EXPLORING URBAN AGRICULTURE IN TOLEDO, OHIO, A MID-SIZED RUST BELT CITY

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ABSTRACT

Urban agriculture (UA) is any form of agriculture practiced in urban spaces. Across the Rust Belt Midwest, where deindustrialization and depopulation have resulted in vacant and abandoned land, UA has increasingly been embraced as a strategy for neighborhood revitalization. Research has shown that returning vacant land to use through UA can increase food security, beautify spaces, and catalyze community relationships. Much of the academic literature on UA in the United States focuses on case studies in large cities, including Detroit, Chicago, and Milwaukee, though many small and mid-sized cities across the Rust Belt also have growing urban agriculture systems. The lack of scholarly attention on these cities, which greatly outnumber larger cities, raises questions about how UA systems function across scale and whether direct comparisons between large and small systems are effective. This exploratory study establishes baseline insight about UA activities in Toledo, Ohio, a mid-sized Rust Belt city with an established and growing UA system. We conducted 27 semi-structured interviews with stakeholders to better understand the history, present activities, and future goals of farmers, organizations, and policymakers who are involved with UA activities. After conducting an inductive analysis to identify emergent themes, we discuss the results in conversation with literature on mid-sized and large Rust Belt cities to identify intersections and distinctions. This research provides a first step in understanding the dynamics of UA systems in mid-sized Rust Belt cities.

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INTRODUCTION

Urban agriculture (UA) is broadly defined as agricultural practice in an urban setting (USDA, 2016), including rooftop gardens, community gardens, urban farms. The practice has grown across the U.S., especially in the Rust Belt, an area once dominated by steel plants, automobile manufacturing, and coal mining that is now characterized by widespread deindustrialization, which in turn has led to an excess of vacant or abandoned land (Mallach, 2018). In these areas, UA has been used as a revitalization strategy to restore property values, improve neighborhoods, and foster community building.

While Rust Belt UA in large cities like Chicago and Detroit is well-studied, little research has documented the growing UA systems in mid-sized Rust Belt cities like Toledo, Ohio; Lansing, Michigan; and Gary, Indiana. Mid-sized cities widely outnumber larger cities, and it is reasonable to assume that a city's size might have impacts on the function and outcomes of a UA system. Because the characteristics of governance, community dynamics, land access, and local resources in these UA contexts are so vastly different than the terrain of small urban systems that it is not clear how relevant outcomes from these big cities might be.

Through a case study exploration of UA stakeholder experiences in Toledo, a mid-sized Rust Belt city, this study aims to develop a baseline context for comparison between mid-sized and large Rust Belt UA systems to identify distinctions and similarities that might be useful for decision-making across other small to medium-sized Rust Belt UA systems. We conducted 27 semi-structured interviews with stakeholders in Toledo focused on perceptions about the history, current challenges and activities, and future goals of the UA system. Using an inductive thematic analysis, we identified four primary themes across the stakeholder experience related to: (1) local economy, (2) improved social and physical environment, (3) food security, and (4) relationships (city, neighborhood, and UA system scales). We then compare our findings with stories and literature about UA in mid-sized and large Rust Belt cities to identify similarities and differences. This research is guided by two research questions

1. What are the perceived dynamics, challenges, and goals of UA initiatives in Toledo, Ohio?
2. How do the characteristics of the Toledo UA system compare to the research on other Rust Belt UA systems across scale?

LITERATURE REVIEW

The Midwest Rust Belt and Urban Agriculture

In the 1980s, many US cities shifted away from manufacturing and this deindustrialization led to plummeting populations and soaring unemployment rates (Colasanti et al., 2012; Masson-Minock & Stockmann, 2010). In the region of the upper Midwestern U.S. most affected by this phenomenon, the Rust Belt, the negative impacts of deindustrialization were, and still are, unevenly distributed across economic class and racial groups (Sadler & Lafreniere, 2017). Midwestern Rust Belt states like Michigan and Ohio were hit particularly hard and, forty years later, are still recovering (High, 2019). At the beginning of the 21st century, then, the same area endured a second impactful shock - the Great Recession – which compounded previous challenges related to depleted populations, vacant land, and unemployment (Arden & DeCarlo, 2021; Mallach, 2018; Shields & Stettner, 2020; U.S. Census Bureau, 2011). Communities across the Rust Belt have turned to UA as a neighborhood strategy with the goal of returning property to productive use, beautifying green spaces, reducing crime, and stimulating the economy.

The benefits of UA in deindustrialized neighborhoods are thoroughly documented in the literature (Aubry et al., 2012; Specht et al., 2014; Walters & Midden, 2018). Studies show that UA can contribute to a place people want to live, work, shop, and visit (Wyckoff, 2014). UA benefits individual health by reducing air and noise pollution, increasing physical activity, and providing access to fresh produce (Egerer et al., 2020; Mason & Knowd, 2011), and it strengthens social ties by creating gathering spaces and shared experiences (Connolly et al., 2013; Kingsley & Townsend, 2006). Participation in UA provides opportunities for intergenerational informal learning (Martin et al., 2016), an especially impactful kind of community building for marginalized groups like immigrants and refugees (Harris et al., 2014). Jettner and Secret (2020) found that community gardens provided spaces for racially diverse groups to connect, which sets UA apart from other revitalization strategies, like public parks, where the interaction is more passive, i.e. less collaborative, therefore likely to catalyze community relationships (Martin et al., 2016).

Much of this literature on Rust Belt UA focuses on large cities, which are urban areas with populations above 500,000 (Bunting et al., 2007a) including Detroit, Chicago, and Milwaukee (Broadway, 2009; Colasanti et al., 2012; Hatchett et al., 2015). Case studies

dominate the UA research in these areas, though more theoretical work has started to emerge in the last decade, including work on local governance (Castillo et al., 2013; Paddeu, 2017b; Prové et al., 2019) and social justice (Draus et al., 2014; Jackson, 2021; Vitiello & Wolf-Powers, 2014). A persistent concern identified in the literature is the potential for UA to contribute to gentrification, whereby UA farmers contribute to neighborhood revitalization that increases property value such that they can no longer afford to live or farm there (Anguelovski, 2015; Poulsen, 2017; Sbicca, 2019; Slocum, 2007). The extent to which this concern is a threat for smaller cities, where inexpensive land is often more available than in large urban cores, is unknown.

Many mid-sized cities across the Rust Belt have growing – and in some places thriving – UA systems. Though mid-sized cities far outnumber larger urban areas (Stick & Ramos, 2021) they are often neglected in research (Bunting et al., 2007a; Filion et al., 2004; Hartt & Hollander, 2018; Stick & Ramos, 2021). But differences between mid-sized and large cities could reasonably impact the dynamics of a UA system, including the density and diversity of the 'urban core', the accessibility of personal or public transit, and local values related to privacy and natural spaces (Bunting et al., 2007b). Additionally, other factors like the scale of local governance, the accessibility of policymakers and governance systems, and/or the price and availability of land might impact the growth and success of a UA system.

For example, mid-sized cities generally can't sustain public transit at the scale of larger cities and instead rely on individual auto-transport paths (Bunting et al., 2007b). Therefore, individuals in these communities who might depend on public transportation may have trouble traveling or transporting supplies to UA projects (Beckie & Bogdan, 2010). As well, some research has suggested that residents in mid-sized cities prefer private home ownership and green space over communal spaces, whereas residents in larger cities are more accustomed to centralized living spaces and shared public spaces, i.e. urban agriculture (Bunting et al., 2007b). Relatedly, in their case study research in two mid-sized Canadian cities, Bunting et al. (2007b) found that residents were averse to spending time in central urban areas because of "rundown appearances; lack of things to do; the presence of undesirable elements in the population; poor parking; and an inconvenient location". More recent literature also highlights the unattractive nature of downtown areas in mid-sized cities – where urban agriculture is almost always located (Kim, 2016) - compared to the more vibrant urban cores in large cities, which feature more

extensive retail and service activities, better walkability, and increased capacity to rebound after periods of decline (Filion, 2023).

Alternatively, the inclination of mid-sized city residents to highly value 'green space' may serve to encourage participation in UA (Bunting et al., 2007b; McClintock & Simpson, 2018; Piso et al., 2019), which is characterized as a form of 'urban greening' (Carlet et al., 2017; Napawan, 2016). In addition, the lower cost of land in the urban core of mid-sized cities, which often house more vacant and abandoned properties than the downtown areas of large cities, makes UA participation less risky for new ventures. Without more research, though, we can do little more than conjecture about the impacts of city size on UA dynamics. More research on the dynamics of UA systems in mid-sized cities could begin to answer some of this uncertainty.

Urban Agriculture in Toledo, OH

Toledo, OH is a mid-sized Rust Belt city that shares with other mid-sized Rust Belt cities the trend of disinvestment and depopulation due to deindustrialization (Hobor, 2013). Toledo is situated in the northeastern corner of Ohio, bordering the western basin of Lake Erie. Toledo was home to the Jeep company headquarters and both General Motors and Chrysler factories. Because of this reliance on the automotive industry, Toledo's economy has been deeply impacted by deindustrialization. The population in Toledo dropped from 355,000 residents in 1980 (U.S. Census Bureau, 1998) to 270,000 residents in 2020 (U.S. Census Bureau, 2020).

Like many Rust Belt cities, Toledo is home to a growing UA movement, which has emerged as a revitalization strategy to address to the impacts of depopulation and economic transitions. Building since the 1990s, local UA initiatives have been driven by support from several organizations, including: (1) Toledo Grows (TG), a non-profit, three-acre urban farm that hosts a community-supported agriculture (CSA) program; provides support, training, and supplies for 125 community gardens; and runs garden-based educational programming; (2) The Ohio State University Extension (OSU-E), which runs programming across the state to support UA development with programs on production, business, nutrition, and food security; (3) The Lucas County Land Bank (LCLB), which, in partnership with the City of Toledo, hosts an Adopt-a-Lot program, whereby residents can beautify a vacant lot by creating a green space, garden, or play area; and (4) the Urban Agriculture Alliance of Toledo-Lucas County (UAALC), a non-profit focused on providing community education on public policy that impacts UA. The support of these organizations has facilitated the growth and impact of both organizational and

individual UA producers in Toledo. For example, the Sofia Quintero Arts and Cultural Center (SQACC), located on a one-acre plot purchased from the LCLB, is home to the Broadway Urban Garden Greenspace (BUGG). In the three years since they bought their land, they have donated more than 2,500 pounds of pesticide-free produce to Toledo's Seagate Food Bank grown in their 51 raised beds. Other local growers include individual farmers like Mr. Thomas Jackson, who purchased several plots from the LCLB in 2016. Since then, he has he has grown thousands of pounds of fresh produce on these plots, which he distributes to neighbors and local restaurants (Mighty Organics, 2020).

The emergence and sustained growth of the UA system in Toledo is encouraging. But because there is little research on UA systems in small to mid-sized cities, there are limited models to draw from as stakeholders make choices about investing resources, developing governance structures, and/or scaling up as they work toward future thriving.

METHODS

Interviews

During the summer of 2020 27 semi-structured interviews were conducted with stakeholders across Toledo's UA system. The primary objective of these interviews was to capture rich stories about the Toledo UA system across a diversity of perspectives, rather than compare the interviewees' individual experiences in the system. Therefore, the interview guide was short and included three main questions to create space for the conversations to follow relevant but unanticipated paths determined by participant interest (Bernard, 2013). All participants were asked: (1) What is your role in Toledo's UA system? (2) What is your understanding of the history of UA in Toledo? and (3) What does your ideal, desirable UA system in Toledo look like in 5-10 years. This final question was followed by a probe about if and how the current system was (or was not) on a trajectory to resemble the described ideal future. The questions were designed to provide a broad picture into the past, present, and aspirational future of the Toledo UA system. This is a useful framework to gain qualitative insight into system resilience (Hodbod et al., 2023), or the capacity of a system to cope or adapt to change, including past shocks, and visions for a desirable future. As well, this line of questioning provides useful insight into perceptions of the system.

Due to COVID-19 precautions, all interviews were conducted remotely on Zoom or the telephone. While remote interviews do not afford the same relationship-development opportunities as face-to-face interactions (Davies et al., 2020), studies have shown that there is "little to no difference" in data quality between the two techniques (Namey et al., 2020; Thunberg & Arnell, 2021). Interviews ranged from 15 minutes to more than two hours long. On average the interviews were about one hour long. All interviews were recorded on two devices for redundancy, including a combination of the Zoom recording feature (when applicable), Otter.ai, a battery-operated voice recorder, and the iPhone VoiceRecorder app. Recordings were transcribed to text files using Otter.ai digital transcription with data cleaning support from a paid undergraduate research assistant, who also took notes during and participated in a debrief after 25 of the 27 interviews. These notes, along with research memos recorded by the first author throughout the analytical process, documented initial reactions and observations of the interviews prior to analysis (Saldaña, 2013), as well as provided a record of researcher thinking

and meaning making throughout the research process. This project was deemed exempt by the MSU IRB (Project #00004720).

Sampling

Participants were chosen through both purposive and snowball sampling. In purposive sampling participants are selected based on the researcher's knowledge of the population, rather than selected randomly (Patton, 2002). The first author had previous experience in the Toledo UA system, which provided insight into key stakeholders and organizations. During interviews with a first round of researcher-identified key stakeholders, participants recommended other people to talk with about UA activities in the area. This snowball sampling provided a broader and more diverse range of perspectives (Kingsley et al., 2020; Winter, 2019). One of these snowball suggestions was particularly fruitful. A member of the UAALC suggested several Toledo UA Facebook groups, which led to connections with several individual growers, a particularly challenging population to recruit.

Table 1. Categories of interviewees, descriptions, number, and percent of sample.

Category	**Category Description**	**#**	**%**
Producers	Individuals whose primary role in the system centers around growing produce for personal use, profit, and/or donation	9	33
Support Organizations	Individuals who provide resources (material, financial, educational, or informational) to actors in the UA system	10	37
Policymakers	Individuals in positions to affect municipal policies; most were employed at the city (City of Toledo) or County (Toledo-Lucas County) levels	4	15
Food distributors	Individuals directly in contact with UA consumers; only participants facilitating the exchange of money for produce (not donation) were included in this category	1	4
Local UA historians	Individuals who are no longer active in the system but hold significant institutional knowledge	1	4
Food system champions	Individuals who have a profound influence on the system, primarily through social means, such as being vocal on social media or using their networks to bring pieces of the system together	2	7

We estimated we would conduct between 12-15 interviews, based on other similar studies and general guidance for qualitative studies (Creswell & Poth, 2018). But because recruitment was so productive and the interviews were so engaging, we instead conducted 27 interviews with producers, support organizations, policymakers, food distributors, local historians, and food system champions (see Table 1). Recruiting support organizations and policymakers was straightforward; their contact information was publicly available on websites and everyone we reached out to was willing to have a conversation. Growers were the least responsive group, which one participant explained was because, "[Urban] farmers can be anti-social. A lot of us just want to do our thing, quietly, on our own." Additionally, interviews were conducted during the summer semester, which is the busiest part of the year for growers.

At this point no new information about system actors, activities, history, or goals was emerging in the discussions, suggesting we had reached saturation (Saldaña, 2013). Our goal was to recruit a representative number of individuals from each category that reflected each category's presence in the system. For example, as the interviews progressed, participants' intersectional identities became clear (e.g., a grower who also worked for a support organization). Therefore, we grouped participants according to their response when asked to describe their title and the role they play in UA (e.g., director of a support organization). We focused on the primary responsibilities associated with the role they first identified with.

Positionality

The first author has been connected to the Toledo UA system since 2014, having worked for two summers TG and SQACC during her undergraduate studies and completing an undergraduate thesis about the history of Toledo's UA history using informal interviews and secondary sources. She has maintained relationships with UA stakeholders with personal communication, garden volunteering, and social media. This previous knowledge of the system provided a unique perspective of the landscape, community, and UA dynamics in Toledo; it also introduces an opportunity for bias during the inquiry process. To address this potential for bias, she memoed extensively during the data collection and analytical processes. After most interviews, she debriefed the conversation with an undergraduate research assistant to check her perceptions of the conversation against the undergraduate researcher's outsider perspective. The research assistant was absent for two of the twenty-seven interviews. The first author met bi-weekly with the second author for more than three years, including throughout the research

framing, recruiting, data collection, interpretive process, and reporting processes. Finally, the second author peer reviewed the interview protocol, codebook, memos, and findings, while a research lab group of graduate students (n = 5) peer reviewed the codebook and findings.

Analysis

Complete transcripts were uploaded to MAXQDA, a qualitative data analysis software program. Coding is a cyclical activity; reading and re-reading the data is an integral part of the process to make sure the interpretation arises directly from and concretely represents the language and experience of the participants (Saldaña, 2013). The first author first read the transcripts multiple times to document first impressions without starting the coding process. She then coded five interviews (~20 percent of the data set) to create an initial in-process codebook, which she shared with a colleague for peer review, during which they both applied the codebook draft to an uncoded transcript. After clarifying and streamlining codebook terms, including collapsing overlapping concepts, she applied the revised draft codebook to ten more interviews, adding new codes as they emerged. She again shared this codebook draft with a colleague for peer review and further refinement, then applied the updated codebook to five more interviews. At this point no new codes were emerging from the data, which indicated the data was starting to saturate. She inputted this codebook into Excel and added a description and key example from the data for each code (Saldaña, 2013). Again, during this process she merged, split, and reorganized the codes to remove redundancy and make sure each code was distinct and clearly described. Finally, she applied this near-final codebook to the rest of the data. New codes emerged sparsely, and the codebook was saturated before she had finished the interviews. At this point she deductively coded the entire data set with the final codebook (Saldaña, 2013).

Limitations

Interviews were conducted during the summer of 2020, during which the COVID-19 pandemic was still limiting in-person data collection. Therefore, our sample includes only individuals who were willing and available to meet over Zoom or the phone and had access to these services. The sample might have been different if recruiting and/or the interviews were done in person, where the researcher could meet participants in the field or other locations chosen by the participant, could also introduce herself personally to new people, and/or meet new people in passing on the farms or markets. Conversations with some participants might also have been different if interviews were conducted in an informal environment, e.g. working

beside each other in a field, rather than connecting in a more professional setting via technology. Two individuals in particular came up several times during the snowball sampling that we were not able to interview. Though both individuals voiced interest in participating in the study, they were unable to set aside time for an interview because of their busy field work seasons. While we were able to meet the challenges of scheduling remote interviews for land workers, by offering to conduct interviews during evenings and on the weekends, this accommodation did not allow us to include everyone. We did not reach individuals without access to technology or individuals who were unable to spare time during the busy harvest season.

RESULTS

Four primary themes emerged during the emergent analysis to collectively describe present impacts and future goals for the UA system in Toledo: (1) local economy, (2) improved social and physical environment, (3) food security, and (4) relationships. At the core, all the themes relate to improving community wellbeing. Below we describe each theme using participant language to provide context and rich description.

Local Economy

Across all the interviews, participants discussed the potential of UA to benefit the 'local economy'; however, they also all acknowledged that this goal had not yet been realized. Many participants specifically used the phrase 'local economy'. The various meanings of this phrase were all related to earning money (through employment, entrepreneurial endeavors, or skill building opportunities) or spending money within the community.

At the time of the interviews, none of the for-profit growing initiatives in Toledo were robust enough to hire employees. One participant shared, "I feel that probably it's going to take another, I hate to say this, but another 3-5 years, until you'll see what UA can become, what it can do for our city. You can't see any of these economic changes yet." Though participants shared the hope of UA improving community wellbeing through affecting the local economy, many participants shared the belief of that goal being far away.

Several participants shared their hope that participating in UA could especially enrich the lives of younger community members. One participant shared: "What I would love to see is more training for folks to learn how to grow. How cool would it be if they could come and get training in agriculture, maybe some kind of certification, then be able to go start a farm?". A fairly common discussion during interviews was the relevance of UA training for other workspaces. This revolved around the idea that on-farm training would support workforce development across fields that require competency with equipment and tools, horticultural knowledge, and teamwork, as well as business know-how, people skills, problem solving capacity, and a tolerance for adversity. Interviewees emphasized the value of these skills because they open doors to employment opportunities that do not require a college degree, which was important to their vision of community development and the kinds of young people they thought would benefit from UA training. Describing the youth activities as SQACC, one participant explained that in learning how to build beehives and construct fences, youth workers gained familiarity

with power tools, practiced simple carpentry tasks, and were introduced to bee ecology and beekeeping skills. Several other participants also described summer programs at their sites, which, in addition to planting, nurturing, and harvesting produce, focused also on skills like timeliness, responsibility, leadership, and interpersonal communication. In telling these stories, participants demonstrated their vision of UA as having impacts far beyond food security and fresh produce. Their experience in Toledo had shown them the ways UA activities might revitalize the community by providing purposeful work, skills training, and relationship building. They hoped that in the future these outcomes would also be accompanied by economic impacts and increased wellbeing for farmers.

Participants expressed hope that eventually the purchase of locally grown food would route money back to the community, though they had not seen evidence of this yet. They also discussed the value of local food systems for community wellbeing, pointing out the associated nutritional benefits, social benefits, economic benefits, and environmental benefits. They hoped to contribute to their community in these ways. Several participants noted the shorter supply chains between producers and consumers in a local food chain, explaining that a robust system like this would be able to address some of the food security issues they experienced during the COVID-19 pandemic. While participants appreciated the role farmers markets play in connecting residents with local food, many also discussed their hope that Toledo-grown UA produce would make its way into larger grocery stores, as well. One participant noted: "I can walk into a chain grocery store by my house, and I see 'locally grown' stickers. But it's on lettuce coming from Cleveland when there's lettuce right here in Toledo." The participant was pointing out a missed opportunity for Toledo growers, which provides useful insight into the local food system dynamics.

Grocery stores in the area do carry local food. The fact that the stores are sourcing the local food from down the road could be related to several concepts discussed by participants. The stores may not know about the UA produce grown in Toledo. Another possibility is that there is not enough produce grown in Toledo to source at that scale. The lack of infrastructure for supporting supply chains that start with growers and end with produce retailers likely plays a part as well. Still, participants did share some examples of UA-grown produce reaching the wider Toledo community, including the Community Supported Agriculture (CSA) program hosted by Toledo Grows, whereby community members pay for weekly produce boxes from the farm.

Though the scale of this market impact is as-yet small, participants noted that the alternative food source option it provides does contribute to increased local food security. More options like this would allow the community to weather supply chain disruptions more effectively, they argued, while also participating in place-based revitalization.

Improved Social and Physical Environment

Many participants discussed the impact of UA on neighborhood improvement. For some this was a point of pride; they wanted to live somewhere beautiful, and UA could help make that happen. As one participant shared, "You can plant a fruit tree, and yes that is bearing fruit, but it's also doing so much more for the environment. It is improving just the overall appearance and beauty of the neighborhood." For others, UA improved the neighborhood environment by providing "an easy way for people to connect." These are important impacts in places that participants described as marked by vandalism and distrust, a reality that creates a divide within the UA community.

Some participants felt strongly that the beautified and productive UA spaces needed protection. Shared one: "If you don't have fences, you don't have a community garden," while another shared, "A perfect garden would be fenced areas with locks and rules. It can't be a free for all. It doesn't matter how much time you spend making friends. Our produce was still stolen." Participants who advocated for fences felt that garden stewardship is difficult work, made near impossible if growers lose their harvest to theft and vandalism. Other participants felt that barriers like fences detracted from the community-building aspects of UA. This group felt that building relationships and trust with neighbors could prevent theft and vandalism at least as effectively as fencing and could also catalyze more widespread enjoyment of the green space. A third participant described their own experience: "We all grow more than we can eat. We used to tell people, 'Come and take all you want', but people started to bring bags. And you're always gonna have the kids that grab and smash stuff in the street. There will always be the few people who abuse it. You just have to talk to people as individuals. Yeah, some people have been rude, but it's been nothing that we haven't been able to deal with." Participants fell on one of two sides of the fencing issue, summed up by a participant: "Are you trying to make money or feed the community? Your answer to that guides your answer to the fencing question." This statement serves to capture two competing perceptions about the purpose and impact of UA held by Toledo stakeholders, with both sides sharing the goal of contributing to community wellbeing.

The degraded condition of some Toledo neighborhoods participants described also limited the growth of UA, participants explained: "I absolutely would [acquire a vacant lot] but proximity becomes a big issue. ...Toledo is not a walking friendly city. The sidewalks are all different levels, drivers don't care about pedestrians, and there is a level of safety you're thinking about. So, yeah, I would love a lot, but the practicality of getting to that lot or finding one in my neighborhood creates a hell of a problem." While participants spoke often about scaling up the UA system to have greater economic and social impact, they also admitted that persistent infrastructure problems might preclude this growth and stymie community participation.

Food security

A primary goal of the UA system for many of the participants was to provide food for the community and increase access to fresh produce for local consumers. While the current system does produce food for stakeholders' immediate communities and donations to pantries, there is as-yet no established infrastructure for distribution. Describing priorities for future UA development, one participant shared: "I think better distribution channels, because we can grow it, [but] we need to distribute it, whether that's to feed people or make money. Small growers aren't sure how to navigate distribution, networking, that kind of thing." Participants explained that more effective distribution channels are critical for producers, who need the income and opportunity, and consumers. Several participants mentioned food deserts and food insecurity rates in Toledo. Shared one participant, "Giving people access to locally sourced, sustainably grown produce, to improve health outcomes. I think that's the purpose of UA." In some respects, then, the current UA system in Toledo is not yet accomplishing its purpose, but the potential that it might is a driving motivation for many of the participants. As one participant explained: "Getting locally cultivated food into local institutions, like schools and hospitals, is such a huge, missed opportunity right now. They're getting everything imported, so they're really struggling." But beyond putting food in hand, participants were clear that they felt it was their responsibility to provide access to desirable food, which they described as affordable, fresh, healthy, good quality, grown-locally, and culturally appropriate. Participants felt strongly that in addition to economic and environmental benefits, integrating local food into institutions like restaurants, hospitals, and schools would increase the quality of the meals provided in these spaces, which was an important step toward community wellbeing. Improving the nutrition of food served in K-12 schools was especially important for some participants, who saw the value of UA in the

community through the perspective of contributing to the future wellbeing of people and place. This theme of supporting young people through UA initiatives cut across all 27 interviews. Everyone believes UA is one way to contribute to the wellbeing of future generations.

Relationships

Participants often described both the strengths and the challenges of the UA system through the lens of relationships across scales: (1) neighborhood-scale relationships, which include interactions with community members and organizations in UA project areas, (2) city-scale relationships, which describe the interactions (or lack of interaction) between UA stakeholders and policymakers, and (3) UA system relationships, which include interactions between different UA actors and initiatives.

By and large, participants reported a lack of relationships with neighbors in the areas around UA projects, though there were exceptions. One participant described the support they felt in their neighborhood: "We need neighbors like we have in the Junction neighborhood, who really love what's going on [with UA]. It might just be a little community garden, but that's the first step in kind of rebuilding a neighborhood, identity, pride, all that stuff. I would say UA could be one of those mechanisms to resuscitate common cause in neighborhoods." Others were less enthusiastic in their descriptions but did express hope that neighborhoods were shifting: "I think some of the young people coming onto city council are very supportive [of UA]." At least one participant was less hopeful, though, perceiving a lack of community support to be a limitation in the success of the system: "That's really the difference between us [Toledo] and Detroit. They have community investment, especially communities of color investment, and specifically black food investment." While apathetic neighbors may not impede an UA project, they won't help to sustain it either. In the interviews, participants expressed a desire to engage their neighbors, hopeful that relationship building could contribute to further UA development. But they acknowledged there is still work to be done in this effort.

Some also pointed to areas where community support was bolstered by particularly engaged anchor institutions as an example of what is possible. Anchor institutions refer to "placed-based organizations, such as schools, universities, and hospitals, that support their communities by virtue of their mission," (Cunningham et al., 2022) and whose wellbeing is tied to that of the community. In an interview, a participant shared that, "in the Old South End [of Toledo], there's a senior center that's got a couple of thriving community gardens. And … there

is the East Toledo Family Center. So really those neighborhoods that have those institutions [tend to have successful UA projects]." Others identified community organizations as leverage points to catalyze community support, as one participant shared: "I would love it if each neighborhood had some sort of community center engaged in UA. It can be really exciting and really rally people together. People within the neighborhood feel connected to it, take some pride in it, want to work to help maintain it." But, one participant lamented, in the last 15 years "There's just been a total collapse of … neighborhood activism [in Toledo]. It's almost all gone now."

Participants also described limited relationships with and access to policymakers. As one shared, "Learning to work with the decision makers is going to be a big feat in itself." One challenge is a lack of clearly articulated governance regarding UA. "I'm not even sure if my raised beds in the front yard are legal," shared one participant. Additionally, another pointed out, "there are preventative regulations for things that haven't happened yet. I would rather see us move on from some of these regulations that can impede UA, then add regulations as they become necessary." Without access to people involved in local governance, decision making for UA stakeholders can be burdensome. Explained a participant, "I don't know if that's other areas, too, but it's like, if we could have just talked to somebody and had these rules in one spot, we could have solved this problem pretty easily."

Participants described local policies, especially those currently limiting UA, as difficult to understand, and sometimes even difficult to find documented. While some policies are not enforced, participants worried this might change with shifts in leadership, and so they follow them, even when doing so can be confusing and sometimes expensive. For example, one participant shared, their organization received donated greenhouse structures, but were unable to use them. This is due to zoning laws which restrict buildings allowed on specific lot types. The process to get greenhouse structures like these approved by the city is too expensive and time-consuming for most UA stakeholders. This limits the capacity of some UA projects.

The four policymakers interviewed in the study were all identified because of their past engagement with UA activities and/or leadership in neighborhoods where UA has a strong presence. In their interviews, they all expressed positive feelings about UA, and several shared an intention to support UA activities in their district. But these feelings and intentions conflicted with the experiences of the other participants who had little contact with policymakers in their

neighborhoods. This disconnect highlights the limited interaction and relationship between the groups.

Participants described a similar dynamic within the UA community, as well. While UA initiatives operate in similar areas, they explained, they work for the most part independently with little interaction or focus on shared objectives. Participants across stakeholder groups expressed a desire for some kind of central leadership to foster this kind of collective action. According to one participant, "The system is scattered. I think people want to do good things, but they don't know where to look for the resources they need." Another shared a similar sentiment: "Things are kind of disparate. I can't think of any specific challenges, except for just a lack of coordination between groups, a lack of people in leadership positions spurring it forward. That's what, in my opinion, prevents [Toledo UA] from being more than it is." Participants offered several ideas about why this is the case, including personality types and unarticulated objectives. "That's the hard part with urban growers is they're all quiet. They like to do their own thing," one participant shared. "You find out they've been doing some cool thing six years after they started doing it. I think that's one of the biggest challenges that we face, everybody is trying to do it on their own, rather than cooperate together." This lack of collaboration translates to a muddled mission, both within the system and as an outward-facing message. Shared one participant, "We need to educate the city and the county and the leaders on why UA is needed, but first we need to figure out why UA is needed. Do we want to have people have access to free food? To fresh food? To get rid of food deserts? To start businesses for economic development? So, we have to decide why we want these before we go tell the city why we want things. And sometimes I don't think we've done a good job of that. Our message is a little helter skelter."

This disconnect between UA actors seems also to have an impact on participant perceptions about system diversity, as well. While many participants described Toledo UA initiatives as welcoming and diverse, several interviewees mentioned barriers to participation in UA activities and described a somewhat homogenous stakeholder community. They specifically identified a lack of diversity in leadership positions, many of which are held by white, college-educated, middle-class women. Without disparaging these leaders or their efficacy, participants noted that Toledo UA leadership does not currently represent the diversity of the communities the UA initiatives serve.

One reason for the muddy messaging and varied perceptions about the UA system might be the lack of historical knowledge about the UA system. When asked about the history of the Toledo UA, participants shared variations of the same response: “I’m not sure I can provide great historical perspective” or “I wasn’t there for the history.” Several key figures seemed to be the holders of institutional knowledge about the system, but there was no shared understanding about when, where, or how UA initiatives developed in the area. Participants described current norms and relationships similarly, as both informal and localized, i.e. specific to an individual’s experience, rather than integrated into organizational structure. For example, one participant told a story about an agreement between a local landscaping business and one of the UA projects. The business regularly delivers grass clippings and wood chips to the farm for compost, explained the participant, but despite being public knowledge, the agreement is between one individual and the business owner, not the organization. If that one individual were to leave the UA project, the participant speculated, the partnership would likely disappear too. Preserving institutional knowledge like this was understood as a key to achieving UA’s potential to affect community wellbeing.

DISCUSSION

Most of the participants we interviewed shared similar goals for UA in Toledo, including integrating UA into the local economy, improving the local social and physical environment, increasing food security, building relationships with the local community and policymakers, and improving community wellbeing for future generations. But there were stark differences in perceptions of the current system across participants. In the discussion we will unpack these findings by situating Toledo in the broader UA literature, with a specific focus on other systems in the Rust Belt Midwest.

Conflicting experiences within Toledo's UA system

The interviews illuminated conflicting experiences within the Toledo UA system. Some participants viewed Toledo's UA system as a diverse, tight-knit system with strong neighborhood support. At the same time, other participants described a system lacking diversity, with little geographical, organizational, or interpersonal cohesion. These conflicting perceptions were present across stakeholder type, so participants' role in the system was not the determining factor in their perspective.

The phenomenon of distinct experiences within the same system is not unique to Toledo. UA leadership across the US tends to be white, middle-class women who do not represent the communities in which they are working in (Colasanti et al., 2012; Hatchett et al., 2015; Kirby et al., 2020; Stanko & Naylor, 2018). In fact, alternative food initiatives in general, including UA and farmers markets, tend to be disproportionately white spaces, and the racial disparities within UA systems continue to be widely discussed in the literature (Cohen & Reynolds, 2015; Guthman, 2008; McClintock, 2014; Meenar & Hoover, 2012; Reynolds, 2015; Slocum, 2007). This pattern of experiences within UA systems differing based on the race of a participant may also be present in Toledo, but collecting the relevant demographic data was not within the scope of this study.

Related to disparate experiences, participants shared divergent perceptions about the integration of UA activities into neighborhood dynamics. For example, theft and vandalism of UA-developed property was a common complaint across participants. For some, this was deemed a 'threat' needing to be fenced out, while others viewed it as an expected nuisance and a reason to invest in trust-building with UA neighbors. These perceptions of UA neighborhood dynamics highlight the lack of cohesion across the Toledo UA system.

This split between two disparate experiences in Toledo US presents both a hurdle to achieving some of the shared goals that unite UA stakeholders, as well as an opportunity to bridge stakeholder groups toward shared interests and commitments. In interviews, participants shared their ideas about ways to build capacity to address this divide, including a focus on relationship-building between UA actors and initiatives, the development of shared goals and vision, and building a UA hub to house common governance and resources. These proposed solutions reveal the unique character of UA systems in small- or mid-sized cities. Relational solutions are fairly straightforward at this scale; fostering interactions between two dozen stakeholders is a different kind of investment than it would be across the geographical, cultural, structural, and resource boundaries in larger systems. Toledo can potentially learn about how to harness the opportunity and move beyond the limitation from other, larger Rust Belt UA systems, assuming other systems operate similarly.

Toledo and UA systems of other mid-sized Rust Belt cities

While there is limited research on UA in mid-sized cities, the studies that do exist provide useful context for our observations in Toledo. For example, other mid-sized Rust Belt cities including Peoria, Illinois; Pittsburg, Pennsylvania; and Lansing, Michigan, have created UA resource hubs like the one envisioned by several Toledo participants. These centralized gathering spaces provide a place where communities can share tools, strategies, and volunteers, while also building relationships and common commitments (Hodbod et al., 2023; Smebak, 2015; Whitley, 2020). It is useful to have examples in similar landscapes to look to as the UA community in Toledo considers the structure, features, and governance of their own UA hub, especially because an investment in this kind of infrastructure would be a costly undertaking for a small community with limited resources.

Other mid-sized UA systems in Rust Belt cities, including Muncie, Indiana and Cleveland, Ohio, have built capacity for sustainable growth and system resilience by marrying their UA projects to anchor institutions (Chase, 2012; Masi et al., 2014; Wang, 2016). For example, Masi et al. (2014) describe a 6-acre farm in Cleveland that "supports five agricultural enterprises that offer a range of benefits to the neighborhood, including employment, skill-building, high quality produce, and opportunities for community gathering," a collaborative model of urban agriculture that "exemplifies how creative collaboration can contribute to more inclusive urban agriculture in deindustrialized cities." Toledo interview participants did mention

a few anchor institutions in the Old South End, including a senior center and the East Toledo Family Center, but they also acknowledged that these kinds of place-based, mutually supportive relationships used to be more prevalent in Toledo. For example, Toledo Grows had a long-running relationship with the Toledo-Lucas County juvenile court, whereby TG provided youth job training programs and community service opportunities for youth offenders. This relationship was foundational for TG, but over the years, after administrative transitions and a pandemic, these kinds of partnerships have faded, which was reflected in the ways interviewees discussed relationships across scale. Their descriptions of absent relationships with their neighbors, a lack of contact with policymakers, and limited interactions between different UA programs and actors are problematic, given that a key indicator of resilient social systems – those capable of coping, adapting, or transforming in response to stress – is robust social networks and alliances (Kirby et al., 2020). An absence of these networks indicates a potential weakness in the system and illuminates an opportunity for investment toward future thriving.

Other similarities between the Toledo UA system and case studies from other mid-sized Rust Belt cities include an embrace of UA as a strategy to revitalize the local economy (Chase, 2012; Mann, 2009; Smebak, 2015; Wang, 2016). These aspirations are likely driven by the documented impacts of UA in larger cities (Poulsen et al., 2017). While acknowledging the limitations of UA for traditional measures of economic impact, i.e. job creation, fiscal impacts, research does demonstrate the positive impact of UA activities on educational and social impacts related to increased economic vitality. The tie between UA and economic revitalization is so strong, in fact, that UA activities have been linked to gentrification, whereby residents (including farmers) of previously undesirable neighborhoods can no longer afford to live there (Sbicca, 2019; Yuan et al., 2022). Recent work in Detroit, though, found no evidence of gentrification there, despite strong urban revitalization that has been associated in part with UA activities (Hawes et al., 2022).

Hawes et al. (2022) point out that little research on green gentrification, i.e. displacement related to UA impacts on property values, has taken place in what they call legacy cities, which are urban areas that "have faced significant population decline often in conjunction with economic depression and deindustrialization," like much of the Rust Belt Midwest. The large tracts of vacant and abandoned properties in these urban areas, including Toledo, make them especially conducive for UA, unlike cities that have not experienced dramatic setbacks. The

suggestion is that legacy cities operate in inherently different ways than those that have not experienced similar decline, therefore conclusions drawn from research in these cities where gentrification has been shown, e.g. Denver and Dan Francisco (Sbicca, 2019; Yuan et al., 2022), is problematic. This is a similar argument as the one we make here. Gentrification or not, while research demonstrates a connection between UA and urban revitalization in large cities, there is very little research on this association in small or mid-sized cities, thus there is little evidence to support that UA systems in places like Toledo will operate like the UA systems in places like Detroit.

Toledo and UA systems of larger Rust Belt cities

Several of the goals for UA's effect on communities discussed in Toledo are also represented in the literature about larger Rust Belt UA systems. There were few differences in the goals of the two city sizes. The main difference between the UA system of Toledo and those of larger Rust Belt cities was the degree of success achieving the stated goals.

One of the differences I did notice related to integrating UA into the local economy, a shared goal. Toledo and larger Rust Belt UA systems want to integrate UA into the local economy, citing benefits like employment opportunities and alternative sources of income (Colasanti et al., 2012; Stanko & Naylor, 2018). UA being integrated into the local economies of these cities is a shared goal, but concerns are rising within these systems/ in large cities about how this could be detrimental to equity (McClintock, 2018; Paddeu, 2017b; Stanko & Naylor, 2018). Paddeu et al (2017a) reported seeing evidence of economic benefits being pursued over environmental or equity benefits. Though this same mechanism could occur in smaller cities, there was no discussion of this being a concern during my interviews. Mid-sized cities may not have this concern yet because they have not progressed as far in integrating their UA systems into their local economies. The degree of success integrating UA into the local economies of larger cities varied, but generally several successes were present that were absent in Toledo.

Integrating UA into local economies is not the only shared goal between mid-sized and large Rust Belt UA systems. The results of this study and the literature indicate that both system types want resource hubs. Toledo and larger cities identify community attitudes toward agriculture on urban land as a hinderance (Castillo et al., 2013; Paddeu, 2017a; Pothukuchi, 2017; Stanko & Naylor, 2018). When support from the community does not come naturally or cannot be maintained, Toledo and larger cities have cited the need for anchor institutions (Stanko

& Naylor, 2018). Again, there are several examples in the literature of larger cities having made progress toward the goal of creating a "hub" with few if any examples of mid-sized cities having made the same kind of progress.

Growers across larger cities had formal partnerships with local farmers' markets (Broadway, 2009; Hatchett et al., 2015; Paddeu, 2017b; Pothukuchi, 2017). In Detroit, a cooperative brought together smaller growers, providing an opportunity to sell produce at the farmers' markets in a way they could not have individually (Pothukuchi, 2017). Toledo UA growers' experiences with the local farmers' markets varied, though many participants cited that integrating UA growers into the farmers' markets in a more formal way was a key method to grow UA. Though there are no cooperative groups like this in Toledo, these Detroit operations could serve as an example of a "central hub" for mid-size cities like Toledo.

Across city sizes in the literature and interviewees for this study, UA system stakeholders repeat concern regarding the temporary state of UA in municipal policies, especially land use regulations. Several larger Rust Belt cities have adapted existing policies or created new ones to support UA (Castillo et al., 2013; Pothukuchi, 2017). UA stakeholders in Toledo described actively pushing for changes like these. Making changes to policies is one method of solidifying UA's place in a community.

Another way UA is being formalized in cities is through including them in sustainability plans. As sustainability has become a concern for more of the public, policymakers are releasing official sustainability plans outlining actions being taken to address these concerns (Wheeler, 2000). UA has been integrated in sustainability plans published in Detroit (Pothukuchi, 2017) and Philadelphia (Stanko & Naylor, 2018). Detroit's UA is even considered a tourist attraction (Pothukuchi, 2017). Toledo's most recent sustainability plan was released in 2014 (Toledo Lucas County Sustainability Commission, 2014). While this includes goals that are achieved by UA, such as repurposing vacant land, there is no explicit mention of UA. A comprehensive planning assessment, released by the Lucas County Land Bank with the Toledo Planning Commission in 2020, does include "small agricultural gardens" as a recommended use of vacant land (Toledo Exploratory Assessment Committee, 2020). Additionally, the support of policymakers is necessary. Lack of access to water and land for UA projects is common across systems, being discussed across my interviews and throughout larger Rust Belt UA systems (Castillo et al., 2013; Pothukuchi, 2017). Part of this problem is a lack of clarity across municipal processes and

policies that relate to UA. The literature echoes frustrations shared by my participants regarding costly and confusing paths navigated to nurture UA projects.

CONCLUSION

This exploratory research establishes a baseline for UA dynamics in a mid-sized Rust Belt city. This is a first step in understanding commonalities in systems that share key characteristics, i.e. mid-sized Rust Belt cities, while also gaining insight into how systems across distinct contexts might function differently, i.e. small, or mid-sized cities compared to large cities. Our results highlight a host of shared concerns and commitments across mid-sized Rust Belt cities like Toledo, as well as identify commonalities concerns between large and mid-sized UA systems, including a shared goal of economic revitalization through UA activities. Because the UA systems in large cities are more established than the burgeoning systems in smaller cities across the Rust Belt, many have already faced concerns and opportunities that are arising in other places with younger systems, like Toledo. Research and popular news coverage of UA in large cities, including in the Rust Belt, could potentially provide insight into how these more established systems have approached concerns, created systems, or navigated unexpected impacts, thereby preventing roadblocks for younger systems in mid-sized cities. But this published literature could also do the opposite. The dearth of research on the dynamics of UA in mid-sized cities, especially in the Rust Belt Midwest where UA initiatives have a become a growing element of neighborhood revitalization strategies, leads to potentially problematic comparisons between unlike urban contexts that could hamstring smaller systems with ineffective strategies for their contexts and stymie creative problem solving that better suit the specific dynamics of mid-sized cities. More research across urban contexts would help to establish realistic goals and outcomes for UA systems across scale.

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