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Just Transition or Just Transitioning? Potentials and Limitations of Urban Growers' Adaptations to the Impacts of the COVID-19 Pandemic

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Abstract: The COVID-19 pandemic caused drastic short-term shocks to global and local food supply chains. Research thus far has examined increased consumer demands, yet there is a lack of research on the impacts, adaptations, and perceptions of local growers and farmers. In this paper, we analyze 59 interviews conducted with urban growers across the DC metropolitan region to understand how local urban and suburban growers responded and adapted during 2020–2021. We use the “just transition” framework, which currently lacks empirical applications to the food system, to explore how transformations in a regional food system could further social sustainability and equity in the larger food system. We find that the growers faced a multitude of challenges in diversifying and scaling up their distribution system, as they implemented changes mostly independently without much institutional support or coordination. Growing commercially, for donation, or personal consumption resulted in different sets of challenges and adaptations. Our study demonstrates the need for more critical, empirically-driven assessments of the “just transition” theory, specifically its implementation mechanisms and processes, as the growers’ variant adaptation strategies underscore both the potential and limitations of ensuring the equitable transformation of a regional food system through grassroots efforts.

Keywords: just transition; urban agriculture; local food systems; COVID-19 pandemic



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1. Introduction

The COVID-19 pandemic caused drastic short-term shocks to global and local food supply chains. In the United States, consumers were confronted with the troubling juxtapositions of empty grocery store shelves, images of long lines at food pantries, and the news that rural farmers were discarding food that they could no longer sell through the existing market system. Beyond retail, social disruptions and institutional policies affected food systems in many ways; restaurants were ordered to close or operate minimally, schools converted to virtual learning, and office workers began meeting on Zoom from home. These changes and stresses impacted consumer food provisioning patterns in the US in several notable ways, exacerbating the conditions of food insecurity among marginalized populations that were already experiencing difficulties accessing healthy and affordable food prior to the pandemic. As the federal and local governments and non-government organizations (NGOs) struggled to respond to the failure of the existing food production and distribution system, urban gardeners and farmers began responding quickly to the unique set of constraints and new opportunities they faced during the first year of the pandemic.

Changes in consumer patterns in food purchasing showed large increases in the purchases of food online [1–4], and consumers turning to nonperishable as opposed to fresh food items [5]. During this time, consumers also increasingly turned to local food provisioning, especially during the initial period of the pandemic, though this pattern varied by state and by the type of local food business [6]. Case studies showed consumers

turning to local food venues such as community-supported agriculture (CSA) programs and farmers markets [7], at least in the short term. Local food producers responded to these shifts to local food purchasing in varied ways. Grassroots efforts by small-scale growers created or strengthened networks between consumers and local producers in order to fill the gaps left by the global supply chain crises [6]. Shorter supply chains and smaller operations meant that local food suppliers were more agile and were more easily able to pivot compared to large national and international suppliers [7–9]. Most studies on this topic have focused on consumer perspectives and experiences, with a few exceptions of producer experiences in the Global South [10]. What has been missing in the existing scholarship is the growers’ perspectives on how they experienced the transitional process. In particular, the acute and all-encompassing disruptions resulting from the global pandemic make the situation uniquely appropriate for understanding what the growers saw as the potential and limitations of their capacity to reshape the local food system in a short period of time.

A sustainable and vibrant local food system relies on producers and growers who are able to respond to increases or changes in demand, rapidly shifting distribution needs, and a shifting landscape. Hence, the grower perspective is an essential one to understand in order to support sustainable food systems. This study explores the potential of the local food system to respond to these “local pivots” by using grower perspectives on their own experiences during the first year of the pandemic. Our case study is distinct from the existing scholarship in that it applies a regional scope by including three adjacent areas in the DC metro: Washington, DC, Arlington, VA, and Prince George’s County, MD. We also used an expansive operationalization of “urban agriculture” by collecting data from community gardens and urban farms that were producing food for a variety of purposes including commercial sales, donation, and personal consumption, to gain a better understanding of how different forms of urban agriculture possess unique sets of potential and limitations for transforming local food systems [11]. In doing so, we assess the potential for small urban growers to contribute to a “just transition” through analyzing how they were able to adapt to this socio-economic crisis in the wake of the global pandemic.

The “just transitions” (JT) framework emphasizes the importance of achieving social equity while transitioning to resilient local economies and local governance structures, including food systems. The major social and economic disruption during the initial year of the global pandemic exacerbated existing food injustices, especially food insecurity but also a lack of economic sustainability of small-scale farmers, including those operating in the city. Yet, the unprecedented disruption in the food systems catalyzed by the public health crisis also created new opportunities for innovation and adaptation that prefigured alternative food systems. In the case of the US, this also occurred in the midst of the intense national discourse on racial injustice and its persisting impact on all aspects of life, including food and agriculture. However, an empirical assessment remains on whether or not the unprecedented turn to a localized, regional food production and consumption model during the early months of the pandemic exemplify a move towards a just transition.

Based on 59 interviews with the managers of community gardens and urban farms across the Washington, DC, metro region, this case study explores the resilience and limitations of the local food production and distribution system as they faced and adapted to major disruptions during the first year of the global pandemic. Our study underscores the importance of empirically testing the JT framework’s applicability under specific spatial and social circumstances in order to refine how to address structural injustices through public policies and grassroots organizing as a part of implementing and achieving ecological sustainability. In this paper, we will present a brief literature review about JT theory and food systems, followed by the methodology of the study, the results, and a discussion of the implications of the work.

1.1. Just Transition, Empirically Tested

Just transition (JT) is defined as “the fair and equitable process of moving towards a post-carbon society” [12]. The concept was originally developed by the trade union movement in an attempt to bridge gaps between labor unions and climate justice movements, and emphasized the importance of jobs in the transition to a no-carbon society. Since then, it has become a broader policy framework, being used by many governments in their policy planning [13,14] and even mentioned in the COP21 Paris Agreement. However, there are disagreements among scholars on its operationalization and implementation, stemming primarily from the limited empirical application of the theory.

The operationalization of the JT framework focuses on two main dimensions: outcomes and process [13]. The outcome dimension stresses the inclusive zero-carbon society where ecological sustainability is achieved while ensuring economic equity. The process dimension, by comparison, articulates the importance of participatory engagement and social dialogue throughout the “managed transition,” and recognizes both the distributional effects of climate impacts as well as the importance of job sector transitions. Achieving just transition fully requires transition in both dimensions so that both the symptoms and the causes of the unjust ecological impacts of the existing economic and social systems are addressed.

Another tension within JT discussions is the level of change that is required: whether the JT requires a complete system change, or whether small adjustments can be made that increase equity within our current socio-political-economic system [13,15]. Union federations focus on greening the economy within the current system, even sometimes called “green Keynesianism” [13,15]. By contrast, a more radical approach demands the democratic control and public ownership of energy production, as stated by some groups, such as the Congress for South African Trade Unions and the Labour Network for Sustainability and Trade Unions for Democracy. However, the current scholarship lacks empirical assessments of how different levels of JT application may produce specific outcomes.

McCauley and Heffron (2018) assert that the JT framework can integrate the disparate scholarships within the climate, energy, and environmental disciplines and their differing understanding of “justice” and the “transition” [12]. For example, labor and the environmental justice movements historically have not shared the same worldview, but the JT framework may hold more promise for equitable systemic change than other frameworks have thus far, because of the focus on decreasing inequality in the system while transitioning away from fossil fuels [16]. Nevertheless, the JT framework currently does not theorize how dual-goals of environmental and energy restructuring and social justice restructuring may be achieved [17]. Furthermore, the JT framework thus far has not sufficiently questioned our current socio-political system or offered concrete visions of a new way of political and economic organization. The framework assumes capitalism as the persisting system and attempts to envision the transition within this system, rather than fundamentally questioning its role in creating and exacerbating racial and economic injustice [16], yet the interdisciplinary and inclusive nature of the JT discourse has resulted in multitudes of renderings in this regard.

Just transition could be an opportunity to create new systems where people interact with each other in completely new and different ways. Yet, the JT scholarship places much emphasis on distributive justice, or the outcome dimension, and not enough on participation and recognition, the process dimension [18]. An equity-based theory of JT envisions “an opportunity for workers to redesign the productive system on equal terms with capital, or even away from it, according to their autonomous needs, creativity, abilities, and so forth—as in self-management or the commons” [16]. Community-centric local governance has been identified as an essential component of just energy transition, especially in the Global South [19]. What remains to be explored is how individuals implementing these changes on the ground experience such transitions, especially when the implementation takes place without large-scale, policy-driven, government-funded attempts for changes.

1.2. Just Transition and Sustainable Local Food Systems

Strong and resilient local food systems should be an integral part of just transition, yet there has been a dearth of scholarship that empirically tests these concepts [20], especially applying them to the food system, though there are a few notable exceptions to this [21,22]. The Climate Justice Alliance identifies local food systems as a component of one of the nine JT principles that it outlines, regenerative ecological economics, because it “requires a re-localization and democratization of primary production and consumption by building up local food systems, local clean energy, and small-scale production that are sustainable economically and ecologically” [23]. Gilbert et al. (2018) applied the JT framework to assess public school food programs in Buffalo, New York, and found that each food program included in the study demonstrated one of the five just transition “activities”: “democratize engagement, decentralize decision-making, diversify economic activity, decrease consumption, and (re)distribute resources and power” [24]. The study also demonstrated increased linkages between human and ecological justice, the explicit integration of food systems into school curricula, and greater integration between food systems and other parts of the JT framework. Similarly, Higgins and Engle (2022) analyzed two food programs in the central Appalachian region of the US using the JT framework and found that while both do increase access to healthy foods, they still operate within the neoliberal system, raising questions about the limitations of the JT framework that call for complete systemic change [21].

In fact, scholars of local food systems have been critically examining the presumed association across concepts such as “sustainable,” “local,” “organic,” and social justice [25–27]. Calling for the expansion and empowerment of local food systems, through small-scale local farms engaging in ecologically sustainable growing practices and selling directly to local consumers, may seem like a logical pathway of the JT application in the food system. However, this so-called “Farm to Table” model does not ensure equity or worse, reproduces existing social inequity along racial and class lines [28]. In particular, the prominence of the alternative food movement in shaping the local food systems discourse and praxis has shifted from the deeper concerns of equity, sustainability, citizenship, and place-building [29]. Food justice scholars have further problematized the dichotomous and oppositional positioning of neoliberal political economy and radical grassroots movements, especially in agricultural food production in rural or urban settings [30,31].

To this effect, a just transition in the food system may pose a unique set of challenges that are distinct to how food as a commodity and cultural product is produced, marketed, and consumed, when compared to other natural resources such as fossil fuel or water. The JT framework has been successfully applied to landscaping in Europe [32] and there are cases of national and regional policies adopting the JT framework in energy or disaster risk reduction [33,34]. By contrast, urban gardens have proven to be more than just a space for food production as they contribute to ecological and social sustainability [35], while local and regional food systems are deeply connected to the global value chain, especially in the Global South [36]. Furthermore, what constitutes “agriculture” is increasingly being questioned as the move toward non-animal diet and food supplies affect production processes and consumer behaviors [37]. Given these complexities within the food systems, therefore, the transition toward a “just” system requires the complex reorganization of competing, multi-scalar needs and networks.

1.3. The Aim and Research Question of the Current Study

We aim to understand how urban and suburban growers in the Washington, DC, metro region adapted to the social and economic disruptions caused by the COVID-19 pandemic by focusing on grower perspectives in three realms of urban food provisioning: commercial production, food donation, and private consumption. The research questions that we explore are: How did the growers overcome a unique set of obstacles in each realm? To what extent did their adaptation demonstrate grassroots potentials for working toward a just transition within the food system? Our study tests the potential and limitations of the

JT framework by analyzing how individuals who were “on the ground” making decisions in unprecedented and uncertain times attempted to create alternative food systems that fall outside of the existing system.

2. Materials and Methods

2.1. Design: In-Depth Qualitative Interviews and Study Sites Description

This study uses in-depth qualitative interviews of the managers of community gardens and urban farms in Washington, DC, Arlington County, Virginia, and Prince George’s County, Maryland. The three jurisdictions are all within a metropolitan area adjacent to each other. The study was designed as inductive research to seek the patterns of challenges the growers faced and variety of adaptations they made in response [38].

Community gardens commonly featured individualized planting spaces, shared tools, seeds, soil, and other resources among the members. Each garden shared responsibilities for the communal areas of the garden. Community gardeners grew vegetables, herbs, and flowers. Most of what they grew were consumed by the gardeners themselves, but there were few that sold some of their produce or donated to local nonprofit organizations. Most, though not all, community gardens are affiliated and supervised by the local Department of Parks and Recreation or the federal National Park Service, but few were managed by or affiliated with private entities, including a church. The management of community gardens is not centralized, so each garden’s appointed manager is responsible for maintaining the day-to-day operations or organizing the members for the garden. Due to their popularity, all of the community gardens in the studied area reported to have a long wait list that could take years for those interested in gardening to get a plot.

Urban farming had more heterogeneity within its own category. They varied in sizes, what they grew, how they grew, and what they did with what they grew. Their numbers in each area also differed significantly, with Arlington County only having one urban farm, in contrast to Prince George’s County having the largest number of urban farms across the region, due to its larger geographical area. The sizes of the farms also varied, reflecting the availability of space. Most urban farms in the study are about a city lot in size, but some of the urban farms in Prince George’s County were operating on multiple-acre space. In-ground growing was the most common method of growing for both community gardens and urban farms, but the latter also included indoor controlled environment agriculture (CEA), such as hydroponics, or other outdoor growing spaces such as the rooftops. Like at community gardens, urban farmers grew vegetables, herbs, and flowers, but they also grew products to be processed such as wine grapes, cattle, and beehives. Our study included both for-profit and non-profit urban farms, and during the time period of this study urban farms engaged in a variety of food distribution practices from donation, community-supported agriculture (CSAs), farmers market sales, commercial sales, and retail sales to individual consumers.

2.2. Participants and Data Collection

This article analyzes 59 in-depth interviews that we conducted with the managers of community gardens and urban farmers between August 2020 and July 2021 (Table 1). The interviews were semi-structured and open-ended, meaning that the interviewees were asked the set of questions focused on pre-pandemic operations, post-pandemic major impacts, and post-pandemic adaptation strategies in the short- and long-term, but were also encouraged to provide additional details or discuss relevant topics as they saw fit for the study. Therefore, some interviews lasted for 30 min while others lasted for more than 60 min depending on the interviewees’ experiences and expertise as well as their availability. Interviews were conducted by the two authors and eleven student research assistants over Zoom due to social distancing requirements during the first year of the COVID-19 pandemic.

Table 1. Regional Population and Interviewee and Project Characteristics.

Items	Categories	Washington, DC (28)	Arlington County, VA (6)	Prince George's County, MD (25)	Total (59)
Population	Census 2020	712,816	189,198	955,306	--
Type of urban agriculture	Community Gardens	19	5	6	30
	Urban Farms	9	1	19	29
Type of food distribution	Commercial Production	6	1	13	20
	Food Donation	9	4	4	17
	Personal Consumption	17	3	8	28
Race	White/Caucasian	15	6	15	36
	Black/African American	10	0	8	18
	Other	3	0	2	5
Gender	Male/Man	14	3	8	25
	Female/Woman	14	3	17	34

We identified and recruited potential interviewees using online searches and snowball sampling through personal references and prioritized diversifying the sample. In other words, the aim was not to have a representative sample of the community garden managers and urban farmers in the area, because there was no holistic census of urban agricultural projects across the region to gauge the representativeness of the sample. Instead, the study aimed to capture the heterogeneity of urban agricultural practices and variability in the scope and scale of the adaptation strategies across types of urban agriculture. As noted previously, the growing spaces and practice varied across the sample, but we used the growers' self-description when classifying them as a community garden and urban farm. There are some limitations to the study sampling. Since we did not have a holistic list of all the growers in the region, the study sample may not be as heterogeneous as it could be. However, we made all attempts to maximize the heterogeneity of the sample across the categories of urban agriculture, especially considering the differences across the three jurisdictions. Table 1 presents the characteristics of the interviewees across the three locations, by types of urban agriculture, and their racial and gender identities.

Overall, we recruited 28 interviewees from Washington, DC, 6 from Arlington County, Virginia (VA), and 25 from Prince George's County, Maryland (MD). In all regions, the majority of the interviewees identified as white or Caucasian, followed by those identifying as Black or African American. The small number of the "Other" category in racial groups reflects the area's population where the population identified as racial groups other than white or Black constitutes (17.7% in DC, 15.7% in Arlington County, and 26.5% in Prince George's County). Gender representation was even in DC and Arlington County, with more participants identifying as female or woman in Prince George's County, which also reflects the local grower demographics in the area. The samples from each location generally correspond to the prevalence of types of gardening and farming in each area, with DC having more community gardens and Prince George's County having more urban farms. There was only one known urban farm in Arlington County, which has smaller open areas and a higher density of development than the other two areas. Commercial production, food donation, and personal consumption reflects the urban agriculture project's engagement in food production during the initial year of COVID-19, from March 2020 through to March 2021.

2.3. Data Analysis

The interviews were digitally transcribed before we used Atlas.ti (v9.1), a qualitative data analysis software, to engage in qualitative coding of each transcribed interview. Table 2

illustrates the coding scheme organization we used for the study, and how many times each code was used to categorize specific statements made by the interviewees. The same code may be applied to multiple parts of an interview, based on the number of relevant statements being made. The coding themes, such as Covid-Challenges and Adaptation-Strategies, correspond with interview questions on the topic. We developed the initial set of codes based on the existing scholarship and initial notes we took during the interviews and engaged in preliminary coding to test these codes. We used the software’s cloud feature to engage in team coding to enhance the “intercoder reliability” [39] of our data analysis. During the initial coding process, we met biweekly for three months to develop and clarify code operationalization and application. Codes were developed to correspond with the interview questions focused on the challenges the interviewees experienced during the initial weeks and months of the global pandemic, and their adaptation strategies. For an additional caution, we assigned coders to the interviews that they did not conduct themselves, in order to avoid bias that could skew the coding process. Finally, we assigned another individual from the research team to check the accuracy of the coding.

Table 2. Qualitative Interview Coding Scheme with Coding Frequency in Parenthesis.

Commercial Production		Donation	Personal Consumption
Theme	Code (Total)	Code (Total)	Code (Total)
Covid-Challenges (New challenges caused by the pandemic)	Distribution (48) Other (41) Policy (35) Participation (27)	Social Distancing (28) Participation (16) Volunteer Shortages (16)	Other (45) Social Distancing (41) Participation (30) Volunteer Shortages (28)
Adaptation-Strategies (Actions taken in response to the pandemic)	Distribution changes (59) Policy (39) Other (28)	Distribution Changes (30) Policy (27) Virtual Conversion (20)	Policy (36) Virtual Conversion (25) Other (22)
Adaptation-Opportunities (What enabled the pivoting)	Pre-existing Strategies (24) Pre-existing Resources (21)	Pre-existing Resources (22) Other (11)	Pre-existing Resources (24) Pre-existing Strategies (24)
Adaptation-Obstacles (Challenges that hindered adaptation, distinct from Covid-Challenges)	Policy (52) Other (21)	Policy (19) Other (9)	Policy (29) Other (18) Funding (16)

Once coding was completed, we engaged in a thematic analysis using Atlas.ti. We used the software’s “report” function to produce the frequency of codes as the guide to identify overall patterns, then reviewed and re-analyzed the coded sections of each interview to analyze nuances and contexts provided by the interviewees for the coded statements. Interviews were divided by distribution category, with the three categories being commercial production, donation, and personal consumption. It is important to note that the distribution categories are not mutually exclusive, meaning that a single urban grower could be participating in both commercial distribution and donation, for example. The donation category is the one that overlaps with the other two categories. There is very little overlap between the categories of commercial distribution and personal consumption. Furthermore, urban farmers practiced mostly commercial distribution, whereas community gardeners practiced mostly donation and personal consumption. Once these categories were created, the coding themes of COVID-19 challenges and adaptations were sorted by frequency within each distribution category in order to understand the most significant challenges and adaptation strategies for each group of growers. Coded sections of the interviews were then reviewed individually to contextualize each statement for a more nuanced understanding of the patterns in the growers’ experiences across the sample. We analyzed the data to identify the common patterns across the interview experiences as well as outliers. We qualified and contextualized the analysis so as not to overly simplify

the findings. Finally, we explored the quotes in the most frequently cited codes in each category to identify patterns and trends in participants' descriptions.

3. Results

3.1. Transitioning Commercial Production Challenges: Distribution and Policy

Growers who were producing for commercial consumption reported that their most significant COVID challenge, by far, was distribution. Two major distribution outlets for the growers in our sample, restaurants and farmers markets, were closed or partially closed starting at the beginning of the pandemic. Restaurants made up a majority of the distribution avenues for growers who distributed commercially. Restaurants in DC were completely closed for several months and then reopening was not consistent for long periods of time, with restaurants opening in waves, at first for carry-out only, then outdoor-only dining, before completely reopening. Even after complete reopening, the numbers of diners allowed indoors were limited and restaurants continued to close temporarily in waves as they followed local guidance. Commercial urban growers were significantly impacted by these policies. As one farmer stated, "Last April, I lost all 42 restaurant clients within three weeks, so I went from a gross billing of around 40,000 to zero in three weeks" (Interviewee 55, PG County).

Other distributional venues were also affected. Farmers markets were important distribution avenues for our sample, and in some locations they were forced to close before policymakers deemed farmers markets "essential businesses" and allowed them to reopen, including in the three areas included in the study [40]. Other distribution impacts included programming and events being canceled, shops closing or no longer accepting certain products, and processing facilities closing. For example, one cattle farmer we interviewed had a distribution dilemma because their processing house shut down for a period of time.

Policy, which included elements such as safety requirements for staff and volunteers, was another frequently cited COVID challenge for this group. One of the farmers shared an example of the contradictory policies that their customers faced in farmers markets as compared to grocery stores as follows:

For our small little farmers markets, we had to have everything pre-bagged. We had to put broccoli in baskets so that things weren't being over handled, or handled by the customer, or other customers could pick it out. And then put it on the scale so it's (only) being touched by the cashiers and customers. . . . It just seemed like when it came to farmers markets, we had to follow a different set of rules (than) when it came to the grocery stores for the bigger guys. (Interviewee 52, PG County)

3.2. Transitioning Commercial Production Adaptations: Direct Distribution, Virtual Conversion, and New Partnerships

As retail venues closed either temporarily or permanently, many of the growers we interviewed were forced to find new distribution avenues. This occurred in numerous ways, including selling directly to consumers for the first time, delivering to customers for the first time, starting new CSAs, creating new online marketing platforms, and starting new or increasing existing donation distribution.

Interviewees discussed changing their distribution model to focus on or include home deliveries and more direct sales and marketing to consumers. For example, a farmer described the transition positively by stating the following:

I definitely am more motivated to pursue the consumer side, trying to market and sell things to consumers, which I hadn't been before. I'm more motivated to pursue a lot of the different grants and opportunities that have come up with COVID and the social unrest. (Interviewee 24, PG County)

Overall, most growers created more diverse distributional arrangements during COVID and some of the interviewees mentioned that the changes they made would be

long-term or even permanent, as they felt the changes strengthened their business model and made them less vulnerable to future shocks. A farm operator described their response to the uncertainty as of September 2020 as follows:

Some restaurants have come back, but we basically are not planning to start selling to them again this year. (With) the restaurant partners we work with, we try to sort of create a planting plan with them at the beginning of the growing season. So if that is unsure, then you don't really want to make that commitment. (Interviewee 64, DC)

Adaptations often created an increased work burden for the growers since they had to build their skills in different areas, such as designing websites for virtual conversion, and many were also doing their own product deliveries. A farmer noted, "I didn't feel (it) was appropriate to put my people at risk to have increased contact for them. So I was doing full deliveries. It was a lot of work. It's a lot of time away from the farm" (Interviewee 71, PG County). Similarly, another farmer recognized that the revenue was relatively down due to increased labor demands, including the new work of converting sales to online platforms, stating the following:

Technically I've made less money, because I'm working more hours now. Not just because I'm working full time. . . . Just dealing with the website and trying to figure it out, and how to do all those things. It just takes so many hours in a day (to do) all the deliveries. (Interviewee 75, PG County)

Despite the growers' extraordinary efforts to adapt, create more resilient business models, and meet the food needs in their communities, it was often too much to take on without institutional support. Interviewees discussed the increase in demand for their products during the early months of the pandemic and how they were overall ill-equipped to handle it, at least at first. One grower described the challenge as follows:

One of the big issues the farmers faced during COVID was if you were a very small farmer, you didn't have the volume to support the increased demand for local food. A lot of people I know that run CSAs, they were like 'I shouldn't be taking on this many! (Interviewee 24, PG County)

Growers stated that they struggled with making decisions about their businesses during a time of extraordinary uncertainty about the future, as articulated by one grower as follows:

Trying to obtain information about the potential risks is difficult when you're considering possible expansion or not. To try to assess the risk when some of the information is still really new. So trying to get information to make an informed decision about whether I should persevere forward or whether it's best to kind of relent and wait this out. That was probably one of the biggest challenges for me. (Interviewee 35, PG County)

Commercial growers organized and connected with each other and with their communities in many creative and effective ways when confronted with a lack of institutional networking and coordination. We found many examples of growers helping and supporting each other and adapting to the difficulties by strengthening networks and communication, such as a farmer that reported relying on their local network of markets and growers:

I've been in contact with some local farmers and growers in the area, and I met people that are in a collective so we may try and get a market started with the collective members who also are small growers. And they would be able to meet once or twice a month at a specific place and host a sale there. (Interviewee 69, PG County)

We find that the growers were working to build local distribution systems prior to the pandemic, but these previous efforts did not prepare them to fully respond to the scale of disruption to the dominant distribution system during the height of the pandemic,

which led to many of them pursuing new forms of food distribution such as CSAs or donation individually.

3.3. Transitioning Food Donations Challenges: Social Distancing and Labor Impacts

The growers who were donating their products faced very different COVID-related challenges than those who were producing for commercial distribution. Their most significant COVID challenge was social distancing, followed by participation and volunteer shortages. All of these challenges were related to labor, either paid or volunteer, so on-farm labor and staffing reductions and impacts were the most significant repercussions on these growers. Distribution was not a significant COVID challenge that was discussed in this category, which means that donation distribution networks were not as affected by the pandemic or are more flexible or resilient. For these growers, the COVID restrictions around social distancing greatly impacted them as they relied more heavily on volunteers and organized events.

Labor shortages also resulted in increased work and stress for garden managers. One community garden manager stated that the lack of volunteers was a challenge for some of the work that was easier with a large group, stating: “Rather than doing all the labor ourselves, harvesting and things like that, in the past, we would have volunteer people to really help to assist with some of that” (Interviewee 31, PG County).

In some cases, the labor and social distancing changes also led to decreases in output. The growers knew that the demand for local healthy food during this time was growing and so this staff shortage was particularly difficult to bear. One farmer described how the reduction in labor, in response to the social distancing requirement, affected their output as follows:

It’s really unfortunate, but in a time where the demand for good, healthy, sustainable, local, organic-kind of every buzzword food is increasing. We’re not anywhere even close to the output that we were doing even in the winter months, which is probably a third of what I had projected for the warmer months. (Interviewee 4, DC)

As he described, the labor shortage held back the growers from being able to respond to the increased demand for local food during the early months of the pandemic.

3.4. Transitioning Food Donations Adaptations: Increasing Donations for Neighbors in Need and New Partnerships

In our sample, both community gardens and urban farms contributed their food for donation. The growers in this category were in a very different position than those who were growing for commercial production. Although growers who grew for donation did not state that distribution impacts were one of the major challenges they dealt with as a result of the pandemic, distribution changes were the most frequently mentioned adaptation strategy in this category of growers. This illustrates that their adaptations were not to the impacts of the pandemic on their operations, but to its impacts on the local food system as a whole, which exacerbated existing inequities and resulted in many people turning to local food sources in the face of growing shortages. These growers responded to their communities’ needs when people were struggling to find food during the early months of the pandemic.

Despite the labor shortages and decreases in volunteer participation, many of the growers in this group said that they were able to increase the amounts of food donations, either because their overall production increased, or even when total output stayed consistent, gardeners decided to donate more of their food to help neighbors and communities in need. In community gardens, increased output was possible due to some gardeners having more time to garden as a result of the pandemic. One community garden manager described their garden’s increased donation production as follows:

The other interesting pivot from this year is the willingness of participants to step up in food donations. We saw a huge interest this year in food donations

to our local pantries, and our garden was one of several that directly supplied a neighborhood school that was doing food distributions to more food insecure families here in the county. And I'll never forget the 600 line of people waiting to get food distribution. (Interviewee 30, Arlington County)

An urban farm manager similarly noted the sense of urgency that led them to increase their production. She reported that her organization delivered over 100 free produce boxes to low-income residents across Washington, DC, and shifted their farmers market to function as a weekly produce giveaway site during the pandemic. She explained that this was made possible through partnerships with other local organizations:

Because of the great need for produce we also partnered with another farm to sort out additional produce to have available for distribution. Prior to the pandemic hitting we had already sent to members of our CSA so we continued to distribute some produce through our CSA. (Interviewee 8, DC)

Other growers also shared that they forged new connections and created new networks in order to facilitate these new donation streams.

Interviewees reported a similar trend across all three of our research locations, and donations were not limited to within the county or the city. One community garden manager noted that they focused donations on specific wards in DC:

It actually went very well during the pandemic, because we were able to concentrate on two very insecure food wards in DC, Wards 7 and 8, which are somewhat food insecure (areas). . . . We've been delivering food every week since the pandemic to those two entities (one in each ward), so they can distribute the food to people in those communities". (Interviewee 31, PG County)

Similarly to the commercial growers, these connections came from individual and community efforts without coordination from governments or other institutions. As one community garden manager described:

I think that there's been a desire among garden members to do something (to be) more productive with the extra produce. But there wasn't any sort of coordinated, organized effort. And the pandemic really created an opportunity, both because of the mutual aid efforts (operating in the communities), but also because people in our neighborhood were more aware of the inequities in our society. There was more energy around doing something within people's individual power to address it. (Interviewee 15, DC)

Many people, especially those who had extra time and resources during the pandemic, wanted to do something to help others and expressed interest in volunteering at higher rates than usual at these gardens and farms.

These distribution adaptations were a direct response to the pandemic's impact on the food system as a whole and on the increasing food needs in the community. These growers responded to their communities' needs when people were struggling to find food during the early months of the pandemic. For those who were already providing food donations, their adaptation was to increase the donations in order to meet growing needs in their communities. Many growers who were not donating before the pandemic started donating during its first few months to meet those needs.

3.5. Transitioning Personal Consumption Challenges: Community and Participation

The growers who were growing for personal consumption, mostly at community gardens, also stated that social distancing, participation, and volunteer shortages were their greatest COVID challenges. Overall, these impacts did not seem to affect the functioning of the gardens too drastically, as volunteers were still able to come out and tend their plots in many cases. Some interviewees mentioned that they felt that COVID did hinder the community spirit of their gardens, as the social aspect of these gardens is very valuable for their members. One community garden manager summed up the issue as follows:

The community spirit—a lot of us ran on the support of others and talking to one another about why our tomatoes didn't go great this year (for example). . . . We can't be together, so I think that's the biggest hindrance. (Interviewee 22, Arlington County)

On the other hand, despite the distancing requirements and the limited numbers of people, managers noted that the community gardens gave people an outlet to socialize and spend time outdoors during the first few stressful and uncertain months of the pandemic, when socialization was limited for most people. One manager put it as follows:

People pretty much maintain distances while they're gardening. They may have a mask on, or not, but everybody has maintained distances. But they've been happy to see each other, and they've been really happy to have their gardens to work there. (Interviewee 28, DC)

3.6. *Transitioning Personal Consumption Adaptations: Policies, New Donations, and New Partnerships*

Some of the adaptations in this group consisted of instituting new safety and sanitation restrictions. These included social distancing policies, restricting the number of people in the garden at a given time, reducing the sharing of items, and the virtual conversion or cancelation of larger events, classes, and other activities. One urban farmer made the following observation:

Instead of having groups of 20 to 50 people, now we have two to four volunteers at a given time. The good thing is we're on a rooftop and in the open air. So everyone just kind of disperses and gets a project in a different area. (Interviewee 7, DC)

There was also an increase in the leniency of policies regarding community gardeners who were unable to maintain their plots because of health issues or decreased socializing as a result of COVID precautions. A community garden manager noted:

Regarding leniencies to plot maintenance, we have had all kinds of people that have needed leniency this summer. It was pointed out (to us that there were) not just medical staff but also other essential workers or persons who are immune compromised. So far, no one has let us know they are giving up their plot; we hope to have everyone back next year. (Interviewee 22, Arlington County)

One interesting adaptation that we saw in this category was the emergence of donations from gardens that had not been donating prior to the pandemic, or an increase in donations for some that were already doing small amounts of donation. Similarly to the growers who were in the donation category, this was cited as an adaptation even though distribution was not an impact. This means these growers were also adapting to the food needs they saw in their communities, which COVID had exacerbated but not created. A community garden manager explained the transition at their garden as follows:

Before the pandemic, our focus was on community gardening and just learning and teaching students about gardening and sustainability. But after the pandemic, it got switched to being more about making as much produce for feeding. (Interviewee 61, PG County)

One garden manager described the creative way that gardeners decided to offer food to neighbors who needed it without having to develop a new distribution procedure:

We would have (vegetables) growing along the fence, just so that anyone could just come and pick what they wanted, and go on about their business, no question asked. And because we have to social distance, we really didn't want anyone inside the garden that didn't need to be (there). So we cleared out the parameters and we pretty much lined the fence with a whole bunch of containers. (Interview 3, DC)

Similarly to the other categories, in this group we also saw evidence of new partnerships forming or existing partnerships being strengthened as a response to the pandemic. Many gardeners had only been growing for personal consumption prior to the pandemic and were moved to start donating to help their neighbors who were in need, and so community garden managers forged new alliances to allow for those donating networks. Distributing food to pantries, churches, food banks, and other venues required levels of coordination and organizing that community gardens had not previously conducted, something that was conducted without institutional or governmental planning or intervention.

4. Discussion

In interpreting our data, we applied Galgóczi's (2020) explanation of the Just Transition (JT) framework's two dimensions to understand just transitions in the food system: outcome and process [13]. In our study, we operationalized the outcome dimensions to be the final outcome of a just transition within the food system, and the process dimension as the equity in the transitional process toward that outcome. Specifically, we interpret adaptations that address local food needs (i.e., how much growers were able to shift distribution or production to meet new local needs) as outcome dimensions, and those that increase local participation in democratic civic engagement networking within the food system as process-related dimensions. Our data point us to the potential and limitations of the adaptations of growers growing for commercial production, donation and personal consumption within each of these dimensions. Table 3 summarizes our findings.

Table 3. Key Challenges, Forms of Adaptation, and Implication for Just Transition Theories by Types of Production.

Type of Production	Key Challenges	Forms of Adaptation	JT Implications by Type of Production	JT Implications that Apply to All
Commercial Production	Market closure/reduction Local policies	Diversifying distribution Pre-pandemic relationships Virtual conversion of distribution New partnership/network	Less flexibility within the economic system	Meeting increased local food needs Individual/community scale networks Potential and limitation of grassroots responses to structural inequity Some changes can replicate inequities
Food Donation	Social distancing Event/Programming cancellation Volunteer shortage	Increased production and donation New donation participation New partnership/network	More flexibility as a result of lower economic constraints Policy-reliant changes may be less effective than tried-and-tested grassroots efforts	
Personal Consumption	Social distancing Event/Programming cancellation Volunteer shortage	New internal policies or adjustments New partnership/network New donation participation Virtual event conversion	Not all "changes" have implications for structural transition	

4.1. Meeting Increased Local Food Needs

Commercial producers had enormous potential to respond to increasing food insecurity and the demand for local foods that occurred in the early months of the pandemic [6]. Urban farmers that we spoke with understood this increase in demand and wanted to meet this need, yet they varied in their capacity to shift their operations quickly to meet these changing needs. Some specifically mentioned that they wanted to pivot to direct to consumer sales, as opposed to sales to restaurants or other venues that they had previously engaged with. However, many also felt overwhelmed by these demands and their limited capacity to respond to them. These shifts and changes were made mostly at the individual

and community level without institutional coordination or management. In fact, in some cases we saw examples of policies hindering the adaptations that growers were making on the ground, such as in the case of the contradictory policies between farmers markets and grocery stores. This illustrates the desire of actors within the food system to create a more vibrant and responsive local food system that is able to address needs more quickly and easily, but the structural limitations of the system hinder rather than facilitate such a transition. Despite these limitations, we see that commercial producers were able to pivot and adapt in numerous ways.

Commercial producers were able to re-localize their production in some cases, as illustrated in our Results section. More importantly, many of them were able to diversify their distribution venues and the majority also spoke of these changes being long-term ones, illustrating that there were real transitions in the system, possibly making it more resilient to future shocks. These adaptation stories illustrate the potential that is actualized through the efforts of grassroots, individual actors in the face of the failure of the existing food systems to re-localize the food system and shorten supply chains, which relates to the outcome dimension of moving towards a JT. Institutional and structural programs and policies could have greatly supported local food systems by better supporting commercial growers, which could have given them greater capacity to distribute their food production locally to more adeptly meet food needs.

For the growers in our study who were producing for donation or personal consumption, the outcomes dimension of the JT framework looked very different than the commercial production growers. Distribution was not an obstacle since, for the most part, donation venues did not close during the pandemic. However, we found that their adaptations were mostly within the distribution sphere. This means that they were adapting not to the impacts of the pandemic on their operations, but to its exacerbation of a food system that was already inequitable. Similarly to the commercial growers, these growers saw the food needs in their communities, particularly in lower income communities who were relying on food donations, and were driven to respond and help and did so relatively successfully within their capacity during the early months of the pandemic.

Growers in this category for the most part were not gardening as their livelihoods, as they were middle-class citizens who were employed full-time and thus were gardening for leisure, often in urban community gardens. As a result of telework when the pandemic started, they had more leisure time that many of them chose to spend in their gardens. Many of these growers increased their food donations or started donating for the first time and were able to address food needs in their communities. Thus, these farmers did not face the same economic constraints as those who grew commercially and were economically able to make different choices to respond to local food needs. These differences underscore the class privilege of these groups of growers leading to varying degrees of autonomy and capacity to respond to community food needs.

4.2. Individual and Community Networks

The process dimension of the JT argument is also crucial. On a small scale, at the individual and community level, we did see evidence of an increase in local engagement and the creation of new networks and partnerships, increased autonomy, and self-determination in the distribution of resources. Commercial producers organized in their own ways to try to provide food to the people who needed it. Many switched their distribution model to sell directly to consumers, for the first time in their lives, creating CSAs or roadside stands, or selling directly from their home or farm and advertising online or by word of mouth. We heard many stories of neighbors and communities helping each other, as illustrated by the examples in our Results section. These partnerships happened organically, without coordination from governments or institutions. In fact, the flexible adaptation was made possible through lack of policy oversight, as we saw that policy disruptions sometimes restricted the growers' capacities to adapt. Although these seem like small changes, they were transformative in the moment, for both the receivers of the food, and for the growers

themselves. They increased the autonomy and self-determination of those urban farmers and created new social and distribution networks in the local food system.

With regards to process, farmers growing for donation and personal consumption were similar to the commercial growers. They also created new networks of engagement and participation in order to distribute their goods. Interviewees shared stories of farms partnering together in order to coordinate food donations for the community and joining mutual aid efforts. On an individual or community scale, we saw evidence of greater community engagement, participation, and communication. However, similar to the commercial category, we did not see an overall trend that illustrated increases in participation or engagement with government entities or institutions.

4.3. Limitations of Grassroots Responses to Structural Inequality

These changes were made within the same market-based structures that have persisted in the region and these actors continue to operate within the confines of an unjust socio-economic system. Commercial producers who rely on farming for their livelihoods were limited in the types of changes they could make by many institutional, political, and economic factors, the most important being the market price of their products. Often, urban farmers told us that they needed to sell in farmers markets that they knew would bring them higher prices, which might not be the areas of greatest need for their product. For example, many Prince George's County urban farmers sell their products in DC farmers markets, where they obtain higher prices than they would in their own county's farmers markets, despite the fact that there are high levels of food insecurity in many areas within the county [41]. Small urban growers who are operating in this space as their full-time employment already struggle to financially support themselves and their families and make production decisions based on prices as opposed to consumer demand; hence, they are constrained in their ability to respond to the greatest need. Autonomy and food sovereignty are highlighted as important components of the just transition within the food system [23]. However, the current economic system does not allow for a small farmer to generate a sufficient livelihood from food production [42]. Thus, growers' autonomy is limited by the economic system that they operate within.

Furthermore, the individual actions and adaptations of these growers during the early months of the pandemic are an illustration of private actors stepping up to fill the voids left by the public sector [21]. Individual actors responded in the ways they were able to, and they made incremental changes in both the outcomes and the process dimensions of the just transition's framework, changing distribution patterns as well as increasing participation and networking. However, these actors continue to operate within inherently unjust economic and social systems, and cannot enact full system transformation without structural changes to political and economic structures. Additionally, the growers who had the most resources pre-pandemic were the ones that were able to respond to the impacts most quickly and successfully, reproducing patterns of inequity and injustice, as scholars have cautioned can be the case. Furthermore, transitioning to a "Farm to Table" local food system does not guarantee an advancement of equity and contributes to a JT [28]. This would remain as a reminder that growers themselves cannot address the structural injustice that causes disparity in employment and land access. Thus, despite the positive adaptations that we saw evidence of, this was not the systemic change that the JT requires, because these strategies were mostly successful only in addressing outcomes (e.g., food security) but had limited capacity to address procedural justice despite intentions to approach the transition through grassroots, inclusive efforts. However, grassroots responses and adaptations made the transformations that were permitted within the constraints that the larger system constructs.

Individuals growing for donation and personal consumption had the economic capacity to respond in greater ways to the food needs in their communities. However, food donations are not evidence of the food system transformation that is needed for a just and equitable food system, as it fails to address the root causes of food insecurity. For

achieving just transition in both outcome and procedure, significant structural changes must take place to fundamentally restructure the economic, political, and social systems. These transformations will involve complex, multi-scalar reform that includes policy-led structural reform.

5. Conclusions

Our study illustrates the creativity, innovation, and resilience of individuals and communities responding to acute needs within their local food systems, and connecting with each other to adapt to the pandemic's impacts on their communities. In thinking of the first research question that this study posed, we found that growers overcame a unique set of obstacles in many creative ways. In the face of a lack of large structural changes and support, individuals and communities stepped in and enacted changes and adaptations that can be seen as making hyper-localized incremental steps towards a just transition. Evidence of this was seen in both the outcomes and process dimensions of the just transition framework, as local growers diversified distribution venues and increased donations to meet the needs of local residents. These responses strengthened the local food system through the creation of new networks and partnerships that enhanced democratic participation in the local food system. Despite structural limitations, the growers faced the impacts of the COVID-19 pandemic, on both their own operations and the local food system as a whole, with resourcefulness, innovation, and a determination to support their communities. As we noted in the introduction, the Just Transitions (JT) literature lacks in empirical applications of its framework more broadly, especially to the food system [20]. This study contributes to both areas through our analysis of farmers' direct, in-depth perspectives of the potentials and limitations for their capacity to implement transformations on the ground. Our study indicates future research has many gaps to fill. There is a continued need for scholarly empirical analyses of JT, in order to better illustrate how the complex framework and its many components play out in the real world. Empirical analyses also need to be conducted at many scales, exploring both policy applications of the framework, and how those impact communities, as well as grassroots decentralized efforts to operationalize the just transition and how those interact with policies and institutions that may or may not be supportive.

As for the second research question, growers demonstrated that grassroots efforts can indeed contribute towards enacting a just transition within the food system. However, in thinking about this tension between institutional "top-down" and grassroots "bottom-up" approaches to implementing the just transition, an important question arises: where does the just transition come from? What is the role of the grassroots versus policy led effort, or how can groups work together to implement a just transition [14]? Scholarship has not come to a consensus about the ways in which the just transition should occur, and greater scholarly discussion exploring the relationships between implementation and operationalization at different scales is needed.

In the case of food systems disruption during the pandemic, policies and programs could have been implemented to strengthen local food systems by better supporting local growers who had the desire to meet their communities' food needs. Yet for the most part, the growers in our sample did not receive these types of coordinated institutional responses. Coordinated purchasing efforts, such as contracts that are enacted during the planting season that ensure the purchase of specific quantities of products from urban growers during their harvest could provide growers with security and reduce some of the distribution stresses that we witnessed. However, more research is needed on how such programs would operate. Research is needed on the types of programs that would increase the capacity of growers, especially commercial growers, to direct their distribution to hyper-local food venues, while explicitly addressing equity in the implementation process. Different regions may approach the problem differently, and research into these approaches and their successes and failures would be an important comparison to contextualize the scaled and scalar understanding of JT outcomes and processes.

Finally, further research into the structural causes of the failures of our food system during the pandemic and its resilience to future shocks is needed. For a full just transition in the food system, structural injustices that have led to an inequitable food system will need to be addressed. Thus, JT scholarship should incorporate longitudinal and critical perspectives in projecting toward the future. One way to do this is by gaining a better understanding of the historical economic divestments and environmental and food injustices in communities of color or low-income communities. These compounding existing structural inequities put marginalized populations in the city at a greater risk of food insecurity. Furthermore, the same factors also pose additional obstacles for residents of these communities in accessing the land and resources needed to establish and operate urban gardens and farms to feed themselves and their neighbors. Strengthening local food systems will not automatically address these issues if changes are not made without addressing the structural causes of injustice [25–27], but supporting small local growers can be a step in the right direction if conducted thoughtfully. We urge JT scholars to continue exploring the empirical applications of the framework on the ground, paying special attention to the historical, geographical, and social context that affects food and resource access distribution in each locale.

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