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## Factors affecting the profitability, productivity, and sustainability of socially disadvantaged urban agriculture operations in Pittsburgh, Pennsylvania

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## **Abstract**

Over the past twenty years, various initiatives and policy updates have encouraged sustainable agriculture production in cities across the United States, yet farmers and growers still face multiple environmental, economic, and social challenges unique to their urban context. This study used a mixed-method qualitative design to identify factors that affect the profitability, productivity, and sustainability of socially disadvantaged urban agriculture operations in Pittsburgh, Pennsylvania. Findings reveal four sets of factors that constrain sustainable agriculture production for socially disadvantaged growers in Pittsburgh: (1) Navigating institutions and support organizations; (2) Finding and maintaining community; (3) Environmental barriers and limitations; (4) Race, gender, and intersections of identity. Comparisons of participant demographic characteristics show that women growers ages 18-34, regardless of race, are more likely to struggle with navigating bureaucracy, finding mentors, accessing relevant information, and experience feelings of isolation compared to growers over age 35. This finding suggests that new and beginning urban growers struggle to navigate the complex systems of non-profit, extension, and federal support programs and organizations in place to support Pittsburgh's agriculturalists. This study has also identified the need for citywide education and extension programming that meets the unique circumstances of urban growers, such as workshops and training that describe best practices for soil remediation, marketing, and distribution strategies for small-scale farms and gardens. This research provides essential insight into critical urban agriculture scholarship and encourages discussion concerning the strengths and shortcomings of existing urban agriculture support services and opportunities for improvement among existing non-profit organizations, government agencies, research institutions, and extension services.

## **Keywords**

historically marginalized farmers, qualitative methods, sustainable agriculture

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## Abstract

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## INTRODUCTION

Over the past twenty years, various initiatives and policy updates have encouraged sustainable agriculture production in cities across the United States, yet farmers and growers still face multiple environmental, economic, and social challenges unique to their urban context. Considerable academic scholarship has identified the benefits of sustainable agriculture and the challenges unique to its practice in urban contexts. For agriculturalists who identify as racial, gender, and ethnic minorities, these challenges are often amplified and compounded by cultural, historical, and socio-economic barriers (Bowens, 2015; Reynolds and Cohen, 2016; Sachs et al. 2016; Rosan and Pearsall, 2018). Little empirical evidence has revealed what tactics urban growers use to navigate the obstacles they face successfully, and even less scholarship has focused on challenges specific to urban farmers from socially disadvantaged groups.<sup>1</sup>

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<sup>1</sup> The Consolidated Farm and Rural Development Act (1961) defines a "socially disadvantaged group" as one whose members "have been subject to racial, ethnic, or gender prejudice because of their identity as members of a group without regard to their individual qualities." USDA regulations further define socially disadvantaged farmers and ranchers as belonging to the following groups: American Indians or Alaskan Natives, Asians, Blacks or African Americans, Native Hawaiians or other Pacific Islanders, Hispanics, and women.

While U.S. urban agriculture production gained notoriety for the Victory Gardens planted to support local food production during World Wars I and II, people have always been farming and gardening in and around metropolitan areas. Since the 1960s and 1970s, Reynolds and Cohen (2016) argue, community gardening has been concentrated in low-income communities and communities of color, where Black, Brown, and first-generation American residents have been growing food in their neighborhoods and hometowns for decades. Gardening has often been historically practiced as a subsistence strategy among low-income residents, but it has also been used as a strategy to increase resident food and health literacy (Levkoe, 2006; Alaimo et al., 2008; White, 2010; SPUR, 2012), community revitalization (Patel, 1991; Feenstra and Lewis, 1999; Armstrong, 2001; Bregendahl and Flora, 2006) and local economic development (Been and Voicu, 2008; Cohen and Reynolds, 2012; Bradley and Galt, 2013).

As urban agriculture's benefits became more broadly recognized throughout the 20th century, urban agriculture experienced a dramatic expansion within academic literature and public media, especially as its practice played an instrumental role in the increase of local food production on a global, national, and regional scale. In 2014 alone, U.S. local food sales totaled at least \$12 billion, a significant increase from the \$5 billion from local sales in 2008 (USDA, 2016). This value was estimated to reach \$20 billion by 2019, attributed mainly to increases in urban food production (USDA, 2016). However, past scholarship has focused on the social, economic, and community benefits of sustainable production and the challenges related to its practice in urban contexts. Findings emphasize the role of environmental and natural resource limitations to sustainable urban practice and traditionally did not explore how deeper issues such as structural racism, gender inequity, and economic disparities disproportionately affect urban farmers and gardeners from socially disadvantaged groups.

Reynolds and Cohen (2016) describe how heightened awareness of food system and environmental inequities, along with the growing recognition of UA's multiple benefits, has led some supporters to see urban agriculture as a solution to various urban problems. Contemporary scholarship has described how positive social, economic, and health impacts related to sustainable urban production include as its promotion of local community development (Saldivar-Tanaka and Krasny, 2004; Bradley and Galt, 2013), improvement of food access and security (Armstrong, 2000; Balmer et al., 2005; Larsen and Gilliland, 2009; Corrigan, 2011), promotion of cross-generational and cultural integration (Balmer et al., 2005; Beckie and Bogdan, 2010), increase in resident food and health literacy (Bregendahl and Flora, 2006; Alaimo et al., 2008), provision of market expansion for local farm operators (Feenstra, 1999; Kremer and DeLiberty, 2011), and promotion of awareness of environmental issues and ethics, sustainability, and local food systems (Bregendahl and Flora, 2006; Kerton and Sinclair, 2009; Travaline and Hunold, 2010).

At the same time, the literature on social sustainability has shown that deeper issues such as structural racism, gender inequity, and economic disparities disproportionately affect urban farmers and gardeners from socially disadvantaged groups (Bowens, 2015; Reynolds and Cohen, 2016; Sachs et al., 2016; Rosan and Pearsall, 2018). The results of limited outreach and engagement are visible in studies whose results show that urban operations struggling the most to establish and maintain sustainable practices are located in low-income communities of color (Birky, 2009; Cohen and Reynolds, 2014). A growing body of research strives to recognize how race, gender, and ethnicity complicate barriers and opportunities for urban farmers, especially as contemporary scholarship calls for a focus on the intersectional issues which lie at the core of social justice in agriculture.

Using a mixed-methods qualitative design, this paper addresses these gaps in urban agriculture research by identifying factors that affect the profitability, productivity, and

sustainability of socially disadvantaged urban agriculture operations in a city that has been identified as a leader in progressive urban agriculture policy in the United States: Pittsburgh, Pennsylvania (Lawson, 2005; Haywood, 2017).

## **METHODS**

This is a qualitative study integrating photovoice, semi-structured interviews, and participant observation. The photovoice approach used was first raised and systemized in the literature by Wang and Burris (1997), who applied photography training, visual information, and community participation for policy change by creating, defining, and utilizing images. This method allows the participatory photographers to act as peer researchers and change-makers, providing local perspectives to critical issues through their visual lens and utilizing their insider identities and established social relations.

Data collection for this study's photovoice portion took place during the project's reflection meeting in early June 2019. Before the reflection meeting, participants met in early May 2019 for an information session. During this orientation, participants became acquainted with this study's origin, the purpose of this project, and its methodology. This meeting took place in-person at a local community center and lasted 95 minutes. At the end of this orientation, all participants were provided a Lomography Simple Use film camera to complete the photovoice process's photography portion. Next, participants were given three weeks to take photographs aligned with the group's theme, which was democratically chosen during the project orientation session – "Beauty from Blight." At the end of the photography period, the primary investigator coordinated camera pick-up with all 18 of the photovoice participants and developed all photos in preparation for the photovoice reflection meeting. During the reflection meeting, participants selected 12 photos they wanted to include in the project's photography gallery. For each of these photos, they were asked to write a two or three sentence narrative caption using a worksheet that described their photograph and its connection to the project's chosen theme. The photovoice reflection meeting was modeled after unstructured discussion group methodologies, which set aside time for participants to build rapport, ask questions, and switch topics based on conversation flow (Nagle and Williams, 2016). The meeting took place in-person at a local community center and lasted for 110 minutes. Written consent was obtained from all participants before the reflection meeting. Detailed notes were taken during the photovoice meeting, and all personally identifiable information was redacted.

Semi-structured interviews began in January 2019 and concluded in June 2019. This study's interview instrument consisted of open-ended questions organized into three categories: food systems work, perspectives on urban agriculture, and perceptions of challenges faced by socially disadvantaged urban agriculturalists. The individual interview instrument allowed for follow-up and probing questions included and used if appropriate during the conversation. Twenty-four interviews were conducted in-person, ranging in location from non-profit offices to backyard gardens to favorite coffee shops and restaurants. To accommodate participants' schedules or poor weather, six interviews were conducted via phone. Interviews ranged from 9 minutes to 2 hours and 22 minutes, with an average length of 50 minutes. All interviews except two were audio-recorded and transcribed verbatim using a transcription service. All personally identifiable information was redacted from each transcript.

Participant observation took place at various community events, environmental and agriculture workshops, community garden and urban agriculture non-profit volunteer opportunities, working group meetings, and urban agriculture networking events. During and after each event, meticulous notes were taken in a field journal and documented observations,

reflections, concerns, musings, and moments of happiness and frustration as a participant observer. A total of 15 weeks was spent in Pittsburgh between January and June 2019.

### **Study location profile**

As of 2014, Pittsburgh's metropolitan statistical area boasted almost 8,000 farms, comprising over 908,000 acres of farmland (Rogus and Dimitri, 2014). Pittsburgh's commitment to sustainable urban agriculture and the improvement of community-based food systems is witnessed through policy and programming enacted by the Pittsburgh Foundation, Pittsburgh City Council, Grow Pittsburgh and the Pittsburgh Food Policy Council. Moreover, with South Pittsburgh's Hilltop Urban Farm having been recently named the largest sustainable urban agriculture operation in the United States (Zuidema, 2018), Whitley (2020) hypothesizes that the city will soon become synonymous with urban agriculture excellence in the Northeast.

### **Research sample**

Purposive sampling was used to explore the views of urban agriculturalists who identify as members of socially disadvantaged groups. To participate, subjects had to identify as having some connection to urban agriculture, be a woman between 18 and 85 years of age, and reside in Pittsburgh, Pennsylvania. This study explicitly recruited individuals who identified as women of color to highlight the experiences of urban agriculturalists representing racial and ethnic minorities. In total, 36 women participated in this study, whether through an in-depth interview (N=30) or via participation in the photovoice project (N=18). Eleven participants chose to participate in both an individual interview and in the photovoice project.

This study's research sample included three categories of participants: education and/or extension experts, urban agriculture non-profit representatives, and Pittsburgh residents who identified as urban farmers, gardeners, and/or growers. Due to the overlapping nature of these positions, some participants self-identified within more than one category. Figure 1 (below) describes participants and their associations with agriculture in Pittsburgh.

### **Data analysis**

This study utilized the framework analysis method to examine all qualitative data. Twenty-eight interviews were audio-recorded and subsequently transcribed using a professional transcription service. In addition to the interview transcripts, photovoice reflection meeting observations, notes from participant interviews, and 15 weeks of participation were included in the data analysis process along with the narrative captions written by participants during the photovoice discussion. All data were coded using Version 12 of the NVivo Qualitative Analysis Software.

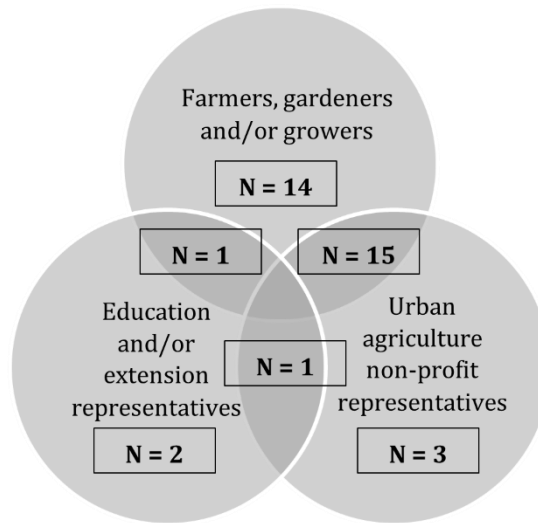


Figure 1. Description of Participants (Total N=36)

## DISCUSSION

Data analysis revealed four sets of factors that constrain sustainable agriculture production for socially disadvantaged growers in Pittsburgh: (1) Navigating institutions and support organizations; (2) Finding and maintaining community; (3) Environmental barriers and limitations; (4) Race, gender, and intersections of identity.

### Navigating institutions and support organizations

Many participants described how bureaucratic red tape, finances, lack of relevant information, and concerns about land access and tenure pose significant limitations to their urban agriculture operations' sustainability. Some women explained that legal access to vacant or abandoned land could be a complicated process to navigate, which often left them feeling frustrated, isolated, or led astray by government and policy officials. Though city-sponsored programs are in place to encourage and promote land accessibility for Pittsburgh's new and beginning growers, lack of information and program support staff remain a pivotal inhibitor to land access. Navigating through the bureaucratic maze of urban land and utility access is made more difficult from grower frustration with a general lack of information.

Limited funding and lack of credit was a universal concern amongst participants, especially for new and beginning growers who were not already part of established urban agriculture non-profit networks. Growers, especially those who operate outside of community garden networks, described the financial commitment it took to yield a favorable harvest. Some women even resorted to borrowing money from family and friends to make necessary investments in their operations. Growers especially felt "in the dark" about how to access loans and mindfully expand and sustain their operations or are unaware of what financing opportunities exist for their operation type.

Accessing relevant information was an additional concern for participants in this study. Many respondents, especially those working for agricultural non-profit organizations, cited lack of relevant information as a significant barrier for Pittsburgh's historically underserved farmers and growers. Without education on the nuances of selling food grown on city-owned land, operators can face significant financial barriers, affecting the long-term sustainability of their farm or garden. The

lack of baseline information, particularly materials related to accessing land, soil, water, and seedlings, are concerns.

Though all respondents had access to spaces where they could grow food, only one woman – a farmer between the ages of 45-54 – owned the land on which she grew. Many participants take advantage of Pittsburgh's Adopt-A-Lot/Farm-A-Lot program, and although they were granted access to grow land on city-managed plots, they remain concerned about their inability to secure that land for extended periods. Individuals who rely on year-by-year leases, unable to secure long-term agreements, risk losing any invested infrastructure if the city decides not to renew their plot. This reality is especially concerning for those who grow in increasingly gentrified neighborhoods, as green space and community gardens are considered attractive for many residential development associations. Respondents described how the prevalence of vacant lots is one reason Pittsburgh remains attractive for increased sustainable urban agriculture production. However, without protected land tenure for urban agriculture operators, farmers and growers will remain vulnerable to potential redevelopment efforts.

### **Finding and maintaining community**

Along with the challenges associated with navigating local government structures, participants found communication, or lack thereof, to inhibit the sustainability of their operations. New and beginning growers spoke of the difficulty they had in contacting established growing operations and urban agriculture non-profits. Frequently, growers expressed concern for the lack of communication within urban agriculture and with agriculture in general. These women were outsiders to urban agricultural systems in the truest sense, as they felt "shut out" and "abandoned" from the city's community of farmers and growers.

For community growers, inconsistent volunteers were one of the biggest obstacles for operation sustainability. Citing lack of dedicated time and difficulty committing to regular volunteer hours, some gardens have fallen into disrepair due to lack of interest and upkeep, which is a constant threat for non-profit-led gardens that rely on volunteers for consistent labor. Respondents who operate in predominantly Black neighborhoods described how volunteer-heavy days, often the result of citywide events, frequently occur without warning and result in farms and gardens not being prepared for the labor supply.

Despite their residence in Pennsylvania's second-largest urban center, participants cited isolation as one of the biggest challenges for growing food in the city. Many new and beginning growers spoke of the difficulty they experienced "breaking into" established urban agriculture networks, especially those within non-profit sectors. Some attributed their connection difficulties to their lack of pre-established contact with someone currently working in the UA non-profit realm. It seems that one must already be part of a community garden or larger organization to cultivate an urban agriculture operation successfully for many growers. Some growers, especially beginning Black participants, identified lack of mentorship as a significant challenge for their UA operations. Lonnie, an established farmer and agriculture non-profit representative, described how, when she was starting, there was no one she could look to for advice, "no one who'd done sustainable urban agriculture in Pittsburgh at all. White or Black." "Even though we're in this place that's technically urban," Cecily explained, "you still feel like you're alone in the work that you're doing and like there's nobody to help you." Some participants shared experiences of formal mentorship opportunities that had ended poorly, thus souring personal and professional relationships. For these individuals, many felt as if they could no longer operate in the same circles as their former mentors for fear of financial or social retaliation.



### **Environmental barriers and limitations**

Participants identified three main environmental issues as being detrimental to their work in urban agriculture: soil quality, water access and quality, and the prevalence of vermin. Poor soil quality is a particularly tricky challenge for Pittsburgh's agriculturalists. Though there are thousands of vacant plots within the city, most of these parcels contain land with a high prevalence of lead or other pollutant chemicals. Contamination was a collective concern – 100 percent of participants identified soil quality as having affected or currently impacting their agricultural work.

Furthermore, Pittsburgh's agriculture spaces are heavily segregated in terms of what land has been deemed suitable for food production and, demographically, by race. The segregated landscape results from long-standing policies that have isolated Pittsburgh's communities of color, resulting in limited access to land and its tenure. This segregation influences a grower's capacity to produce and affects the conditions under which they grow.

### **Race, gender, and intersections of identity**

When asked if their own social identities have influenced their urban agriculture experiences, respondents identified the four following themes as affecting their work: representation, legitimacy, historical trauma, and identity intersections. Many participants noted the prevalence of women working in urban agriculture spaces. "I think the food systems world in Pittsburgh is dominated by women, explained Natasha. "It's mostly white women who are working [in this space], who are caring about these issues and doing the work." Still, study participants described how limited inclusion in resource allocation and inconsistent, inaccessible education and training opportunities had made Pittsburgh's agriculture spaces challenging to participate in. Though many growers possess traditional agricultural knowledge that has been passed on from friends or family members, lacking a certificate or agricultural-related degree, they are commonly excluded from formal mentorship, education, or training positions frequently enjoyed by white growers.

Respondents also shared how a severe lack in the representation of farmers of color in conversations about public policy and neighborhood revitalization has negatively influenced their work. Urban agriculture non-profit representatives, particularly those who work and grow in predominantly Black neighborhoods, described how the "experience barrier" – not having lived, worked, or socialized in Pittsburgh's communities of color – is one of the main difficulties they experience when applying for resources or working on policy committees.

### **CONCLUSIONS**

Comparisons of participant demographic characteristics show that women growers ages 18-34, regardless of race, are more likely to struggle with navigating bureaucracy, finding mentors, accessing relevant information, and experience feelings of isolation compared to growers over 35. This finding suggests that new and beginning urban growers struggle to navigate the complex systems of non-profit, extension, and federal support programs and organizations in place to support Pittsburgh's agriculturalists. Finances were a challenge experienced by women of all ages and races. Some respondents attributed this struggle to a lack of credit or personal finances, while others attributed this challenge to a lack of knowledge on applying for grant programs. Land access and tenure were also a challenge experienced by respondents of all ages and races, though white women between the ages of 25 and 34 were particularly vocal about this struggle. This finding may be due to the tendency for white respondents in this sample to operate as solo growers, not as members of community gardens or farming cooperatives. Also, African American or Black respondents were more likely to identify "community support" as a challenge to their agricultural operations. This may be due to the likelihood of urban growers of color in this sample to operate in

shared community garden spaces, not on solo operations. Regardless, to lessen these challenges, findings suggest the need for education and extension programming that meet the unique circumstances of urban growers.

For urban agriculture policies to justly acknowledge social justice issues within agricultural spaces, support organizations might begin by supporting such groups financially. Reduced price or free soil testing, for example, might be provided to operators who qualify under the USDA's definition of socially disadvantaged farmers and ranchers. At the programmatic level, as gender-, race- and ethnically-rooted coalitions continue to rise within urban agriculture spaces, public and private officials should continue to support and encourage such organizations through representation on committees, task forces, and leadership positions, and via resource, finance, and labor provisions. These opportunities might be advertised through community communication channels, not through press releases or governmental memos. Also, paperwork submission systems should be transferred to online applications to eradicate costs associated with repeated transportation to government offices that are only open during working hours and create a more equal application process. Standardizing application systems and provision of reduced-cost testing services to marginalized agriculturalists will create a more equitable process for accessing land and services in urban food systems.

Future urban agriculture research should consider the conditions of agricultural and environmental education and extension programs that are most accessible and helpful for the city's growers. Information collected during this study is well suited to begin answering this question, though further data collection and analysis is needed to fully understand what education programs and workshops and resources are most needed. At the practical level, future academic scholarship should meet the needs of growers. In this study, many respondents expressed the need for data that support urban soil health and remediation and information on marketing and distribution strategies for small-scale farms. Participants hope that future research continues to utilize participatory and community-led studies that provide baseline information on agricultural policies, programs, services, and their effects on participants, while simultaneously connecting urban agriculture to broader social justice issues. To make support programs and services more equitable for socially disadvantaged groups, assessments should identify how workshops and education sessions can be made more accessible to farmers and gardeners. It would also be best for urban agriculture professionals to consider how growers most conveniently acquire information – whether that be through in-person instruction, Internet knowledge hubs, or through social media networks.

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