



Social solidarity, social infrastructure, and community food access

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Abstract

This study examines the case of community resource mobilization within the context of a farmers market incentive program in Washington D.C., USA to illustrate the ways in which providing opportunities for people impacted by food inequities to develop and lead programming can help to promote food access. Through an analysis of interviews with 36 participants in the Produce Plus program, some of whom also served as paid staff and volunteers with the program, this study examines the ways that group-level social interactions among program participants helped to ensure the program was accessible and accountable to the primarily Black communities that it serves. Specifically, we explore a particular set of social interactions, which we collectively term social solidarity, as a community-level form of social infrastructure that program volunteers and participants mobilized to support access to fresh, local food in their communities. We also examine the elements of the Produce Plus program that contributed to the flow of social solidarity within the program, providing insight into the ways in which the structure of food access programs can serve as a social conduit to facilitate or hinder the mobilization of community cultural resources like social solidarity.

Keywords Social solidarity · Social infrastructure · Farmers market · Incentive program · Mutual aid · Food justice

Abbreviations

PP Produce plus
PPD Produce Plus Direct
FMB Farmers market brigade

Introduction

Access to fresh fruits and vegetables is important for promoting the health of individuals and communities. Consumption of the recommended amount of fresh fruit and vegetables is associated with numerous positive health outcomes, including a lower incidence of obesity and chronic diseases like cancer, stroke, diabetes, and heart disease (Aune et al. 2017; Centers for Disease Control and Prevention 2018; Van Duyn

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and Pivonka 2000). Conversely, lack of fruit and vegetable consumption and disparities in consumption levels is associated with increased risk of chronic illness, such as hypertension, cardiovascular disease, stroke, obesity, diabetes, osteoporosis and certain cancers (Duthie et al. 2018). Disparities in access to fresh fruits and vegetables help to explain inequitable health outcomes among historically marginalized groups. In Washington D.C., the distribution of grocery stores is one example of inequitable access to fruits and vegetables. In 2021, D.C.'s Ward 8 (population of 80,000, 92 percent identifying as Black) was home to a single full-service grocery store, while D.C.'s Ward 3 (population of 84,000, 81 percent identifying as White) was home to 13 full-service grocery stores (D.C. Health Matters 2021; D.C. Hunger Solutions 2021).¹

Disparities in food access can be framed using the social ecological model's description of upstream and downstream factors (Andress 2017). Numerous upstream structural inequities shape food access, including the location of grocery stores, farmers markets, and other food sources; transportation access; disparities in employment and income; and racial residential segregation (Caspi et al. 2012; Smith 2017; Tach and Amorim 2015; White et al. 2018). These factors are representative of macrosocial inequities that contribute to the unequal distribution of resources that promote health. In response to these inequities, groups have mobilized resources at the meso- or community level, in the forms of self-help, mutual aid, and social solidarity, to ensure the survival and wellness of community members (Reese 2019; Yosso 2005).

This study examines the case of community resource mobilization within the context of a farmers market incentive program in Washington D.C., USA to illustrate how community social resources can help to promote food access. We focus specifically on the Produce Plus program, a farmers market incentive program administered by D.C. Greens and the D.C. Department of Health.² Through an analysis of interviews with 36 volunteers and participants in the Produce Plus program, this study examines the ways that group-level social interactions among program participants helped to ensure the program was accessible and accountable to the

primarily African American communities that it serves. Specifically, we explore a particular set of social interactions, which we collectively term social solidarity, as a community resource that is mobilized to strengthen social infrastructure and can also be an effect of particular forms of social infrastructure.

Previous research has examined the effect of social environment on food insecurity, pointing to the dynamic relationship between food insecurity and social-ties formation. In these formulations, food insecurity is mitigated by social resources like social networks and social connection, what the sociology literature had usefully termed social capital (Flora et al. 2018). Martin et al. (2004) found that households with greater social capital at both household and community levels—which they measure as trust, reciprocity, and social networks—were less likely to experience hunger, irrespective of socio-economic factors. Likewise, in Leddy et al. (2020), women reported drawing on bonding social capital (support from their primary social group) and bridging social capital (individuals from other social groups or institutions) to reduce household food insecurity.

Neighborhood level social cohesion and trust, the social capital residents possess, have been shown to mitigate food insecurity type and severity (Best and Johnson 2016; Martin et al. 2004; Leddy et al. 2020). Investigating a high-impact mobile farmers market program that served low-income residents in D.C.'s Wards 7 and 8, Best and Johnson (2016), for example, found reciprocal social networks were an effective resource that community organizations, in partnership with community stakeholders, could leverage to improve food access. They apply Granovetter's (1973) seminal "strength of weak ties" thesis to capture the unifying power of weak ties (ties between people we sort of know) that function as a bridge to others and enable broad diffusion of information across groups. Best and Johnson (2016) document how the formation of weak ties between staff and customers through market exchanges that centered dignity and respect, combined with organizational networks with local institutions which function as social infrastructure, like churches and local community groups, facilitated trust bonds. These bonds, in turn, spurred word-of-mouth outreach by customers, thereby expanding the mobile market's reach, which itself became part of the community's sustaining social infrastructure.

Other research demonstrates that civic structure and collective efficacy at the neighborhood level also mediate food insecurity (Brisson and Altschul 2011). Morton et al. (2005) point to the importance of a community's civic structure, including local leadership, cooperation of several interacting groups, and collective action by community residents as a critical lever in reducing food insecurity in communities with few conventional food stores. Yet, how social capital affects food insecurity is not sufficiently understood in part

¹ A recent analysis found that Wards 5, 7, and 8 have "some of the highest numbers of farmers markets and stands in the District" and a greater number of Healthy Corner stores than other areas in DC (D.C. Hunger Solutions 2020, p. 10). Even with these critical resources, the report (D.C. Hunger Solutions 2020, p. 4) concluded that residents in Wards 5, 7, and 8 "still lack sufficient and reliable access to healthy and affordable food".

² This study examines participants' experiences with two versions of the farmers market incentive program: Produce Plus (PP), implemented prior to the COVID-19 pandemic, and Produce Plus Direct (PPD), the pandemic version of the program.

because social capital is often examined as an individual attribute and much less as a collective entity belonging to a group. This study seeks to contribute to this conversation, highlighting the interactional and organizational mechanisms by which social solidarity is mobilized as flows, connecting individuals and groups through food-based nonprofits that function as social conduits. We consider social solidarity as a specific type of social capital that is collectively held. As we examine the elements of the Produce Plus program that contributed to the flow of social solidarity within the program, we provide insight into how the structure of food access programs can help to facilitate the mobilization of community cultural resources, like social solidarity.

Social infrastructure and social solidarity

From years of research in rural communities, Flora and Flora (1993, p. 49) contend that while physical infrastructure and leadership training are necessary to community development efforts, neither are sufficient without the addition of social infrastructure, “the group-level, interactive aspect of organizations or institutions.” This definition of social infrastructure includes social capital, trust building, and networks (Kimmel et al. 2011), “specifically collective or explicitly interactive elements” (Flora and Flora 1993, p. 50). Social infrastructure “resides in symbols and interactions, not in individuals or things,” and thus “is less tangible and thus more difficult to measure than either physical infrastructure or human capital...” (Flora and Flora 1993, p. 49). Social infrastructure is a key component of community development, linking the built environment with individual-level capacities, such as leadership skills (Klinenberg 2018).

Social capital, a component of social infrastructure, consists of connections and relations among people (Lachapelle et al. 2020). It “involves mutual trust, reciprocity, groups, collective identity, working together, and a sense of shared future” (Flora et al. 2018, p. 28). Networks and norms that facilitate cooperation, coordination, and participation for mutual benefit are also aspects of social capital (Putnam 2000, as cited in Lachapelle et al. 2020). In our work, Flora et al.’s (2018) concept of bonding social capital is particularly important in part because program participants generally shared similar social characteristics and often knew one another in contexts outside of the Produce Plus program. Additionally, participants showed close emotional connections and strong social ties (Emery and Flora 2006). This contrasts with the more contractual single- or instrumental-purpose orientation characteristic of what Flora et al. (2018) call bridging social capital.

The forms of social solidarity we discuss in this paper emerged inductively from our data analysis and also align closely with conceptualizations of African American

community development (e.g., Schiele et al. 2005), community cultural wealth (Yosso 2005), and empowerment theory (Gutiérrez and Lewis 1999). We see social solidarity as a set of actions and interactions that are characterized by the values of trust, reciprocity, mutuality, care, advocacy, and accountability. These values were expressed in concrete ways by program participants as they actively sought to expand the reach of the program in their communities and to treat program participants as neighbors and extended family members.

In our conceptualization, social solidarity can be defined as a flow of energy that is driven by various social processes (Fig. 1). Community programs such as Produce Plus act as social conduits that embody this energy, making it more tangible and visible. In the sociology literature, social conduits are “places that support routinised interactions between regular users, encourage frequent interaction and contribute to the development of a shared identity” and are linked to improved social networking, social cohesion, and place attachment (Wickes et al. 2019, p. 239). In our formulation, social conduits function as spaces for social solidarity to flow through and may even strengthen its connective fiber, though social conduits are not usually directly responsible for its initial formation. Social solidarity resides in social connections between people.

Randall Collins conceptualizes social solidarity as a “shared energy” and “intersubjective focus” (Collins 2004, p. 32), that is embedded in human encounters that are “charged up with emotions and consciousness” (Collins 2004, p. 3) and produce “solidarity and symbols of group membership” (Collins 2004, p. 7). Social solidarity operates as an emotional energy that gives meaning to action that facilitates reciprocity, a sense of collective belonging and trust bonds. Multiple factors along the socioecological model contribute to the flows and disruptions of this connective energy. Factors that encourage a positive flow include but are not limited to community awareness and mobilization, positive reciprocal exchange, social infrastructure, resource sharing, and collaboration. Some factors that negate these include social isolation, lack of community awareness, insufficient community outreach and communication, barriers to access, inadequate or poorly perceived quality of resources, and lack of accountability among agencies. Figure 1 captures the flow of social solidarity and its movement within social conduits.

In this study, we show how social solidarity was expressed and generated by program volunteers and participants. We demonstrate the ways these interactions formed a particular type of social infrastructure that helped to improve the incentive program’s reach and operation. As social sector programs work to become more equitable and culturally responsive, centering and investing in people living in communities that have been historically marginalized is

Fig. 1 Flow of social solidarity

Social solidarity can be defined as a flow of energy that is driven by various social processes. Community programs such as PPD act as physical vessels that embody this energy, making it more tangible and visible. These vessels provide spaces for social solidarity to exist and move through but are not directly responsible for its facilitation. Both internal and external factors contribute to the flows and disruptions of this energy.



important. As part of our analysis, we highlight the ways specific elements in the Produce Plus program helped to facilitate the mobilization of social solidarity. In doing so, we contribute to the recognition of community cultural resources, such as social solidarity, and by extension social capital, as important meso- or community-level factors mediating food access and the program specific factors that can enable or constrain the expression of these resources.

Study context: Washington D.C.

The setting for this study, Washington, D.C., is an important site for studying disparities in food access and community resistance to them. Deeply rooted inequities continue to shape the modern food landscape in Washington, D.C. For example, income disparities in D.C. are significant: the top 20 percent of households hold 56 percent of all income in the District, compared to the bottom 20 percent, which hold just 2 percent of the total income (Naveed 2017). Most households with the least access to income live in Wards 7 and 8 (as defined by the 2010 Census), where 92 percent of residents identify as Black (D.C. Health Matters 2021). Households in Wards 7 and 8 also experience significant disparities in access to employment, with unemployment rates of 16–18 percent, more than twice the District average of 7.3 percent (D.C. Health Matters 2021). These inequities, among others, have created concentrated zones of poverty in the District, leading to limited access to resources and opportunities for communities of color.

In response to racism and social exclusion, Black communities in Washington D.C. have developed models of self-sufficiency and community sustainability. As Reese described in *Black Food Geographies* (2019), food production sustained the residents of Deanwood as the D.C. neighborhood evolved into a self-reliant Black community during the first four decades of the twentieth century. Many Deanwood families used personal yards and common spaces to grow poultry and produce for their own consumption, and for sharing with neighbors. Additionally, food business was an important means of upward social mobility for residents of the neighborhood. Black Washingtonians sold produce from homes, carts, and wagons throughout Deanwood, and in other areas of the city such as Florida Avenue Market (Reese 2019). Many Black-owned storefronts in the District sold groceries as well; beyond offering food, these stores often served as key sites of community building and mutual aid under Jim Crow (Meghelli and Hazzard 2021). Reese's anthropological research points to the value of this social cohesion and reciprocal human exchange as a driving force behind Black residents' robust participation at farmers markets and support for community-based food resources (Reese 2019).

By the 1950s, supermarkets emerged as a major component of the District's food retail landscape, crowding out many of the small grocers and public markets where Washingtonians traditionally purchased groceries. In the early 1960s, supermarket corporations began consolidating and shifting to larger-format suburban stores. This combined with major capital disinvestments in increasingly racially segregated districts and neighborhoods, like Wards 7 and 8,

intensified systemic inequities in access to healthy foods and other community-based resources.

Black Washingtonians responded by building and deepening social infrastructure for resource sharing and collaboration; this often took the form of food cooperatives, which blossomed across the city in the 1970s (Reese 2019). In Southeast D.C., for example, a group of poor and working-class Black women leveraged their existing networks of care and federal Community Action Program funds to establish a web of food buying clubs. In 1970, one of the clubs transitioned to become a brick-and-mortar store, the Martin Luther King Jr. Co-op. Notable for its location inside a public housing complex, the community-run grocery store remained in operation for almost a decade (Meghelli and Hazzard 2021). Still, between 1968 and 1978 alone, half of the District's supermarkets left the city; the losses were especially stark in Southeast D.C. Today, Eastern Market is the only public market remaining in the city. And of the 49 full-service grocery stores in D.C. in 2021, only three were located in Wards 7 and 8.

Additionally, Washington, D.C.'s Latinx and Hispanic communities have a rich history that highlights the diversity of the region. As Singer (2007) explains, the first Latin American and Caribbean immigrants originated from the Dominican Republic and Cuba during the 1950s and 1960s. During the 1960s, there were heavy waves of migration from Central America that mostly included women, domestic workers, and international staff (Singer 2007). By the 1980s, there were large populations of Central American immigrants in the Adams Morgan and Mount Pleasant D.C. neighborhoods. From 2000 to 2010, the Latinx and Hispanic populations in the District have grown exponentially in all D.C. Wards, with the exception of Ward 1. According to the Mayor's Office on Latino Affairs (2013), Latinx and Hispanic residents are highly underrepresented in the Census but have officially grown from 2.8 percent of total residents in 1980 to 9.1 percent by 2010. Today, most Hispanic and Latinx D.C. residents originate from El Salvador.

The Produce Plus program

The Produce Plus program is a farmers market incentive program that connects Washington D.C. residents who participate in at least one government assistance program with fresh produce from local farmers markets. The program also aims to support local farmers by increasing customer participation in neighborhood farmers markets. Produce Plus was implemented by D.C. Greens, a local nonprofit, from 2016 to 2020 in partnership with the D.C. Department of Health. During the first four years of implementation, the number of customers

participating in the program increased from 7045 in 2016 to 8586 in 2019 (D.C. Greens and D.C. Health 2019).

Under the pre-COVID-19 pandemic Produce Plus model, participating customers were eligible to receive two sets of \$5 checks each week to spend at a local farmers market from June to September. The program hired Produce Plus participants as Market Champions to conduct program outreach, support Produce Plus participants at market, and aid in the development and implementation of the Produce Plus program. In addition, the program maintained a Farmers Market Brigade (FMB) volunteer program; FMB volunteers distributed Produce Plus checks at local farmers markets from 2015 to 2019.

Market Champions and FMB volunteers played a significant role in the design and implementation of Produce Plus. Market Champions provided feedback and suggested changes to Produce Plus's communication materials and permanent signage at markets. Market Champions and FMB volunteers shaped program policies and procedures by identifying what worked and what could be improved within the program overall and at individual markets. For example, Market Champions were involved in decisions to adjust the increments that Produce Plus checks were distributed and in the transition from a paper-based to a digital tracking and distribution system. Market Champions and FMB volunteers raised issues with structural and interpersonal racism at a particular farmers market, which Produce Plus staff worked with market staff to address. One Market Champion also served as a representative on the Produce Plus planning team that met each winter and spring. During the Produce Plus season, Market Champions and FMB volunteers conducted the bulk of the on-the-ground outreach. They were usually the first people Produce Plus participants interacted with when visiting markets and helped shape what the atmosphere was like at their assigned market. This work included organizing individuals into lines for registration, registering participants, distributing checks, answering participants' questions, resolving any conflicts that arose, and helping participants navigate markets.

The version of the program implemented during the COVID-19 pandemic, rebranded the Produce Plus Direct (PPD) program, contracted with 17 vendors to provide prepackaged or market-style produce that was offered via delivery or pickup to eligible D.C. residents. As the research team interviewed primarily returning participants, this study discusses participants' experiences with both versions of the program.

Methods

The analysis presented here is part of a larger mixed methods research project designed to understand how Produce Plus Direct program participants experienced program changes

that were implemented to respond to the COVID-19 pandemic. As part of this project, a team of six university-based researchers partnered with Market Champions, PPD participants who were hired as paid program staff, to recruit what the program referred to as returning customers, participants who had engaged with the program pre-COVID and in the current program year. PPD Market Champions recruited 68 interview participants by asking individuals at PPD pickup sites if they would like to participate in an interview.

All 68 customers recruited by the Market Champions were contacted by the research team, using the customer's preferred method of communication (phone, text, or email). Of the 68 customers contacted, 28 agreed to participate in an interview and were interviewed by phone. Informed consent was obtained from all individual participants included in the study. Customers who were interviewed were asked to recommend anyone they knew who might want to participate in an interview to share their feedback about the program. An additional 11 customers were identified through this snowball sampling method. From the snowball sample, eight customers were interviewed by phone. Of the 36 customers interviewed, five also served as program volunteers.

Taken together, the research team completed 35 interviews with a total of 36 customers in September and October 2020. (One interview included both a mother and son who were prior program participants.) Of the 36 customers interviewed, 31 were returning customers, three were new to the program in the 2020 season, and two participated in prior years but were not able to register in 2020. While the research team did not collect demographic information from participants, the research team estimates, based on participants' interview responses, that about half of the interview participants were seniors and about one fifth lived in a household with at least one child. These demographics are generally representative of the Produce Plus program over the past three years, as the program has transitioned from primarily serving seniors to expanding to serve younger participants with children (D.C. Greens and D.C. Health 2019; Kerstetter et al. 2021). Interviews were audio-recorded and transcribed by members of the research team for analysis.

Interviews were designed to understand the registration process, how participants accessed food provided by PPD, and barriers to access. Interviews also investigated participants' assessments of the prepackaged food in terms of quantity, quality, and variety and in relation to food preparation, food consumption, and food waste. Questions were largely open-ended to elicit richly-detailed responses.

The qualitative analysis of the interviews proceeded in two stages: open-coding and focused-coding. During open coding, the research team divided into two groups to analyze a subset of 10 interviews. Each team began by analyzing a set of five interviews to identify themes related to the project's research questions. Each researcher analyzed the five

interviews independently and then discussed the codes they had developed with their group. The process was repeated with the second set of five interviews until both teams had open coded the full subset of 10 interviews. The team met several times to discuss identified themes and achieve consensus on the set of codes that would be applied to the full set of 35 transcripts during the focused coding process.

Prior to focused coding, the research team developed a codebook that detailed the codes for the project, a description of each code, and examples of the codes to ensure inter-coder-reliability in how the codes were applied by research team members. The codebook was organized by four broad themes: content of box/food evaluation, experiential/encounters with PPD, consumption/behavior change, and mediating factors or externalities, with several focused codes relating to each. Subcodes were developed within each of these focused codes, within the broad themes.

For the focused coding process, the research team used Dedoose software to facilitate team-based coding virtually. The research team divided into three pairs for the focused coding process, each pair coding a third of the transcripts. Each member of a coding pair coded a set of transcripts independently and then met with their coding partner to compare how codes were used and applied, with the goal of achieving agreement on how codes were applied to the transcripts. Coding pairs met as a whole group weekly to discuss questions and discrepancies and to refine how the codes were applied. The teams achieved a high-level of consistency in coding. This consensus model of coding has been adopted in previous nutrition and food access-based studies (Cotter et al. 2017; Blondin et al. 2015).

The analytical themes of social solidarity and social infrastructure emerged from the initial sets of descriptive codes that were developed. This compelled the research team to return to the literature to understand how and to what extent other researchers had conceptualized and measured social solidarity. Moving between the literature and our own data, a practice common to inductive and abductive coding strategies, helped to refine social solidarity as a concept while also retaining its fidelity to the data collected. The research team identified elements of social solidarity and social infrastructure that existed within the following codes: community involvement/stakeholder involvement, community engagement, knowledge of food landscape, mobility, networks, resources to secure food, technology access and knowledge, and food sharing. The process for focused coding with these two themes incorporated the consensus model of coding described above.

In what follows, we elaborate the conceptual model of social solidarity focusing on the dynamic set of actions around reciprocal exchange, resource sharing, and collaboration that served to build community awareness and mobilization and the potential for more durable forms of

social infrastructure. As expressed in the interview data, these actions take specific localized form, which includes the work empowering community members to access program resources, enhancing social bonds through food and resources sharing, and community development through advocacy and accountability. In this regard, the conceptual model of social solidarity we elaborate emerged inductively from the data we collected, but it was also informed by existing literature that points to the potential value of community and group level mechanisms such as social capital that serve to build strong ties and mitigate food insecurity at the household and community levels.

Results

Social solidarity

Empowering community members to access program resources

In *Empowering Women of Color*, Gutiérrez and Lewis (1999, p. 5) describe the importance of “understanding the multidimensional nature of power in social relationships,” including that “power can be generated in the process of social interaction.” Power comes from expanding social networks and from the exchange of skills and resources, which provide individuals with new possibilities for action, collectively and individually (Gutiérrez and Lewis 1999). One way program participants expressed social solidarity and helped to expand food access was through efforts to ensure other members of their community knew about opportunities to access fresh produce.

One of the ladies at the church had given us a pamphlet, and I was going through my papers and found the number. So, I said, “Let me call.” And thank God, I got you and was able to go over to the stadium and get the produce, which was excellent. (Interview 42). I recommended a couple of my friends sign up for the program and a couple of folks said they were on waiting lists. So, I don’t think they were able to get into the program. So, I’m not sure who participated this year since I wasn’t a volunteer, because you get to know the faces. (Interview 6).

Information exchanges occurring between program participants were commonly amplified through deepened engagement with established PPD initiatives, such as the PPD Market Champions, paid volunteers who are also participants. Below, two program participant volunteers describe sharing information about Produce Plus with neighbors and community members; a recurring theme among many of our interview participants. The two participants

engaged in outreach by going to where people were living and traveling—in an apartment complex and on the bus. They drew on their knowledge of how to reach people where they were to share information about the program and to break down barriers related to disconnection, isolation, and stigma.

Word of mouth travels faster than any computer that you ever had. So, when I was there, I would ride the bus down to where I work at for Produce Plus...I went on the bus so that I could introduce people’. Cause I had my little shirt on, and I introduced people to the Produce Plus. And I would say come on, get off the bus with me, and I’ll sign you up. Right now, today—you can get 10 dollars right now, today, to spend at the market. So, that’s what I did. And then they would tell two friends. And they tell two friends. I always say look, tell two people. (Interview 4).

Particularly now, people...they don’t know where to go for help, so I’m trying to be an advocate that, “You can ask for help.” These things are available, and if I can do it, it’s no shame in it because it is a direct correlation to overall health...I believe very strongly in it, actually...It has connected me with other resources, as far as where food is available, which helps me to disseminate that information to the people that I live with. In my apartment complex, we have a lot of seniors. They have a lot of Latinos... Latinas... so it’s like, this is where you can go get food, fresh produce...It helps me get that out—the word out (Interview 65).

By drawing on their own lived experiences and knowledge of their communities, the volunteers helped to ensure that members of their community were not excluded from the program and from the opportunity to obtain free produce. In doing so, participants expanded the reach of the Produce Plus program in communities with the most structural barriers to accessing food. Both volunteers also described making additional efforts to empower community members to engage with the program. In one instance, the volunteer offered to accompany prospective participants to the sign-up location and facilitate their registration. In another instance, the volunteer described efforts to reduce any potential shame or stigma that community members might feel about engaging with the program.

In addition to empowering potential participants to engage with the program, Produce Plus volunteers also served as connectors and conduits of information for existing participants to learn about program changes.

Sometimes when we go out to some community meetings, or volunteer stuff, you run across the people that work with them or that attend their meetings. And they’ll say, “Okay, this is what’s coming down the

pipe, and these are the changes going to happen.” So, it’s through the community meetings and stuff you go to that you meet these people. And then they tell you or somebody tell somebody and then you hear. You have your little circle where you get your information from. (Interview 33).

I don’t think nobody actually have a problem with transportation or either delivery...I haven’t heard in the wind or anything. And I’m pretty sure somebody would say something. They think that I’m head of both the Produce Plus and Grocery Plus. They think I’m supposed to know it all. I try to dig into a lot of research, so if they do ask, I can tell them certain things. Phone number or where to go or who to contact or something like that. (Interview 4).

Both volunteers described how they activate their ties to the community and to Produce Plus staff to facilitate information-sharing between Produce Plus and program participants. The first volunteer attended community meetings and feedback sessions offered by the program and then shared this information word-of-mouth with program participants. The second participant also described assuming a leadership role in the community as a source of information for Produce Plus staff about how community members are experiencing the program. In this role, the volunteer became an advocate for community needs and a source of information for community members looking for assistance or more information about the program. In these ways, the two volunteers were embodying the two elements of connection for empowerment: “the development of social support networks and the creation of power through interaction” (Gutiérrez and Lewis 1999, p. 10). The networks of Produce Plus participants that relied on volunteers to share information about the program and to communicate their experiences and recommendations to the program represents a form of social support network. By advocating for a larger community of Produce Plus participants to program staff, volunteers were also creating and mobilizing power through these interactions.

Enhancing social bonds

Another way community development is expressed is “to enhance the social bonds among members of the community” (Barker 1999, p. 90 as cited in Schiele et al. 2005). “In this way, community solidarity reduces isolation, enhances cooperation, and accentuates the power inherent in collective action (Checkoway 1997)” (Schiele et al. 2005, p. 23). Each of the Produce Plus volunteers we interviewed embodied this form of community development in how they approached new participants registering for the program and in how they developed long-term relationships with existing program participants. Participants expressed that they recognized the

efforts of the volunteers and community engagement initiatives implemented by the PPD program.

That’s the big difference between last year and this year, was a lot of socializing...Getting to know your neighbor is what I call it. I don’t care where they live at or whatever. They were still my neighbor and I treat them as such when they came to sign up for the Produce Plus. Because that’s how I wanted them to feel like. That they our neighbor... ‘cause we help each other out. (Interview 4).

As this former volunteer describes, building social bonds was an important part of the expression of social solidarity within the Produce Plus program and involved welcoming new participants into the program as neighbors. The naming of participants as neighbors suggests a mutuality to the relationship—“we help each other out”—and contrasts with other forms of relating that may create distance or a hierarchical relationship between program staff and program participants.

Once established, as this participant described, social bonds deepened through regular contact. Farmers markets were a space for senior members of the community to counteract social isolation, as one participant described:

I’m in the house and this gives me a chance to get out... ‘cause I don’t see anybody that often. And meeting some of the seniors, we talk, and I think it’s a wonderful thing that you can get produce like that... because most of us seniors, we live alone.... (Interview 9).

I enjoy it...it’s a socialize thing. It helps me. I can use the produce but other than that, I just enjoy socializing and meeting other people (Interview 29).

The presence of Produce Plus volunteers ensured that a trip to the market would not be an isolating experience. As relationships were built, one Produce Plus volunteer reported taking advantage of these social interactions to check in on elders in the community.

One thing that I said in the focus group, it’s real important that their connections to the community and the neighborhoods stay intact...Our seniors, they look forward to that... Sometimes it’s their only time to get out of the house...But it’s important. It’s always good, because it helps us do a wellness check in a discreet way...People are checking in, particularly now because it’s so much isolation right now...Just to see their face, and people asking how they’re doing...Grandma or Grandpa, they’ll come back because they made us a fresh pie... They don’t have to; they take their produce and then they make something for us. It’s just a win-win, like, “I was thinking about you” (Interview 65).

The social bonds developed between Produce Plus volunteers and senior participants traveled both ways, the “win–win” that this volunteer describes. Seniors reciprocated the care they received from volunteers by baking for volunteers with ingredients they had purchased at the farmers’ market. In this way, senior participants were not only recipients of care, but also actively cared for program volunteers, suggesting a spirit of mutualism over hierarchical, instrumental exchange.

Community development through advocacy and accountability

One form of community development involves the ability of people to collectively act and “gain some control over...a frustrating and changing world” (Biddle and Biddle 1965, p. 78 as cited in Schiele et al. 2005). The COVID-19 pandemic and associated program changes led to several challenges for participants, including registering for the program and accessing prepackaged produce from an assigned vendor. The presence of many different vendors led to variations in program participants’ experiences. This variation also led to efforts from at least three of the participants we interviewed to engage in monitoring activities to ensure that resources were being distributed fairly and the quality of product and services were appropriate. As one of these participants described:

I just noticed a difference in the packaging for different areas, which, to me, doesn’t make sense. Because you give someone a large box and you only have maybe ten to fifteen items in that large box, and to me, that doesn’t make sense. When you go somewhere else and they get that same box which you got, they have more things in the boxes. And to me, I would hate to think that it’s a demographic... that they’re going according to the demographics. To me, that’s not fair... Say, for instance, Ward 7 gets a better box than Ward 8. I need to know why is that? And it’s the same box... I went over to see what their boxes looked like. And I checked the... because I took a picture of my box, and I said, “Okay, well let me go over when they’re in a different area to see what the—what their large boxes look like.” And it’s totally different. That’s a problem!... You’re saying you’re trying to make sure everybody gets the same amount, the same quantity, and the same quality, but that’s not happening over here. (Interview 10).

Through monitoring the different vendors providing produce, PPD participants worked to hold the program and individual vendors accountable for distributing food fairly to program participants. Participants drew on their knowledge of seasonality and their concerns about treating fellow participants with dignity and respect to argue that some vendors

were giving away less desirable produce, “rubbish plants” according to one interviewee, that they were unable to sell elsewhere or a smaller amount of produce. One participant shared an example of vendor who gave away large amounts of squash, contrasting this practice with a vendor who practiced more transparency (packaging produce in a clear bag to be visible to customers) and included more variety and desirable produce in her offerings. A second participant noted differences in the variety of produce she received from one vendor, compared to the variety of produce offered to her niece from a different vendor. In the example above, a participant noted that the amount of produce provided in the large box size differed among vendors in two different communities. By gathering evidence through direct observation, these individuals were exercising their power as program participants to monitor program activities to advocate for a fair distribution of food for their families and larger communities.

Food and resource sharing

Beyond providing information about the program, program participants also facilitated each other’s access to fresh produce in the program by picking up vouchers or prepackaged produce boxes for neighbors and family members, gifting extra vouchers they had collected to other participants, and sharing food they had received in the prepackaged produce boxes. Over 60 percent of interviewees said that they participated in resource or food exchanges between other program members and non-program members within their social networks.

And then by us keeping the coupons until the last month or two, sometime we’ll have the coupon. And if ever a person in line, and they may be five dollars short or something like that, I would give them a coupon... I’m not the only ones that does that. Especially towards the end [of the season]. (Interview 35)

The eggplants. I gave it [away] because my mom never fixed it for us. But my neighbor, I gave it to her because she knows how to prepare it... I just gave it to her because she has an elderly mom. Her mom’s eighty-something, so she fixes and prepares meals for her mother throughout the weekend and takes it to her. (Interview 26).

Food and resource sharing represent case examples of community awareness and mobilization, reciprocal exchange, social infrastructure, resource sharing, and collaboration. These forms of social solidarity helped to make the program more accessible to existing participants and potentially expanded the reach of the program as participants shared produce with neighbors and other family members. It is important to note sharing was not a result of a surplus

in produce. No participant reported having more food than they needed. To the contrary, several detailed their efforts to stretch the produce they received, by freezing items for the winter, for example. Sharing often occurred when resources were constrained and was motivated by a spirit of mutual aid, reciprocal support, and obligation. All are evidence of an underlying social solidarity.

Factors that contributed to the flow of social solidarity in Produce Plus

Our analysis of the participant interviews revealed that there were specific ways, formally and informally, in which the Produce Plus program itself reinforced the mobilization of social solidarity. These included opportunities for program participants to get involved in the program and advocate in formal settings, including attending meetings, giving feedback, volunteering, and gaining employment with the organization.

Volunteering

Produce Plus provided formal opportunities for participants to volunteer with the program through the Farmers Market Brigade. Farmers Market Brigade volunteers were recruited from communities to distribute Produce Plus checks and provide general customer service at farmers markets.

Volunteering was a key aspect of the program that participants routinely expressed as positive and integral to their engagement with the program and provided a structure within which participants could expand the reach of the program and build ties with current program participants. By volunteering with Produce Plus, participants had a formal way to interact with other members of their community, helping to support and even empower the community through interactions that included networking, socializing, and sharing information and resources. Participants noted these volunteering opportunities provided a way to become an advocate for their community. Participants learned more about the issues within the program through their engagement with Produce Plus volunteering. As active participants in their own communities, the program volunteers were able to help individuals get access to food and increase community awareness of opportunities available to them.

Once I learned about that, I just started calling people to get on...the volunteer company that I've been a part of ever since....I became one of the volunteer leaders for some of the markets, particularly last year, and ran them. And organized and helped facilitate one of the D.C. Greens volunteer efforts at a few of the markets. (Interview 65).

These volunteering opportunities were expansive, as participants expressed that in the pre-pandemic version of the program, there were over 200 community volunteers working with Produce Plus. These volunteers were able to exchange expertise regarding their community food systems through this engagement with the program, while also potentially learning more about the food system, including elements of the local food supply chain. Through this participation, volunteers become aware of the challenges and barriers to food access, such as market economies, food systems, farming, and food vendors. While challenges to these volunteering opportunities have been identified, such as tracking hours and direction of program operations, volunteers expressed a level of engagement with the food structure of their community that exemplifies how Produce Plus, and potentially other food access programs, provide a significant contribution to building and maintaining the social infrastructure in the community.

Employment

Produce Plus also provided opportunities for participants to engage with the program by working with the program in an employment capacity as Market Champions. Market Champions were program participants hired to conduct program outreach and to assist Produce Plus participants with registering and purchasing food at farmers markets. The Market Champions program provided another structure for participants to foster relationships with members of their community and create collaborative and inclusive food environments. One Market Champion described how the program offered her a way to give back to her community and to share the knowledge that she had gained and the joy of being able to serve her community.

I got a call from one of their employees, and they wanted to do an interview with me...The next thing I know, about a week later, I'm getting offered a position to work with them. With D.C. Greens...as an advocate...Well, that was kind of right up my avenue because I'm disabled, my health had become better, and I wanted to start giving back to the community... So, that just came right on time...We were working directly with D.C. Greens....They were teaching us stuff, and then we're on our own in our own communities, giving back that way...[It's been] very knowledgeable and rewarding actually, because once you gain the knowledge and start to give back, you see the joy on the people's faces...Same way I was receiving it, and was joyful in getting it, I was getting that same blessing coming back to me by giving. (Interview 15).

By providing employment opportunities in conjunction with opportunities for engagement with food access,

Produce Plus further contributed to the social infrastructure of the community. The Market Champions program created a formal and routine structure within which participants could collaborate to create welcoming, inclusive, and joyful food environments.

Attending feedback meetings

Produce Plus hosted a community meeting at least once each season to better understand program participants' experiences with the program. These meetings provided a formal structure for Produce Plus staff to share information about proposed program changes and community members to share their experiences with the program and advocate for program changes.

Every year at the end of the program, we have a meeting you can go to. Or they'll have one in the spring before everything starts. And I go. I've been to those meetings every year, and I've been hearing about this whole idea of changing the program in the sense of giving people a card with the money on it or different ideas that will affect it. (Interview 8).

Latham and Layton (2019) describe a function of social infrastructure as creating public spaces where human expression in various cultural forms is welcome and encouraged. Produce Plus community meetings provided the opportunity for community members to participate in meaningful ways in improving their own access to food, as the community can provide their expertise about limitations and barriers in the program and broader community. Even when some participants did not perceive their criticisms to be welcome, their desire to improve the program for everyone overshadowed any hesitancy in self-expression or avoidance of potential conflict. As one participant expressed, "They need to have the program. But they need to have the program... that's going to serve them [community members] the best."

Discussion

These findings offer evidence of how social solidarity, as expressed by program volunteers and participants, is a form of group-level social infrastructure (Flora and Flora 1993) that can be mobilized to ensure the accessibility and accountability of a city-funded farmers market incentive program. A growing body of research points to the significance of social capital, those networks and social bonds that connect people to each other and build social cohesion and social infrastructure to help to mediate food insecurity (Martin et al. 2004; Leddy et al. 2020). This study has sought to highlight the mechanisms by which social solidarity, a type of social capital, is mobilized through participant interactions and the

social infrastructure of the Produce Plus program. This study demonstrates how programs can serve as social conduits that can enhance the flow of social solidarity and build social infrastructure.

The analysis focuses on one form of social infrastructure, specifically social solidarity. The findings support calls to consider social infrastructure alongside physical infrastructure and leadership when considering community development, giving attention to social capital and social infrastructure (Flora and Flora 1993; Flora et al. 2018). The analysis highlights the centrality of social solidarity to food access efforts and the different ways social solidarity can be activated within community programs to mitigate food insecurity. Through interviews with Produce Plus participants, this study found that participants' mobilization of social solidarity contributed to increasing program access and reach, enhancing social bonds, and promoting community development through advocacy and accountability. Specific features of the Produce Plus program, including recruiting participants as volunteers and employees and conducting regular feedback meetings, helped to support the flow of social solidarity within the program to mediate food insecurity. These findings underscore the importance of building program structures in which community members and program participants can lead in the design and implementation of food access programming.

Limitations of the study include a small, relatively homogenous sample, placing limits on the applicability of the conceptual model of social solidarity beyond the case. Future research could expand the sample size of interview participants to examine applicability of the conceptual model to a larger sample population. Future research could also supplement the interview data with observations of market exchanges and social relations among Produce Plus participants for both triangulation and further explication of social solidarity forms embedded within social relations as they unfold in real time. To further examine the applicability beyond the case, future research could also build in a comparative component, attending to different levels of analysis including cross sector and inter-organizational comparison or comparison at the level of municipality and urban context. To what extent does existing social infrastructure maintained and/or fortified by municipal support systems or nonprofit networks enhance social solidarity as a durable form?

Above all, our work suggests food access programming efforts would be well served by greater investment in opportunities for program participants to lead the design and implementation of programming and in identifying and supporting the wealth of cultural resources, including social solidarity, that exist already within communities. Food access programs like Produce Plus are not directly responsible for generating social solidarity among participants; but they can create structures where community leadership and cultural

wealth can flourish and support greater program effectiveness. Programs like Produce Plus can be important conduits through which mutual support and social solidarity and the energy that comes from it, are mobilized for positive ends. Policy and organizational planning, then, should consider how to actively incorporate community members into program leadership and governance. Recognizing, valuing, and supporting participant leadership and the range of cultural resources that exist in communities can be important tools towards creating inclusive and more just food environments.

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