%
<b>Time in operation</b>		
Less than 5 years	6	67%
5–19 years	6	46%
20+ years	5	38%

<sup>2</sup> In Charlotte, farmers markets were always considered essential food businesses. They did not face mandatory closures, only limits on the number of vendors due to increased spacing requirements.

between producer and consumer in the corporate food regime.

Many organizations and businesses also faced new resource demands in order to meet public health guidelines. This included using limited resources to purchase personal protective equipment (PPE), cleaning supplies, and other materials. According to a food security–focused nonprofit staff member, these new demands affected their ability to provide other services: “I felt like we couldn’t do as much as we wanted to do because you had to take all of the extra health precautions and some money that would have went to the kids went to operating in the pandemic” (Food access, interview participant, 2021). For some, money that otherwise would have furthered an organization’s mission or met an immediate need was redirected toward addressing new resource needs so that basic functions could continue. It is also indicative of the limited budgets with which many food system nonprofits operate.

Increased resource demands were mitigated, in part, through new (yet short-term) funding opportunities and technological innovations that positively impacted operations. Many organizations and businesses secured funding that either did not exist previously or would have been inaccessible. Organizations in food advocacy (54%) and access (41%) most frequently identified new funding streams as a change during the pandemic (refer to Table 3). The federal Paycheck Protection Program (PPP) loans<sup>3</sup> helped businesses adjust to the new restrictions and requirements of the pandemic. Other federal funding programs, such as the Coronavirus Food Assistance Program,<sup>4</sup> Farmers to Families Food Box Program,<sup>5</sup> and other Coronavirus Aid, Relief, and Economic Security (CARES) Act<sup>6</sup> programs all provided new forms of financial support to food system actors grappling with the dual burden of serving more people while changing distribution models.

This balance between new funding challenges and opportunities manifested differently between

survey and interview responses. More than 56% of survey respondents reported increased client demand as a pandemic impact (especially in the food access and food advocacy sectors), while only 28% selected new funding streams (Table 1). Responses to an open-ended survey question regarding possible solutions to food system challenges overwhelmingly returned funding or financial support as a critical need.

Yet many interviewees conveyed a sense of either ambivalence or satisfaction with respect to funding during the pandemic. One interview participant associated with farmers markets stated simply, “this is the catch-22: we’ve actually had more funding because of COVID.” Financial support included new grants and investments for some nonprofits, as well as increased consumer purchases at local food businesses. One business owner described exceeding expectations by fulfilling 300 orders per week instead of an expected 30. For nonprofits, more grants were made available during the pandemic that allowed them to continue operations. One food pantry staff member explained:

Because of the pandemic, federal and local grants were much freer in coming through the system than they normally are. They loosened restrictions, which was awesome. And so, money came through a lot quicker. We were able to get over [US]\$250,000 in grant money from the county and to be able to help pay bills, and other grants too, so many more grants than we’ve ever gotten before. (Food access, interview participant, 2021)

Interviewees described the constraints placed on their organizations’ finances during the pandemic, but more frequently identified silver linings in the various programs and funding initiatives designed to help organizations cope with the pandemic.

Similarly, increased reliance on technology

<sup>3</sup> <https://www.sba.gov/funding-programs/loans/covid-19-relief-options/paycheck-protection-program>

<sup>4</sup> <https://www.farmers.gov/archived/cfap2>

<sup>5</sup> <https://www.ams.usda.gov/selling-food-to-usda/farmers-to-families-food-box>

<sup>6</sup> <https://www.congress.gov/bill/116th-congress/senate-bill/3548/text>

emerged as both a constraint and an asset in overcoming increased resource demands. As the pandemic forced many to find alternative methods for meeting and interacting, the use of web conferencing tools and other technology became critical for organization success. Nearly 56% of survey respondents identified increased reliance on technology as a pandemic impact, the most selected impact. Organizations identifying in an “other” sector category (mostly environmental education; 77%) and in food production (67%) and food retail (60%) most frequently cited this pandemic impact in survey responses (Table 2). There was not significant variation in responses according to respondent organization size or age. Technological resources were critical, as many organizations shifted their operations to meet the dual demands of higher client need and disease spread mitigation. This was easier for some organizations than for others; some experienced challenges in gaining access to technology, while others expressed concern about their ability to effectively use technology.

Nevertheless, many organizations experienced new technology uses as a positive development for making operations more efficient and diversifying communications. One person in the food-production and environmental-education nonprofit sectors explained:

I do feel, though, that meeting people on Zoom has saved a ton of time. We used to meet in person for board meetings—which is nice, you still need to do that sometimes—but everybody having to call off work one day a month ..., meet downtown at a conference room. I got to get there early to set up audio visual, have [everything] printed out, and to have a two-hour board meeting took four hours in total. And now I can just get on and share my screen and send everybody the stuff in an email. So, there's some things about the pandemic that have shown us a better way to do a lot of things. (Environmental education, interview participant, 2021)

As this participant indicates, shifting to online meetings was seen as creating important operational efficiencies.

In addition to the possibilities for more accessible meetings, many organizations leveraged technology to create different options for their clients, such as online shopping, instructional cooking videos, and virtual fundraising events. Technology usage also broadened the geographic range of service for organizations and, in many cases, provided new platforms for communicating with those in need and prospective partners. In these examples, organizations and businesses overcame increased resource needs and client demand through continued reliance on external funding sources and technological innovations.

#### *Thin margins and more visible vulnerabilities*

Food systems scholars have reported on the thin margins for businesses in the food industry and the limited resources for organizations that rely on an uneven nonprofit funding landscape (Finley & Esposito, 2012; Fisher, 2017; Hailu, 2021; INCITE!, 2007). These challenges hampered the ability of organizations and businesses to respond to pandemic challenges, yet were also brought to light for the public, which some saw as an opportunity for change.

The immediate disruptions in supply chains, increased need for resources, loss of volunteer and staff labor, and barriers to in-person programming all produced obstacles for business and organizational operations. One restaurant owner described these challenges in detail:

There was a time when you couldn't get any more gloves from Sysco because there was a shortage of them. There was a time that whole chicken wings, there's a shortage. My poultry purveyor, he only does chicken, and he didn't have any chicken wings, you know? ... At one point, there was a shortage of black-eyed peas. I had to go to the grocery store to literally buy 20 pounds of black-eyed peas because nobody had black eyed peas. (Business owner, interview participant, 2021)

For some businesses, these supply disruptions alongside mandated closures and limited staff support spelled doom in an industry that already operates with very limited margins. The *Charlotte*

*Observer* reported that more than 30 food businesses in the region closed permanently in the first year of the pandemic (CharlotteFive Staff, 2020). Charlotte restaurants fared better than the national average in 2020 with approximately 12.5% of restaurants closing permanently, compared to a national average of 15.2% (Sedov, 2022).

Many organizations, such as emergency food providers, also struggled to have enough resources and staff to meet demand prior to the pandemic. As they rely on volunteer labor, donations, and external funding, these organizations are often pushed to be as efficient as possible without being able to save for a rainy day. Accordingly, they had to focus all energy on responding to the increased demand driven by pandemic disruptions. A significant portion of survey respondents (47%) reported that they were unable to meet the increased demand, with five organizations noting that they had to turn away more than 100 clients per month at the height of the pandemic.

This reflects the challenging funding environment for nonprofit organizations in which they are increasingly asked to do more with less, are not equipped to change quickly, and are required by grant provisions to allocate fewer and fewer resources to administrative costs (Finley & Esposito, 2012; Lecy & Searing, 2015). This challenging environment existed before the pandemic, and several research participants indicated that even with the infusion of new funding streams (as described above), there were not enough resources to adequately meet demand. At the same time, some were concerned that since the new funding streams were focused on immediate, pandemic-related needs (such as keeping staff employed), there was already momentum toward returning to this status quo.

On the other hand, many research participants reported optimism that the growing public attention to these challenges could present an opportunity to reform the system. In developing partnerships (described above), more cross-sector connections were made such that organizations focused on health or housing needs also began to see the extensive food needs among their clients. For example, one interview participant in the healthcare industry reported that the pandemic and related job

losses accelerated new programs to screen patients for food insecurity.

Many stakeholders also noted that the pandemic made visible the many food system injustices discussed earlier. One interview participant associated with a healthy eating nonprofit explained: "So, before the pandemic, it was tough anyway. People don't have enough to eat. ... If this pandemic went away tomorrow, that problem will still be here. The pandemic just kind of pulled the band aid off of it." As the plight of farmers, restaurants, organizations, and food-insecure individuals became the focus of media attention, support for food-based efforts to build resilient communities expanded. One stakeholder involved in local food production described this dynamic:

I feel like for all the bad that COVID brought for local food systems, in the work we were doing, I felt like it really, it was kind of our time to shine. And a lot of people took notice, at least paid a little more attention to the local food system because when the grocery store shelves were empty, and the U.S. Foods' trucks were having issues and we're like, "Hey, we're fine, we've got products," you know, it definitely kind of underscored the importance of the work that all of us are doing in the food system. (Food production, interview participant, 2021)

In addition to highlighting the promise of local food systems, media reports highlighted the precarity of workers in the food system and the extent of food insecurity in the region. The greater attention to food system vulnerabilities was perceived by many as an opportunity to seek support for building a more robust, sustainable, and equitable food system.

## Discussion

Our research uncovered mixed pandemic impacts on food systems. While many obstacles were identified by interviews and survey respondents, including disconnections, increased resource demands, and exacerbation of thin margins, most also discussed opportunities that arose, including forming new partnerships, identifying new funding streams

and technology innovations, and increased visibility. In response, many research participants made changes (such as increasing their reliance on technology, meeting increased client or customer demand, acquiring new resources, and utilizing new distribution channels) that they intend to keep in place permanently. The majority of survey respondents (35) indicated that they would continue the changes they had made, while many interview participants noted that their partnerships are now stronger, they found efficiencies through enhanced technology use, and operations improved. These shifts were critical for sustaining business and organizational operations and meeting client and customer demand while still operating in an industrial, corporate food regime that privileges large-scale, consolidated operations producing cheap goods for international markets.

Yet, it is not clear that the transformational changes called for in early pandemic-era food systems literature was possible. The change food systems scholars called for included a move toward regional and system-centered planning, pursuing circular economies, and dismantling the corporate food regime. Many scholars also argued for utilizing the crisis moment to address long-standing injustices at the root of our food system, including settler colonialism and structural racism (Lunsford et al., 2021).

However, given the need for survival in a precarious field, many organizations and businesses in our study shifted in ways that secured their continued operations but with a limited impact on reforming the system. One local business owner explained that at the beginning of the pandemic,

[People] raised some money, paid a local ... business or restaurant to make food and deliver meals. And those things in the early days helped. And then, as time went on, of course, they fell off. There weren't as many. And also, there were more businesses that then were kind of like fighting for the funds. (Business owner, interview participant, 2021)

This quote illustrates the tenuous nature of many of the pandemic-initiated responses to food insecurity and economic precarity, and the tendency of

the systems to return to their previous state, regardless of the vulnerabilities. While a strong sense of community solidarity may have facilitated survival for different organizations in Charlotte during the early stages of the pandemic, as time goes on, the competitive marketplace appears to be returning to its former level.

A closer examination of the benefits associated with the pandemic, like increases in funding and how funds were distributed, provides a telling picture of their transformative potential. As one food system advocate noted, "I think the funding piece has become more interesting with the pandemic. I think some organizations are benefitting from that and others are not" (Advocacy, interview participant, 2021). A prioritization of emergency food relief over other efforts also indicates a continuation of the status quo. Others have similarly argued that the "emergency-within-emergency" approach to addressing rapidly increased hunger was simply a continuation of decades of replacing rights with charity via corporate-sponsored food banks (Spring et al., 2022). At the same time, funding for efforts that create transformational change remains limited. The common thread throughout the pandemic remained that organizations needed to meet a higher level of demand under new restrictions, and with a dwindling supply of critical resources.

As a result of these continued challenges, many organizations and businesses provided suggestions for ways to build sustainable and equitable food systems more incrementally. Short-answer survey responses called for establishing a more robust system of coordination, better support for small-scale, local producers, and a more active role for local and state government. Interview participants similarly argued for more coordinated food system strategies that recognize the complexities and historical marginalizations in the food system described above. Many research participants called for better recognizing the systemic roots of food system injustices, including continual and pervasive disinvestment in communities of color, uneven access to land ownership, and miscalculation of the multidimensional costs of producing food. In this regard, there is a need to better include BIPOC and underserved residents in decision-making processes, including through leadership positions, to

ensure that food system solutions sufficiently address their needs.

This aligns with the pandemic-focused literature that viewed the current moment of crisis as an opportunity for transformational change. However, our research found significant obstacles to pursuing such change when the crisis precipitates an even greater focus on survival. The corporate food regime does not often produce openings for food system organizations and businesses to simultaneously meet client needs and challenge injustices (Alkon & Guthman, 2017). The continued competition between organizations signals a return to the status quo, while the promise of truly transformational change waits to be realized. While many of our research participants were optimistic about the innovations and changes spurred by the pandemic, it is clear that the available shifts were smaller-scale and incremental.

### ***Recommendations for Research and Practice***

This paper describes the pandemic's impacts on food system organizations and businesses in Charlotte, North Carolina. It contributes to food systems literature by going beyond the challenges faced by individuals and farms to also examine the pandemic's impacts on food system organizations and businesses. Relying on surveys and in-depth interviews with stakeholders across multiple food sectors, we identified mixed pandemic impacts that included both unprecedented challenges and new opportunities. Disconnections were created through physical distancing guidelines and stay-at-home orders, but significant formation of new partnerships also occurred as the need for collaboration was made clearer. Organizations and businesses struggled to meet new resource demands (for example, increased food pantry demand and the need to purchase sanitizing materials and masks) but also found new funding streams and technological efficiencies. The pandemic clearly exacerbated the thin margins in which most food system actors operate, but also drew greater

attention to those thin margins and food system vulnerabilities.

While much early literature on food systems during the pandemic called for using the crisis moment to create transformational change, the food system actors included in this research continued to be constrained in doing so. Instead, they had to direct their innovations toward survival. Thus, there remain questions about the levers of change available to system actors during moments of crisis. As COVID-19 becomes an endemic disease, a condition we will deal with in the normal course of life like the flu and other viruses, many food systems actors are questioning whether organizations and businesses are already returning to a status quo grounded in neoliberal policies and competition for scarce resources. In response, our research uncovered recommendations for centering BIPOC communities in decision-making positions, attending to the systemic vulnerabilities that were exacerbated during the pandemic, and fostering greater collaboration in order to build robust regional food systems. For policymakers and practitioners, a first step is to better support the innovations that emerged during the pandemic and to support organizations and businesses to not only survive, but to create change in today's unsustainable food system. Future research should continue to monitor the long-term impacts of the pandemic on food system stakeholders with an eye toward their capacity to pursue transformational change.



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