The Pennsylvania State University

The Graduate School

College of Agricultural Sciences

COMMUNITY CAPACITY BUILDING, CONTEXT, AND EVERYDAY ENVIRONMENTAL INJUSTICES: RURAL COMMUNITY GARDENING AND ORGANIZATIONAL NETWORKS IN CENTRAL APPALACHIA

A Dissertation in

Rural Sociology and

Human Dimensions of Natural Resources and the Environment

by

Elyzabeth W. Engle

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

August 2018

The dissertation of Elyzabeth W. Engle was reviewed and approved* by the following:

C. Clare Hinrichs
Professor of Rural Sociology
Dissertation Advisor
Chair of Committee

Kathryn J. Brasier
Professor of Rural Sociology
Director of Graduate Studies

Carolyn Sachs
Professor Emerita of Rural Sociology

Kai A. Schafft
Associate Professor of Education and Rural Sociology

Theodore R. Alter
Professor of Agricultural, Environmental and Regional Economics

*Signatures are on file in the Graduate School

ABSTRACT

In the past century, the progression of industrialization, globalization, neoliberalism, and devolution of government services has contributed to uneven development and growing inequalities in many parts of urban and rural America, the outcomes of which are especially concentrated in the region of Central Appalachia. This region has been noted, studied, and stereotyped for its historical and contemporary conditions of persistent poverty, high rates of unemployment and outmigration, low rates of educational attainment, environmental exploitation, and increasing human health disparities. As some federal development programs and policies have worsened these conditions of uneven development, more place-based initiatives have emerged in response at the grassroots level. Many such initiatives strive to build more localized systems of food production and consumption, which have been endorsed as sources of comprehensive sustainable development in other contexts. However, more recent scholarship has suggested that the impacts of such initiatives may also reproduce the socioeconomic inequalities observed in more conventional food and agricultural systems, especially when research on and beneficial outcomes of these initiatives remain biased toward more privileged populations and communities. Further research is needed to examine how and for whom grassroots, place-based efforts grounded in localized food and agricultural systems contribute to sustainable development in places and for people who are more socioeconomically and environmentally marginalized, such as Central Appalachia and its inhabitants.

Working from the interface of rural sociology, environmental sociology, and community development studies, this dissertation research has three main objectives: (1) to understand if and how rural community gardening programs, as place-based, grassroots initiatives, contribute to sustainable community development in a region long affected by the processes and outcomes of

uneven development; (2) to document the multiple outcomes of these initiatives and learn how they are distributed among different people and communities; and (3) to evaluate how the processes and outcomes of these initiatives are shaped by the socioeconomic and biophysical context of places. To address gaps in both scholarship and practice relevant to sustainable rural development, the dissertation research was collaboratively designed as a participatory action research project with Grow Appalachia, a regional community food security and community gardening initiative based at Berea College in Kentucky.

Grounded in the conceptual framework of community-capacity building and implemented through a mixed methods research design, the study results are captured in three empirical papers. Drawing upon organizational sociology and community development scholarship, the first paper uses interviews and a survey of Grow Appalachia staff to examine how broker organization-led rules structure the practices and experiences of an interorganizational network, leading to particular benefits, but also costs for the overall network and program participants. Using interviews with Grow Appalachia staff and gardening program participants, the second paper illuminates four facets of the everyday environmental injustices experienced via community gardening activities in communities highly impacted by Central Appalachia's history of natural resource dependency and coal extraction. Finally, the third paper applies the community capitals framework to analyze data from a network-wide survey of rural gardening program participants to examine how county context – socioeconomic and environmental – is associated with seven perceived program outcomes at the community-level.

Findings demonstrate that grassroots, place-based development initiatives grounded in localized food systems can lead to a number of positive outcomes across the Central Appalachian region, building individual and organizational capacities that are necessary to then build overall

community capacity. However, this research further shows that such initiatives may simultaneously contribute to uneven development and/or exacerbate social and environmental inequalities. The first paper demonstrates that while the broker organization's rules contributed more to benefits than not in how the community-based organizations and their community food security programs functioned, those rules also generated costs and barriers that reproduced social inequalities compromising the network's overall impacts on improved community food security and community development. At the more individual level, the second paper demonstrates that the everyday environmental injustices experienced across natural, built, human health, and socioeconomic dimensions in this region constrain program participation and beneficial outcomes, particularly for more disadvantaged households affected by chronic illness, geographic isolation, and environmental hazards. Lastly, at the larger community level, the associations between context and community-level outcomes examined in the third paper demonstrate that people who experience some form of advantage, be it residence in areas of better environmental quality or having higher household income, may be more likely to perceive better community gardening program outcomes, especially across more tangible dimensions like natural and financial-built capitals.

Considered together, the uneven outcomes of rural community gardening initiatives were found to be largely driven by organizational resource scarcity, inaccessibility of initiative activities and services, and the environmental and socioeconomic contexts in which they were operating. These results underscore the need for complementary top-down and bottom-up place-based efforts that are context driven, establish and maintain safe and healthy environments, and provide sufficient resources for community-based organizations and leaders to ensure equitable sustainable development processes that enhance the wellbeing of all peoples in all places.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

This research was supported by the Garden Club of America's Douglas Dockery Thomas Fellowship Award and the Rural Sociological Society's Dissertation Research Award. I also acknowledge support from Penn State's Sustainability Institute while I conducted my field research. This project was also supported in part by the Grow Appalachia organization, not only financially, but also through many long conversations, kind introductions, and unfailing confidence in our ongoing collaboration. I can never thank the staff at Grow Appalachia headquarters enough for opening their doors, sharing their files, and taking a chance on a shy stranger from Pennsylvania. I am also indebted to the many Grow Appalachia partner site coordinators, staff, and growers that I met throughout my dissertation journey. Thank you for welcoming me into your homes, sharing your stories, and never letting me leave hungry. And last but certainly not least, a big hug to my Berea host mother, Mama MaeMae, who kept me grounded – both literally and figuratively.

I would also like to thank my colleagues, advisors, and mentors that I have had the great pleasure of meeting during my time at Penn State. To Clare Hinrichs – thank you for spending the last six years consistently pushing me a step further than I thought possible. You have taught me how to think more critically, ask tougher questions and, better yet, how to more thoroughly pursue and deliver corresponding answers. To Kathy Brasier and Ted Alter – thank you for being my mentors, in dissertation research and beyond, and for always finding an extra five minutes (…or 45) to check in. To Carolyn Sachs and Kai Schafft – many thanks for sharing your wisdom and guidance throughout my academic career, delivered on campus or out in Penns Valley. Lastly, many thanks to the rest of the Rural Sociology faculty as well as the staff members, current and past, of the Sustainability Institute, who have provided numerous learning

opportunities that will continue to inform my next steps beyond Penn State. Thank you all for your time, patience, and various roles played in my development from student to scholar.

And, of course, many thanks go out to my family who are my friends and my friends who are my family. To my 2012 cohort – thank you for the ongoing support from afar, even after leaving me behind for your 'real adult jobs.' To my cohort by choice – I look forward to repaying your encouragement with many more ice cream breaks, glasses of wine, late-night pet videos, and Leslie Knope memes to come. To the Engles and Hazels – thank you for instilling my deep sense of wonder, never once questioning my academic or personal abilities, and always supporting my love of learning. An extra big thank you to my mother, who not only served as my survey data entry assistant and informal fieldwork therapist, but who has also done everything in her power to make sure that I finished, even when the road got a whole lot rougher. Finally, to Chris – this dissertation was truly made possible by your unending patience, our shared passion for combining knowledge generation and grounded practice, and your uncanny ability to know exactly when I need a good laugh or distraction. And to Graycie and Oskar – I could not have asked for better writing companions or nap buddies. I love you all.

CHAPTER 1:

INTRODUCTION TO THE DISSERTATION

Introduction

Localized and alternative food systems have been described as mechanisms of broader community development, offering not only more environmentally sustainable and socially responsible forms of food production and consumption, but also contributions to local economies, social relations, and human health and wellbeing (Lyson 2007; Hinrichs & Charles 2012; Christensen and Phillips 2016). However, scholarship examining these initiatives has found that the distribution of their beneficial processes and outcomes – and the research that demonstrates these findings – may be limited to people and places that are already more economically, socially, and/or environmentally privileged (Allen 2004; Alkon & Agyeman 2011; Mares & Alkon 2011). Focusing specifically on rural community gardening initiatives, this dissertation research project sought to understand how and for whom grassroots efforts linking localized food systems and community development may enhance sustainable development in a region that has long endured socioeconomic and environmental disadvantage: the coalfields of Central Appalachia. Specifically, this dissertation examined the processes through which these initiatives strive to contribute to sustainable rural development, the outcomes of these initiatives and how are they distributed among people and places, and, lastly, how the context of Central Appalachia, as a region with a long history of uneven development and natural resource dependency, has shaped the successes or limitations experienced by these initiatives.

The rest of this introduction chapter provides background information on Central Appalachia's history of uneven development and the forms of grassroots, place-based development (i.e., civic agriculture initiatives) of relevance to this dissertation and the

overarching theoretical framework (community capacity-building) that has guided this study. Given the importance of the action research collaboration on which this dissertation is based, I next introduce Grow Appalachia, the organization that was both a partner and the subject of this research. Finally, I present the overall research design as well as my researcher's stance, and introduce the three empirical chapters.

Uneven Development and Natural Resource Dependency in Rural Appalachia

In the past century, traditional livelihoods in rural America have undergone rapid changes resulting in various consequences for rural family and community well-being that span social, economic, and environmental dimensions (Tickamyer & Smith 2011; Bailey, Jensen, & Ransom 2014). These changes have been linked to both endogenous and exogenous drivers, including the interdependencies rooted in mechanization and restructuring of traditionally rural industries, globalization and neoliberalization of markets, and the devolution of regulatory and service responsibilities (Brown & Swanson 2003; Lichter & Brown 2011; Bailey et al. 2014). These processes have contributed to growing inequalities in many parts of urban and rural America, but the negative outcomes are especially concentrated in the region of Appalachia, a place and population long noted, studied, and stereotyped for its history of persistent poverty, high rates of unemployment and outmigration, low rates of educational attainment, environmental exploitation, and increasing human health disparities (Eller 2013; Catte 2018).

Appalachia is simultaneously a geographic region, a sociopolitical construct, and a cultural category (Billings & Blee 2000; Catte 2018). Geographically, Appalachia is an approximately 700,000-square-mile region of the eastern United States, stretching along the Appalachian Mountain range from northern Alabama to southern New York (Eller 2008). The most commonly cited definition of the region is the political one created in the authorizing

legislation that originally founded the Appalachian Regional Commission (ARC) in 1965. According to the ARC (2018), Appalachia encompasses 420 counties across 13 states – Alabama, Georgia, Kentucky, Maryland, Mississippi, New York, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and West Virginia – and is home to more than 25 million people. Compared with 20 percent of the national population, roughly 42 percent of Appalachia's population resides in rural areas (ARC 2018). Demographically, Appalachia has been traditionally viewed as a relatively white region, but recent trends demonstrate growing racial and ethnic diversity as outmigration rates are highest among whites and minority populations are growing most rapidly (Pollard & Jacobsen 2017; Catte 2018).

Despite the tireless narrative of Appalachia as an other (or separate) America, it is in fact the region's connectedness – through its supply of essential natural, industrial, and human resources – to domestic and global economic development and the United States' global war efforts that have largely led to these negative outcomes (Dunaway 1996; Eller 2013). Additionally, these conditions and inequalities have been intensified by well-intentioned, but poorly designed and implemented government programs aimed at promoting growth and further assimilation into national and global economies, from the Johnson Administration's War on Poverty and Appalachian Regional Development Act of the 1960s to the Clinton Administration's welfare reform of the 1990s to the more recent Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Initiative sponsored by the Appalachian Regional Commission (ARC) since 2015. These programs and strategies have traditionally focused on infrastructure development, welfare management, behavioral modification, and industrial recruitment strategies that have not taken into account local contexts and have ignored the actual drivers of social inequality (Eller 2013; Catte 2018).

Federal development programs did achieve some success in the Appalachian region. Between 1960 and 2000, poverty rates were cut in half, per capita income in the region reached almost 84 percent of the national average, unemployment rates significantly declined, and the number of severely economically distressed counties (as designated by the ARC) fell from 223 to 89 (Eller 2013:232). But these region-wide statistics of progress mask the ways in which many programs and policies have also intensified social, economic, and environmental inequalities both within Appalachia and relative to the rest of the nation. These trends have been particularly drastic for communities and people that are situated within the Central Appalachia coalfields, encompassing southern West Virginia, eastern Kentucky and Tennessee, and southwest Virginia (Figure 1.1) (Billings & Tickamyer 1993; Eller 2013).

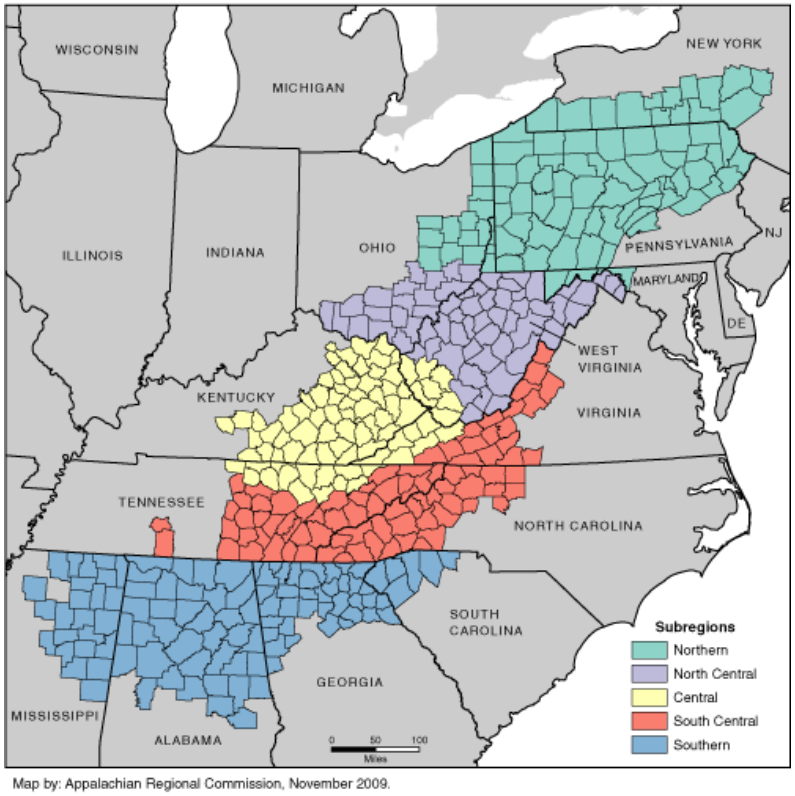

Figure 1.1. Map of Appalachia and its Subregions
Source: Appalachian Regional Commission (https://www.arc.gov/research/MapsofAppalachia.asp?MAP_ID=31)

Today, the total Appalachian region (by the ARC definition) has an average poverty rate of 17.1 percent, compared to the national average of 15.5 percent (Pollard and Jacobsen 2017). But average poverty rates are significantly higher than the total region for Central Appalachia (24.4 percent); the sub-region also exhibits the highest unemployment rates (8.6 percent), lowest rates of educational attainment (23.4 percent of the population ages 25 years and over with less than a high school diploma), and lowest household median and per capita incomes ($34,105 and $19,216, respectively) compared to the rest of the overall region (Pollard & Jacobsen 2017) (Table 1.1).

Table 1.1. Socioeconomic conditions of Central Appalachia compared to national and regional trends (2011-2015)

	United States	Appalachian Region	Central Appalachia
Poverty Rate	15.5	17.1	24.4
Unemployment Rate	6.9	6.9	8.6
Educational Attainment[1] Rate	13.3	14.5	23.4
Median Household Income	$53,889	$44,744	$34,105
Per Capita Income	$28,930	$24,302	$19,216

Source: Pollard & Jacobsen 2017

[1]Defined as percent of population ages 25 years and over with less than a high school diploma

These trends in uneven development are commonly associated with Central Appalachia's history of natural resource extraction (Gaventa 1980; Billings & Tickamyer 1993; Purdy 2011; Eller 2013; Partridge, Betz, & Lobao 2013; Lobao, Zhou, Partridge, & Betz 2016). Central Appalachia has long been (and is still) home to several natural resource sectors, having been reliant on subsistence agriculture during its early settlement and then transitioned at the beginning of the 20th century to an economy driven by timber and coal mining industries (Billings & Tickamyer 1993; Tallichet 2014). It is the latter industry, coal, that has come to define and shape the Central Appalachian region the most, both in practice and in public perception (Lewin 2017). Coal has been mined in Appalachia since the 1700s, and since then, coal production has been economically critical to Central Appalachian states, primarily due to the jobs and tax revenues provided by the industry (Tallichet 2014). For example, in 2008, the

coal industry employed 37,000 workers directly and indirectly across the region, which accounted for up to forty percent of the labor force within individual counties (McIlmoil & Hansen 2009). The coal severance tax in these states has also generated hundreds of millions of dollars in revenue, with tens of millions of dollars being distributed to county and local governments (McIlmoil & Hansen 2009).

But times have changed. Surface-mined coal production has steadily increased in the past 30 years due to technological advances in the industrial processes and depletion of accessible underground reserves (McIlmoil & Hansen 2009). The Central Appalachian coal industry has also become less competitive than other domestic and international coal basins, leading to a sharp decline in Appalachian coal employment since the 1970s. In 1973, there were over 111,000 underground miners across the United States, but that figure has now dropped by half – with job loss severely concentrated in the Central Appalachian coalfields (Bonskowski & Watson 2006; Tallichet 2014). Regional coal production and employment in Central Appalachia is expected to continue to decline over the coming decades, largely due to national and global market competition from other coal-producing regions, larger reliance on natural gas and renewable energy sources, limited accessibility to the Appalachian coal reserves, stricter environmental regulations, and technological advances, like mountaintop removal (McIlmoil & Hansen 2009; Tallichet 2014).

In natural resource sociology scholarship, this condition is referred to as natural resource dependency, in which counties or communities are socioeconomically dependent (historically or currently) on natural resource-based industries through employment or income levels (e.g., 15 percent or more of county average annual labor and proprietors' earnings (Parker 2015)), local tax revenues, recreation and tourism activities, place attachments, and/or occupational and

community identities (Rasker 2006; Petrzelka et al. 2006; Stedman 2013; Krannich et al. 2014). Although the condition of natural resource dependency itself is not inherently negative or positive, the consequences of this condition are most often associated with poor social, economic, and environmental outcomes, including sharp fluctuations in employment and slow economic growth, high rates of un- and under-employment, persistent poverty, high outmigration, and deterioration of community capacity for collective action (Freudenburg 1992; Freudenburg & Wilson 2002; Krannich et al. 2014; Tallichet 2014). Therefore, natural resource dependency is often equated with the 'resource curse' concept in which regions rich in natural resources and amenities experience slow, if not negative, socioeconomic development as financial profits accrue to extra-local individual and corporate elites (James and Aadland 2011; Weber 2014). Although these results vary widely across different geographical areas and between resource industries and sectors (Nord and Luloff 1993; Overdevest and Green 1994; Stedman 2013), the negative outcomes often associated with the condition of natural resource dependency are clearly apparent in the uneven development observed in the Central Appalachian region (Gaventa 1980; Eller 2013; Partridge, et al. 2013; Tallichet 2014).

In response to the federal programs and policies that have largely exacerbated, rather than ameliorating, the negative ramifications of uneven development and natural resource dependency, various place-based and grassroots-level initiatives have arisen throughout the Appalachian region (Billings and Blee 2000). These endogenous initiatives draw upon Appalachia's cultural assets and strong sense of place to invest in local empowerment, social networks, and entrepreneurship (Keefe 2009; Eller 2013). Individual activists and informal organizing efforts have played a large role in Appalachia's history, from coal miners striking for unionization to contemporary environmentalists protesting mountaintop removal. From these

efforts have emerged more formally structured community-based organizations, thousands of which currently exist across the Appalachian landscape, driving grassroots movements focused on education, environmental quality, poverty relief, and more (Fisher & Smith 2012). Many case studies have captured the work of these organizations, notably in Fisher and Smith's recent edited volume, *Transforming Places: Lessons from Appalachia* (2012), which detailed the work of many multi-mission, membership-based organizations and regional institutions working within and across the Appalachian region.

That said, more systematic evaluation of these grassroots, place-based initiatives – and how they are experienced by those who organize them and those who participate in them – is needed to better understand, assess, and continually improve the sustainable development processes and outcomes of these initiatives for all parties, especially given the history of uneven development and social inequalities prevalent throughout the Appalachian region. This dissertation is therefore organized around three objectives: (1) by what processes do grassroots, place-based initiatives contribute to sustainable community development in rural Appalachia, (2) what are the outcomes of these initiatives and how are they distributed among initiative organizers and participants, and (3) how are these initiatives (and their outcomes) shaped by the physical and social context of rural Appalachia and its history of uneven development?

Place-Based Development and Civic Agriculture

To better address uneven development by tailoring processes and outcomes to specific contexts, both scholars and practitioners are now turning to place-based approaches to community and economic development (Holland and Thompson 2015; Bridger and Alter 2008). Place-based development is operationalized in diverse ways, but is grounded in the assumption that development efforts should respond to and enhance the unique physical and/or social

characteristics of places in which they occur, often through participatory, bottom-up activities shared among local actors (Rangwala and Kaizer 2010). Yet, many issues persist within place-based development theory and strategy, including contested notions of 'place' and 'place-based' and a lack of evaluative research in non-metropolitan regions and/or regions lacking in fundamental assets or capacities, like built infrastructure, human capital, or financial resources (Pugalis and Bentley 2014; Bridger and Alter 2008). This dissertation addresses this gap through a comprehensive case study examination of a place-based approach to community and economic development in the rural, resource-poor region of Central Appalachia.

Community food system initiatives have emerged as a favored place-based development strategy at many levels of governance in Appalachia, from grassroots to federal, because of their ready connections to the region's rich history of self-reliance, agriculture, and diverse food cultures (Haskell 2012; Ruel 2012; Appalachian Foodshed Project 2015). At the federal level, this movement is exemplified by the ARC's participation in the federal 'Local Food, Local Places' program and the ARC's own research on, funding for, and promotion of local food systems as a route for economic transition in many Appalachian counties (EPA 2015; ARC 2015b). Other initiatives have been more bottom-up, network-based approaches to promoting local and heritage-based food systems across the region, like the Appalachian Sustainable Agriculture Project based in western North Carolina (2018), Community Farm Alliance in Kentucky (2018), or the Appalachian Food Summit, a nonprofit that convenes Appalachian foodways stakeholders to support grassroots food movements across the region (2018).

One name for the emerging paradigm around community food systems is the concept of civic agriculture, which aligns the goals of relocalizing of agricultural production with place-

based economic and community development (Lyson 2007). Often contrasted with conventional, corporate-led agricultural systems, civic agriculture can be described as

> *…a locally organized system of agriculture and food production characterized by networks of producers who are bound together by place. Civic agriculture embodies a commitment to developing and strengthening an economically, environmentally, and socially sustainable system of agriculture and food production that relies on local resources and serves local markets and consumers. (Lyson 2005:94)*

Civic agriculture initiatives include farmers' markets, community and school gardens, farm-to-school and farm-to-restaurant programs, institutional buying ordinances that encourage local sourcing, community-supported agriculture projects, grower cooperatives and marketing clubs, community kitchens, and more. Although there is much diversity among the different civic agriculture activities, what they have in common "is their potential to nurture local economic development, maintain diversity, and quality in products as well as to provide forums in which producers and consumers can come together to solidify bonds of community" (Lyson 2007:28).

Recent scholarship has drawn many connections between the localized, community-based food systems of civic agriculture and holistic community development (Phillips & Wharton 2016). Yet, little research to date has applied a community development framework to explicitly examine the outcomes that civic agriculture ventures have for rural people and places – especially regions with long histories of uneven development and social inequality, like Central Appalachia. As an orienting guidepost for understanding what empirical evidence does exist on local foods and community development, Hinrichs and Charles (2012) identify three community development themes that can be used to analyze local food efforts in both US and UK contexts, including: (1) entrepreneurship and small business development, (2) community capacity-building, and (3) social equity and inclusion.

This second theme identified by Hinrichs and Charles (2012) – community capacity-building – is most relevant to this study, and perhaps the most empirically underexplored (Phillips & Wharton 2016). As a starting place, Lyson (2005) discusses how civic agriculture enterprises ultimately develop a community's capacity for problem-solving. Due to the connections and reciprocity built by civic agriculture ventures, a number of authors have identified positive social impacts of relationship building, enhanced community cohesion and engagement, and strengthened cultural heritage as important community capacity-building effects of these initiatives (Firth, Maye, & Pearson 2011; Glowacki-Dudka, Murray, & Isaacs 2012; Obach & Tobin 2014; Phillips & Wharton 2016). Other authors have suggested civic agriculture enterprises also have a positive impact on community capacity by improving the natural and built environment through employing sustainable agriculture practices, creating new infrastructure, and repurposing underutilized or neglected land (Lyson 2005; Flora & Gillespie 2008; Macias 2008).

As the civic agriculture venture relevant to this study, community gardening has been found to contribute to a wide range of community development dimensions, including human health, socio-cultural, economic, and environmental benefits (Lawson 2005; Draper & Freeman 2010; Guitart, Pickering, & Byrne 2012). Compared to other forms of civic agriculture, community gardening initiatives can create "unique social processes that arise in these communal spaces or from participation in the act of gardening" (Poulsen 2015:18). Beyond this, community gardening practices and spaces are also inherently grounded in particular places due to their physical and social aspects, and they have a historical connection to grassroots-led movements focused on promoting individual and community wellbeing (Lawson 2005), aligning closely with the interests of this dissertation research project.

That said, literature documenting the community development benefits of community gardening tends to be very urban-focused. Additionally, although the concept of civic agriculture clearly links localized food system activities to aspects of community development, civic agriculture ventures – and community gardening in particular – have also been criticized for reproducing traditional market relations, worsening or overlooking social inequalities related to race and class, and not living up to environmental sustainability claims (Coley, Howard, & Winter 2009; Mares & Alkon 2011; Santo, Palmer, & Kim 2016). Therefore, this dissertation research explicitly uses the conceptual framework of community capacity building to better understand how and for whom community gardening as a place-based, grassroots initiative – that has been both celebrated and critiqued for its contributions in urban environments – may contribute to sustainable rural development in the context of Central Appalachia.

Overarching Theoretical Framework: Community Capacity Building

To examine how and for whom grassroots, place-based initiatives grounded in civic agriculture may contribute to grassroots, place-based sustainable development in the Central Appalachia region, this dissertation develops the conceptual framework of community capacity building. Ideologies about community development practice have also moved through distinct phases over time, moving from "program-focused, top-down, direct-assistance models to community-centered, capacity-building, coordinated approaches" (Pigg and Bradshaw 2003:387). Capacity-building in rural community development theory has recently transitioned from a narrow focus on leadership development, meant for a select few in a community, to a more holistic practice that builds networks among and competencies within many different community stakeholders (Pigg and Bradshaw 2003). This new theory of community capacity-building not only calls for more diverse participation in community development initiatives, but

also the empowerment of all individuals through social and human capital development (Richardson 2000).

But what are community capacities? And how do we go about building them? These remain relatively unsettled questions within the community development literature. According to Robert J. Chaskin (2001), an urban community sociologist, there have been few attempts to define community capacity in the literature, and those that do exist span a wide range of interpretation. Chaskin (2001:292-293) found common threads in many of the definitions, including: (1) the existence of resources (e.g., individual skills, financial capital)), (2) networks of relationships, (3) leadership, and (4) mechanisms for participation by community members in collective action and problem solving.

Building upon this literature, Chaskin et al. (2001:7) offered their own community capacity framework, starting with this definition:

> *Community capacity is the interaction of human capital, organizational resources, and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the well-being of that community. It may operate through informal social processes and/or organized efforts by individuals, organizations, and social networks that exist among them and between them and the larger systems of which the community is a part.*

Chaskin et al.'s (2001) framework includes six different dimensions related to capacity building. First, *characteristics* of community capacity are engendered at different *levels* of social agency (individuals, organizations, networks), which are often geared towards a particular community *function* (or community capacity in action, e.g., production of goods/services or governance processes). Second, *conditioning influences*, or macro- and micro-level contextual factors, shape the *characteristics* of community capacity present in the community, as well as the *strategies* (means by which capacity is built or engaged) implemented to build capacity and at which *levels* of social agency. These *strategies* will ultimately affect the *characteristics* of the

community's capacity as well as *other outcomes* in the community, like social services and economic wellbeing.

Although the work of Chaskin and his colleagues tends to be more urban in focus, this framework provides an important starting point for understanding the characteristics of community capacity and the processes of building it. Based on his literature review and key informant analysis, Chaskin (2001) identified four fundamental characteristics of community capacity, including: (1) a sense of community, or degree of connectedness among community members and collectively held values, norms, and vision, (2) level of commitment, or the willingness of community members who see themselves as stakeholders in and are willing to act on the collective wellbeing of the community, (3) the ability to solve problems, or to translate their commitment into action, and (4) access to resources (economic, human, physical, and political) within and beyond the community. These capacities are utilized both to build further community capacity and to engender the outcomes of community capacity building processes, in addition to producing other intentional or unintentional community outcomes beyond the enhancement of community capacity.

Other community capacity scholars have taken a more explicitly rural focus. Notable here is the work of Flora and Flora (2015), who developed the Community Capitals Framework (CCF). The CCF is a tool that can be used to assess pre-existing conditions and structures within a community, the process (actions, investments, and interventions) of community development, and its outputs and outcomes within the community (Flora et al. 2005). It defines and examines seven different types of interrelated 'capital' (Emery and Flora 2006), including: Natural, Cultural, Human, Social, Political, Financial, and Built Capitals. (For more detail, see Paper 3.) When successfully enhanced and mobilized, these capitals can be invested to ensure sustainable

community development that provides a healthy biophysical environment, economic security, and social inclusion. The CCF has recently been embraced and integrated into United States Department of Agriculture programming for Rural Wealth Creation, which also identifies seven different types of assets (physical, financial, human, intellectual, natural, social, political, and cultural) (Pender, Marré, and Reeder 2012).

This study combines these two frameworks – Chaskin's (2001) community-capacity building framework and Flora and Flora's (2015) community capitals framework – to critically assess how and for whom grassroots, place-based initiatives grounded in civic agriculture contribute to sustainable development in rural Appalachia. The final framework for this dissertation study largely follows the process outlined by Chaskin (2001), in which community capacity is built through different levels of agency through various strategies to achieve a diversity of functions. In addition to the characteristics of community capacity laid out by Chaskin (2001), the CCF is used to further illuminate the range of other community outcomes that may result from capacity building processes and the implications they have for overall community capacity. Lastly, this process and its outcomes are viewed as embedded within and affected by contextual factors (physical, sociopolitical, cultural, economic) (Figure 1.2).

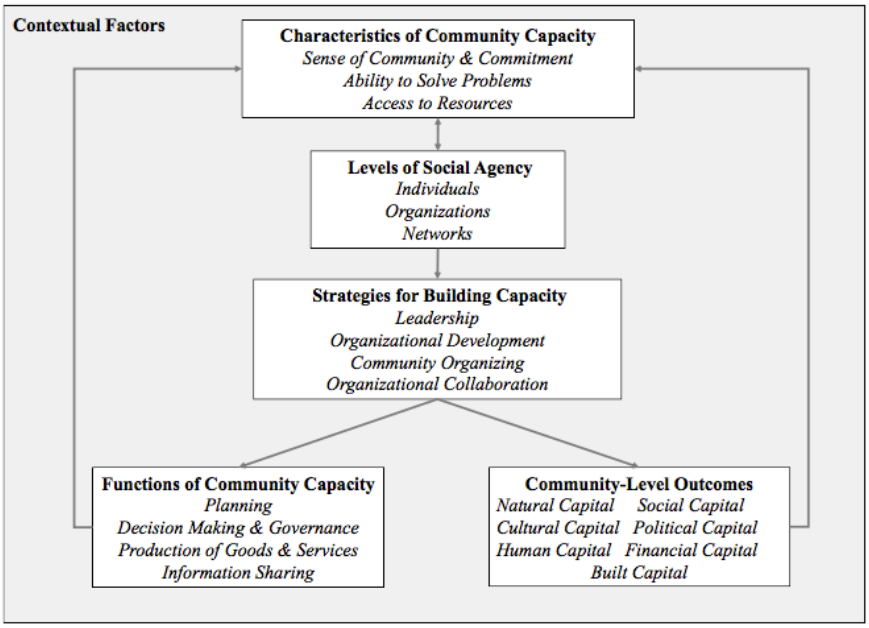

Figure 1.2. Conceptual Framework: Community Capacity Building and Community Capitals
Source: Adapted from Chaskin et al. (2001) and Flora and Flora (2015)

Organizational Partner: Grow Appalachia

Community gardening programs are often associated with community-based organizations (churches, schools, other non-profits), which are key agents for building community capacity and have long been agents of grassroots-level change in the Appalachian region (Chaskin et al. 2001; Fisher & Smith 2012; Drake & Lawson 2014; Meenar 2015). To engage with organizations, this dissertation project emerged from a partnership I initiated in the spring of 2016 with Grow Appalachia, a non-profit partnership formed in 2009 between Berea College's Appalachia Fund and John Paul DeJoria's *Peace, Love & Happiness Foundation*. Grow Appalachia's community food security-oriented mission is "to help as many Appalachian families grow as much of their own food as possible" (Grow Appalachia 2016). To accomplish this, Grow Appalachia elicits annual proposals from community-based organizations located throughout the Appalachian region who wish to (or already do) provide community food security and community gardening programs to their local communities. If they are selected, Grow Appalachia provides these organizations with financial and technical assistance which are used

to support localized educational workshops, gardening / food preparation / preservation tools and resources, and in some cases, the development of other community assets, like farmers' markets, community kitchens, summer youth feeding programs.

In 2009, Grow Appalachia started with five partner organizations, or 'partner sites.' Since 2015, Grow Appalachia has selected 30-40 partner sites each year. Since 2009, Grow Appalachia has distributed over $5 million to selected partner site organizations to establish organic home, community, and institutional gardening programs within their local communities. Although not all Grow Appalachia partner sites fit the traditional model seen in much of the urban-based community gardening literature due to the inherent geographic dispersion of the rural partner site programs, each partner site is required to create communal learning and gathering spaces for program staff and participants, which may or may not be connected to collective food production spaces. In this way, Grow Appalachia supports opportunities for interaction, knowledge generation, and food and resource sharing that are often implicitly connected to the collective growing spaces of urban community gardening initiatives. Additionally, by working directly with community-based organizations, the work of Grow Appalachia is intentionally community- and place-based, driven by the interests and needs of leaders and participants at the grassroots level (Grow Appalachia 2016; Grow Appalachia 2017; Grow Appalachia 2018).

Research Methods Overview

My research partnership with Grow Appalachia led to a sequential, exploratory mixed methods research design to examine how and for whom Grow Appalachia's grassroots, place-based initiatives, in the form of rural community gardening programs, contribute to sustainable development. In this design, qualitative data is typically collected and analyzed first, followed by the collection of quantitative data to build upon the preliminary findings of the qualitative

research phase; the findings of the two phases are then integrated during the final interpretation phase (Creswell & Plano Clark 2007) (Figure 1.3). Given the complexity of community development processes and the transdisciplinary nature of civic agriculture and organizational initiatives, a mixed methods design allows the researcher to more fully document the "social story," and gain a more nuanced understanding of the research problem and context (Hesse-Biber 2010:4). Additionally, this study aims to understand the experience of community capacity-building processes at multiple levels of agency (individual, organization, regional network), further justifying the need for a mixed methods approach (Hesse-Biber 2010). This dissertation has also been influenced by the methodology of organizational ethnography in which a detailed, in-depth picture of an organization and its members is developed using participative methods to examine social, cultural, and political issues affecting (or affected by) the organization (Neyland 2008).

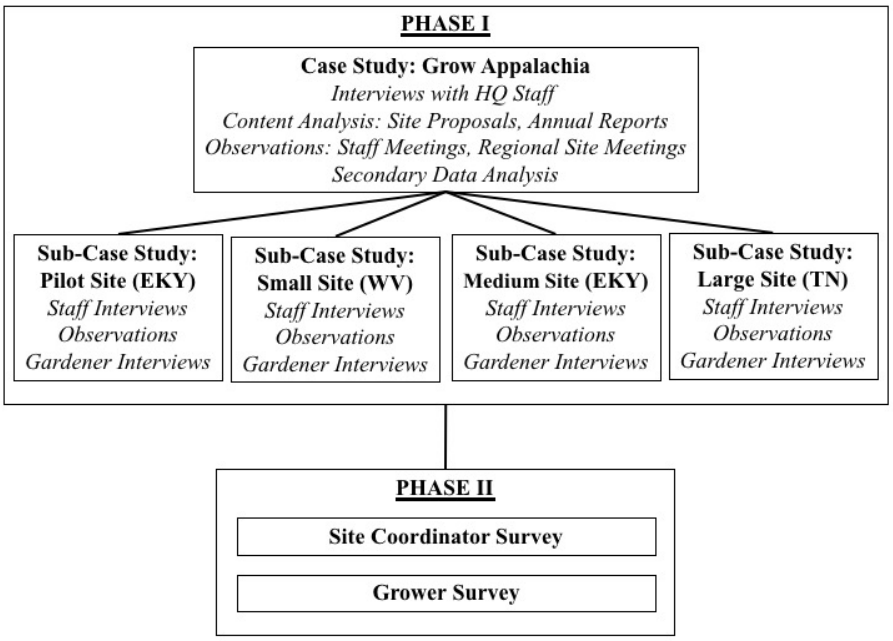

Figure 1.3. Dissertation Exploratory Sequential Mixed Methods Research Design

Although mixed methods research designs have historically cast qualitative data in a more "supportive role" (Hesse-Biber 2010:15), subordinate to quantitative data collection and analysis, this study is grounded in and led by the qualitative inquiry. The application of qualitatively-grounded mixed methods designs emphasizes the lived experiences and accounts of individuals and groups, especially those who have often been left out of or further socially and politically marginalized by research processes. Given Central Appalachia's history of uneven development and social and environmental injustice, this dissertation used an interpretative methodology in which the researcher assumes "multiple subjective realities that consist of stories or meanings produced or constructed by individuals within their 'natural' settings" (Hesse-Biber 2010:18).

This research design incorporated two distinct, but closely related, data collection phases. Phase 1 relied primarily on qualitative methods, specifically key informant interviews with select Grow Appalachia stakeholders and field observations organized according to an embedded and comparative case study design (Yin 2014). In-depth interviews were conducted with Grow Appalachia headquarters staff employed during the summer of 2016 and site coordinators, field staff, and select gardener participants at four case study sites that varied by size and geographic location. I spent a total of 18 weeks in the field (Kentucky, Tennessee, or West Virginia) between February 2016 and February 2017. Observations were conducted at the 2016 and 2017 annual gatherings in Berea, KY, three regional site meetings held during summer 2016, and various activities held at the headquarters' office and the case study sites. The interviews were transcribed verbatim. They and my observational fieldnotes were coded in NVivo Qualitative Analysis software according to an open coding approach that allowed themes to emerge inductively (Saldaña 2012).

Although the three-paper structure of this dissertation does not explicitly or comprehensively demonstrate the integration of all qualitative and quantitative analyses and findings in each individual paper, the overall dissertation research project is still best characterized as a mixed methods study. Informed by and according with the literature on mixed methods approaches (Creswell & Plano Clark 2007; Hesse-Biber 2010), the processes and outcomes of the first data collection and analysis phase were instrumental to the later design and interpretation of the second phase of data collection and analysis. The results from the qualitative Phase 1 were integrated into the development of site coordinator and gardener surveys in the more quantitative Phase 2 of data collection. The survey instruments were developed in collaboration with Grow Appalachia headquarters staff during fall of 2016 to support a program-wide evaluation for Grow Appalachia's current and future funders. Specific items and responses included on the survey reflected many of the themes discussed during the semi- and un-structured interviews, including general program experiences and benefits and challenges perceived at multiple levels (individual, household, organization, and community). Following a tailored Dillman design for the distribution of both surveys (Dillman, Smyth, & Christian 2009), the site coordinator survey was distributed via email in mid-November 2016 to all partner site coordinators. The mixed-mode gardener survey was distributed via email and mail to gardener participants through their respective site coordinators, and responses were collected between the end of November 2016 and early March 2017. Paper survey responses were merged with online responses, and all survey results were cleaned, recoded, and analyzed using SPSS (Version 22). Coding schemes and themes developed in Phase 1 guided the analysis of the Phase 2 data, from selective coding of open-ended question responses to interpretation of quantitative trends.

Researcher Stance

My previous academic work on local food systems and applied experience in co-managing community gardening initiatives greatly influenced my dissertation topics and how I framed them throughout the research project. But even more influential were my training in a discipline that strongly values applied research and my own professional experiences with engaged scholarship (and the scholarship of engagement) at Penn State's Sustainability Institute, which have led me to strongly identify with the action researcher / public scholar / educational organizer (AR/PS/EO) tradition as described by Peters, Alter, and Schwartzbach (2010). In this tradition, academic professionals "educate, learn, deliberate, conduct research, and organize and conduct public work directly *with* specific (and typically localized) groups of people that function not as audiences and students, but rather as collaborators and participants" (Peters et al. 2010:38).

I sought to follow this tradition in my dissertation work by partnering with the Grow Appalachia organization, engaging them in what evolved into a participatory action research dissertation project (Herr & Anderson 2005). I describe this dissertation project as a participatory action research endeavor because it aims to document and improve organizational practices as well as address issues of self-reliance, equity, and oppression, both within the work of Grow Appalachia as well as within the broader context of Appalachian uneven development (Herr & Anderson 2005:16). To ground my research interests of sustainable rural development, community food systems, and socio-ecological justice, I began reaching out to Appalachian-based contacts I had made through the Rural Sociological Society. A faculty member at University of Kentucky directed me to Grow Appalachia, which in turn, invited me to attend the organization's 2016 annual gathering in Berea, Kentucky. This experience game me an

immersive introduction to the work of Grow Appalachia; it also created a necessary space to begin building relationships and trust through in-person interaction and informal conversations about the organization's evaluation needs and my research goals. While more traditional approaches to organizational ethnography have emphasized ethnographic studies either *of* or *for* organizations (Neyland 2008), this dissertation project was designed from the start to be an ethnographically-informed study *with* the Grow Appalachia organization that simultaneously met my graduate program requirements and professional interests as well as the evaluation needs of Grow Appalachia headquarters towards securing reliable third-party funding and better addressing their program goals.

Therefore, this dissertation project evolved as a participatory action research project in which an outsider (myself) collaborated with organizational insiders (Grow Appalachia headquarters staff) to conduct research that simultaneously contributes to the academic knowledge base, improved and critiqued applied practice, and organizational development and transformation (Herr & Anderson 2005). To maintain the AR/PS/EO tradition throughout my dissertation work, I made Berea, Kentucky, my 'home base' during field research. I spent the first three weeks of my summer fieldwork working directly in the headquarters' office, sitting in on weekly staff meetings and occasional budget discussions, reading through collated annual reports, and traveling to local workshops and gatherings with headquarters staff. During this time, I also provided a small secondary data analysis for a new grant proposal that headquarters staff were preparing for the Appalachian Regional Commission.[1] Throughout the summer of 2016, I regularly returned to the headquarters' office to provide brief summaries and updates from my fieldwork at the case study sites and to discuss upcoming research steps. Even after

[1] This data analysis subsequently informed my sub-case study sampling strategy. For more, see Chapter 3, Paper B.

'exiting the field,' I have kept in close contact with the headquarters staff; we have collaborated via email and phone on the design and distribution of the site coordinator and gardener surveys, jointly prepared (and then delivered) professional presentations[2], and provided feedback on written summaries capturing the nature (and preliminary findings) of our research collaboration for academic and applied audiences. To both guide and sustain a more reflective analysis, I have also maintained a memo journal throughout this process to document decision-making, changes in research design, and personal reactions and experiences while traveling in the field (Hesse-Biber 2010).

Structure of Dissertation

To investigate how and for whom the place-based, grassroots civic agriculture initiatives of Grow Appalachia contribute to sustainable development in the Central Appalachian region, this dissertation is organized into three empirical papers (Chapters 2, 3, 4) that each correspond to different components of the community capacity-building framework. Chapter 2 (Paper A, "Brokering Community Food Security") examines the *levels of agency* embedded within the Grow Appalachia organization (staff, community-based organizations, and networks of organizations) to assess the *strategies* employed to build community capacity through rural community gardening. Chapter 3 (Paper B, "Coal Is In Our Food, Coal Is In Our Blood") examines how *context* shapes the *strategies* and *functions* of community gardening efforts as experienced at the individual *level of agency*. Lastly, Chapter 4 (Paper C, "Does Context Matter?") analyzes how socioeconomic and biophysical *context* influences the gardener participants' perceptions of multiple possible *community-level outcomes* of community

[2] Engle, E.W. and C. Mullins, 2017, "Building Community Capacity, One Garden at a Time: A Collaborative Evaluation of the Grow Appalachia Program," Appalachian Studies Association, Blacksburg, VA.

gardening initiatives.

Chapter 2 uses the work and structure of Grow Appalachia as a case study to understand how a broker organization (Chaskin 2001), such as Grow Appalachia headquarters, not only establishes a network of community-based organizations to achieve community capacity-building goals, but also how the broker organization sets 'rules' for participation in the network and the implications of these rules for meeting capacity-building goals, gaps that currently exist in community development and inter-organizational coordination literatures. Integrating the analysis of the semi-structured interviews with headquarters and partner site staff with the results of the site coordinator survey, the analysis found that there are four overall rules that Grow Appalachia uses to guide their work and the structure and work of the organizational network. The findings of this paper indicate that while the broker organization's rules contribute to benefits in the functioning of the community-based organizations and their community food security programs, the costs and barriers associated with the rules may reproduce social inequalities that compromise the network's overall ability to improve community food security and community development throughout the Central Appalachian region.

Chapter 3 employs Agyeman, Schlosberg, Craven, and Matthews' (2016) concept of 'everyday environmental injustices' to examine how the everyday experiences of community gardening in Central Appalachia today improve our understanding of the conditions driven by historical natural resource dependency (Krannich et al. 2014). Drawing upon the semi-structured and unstructured interviews with Grow Appalachia staff and gardener participants, I examine and interrelate four different dimensions of environmental experiences and constraints: natural, built, human health, and socioeconomic environments. Many of the experiences shared by the study participants described these 'everyday environmental injustices' not only as constraints on

their gardening abilities or respective program success, but also as justification for how and why community gardening programs, and other forms of grassroots-level redevelopment efforts, can help historically natural resource dependency communities identify development needs and opportunities.

Chapter 4 takes a deep look at context – in terms of socioeconomic and environmental advantage and disadvantage at the county level – to examine whether such place factors influence how Grow Appalachia gardener participants perceive multiple possible community-level outcomes of their respective programs. Previous scholarship on community development and community gardening has claimed that – but not necessarily demonstrated how – context shapes how these processes and initiatives affect community and individual wellbeing. Drawing upon Flora and Flora's (2015) Community Capitals Framework and using multivariate statistical techniques, this chapter demonstrates that the relationship between context and community-level outcomes depends on the type of community-level outcome one examines – and even different dimensions of specific types of outcomes, such as financial-built and human capitals – as well as different contextual factors and characteristics of the program participants. In many ways, places and/or people who experience some form of advantage, be it environmental quality or household income, may be more likely to perceive better outcomes, especially for more tangible community-level outcomes, like natural and financial-built capitals.

Taken together, these three chapters demonstrate how community gardening programs as grassroots, place-based initiatives grounded in civic agriculture may contribute to, limit, or have little effect on sustainable development efforts within the context of Central Appalachia. While this dissertation found that the activities of Grow Appalachia have built capacities of community-based organizations, households and individuals through increased access to

financial, physical, and social resources, Central Appalachia's long history of resource extraction and natural resource dependency is unlikely to be transcended by these grassroots efforts alone. This dissertation research project offers insights into how community gardening programs specifically and grassroots initiatives more generally can contribute to sustainable rural development. However, future research and policy needs to address organizational and programmatic barriers as well as contextual impediments to help grassroots efforts effectively improve wellbeing for all people in all places.

References

Agyeman, Julian, David Schlosberg, Luke Craven, and Caitlin Matthews. 2016. "Trends and Directions in Environmental Justice: From Inequity to Everyday Life, Community, and Just Sustainabilities." *Annual Review of Environment and Resources* 41:321–40.

Alkon, A.H. and J. Agyeman. 2001. *Cultivating Food Justice: Race, Class, and Sustainability.* Cambridge, Massachusetts: MIT Press.

Allen, P. 2004. *Together at the Table: Sustainability and Sustenance in the American Agrifood System*. University Park, PA: The Pennsylvania State University Press.

Appalachian Food Summit. 2018. "About Us." Last accessed 24 April 2018. https://www.appalachianfood.com/what-we-do/.

Appalachian Foodshed Project. 2012. "Appalachian Foodshed Project." Last accessed 30 January 2016. http://www.appalachianfoodshedproject.org.

Appalachian Regional Commission. 2018. "The Appalachian Region." Last accessed 20 December 2015. http://www.arc.gov/appalachian_region/TheAppalachianRegion.asp.

Appalachian Regional Commission. 2015. "Growing the Appalachian Food Economy: A Forum on Local Food Systems and Sustainable Agriculture." Last accessed 20 December 2015. http://www.arc.gov/program_areas/GrowingtheAppalachianFoodEconomy Forum.asp.

Appalachian Sustainable Agriculture Project. 2018. "About Us." Last accessed 24 April 2018. http://asapconnections.org/about-us/.

Armstrong, D. 2000. "A Survey of Community Gardens in Upstate New York: Implications for Health Promotion and Community Development." *Health & Place* 6(4):319–27.

Bailey, C., L. Jensen, and E. Ransom. 2014. “Introduction and Overview.” Pp. xiii-xxx in C Bailey, L Jensen, & E Ransom (eds.) *Rural America in a Globalizing World: Problems and Prospects for the 2010s*. University Park, PA: Penn State Press.

Barnidge, E.K., P.R. Hipp, A. Estlund, K. Duggan, K.J. Barnhart, and R.C. Brownson. 2013. “Association between Community Garden Participation and Fruit and Vegetable Consumption in Rural Missouri.” *The International Journal of Behavioral Nutrition and Physical Activity* 10(128):1-8.

Billings, D. and A. Tickamyer. 1993. “Uneven Development in Appalachia.” Pp. 7-29 in T.A. Lyson and W.W. Falk (eds.), *Forgotten Places: Uneven Development in Rural America*. Lawrence, KS: University Press of Kansas.

Billings, Dwight B. and Kathleen M. Blee. 2000. *The Road to Poverty: The Making of Wealth and Hardship in Appalachia*. Boston: Cambridge University Press.

Born, B. and M. Purcell. 2006. “Avoiding the local trap scale and food systems in planning research.” *Journal of Planning Education and Research* 26(2):195-207.

Bridger, J.C. and T.R. Alter. 2008. “An Interactional Approach to Place-Based Rural Development.” *Community Development* 39(1):99–111.

Brown, D.L. and L.E. Swanson. 2003. “Introduction: Rural America Enters the New Millennium.” Pp. 1-15 in D.L. Brown and L.E. Swanson (eds.), *Challenges for Rural America in the Twenty-First Century*. University Park, PA: The Pennsylvania State University Press.

Catte, Elizabeth. 2018. *What You Are Getting Wrong About Appalachia.* Cleveland, OH: Belt Publishing.

Chaskin, R. 2001. “Building Community Capacity: A Definitional Framework and Case Studies From a Comprehensive Community Initiative.” *Urban Affaires Review* 36(3):291–323.

Chaskin, R.J., P. Brown, S. Venkatesh, and A. Vidal. 2001. *Building Community Capacity.* New York, NY: Walter de Gruyter, Inc.

Christensen, Bradley and Rhonda Phillips. 2016. “Local Food Systems and Community Economic Development through the Lens of Theory.” *Community Development* 5330(August):1–14.

Cohen, Nevin and Kristin Reynolds. 2015. “Resource Needs for a Socially Just and Sustainable Urban Agriculture System: Lessons from New York City.” *Renewable Agriculture and Food Systems* 30(1):103–14.

Coley, D., Howard, M., & Winter, M. 2009. “Local food, food miles and carbon emissions: A comparison of farm shop and mass distribution approaches.” *Food Policy* 34(2):150-155.

Community Farm Alliance. 2018. “About.” Last accessed 24 April 2018. http://cfaky.org.

Creswell, J. W., & Plano Clark, V. L. 2007. *Designing and Conducting Mixed Methods Research.* Thousand Oaks, CA: Sage Publications, Inc.

Dillman, D.A., J.D. Smyth, and L.M. Christian. 2009. *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method.* Wiley.

Drake, L. and L.J. Lawson. 2014. “Results of a US and Canada Community Garden Survey: Shared Challenges in Garden Management amid Diverse Geographical and Organizational Contexts.” *Agriculture and Human Values* 32(2):241–54.

Draper, C., & Freedman, D. 2010. “Review and analysis of the benefits, purposes, and motivations associated with community gardening in the United States.” *Journal of Community Practice 18*(4):458-492.

Eller, R. 2013. *Uneven ground: Appalachia since 1945*. University Press of Kentucky.

Emery, M. and C.B. Flora. 2006. “Spiraling-Up: Mapping Community Transformation with Community Capitals Framework.” *Community Development* 37(1):19–35.

Environmental Protection Agency. 2015. “Local Foods, Local Places.” Last accessed 20 December 2015. http://www.epa.gov/smartgrowth/local-foods-local-places.

Firth, C., D. Maye, and D. Pearson. 2011. “Developing ‘community’ in Community Gardens.” *Local Environment* 16(6):555–68.

Fisher, Stephen L. and Barbara Ellen Smith. 2012. *Transforming Places: Lessons from Appalachia*. Champaign: University of Illinois Press.

Flora, C.B. and J.L. Flora. 1994. “Entrepreneurial social infrastructures: A necessary ingredient.” *The Annals of the American Academy of Political and Social Science* 529:48–58.

Flora, C.B. and J.L. Flora. 2003. “Social Capital.” Pp. 214-227 in D.L. Brown and L.E. Swanson (eds.), *Challenges for Rural America in the Twenty-First Century*. University Park, PA: The Pennsylvania State University Press.

Flora, C.B. and J.L. Flora. 2014. “Community Organization and Mobilization in Rural America.” Pp. 609-626 in C. Bailey, L. Jensen, & E. Ransom (eds.), *Rural America in a Globalizing World: Problems and Prospects for the 2010s.* Morgantown, WV: West Virginia University Press.

Flora, C.B. and J.L. Flora. 2015. *Rural Communities: Legacy and Change* (4th ed.) Boulder, CO: Westview Press.

Flora, J.L., J.S. Sharp, C.B. Flora, and B. Newlon. 1997. "Entrepreneurial Social Infrastructure and Locally Initiated Economic Development in the Nonmetropolitan United States." *Sociological Quarterly* 38(4):623–45.

Gaventa, J. 1980. Power and powerlessness: Quiescence and rebellion in an Appalachian valley. Oxford, UK: Clarendon Press.

Glowacki-Dudka, M., J. Murray, and K.P. Isaacs. 2012. "Examining Social Capital within a Local Food System." *Community Development Journal* 48(1):75–88.

Green, G.P. and A. Goetting, (eds). 2010. *Mobilizing Communities: Asset Building as a Community Development Strategy.* Philadelphia, PA: Temple University Press.

Grow Appalachia. 2016. "Site Coordinator Manual." PDF accessed from Grow Appalachia headquarters, Berea, Kentucky.

Grow Appalachia. 2017. "2016 Annual Report." PDF accessed from Grow Appalachia headquarters, Berea, Kentucky.

Grow Appalachia. 2018. "About Us." Last accessed 23 April 2018. http://growappalachia.berea.edu/#.

Guitart, D., C. Pickering, and J. Byrne. 2012. "Past results and future directions in urban community gardens research." *Urban Forestry & Urban Greening* 11:364-373.

Haskell, J. 2012. "Assessing the Landscape of Local Food in Appalachia." A report developed for the Appalachian Regional Commission. http://www.arc.gov/images/programs/entrep/assessinglandscapeoflocalfoodinappalachia.pdf.

Herr, K. and G.L. Anderson. 2005. *The Action Research Dissertation: A Guide for Students and Faculty*. Thousand Oaks: SAGE Publications.

Hesse-Biber, S.N. 2010. *Mixed Methods Research: Merging Theory with Practice*. NY, New York: The Guilford Press.

Hinrichs, C.C. and Charles, L. 2012. "Local food systems and networks in the US and the UK: community development considerations for rural areas." Pp. 156-176 in M. Shucksmith, D.L. Brown, S. Shortall, J. Vergunst, and M.E. Warner (eds.) *Rural Transformations and Rural Policies in the UK and US*. UK: Routledge.

Keefe, S.E. 2009. *Participatory Development in Appalachia: Cultural Identity, Community, and Sustainability*. Knoxville, TN: The University of Tennessee Press.

Krannich, R.S., B. Gentry, A.E. Luloff, and P.G. Robertson. 2014. "Resource Dependency in Rural America: Continuities and Change." Pp. 208-225 in C. Bailey, L. Jensen, & E. Ransom (eds.), *Rural America in a Globalizing World: Problems and Prospects for the 2010s.* Morgantown, WV: West Virginia University Press.

Krasny, M. and R. Doyle. 2002. “Participatory approaches to program development and engaging youth in research: The case of an inter-generational urban community gardening program.” *Journal of Extension* 40(5):1-21.

Lawson, L. 2005. *City bountiful: A century of community gardening in America*. Berkeley: University of California Press.

Lewin, P. 2017. “’Coal is Not Just a Job, It’s a Way of Life’: The Cultural Politics of Coal Production in Central Appalachia.” *Social Problems* 0:1-18.

Lichter, Daniel T. and David L. Brown. 2011. “Rural America in an Urban Society: Changing Spatial and Social Boundaries.” *Annual Review of Sociology* 37(1):565–92.

Lobao, L., M. Zhou, M. Partridge, and M. Betz. 2016. “Poverty, Place, and Coal Employment across Appalachia and the United States in a New Economic Era.” *Rural Sociology* 81(3):343-386.

Lyson, T.A. 2004. *Civic Agriculture: Reconnecting Farm, Food, and Community*. Lebanon, NH: University Press of New England.

Lyson, T.A. 2005. “Civic Agriculture and Community Problem Solving.” *Culture Agriculture* 27(2):92–98.

Lyson, T.A. 2007. “Civic Agriculture and the North American Food System.” Pp. in T.A. Lyson and C.C. Hinrichs (eds.), *Remaking the North American Food System: Strategies for Sustainability.* Lincoln: University of Nebraska Press.

Macias, T. 2008. “Working toward a Just, Equitable, and Local Food System: The Social Impact of Community-Based Agriculture.” *Social Science Quarterly* 89(5):1086–1101.

Mares, Teresa Marie and Alison Hope Alkon. 2011. “Mapping the Food Movement: Addressing Inequality and Neoliberalism.” *Environment and Society* 2(1):68–86.

McClintock, N. 2012. “Assessing Soil Lead Contamination at Multiple Scales in Oakland, California: Implications for Urban Agriculture and Environmental Justice.” *Urban Studies and Planning Faculty Publications and Presentations*. Paper 94.

McIlmoil, R. and E. Hansen. 2010. “The Decline of Central Appalachia Coal and the Need for Economic Diversification.” 19 January. Morgantown, WV: Downstream Strategies.

McIlvaine-Newsad, H. and R. Porter. 2013. “How Does Your Garden Grow? Environmental Justice Aspects of Community Gardens.” *Journal of Ecological Anthropology* 16:69–75.

Meenar, M.R. 2015. “Nonprofit-driven community capacity-building efforts in community food systems.” *Journal of Agriculture, Food Systems, and Community Development*. Advance online publication. http://dx.doi.org/10.5304/jafscd.2015.061.006.

Neyland, D. 2008. *Organizational Ethnography*. Los Angeles: SAGE Publications.

Obach, Brian K. and Kathleen Tobin. 2014. “Civic Agriculture and Community Engagement.” *Agriculture and Human Values* 31(2):307–22.

Okvat, H.A. and A.J. Zautra. 2011. “Community gardening: A parsimonious path to individual, community, and environmental resilience.” *American Journal of Community Psychology* 47(3-4):374-387.

Parker, T. 2015. “County Typology Codes.” United States Department of Agriculture. Retrieved 31 May 2016. http://www.ers.usda.gov/data-products/county-typology-codes.aspx.

Partridge, M.D., M.R. Betz, and L. Lobao. 2013. “Natural resource curse and poverty in Appalachian America.” *American Journal of Agricultural Economics* 95(2):449-456.

Pender, J., Marré, A., & Reeder, R. 2012. “Rural Wealth Creation Concepts, Strategies, and Measures.” *USDA-ERS Economic Research Report*, (131).

Peters, S.J., T.R. Alter, and N. Swartzbach. 2010. *Democracy and Higher Education: Traditions and Stories of Civic Engagement*. East Lansing, MI: Michigan State University Press.

Phillips, R. and C. Wharton. 2016. *Growing Livelihoods: Local food systems and community development*. New York, NY: Routledge.

Pigg, K.E. and T.K. Bradshaw. 2003. “Catalytic Community Development: A Theory of Practice for Changing Rural Society.” Pp. 385-405 in D.L. Brown and L.E. Swanson (eds.), *Challenges for Rural America in the Twenty-First Century*. University Park, PA: The Pennsylvania State University Press.

Pollard, K. and L.A. Jacobsen. 2017. “The Appalachian Region: A Data Overview from the 2011-2015 American Community Survey Chartbook.” Report prepared for the Appalachian Regional Commission under contract #CO-18662-16. (https://www.arc.gov/research/researchreportdetails.asp?REPORT_ID=132).

Poulsen, M.N. 2015. “*They Got Corn Out Here in the Heart of the Ghetto?” Community Perceptions of Urban Farming in Baltimore, Maryland.* Dissertation: Johns Hopkins University.

Purdy, J.S. 2011. “Afterword: An American Sacrifice Zone.” Pp. 181-184 in M. Morrone and G. L. Buckley (eds.), *Mountains of injustice: Social and environmental justice in Appalachia*. Columbus, OH: Ohio University Press.

Rasker, R. 2006. “An exploration into the economic impact of industrial development versus conservation on western public lands.” *Society and Natural Resources* 19(3):191-207.

Richardson, J. 2000. *Partnerships in communities: Reweaving the fabric of rural America.* Washington, DC: Island Press.

Roenker, J.M. 2002. "The Economic Impact of Coal in Appalachian Kentucky." Report prepared by University of Kentucky Center for Business and Economic Research.

Ruel, L. 2012. "Branding Study for Appalachian Local Food Economies." Report for the Central Appalachian Network. http://dusp.mit.edu/project/branding-study-appalachian-food-economies-0.

Saldaña, J. 2012. *The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA: SAGE Publications.

Saldivar-Tanaka, L. and M.E. Krasny. 2004. "Culturing Community Development, Neighborhood Open Space, and Civic Agriculture: The Case of Latino Community Gardens in New York City." *Agriculture and Human Values* 21(4):399–412.

Santo, R., A. Palmer, and B. Kim. 2016. "Vacant Lots to Vibrant Plots: A Review of the Benefits and Limitations of Urban Agriculture." Report prepared for the Johns Hopkins Center for a Livable Future. https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/urban-ag-literature-review.pdf

Stedman, R.C. 2013. "Resource dependence and rural development." Pp. 77-91 in G.P. Green (ed.), *Handbook of Rural Development*. Cheltenham, UK: Edward Elgar Publishing.

Tallichet, S.E. 2014. "Got Coal? The High Cost of Coal on Mining-Dependent Communities in Appalachia and the West." Pp. 279-295 in C. Bailey, L. Jensen, & E. Ransom (eds.) *Rural America in a Globalizing World: Problems and Prospects for the 2010s*. University Park, PA: The Pennsylvania State University Press.

Tarng, Danny W. 2015. "Privilege and Allyship in Nonprofit Food Justice Organizations." *Journal of Agriculture, Food Systems, and Community Development* 5(4):173–77.

Turner, B. 2011. "Embodied Connections: Sustainability, Food Systems and Community Gardens." *Local Environment* 16(6):509–22.

Yin, R. 2014. *Case Study Research: Design and Methods*. Thousand Oaks, CA: Sage Publications, Inc.

CHAPTER 2:

PAPER A: BROKERING RURAL COMMUNITY FOOD SECURITY: AN ORGANIZATIONAL NETWORK CASE STUDY IN CENTRAL APPALACHIA

Introduction

Community-based organizations (CBOs) are a common entry point for examining the activities, processes and outcomes of localized and/or alternative agrifood system initiatives, especially in urban environments (Drake & Lawson 2015; Meenar 2015; McClintock & Simpson 2017). CBOs are increasingly recognized for their roles across many different efforts to improve food and agricultural systems, but are particularly noted for their potential contributions, as well as their challenges, in the realms of food justice and community food security (Slocum 2006; Alkon and Agyeman 2011; Sbicca 2012; Kato 2013; Phillips & Wharton 2016).

Community food security may be understood as the condition in which "all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice" (Bellows and Hamm 2002:35). The work of CBOs on community food security can be categorized into two basic strategies: (1) facilitating immediate access to food by providing or distributing resources to vulnerable populations or (2) providing programming and resources to improve local people's social cohesion and capabilities toward the management of their own food resources and nutrition. While the former strategy is often fulfilled by CBOs like soup kitchens, food banks, and food pantries, the latter includes CBO-initiated programs like community kitchens, community gardens, farmers' markets, and community food boxes (Roncarolo, Bisset, and Potvin 2016; Wakefield et al. 2013).

Many CBO-based community food security programs have been found to improve household food security and improve the health of participants, at least in the short-term (Roncarolo et al. 2016), goal one mentioned above. But by situating community food security work in locally-oriented CBOs, these initiatives often experience greater community buy-in and participation than more regionally- or nationally-based food security initiatives, helping to also meet goal two mentioned above (Jaskiewicz et al. 2016). In addition, community food security work by CBOs has been found to contribute to other important aspects of community development, such as racial justice and empowerment, both internally and external to the organizations that host the community food security programs (Slocum 2006; Curran and González 2011; Tarng 2015). And in some cases, it may also induce citizen mobilization and policy change towards addressing the root causes of food insecurity and creating sustainable systems-level change (Tarng 2015).

But CBO-based community food security work is not without its challenges. Like many CBOs, those engaged in community food security work are limited by organizational capacity and physical and financial resources. In a study of Philadelphia-based food systems-oriented CBOs, Meenar (2015) found the organizations struggled with administrative and budgetary issues (e.g., limited staff support, lack of physical infrastructural investment; inconsistent quality and quantity of services); lack of and/or poor community partnerships; uncertain longevity and availability of programs; spatial mismatch of programs; lack of local participation; unfavorable city policy and neighborhood atmosphere; and lack of informational access. In their work with similar CBOs in Ontario, Canada, Wakefield et al. (2013) found that this work may actually help to reproduce the economic and social structural inequalities that create food security problems in

the first place – and the limited capacity of CBOs further limits their ability to overcome this situation or become more effective advocates.

To address these challenges, participation in collaborative CBO networks has been noted as a solution (Meenar 2015; Wakefield et al. 2013). While there is a wealth of scholarship that examines collaboration between organizations more generally, there is a lack of research examining the specific processes, outcomes, and barriers of collaboration between CBOs working in the realm of community food security. Given the structural socioeconomic issues that limit or enable both the function of CBOs and the prevalence of community food insecurity, it is important to examine this particular area of interorganizational collaboration to improve both scholarly understanding and applied practice towards greater community food security and community development overall.

This paper draws upon scholarship from organizational sociology and develops the concept of the "broker organization" (Chaskin 2001) to examine the work of Grow Appalachia, a nonprofit initiative that facilitates and provides resources for networks of community-based organizations in order to address community food security and community development across the Central Appalachia region. Using a mixed methods case study approach, this paper 1) identifies the rules and strategies that Grow Appalachia headquarters, as a broker organization, sets and circulates in managing its interorganizational network of CBOs and (2) analyzes the organizational outcomes, benefits, and barriers experienced by the partnering CBOs within the interorganizational network as these rules and strategies are "brokered" and translated into practice at the community level.

Four key rules are identified by the researcher that implicitly guide how Grow Appalachia designs and facilitates community food security work performed by CBOs

throughout Central Appalachia: "Being In And Of The Community," "Providing a Hand Up, Not A Hand Out," "Cultivating Science-Assisted Craft/Mountain Agriculture," and "Promoting Sustainability for Self-Sufficiency." From the perspective of the study participants, the practices governed by these rules resulted in greater organizational capacity, improved community buy-in, neutralized community conflict, and rejuvenated community food traditions. That said, these same rules and practices were also related to staff burnout and exclusion of some disadvantaged populations from program and organizational network participation. Overall, the rules set and maintained by Grow Appalachia in its role as the broker organization for pursuing community food security yielded more rewards than costs for the CBOs participating in the network. However, the rules also had the effect of reproducing inequalities at the region and community level that compromised the very contributions to community food security and community development in the Central Appalachian region that were among the aims of participating CBOs and Grow Appalachia.

Background

Community-Based Organizations and Organizational Collaboration Networks

Given their importance in the development of modern industrial society, organizations have long been a topic of sociological inquiry, dating back to Weber's work on bureaucracy, authority, and rational systems of organization (Roth and Wittich 1978). Simply, organizations may be understood as "a means by which people working together can accomplish larger and more complicated tasks than they can as individuals acting separately" (Handel 2002:2). They vary widely in their aims, size, formality, and governance, and these characteristics may change over the life course of an organization. Scott and Falcone (1998) described three approaches for understanding organizations, including: (1) rational theories, in which organizations are designed

to achieve specific goals through predetermined plans, rules, and a division of work; (2) natural theories, in which organizations are human and social systems that include cultural dimensions and include outcomes beyond the formal mission-driven work of the organization; and (3) open systems theories that are concerned less with the internal structure of organizations and instead the organizations' social environment. Because this paper examines the work of an organizational network through the lens of individual human experience, the second two theories are most relevant here.

As a broad category of organizations, nonprofit organizations are recognized as institutions essential to civil society, as they fulfill social services, create spaces for civic engagement, and lobby for social causes in policy-making processes (Leroux 2007; Putnam 2000). Community-based organizations (CBOs), a localized type of nonprofit organization, have become increasingly important to American cities and communities in the contemporary era of privatization and devolution (Marwell 2004; Walker & McCarthy 2010). Additionally, as resources have become more scarce and funders demand greater operational efficiency, cooperation among CBOs has become more pronounced in practice and as a topic for research examining the work and outcomes of CBOs (Rich, Giles, & Stern 2001; Takahashi & Smutny 2001; Provan & Lemaire 2012). Interorganizational collaboration can take many different operational and governance forms depending on the number and type of organizations involved and the issue(s) and/or actor(s) driving their coordination (Alexander 1995). The forms or structure of interorganizational collaboration are closely tied to the motivations for and the outcomes of the collaboration processes (Williams 2005; Arya & Lin 2007).

Research examining CBO relationships and networks has identified three main motivations for organizational coordination or collaboration, including exchange of resources,

alignment of practices and roles, and minimized transaction costs (Alexander 1995). Organizational collaboration – in a variety of forms – has increasingly been seen in the private, public, and nonprofit spheres as a means of enhancing competitive advantage, promoting cost-effectiveness, expanding the efficacy of organizational governance, and more effectively providing services to an increasingly diverse population (Takahashi & Smutny 2001). For example, in an examination of 20 early child care and education organizations, Selden, Sowa, and Sandfort (2006) found that collaboration between CBOs improved the working experience of organization employees, elevated the CBO-based programs through an increased array of services and facilities, and enhanced educational experiences and outcomes for their clients. Additionally, Chen and Grady (2010) found that participating organizations experience enhanced client outcomes and interorganizational relationships when partnerships are formed to meet shared programmatic and organizational goals. Organizational learning outcomes are also supported when partnerships are formed to enhance organizational legitimacy (Chen & Graddy 2010).

But collaboration may not be desirable or the same experience for all organizations or organization service populations (Longoria 2005). Guo and Acar (2005) found in a survey of 95 urban charitable organizations that an organization is more likely to develop formalized collaborations when it is older, has larger budget size, receives government funding, has more board linkages with other nonprofit organizations, and is not operating in the education and research or social service industries. Research on CBO collaborations has also captured challenges that arise from or affect collaboration, which Takahashi and Smutny (2001) categorize at three different levels: contextual, institutional, and individual. Contextual challenges are driven by the evolution and complexity of the economic, governance, and social

systems in which CBOs exist (e.g., immigration patterns, economic market shifts), affecting their ability to respond effectively to local needs as well as extralocal pressures. Institutional challenges include local sources of stable funding and increasing competition for funds; lack of functional organization within and between agencies; and frequent staff turnover. Lastly, individual-level dilemmas include lack of experience in inter-organizational cooperation and/or knowledge about other organizations, clashing leadership styles, and poor relationship histories with other organization leaders (Takahashi & Smutny 2001).

While the majority of organizational studies, and particularly CBO-based research, are based within an urban context, there is a distinct lack of research on the processes and outcomes of inter-organizational collaboration in rural settings. While many social problems and needs transcend rural-urban boundaries (e.g., poverty, unemployment, food security), these problems can arise from different drivers and may be experienced differently across these spatial boundaries (Bailey, Jensen, and Ransom 2014), justifying the need to understand how organizations operate collaboratively in rural contexts as much as urban. In the few existing studies, rurality mediates the processes, outcomes, and barriers experienced by CBOs in individual and collaborative work. Considering the context of an under-resourced rural development project, Bradshaw (2000) found that interorganizational collaboration reduced the financial risk required by each of the participating organizations, allowing for successful partnerships that contributed to better overall flood management, affordable housing, and social service delivery in a rural California community. That said, Snavely and Tracey (2000) found that collaboration between rural CBOs in southern Illinois and the Mississippi Delta may be impeded by geographic dispersion, poor transportation access, limited financial resources and low staff salaries, and local resistance to service offerings; but these authors also found that

collaborations in these settings benefit from the trust embedded in informal, personal networks that may already exist within rural communities (Snavely and Tracy 2002).

Broker Organizations in Organizational Networks

While these challenges can limit the effectiveness of inter-organizational collaboration, especially in resource poor and/or rural areas, research has found that participation in organization-based networks facilitated by a third party organization may help to overcome many of these issues, increasing the likelihood that the rewards of collaboration outweigh the costs for individual organizations (Chen & Graddy 2010; Walker & McCarthy 2010; Abrahms, Davis, & Moseley 2015). These third-party coordinating organizations provide the leadership necessary to maintain stable, long-term interorganizational partnerships as individual organizations cope with change at multiple points in time (Ivery 2010). Leadership by third-party organizations allows for continuous communication, maintenance and efficient use of resources, reduced gaps and overlaps in service delivery, and strategic and adaptive planning through periods of change that may not be possible in interorganizational collaborations that lack a coordinating organization (Alexander 1995; Provan & Kenis 2008; Chen & Graddy 2010; Ivery 2010).

A particular type of coordinating organization proposed by Chaskin (2001:145), specific to the conditions of CBOs working on community development, is a "broker organization," which operates as an intermediary organization that is "responsible for fostering and convening partnerships and networks of relations among existing organizations" (Chaskin 2001:145). Chaskin (2001:148) further describes broker organizations as "an ongoing mechanism for problem solving, resource development and acquisition, and, possibly, a degree of community-level decision making and governance." In addition to mediating and fostering relationships,

broker organizations may also provide technical assistance to other organizations, act as a clearinghouse for information, monitor activities and outcomes, or act as funders or resource managers, among other roles. Through these activities, broker organizations contribute to overall community development by building organizational capacity through enhanced networks and resources.

In some cases, existing CBOs evolve to fill this role; in other cases, new formal or informal organizations are created or arise to fulfill this purpose. In his work with urban CBOs, Chaskin (2001) identified three factors that can determine the success of a broker organization's work, including: (1) the extent to which issues of power and control are successfully negotiated within the interorganizational network; (2) the extent to which the benefits of interorganizational relationships are found to outweigh costs over time; and (3) the broader historical and socioeconomic context in which the broker and partner organizations are operating. The rewards and costs among participating organizations produced by the hierarchical structure induced by the presence of a broker organization are closely related to the characteristics (e.g., human resources, funding structure, flexibility) of the broker organization and its reflexivity and willingness to acknowledge and mediate power relations between itself and other organizations participating in the network (Chaskin 2001; Avery 2010).

Like individual organizations, interorganizational networks may also be understood as open social systems. Alexander (1995:69) uses Giddens' Structuration Theory (1984) to describe interorganizational networks as having social, or coordination, structure, or "an organized set of rules and resources or transformation relations…that enable and (or) constrain behavior, action, and interaction." While Chaskin (2001) recognizes the power held by a broker organization in an interorganizational network as they control resources, information access, and organizational

representation, research has yet to examine how broker organizations, in their position of power, also influence the 'rules' driving the structure and processes of an interorganizational network. For this particular study, the concept of "rules" is used to examine the strategic principles and philosophies that underlay the day-to-day function of a broker organization, including how it forms its interorganizational networks and how its policies and programs are implemented at the local level. Therefore, this study addresses the following research questions: 1) As a broker organization, what rules does Grow Appalachia establish – explicitly or implicitly – to coordinate the practice of their CBO-based network?; and 2) How do these rules contribute to the benefits, costs, and barriers experienced by the participating organizations in regard to their work on community food security?

Study Context

The focus of this organizational network study is the Grow Appalachia initiative, a partnership founded in 2009 between the Loyal Jones Appalachian Center of Berea College and JP's Peace, Love & Happiness Foundation. Grow Appalachia's food security-driven mission is to "help as many Appalachian families grow as much of their own food as possible." Grow Appalachia headquarters in Berea, KY, establishes and manages a network of community-based organizations across six states[3] in the Central Appalachia region (Grow Appalachia 2017a). Grow Appalachia headquarters identifies partner site organizations by soliciting applications annually from CBOs (1) that are independent and locally-oriented (i.e., not branches of regional or national agencies) and (2) who have a history of working on food security or food security-related issues, such as poverty or economic development. In turn, each partner site organization

[3] States include: Southeastern Ohio, southern West Virginia, eastern Kentucky and Tennessee, western North Carolina, and southwestern Virginia.

provides a dedicated site coordinator who is tasked with facilitating the site's Grow Appalachia program, including management of the program's budget, reporting, and any additional staff/volunteers recruited to support their local Grow Appalachia work (Figure 2.1).

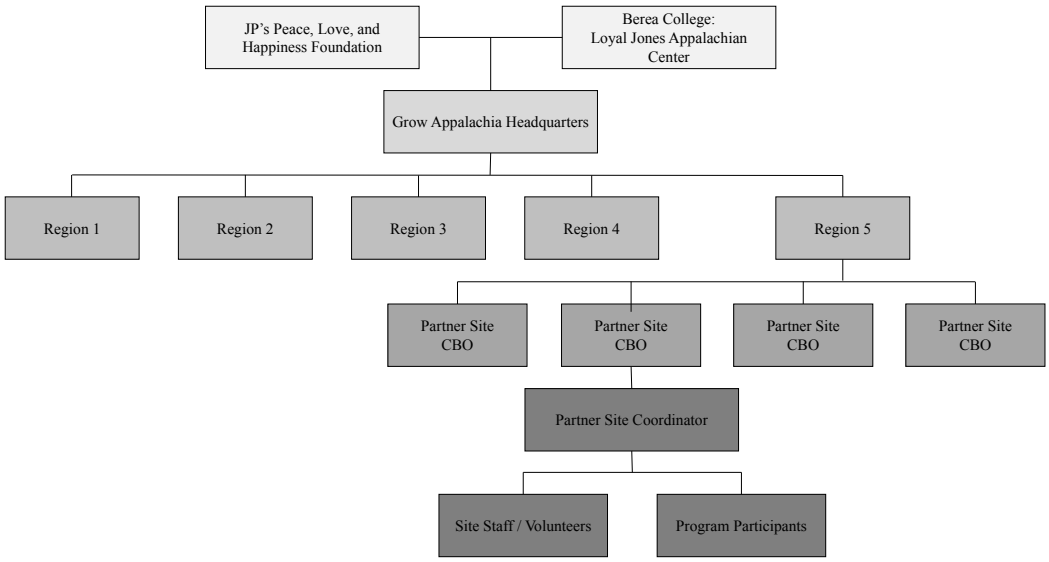

Figure 2.1. Organizational chart of Grow Appalachia initiative
Source: Developed based upon interviews and review of internal documents.

Since Grow Appalachia's start in 2009, its partner site organizations have varied widely in type, including social service organizations, educational institutions, heritage/cultural centers, and economic development agencies. Given this variation in partner site organization type, Grow Appalachia activities may manifest differently at the partner site level, including various combinations of home, community, and institutional gardening programs. Each partner site organization is also responsible for delivering educational programming related to organic gardening, healthy cooking methods, and food preservation; providing organic gardening tools and resources (seeds, plants, hand tools, fertilizer, pesticides, etc.); and arranging garden labor and tilling services as needed. Since 2009, the entire Grow Appalachia organizational network has worked with more than 4,300 families to grow nearly 3 million pounds of organic produce.

In 2016 alone, Grow Appalachia invested $611,000 in gardening resources across 32 partner site organizations, serving over 1,300 families in 61 different counties (Grow Appalachia 2017b).

In knitting together this geographically dispersed activity, Grow Appalachia headquarters operates as a broker organization (Chaskin 2001). Headquarters distributes financial, technical, and educational resources to the partner site CBOs and conducts bimonthly reviews of partner site spending and reports. Grow Appalachia headquarters also facilitate interorganizational collaboration by hosting several methods of interorganizational communication (e.g., email listserv, online blog) as well as by bringing together partner site coordinators and site staff in person for regional meetings and annual trainings, ultimately forming the largest coordinated network of rural community-based gardening programs in the United States. To counteract the Appalachian region's geographic isolation and limited financial resources, Grow Appalachia headquarters intentionally brokers relationships between previously disconnected CBOs to encourage interorganizational learning, mentorship, and resource sharing that can amplify and sustain improvements in local community food security. The Grow Appalachia initiative was originally founded to perform these 'broker' responsibilities, making this initiative an important case study of interorganizational collaboration for community food security in rural, resource poor settings. This study also sheds light on how broker organizations formed primarily for the role of brokerage interact with and affect their CBO partners.

Methods

To understand the roles and rules of a broker organization working across a wide service area and engaging diverse organizational partners, this project[4] employed an embedded case

[4] The analysis presented in this study is part of a larger ongoing collaborative program evaluation project between the author and Grow Appalachia headquarters. This project was initiated in February 2016 to assess the organization's process and outcomes to better understand and elevate their impact across the service region.

study design, including the Grow Appalachia organization as the parent case study and four comparative sub-case studies (one pilot, three full) with select partner site organizations (Yin 2012). The sub-case study sites were purposively selected to capture variation in Grow Appalachia partner sites' geographical location and program size: one small site (~35 household participants) in southern West Virginia, one medium site (~60 household participants) in eastern Kentucky, and a large site (~90 household participants) in eastern Tennessee. The pilot study (~20 household participants) was selected for its proximity to Grow Appalachia headquarters in Berea, Kentucky, to evaluate the qualitative data collection instruments for validity. Data collected through this pilot study is also included in this analysis.

To capture the intricacies of intra- and inter-organizational processes across the full network case study, data was collected using an exploratory-sequential mixed methods approach (Creswell & Plano Clark 2007). In this mixed methods approach, findings from Phase 1 are used to inform data collection and analysis in Phase 2; additionally, findings from both phases are integrated to address the overall study's research questions, as is demonstrated in this paper's findings section (Creswell & Plano Clark 2007). Phase I of data collection utilized mixed qualitative methods, including semi-structured interviews (N=26) with Grow Appalachia headquarters staff and sub-case study partner site coordinators and staff and four combined months of participant observation at the headquarters' office in Berea and at the four sub-case study sites. Interview participants were identified by their role in the program using a stratified purposive sampling process (Ritchie et al. 2013). The interview sample (Table 2.1) began with all Grow Appalachia headquarters staff members employed during the summer of 2016 and the individual site coordinators employed at CBOs where the four sub-case study sites were managed.

Site coordinators were asked to identify and provide introductions to any staff members and key volunteers involved in their Grow Appalachia site since the establishment of their individual programs. All but one[5] of the interviews were conducted in person at a location of the participant's choosing; interviews ranged in length from 20 minutes to 2.5 hours, with an average length of 70 minutes. All but two interviews were conducted one-on-one.[6] The majority of the qualitative fieldwork was conducted between May 2016 and September 2016; key events included Grow Appalachia's annual All Hands Gathering in Berea (February 2016 and 2017), and three regional site meetings (two in May 2016 and one in August 2016), one each in Kentucky, Tennessee, and West Virginia. Other observation events included staff meetings, workshops, farmers' markets, and garden tours.

Table 2.1. Interview participants sample by sub-case study site

Case Study Site	Grow Appalachia (HQ)	Pilot Site	sWV (Small)	eKY (Medium)	eTN (Large)	Total
Staff Interviews	6[7]	3	3	3	5	20
Interviewee Roles	Director (1) Asst. Director (1) Office Staff (2) Field Staff (2)	Site Coord. (1) Org. Director (1) Support Staff (1)	Site Coord. (1) Field Staff (2)	Site Coord. (1) Former/Current Field Staff (2)	Site Coord. (1) Support Staff (2) Field Staff (2)	--

The semi-structured interviews with Grow Appalachia staff and coordinators included questions about personal and organizational background; program mission, operation, outcomes, and challenges; and goals for future programming. All interviews were audio-recorded and

[5] A follow up interview was conducted with the sixth headquarters staff member in July 2017 via phone.

[6] Two of the staff interviews at the Eastern Tennessee case study site included the interview participant and the site coordinator, as the site coordinator had driven the researcher to the interview site. It is the opinion of the researcher that the presence of the site coordinator had little influence on the interview outcomes given the history of relationship and trust between the participant and the site coordinator.

[7] All Grow Appalachia headquarters staff were interviewed twice. All six were interviewed in May 2016. Five of the staff members participated in follow up interviews in August 2016 after conducting their respective regional site visits. The sixth staff member participated in a follow up interview in July 2017 after several months of collecting stories at Grow Appalachia partner sites.

transcribed verbatim by the researcher or a third-party professional transcriber. All interview participants provided verbal informed consent prior to participating and following an IRB-approved oral consent script read by the researcher. Interview and field note transcriptions were coded and analyzed using NVivo Qualitative Analysis software. Interview transcriptions were analyzed using an open coding approach where themes were allowed to emerge organically; the coding framework developed from this process was used to guide a selective coding process of the field note transcriptions (Saldaña 2012).

Informed by the results of Phase I, Phase II of data collection included an online survey (Dillman, Smyth, and Christian 2008) sent to all of the 2016 partner site coordinators (N=32) and a content analysis of all 2016 partner site proposals and end of year reports and narratives, as available.[8] A 50-question survey was created in Qualtrics and included questions related to program history, operation, outcomes, barriers, and individual demographics, as informed by a preliminary analysis of all Phase I data. Survey questions about the organizational benefits and barrier impacts from participating in the Grow Appalachia network were measured on a 5-point Likert Scale with "1" indicating no impact and "5" indicating a great deal of impact.

The survey was distributed via email to the Grow Appalachia partner site listserv with directions for who was to complete the survey (current and/or former site coordinators and staff instrumental to program operation, at the discretion of the site coordinator). The survey was active for two months (mid-November 2016 to mid-January 2017), and included three email reminders timed approximately every three weeks following the initial participation request. The

[8] Not all sites submitted a proposal for the 2016 season nor did all sites submit final report indicators and/or narrative at the end of the 2016 season. In some cases, this was because the program was small in nature or cooperating with another partner site for the 2016 season; in the case of missing end-of-year reports, four sites had failed by the end of the season and/or were not renewed for the 2017 season. Out of the 32 partner sites in 2016, the final document sample included 30 site proposals; 28 end-of-year reports; and 22 end-of-year narratives.

survey yielded a total of 32 responses representing 28 of the 2016 partner site organizations (a response rate of 88%). Quantitative survey data and end of year report indicators were analyzed for descriptive statistics using SPSS (Version 22). Using NVivo Qualitative Analysis software, open-ended survey questions, site proposals, and end-of-year narratives were selectively coded (Saldana 2012) according to the coding scheme generated in Phase I. Additional background data about the organizations was gleaned from the Grow Appalachia and partner site websites, as needed.

Study Sample: 2016 Partner Site Organizations and Survey Respondents

This section describes the organizations involved in the Grow Appalachia initiative during the 2016 growing season and the site coordinators/staff who responded to the online survey.

2016 Partner Site Organizations

Grow Appalachia headquarters accepted 32 partner site proposals for the 2016 growing season. Based on their organization and mission descriptions from their proposals, about half of these organizations were classified as "social service" organizations; nine had education-based missions; four programs were housed in organizations whose mission was tied to preserving and celebrating local/Appalachian culture and traditions; and four were invested in economic development (for descriptions of organizations by mission type, see Table 2.2). Although they are treated as distinct categories, most of these organizations' missions cut across several of these dimensions of work (e.g., social services and economic development); but the mission typology provides insight as to what originally brought these organizations to the Grow Appalachia program and/or how they operationalized the program at the partner site level.

Table 2.2. Types of organizations involved in Grow Appalachia in 2016 by mission type

Mission Type	#Orgs	Description
Social Services	15	Poverty relief & food access organizations, Faith-based organizations (eg. Missions), Shelters, Crisis centers, Health organizations
Education	9	Higher education institutions, Extension, Secondary education, Daycares, Environmental / Food system education organizations
Heritage	4	Settlement schools, Cultural centers
Economic Development	4	Economic transition organizations, Job creation & Farmer training programs

Nearly half (N=15) of the partner site organizations were located in Kentucky (Table 2.3). Most of the organizations (N=22) have been present in their home communities for more than 10 years (Table 2.3). Of the 32 partner sites that participated in the 2016 growing season, 28 are located in nonmetropolitan[9] counties. Of the five partner sites located in metropolitan counties, four recruit many (if not most) of their household participants from the surrounding rural regions / nonmetropolitan counties. (The one urban site is located in Cincinnati, Ohio, in a neighborhood historically populated by people who out-migrated from Appalachia's rural regions.) Of the 32 partner sites, 29 are located in counties included in the ARC's delineation of Central Appalachia[10] (including North and South Central); the three that are not serve a population that either (1) is located in Appalachian counties and/or (2) has similar demographic and economic characteristics to those in the Central Appalachian region. Of the 29 Appalachian counties that host partner sites, 25 are located in counties that have been designated by the Appalachian Regional Commission as economically distressed and/or at risk of becoming economically distressed.[11]

[9] Metro/Nonmetropolitan status was based upon the 2013 USDA ERS county classifications in which nonmetropolitan counties are outside the boundaries of metro areas and have no sites with 50,000 residents or more (Parker 2015).
[10] Appalachian Regional Commission. 2016a. "The Appalachian Region." Retrieved May 31 2016. (https://www.arc.gov/appalachian_region/TheAppalachianRegion.asp).
[11] Appalachian Regional Commission. 2016b. "County Economic Status and Distressed Areas in Appalachia." Retrieved May 31 2016. (https://www.arc.gov/appalachian_region/CountyEconomicStatusandDistressedAreasinAppalachia.asp).

Table 2.3. Characteristics of 2016 partner site organizations and their GA programs (N=32)

State	
Kentucky	15
West Virginia	8
Tennessee	4
Ohio	2
Virginia	2
North Carolina	1
Tenure in Community	
Range	*2 – 120 years*
Average	*39 years*
10 years or less	10
11 – 25 years	6
26 – 50 years	7
More than 50 years	9
Years in GA Program	
Range	*1 – 8 years*
Average	*4 years*
1-2 years	8
3 years	8
4-5 years	10
6-8 years	6

Program Grant Size	
Range	*$2,500 – $63,000*
Average	*$19,300/site*
Less than $10,000	9
$10,000-$14,999	8
$15,000-$19,999	7
$20,000 or more	8
Number of Households	
Range	*9 – 160 households*
Average	*39 households/site*
Less than 20 households	8
20 – 29 households	9
30-49 households	7
50 or more households	8
Pounds of Food Produced	
Range	*290 – 90,000 lbs*
Average	*20,300 lbs*
Less than 5,000 lbs	11
5,000-19,999 lbs	11
20,000-40,000 lbs	6
More than 40,000 lbs	4

Of the 32 partner sites, half (N=16) had been with the Grow Appalachia program for four or more years (including the 2016 growing season (Table 2.3). The grants provided by Grow Appalachia to the partner sites ranged from $2,500 - $63,000 per site, with an average grant size of $19,300. The programs included an average of 39 households in their programs, including home and community garden participants, and grew a program average of 20,300 pounds of food in the 2016 growing season.

Partner Site Coordinators and Staff Survey Respondents

Of the 32 respondents, 28 identified themselves as the current or former partner site coordinator; the rest identified themselves as support staff for their programs (Table 2.4). Two-thirds of the respondents had been involved with their Grow Appalachia sites for 3 or more years. The respondents were an average of ~40 years old and had lived in their home communities for an average of ~18 years; two-thirds identified as female and all but one identified their race as white. The respondents were highly educated (78.2% with a four-year

college degree or higher) and 18 of the 32 worked 35 or more hours per week at one or more jobs, including and in addition to their Grow Appalachia position. About two-thirds of the respondents also reported having a household income of $30,000 or more in 2015 (before taxes).

Table 2.4. 2016 Site coordinator and staff characteristics (N=32)

Respondent Characteristic	
Site Coordinator (Current/Former)	28 (87.5%)
Involved with GA Program 3+ Years	22 (68.7%)
Female	21 (65.7%)
White	31 (97%)
Four-Year College Degree or Higher	25 (78.2%)
Full-Time Employment	18 (59.4%)
2015 Household Income, $30,000 +	21 (65.7%)
Age	
Range	23 – 66 years
Average	39.4 years
Years Lived in Community	
Range	0 – 63 years
Average	17.8years

Rules of a Broker Organization

Four main organizational rules (and the benefits, costs, and barriers associated with them) emerged from the integrated data analysis. While the concept of "rules" and the four described below originated from the author's framing of the study and the combined qualitative and quantitative analyses, the rules' labels reflect language and terms used by and circulated among the research participants themselves. The rules were discussed – explicitly and implicitly – by staff at Grow Appalachia headquarters when describing their work and the program overall, but the experiences described by partner site staff also reflected the ideals underlying the rules and how they translated at the community-/site-level. In spirit and some specifics, the rules often traced to the previous nonprofit and community development experience headquarters staff brought to the Grow Appalachia program, as well as to the expectations of the program's

primary foundation funder[12]. This section describes these four rules, how they translated into practice, and how they were related to the many benefits, costs, and barriers observed and shared throughout the course of the study (summarized in Table 2.5). Quantitative survey results that support presentation of the rules are embedded throughout the following section (for full data tables on the staff survey, see Appendix 2A.)

"Being In and Of the Community"

As detailed above, Grow Appalachia headquarters staff prioritized having partner sites that are "in and of the community," or connected to organizations and/or are coordinated by people who have history and connections within their local communities (Table 2.2). This organizational rule and its associated practices were related to the past professional experiences of headquarters' staff members who have worked in the Appalachian region prior to joining Grow Appalachia as well as Berea College's historical commitment to the region. But, ultimately, this rule was rooted in a long, contested history of extra-local control and externally driven community and economic development programs, like the federal government's War on Poverty in the 1960s (Eller 2013). When asked to describe the characteristics of a successful partner site, a headquarters' staff member shared:

> *I think the leader of the organization is one of the keys to it being successful. They have to have connections throughout the community. So that the community can trust its organization. Historically in Central Appalachia, there's always been organizations coming from the outside to help the poor people, you know. And that's insulting. We didn't want to appear like we're coming in from outside and assuming ignorance, that those people don't know any better. And that we need to teach them the right way. That's definitely not how we—didn't want to come across. So, we partner with organizations that are very strong—have very strong, trusted relationships in their communities.*

[12] The author acknowledges that the roles and expectations of Grow Appalachia's primary funder and its home institution (Berea College) had some additional effect on the development, emphasis and implementation of headquarters' rules and strategies. However, the complex and sometimes sensitive nature of these further organizational and bureaucratic layers was beyond the scope of what could be fully addressed and analyzed in this chapter.

As seen in Table 2.3, the 2016 partner site organizations had been present in their respective communities for an average of 39 years, with nine out of the 32 having been present for more than 50 years. As for the individual site coordinators/staff, of those that responded to the survey, they had lived in their communities an average of ~18 years. Additionally, when asked on the survey to rate their experience with common organizational barriers in program implementation, the survey respondents rated "Few or Negative Community Relationships" as one of the least problematic barriers (Mean=1.71, SD=.864), indicating strong integration within their host communities.

This rule was strategic, from the eyes of Grow Appalachia headquarters, not only for the benefits it brought to the implementation of partner site programs, but for the security it brought to the CBOs who participated in the Grow Appalachia network. Many survey respondents indicated that their work with Grow Appalachia "Strengthened their Overall Mission" (Mean=3.91, SD=1.03) and "Increased their Ability to Meet their Goals" (Mean=3.59, SD=.979). Some study participants even went as far as to credit their participation in Grow Appalachia as saving their CBO through raising local awareness about the organization and its services, reaching new local service populations, and regenerating community activity. During his interview, a Grow Appalachia headquarters staff member shared a story from a recent partner site visit:

> *[The partner site CBO] was basically ready to close their doors. There was no activities. The community was divided and segregated. And a program around food brought all those people back together. And so, if not weekly, at least twice a month, they have anywhere from 50 to 100 people gathering at their community center, which was vital to the community 30 years ago, but had just lost its, maybe lost its way or direction or focus, and has been able to utilize our program as a way to reconnect people.*

The rule of "Being In and Of the Community" describes not only how Grow Appalachia headquarters selects organizations (and site coordinators) for its network; it also describes the community-led approach they encourage for the implementation of the program at the local level. Survey results also found "Strengthened Intra-Community Connections" (Mean=4.22, SD=.906) to be the highest rated organizational benefit related to participation in the Grow Appalachia network, demonstrating that not only does Grow Appalachia headquarters prioritize organizations that are already embedded in their communities, but it also encourages them to strengthen this connection through the implementation of their Grow Appalachia site. And while the program has some parameters set at the headquarters level, such as the required curriculum, reporting processes, and a two-year limit on gardener participation, headquarters ultimately leaves it up to the sites to determine what is most needed and what is possible within their local partner site communities.

For example, Grow Appalachia headquarters strongly discouraged the use of site funds on raised garden beds as they are expensive and labor-intensive to construct properly – especially given the assumed land access in rural settings. That said, several sites had chosen to implement raised beds for reasons driven by local needs – from poor soil quality to the poor health and mobility of their gardener participants. The eastern Tennessee sub-case study was such a site, driven to raised beds to help their gardener participants overcome poor soil and health conditions within the two-year program participation limitation. To meet both local need and headquarters' parameters, this site established a partnership with the local school districts in which high school students constructed and installed the raised beds for those in need – alleviating costs, time constraints, and providing another benefit to the community in youth participation and professional development. The rule of "Being In and Of the Community" not only allowed the

site coordinator to adapt the program to local needs, but did so through personal connections and a history of respectful relationships with community partners, like the local school district and teachers.

According to study participants, community-led practices related to headquarters' "Being In and Of the Community" rule were the foundation of Grow Appalachia's success as a broker organization and as a community food security program. This rule ensured the creation of programs that are responsive to local needs and improve participant buy-in. But this rule was also related to some of the most persistent challenges faced by partner sites. The limited capacity of site coordinators was a major constraint on program success. "Limited Staff Time for Grow Appalachia Work" (Mean=2.81, SD=1.09) was the highest rated organizational barrier on the site staff survey; limited partner site staff and organizational capacity was also one of the most commonly mentioned reasons for why a partner site was let go from the Grow Appalachia network. When a program is built entirely on the shoulders and connections of one individual or one organization, it creates an inherent vulnerability in the program, especially when the site coordinator becomes burnt out, when they leave the position, or when the organization faces pressures from other programs or funders.

"Being In and Of the Community" also meant that site coordinators were chosen for their community relationships – not necessarily their gardening or food system abilities. A few of the site coordinators indicated a background in farming or gardening, but most faced a large learning curve when joining the Grow Appalachia network. Though "Limited Gardening/Cooking Experience" (Mean=1.81, SD=.780) was one of the lowest rated organizational barriers on the site staff survey, respondents more highly rated "Limited Food Entrepreneurship & Policy Experience" (Mean=2.59, SD=1.07) as one of the organizational barriers they saw.

Recruitment of gardener participants and partner site volunteers was also limited to the established networks of the site coordinators and their organizations and was therefore affected by any history of social conflict experienced by the site coordinators in addition to the positive community relationships and history. When asked about limitations of their local Grow Appalachia program, the eastern Kentucky site coordinator confessed that they had not reached as many low-income households or families of color as they would have liked, explaining, "At [our organization], we don't mean to enable nepotism, but sometimes it just comes natural and easy to reach out to our friends and family first." Survey respondents also rated "Lack of Reliable Volunteers" (Mean=2.53, SD=1.14) as one of the more problematic organizational barriers, indicating a program barrier in which the partner site organization has limited ability to mobilize community members they deem reliable.

Lastly, by embedding the program implementation in the community in a way that addresses community needs and community values, partner site programs were also susceptible to not only the history of social conflicts in that locality, but also broader local legacies of social injustice. As shared by one headquarters' staff member: "People [say] they love this program and they love gardening, because it's getting back to the old ways, which also sometimes carries that 'things were better back then' mentality, which comes with racism and sexism." Some of the study participants, particularly select female staff members, noted ways in which traditions or values rooted in racism, sexism, and classism affected the functioning of the program, largely by placing unequal burdens on women to perform program duties and by excluding people of color or low-income households from program participation.

"Providing a Hand Up, Not a Hand Out"

A second rule fundamental to Grow Appalachia's work is to provide a "Hand Up, Not a Hand Out" to program participants (Table 2.5). Enacting this rule, Grow Appalachia headquarters requires no income cap or limit on gardener participants – anyone is welcome to join, whether they live below the poverty line or not. This rule also speaks to headquarters' limit of two years that gardeners may participate in the program (although this rule is waived for those that qualify as single-parent households with minor children; elderly; or disabled). Lastly, Grow Appalachia headquarters also strongly encourages partner sites to support their gardener participants not only to feed their families with produce from their gardens, but to begin selling surplus produce to others to supplement their household income. This rule emerges in part driven from the limited and uncertain funding structure of Grow Appalachia and the wishes of its private funder that program participants become more independent, but it is also tied to the long history of ineffective development programs that have, from the perspective of many in the Appalachian region, done more harm than good by creating a stigma or unnecessary boundaries around social service programs that prevent those who need the services most from using them (Eller 2013). As described by a headquarters' staff member:

> *My experience working in social change is that as soon as you say, 'only someone making this much money or less,' or 'somebody with a card or somebody on the check is responsible or eligible,' what you've done is stigmatize the program so that the genuinely poor don't want to be a part of it because they're proud people… What I saw happen countless times is that the working poor, who in many cases are working two or three part-time jobs just to keep their families together, might not qualify for those programs by a very small amount of money and those typically are families that really understand how to work hard and make this happen.*

In promoting the expectations and values of a "Hand Up, Not a Hand Out" program, headquarters' staff and partner site coordinators alike claimed that the Grow Appalachia program not only increased community food security by giving people the knowledge, skills, and physical

tools they need to independently feed their households, but also increased empowerment, self-confidence, and self-esteem – human resources scarce in a region hampered by persistent poverty, high unemployment, and negative external stereotypes. As written by a West Virginia site coordinator in their end-of-year narrative, "Our participants want to extend their gratitude to all of you for allowing us to help them feed their families better and teach them how to do this for themselves instead of just handing them free food. They are glad they can provide for themselves and others without always depending on others." This sense of self-reliance also comes from Grow Appalachia's emphasis on peer-to-peer learning. The program attracts people with many different gardening and cooking abilities, allowing for mentorship and knowledge exchange in a way that might not happen if the program only targeted – or was perceived to target – a particular population.

Several study participants also described another more unexpected, but welcome benefit of this rule and the program approach it inspired: its ability to build bridges between people and groups that may not have otherwise interacted within their home communities. Given the region's contested history of natural resource extraction and political unrest, Grow Appalachia's community events and peer-to-peer learning model, and lack of income restrictions let people of many backgrounds come together to work on household- and community-level food security. One headquarters' staff member shared after returning from his recent site visits:

> *We're talking about the pro-coal, anti-coal; Grow Appalachia crosses all of those… We have Trump supporters. We may have a few Hillary supporters, maybe dotted here and there… We have people from different [socioeconomic] classes. It really just is incredible to think about people working across all of those lines to improve their communities.*

This rule and the organizational and operational strategies it spawned built both human and community capacity in a way that might allow these practices and benefits to continue, in theory, after the funding for the Grow Appalachia program is gone – both at the household and

community levels. But the rule also led to some drawbacks, which study participants recognized. By (1) allowing anyone to join the program, need-based or not and (2) prioritizing gardener participants who have the ability and capacity to meet the program guidelines (i.e., workshop attendance and transition to market sales), some study participants worried that the program could miss people in their communities who actually needed the program most. In a "Hand Up, Not a Hand Out" initiative, gardener participants are expected to invest considerable time in the program and their own gardens, especially given the steep 2-year learning curve expectations. Yet survey respondents rated "Loss of Program Participants" (Mean=2.50, SD=.880) and "Poor Workshop Attendance" (Mean=2.35, SD=1.05) as barriers affecting the success of their partner site programs. In interviews, limited gardener participant workshop attendance and attrition were often related to limited economic means, poor health, and lack of access to resources like transportation and childcare – social issues that drove Grow Appalachia's formation in the first place. As an interview participant at the eastern Tennessee sub-case study site shared:

> *And what we're finding is… that the people who are in the program can either get their own garden tilled, which is nothing wrong with that – but to be honest with ya, kinda red flag. If they're already doing that, they've got that, they're probably already gardeners. I think it was going better when we're going to somebody's house and they don't even know what it means to lay a row out. We're just showing them everything. And then the end result is that they've grown something and they feel good about it and they eat it.*

This was a common theme at many of the partner site gatherings – how to avoid the "free rider" problem and finding those program participants willing to put in the hard work required by the Grow Appalachia program while also reaching those in the community who need the food security, health, and financial benefits of Grow Appalachia the most. As put by a headquarters' staff member:

> *I think we're reaching out a little too much to gardeners who would probably garden without us. They're probably gardening better and smarter with us but my emphasis is going to be more strong this year on, 'let's reach people that would not garden without*

> *us.' That's who we need to be reaching out to. It's not just a financial thing, it's a support thing.*

"Cultivating Science-Assisted Craft / Mountain Agriculture"

Grow Appalachia focuses on vegetable gardening and food preservation to address community food security not just to provide a "hand up," but because of connections to the region's rich history and traditions related to these subsistence activities (Eller 2013). These gardening and food traditions have died out for a variety of reasons, most of which are related to population loss (e.g., outmigration, health conditions); economic restructuring and jobs that took people far from home and paid wages that made subsistence practices no longer necessary; or the influence of programs, again like the War on Poverty, that emphasized emergency food relief practices over subsistence practices (Lundy 2016). By returning to traditional foodways grounded in contemporary science and organic growing methods – an approach headquarters staff members called "science-assisted craft (or mountain) agriculture" – Grow Appalachia aimed to improve participant buy-in and program outcomes, build healthy communities and environmental systems, and revitalize regional culture and pride in place (Table 2.5). As described by a headquarters' staff member:

> *Appalachia… has a long and strong history of being able to grow and produce their own food. [While] the knowledge of how to do that and some of the will to actually get out and do the work has dissipated… people out there still have the stories from their grandparents or parents about big gardens and how they fed themselves through hard times. So that tradition is still there in the back of people's minds, whereas in other places, you'd be starting from scratch. 'What do you mean I need to grow my own food, what kind of idea is that?' In Appalachia it's like, yeah, you know, I've always wanted to grow a big garden, but I just haven't had the knowledge or the resources… Once they have the knowledge and the resources, they run with it.*

All study participants shared ways that the approaches informed by this organizational rule had revitalized cultural traditions in their communities, from the celebration of favorite

heirloom vegetable varieties to the exchange of old Appalachian recipes and preservation techniques to the donation of excess food to neighbors who do not or cannot participate in the Grow Appalachia program. Ground-level enactment of this rule also helped to build bridges between people and groups who would not ordinarily work together, with food and gardening operating as mechanisms to transcend community divisions. As stated by a headquarters' staff member, "Folks ordinarily wouldn't talk to each other on the street, but if they're talking about canning tomatoes, there ain't no politics there." Grow Appalachia's steady insistence on "science-assisted craft" has also supported use of the peer-to-peer learning model, which has been particularly conducive to intergenerational interaction and learning – a benefit cherished by many of the study participants.

While the appeal of "science-assisted craft" brought many site coordinator and gardener participants to the program in the first place, broader understandings of and adherence to Appalachian food heritage played a significant part in whether or not the individual programs were fully meeting Grow Appalachia headquarters' expectations – particularly related to organic practices and improved human health, the more "science-assisted" components of this rule. Many gardener participants, and even a few cases of the site coordinators and staff themselves, were, as several headquarters' staff members put it, "stuck in their ways," and hesitant to adopt organic growing methods, especially the organic herbicides and pesticides recommended by Grow Appalachia headquarters, preferring instead more familiar conventional methods and products (e.g., Sevin Dust). As explained by one headquarters' staff member, "That term organic, kind of, uh… People shut down. Because they assume that you need to be a hippie… folks [headquarters' staff member] worked with in West Virginia called organic gardening 'holy

[holey] gardening.' Cus you would go out and plant your plants and you would pray that they would produce some food."

Organic growing methods were not the only areas in which Grow Appalachia staff and site coordinators had experienced resistance. Although Grow Appalachia curriculum promotes 'heart healthy cooking' methods, resistance arose in programs around traditional cooking techniques that may not be considered 'heart healthy,' but are important to Appalachian heritage (e.g., frying) and a resistance to trying new types of vegetables and specific varieties that might better support Grow Appalachia's healthy lifestyle mission. Commitment to old preservation techniques also raised issues of food safety for some study participants, as they worried that the techniques used and shared by their gardener participants – particularly canning techniques – may no longer meet the requirements of currently popular vegetable varieties or the current safety standards of experts and might lead to food-borne illness. This resistance to new ways created tensions for site coordinators who wanted to respect the desires of their gardener participants, while also meeting headquarters' expectations. As shared by an interview participant from the eastern Kentucky sub-case study site: "I think I'm protective of people here. Like, I don't want to condemn the cooking, I don't want to tell moms who have loved and cared and worked so hard for their families… but in a sense fed them things that are poor choices. When we have a cooking class, we don't say anything is bad, it's just another way…"

Lastly, Appalachia's culture of sharing excess food with others contributes to Grow Appalachia's original mission of addressing food insecurity – but creates limitations for its "Hand Up, Not a Hand Out"-related goals to support entrepreneurship and local market development. Many study participants have observed that their gardener participants are not only resistant to selling their excess produce – because it would be "offensive" or "just not right" –

but also observed a resistance from local people to pay a reasonable price (or any price) for produce that traditionally would have been shared for free. Food sharing and existing knowledge also make it hard to quantify the outcomes of the Grow Appalachia program; it is hard to weigh produce that exchanges different hands and it is nearly impossible to know to what degree Grow Appalachia has influenced gardening knowledge and food security when these practices already existed in place.

"Promoting Sustainability for Self-Sufficiency"

Lastly, nearly all study participants described what might happen to their individual programs or the Grow Appalachia network overall if (or when) its main sources of funding dried up. In attempt to create long-term change in their partner communities and due to the pressures of having one more funding source, Grow Appalachia headquarters emphasized financial "sustainability" and "self-sufficiency" in nearly all their programmatic operations and expectations (Table 2.5). GA headquarters conserved financial resources any way they could, especially limiting the funds they used for headquarters' operation and administration and putting a lot of staff effort into creating social enterprise ventures, including wholesale fertilizer and high tunnel construction. Though this was in some ways a diversion from their original food security mission, a headquarters' staff member explained:

> *We wanted to find a way to support ourselves. It's interesting because high tunnels are part of the ag system. They're a part of allowing someone to produce year-round. So, it's not like we're going out and manufacturing ballpoint pens, you know? It's very much part of the system that we're already working in. But we're trying to solve our own problems.*

To the degree they could, GA headquarters also pushed all partner sites to be as self-sustaining as they could be, encouraging practices that led to site-generated revenue (e.g., sale of

value-added products) and securing external resources (e.g., donations, grants). In many ways, this approach did result in organizational capacity building through the professional development and education of site coordinators and staff. It also pushed partner site organizations to invest in new community assets, like commercial kitchens, greenhouses, and farmers' markets. Encouraging entrepreneurship at the organization level created better opportunities for gardener participants to transition to market gardeners themselves, resulting in the generation of supplemental income.

All of that said, this "self-sufficiency" approach at headquarters had its own negative ramification on GA's role as a broker organization. It limited overall staff capacity and ability to respond to partner site needs, in some cases leading to individual staff burn out at the headquarters' level and unsuccessful or lack of time for submissions to external funding opportunities. And in some cases, leveraged resources obtained by partner sites ultimately harmed their programs, particularly in the case of unreliable volunteers and donated goods that were of poor quality. Poor seeds and plants lead to poor gardens – which leads to poor program outcomes and gardener attrition. As stated by a headquarters' staff member on several occasions, "Sometimes free seed is as expensive as hell."

Similar to how a "Hand Up, Not A Hand Up" limited who could participate in Grow Appalachia as an individual gardener, the rule of "Sustainability" inherently prioritizes partner sites who have the capacity and ability to maintain partnerships and secure funding beyond Grow Appalachia – which could be a challenge for some smaller CBOs centered in very isolated, resource-poor communities. Mismanagement of funds and fiscal reporting problems were among the most common reasons shared for why partner sites were removed from the Grow Appalachia network. This mismanagement is viewed as "theft from the community" and as one

headquarters' staff member shared: "We've had sites that came on board and simply were unwilling or unable to build their own internal capacity to manage the data collection and education program the way we insist it be done. They're no longer with us."

Taking on site-generated-revenue ventures and applying for external funding also contributed to site coordinator burn out – making already busy people even busier, harming their programs in the short-term for (potential) long-term gain. The programs that benefited most from this rule of "Sustainability for Self-Sufficiency" already had partnerships in place and/or the beginnings of local food systems infrastructure (e.g., farmers' markets, commercial kitchens). Therefore, those starting from the absolute bottom faced more challenges in achieving financial "sustainability," limiting their ability to offer important social services and support to their participants (e.g., prioritizing market growers over household gardeners). As shared by a headquarters' staff member:

> *With this new push for site generated revenue, with this new push for sustainability, we're going to have to look beyond [food security]… I don't think we can ask [partner sites] to sustain themselves just from the resources that are right there in the community. I don't think there are enough resources already there to support those organizations… They're going to have to look beyond their own community, which is going to be really hard for some folks. It's going to be real hard.*

As seen above, participation in the Grow Appalachia network was associated with saving struggling CBOs throughout the Appalachian region. Yet, despite this push for financial "sustainability" and "self-sufficiency" from headquarters, economic benefits were among the lowest and economic barriers were among the highest rated items on the site staff survey. While survey respondents reported financial benefits to their organization and their own professional development ["Improved External Grant Practices" (Mean=3.34, SD=1.29), "Improved Financial Sustainability" (Mean=3.22, SD=1.18), "Improved Grant Writing Ability" (Mean=2.78, SD=1.07), "Improved Budget Management" (Mean=2.72, SD=1.35), and "Improved Fundraising

Skills" (Mean=2.44, SD=.982)], these benefits were rated lower than most other benefits. Additionally, financial barriers were among the highest to mid-range rated, including "Limited Financial Resources" (Mean=2.72, SD=1.30) and "Failed Site Generated Revenue Ventures" (Mean=2.03, SD=.836). Although greater financial sustainability is crucial to Grow Appalachia network participation and success, these results indicate that financial capacity perhaps is not being built to the degree needed to meet the goals of Grow Appalachia headquarters. In this way, the rules and practices enforced by the overall broker organization can be understood as costs or barriers to its ultimate community development goals, despite being a source of financial resources for its partner CBOs (Chaskin 2001).

Table 2.5. Four rules of Grow Appalachia: description and justification

RULE 1: "BEING IN AND OF THE COMMUNITY"
Description: Selecting partner sites with organizations and/or site coordinators who have history and connections in their local community; Encouraging sites to use a community-based approach to program implementation
Justification: To counter contested history of extra-local control and externally driven community and economic development programs; Encourage greater program success through programs tailored to community needs and capacity
RULE 2: "PROVIDING A HAND UP, NOT A HAND OUT"
Description: Building capacity of individual participants to meet their own food security needs; No income cap on programs; Two-year limitation on gardener participation; Emphasis on entrepreneurship and beginning farmer support
Justification: To create a more integrated approach for addressing household and community food insecurity that will last beyond program participation by building individual capacities to meet their own needs
RULE 3: "CULTIVATING SCIENCE-ASSISTED CRAFT/MOUNTAIN AGRICULTURE"
Description: Using traditional, but contemporary science-based, subsistence practices (eg. gardening, food preservation) as vehicles for addressing household and community food security
Justification: To revitalize Appalachia's rich food history and traditions that have been harmed by population loss, economic restructuring and top-down poverty relief programs while also addressing human and ecological health
RULE 4: "PROMOTING SUSTAINABILITY FOR SELF-SUFFICIENCY"
Description: Limiting spending at the administrative level and encourage partner sites to participate in site-generated revenue ventures and obtain other leveraged resources
Justification: To address financial uncertainty of philanthropic giving and to create long-term social change and community food security in partner site locations

Source: Derived from results of integrated analysis of qualitative and quantitative data.

Discussion

As a social structure, the broker organization-led network of Grow Appalachia partner sites is loosely governed by the four rules, set out above. As described above, these rules were drawn from the integrated data analysis, meaning they were not completely explicit in Grow

Appalachia's documentation or strategies; they were more implicit, hidden in the everyday language and practices of Grow Appalachia staff, particularly those at headquarters. That said, most research participants shared similar sentiments that resonated with the ideals articulated at headquarters and/or applauded the approaches that stemmed from these headquarters-set rules and practices.

Additionally, while there were costs and barriers that could be related to all four of these rules, the benefits appeared to outweigh these consequences, given that most partner site organizations intentionally return to the Grow Appalachia network year after year. In fact, most (if not all) research participants described how the Grow Appalachia network would not exist or achieve much in the way of community food security without some iteration of these guiding rules and practices. All study participants – interviewees, survey respondents, and those who participated in observed activities – spoke highly and often of the Grow Appalachia headquarters' staff and their management of network resources and function. Costs and barriers were more often associated with the conditions of the communities or organizations in which they were trying to operate the partner site.

The organizational rules highlighted by this research are highly interdependent, and the benefits and barriers associated with each individual rule tend to reinforce the benefits and barriers associated with the others. For example, by "Being In and Of the Community," partner site organizations are more attuned to community perceptions of the organic gardening and healthy cooking practices associated with the "Science-Assisted Craft/Mountain Agriculture" rule, improving the adoption of these practices by gardener participants in ways that are perhaps more locally and culturally appropriate. Conversely, the association between "Being In and Of the Community" and limited organizational capacity and partner site staff burnout exacerbates

the problems of "Sustainability for Self-Sufficiency"; over-stretched and worn out staff not only have to manage the site programs but also generate new programs and fundraising opportunities to make themselves less reliant on resources from headquarters.

However, many of the perceived limitations in enacting these rules affect the overall mission of Grow Appalachia and its partner sites – to improve community food security in their respective locations across the Appalachian region – rather than create costs to the organizational capacity of the CBOs themselves. All four rules led to practices that limited the ability of partner sites to reach the most disadvantaged individuals and families in their respective communities. Additionally, these rules guided Grow Appalachia headquarters to prioritize CBOs with pre-established capacities that could meet the expectations associated with the operationalization of these rules. In this way, the Grow Appalachia network may be (unintentionally) reproducing social inequalities in the form of food insecurity, economic hardship, and health disparities among populations and organizations, which undermine overall goals for community food security and community development across the region. This problem resonates with both the community food security and CBO literature in which community services are often found to be distributed to more privileged populations, raising questions about community food security and/or community development 'for whom?' (Provan & Kenis 2008; Chen & Graddy 2010; Alkon & Agyeman 2011; Wakefield et al. 2013).

These costs have consequences for the organizational network as well. If there is failure in meeting the mission (in this case, community food security) through collaboration, previous research has found that the collaboration itself will fail and any benefits that did occur through this collaboration may cease to develop (Bryson, Crosby, & Stone 2006). These problems may be addressed over time as organizations continue to build capacity and reach through

participation in the broker-led network (Ivery 2010). That said, this is why the rules of a broker organization matter; as the rules persist without compromise or change over time, so will the costs to the organizations' shared mission and the network's function overall.

This study expands upon the concepts of interorganizational collaboration and the role of broker organizations in a few key ways. First, this examination of Grow Appalachia as a broker organization expands upon Chaskin's (2001) framework by providing insight into how the hierarchical structure of a broker-led network is guided by rules that are formed at the broker level and how these rules guide the rewards and costs associated with network participation. This particular broker organization and organizational network case study also demonstrates how issues associated with organizational network participation – staff burnout, interorganizational power dynamics, reproduced social inequalities, and compromised organizational/network missions (Chaskin 2001; Takahashi & Smutny 2001; Longoria 2005) may transcend rural-urban contexts; yet, organizations in rural environments face unique conditions and barriers that may compromise their ability to address these issues, especially when federal and state programs designed to support CBOs are urban-biased (Snavely & Tracey 2000).

Second, focusing on a broker organization leading efforts on community food security, this study demonstrates how coordination by a leading organization may improve the work of CBOs addressing community food security (Wakefield et al. 2013; Meenar 2015), including increased organizational capacity, transcended social stigmas, and rejuvenated food traditions. Grow Appalachia's "Hand Up, Not a Hand Out" rule counters the inattention to dignity found in other community food security work (Wakefield et al. 2013) and demonstrates how a broker organization grounded in the traditions and history of their region can do work *with* not just *for* their communities to create larger social change (Tarng 2015). That said, this case study also

illuminates how broker organizations may be susceptible to the same organizational challenges of their network participants, as demonstrated especially by Grow Appalachia's implementation of their rule of "Sustainability for Self-Sufficiency." But these challenges at the broker organization level have greater ripple effects beyond the broker organization itself. Challenges in economic sustainability and staff burnout at the broker level may result in a compromised community food security mission network-wide, as does the prioritization of capable organizations and program participations.

The limitations of this study inform areas for future research and practice in community food security and CBO collaboration efforts. This study is a case study of one broker organization and network; comparative work across broker organizations engaged in community food security work and across rural-urban boundaries will help to tease out what is specific to the case of Grow Appalachia and what benefits and costs transcend the specific conditions of this case. This study is also cross-sectional in nature, examining the rules and practices of the broker organization and network at one point in time. Previous research indicates that the function of a broker organization may change over time (Ivery 2010), so future research may take a more longitudinal approach to better understand how the rules of a broker organization – and the associated practices, benefits, and costs – may change or be addressed over time. Lastly, this study was limited to the CBOs currently participating in the Grow Appalachia network, limiting the understanding of how the broker's enforced rules and practices may actually be related – or not – to partner site failure. Future research should examine the experiences of organizations that were excluded or chose not to participate in brokered networks to better understand the limitations of coordinated organizational networks for addressing community food security and other dimensions of community development.

Conclusion

Using the experiences of Grow Appalachia and its organizational partners as a case study, this study examines how the rules of a broker organization guide the practices, benefits, and barriers affecting the work of rural CBOs on community food security. The findings indicate that while the broker organization's rules contribute to more benefits than costs in the function of the CBOs and their community food security programs, the costs associated with the rules may reproduce social inequalities that compromise the network's overall impacts on improved community food security and community development throughout the Central Appalachian region. As organizational collaboration – particularly that which is led by a coordinating entity like a broker organization – gains favor in public policy that supports social services in urban and rural environments, recognition and intentional development of the "rules" and associated practices enforced by the coordinating organization should be a key component of program and mission evaluation. This evaluation will not only support improved organizational capacity and network longevity, but also more equal distribution of program practices and outcomes towards community food security and development for all.

References

Abrams, Jesse, Emily Jane Davis, and Cassandra Moseley. 2015. "Community-Based Organizations and Institutional Work in the Remote Rural West." *Review of Policy Research* 32(6):675–99.

Alexander, Ernest. 1995. *How Organizations Act Together: Inter-Organizational Coordination in Theory and Practice*. Amsterdam: Gordon and Breach.

Alkon, Allison Hope and Julian Agyeman. 2011. *Cultivating Food Justice: Race, Class, and Sustainability*. Boston: The MIT Press.

Appalachian Regional Commission. 2016a. "The Appalachian Region." Retrieved May 31 2016. (https://www.arc.gov/appalachian_region/TheAppalachianRegion.asp).

Appalachian Regional Commission. 2016b. "County Economic Status and Distressed Areas in

Appalachia." Retrieved May 21 2016. (https://www.arc.gov/appalachian_region/CountyEconomicStatusandDistressedAreasinAppalachia.asp).

Arya, Bindu and Zhiang Lin. 2007. "Understanding Collaboration Outcomes from an Extended Resource-Based View Perspective: The Roles of Organizational Characteristics, Partner Attributes, and Network Structures." *Journal of Management* 33(5):697–723.

Bailey, C., L. Jensen, and E. Ransom. 2014. "Introduction and Overview." Pp. xiii-xxx in C Bailey, L Jensen, & E Ransom (eds.) *Rural America in a Globalizing World: Problems and Prospects for the 2010s*. University Park, PA: Penn State Press.

Bellows, Anne C. and Michael W. Hamm. 2002. "U.S.-Based Community Food Security: Influences, Practice, Debate." *Journal for the Study of Food and Society* 6(1):31–44. Retrieved (https://www.tandfonline.com/doi/full/10.2752/152897902786732725).

Billings, Dwight B. and Kathleen M. Blee. 2000. *The Road to Poverty: The Making of Wealth and Hardship in Appalachia*. Boston: Cambridge University Press.

Bradshaw, Ted K. 2000. "Complex Community Development Projects: Collaboration, Comprehensive Programs, and Community Coalitions in Complex Society." *Community Development Journal* 35(2):133–45.

Bridger, Jeffrey C. and Theodore R. Alter. 2008. "An Interactional Approach to Place-Based Rural Development." *Community Development* 39(1):99–111. Retrieved December 7, 2014 (http://www.tandfonline.com/doi/abs/10.1080/15575330809489744).

Bryson, John M., Barbara C. Crosby, and Melissa Middleton Stone. 2006. "The Design and Implementation of Cross-Sector Collaborations: Propositions from the Literature." *Public Administration Review* 66(Special Issue):44–55.

Chaskin, Robert J. 2001. "Organizational Infrastructure and Community Capacity: The Role of Broker Organizations." *Research in Social Problems and Public Policy* 8:143–66.

Chen, Bin and Elizabeth A. Graddy. 2010. "The Effectiveness of Nonprofit Lead-Organization Networks for Social Service Delivery." *Nonprofit Management and Leadership* 20(4):405–22.

Creswell, J. W., & Plano Clark, V. L. 2007. *Designing and Conducting Mixed Methods Research.* Thousand Oaks, CA: Sage Publications, Inc.

Curran, Christopher J. and Marc-Tizoc González. 2011. "Food Justice as Interracial Justice: Urban Farmers, Community Organizations and the Role of Government in Oakland, California." *The University of Miami Inter-American Law Review* 42(1):207–32. Retrieved (http://www.jstor.org/stable/23339452).

Dillman, Don A., Jolene D. Smyth, and Leah Melani Christian. 2008. *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method (3rd Edition)*. Hoboken, NJ: John Wiley & Sons, Inc.

Drake, Luke and Laura J. Lawson. 2015. "Results of a US and Canada Community Garden Survey: Shared Challenges in Garden Management amid Diverse Geographical and Organizational Contexts." *Agriculture and Human Values* 32(2):241–54.

Eller, Ronald D. 2013. *Uneven Ground: Appalachian since 1945.* Lexington: University Press of Kentucky.

Fisher, Stephen L. and Barbara Ellen Smith. 2012. *Transforming Places: Lessons from Appalachia*. Champaign: University of Illinois Press.

Giddens, A. 1984. *The Constitution of Society: An Introduction into the Theory of Structuration*. Campbridge: Polity Press.

Grow Appalachia. 2017a. "Grow Appalachia: About Us." Last accessed 31 March 2016. http://growappalachia.berea.edu/#.

Grow Appalachia. 2017b. "2016 Annual Report." PDF received from Grow Appalachia headquarters.

Guo, Chao and Muhittin Acar. 2005. "Understanding Collaboration among Nonprofit Organizations: Combining Resource Dependency, Institutional, and Network Perspectives." *Nonprofit and Voluntary Sector Quarterly* 34(3):340–61.

Handel, Michael J. 2002. *The Sociology of Organizations: Classic, Contemporary, and Critical Readings*. Thousand Oaks, CA: SAGE Publications.

Harvey, Mark H. and Lionel J. Beaulieu. 2010. "Implementing Community Development in the Mississippi Delta: The Effect of Organizations on Resident Participation." Pp. 146-176 in *Mobilizing Communities: Asset Building as a Community Development Strategy* edited by Gary Paul Green and Ann Goetting. Philadelphia: Temple University Press.

Holland, Joseph Hampton and Olivia M. Thompson. 2015. "Place-Based Economic Development: Examining the Relationship between the US Supplemental Nutrition Assistance Program and Farmers Markets in Mississippi." *Community Development* 46(1):67–77. Retrieved (http://dx.doi.org/10.1080/15575330.2014.991410).

Ivery, Jan M. 2010. "Partnerships in Transition: Managing Organizational and Collaborative Change." *Journal of Human Behavior in the Social Environment* 20(1):20–37.

Jaskiewicz, Lara, Rachael D. Dombrowski, Gina Massuda Barnett, Maryann Mason, and Christina Welter. 2016. "Training Local Organizations to Support Healthy Food Access: Results from a Year-Long Project." *Community Development Journal* 51(2):285–301.

Kato, Yuki. 2013. “Not Just the Price of Food: Challenges of an Urban Agriculture Organization in Engaging Local Residents.” *Sociological Inquiry* 83(3):369–91.

Keefe, Susan E. (ed.) 2009. *Participatory Development in Appalachia: Cultural Identity, Community, and Sustainability*. Knoxville: The University of Tennessee Press.

Leroux, Kelly. 2007. “The Role of Community-Based Organizations in Promoting Political Participation.” 410–22.

Longoria, Richard A. 2005. “Is Inter-Organizational Collaboration Always a Good Thing?” *Journal of Sociology and Social Welfare* 32(3):123–38.

Lundy, R. 2016. *Victuals: An Appalachian Journey, With Recipes*. New York, NY: Clarkson Potter.

Marwell, Nicole P. 2004. “Privatizing the Welfare State: Nonprofit Community-Based Organizations as Political Actors.” *American Sociological Review* 69:265–91.

McClintock, Nathan and Michael Simpson. 2017. “Stacking Functions: Identifying Motivational Frames Guiding Urban Agriculture Organizations and Businesses in the United States and Canada.” *Agriculture and Human Values* 35(1):1–21.

Meenar, Mahbubur R. 2015. “Nonprofit-Driven Community Capacity-Building Efforts in Community Food Systems.” *Journal of Agriculture, Food Systems, and Community Development* Advance on:1–18.

Parker, T. 2015. “County Typology Codes.” United States Department of Agriculture. Retrieved 31 May 2016. http://www.ers.usda.gov/data-products/county-typology-codes.aspx.

Phillips, R. and C. Wharton. 2016. *Growing Livelihoods: Local food systems and community development*. New York, NY: Routledge.

Pollard, K. and L.A. Jacobsen. 2017. “The Appalachian Region: A Data Overview from the 2011-2015 American Community Survey Chartbook.” Report prepared for the Appalachian Regional Commission under contract #CO-18662-16. (https://www.arc.gov/research/researchreportdetails.asp?REPORT_ID=132).

Provan, Keith G. and Patrick Kenis. 2008. “Modes of Network Governance: Structure, Management, and Effectiveness.” *Journal of Public Administration Research and Theory* 18(2):229–52.

Provan, Keith G. and Robin H. Lemaire. 2012. “Core Concepts and Key Ideas for Understanding Public Sector Organizational Networks: Using Research to Inform Scholarship and Practice.” *Public Administration Review* 72(5):638–48.

Pugalis, Lee and Gill Bentley. 2014. “Place-Based Development Strategies: Possibilities,

Dilemmas and Ongoing Debates." *Local Economy* 29(4–5):561–72.

Putnam, Robert D. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

Rangwala and Kaizer. 2010. "Place-Based Economy." *Economic Development Journal* 9(1):42–48.

Rich, Michael J., Micheal W. Giles, and Emily Stern. 2001. "Collaborating to Reduce Poverty: Views from City Halls and Community-Based Organizations." *Urban Affairs Review* 37(2):184–204.

Roncarolo, Federico, Sherri Bisset, and Louise Potvin. 2016. "Short-Term Effects of Traditional and Alternative Community Interventions to Address Food Insecurity." *PLoS ONE* 11(3):1–15.

Saldaña, J. 2012. *The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA: SAGE Publications.

Sbicca, Joshua. 2012. "Growing Food Justice by Planting an Anti-Oppression Foundation: Opportunities and Obstacles for a Budding Social Movement." *Agriculture and Human Values* 29(4):455–66.

Scott, Patrick G. and Santa Falcone. 1998. "Comparing Public and Private Organizations: An Exploratory Analysis of Three Frameworks." *The American Review of Public Administration* 28(2):126-145.

Selden, Sally Coleman, Jessica E. Sowa, and Jodi Sandfort. 2006. "The Impact of Nonprofit Collaboration in Early Child Care and Education on Management and Program Outcomes." *Public Administration Review VO - 66* (3):412.

Slocum, Rachel. 2006. "Anti-Racist Practice and the Work of Community Food Organizations." *Antipode* 38(2):327–49.

Snavely, Keith and Martin B. Tracy. 2000. "Collaboration among Rural Nonprofit Organizations." *Nonprofit Management and Leadership* 11(2):145–65.

Snavely, Keith and Martin B. Tracy. 2002. "Development of Trust in Rural Nonprofit Collaborations." *Nonprofit and Voluntary Sector Quarterly* 31(1):62–83.

Stoecker, Randy. 2007. "The Research Practices and Needs of Non-Profit Organizations in an Urban Center." *Journal of Sociology and Social Welfare* 34.

Strati, Antonio. 2000. *Theory and Method in Organization Studies: Paradigms and Choices*. Thousand Oaks, CA: SAGE Publishing

Takahashi, Lois M. and Gayla Smutny. 2001. "Collaboration Among Small, Community-Based

Organizations: Strategies and Challenges in Turbulent Environments." *Journal of Planning Education and Research* 21:141–53.

Tarng, Danny W. 2015. "Privilege and Allyship in Nonprofit Food Justice Organizations." *Journal of Agriculture, Food Systems, and Community Development* 5(4):173–77.

Wakefield, Sarah, Julie Fleming, Carla Klassen, and Ana Skinner. 2013. "Sweet Charity, Revisited: Organizational Responses to Food Insecurity in Hamilton and Toronto, Canada." *Critical Social Policy* 33(3):427–50.

Walker, Edward T. and John D. McCarthy. 2010. "Legitimacy, Strategy, and Resources in the Survival of Community-Based Organizations." *Social Problems* 57(3):315–40.

Weber, M., G. Roth, & C. Wittich. 1978. *Economy and Society: An Outline of Interpretive Sociology (Vol. 1)*. Berkeley: University of California Press.

Williams, Trevor. 2005. "Cooperation by Design: Structure and Cooperation in Interorganizational Networks." *Journal of Business Research* 58(2 SPEC.ISS.):223–31.

Yin, R.K. 2012. "Chapter 1: A (Very) Brief Refresher on the Case Study Method." *Applications of Case Study Research (3rd ed)*. Thousand Oaks, CA: Sage Publications, Inc.

Appendix 2A. Selected results from partner site staff survey.

Table 2A-1. Perceived impacts of Grow Appalachia participation on CBO partner sites (N=32)

Organizational Impact	Mean[1]	SD
Strengthened Intra-Community Connections	4.22	.906
Built Inter-Community Connections	4.06	1.13
Strengthened Overall Mission	3.91	1.03
Increased Ability to Meet Goals	3.59	.979
Improved Environmental Practices	3.59	1.21
Improved External Grant Opportunities	3.34	1.29
Improved Financial Sustainability	3.22	1.18

[1]Measured on a five-point Likert Scale in which 1="Not at All" and 5="A Great Deal".

Table 2A-2. Perceived professional impacts for CBO partner site staff (N=32)

Professional Impacts	Mean[1]	SD
Leadership Skills*	3.20	1.21
Communication Skills	3.13	1.24
Event Planning	2.91	1.28
Time Management	2.84	1.35
Grant Writing Ability	2.78	1.07
Staff Management	2.78	1.24
Budget Management	2.72	1.35
Marketing Skills	2.72	1.17
Fundraising Skills	2.44	.982
Computer Skills	2.34	1.81

[1]Measured on a five-point Likert Scale in which 1="Not at All" and 5="A Great Deal".
*Two respondents skipped this question

Table 2A-3. Perceived barriers experienced while participating in Grow Appalachia (N=32)

Organizational Barriers	Mean[1]	SD
Limited Staff Time for GA Work	2.81	1.09
Limited Financial Resources	2.72	1.30
Limited Food Entrepreneurship/Policy Experience	2.59	1.07
Lack of Organizational Support	2.34	1.45
Limited Gardening/Cooking Experience	1.81	.780
Few or Negative Community Relationships	1.71	.864

[1]Measured on a five-point Likert Scale in which 1="Not at All" and 5="A Great Deal".

Table 2A-4. Perceived partner site challenges for participating in Grow Appalachia (N=32)

Programmatic Challenges	Mean[1]	SD
Lack of Reliable Volunteers	2.53	1.14
Submitting GA Blog Posts in Timely Manner*	2.50	1.38
Loss of Growers Throughout Season	2.50	.880
Poor Workshop Attendance*	2.35	1.05
GA Site Staff Turnover	2.09	1.17
Failed Site Generated Revenue Ventures*	2.03	.836
Theft/Vandalism in Garden Plots*	1.90	1.11
Unclear Communication from GA HQ	1.47	.621

[1]Measured on a five-point Likert Scale in which 1="Not at All" and 5="A Great Deal".
*One respondent skipped this question

CHAPTER 3:

PAPER B: "COAL IS IN OUR FOOD, COAL IS IN OUR BLOOD": EVERYDAY ENVIRONMENTAL INJUSTICES OF RURAL COMMUNITY GARDENING IN CENTRAL APPALACHIA

Introduction

In August 2016, a group of community gardening program coordinators met in southern West Virginia for their second regional gathering of the year to exchange best practices, commiserate over common challenges, and collaborate on resource acquisition. Part of the day's itinerary included a tour of the host site's community garden plot, roughly 20 raised beds and two high tunnels snuggly situated between a small rural highway and several lines of railroad freight cars stacked high with recently mined coal. As the group explored the site, remarking on plots full of end-of-summer vegetables and weeds, a program coordinator from another county asked the local leaders how they managed the coal dust that was visibly settling on the plants and structures within the garden space due to the proximity of the nearby rail lines. The response was a low laugh, followed by: "Coal is in our food, coal is in our blood. It's just who we are. Nothing we can do about that."[13]

Central Appalachia's relationship with coal and other natural resource extraction industries is an extended, complex one. Economically, coal production has been critical to Central Appalachian states, primarily due to the jobs and tax revenues historically provided by the industry (McIlmoil & Hansen 2010). But times have changed. The Central Appalachian coal industry has become less competitive than other energy development industries and regions, leading to a sharp decline in Appalachian coal employment since the 1970s, a trend that is

[13] In addition to inhalation, ingestion of and skin exposure to coal dust has been found to have negative human health consequences (Kurth et al. 2015).

expected to continue over the coming decades (Bonskowski & Watson 2006; McIlmoil and Hansen 2009; Tallichet 2014). Though coal employment and tax revenues have drastically fallen, Central Appalachia's relationship with natural resource extraction continues to affect the wellbeing of communities and people throughout the region. In natural resource sociology scholarship, the term "natural resource dependency" is used to describe such regions that have historically had high levels of employment and/or income derived from resource extraction and processing industries – but may not anymore (Humphrey et al. 1993; Krannich et al. 2014). Although the condition of natural resource dependency itself is not inherently negative or positive, a history of natural resource dependency most often results in poor social and economic outcomes relative to regions not economically dependent on resource extraction, including sharp fluctuations in employment and slow economic growth, high rates of un- and under-employment, persistent poverty, high outmigration, and deterioration of community capacity for collective action (Freudenberg 1992; Humphrey et al. 1993; Krannich et al. 2014; Tallichet 2014). Consequently, this condition has also been described as the 'resource curse' (James and Aadland 2011; Weber 2014).

Central Appalachia's historical dependence on natural resource industries – particularly coal-mining – has contributed to trends of persistent poverty, unemployment, weakened local governance, limited opportunities for entrepreneurship and educational attainment, environmental degradation, and severe health disparities relative to the rest of the nation (Partridge et al. 2013). While some federal and regional programs have been created to address these issues – from the War on Poverty in the 1960s to the Appalachian Regional Commission's POWER initiative of today – these conditions still persist. As asserted by C. Wright Mills (1959:3) in *The Sociological Imagination*, "Neither the life of an individual nor the history of a

society can be understood without understanding both." In other words, social issues at the macro-level (such as natural resource dependency and its outcomes) may be best understood – and ultimately addressed – by also examining the micro-level, personal experiences of individuals living within these conditions *in addition to* the sociopolitical and economic structures that drive them (Sztompka 2008; Scott 2009). Although past research about natural resource dependency has traditionally examined historical socioeconomic trends at the community- or county-level (Stedman 2013), fewer studies have assessed how the consequences of natural resource dependency shape the everyday experiences of those who live in such regions and, additionally, how those everyday experiences illuminate challenges or opportunities for future development.

To highlight the 'micro' experiences of natural resource dependency and their implications for overcoming the consequences of this natural resource dependency, this study draws upon the concept of environmental justice, a frame that complements natural resource dependency scholarship in that it is also grounded in the complex links between environmental and social conditions, but has increasingly been applied to understand how social and environmental inequalities are experienced, (re)produced, and addressed through individuals' everyday experiences and practices (Agyeman, Schlosberg, Craven, & Matthews 2016). The frame of environmental justice acknowledges the social and economic conditions (e.g., poverty, inequality) taken into account in past natural resource dependency scholarship, while tying in the biophysical environmental quality implications – a dimension of impact overlooked in previous natural resource dependency studies. Specifically, this study uses an environmental justice frame to examine how the consequences of natural resource dependency constrain the efforts of community gardening programs that serve coal-impacted communities, as demonstrated through

the everyday experiences of program coordinators and participants. Food production and consumption practices have been a strong focus in studying environmental (in)justice due to food's bridging role between biophysical, economic, and human spheres (Gottlieb 2009). As demonstrated by the opening vignette as well as previous scholarship, food gardening in particular can provide important insights into human-environment interactions through personal and professional everyday experiences while also illuminating larger patterns of social and environmental inequalities (Bhatti, Church, Claremont, & Stenner 2009; Hondagneu-Sotelo 2010; Milbourne 2012). This paper therefore addresses the following two research questions: 1) How might rural community gardening programs shed new light on the everyday environmental injustices experienced in a historically natural resource dependent setting?; and 2) How might these injustices compound to create constraints for grassroots initiatives, like community gardening programs?

Following a broader review of environmental justice as a conceptual frame and its relevancy to the context of Central Appalachia, this paper then reviews the literature on community gardening practice and constraints. Next, the paper describes the embedded and comparative case study approach applied in this research. Findings demonstrate that the everyday environmental injustices experienced by gardening program coordinators and participants can be understood in four overlapping and mutually reinforcing dimensions: *natural* environment, *built* environment, *human health* environment, and *socioeconomic* environment. Although the participants viewed many of these challenges as justification for grassroots initiatives like community gardening programs, these constraints interacted in a way that limits the success of these efforts, particularly for individuals who are most marginalized.

Background

Environmental (In)Justice and Everyday Life

Environmental justice, as a social movement and an academic field, emerged in the 1970s to demonstrate and address how the needs of marginalized populations were not being adequately addressed in the modern US environmental movement (Agyeman et al. 2016). Bullard defined environmental justice as the principle that "all people and communities are entitled to equal protection of environmental and public health laws and regulations" (as cited by Brulle and Pellow 2006:104). In a review of different organizations' definitions of environmental justice, Walker (2012) found that they included three different dimensions of justice: distributive justice, or who lives with, consumes, or receives environmental 'goods' and/or 'bads'; procedural justice, meaning access to information, participation in decision-making processes, and access to methods of justice; and justice as recognition, or who is given respect and who is (or is not) valued.

More than two decades of environmental justice studies in the U.S. have demonstrated that ethnic minorities, indigenous persons, people of color, and low-income communities are disproportionately exposed to environmental harms (eg. air, water, and soil pollution) related to industrialization, militarization, and consumer practices (US GAO 1983; Bullard et al. 2007; Mohai, et al. 2009). The development of environmental justice studies began with proximity-based analyses, those that examine disadvantaged populations' distances to industrial facilities or hazardous waste sites. The field evolved to include studies grounded in risk-based approaches, which examine the socio-spatial distribution of pollution risk (Mohai, et al. 2009). More recently, environmental justice studies have recognized the importance of everyday experiences and practices to better demonstrate the drivers, spatial distinctions, and more widespread

reproduction of environmental inequalities beyond isolated "spectacular conflicts" of environmental hazards and disasters (Milbourne 2012:944; Hobson 2006; Agyeman et al. 2016; Jamal & Hayes 2016).

Research in this newer vein of environmental justice scholarship assesses how contemporary systems of production and consumption are connected to the ways in which 'everyday' or 'ordinary' environmental injustices are produced, experienced, reproduced, and resisted by individuals and social groups. Agyeman et al. (2016) situated this concept in environmental organizing literature focused on "new materialism," or "a concern with power, politics, and sustainability represented in the materials and flows through both human and non-human communities… [that] represent[s] a new politics of sustainable materialism, an environmentalism of everyday life" (Schlosberg & Coles 2016:161). This movement is grounded in the belief that "how we immerse ourselves in the natural world, and how we provide for our basic needs, is simply not working," as demonstrated by environmental and sociopolitical challenges like climate change, and that these challenges may be addressed by "replacing the existing [material] flows with new, local, engaged systems of community production and consumption" (Schlosberg & Coles 2016:177). Agyeman et al. (2016) assert that by examining the practices and material flows of everyday life, we not only learn more about the systems that produce environmental injustices, but also about how we may reclaim and restructure these systems towards greater equality and sustainability.

Although a focus on the materiality of everyday life is not necessarily new to environmental justice scholarship (see Agyeman et al. 2016), research explicitly utilizing the concepts of 'everyday' or 'ordinary' environmental injustices is still emerging. Hobson (2006:673) explored how people living in Singapore, a political setting not conducive to citizen-

led social movements, performed environmental justice work through everyday actions and representations, which "often fall 'under the radar'" of previous environmental justice studies. Further, Milbourne (2012:954) demonstrated how acts of "ordinary environmentalism" – specifically, community gardening – can address often overlooked "everyday forms of [environmental and social] injustice" while also becoming the "springboards" for action on larger scale injustices.

These previous studies demonstrate how environmental justice may be addressed through everyday or ordinary actions. In a different approach, Whitehead (2009) drew upon Lefebvre's (1991) theories of everyday life to demonstrate how larger-scale, city-based ecological regeneration efforts can actually exacerbate 'ordinary' forms of environmental and social injustice in urban settings. Relatedly, this study seeks to expand our understanding of this concept by examining how implementing "local, engaged systems of community production and consumption" (Schlosberg & Coles 2016:177) – specifically through community gardening programs – may (1) help to illuminate and (2) yet also be constrained by individuals' experiences of everyday environmental injustices. This study further adds to the scholarship on "everyday environmental injustices" by focusing on less examined rural places, particularly those affected by the outcomes of natural resource dependency, that may experience and address environmental (in)justice in different ways than more commonly studied urban places (Ashwood & MacTavish 2016; Pellow 2016).

Environmental (In)Justice and Community Gardening

As demonstrated by the previous work of Milbourne (2012), and the broader connections between environmental justice and food justice scholarship and practice – in which community gardening is strongly situated (Gottlieb & Fisher 1996; Alkon & Agyeman 2011) – community

gardening provides a substantive case for understanding how environmental inequalities are materially experienced as 'everyday environmental injustices' due to the material and visceral experience inherent to both producing and consuming food (Agyeman et al. 2016). Community gardening programs may be described as "bottom-up, community-based, collaborative efforts to grow food… cultivated through a system of individual/family plots, or tended as a whole by a group of citizen volunteers…[that] involve the leadership and active participation of area residents to plan and care for these [gardening spaces]" (Okvat & Zautra 2011:374). The community gardening movement in the U.S. arose in the 1890s in response to socioeconomic and environmental crises, such as high unemployment rates and deterioration of city green spaces; today, community gardens have remained a pathway for economic self-reliance in the face of rising food prices and human and ecological health concerns about conventional agricultural practices (Lawson 2005). Community and household gardening programs have also been promoted by prominent federal agencies such as the United States Department of Agriculture and Center for Disease Control as sustainable development initiatives for both urban and rural communities (CDC 2017; USDA 2017).

Most of the scholarship on community gardening programs – and home gardening initiatives that include a collective or sharing component – focuses on the various beneficial outcomes experienced by individuals, families, and communities (Draper & Freedman 2010; Guitart, Pickering, & Byrne 2012; Poulsen, Neff, & Winch 2017). But of particular interest to this study, the scholarship on home and community gardening initiatives has also identified numerous challenges and constraints to realizing these benefits. Reviews of community garden studies have found environmental and social justice challenges embedded in community gardening efforts, including: social exclusion, non-ecologically sound agricultural practices,

limited access to educational and financial resources, limited institutional and political support, poor water access and land tenure, disproportionate human health and household financial impacts, among other organizational and human resource challenges (Draper & Freedman 2010; Guitart, Pickering, & Byrne 2012; Santo et al. 2016).

Because much of the community gardening literature is grounded in urban spaces, focusing on urban greening efforts and social justice issues, many studies have examined how these efforts are constrained by the conditions of urban environments. Of particular import have been issues of soil contamination and water/air pollution, in which heavy metals, petroleum products, biological waste, or other hazardous material from historical residential, industrial, and transportation practices threaten the safety of gardeners and growing spaces (Bugdalski et al. 2014; Guitart et al. 2012; McClintock 2012). The inappropriate use and disposal of fertilizers and pesticides may also pose a risk to the health of growers and consumers (Santo et al. 2016). However, in a study of Baltimore community gardens, Kim et al. (2014) found that most program participants have low levels of concern and inconsistent levels of knowledge about these environmental hazards, experience barriers to investigating a garden site's history and conducting soil tests, and have limited knowledge of best practices for reducing exposure, despite the real risks these hazards pose in this setting. These hazards can lead to various negative health impacts, including nervous system damage and certain cancers, and the sources of the hazards are likely to be concentrated in areas and activities serving populations already more vulnerable to these health conditions (low-income, racial and ethnic minority, women, children, and the elderly) (McClintock 2012; Santo et al. 2016). This study will expand upon this scholarship to examine how similar challenges may be relevant in a rural, natural resource

dependent context to further understand how community gardening efforts may constrain or reproduce 'everyday environmental injustices.'

Study Context: Central Appalachia and Grow Appalachia

Central Appalachia is no stranger to issues of environmental (in)justice, many of which can be tied back to the condition of natural resource dependency enforced by the pursuit of financial gains for local and extra-local elites (Gaventa 1980; Eller 2013). In addition to the occupational and regional hazards of energy extraction practices, many Appalachian residents also live in close proximity to other extractive hazards such as waste impoundments and waste treatment facilities (Morrone and Buckley 2011). The presence of these hazards leads to adverse ecological effects like more extreme and frequent flash flooding events, soil erosion and landslides, water contamination, and air and noise pollution (Berhardt et al. 2012; Bell 2016). Public health researchers have found that, in comparison to other non-mining regions of the U.S. and Appalachia, the coal mining-dependent areas of Central Appalachia endure higher rates of hospitalization for respiratory and cardiovascular conditions, as well as higher rates of mortality, birth defects, cancer, and chronic illness, controlling for other socioeconomic factors like household income and educational attainment (Ahern and Hendryx 2008; Hendryx 2008; Hendryx 2011).

In addition to the distributive environmental injustices felt throughout the Appalachian region, previous scholarship has also demonstrated the many procedural and recognition-related challenges residents face in mobilizing against these forms of social and environmental injustice. Despite the damaging role that resource extraction, particularly coal development, has played in Central Appalachia's history and current situation, public perceptions toward the coal industry tend to be positive or at least neutral (Gaventa 1980; Scott 2010; Bell 2016; Lewin 2017). Recent

research also suggests that coal companies lobby local and state governments, undermine local environmental justice movements, and manipulate community identity to maintain their power, despite contributing a declining share to the local and regional economy (Bell and Braun 2010; Bell and York 2010; Scott et al. 2012). Even in cases where residents question or condemn the presence of the coal industry, a number of barriers exist against mobilization, including depleted social capital in coal-mining communities, the gendering of activist involvement, the coal industry's ideology-construction and political efforts, and the hidden physical impacts of the coal industry's environmental destruction (Bell 2016).

In spite of the many barriers to mobilization, Central Appalachia is well known for its proliferation of community-based organizations and social movements that have emerged to address issues of environmental, social, and economic injustice that persist throughout the region (Fisher & Smith 2012). The specific organization examined in this study is the non-profit initiative of Grow Appalachia, a partnership founded in 2009 between the Loyal Jones Appalachian Center of Berea College and JP's Peace, Love & Happiness Foundation to "help Appalachian families grow as much of their own food as possible" (Grow Appalachia 2018). To do so, Grow Appalachia provides financial, technical, and educational assistance to other community-based organizations located throughout the region to establish community gardening programs, including farmers' markets and commercial kitchens, to simultaneously address human health and economic development through the rejuvenation of local subsistence cultural practices. Since 2009, Grow Appalachia and their network of partner sites have worked with more than 4,300 families to grow nearly 3 million pounds of organic produce. In 2016 alone, Grow Appalachia invested $611,000 in gardening resources across 31 partner sites, serving over 1300 families in 61 counties across six states (Grow Appalachia 2017). While not explicitly an

environmental organization, Grow Appalachia's community food security work provides a substantive case for examining how 'everyday environmental (in)justices' may be experienced through the ordinary acts of gardening and food preservation (Agyeman et al. 2016). Additionally, in a region where conversations about the environment and history of natural resource extraction can be especially conflict-ridden (Bell 2016), working with an experienced and trusted organization like Grow Appalachia and focusing on the more neutral arena of food practices provided a useful point of entry for this study.

Methods

To examine the 'everyday environmental injustices' experienced though community gardening and how these injustices may constrain redevelopment efforts, this study[14] employed an embedded case study design, including the Grow Appalachia organization as the parent case study and four comparative sub-case studies (one pilot, three full) with select partner sites who implement the Grow Appalachia program at the local level (Yin 2012). To help understand the concept of natural resource dependency and relationships between its outcomes and everyday experiences with community gardening programs, the four sub-case studies were selected to represent highly coal-impacted areas within the Central Appalachia region. Because the Grow Appalachia partner site programs function at the county or multi-county level, coal impact level was also assessed at the county level using coal production and employment statistics.[15] The pilot study (N=20 household participants) was selected as a highly-impacted coal community to

[14] The analysis presented in this study is part of a larger ongoing collaborative program evaluation project between the author and Grow Appalachia headquarters. This project was initiated in February 2016 to assess the organization's process and outcomes to better understand and elevate their impact across the service region.
[15] A Grow Appalachia partner site was designated a high coal-impact partner site if the counties they served were designated as a coal production county by the Kentucky Center for Business and Economic Research (Roenker 2002) and/or a mining-dependent county by the USDA ERS 2015/2004/ and/or 1989 county typologies (USDA ERS 2016).

test interview instruments for validity and reliability in addressing the study's overall research questions. The three full high-coal impact sub-case studies were selected to represent the geographic and size variation in the Grow Appalachia program overall: one small site (~35 household participants) in southern West Virginia, one medium site (~60 household participants) in eastern Kentucky, and a large site (~90 household participants) in eastern Tennessee.

To understand the everyday experiences of program staff and participants, this study primarily draws upon qualitative research conducted at Grow Appalachia headquarters (in Berea, Kentucky), the pilot site, and the three full sub-case study sites. Data collection included semi-structured, in-depth interviews (Table 3.1) with Grow Appalachia headquarters and partner site coordinators and staff (N=20); unstructured interviews with gardener participants at the three sub-case study sites (N=23) (Table 3.1); and 18 combined weeks of participant observation at the case study sites (including, but not limited to, program or staff meetings, partner site office visits, home/community/institutional garden tours, farmers' markets, and garden workshops).

Table 3.1. Sample of interview participants

Case Study Site	Grow Appalachia (HQ)	Pilot Site	sWV (Small)	eKY (Medium)	eTN (Large)	Total
Staff Interviews	6	3	3	3	5	**20**
Gardener Interviews	--	--	8	7	8	**23**

***** Individual follow-up interviews were conducted with all Grow Appalachia Headquarters staff between May 2016 and July 2017. In total, 12 interviews were conducted with these study participants.

To capture the potential variety of perspectives embedded throughout the community gardening programs, interview participants were identified by their role in the program using a stratified purposive sampling process (Ritchie et al. 2013). The interview sample began with all Grow Appalachia Headquarters staff members employed during the summer of 2016 and the individual site coordinators for the four identified sub-case study sites. Site coordinators were asked to identify and provide introductions to any staff members and key volunteers involved in

their Grow Appalachia site since the establishment of their individual programs. Informed by a quota sampling strategy (Ritchie, et al. 2013), site coordinators were then asked to identify six to eight gardener participants according to (non-mutually exclusive) characteristics used by the Grow Appalachia program to describe their participants including: number of years in the program (one, two, or more), home/community/market gardeners (as available), and representatives from Grow Appalachia's special[16] gardener categories (elderly, disabled, and single-parent).

All but one[17] of the interviews were conducted in person between May 2016 and September 2016 and lasted 30 minutes to four hours, with an average length of 65 minutes. Each of the interviews took place at the study participant's home, work place, or a third space of their choice (e.g., local restaurant). Nearly all interviews conducted with Grow Appalachia headquarters and site staff were done one-on-one; two of the interviews done with the large sub-case study staff were conducted with the site coordinator present; and interviews conducted with gardeners included any present members of the household involved in the Grow Appalachia program and often the respective site coordinator[18]. All interview participants provided verbal informed consent prior to participating and following an IRB-approved oral consent script read by the researcher. All interviews were audio-recorded and transcribed verbatim by the researcher or a third-party professional transcriber.

[16] Grow Appalachia Headquarters enforces a two-year limit on gardener participants across its partner site programs, except for gardeners that qualify as elderly, disabled, or single-parent households.
[17] One follow-up interview conducted with a Grow Appalachia Headquarters staff member was delayed to July 2017.
[18] Site coordinators served as necessary gatekeepers to their site staff and gardener participants. They remained present for many of the interviews conducted with the staff and gardener participants 1) to put the interviewee at ease and, 2) because they had to transport the researcher to very remote locations (with no GPS service available) to meet the interviewee at their selected interview location.

The semi-structured interviews with Grow Appalachia staff and coordinators included questions about program mission, operation, benefits, and challenges, including the opportunities and constraints of operating in a rural Appalachian region/community. Gardener interview participants were recruited with the help of partner site coordinators to sample for variation in garden type (household, community, or market garden), and the number of years the gardener had been a participant in their respective Grow Appalachia program. The unstructured interviews with gardener participants included questions about their personal experience with the Grow Appalachia program and the individual and household-level benefits and challenges they experienced from growing their own gardens. These interviews included extensive tours of their garden plots and produce storage areas (if they had maintained a garden in 2016). Interview and field note transcriptions were coded and analyzed using NVivo Qualitative Analysis software. Interview transcriptions were analyzed using an open coding approach where themes were allowed to emerge organically; the coding framework developed from this process was used to guide a selective coding process of the field note transcriptions (Saldaña 2012).

Results

This study found that there are multiple dimensions of 'everyday environmental injustices' experienced within Grow Appalachia community gardening programs. These individual and household experiences – and the constraints they represent for the program's overall efforts – can be organized into four distinct (but overlapping and mutually reinforcing) categories: *natural* environment, *built* environment, *human health* environment, and *socioeconomic* environment. 'Environment' in this study's findings is used in a more expansive interpretation in order to illuminate the nuances of ordinary experiences and 'everyday environmental injustices' (Agyeman et al. 2016). Each of these dimensions is described in turn

below, in an order that suggests how the dimensions may nest within each other; the human health environment is largely situated within the human-driven built environment, which in turn is situated within the broader natural environment. Experiences and constraints related to the socioeconomic environment were closely related to (and often exacerbated by) constraints experienced within the other three environmental dimensions, so it is discussed last.

Natural Environment

Experiences and constraints related to the *natural* environment may be understood as ecological conditions that are naturally occurring limitations related to the geographical and biophysical location of the community gardening programs and their participants. As with most gardening ventures, the coordinators and participants experienced many naturally occurring gardening challenges, such as the prevalence of animal and insect pests, proliferation of invasive weeds and grasses, and plant disease. These challenges were described as natural limits on the programs and gardens, but were largely understood as an inevitable part of the food production process. Given the organic gardening practices required by the Grow Appalachia office, these issues were burdensome, but not hard to overcome with the tools and resources provided to the sites through their Grow Appalachia program grant budgets.

More unique and difficult to overcome were issues of land access and quality. Given the topography of Central Appalachia and the way land is distributed among individual and corporate landowners, access to flat land suitable for food production was perceived as a challenge by many in the Grow Appalachia program. The land that is accessible to participants is also not of inherently good quality for growing produce due to soil type and low fertility. As described by the pilot site coordinator:

> *Obviously, we're not the most cream of the crop land. We got a lot of marginal spots… The topography and lack of arable land presents an issue. Especially, I mean, people got a trailer perched up on the side of the mountain and that's all they got. So, I'm like, alright, we'll try it, we'll see. So, half of my life is picking rocks.*

Although Grow Appalachia headquarters has informal restrictions about how much money its partner organizations can spend on raised bed gardening (due to the heavy resource investment of raised beds), coordinators and staff members from the eastern Tennessee site found it a necessary practice due to naturally poor soils lacking almost any top soil or organic matter in their area. As described by one Tennessee site staff member:

> *Soil quality in [our] county is poor. We don't have any natural lime, so our ground's real acidic. So, from the start, we're already behind. Real rocky also; we do need to plow it. And… it's just kinda hard to get a place that's flat enough and rich enough to get a garden in. [laughs] So you make do with that.*

The flat land that is available for gardening is often "bottomland" or land located in the flood plains along creeks and streams, putting the garden at risk of flooding during rainy seasons. Due to this use of "bottomland," floods came up often in discussions with Grow Appalachia staff and participants, particularly those located in the more mountainous regions of eastern Kentucky and southern West Virginia (as compared to the eastern Tennessee sub-case study site, which was overall flatter in terrain). As told by a headquarters staff member, "Floodwaters is every year. Some years more than once. Last year [2015] we had three major floods and every time people lost gardens." In the extreme case of June 2016, the Grow Appalachia sites located in central and southern West Virginia were struck by a 1,000-year flash flood event. Roughly 8-10 inches of rain water fell in a 12-hour period, resulting in 23 deaths and damage to 1200 homes (Visser and Savidge 2016). Effects were widespread and Grow Appalachia sites located in this area lost many home and community gardens too late in the season to replant for summer harvest.

The hilly topography of much of central Appalachia regularly contributes to flash flood events, as the water from intense rains gathers quickly and has limited paths of travel. However, the June 2016 flood event demonstrated how extreme/variable weather also limits the very success of Grow Appalachia and its partner sites' programs. In addition to excess rainfall and intense flash floods, other examples of extreme/variable weather mentioned by study participants or observed in the field included heat waves, droughts, cold snaps, and wildfires. In an attempt to diversify funding streams, Grow Appalachia headquarters staff attempted to produce a lettuce crop for commercial sale in the 2015 growing season. As described by a headquarters staff member,

> *We tried to do a cooperative lettuce production aggregation and selling project last year. As it turned out, we chose the coldest and worst winter in recorded history to try and do this and so from the beginning an intense cold just stymied us at every single thing we tried to do… By the time the weather had turned, it started to get really warm really quickly, which dooms your lettuce production.*

Resources invested into this pilot program were ultimately lost, and they have not since pursued a similar social enterprise strategy. Through this example and the others shared above, the findings demonstrate that, despite assumptions about the ease and prevalence of gardening in rural environments, the natural distribution of biophysical features and phenomena can constrain gardening and program success, contributing to uneven outcomes between different places and households based on who has access to sufficient natural amenities and who does not.

Built Environment

Experiences and constraints within the *built* environment may be understood in two ways: (1) results of human-driven activity (e.g., industry, resource extraction) and (2) results of insufficient infrastructure (e.g,. centralized sewer systems). Most commonly, built environment issues came up in regard to water quality, particularly in light of flash floods' effects on

gardening spaces. When discussing the prevalence and subsequent dangers of growing in flood plains, one headquarters staff member shared, "In the creek bed if you get a flood, and all your plants survive, you still can't eat it because there's so many straight pipes and so much heavy metal concern…" Another headquarters staff member discussed the water quality tension between subsistence food practices and drinking water: "It makes it kinda challenging to tell someone that they should be growing their own food and eating healthier when they can't even drink the water out of their faucet… You know, how can you eat well but drink poorly? It can't be one without the other."

The water quality impacts of the built environment were often associated with lack of centralized sewer systems and water treatment plants (resulting in a prevalence of "built-in fertilizer" in the local streams, as one West Virginia home gardener joked) or presence of industry practices – particularly coal extraction via mountain top removal practices. But some participants also cited well water contamination from natural gas drilling and/or silt buildup in streams from logging operations. In addition to water quality, access to water in general was restricted by a lack of water lines and infrastructure, resulting in extra manual labor needs at some gardening sites and, in the case of the eastern Tennessee sub-case study, the loss of a community garden site intended to serve a low-income apartment complex. Providing insight at the household level, the pilot sub-case staff member described what it was like to water her own garden, located near the top of a mountain hollow on a very steeply sloped hill:

> *Well, before I'd have to carry water… before they ran the water lines up here [this year]. I used to either have to go down here to the spring, you see… And carry water up to the garden. Or I'd have to wait for it to rain. Or if there's enough water was that in the creek, I could go to the creek and get me a bucket and dip it…*

In addition to water, soil quality was also commonly cited as being impaired by industry practices that further restricted the availability of safe, flat, and fertile land for food production.

Although Grow Appalachia intentionally does not invest in larger-scale production on reclaimed mountain top removal sites for safety reasons, individual and community growing spaces across their partner sites are still directly affected by issues like absence of top soil and presence of industry backfill. For example, the southern West Virginia sub-case study site is currently housed in a disaster-relief shelter built on top of a reclaimed coal mine completely repurposed upon a gravel landscape. Therefore, their on-site growing spaces (used for community programming with a local mental health center) are exclusively contained in raised beds, including repurposed industrial equipment like freezers and tires. Staff members (at headquarters and sites) who have visited individuals' home gardens have also observed this issue at the household level. As described by a headquarters staff member:

> *I'm working with a family right now at [an eastern Kentucky site] and they want to use their backyard for their garden. Well, their backyard is an old strip mine. We went to take soil samples and my soil probe got about that far [motions with fingers] in the soil… I stick that soil probe down in there, first of all there were more colors than a damn rainbow, which is not a good thing… What do you tell a family?... You guys need to put some raised beds up and then do some hazmat barrier between whatever's down there and what you're eating.*

The built environment also constrained the success of the community gardening programs in ways beyond effects on natural resources. Travel to and between gardening locations was one of the most common constraints shared by staff, coordinators, and participants. The geography of the local areas meant that travel routes between homes, gardens, and workshop locations were limited and exceptionally long, a uniquely complicating feature for these rural community gardening programs. In some cases, roads had also been damaged or compromised by extreme weather events or industry practices, further restricting accessibility for program coordinators and participants alike. Grow Appalachia headquarters permits large travel allowances in program sites' budgets to account for this challenge, but with the absence of public

transportation or formalized ride share programs in these remote rural areas, families without access to cars remain at a greater disadvantage, threatening both their gardening success and tenure within the program due to mandatory attendance policies within the Grow Appalachia program.

Other constraints of the built environment observed in the field also shaped rural community garden experiences. These included insufficient housing, including lack of food storage or preparation space within the homes of the garden participants, particularly for those who have small living accommodations, lack indoor running water, or have limited electricity access. Lack of other public services, such as communication infrastructure (e.g., internet, phone service) and stores or greenhouses with organic gardening resources, were also cited or observed as constraints on overall gardening programs or individual participants. Constraints of the built environment became especially apparent in places and for households where natural environment constraints worsened issues within the built environment, such as floods in areas where water contamination rates were high or where industry practices had compromised what little soil quality had naturally been available in a given place. In this way, constraints experienced through the built environment not only created independent incidents of everyday environmental injustice, but also heightened distress caused by natural environment constraints and/or impeded local people's abilities to overcome them.

Human Health Environment

All research participants, in one way or another, shared experiences relevant to the *human health* environment that illuminated how physical and mental health issues both shaped and constrained their community gardening and program efforts. Perhaps given the food security mission of the overall organization, Grow Appalachia headquarters and site staff all referenced

human health in one way or another. Many mentioned the public health challenges of the region as a fundamental reason why Grow Appalachia exists and endures. They seamlessly wove references to cancer rates, diet-related diseases, disability, age-related health issues, mental health, drug abuse, domestic violence, and limited access to healthcare into discussions about program purpose and their individual motivations for promoting community gardening programs in their respective regions or communities.

In addition to the overall public health trends, many interviewees shared more specific or personal instances of how human health had influenced not just the overall mission, but also affected the daily functioning of their Grow Appalachia program or their own individual program experience. Although improving human health is a major aim of the Grow Appalachia program, human health remains one of the biggest barriers to program implementation. Following his regional site visits, one Grow Appalachia headquarters staff member commented:

> *In fact, one thing that kind of surprised me, and shouldn't have, but it did… I would say 70 percent of the people that I work with were somewhat physically disabled. Whether they were older or had health issues, which is so prevalent, or they're working with family members who have health issues, and so they're trying to support those family members.*

Site coordinators/staff and their gardener participants alike cited personal health issues as barriers to program participation and success. And even if the main gardening participant enjoyed good health, family illness and caretaking responsibilities could also limit one's ability to remain engaged in the program and maintain his/her own garden spaces. When asked how she and her family use the food produced in her garden, one Kentucky gardener participant replied:

> *We canned a lot of stuff, but this year we didn't have as big a garden as we typically have. My husband passed away unexpectedly last November... He was the tractor driver, the plower, and we had like five acres... So this year it's just a behind the house garden. I just couldn't hardly undertake the... [pause] He was the one who got everything ready.*

This gardener not only experienced constraints on her garden experience due to her

husband's illness and passing, but faced her own health issues. For the last five years, she had been battling ovarian cancer, treatment for which had also limited her ability to garden – but also fueled her dedication to homegrown, organic produce as an important aspect of how she pursued a healthy lifestyle.

Some interview participants also discussed human health concerns in relation to other environmental (natural and/or built) constraints, drawing connections to the implications of relying on water sources compromised by industry practices and waste products. The opening vignette about coal dust in the community garden site showed how local energy development not only affects the natural and human health environment through impaired air quality, but also raises questions of food safety. As put by a headquarters staff member when discussing the dangers of flooding and growing gardens in flood plains, "Haven't known anyone to get poisoned from their own vegetables yet. But I'm just waiting…" Just as the built environment constraints discussed above exacerbated those experienced in the natural environment, constraints experienced within the human health environment may be seen as standalone issues of everyday environmental injustice but also as layered effects that make natural and built environment injustices even more problematic and difficult to overcome – particularly for gardening participants who are limited by poor personal and family health conditions.

Socioeconomic Environment

Grow Appalachia headquarters staff and site staff/coordinators in particular often connected experiences and constraints from the first three environmental dimensions to the conditions of the household, local, or regional *socioeconomic* environment. Their explanations of why constraints existed or persisted within the other three environmental dimensions often identified long-term patterns of unjust and uneven local and regional economic development,

experienced both at the individual household level and at the overall programmatic level.

At the individual level, many study participants mentioned limited household resources as a barrier to gardening program participation, based either on their own experience or as something they had witnessed for other individuals or families. When asked if she and her daughter would continue gardening if their Grow Appalachia program had to close down, one West Virginia gardener shared:

> *Yeah, we would still do it. I mean, we probably wouldn't do it as extensive, because like I say – and I'm not being mean, I'm not saying we took advantage of you guys, but you know, a lot of this stuff you can't afford. And when somebody is giving away free plants and free garden stuff... Yeah. It probably wouldn't be as extensive as, you know, what we did when [Grow Appalachia] helped us.*

Headquarters and partner site staff often explained limited household resources through narratives of larger socioeconomic trends related to poverty, unemployment, underemployment, and local job scarcity. They also cited limited community resources, including childcare, healthcare, and university extension offices (for physical and informational resources) as individual constraints on program participation and success. Socioeconomic constraints were also experienced at the headquarters/programmatic level, largely in the form of underinvestment from federal or state programs. As described by one headquarters staff member: "Your larger USDA grants, the Community Food Projects grants, going back and looking at the funded ones, they're all in urban areas. And I think rural – it's an area that people have their own assumptions about, they think that people are really self-sufficient." This staff member went on to explain further: "If you aren't creating jobs, they don't care. If you aren't urban, they really don't care." Headquarters staff involved in the external grant processes described the challenges they faced in explaining the nuances of rural conditions and experiences (i.e., geographic dispersion and transportation issues, lack of employment opportunities, lack of access to healthcare and fresh food sources) to investors who primarily funded urban-based projects.

Most study participants raised issues of poverty, unemployment, low educational attainment, population loss, and more – themes commonly discussed within scholarship on the socioeconomic outcomes of natural resource dependency (Krannich, et al. 2014). From discussions about the War on Poverty to extra-local corporate control by energy industries to lack of (or inefficient) federally financed regional development programs, the long-term view of many headquarters' and partner site staff members underlay descriptions of how natural, built, and human health environments interconnect and are experienced by themselves or other Central Appalachian residents today, whether through community gardening activities or otherwise. For example, when asked how the qualities of Appalachia as a physical context had shaped the Grow Appalachia program, a headquarters staff member said:

> *Appalachia is a deeply unique place… [It] has been an isolated region that has been overlooked and then used and stereotyped and unvalued and underserved. As a result, a lot of the communities in Appalachia are really suffering… Had it been that the resources that were generated from coal and from timber extraction had actually stayed and benefited the region, that would be a different story, but it hasn't. Where's that money gone? You don't drive through the region and see it. You see devastation, you see toppled mountains, you see broken homes, you see broken down cars, and kids who don't have access to good education and healthy food.*

This quote demonstrates how the materiality and everyday human experiences of the other three environmental dimensions – from environmental quality to industrial impacts to human health – are tightly interwoven with the region's socioeconomic conditions, past and current. Though the constraints discussed in this sub-section are more often considered issues of social and economic justice, their relationship to the previous three dimensions of everyday environmental injustice demonstrates the intersectional and reinforcing associations between all four dimensions. Though the constraints detailed in the previous three dimensions may be considered 'everyday' or even mundane, it is this fourth dimension – socioeconomic environment – that in many cases made those other experiences into constraints because the

household, program, and/or regional resources were not available to address natural, built, or human health constraints at their outset.

Discussion

Based on an embedded case study of Grow Appalachia in rural central Appalachia, this paper has shed new light on how residents of a natural resource dependent region experience 'everyday environmental injustices' through engagement in community gardening activities. Using an expansive interpretation of the term 'environment', as suggested by Agyeman et al. (2016), evidence of everyday environmental injustices was found within and across four different environmental dimensions: natural, built, human health, and socioeconomic. These dimensions did (and do) not function in isolation, but instead demonstrated ongoing interaction and mutual reinforcement through the experiences and constraints described by study participants. For example, as illustrated in quotes above, soil fertility is an important issue in many parts of Central Appalachia, separate from the region's natural resource dependent conditions. Compound this with industrial pollution and consider the food safety implications for the people producing and consuming food in these spaces, and the lines between natural, built, and human health environment become inextricably blurred. These intersections may then be overlaid with socioeconomic constraints, both at the household and programmatic level, limiting one's ability to overcome the other constraints. In sum, one environmental dimension may not be addressed without also considering or addressing the others.

Similar to Whitehead (2009), this study demonstrates how "new, local, engaged systems of community production and consumption" (Schlosberg & Coles 2016:177) are also susceptible to and/or may reproduce environmental injustices. Many of the challenges noted by study participants reflect the environmental justice challenges faced by community gardening

programs in more urban environments, from land access to industrial pollutants (Guitart et al. 2012; McClintock 2012; Bugdalski et al. 2014; Kim et al. 2014; Santo et al. 2016). That said, many of the experiences shared by Grow Appalachia staff and gardening participants identified these 'everyday environmental injustices' not only as constraints on gardening abilities or respective program success, but also as opportunities and justification for how and why community gardening programs, and other forms of grassroots-level redevelopment efforts, can and should make a difference in the lives of Appalachians. This was particularly salient in issues related to the human health environment, where chronic illness and disability were seen as reasons to participate in and support a program like Grow Appalachia to pursue greater food security, improved personal and family health, and accessible physical activity. Though these issues do in fact constrain the ability of community gardening programs to contribute to sustainable redevelopment, framing them as opportunities is an important strategy (conscious or unconscious) used by participants to avoid the common trap of Appalachian fatalism (Welch 2011). Community gardening programs in central Appalachia also mobilize a sense of agency and empowerment and agency for overcoming these constraints through individual and collective efforts.

However, actual environmental experiences and constraints – particularly those related to the natural and built environment – remained a difficult conversation to instigate during the field research, as found in other scholarship from energy-impacted or resource dependent regions (Bell 2016). Both staff and participating gardeners sometimes described environmental conditions as "givens" and "constants" that the program was built upon instead of as barriers illuminated through the community gardening processes. In other conversations, environmental (particularly natural) constraints were blatantly denied, in direct contradiction to other local

interviewees' descriptions or the researcher's field observations. As illustrated in the opening vignette, conditions like industry-impaired water, soil, or air quality have long been a part of daily life in this region. While constraint and environmental injustice are largely used interchangeably above, there was fluctuation between what might be considered a constraint due to naturally occurring environmental inequalities (such as those discussed in the natural environment) as opposed to those caused by or exacerbated by human- or societal-based systems (like those discussed in the built or socioeconomic environments), which may be viewed as actual injustices as opposed to naturally occurring inequalities or constraints. The human health environment bridges these dimensions in that human health issues may be considered naturally occurring, but what we know from previous environmental justice scholarship in Appalachia, many of the health conditions rampant in this area are closely linked to industrial activities (Ahern & Hendryx 2008; Morrone & Buckley 2011), pushing these constraints from mere environmental inequalities to environmental injustices.

The environmental conditions discussed above are not likely to go away anytime soon. This may explain why, if they were discussed at all, they were described less as explicit program constraints and more as just one part of a complex social and physical context in which all parts of life (community gardening programs included) must learn to function. Additionally, most, if not all, of the constraints discussed above assess more so instances of distributive environmental injustice; research participants were relatively silent on issues that may be considered procedural environmental justice or justice as recognition (Walker 2012). Beyond difficult conversations about the environment in Appalachia, this also demonstrates the importance of examining *everyday* or *ordinary* injustices in that they have serious consequences for individual and community wellbeing, but are easily ignored, denied, and taken for granted because they are a

part of *everyday* life, which inherently raises issues of procedure and recognition – or lack thereof. Much of the environmental justice scholarship conducted within Central Appalachia (and beyond) focuses on the direct human and environmental consequences of particular, often acute disasters or hazards (Morrone and Buckley 2011); in contrast, this study uses an 'everyday' lens to extend this scholarship by demonstrating how the compounding history of natural resource dependence and extraction can also be experienced indirectly, but consequentially through mundane, ordinary acts, like gardening. By recognizing and addressing these distributive everyday environmental injustices, we may also begin to better question and address procedural and recognition elements of environmental injustice as well. This also raises questions of who gets to label environmental injustices or constraints, which is particularly difficult in everyday situations where an outside researcher may notice things that are otherwise hidden or mundane for the research participants. Future research may also examine more closely the framing of everyday environmental injustices and how they differ between different people based upon roles, experiences, and resources to address these constraints.

In addition to fieldwork constraints related to researching conflict-ridden environmental issues in a natural resource dependent region, this study and its findings are limited by other factors. As a collaborative endeavor, sampling of the sub-case study sites, interview participants, and the topics discussed in the interviews were partially shaped by the needs of Grow Appalachia as a partner organization. But, in turn, this action research partnership aided in building rapport and gaining access to participants who might not otherwise have consented to meet with an outside researcher. This study approach was cross-sectional in nature and is limited by the conditions of the chosen sub-case study sites, which provided some spatial and environmental variation for comparison, but limited time for in-depth, ethnographic field work at

any individual site. The findings are also based on the perceptions of study participants, as opposed to a rigorous physical field analysis of contaminants or medical research on human health outcomes. Future research could employ an interdisciplinary approach to combine social, physical, and medical science perspectives to compare perceptions of environmental constraints to presence of and proximity to environmental hazards within subsistence agriculture activities and the consequences for human health.

Conclusions

This study has demonstrated how the condition of natural resource dependency has serious (and largely negative) ramifications not just at the level of county socioeconomic trends documented in past research (Krannich et al. 2014), but also in the everyday lives of region residents. 'Everyday environmental injustices' experienced across natural, built, human health, and socioeconomic environments individually and collectively constrained the ability of individuals to participate in and reap some potential benefits of community gardening programs – while at the same time, providing purpose and motivation to persevere. All four of these dimensions may be linked directly to the region's history of natural resource dependency, demonstrating not only how the consequences of this condition have negatively affected communities and individuals in the past or currently, but also how Central Appalachia's historical and current natural resource dependency constrains new and localized forms of consumption and production – particularly those based in food subsistence practices and therefore reliant on high quality environmental resources, safe infrastructure, and physical labor.

Just as Grow Appalachia staff and gardening participants viewed these 'everyday environmental injustices' as barriers *and* opportunities within their programs, scholar and practitioners may do so as well. Bringing the normative- and activist-oriented lens of

environmental justice into natural resource dependency scholarship guides current and future research activities in this area towards influencing relevant policies or programs – particularly at a time when the most relevant agencies and programs for this particular region (Appalachian Regional Commission, United States Department of Agriculture, and the Environmental Protection Agency) are facing massive budget cuts and philosophical reorientation. This study offers a way to understand the relationships between contemporary, multi-dimensional environmental constraints on local development initiatives as well as the sociohistorical context that has caused these constraints to emerge and persist. Through the lessons offered by this case, scholars, practitioners, and policy makers may be better positioned to introduce more effective structural solutions and new systems of production/consumption that provide both long- and short-term relief without further exacerbating social or environmental inequalities.

References

Agyeman, Julian, David Schlosberg, Luke Craven, and Caitlin Matthews. 2016. "Trends and Directions in Environmental Justice: From Inequity to Everyday Life, Community, and Just Sustainabilities." *Annual Review of Environment and Resources* 41:321–40.

Ahern, M.M. and M. Hendryx. 2008. "Health disparities and environmental competence: A case study of Appalachian coal mining." *Environmental Justice* 1(2):81-86.
Alkon, A.H. and J. Agyeman. 2011. *Cultivating Food Justice: Race, Class, and Sustainability*. Cambridge, MA: The MIT Press.

Appalachian Regional Commission. 2015. "Subregions in Appalachia." http://www.arc.gov/research/MapsofAppalachia.asp?MAP_ID=31. Last accessed 10 December 2015.

Ashwood, L. and K. MacTavish. 2016. "Tyranny of the majority and rural environmental justice." *Journal of Rural Studies* 47:271-277.

Bell, S.E. 2016. *Fighting King Coal: The Challenges to Micromobilization in Central Appalachia.* Cambridge, MA: MIT Press.

Bell, S.E. and Braun, Y.A. 2010. Coal, identity, and the gendering of environmental justice movement participation in Central Appalachia. *Gender & Society* 24:794-813.

Bell, S.E. and York, R. 2010. Community economic identity: The coal industry and ideology construction in West Virginia. *Rural Sociology* 75:111-143.

Betz, M., M. Farren, L. Lobao, and M. Partridge 2015. "Coal Mining, Economic Development, and the Natural Resource Curse." *Energy Economics* 50:105–16.

Bhatti, Mark and Andrew Church. 2001. "Cultivating Natures: Homes and Gardens in Late Modernity." *Sociology* 35(2):365–83.

Bhatti, Mark, Andrew Church, Amanda Claremont, and Paul Stenner. 2009. "'I Love Being in the Garden': Enchanting Encounters in Everyday Life." *Social and Cultural Geography* 10(1):61–76.

Billings, D. and A. Tickamyer. 1993. "Uneven Development in Appalachia." Pp. 7-29 in T.A. Lyson and W.W. Falk (eds.), *Forgotten Places: Uneven Development in Rural America*. Lawrence, KS: University Press of Kansas.

Blake, A. and D. Cloutier-Fisher. 2009. "Backyard Bounty: Exploring the Benefits and Challenges of Backyard Garden Sharing Projects." *Local Environment* 14(9):797–807.

Bonskowski, R. and W.D. Watson. 2006. *Coal Production in the United States: An Historical Overview.* Washington, D.C.: Energy Information Administration.

Bridger, J.C. 1996. "Community imagery and the built environment." *Sociological Quarterly* 37(3):353-374.

Brown, D.L. and K.A. Schafft. 2011. *Rural People & Communities in the 21st Century: Resilience and Transformation.* Malden, MA: Polity Press.

Brulle, R.J. and Pellow, D.N. 2006. "Environmental justice: human health and environmental inequalities." *Annual Review of Public Health* 27:103-124.

Bugdalski, L., L.D. Lemke, and S.P. McElmurry. 2014. "Spatial Variation of Soil Lead in an Urban Community Garden: Implications for Risk-Based Sampling." *Risk Analysis* 34(1):17-27.

Bullard, R.D. 1996. "Environmental justice: it's more than waste facility siting." Social Science Quarterly 77(3):493-499.

Bullard, R.D, P. Mohai, R. Saha, and B. Wright. 2007. "Toxic Wastes and Race at Twenty: 1987-2007." Report prepared for the United Church of Chris Justice & Witness Ministries. Cleveland, OH.

Centers for Disease Control and Prevention. 2017. "Community Gardens." *CDC*. Last accessed on 10 July 2017: https://www.cdc.gov/healthyplaces/healthtopics/healthyfood/community.htm.

Deller, S.C. and A. Schreiber. 2012. “Mining and Community Economic Growth.” *Review of Regional Studies* 42:121–41.

Drake, L. and L.J. Lawson. 2014. “Validating verdancy or vacancy? The relationship of community gardens and vacant lands in the U.S.” *Cities* 40:133-142.

Draper, C., & Freedman, D. 2010. “Review and analysis of the benefits, purposes, and motivations associated with community gardening in the United States.” *Journal of Community Practice 18*(4):458-492.

Duncan, C.M. 2015. *Worlds Apart: Poverty and Politics in Rural America*. Hartford, CT: Yale University Press.

Eller, Ronald D. 2013. *Uneven Ground: Appalachian since 1945.* Lexington: University Press of Kentucky.

Erikson, K.T. 1976. *Everything in its Path*. New York, NY: Simon and Schuster.

Fisher, Stephen L. and Barbara Ellen Smith. 2012. *Transforming Places: Lessons from Appalachia*. Champaign: University of Illinois Press.

Freudenburg, W.R. 1992. ‘‘Addictive Economies: Extractive Industries and Vulnerable Localities in a Changing World Economy.’’ *Rural Sociology* 57(3):305–332.

Freudenburg, W.R. and R. Gramling. 1994. “Natural Resource and Rural Poverty: A Closer Look.” *Society & Natural Resources* 7(1):5-22.

Freudenburg, W.R. and L.J. Wilson. 2002. “Mining the Data: Analyzing the Economic Effects of Mining on Rural Communities.” *Sociological Inquiry* 72(4):549–75.

Gaventa, J. 1980. *Power and Powerlessnes: Quiescence and Rebellion in an Appalachian Valley*. Urbana, IL: University of Illinois Press.

Gottlieb, Robert and Andrew Fisher. 1996. “‘First Feed the Face’: Environmental Justice and Community Food Security.” *Antipode* 28(2):193–203.

Gray, L., P. Guzman, K.M. Glowa, and A.G. Drevno. 2014. “Can Home Gardens Scale up into Movements for Social Change? The Role of Home Gardens in Providing Food Security and Community Change in San Jose, California.” *Local Environment* 19(2):187–203.

Grow Appalachia. 2017. “2016 Annual Report.” PDF received from Grow Appalachia headquarters.

Grow Appalachia. 2018. “About Us.” Last accessed 23 April 2018. http://growappalachia.berea.edu/#.

Guitart, D., C. Pickering, and J. Byrne. 2012. “Past results and future directions in urban community gardens research.” *Urban Forestry & Urban Greening* 11:364-373.

Hendryx, M. 2008. “Mortality Rates in Appalachian Coal Mining Counties: 24 Years Behind the Nation.” *Environmental Justice* 1(1):5-11.

Hendryx, M. 2011. “Poverty and Mortality Disparities in Central Appalachia: Mountaintop Mining and Environmental Justice.” *Journal of Health Disparities Research and Practice* 4(3):44-53.

Hobson, Kersty. 2006. “Enacting Environmental Justice in Singapore : Performative Justice and the Green Volunteer Network.” 37:671–81.

Hodge, D. 2016. “Appalachian Coal Industry, Power Generation, and Supply Chain.” Report prepared for the Appalachian Regional Commission. https://www.arc.gov/assets/research_ reports/CoalIndustryPowerGenerationandSupplyChainReport.pdf.

Hondagneu-Sotelo, P. 2010. “Cultivating Questions for a Sociology of Gardens.” *Journal of Contemporary Ethnography* 39(5):498–516.

Humphrey, C.R., G. Berardi, M.S. Carroll, S. Fairfax, L. Fortmann, C. Geisler, T.G. Johnson, J. Kusel, R.G. Lee, S. Macinko, et al. 1993. “Theories in the Study of Natural Resource-Dependent Communities and Persistent Rural Poverty in the United States.” Pp. 134-172 in *Persistent Poverty in Rural America*, ed. Rural Sociological Task Force on Persistent Rural Poverty. Boulder, CO: Westview.

Jamal, Tazim and Rob Hales. 2016. “Performative Justice: New Directions in Environmental and Social Justice.” *Geoforum* 76:176–80. Retrieved (http://dx.doi.org/10.1016/j.geoforum.2016.09.014).

James, A. and D. Aadland. 2011. “The Curse of Natural Resources: An Empirical Investigation.” *Resource and Energy Economics* 33(2):440-453.

Krannich, R.S. and A.E. Luloff. 1991. “Problems of Resource Dependency in US Rural Communities.” *Progress in Rural Policy and Planning* 1:5-18.

Krannich, R.S., B. Gentry, A.E. Luloff, and P.G. Robertson. 2014. “Resource Dependency in Rural America: Continuities and Change.” Pp. 208-225 in C. Bailey, L. Jensen, & E. Ransom (eds.), *Rural America in a Globalizing World: Problems and Prospects for the 2010s.* Morgantown, WV: West Virginia University Press.

Lewin, P. 2017. “’Coal is Not Just a Job, It’s a Way of Life’: The Cultural Politics of Coal Production in Central Appalachia.” *Social Problems* 0:1-18.

Lobao, L., M. Zhou, M. Partridge, and M. Betz. 2016. “Poverty, Place, and Coal Employment across Appalachia and the United States in a New Economic Era.” *Rural Sociology* 81(3):343-

386.

Machlis, G.E., J.E. Force, and R.G. Balice. 1990. “Timber, Minerals, and Social Change: An Exploratory Test of Two Resource-Dependent Communities.” *Rural Sociology* 55(3):411-424.

McClintock, N. 2012. “Assessing Soil Lead Contamination at Multiple Scales in Oakland, California: Implications for Urban Agriculture and Environmental Justice.” *Urban Studies and Planning Faculty Publications and Presentations*. Paper 94.

McIlmoil, R. and E. Hansen. 2010. “The Decline of Central Appalachia Coal and the Need for Economic Diversification.” 19 January. Morgantown, WV: Downstream Strategies.

Milbourne, Paul. 2012. “Everyday (In)justices and Ordinary Environmentalisms: Community Gardening in Disadvantaged Urban Neighbourhoods.” *Local Environment* 17(9):943–57.

Mills, C. W. 1959. *The Sociological Imagination*. UK: Oxford University Press.

Mohai, P., D. Pellow, and J.T. Roberts. 2009. “Environmental Justice.” *The Annual Review of Environment and Resources* 34:405–30.

Mohai, P. and R. Saha. 2007. “Racial Inequality in the Distribution of Hazardous Waste: A National-Level Reassessment.” *Social Problems* 54(3):343–70.

Morrone, M. and G.L. Buckley . 2011. “Introduction: Environmental Justice and Appalachia.” Pp. xi-xix in M. Morrone and G. L. Buckley (eds.), *Mountains of injustice: Social and environmental justice in Appalachia*. Columbus, OH: Ohio University Press.

Morton, L.W., E.A. Bitto, M.J. Oakland, and M. Sand. 2008. “Accessing Food Resources: Rural and Urban Patterns of Giving and Getting Food.” *Agriculture and Human Values* 25(1):107–19.

Nord, M. 1994. “Natural resources and persistent rural poverty: In search of the nexus.” *Society & Natural Resources* 7(3):205-220.

Nord, M., and A.E. Luloff. 1993. “Socioeconomic Heterogeneity of Mining-Dependent Counties.” *Rural Sociology* 58(3):492-500.

Okvat, H.A. and A.J. Zautra. 2011. “Community Gardening: A Parsimonious Path to Individual, Community, and Environmental Resilience.” *American Journal of Community Psychology* 47(3–4):374–87.

Parker, T. 2015. “County Typology Codes.” United States Department of Agriculture. Last accessed on 10 December 2015. http://www.ers.usda.gov/data-products/county-typology-codes.aspx.

Partridge, M.D., M.R. Betz, and L. Lobao. 2013. “Natural resource curse and poverty in Appalachian America.” *American Journal of Agricultural Economics* 95(2):449-456.

Pellow, D.N. 2016. "Environmental justice and rural studies: A critical conversation and invitation to collaboration." *Journal of Rural Studies* 47:381-386.

Peluso, N. L., C.R. Humphrey, and L. P. Fortmann. 1994. "The rock, the beach, and the tidal pool: People and poverty in natural resource-dependent areas." *Society & Natural Resources*, *7*(1):23-38.

Perdue, R.T. and G. Pavela. 2012. "Addictive Economies and Coal Dependency: Methods of Extraction and Socioeconomic Outcomes in West Virginia, 1997-2009." *Organization & Environment* 25(4):368-384.

Pollard, K. and L.A. Jacobsen. 2017. "The Appalachian Region: A Data Overview from the 2011-2015 American Community Survey Chartbook." Report prepared for the Appalachian Regional Commission under contract #CO-18662-16. https://www.arc.gov/research/researchreportdetails.asp?REPORT_ID=132.

Poulsen, Melissa N., Roni A. Neff, and Peter J. Winch. 2017. "The Multifunctionality of Urban Farming: Perceived Benefits for Neighbourhood Improvement." *Local Environment* 22(11):1411–27.

Rasker, R. 2006. "An exploration into the economic impact of industrial development versus conservation on western public lands." *Society and Natural Resources* 19(3):191-207.

Ritchie, J., J. Lewis, G. Elam, R. Tennant, and N. Rahim. 2013. "Designing and Selecting Samples." Pp. 111-146 in J. Ritchie, J. Lewis, C. McNaughton Nicholls, and R. Ormston (eds.), *Qualitative Research Practice: A Guide for Social Science Students & Researchers (2nd Ed.)* Thousand Oaks, CA: SAGE Publications.

Roenker, J.M. 2002. "The Economic Impact of Coal in Appalachian Kentucky." Report prepared by University of Kentucky Center for Business and Economic Research.

Saldaña, J. 2012. *The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA: SAGE Publications.

Santo, R., A. Palmer, and B. Kim. 2016. "Vacant Lots to Vibrant Plots: A Review of the Benefits and Limitations of Urban Agriculture." Report prepared for the Johns Hopkins Center for a Livable Future. https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/urban-ag-literature-review.pdf

Scanlan, S.J. 2011. "The Theoretical Roots and Sociology of Environmental Justice in Appalachia." Pp. 3-31 in M. Morrone and G. L. Buckley (eds.), *Mountains of injustice: Social and environmental justice in Appalachia*. Columbus, OH: Ohio University Press.

Schlosberg, David and Romand Coles. 2016. "The New Environmentalism of Everyday Life: Sustainability, Material Flows and Movements." *Contemporary Political Theory* 15(2):160–81.

Scott, R.R. 2010. *Removing Mountains: Extracting Nature and Identity in the Appalachian Coalfields*. Minneapolis, MN: University of Minnesota Press.

Scott, S. 2009. *Making Sense of Everyday Life*. Malden, MA: Polity.

Scott, S.L., S. McSpirit, P. Breheny, and B.M. Howell. 2012. "The Long-Term Effects of a Coal Waste Disaster on Social Trust in Appalachian Kentucky." *Organization & Environment* 25(4):402–18.

Shrader-Frechette, K. 2002. *Environmental justice: Creating equity, reclaiming democracy*. UK: Oxford University Press.

Stedman, R.C. 2003. "Is It Really Just a Social Construction?: The Contribution of the Physical Environment to Sense of Place." *Society & Natural Resources* 16(8):671-685.

Stedman, R.C. 2013. "Resource dependence and rural development." Pp. 77-91 in G.P. Green (ed.), *Handbook of Rural Development*. Cheltenham, UK: Edward Elgar Publishing.

Stedman, R.C., J.R. Parkins, and T.M. Beckley. 2004. "Resource Dependence and Community Well-Being in Rural Canada." *Rural Sociology* 69(2):213-234.

Stedman, R.C, W. White, M. Patriquin, and D. Watson. 2007. "Measuring community forest-sector dependence: does method matter?." *Society and Natural Resources* 20(7):629-646.

Sztompka, Piotr. 2008. "The Focus on Everyday Life: A New Turn in Sociology." *European Review* 16(1):23–37.

Tallichet, S.E. 2014. "Got Coal? The High Cost of Coal on Mining-Dependent Communities in Appalachia and the West." Pp. 279-295 in C. Bailey, L. Jensen, & E. Ransom (eds.) *Rural America in a Globalizing World: Problems and Prospects for the 2010s*. University Park, PA: The Pennsylvania State University Press.

Taylor, D.E. 2014. *Toxic communities: Environmental racism, industrial pollution, and residential mobility*. New York, NY: NYU Press.

USDA. 2017. "The People's Garden." *USDA*. Last accessed on 10 July 2017: https://peoplesgarden.usda.gov.

USDA Economic Research Service. 2016b. "County Typology Codes." *USDA*. Last accessed on 31 May 2016: https://www.ers.usda.gov/data-products/county-typology-codes/.

US General Accounting Office. 1983. "Siting of Hazardous Waste Landfills and their Correlation with Racial and Economic Status of Surrounding Communities." Report prepared for the US General Accounting Office. Washington, DC: GAO/RCED-83-168.

Visser and Savidge. 2016. “West Virginia floods devastate 1,200 homes, many lives.” *CNN News.* Last accessed 14 July 2017 at http://www.cnn.com/2016/06/28/us/west-virginia-flooding-weather/index.html.

Walker, G. 2012. *Environmental justice: concepts, evidence and politics*. New York, NY: Routledge.

Weber, J.G. 2014. “A decade of natural gas development: The makings of a resource curse?” *Resource and Energy Economics* 37(2014):168-183.

Welch, W. 2011. “Self Control, Fatalism, and Health in Appalachia.” *Journal of Appalachian Studies* 17(1/2):108-122.

Whitehead, Mark. 2009. “The Wood for the Trees: Ordinary Environmental Injustice and the Everyday Right to Urban Nature.” *Inernational Journal of Urban and Regional Research* 33.3(September):662–81.

Woods, B.R. and J.S. Gordon. 2011. “Mountaintop Removal and Job Creation: Exploring the Relationship Using Spatial Regression.” *Annals of the Association of American Geographers* 101(4):806–15.

Yin, R.K. 2012. “Chapter 1: A (Very) Brief Refresher on the Case Study Method.” *Applications of Case Study Research (3rd ed).* Thousand Oaks, CA: Sage Publications, Inc.

CHAPTER 4:

PAPER C: DOES CONTEXT MATTER?: SOCIOECONOMIC AND ENVIRONMENTAL ADVANTAGE AND RURAL COMMUNITY GARDENING OUTCOMES

Introduction

Studies of sustainable community development have long pointed to the importance of context in shaping the processes and outcomes of development initiatives (Green & Goetting 2010; Flora & Flora 2015). Context can be understood and operationalized in different ways, ranging from geopolitical structures to economic circumstances to sociocultural environments to biophysical surroundings – and the many interactions thereof. Context has been particularly important in explaining patterns of uneven development as where contextual conditions such as rurality, persistent poverty, natural amenities, economic policies, labor markets, et cetera, are used to explain observed patterns in inequality and advantage/disadvantage within and across rural-urban boundaries and spaces (Tickamyer & Duncan 1990; Lyson & Falk 1992; Tickamyer 2000; Lobao 2004; Lichter & Brown 2011; Pender, Marré, & Reeder 2012). Although the general importance of context is often demonstrated in single or comparative case studies about sustainable community development initiatives and in studies of spatial inequality at the scales of cities and nation-states, more scholarship is needed to better understand how different contextual factors may limit or enable sustainable development efforts at the sub-national scale (Lobao 2004; Lobao, Hooks, & Tickamyer 2007). How does context matter at this regional scale?

This study addresses this question by examining the relationship between contextual factors and the outcomes of a regional approach to sustainable community development in Central Appalachia, a region long affected by patterns of uneven development (Eller 2008). The centerpiece of this regional approach is community gardening programs, a strategy that has been

much celebrated in scholarship and practice for its contributions to sustainable community development. Broadly conceptualized, community gardening initiatives may be defined as:

> *…bottom-up, community-based, collaborative efforts to grow food. Whether cultivated through a system of individual/family plots, or tended as a whole by a group of citizen volunteers, community gardens involve the leadership and active participation of area residents to plan and care for these [gardening spaces]* (Okvat & Zautra 2011:374).

Like other sustainable community development strategies, community gardening – and the motivations, practices, and outcomes associated with each initiative and program – often depend upon the social, economic, and environmental contexts in which they operate (Drake & Lawson 2015). And yet much recent scholarship on community gardening and related agrifood initiatives has been conducted as single case studies or limited cross-case comparisons, restricting our understanding of how context might shape experiences and outcomes (Draper & Freedman 2010; Guitart, Pickering, & Byrne 2012). To increase understanding of how context matters for community gardening *and* regional approaches to sustainable development, this paper specifically examines: (1) how context shapes perceived outcomes of community gardening initiatives across a multi-state region, Central Appalachia, (2) how the relationship between context and outcomes varies by specific type of gardening program outcome, and (3) how the effects of context on outcomes may or may not be moderated by other factors, like program and individual participant characteristics.

This paper draws upon both Chaskin et al.'s (2001) community capacity-building framework and Flora and Flora's (2015) community capitals framework to conceptualize the multiple outcomes of sustainable community development initiatives and how context may be related to these outcomes. The paper then outlines the collaborative survey research methodology used for primary data collection, the sources of secondary data, and the variables of interest to the analysis. Next results from a series of bivariate and binary logistic regression

analyses are presented. The discussion examines patterns across and differences between associations between contextual factors and perceived community-level outcomes, demonstrating how socioeconomic and environmental advantage or disadvantage at the county level is associated with some types of perceived community-level outcomes of community gardening initiatives. The paper concludes by considering the implications of this work for future research and practice related to sustainable community development and community gardening initiatives.

Background

Conceptual Framework: Community Capacity-Building and Community Capitals

To situate community gardening in broader efforts towards sustainable community development, these initiatives may be understood as strategies for building community capacity. Community capacity has been conceptualized in the literature differently over time. For Chaskin et al. (2001:7), community capacity is "the interaction of human capital, organizational resources, and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the well-being of that community." Chaskin et al.'s (2001) framework describes how conditioning influences, or social, political, economic, environmental contexts, shape the characteristics and functions of initial community capacities and the strategies and levels of social agency used to build upon it, as well as the outcomes of community capacity building efforts.

Community-level outcomes then are the culmination of all of the preceding components of the community capacity-building efforts (Chaskin et al. 2001). They may be fairly diverse depending on the purposes, processes, and context in which capacity-building efforts are pursued. The present study uses Flora and Flora's (2015) community capitals framework to (1)

provide further guidance on how we may conceptualize "community-level outcomes" and (2) supplement Chaskin et al.'s (2001) urban-centric framework with one that has been widely used in rural contexts (for examples, see Flora et al. 2004; Emery & Flora 2006; Pigg et al. 2013). This framework offers a method for analyzing inputs and impacts both within and beyond the community that determine the success of sustainable community development efforts. Community capitals may be understood as resources that a community already has in place to be mobilized for capacity-building efforts; but they may also be used to analyze the outcomes of capacity-building efforts as investments are made in the community through the work of people, organizations, and governments to support future development efforts (Flora & Flora 2015).

The community capitals framework describes seven different types of interrelated resource categories, or 'capital', that fall into two broader categories: tangible and intangible factors (Gutierrez-Montes, Emery, & Fernandez-Baca 2009). Tangible, or material, factors include those that can be measured or experienced physically, including: natural capital, built capital, and financial capital. Intangible, or human, factors are more difficult to measure and are experienced less concretely, including: cultural capital, social capital, political capital, and human capital. (For fuller description of the seven capitals, see Table 4.1.) When successfully enhanced and mobilized, these capitals can be invested to support sustainable community development that encapsulates a healthy biophysical environment, economic security, and social inclusion (Flora and Flora 2015). Given its utility in mobilizing and evaluating rural community capacity building, this framework has been recognized and integrated into a recent movement within United States Department of Agriculture development programming oriented towards Rural Wealth Creation (Pender, Marré, & Reeder 2012).

Table 4.1. Description of community capitals, as adapted from Flora and Flora (2015)

Capital	Description
Tangible	
Natural	Assets that exist in a particular location, such as weather, geographic isolation, natural resources, amenities, and aesthetics.
Built	Physical infrastructure (housing, transportation, telecommunications, utilities, etc.) that enables community development activities.
Financial	Financial resources available to invest in community capacity building activities, support entrepreneurship, and accumulate wealth for future development activities.
Intangible	
Cultural	Reflects how people understand and act within their social and physical environments, as well as their traditions, rituals, and language.
Social	Connections among people and organizations, including both close ties that build community cohesion (bonding social capital) as well as loose ties that exist between organizations and communities (bridging social capital).
Political	Ability to influence standards, rules, regulations and their enforcement, reflecting access to power and power brokers, like government officials and regional companies.
Human	Skills and abilities of people to develop and enhance local and external resources, including human health and educational attainment.

This framework emphasizes the interdependence, interaction, and synergy among the different capitals, as the stocks or assets available for one capital category can have a positive or negative effect on the quantity or investment in the other capitals. Building capacity through the capitals simultaneously can lead to a multiplying effect across the capitals, facilitating sustainable community development processes. That said, limited or degraded stocks in one or more capitals may negatively affect the stocks available in other capital categories or the community's overall ability to engage in sustainable development processes. Relatedly, balance among the capitals has been shown to be important, as when one capital outperforms or is emphasized over the others in capacity building processes, its stocks suffer and sustainable development is compromised (Gutierrez-Montes, et al. 2009; Flora & Flora 2015). Therefore, the context in which the community capitals are embedded – including biophysical and socioeconomic environments – can determine both pre-existing stocks within a community's capitals and the success of efforts to build further community capacity within and towards sustainable development efforts.

Community Gardening: Community-Level Outcomes and Contextual Limits

This section presents some of the ways community gardening has been found to contribute to community capacity building – and, additionally, the role of community context in realizing (or not) community-level outcomes. Given the plethora of community gardening studies across academic disciplines and the diversity of outcomes associated with these and other related agrifood initiatives, the community capitals framework (Flora & Flora 2015) provides a useful lens for distilling patterns found in the findings and across this research.

Tangible Outcomes: Community gardening has been found to improve natural capital largely through the reclamation and preservation of open and green spaces, particularly in urban environments (Draper & Freedman 2010; Drake & Lawson 2015). Community garden spaces and activities have also been associated with climate change mitigation through the processes of carbon sequestration and promoting locally-oriented food systems (Meadows 2000; Okvat & Zautra 2011). Additionally, community gardening spaces may perform other ecosystem services, like mitigating and filtering stormwater runoff, recharging groundwater sources, enhancing biodiversity and creating wildlife-friendly habitat, contributing to improved air quality, and rebuilding soil quality and supporting organic waste reduction through composting activities (Okvat & Zautra 2011; Santo et al. 2016).

Community gardening initiatives have also been associated with diverse economic development and built environment outcomes, including the repurposing of vacant lots, increased property values, increased local government tax revenues, capital investment in distressed areas, and new jobs and sources of income (Okvat & Zautra 2011; Santo, et al. 2016). Historical and contemporary community gardening movements in the United States were or are often related to poverty alleviation, both through supplementing household food resources and

creating opportunities for gardeners to sell excess produce through direct market outlets (Hanna & Oh 2000; Lawson 2005). Additionally, Voicu and Been (2008) found in a study of New York City gardens that establishing a community garden space had a statistically significant positive impact on the sale prices of properties within 1000 feet (or four blocks) of the garden space, an impact which increased over time and was greatest in disadvantaged neighborhoods. Although this may also contribute to ongoing processes of gentrification (Pudup 2008), open spaces enhanced by community gardening activities also provide important communal spaces, particularly in disadvantaged communities where such gathering spaces may be hard to come by (Saldivar-Tanaka & Krasny 2004; Poulsen et al. 2014) and contribute to neighborhood beautification (Allen et al. 2008)

Intangible Outcomes: Human capital-related outcomes are likely the most widely studied and cited type of outcome related to community gardening in the academic literature (Guitart, et al. 2012), including education and skill development and improved human health, both physical and psychological (Stein 2008). Community gardening provides opportunities for developing knowledge and skills about food and agricultural processes, nutrition, the environment, and entrepreneurship, particularly for youth and members of disadvantaged communities (Armstrong 2000; Draper & Freedman 2010; Blair 2009; Krasny and Tidball 2009; Santo et al. 2016). Poulsen et al. (2014) also found that community gardening activities enhanced health by improving access to high quality, fresh foods and opportunities for exercise, but also improved psychological wellbeing through an enhanced sense of pride and accomplishment, the joy of sharing food with others, and elevated connections to nature. Lastly, many studies have demonstrated the contributions of community gardening to household and community food security, including donations of excess produce to elderly, homeless, and lower-income

individual and families (Saldivar-Tanaka & Krasny 2004; Shinew et al. 2004; Teig et al. 2009; Poulsen et al. 2014).

Following human capital, social capital-related outcomes are the other main focus of most community gardening studies and are the most widely demonstrated type of outcome in this literature (Guitart et al. 2012). The shared space of community gardening has been found to support the development of neighborhood social ties, sense of belonging, social trust, multicultural/multiracial relationships, and decreased isolation through the sharing of resources (seeds, tools, knowledge, produce, recipes, etc.) (Glover 2004; Shinew et al. 2004; Wakefield et al. 2007; Tieg et al. 2009; Firth, Maye, & Pearson 2011; Okvat & Zautra 2011; Poulsen et al. 2014). Additionally, community gardening scholarship has explored several cultural aspects of these initiatives, including their ability to enhance heritage and traditions by supporting food and spiritual practices, encouraging intergenerational interactions and learning, providing resources for culturally appropriate food production, and by creating space for dance, musical performances, and other artistic activities (Hanna & Oh 2000; Saldivar-Tanaka & Krasny 2004; Draper & Freedman 2010; Guitart et al. 2012; Baker 2013; Reynolds 2015). Lastly, community gardening initiatives have been theorized and found to contribute to processes that also support political capital, largely through the development of collective power, community mobilization, and collaborative decision-making, particularly among historically marginalized groups (Parry, Glover, & Shinew 2005; Teig et al. 2009; Draper and Freedman 2010).

Contextual Effects: While community gardening scholarship has gone to great lengths in theorizing, demonstrating and evaluating the varied outcomes of community gardening initiatives, less has been done to document how these outcomes are shaped within and across different contexts. That said, literature documenting the challenges experienced by community

gardening initiatives does start to illuminate how context affects the outcomes of these initiatives as well as how community gardening outcomes may be distributed unevenly. First, research has demonstrated how the outcomes of community gardening are constrained by the environments in which the activities take place, especially when land and water resources have been compromised by pollutants or when access to quality land is restricted in the first place (Drake & Lawson 2014; Kim et al. 2014). Limited access to financial resources also limits the longevity of community gardening initiatives and their ability to enact long-term change in their given communities (Gough & Accordino 2013; Meenar 2015).

Another contextual factor affecting the outcomes of community gardening programs is social inequality enforced by political and economic systems that limit the overall capacity of community gardening initiatives as well as who can access them (Lawson 2005; Santo et al. 2016). Some scholars have found that community gardening spaces and programs may even reproduce social inequality rather than address it. In a two-year study of urban agricultural initiatives in New York City, Reynolds (2015) found that these types of programs reinforce race- and class-based inequalities in the city through inequitable distribution of financial and physical resources and biased services from government agencies and officials. Similarly, Ghose and Pettygrove (2014:1109) found in their study of a community gardening program in Milwaukee that while this program encouraged active citizenship, community gardening produced "a form of conditional citizenship in which membership is available only to those with resources and who produce space conforming to government specifications." Although Kingsley and Townsend (2006) found in their study of a community gardening initiative in Melbourne, Australia, that participants experienced increased social cohesion, social support, and social connections, they also found that these benefits did not necessarily extend beyond the garden space itself, at least

not in the early stages of program development. Gough and Accordino (2013) also argued that for a community gardening program to result in positive social (or other) outcomes, it must be rooted in previously established trust and social relationships – it cannot simply build these aspects from the ground up. In sum, while community gardening has been found to contribute to political and social capital improvement, the distribution of these outcomes may be limited by the power inequalities and political capital already in place in a given context.

Summary and Literature Gaps

As established above, an abundant prior scholarship has described and demonstrated the contributions of community gardening to all dimensions of community capacity building, as viewed through the community capitals framework (Flora & Flora 2015). These outcomes are also highly dependent on one another, with limitations in existing context (e.g., power inequalities, financial resources, environmental quality, etc.) further contributing to limitations in other outcome areas. Although this association has been acknowledged and examined in case studies on specific community gardening programs, there is a lack of scholarship that systematically assesses how aspects of context may be related to these limitations in program outcomes. Scholarship examining the outcomes – particularly at the community level – of community gardening initiatives beyond single case studies tends to focus on the perspectives of program coordinators, not the actual program participants, who arguably provide a broader perspective of community conditions and are connected to their communities and each other in different ways than those who manage the community gardening programs. The perspectives and experiences of program participants may also be less invested in 'proving' positive outcomes than those whose work (and potentially livelihoods) are based on continuation of the community gardening initiative. Therefore, this study addresses these important gaps by examining the

relationship between contextual factors and community-level outcomes of community gardening initiatives through the eyes of program participants.

Methods

This study was designed in collaboration with the Grow Appalachia initiative, a partnership founded in 2009 between the Loyal Jones Appalachian Center of Berea College and JP's Peace, Love & Happiness Foundation. Grow Appalachia's mission is to "help as many Appalachian families grow as much of their own food as possible" (2017a). To do so, the Grow Appalachia headquarters in Berea, Kentucky, provides technical assistance and financial grants to local non-profit partner sites located across the Appalachian regions of six states (Ohio, West Virginia, Kentucky, Tennessee, and North Carolina), creating the largest network of rural community-based gardening programs in the United State. Since 2009, Grow Appalachia and their selected partner sites have worked with more than 4,300 families to grow nearly 3 million pounds of organic produce. In the 2016 growing season, Grow Appalachia invested $611,000 in gardening resources across 32 partner sites, serving over 1,300 families across an estimated 61 counties (Grow Appalachia 2017b).

Sample & Data Collection

The data used in these analyses come from a survey of Grow Appalachia program participants currently or formerly involved with the thirty-two 2016 partner organization gardening sites. The sample was designed to include all adult (18 years or older) program participants who (1) had joined their respective programs in 2016 or earlier and (2) had current contact information on file with their respective program. According to a brief survey

administered to all 2016 partner site program coordinators in November 2016, the survey population was estimated to be a total N of 1534 program participants.

The survey instrument was constructed collaboratively with Grow Appalachia headquarters staff with the shared goals of collecting information about program participants' motivations for joining their respective programs, gardening practices, program experiences and satisfaction, and perceived individual- and community-level program outcomes and barriers. Survey topics were drawn from similar peer-reviewed literature on community garden programs and community capitals research (Armstrong 2000; Guitart et al. 2012; Flora & Flora 2015) and informed by in-depth interviews (N=45) conducted with program staff and participants in summer 2016 (see Papers A & B in this dissertation). The final survey instrument included 55 items and was reviewed by four Grow Appalachia site coordinators and two rural sociology faculty at Penn State University. Before distribution, the instrument was also field tested by two support staff at Grow Appalachia headquarters.

To increase survey accessibility for Grow Appalachia program participants, a mixed mode – mail and internet – survey distribution approach was used. As with many other community-based participatory research projects, particularly for hard to reach populations like the Grow Appalachia program participants, surveys were distributed to the program participants through a "gatekeeper" (Keesling 2008) – specifically, the partner site coordinators. The coordinators of all 32 partner sites were provided with a link to the online survey and were mailed an appropriate number of paper surveys from Grow Appalachia headquarters. Surveys were first distributed at the end of November 2016; five reminders were sent to site coordinators (one approximately every two weeks) and new paper surveys were provided as needed.

Several other measures were taken to increase the survey response rate and ensure confidentiality and accessibility, while working within the confines of the Grow Appalachia program and the abilities of their respective partner site staff. Site coordinators were instructed to share the survey with all current and former adult program participants through the means available to their sites (email, social media, in person, mail). The paper surveys were provided with pre-addressed and pre-stamped envelopes so that program participants could return the survey directly to Grow Appalachia headquarters. Data collection closed at the beginning of March 2017. Where low literacy rates or physical disability proved a challenge to survey completion, site coordinators at three partner sites administered some surveys verbally to survey participants. One partner site that works primarily with immigrants from Central America was also provided a Spanish version of the survey for translation purposes. Lastly, to increase overall survey response, small monetary incentives were offered by Grow Appalachia headquarters to the three partner sites with the highest response rates by the close of the survey.

All data collected via paper surveys were entered electronically and combined with online survey responses in Spring 2017. Completed surveys totaled 539, resulting in a 35.1% response rate. Of the 32 2016 partner sites, survey responses were received from 23 sites.[19] To generate the final sample for this study, cases were removed that had missing variables necessary to conduct the analyses, including: their respective partner site, county of residence, age, gender, education level, household income. The final study sample included 494 cases distributed across 41 counties in a total of five states (Table 4.2).

[19] Of the 32 2016 partner sites, five were not funded for the following 2017 season, so no survey responses were received from their program participants. Three additional partner sites produced no responses, one was excluded from this study because they work primarily with minors, and two more were merged into one because they operate under the same parent organization and submit joint reports each growing season.

Table 4.2. Distribution of counties and participants by state in study sample

State	Number of sample counties	Percent of sample counties	Number of responses	Percent of responses
Kentucky	17	41.5	237	48.0
West Virginia	11	26.8	139	28.1
Tennessee	7	17.1	69	14.0
Virginia	4	9.8	39	7.9
North Carolina	2	4.9	10	2.0
Total	41	100.0	494	100.0

Dependent Variables: Community Outcomes

Survey respondents were asked, in their opinion, to what extent the Grow Appalachia program had contributed positively to seven different community-level outcomes that represented five different community capitals[20]: natural, financial-built, cultural, social, and human (Table 4.3). The survey items and the capitals they corresponded to were developed based upon the findings from the preceding qualitative analyses (see Papers A and B) and the interests of the Grow Appalachia organization for the purposes of program evaluation. Built and financial capital were combined given their overlap in preceding analyses and previous scholarship (Flora & Flora 2015; Meenar 2015). Given their importance to the overall mission of the Grow Appalachia organization, financial-built capital and human capital were each measured using two different items. Responses were recorded on a five-point Likert Scale, in which one equaled "Not at All" and five equaled "A Great Deal" in reference to how much perceived positive impact the Grow Appalachia program had had on each of the designated items. For the purposes of this analysis and to achieve a more normal distribution, responses to these survey items were recoded into binary categories, in which 1 equals "High Impact" (4-5 on the Likert Scale) and 0 equals "Moderate to No Impact" (1-3 on the Likert Scale). Respondents who skipped individual survey

[20] Political capital was excluded because no themes related to political capital had emerged during the preceding qualitative analysis and to maintain a reasonable response rate as politically-related topics are particularly sensitive with this research population.

items were coded as "No Opinion" and included in the 0/"Moderate to No Impact" category. Each community capital used as a dependent variable in the following analysis was measured using a single item from the gardener participant survey, as described in Table 4.3.

Table 4.3. Community outcome survey items by community capital category

Community Capital	**Survey Item**
Tangible	
Natural Capital	Improved Soil and Water Quality
Financial-Built Capital [Econ. Opp.]	Introduced New Economic Opportunities
Financial-Built Capital [Food Access]	Improved Access to Fresh Foods
Intangible	
Cultural Capital	Rejuvenated Local Food Traditions
Social Capital	Built and Strengthened New Relationships
Human Capital [Health]	Improved Overall Human Health
Human Capital [Knowledge/Skills]	Improved Organic Gardening Skills

Independent Variables: Contextual Factors

Contextual factors were selected to represent both the socioeconomic and natural conditions of the respondents' counties of residence (Table 4.4). Socioeconomic conditions were described using the Appalachian Regional Commission's 2016 County Economic Status, an index constructed using a three-year average unemployment rate, per capita market income, and poverty rate at the county level (ARC 2018). Based on this index, counties are ranked into five categories, with the most socioeconomically disadvantaged included in the "Distressed" category. For the purposes of this analysis, counties of residence were coded as 0 = "Distressed" and 1 = "All Others".

Table 4.4. Contextual factors: secondary data measures and sources

Contextual factor	Measure	Source
Socioeconomic	County Economic Status	Appalachian Regional Commission (2016)
Natural	Water Quality Index	EPA Environmental Quality Index (2014)
Natural	Land Quality Index	EPA Environmental Quality Index (2014)

Natural conditions were described using the Environmental Protection Agency's 2014 Environmental Quality Index (EPA 2018) (Table 4.4); specifically, the Water Quality and Land

Quality Indices, given the importance of water and land resources for gardening activities. The Water Quality Index was constructed from nine different data sources and the Land Quality Index was constructed from twelve different data sources; for more information, see Lobdell, Jagai, Rappazzo, and Messer (2011). For the purposes of these analyses, the RUCC-adjusted index was used for each county. The mean Water Quality and Land Quality index scores were each calculated for all 41 counties represented in this study. Because higher index scores indicate lower environmental quality, the counties with index scores greater than the mean score were coded as "Below Average Quality" (0) and the counties with index scores less than the mean score were coded as "Above Average Quality" (1).

Control Variables: Partner Site and Individual Characteristics

Given the variation of partner sites and individual participants involved in the Grow Appalachia program and the collection of community-level outcomes data at the individual level, the analyses have been controlled for both partner site and individual characteristics to better isolate the relationship between place and perceived community-level outcomes. To account for partner site influences on the dependent variables, the analyses have been controlled for partner site tenure, or the length of time the partner site has been with the Grow Appalachia program. Partner site tenure was coded as less than five years (0) or five years or more (1) because sites that hit the five-year mark are considered well-established sites within the Grow Appalachia program.

Individual participant characteristics included in the models are: age (in years), gender (0 = male, 1 = female), education level (0=High school diploma or less, 1=Some college/Technical-Vocational school, 3=Four-year college degree, 4=Post-graduate degree), and household income (0=Less than $20,000, 1=$20,000-29,000, 2=$30,000-49,000, 3=$50,000 or more) as these

variables have been found to be significant predictors or variables of interest in other studies on community garden experiences (Draper & Freedman 2010). These analyses also included a variable related to the individual's experience with the Grow Appalachia program: years in the program (0=1 year, 1=2 years, 2=3 or more years).

Analytic Strategy

The first stage of analyses focused on the descriptive statistics of each dependent and independent variable as well as bivariate correlations between the community outcomes and the place characteristics. To estimate the relationships between the contextual factors and perceived community-level outcomes, binary logistic regression models were used for each type of contextual factor (socioeconomic and environmental quality), totaling 14 tests in all. To observe how the independent and control variables may be related to one another and the dependent variable of interest through significant changes in coefficients, each community-level outcome analysis includes five models: model 1 includes the county socioeconomic or environmental quality measure(s); model 2 includes the partner site tenure control variable; and model 3 includes the individual/household demographic and program experience control variables. The independent and control variables were assessed for multicollinearity by calculating correlations between all variables; the absolute values of all coefficients were 0.407 or less.

Results

Descriptive statistics

Descriptive statistics for all variables are presented in Tables 4.5, 4.6, 4.7, and 4.8. In general, the majority (over 50%) of respondents reported a high positive impact for all of the community-level outcomes, especially for 'improved access to fresh foods' and 'improved

organic gardening skills', for which over 70 percent of respondents reported high impact (Table 4.5).

Table 4.5. Descriptive statistics for community-level outcome variables (N=494)

Community outcome	Number of cases	Percent of sample
Tangible		
Natural: Improved Soil and Water Quality		
High Impact	256	51.8
Moderate to No Impact	238	48.2
Financial-Built: Introduced New Economic Opportunities		
High Impact	266	53.8
Moderate to No Impact	228	46.2
Financial-Built: Improved Access to Fresh Foods		
High Impact	369	74.7
Moderate to No Impact	125	25.3
Intangible		
Cultural: Rejuvenated Local Food Traditions		
High Impact	287	58.1
Moderate to No Impact	207	41.9
Social: Built and Strengthened New Relationships		
High Impact	288	58.3
Moderate to No Impact	206	41.7
Human: Improved Overall Human Health		
High Impact	269	54.5
Moderate to No Impact	225	45.5
Human: Improved Organic Gardening Skills		
High Impact	348	70.4
Moderate to No Impact	146	29.6

As for independent variables, just over 60 percent of the respondents reside (or resided at the time of program participation) in a distressed county. Over half of the respondents resided in counties with below average water quality (57.9%) and below average land quality (52.0%) (Table 4.6).

Table 4.6. Descriptive statistics for contextual factors at the respondent level (N=494)

Contextual factor	Number of cases	Percent of sample
ARC County Economic Status		
Distressed	300	60.7
All Others	194	39.3
EPA Water Quality Index		
Below Average Quality	286	57.9
Above Average Quality	208	42.1
EPA Land Quality Index		
Below Average Quality	257	52.0
Above Average Quality	237	48.0

As for partner site characteristics, over 70 percent of the respondents had participated at partner sites that had been with the Grow Appalachia program for over five years (Table 4.7). As for participant characteristics, the respondents had an average age of 50.56 years. The majority of respondents (68.4%) were female, 60.3 percent had an education level of vocational-technical school or some college or less, and a third of respondents (33.0%) reported an annual household income of $20,000 or less. As for program experience, about half (51.0%) of the respondents had participated in their Grow Appalachia partner site for one year. As for the partner sites, 12 of the 22 final partner sites had been a part of the Grow Appalachia network for less than five years, but 71 percent of the participant sample were associated with partner sites operating five or more years (Table 4.8).

Table 4.7. Individual/household characteristics of final study sample (N=494)

Characteristic	Mean	SD	Minimum	Maximum
Age				
Years	50.56	15.52	18	90
	Number of cases		Percentage of sample	
Gender				
Female	338		68.4	
Male	156		31.6	
Educational Attainment				
High School Diploma or Less	154		31.2	
Vocational/Technical School/Some College	144		29.1	
Four-Year College Degree	118		23.9	
Post-Graduate Degree	78		15.8	
Household Annual Income				
Less than $20,000	163		33.0	
$20,000-$29,000	85		17.2	
$30,000-$49,000	132		26.7	
$50,000 or More	114		23.1	
Years in Grow Appalachia Program				
1 year	252		51.0	
2 years	126		25.5	
3 or more years	116		23.5	

Table 4.8. Descriptive statistics for program characteristic at the partner site and individual level (N=494)

Program characteristic	Number of partner sites	Percent of partner sites	Number of cases	Percent of sample
Years as a GA Partner Site				
Less than 5 Years	12	54.5	140	28.3
5 Years or More	10	45.5	354	71.7

Bivariate analyses: contextual factors and community-level outcomes

Using chi-square tests for independence, bivariate associations between community-level outcomes and contextual factors are reported in Tables 4.9, 4.10, and 4.11. There is a significant difference (at the $p<0.05$ level) between distressed and not distressed counties for all community-level outcomes except for one type of human capital ('improved organic gardening skills'). Higher proportions of residents living in economically distressed counties than those living in not distressed counties reported high impact for all community-level outcomes (Table 4.9).

Table 4.9. Community-level outcomes by ARC county economic status (N=494)
(percentages in parentheses)

	Distressed	**Not Distressed**	**x^2**
Tangible			
Natural: Improved Soil and Water Quality			
High Impact	168 (56.0)	88 (45.4)	5.341*
Moderate to No Impact	132 (44.0)	106 (54.6)	
Financial-Built: Introduced New Economic Opportunities			
High Impact	178 (59.3)	88 (45.4)	9.255**
Moderate to No Impact	122 (40.7)	106 (54.6)	
Financial-Built: Improved Access to Fresh Foods			
High Impact	235 (78.3)	134 (69.1)	5.346*
Moderate to No Impact	65 (21.7)	60 (30.9)	
Intangible			
Cultural: Rejuvenated Local Food Traditions			
High Impact	192 (64.0)	95 (49.0)	10.934***
Moderate to No Impact	108 (36.0)	99 (51.0)	
Social: Built and Strengthened New Relationships			
High Impact	188 (62.7)	100 (51.5)	5.993*
Moderate to No Impact	112 (37.3)	94 (48.5)	
Human: Improved Overall Human Health			
High Impact	178 (59.3)	91 (46.9)	7.335**
Moderate to No Impact	122 (40.7)	103 (53.1)	
Human: Improved Organic Gardening Skills			
High Impact	217 (72.3)	131 (67.5)	1.308
Moderate to No Impact	83 (27.7)	63 (32.5)	

As for environmental quality, water quality was significantly associated with natural capital ('improved soil and water quality'), in that a greater proportion of respondents who reside in counties with above average water quality reported high impact than those who live in counties with below average water quality (Table 4.10).

Table 4.10. Community-level outcomes by EPA water quality index (N=494)
(percentages in parentheses)

	Below Average	Above Average	x^2
Tangible			
Natural: Improved Soil and Water Quality			
High Impact	129 (45.1)	127 (61.1)	12.275***
Moderate to No Impact	157 (54.1)	81 (38.9)	
Financial-Built: Introduced New Economic Opportunities			
High Impact	163 (57.0)	103 (49.5)	2.707
Moderate to No Impact	123 (43.0)	105 (50.5)	
Financial-Built: Improved Access to Fresh Foods			
High Impact	212 (74.1)	157 (75.5)	.117
Moderate to No Impact	74 (25.9)	51 (24.5)	
Intangible			
Cultural: Rejuvenated Local Food Traditions			
High Impact	169 (59.1)	118 (56.7)	.276
Moderate to No Impact	117 (40.9)	90 (43.3)	
Social: Built and Strengthened New Relationships			
High Impact	169 (59.1)	119 (57.2)	.175
Moderate to No Impact	117 (40.9)	89 (42.8)	
Human: Improved Overall Human Health			
High Impact	154 (53.8)	115 (55.3)	.101
Moderate to No Impact	132 (46.2)	93 (44.7)	
Human: Improved Organic Gardening Skills			
High Impact	195 (68.2)	153 (73.6)	1.672
Moderate to No Impact	91 (31.8)	55 (26.4)	

Land quality was significantly associated with three of the outcome variables. A greater proportion of respondents who live in counties with above average land quality (than those living in counties with below average land quality) reported high impact on natural capital (‘improved soil and water quality’), one type of financial-built capital (‘improved access to fresh foods’), and cultural capital (‘rejuvenated local food traditions’) (Table 4.11).

Table 4.11. Community outcomes by EPA land quality index (N=494)
(percentages in parentheses)

	Below Average	Above Average	x^2
Tangible			
Natural: Improved Soil and Water Quality	257	237	
High Impact	114 (44.4)	142 (59.9)	11.953***
Moderate to No Impact	143 (55.6)	95 (40.1)	
Financial-Built: Introduced New Economic Opportunities			
High Impact	128 (49.8)	138 (58.2)	3.519
Moderate to No Impact	129 (50.2)	99 (41.8)	
Financial-Built: Improved Access to Fresh Foods			
High Impact	180 (70.0)	189 (79.7)	6.148*
Moderate to No Impact	77 (30.0)	48 (20.3)	
Intangible			
Cultural: Rejuvenated Local Food Traditions			
High Impact	136 (52.9)	151 (63.7)	5.902*
Moderate to No Impact	121 (47.1)	86 (36.3)	
Social: Built and Strengthened New Relationships			
High Impact	145 (56.4)	143 (60.3)	.778
Moderate to No Impact	112 (43.6)	94 (39.7)	
Human: Improved Overall Human Health			
High Impact	131 (51.0)	138 (58.2)	2.617
Moderate to No Impact	126 (49.0)	99 (41.8)	
Human: Improved Organic Gardening Skills			
High Impact	173 (67.3)	175 (73.8)	2.521
Moderate to No Impact	84 (32.7)	62 (26.2)	

Binary logistic regression

The associations between all the outcome variables and the contextual factors, controlled for individual/household characteristics and partner site experiences, are presented as odds-ratios in Table 4.12. (For greater detail about the individual binary logistic regression models, see Appendices 4A through 4G.)

Tangible Outcomes: In the final model, there was a significant reduction in the relationship between county economic status and land quality on perceived high impact on natural capital when individual/household characteristics were added to the respective models. The relationships between county economic status and land quality, respectively, and high impact on natural capital were moderated by individuals' educational attainment and years in

Table 4.12. Final odds ratios for all independent and control variables by outcome variable

Variable	Tangible						Intangible					
	Natural		Financial-Built: Econ Opp		Financial-Built: Food Access		Cultural		Social		Human: Health		Human: Skills	
Context														
County Economic Status *[0=Distressed]*	.806		.657*		.727		.617*		.756		.699[a]		.945	
Water Quality *[0=Below Average Quality]*		1.666*		.566**		.887		.727		.830		.907		1.253
Land Quality *[0=Below Average Quality]*		1.428[a]		1.660*		1.652*		1.638*		1.123		1.361		1.177
Program														
Years as a Partner Site *[0=Less than 5 Years]*	.944	.989	1.266	1.441	.747	.827	1.079	1.201	1.034	1.056	1.030	1.094	.753	.770
Individual														
Age	1.000	.997	.999	1.002	.990	.990	.988[a]	.991	1.001	1.004	.990	.991	.989	.988[a]
Gender *[0=Male]*	1.074	1.055	1.419[a]	1.455[a]	1.380	1.398	1.015	1.030	1.477[a]	1.481[a]	1.192	1.194	1.351	1.350
Educational Attainment *[0=High School or Less]*														
Some College	.808	.855	1.163	1.101	.701	.694	.729	.699	.913	.880	.580*	.568*	.619[a]	.635
4-Year Degree	.527*	.554*	.675	.672	.606	.630	.508*	.504*	.606[a]	.577*	.531*	.523*	.587[a]	.611
Post-Graduate Degree	.407**	.447*	.453*	.434**	.423*	.440*	.453*	.438*	.483*	.446*	.360**	.351***	.487*	.518[a]
HH Income *[0=Less than $20k]*														
$20k-29k	1.086	1.090	1.246	1.180	1.015	.989	1.115	1.067	1.241	1.218	.806	.787	2.115*	2.122*
$30k-49k	1.744*	1.711*	1.900*	1.797*	1.667[a]	1.579	2.056**	1.940**	1.813*	1.785*	1.443	1.394	2.521**	2.485***
$50k or More	1.091	1.088	1.587[a]	1.589[a]	1.975*	1.968*	1.836*	1.853*	1.766*	1.809*	1.187	1.200	2.134*	2.117*
Years in Program *[0=1 year]*														
2 years	1.053	1.066	1.086	1.117	2.057*	2.089**	1.548[a]	1.608*	1.058	1.090	1.097	1.133	2.269**	2.273**
3 years or more	1.665*	1.834*	1.598[a]	1.741*	2.053*	2.246**	1.629[a]	1.813*	1.679*	1.762*	2.332***	2.529***	2.456**	2.534***

[a]p<.10; *p<.05; **p<.01; ***p<.001

program. (Respondents with higher education levels than high school diplomas or less had lower odds of reporting high impact on natural capital, while respondents with three or more years of experience at their respective partner sites had higher odds of reporting high impact on natural capital.) The significant relationship between a context of better water quality and perceived improved natural capital remained in the final models. Respondents residing in counties with higher than average water quality were 66.6 percent more likely to report Grow Appalachia having a high impact on natural capital than those residing in counties with lower than average water quality, controlling for partner site and individual/household characteristics.

As for financial-built capital outcomes, the relationship between county economic status and perceived high impact on 'introduced new economic opportunities' remained in the final model; respondents residing in socioeconomically advantaged counties were 65.7 percent less likely to report high impact on 'introduced new economic opportunities' than those who reside in disadvantaged counties, controlling for partner site and individual/household characteristics. The relationship between environmental quality factors and 'introduced new economic opportunities' increased significantly for both water and land quality when controlling for partner site and individual/household characteristics. Respondents residing in counties with higher than average water quality were 56.6 percent less likely to report high impact on 'introduced new economic opportunities' than those residing in counties with lower than average water quality. However, respondents residing in counties with higher than average land quality were 66.0 percent more likely to report high impact on this outcome variable than those residing in counties with lower than average land quality.

In the final model, there was a significant reduction in the relationship between county economic status and perceived high impact on 'improved access to fresh foods' when partner site

and individual/household characteristics were added to the model, and there remained no significant association between water quality and perceived outcomes in this category. (The relationship between county economic status and 'improved access to fresh foods' was moderated most strongly by the number of years they had participated in their respective Grow Appalachia partner site; respondents who had been in the program for two or three or more years, respectively, were more than twice as likely to report high positive impact on this built-financial outcome than those who had been in the program for only one year.) That said, in the final model there remained a significant relationship between land quality and perceived high impact on 'improved access to fresh foods,' with respondents residing in counties with higher than average land quality 65.2 percent more likely to report high impact on this outcome than those residing in counties with lower than average land quality.

Intangible Outcomes: In the final models, the only significant association between the contextual factors and an intangible outcome type was with cultural capital impacts. Controlling for partner site and individual/household characteristics, respondents residing in non-distressed counties were 61.7 percent less likely to report high impact on cultural capital than those residing in distressed counties. Additionally, respondents residing in counties with higher than average land quality were 63.8 percent more likely to report high impact on this outcome than those residing in counties with lower than average land quality. (There remained no significant association between water quality and high impact on cultural capital in the final model.)

The associations between county economic status and high impact on social capital and one of the human capital outcomes ('improved overall human health') were significantly reduced when individual/household characteristics were added to the respective models. There remained no significant associations between either environmental quality factor and high impact on social

and human capital (both outcome variables) in the final models. Individual/household characteristics had much stronger associations with perceived high positive impacts in all intangible outcome categories. There was an especially strong association between educational attainment and cultural capital and one of the human capital ('improved overall human health') outcomes, in which respondents with educational levels higher than those in the lowest education level category (high school diploma or less) had lower odds of reporting high impact on the outcome variables. There was also a strong association between household income level and cultural capital, social capital, and one of the human capital ('improved organic gardening skills') outcomes, in which respondents with greater household income levels had higher odds of reporting high impact on these outcomes variables than those in the lowest household income category (less than $20k a year). For all intangible outcome categories, respondents who had spent more years participating at their respective partner site (especially three years or more) had greater odds of reporting high impact on all of the outcome variables than those who had participated in their partner site for only one year.

Discussion

In the bivariate analyses, contextual factors had a significant effect on perceived impacts in regard to all outcome variables but one (human capital: 'improved organic gardening knowledge and skills'). County economic status was significantly associated with high impact on all other outcome variables, with respondents from distressed counties more likely to report high impact than those from non-distressed counties. Water and land quality were significantly associated with perceived high impact on natural capital, with respondents from counties with *higher* than average water and land quality more likely to report high impact than respondents from counties with lower than average water and land quality. Additionally, respondents from

counties with better than average land quality were also more likely to report high positive impact on cultural and financial-built[21] capitals than respondents from counties with lower than average land quality. Before introducing partner site and individual/household characteristics into the models, the findings from the bivariate analyses suggest that community gardening initiatives are perceived as having greater impact on both tangible and intangible outcomes in places that are more disadvantaged socioeconomically, but may also generate perceptions of greater impact on perceived tangible outcomes in places with better environmental quality.

Introducing partner site tenure had little effect on these relationships, but several of these associations changed when individual/household characteristics were added into the models, especially for the intangible outcome categories. Because the outcome variables were measured at the individual level, it is perhaps not too surprising that individual/household characteristics played such a large role in the models for all of the outcome variables. Additionally, the 'intangible' community capitals – and the survey items used to represent them – could be interpreted to reflect individual experiences and individual-level measures (e.g., social relationships, health conditions, gardening knowledge and skills) more so than the broader natural or built-financial capital outcomes, further explaining why their relationship with contextual factors was (1) moderated by individual/household characteristics in regard to social and health-related human capitals or (2) non-existent from the beginning in the case of knowledge/skills-related human capital. While age and gender contributed little to the models, educational attainment, household income, and years in program were significantly associated with nearly all of the outcome variables. In general, respondents with higher education levels were less likely to report high impact on the outcome variables, while respondents with higher

[21] Association approaching statistical significance for 'introduced new economic opportunities' (p=0.061).

household incomes and more years in their respective programs were more likely to report high impact on most outcome variables. While this may seem to be an unintuitive contrast of individual-household level advantage, (with higher perceived impacts reported by participants that are both less educated but also of higher household income levels), this may be explained by the prevalence of occupational industries (particularly coal, natural gas, timber) in the study region that do not require high levels of formal education, but may pay relatively well (as opposed to individuals who may be well educated, but more likely to work in non-profit or educational settings with lower household income levels) (Blee & Billings 2000).

That said, socioeconomic disadvantage remained significantly and positively associated with perceived high impact on one type of financial-built capital ('introduced new economic opportunities') and cultural capital. This resonates with previous community gardening literature that theorizes how benefits of community gardening – particularly those related to economic opportunity and cultural heritage – may be of particular import to socioeconomically disadvantaged populations (Okvat & Zautra 2011; Saldivar-Tanaka & Krasny 2004), but this analysis demonstrates that relationship at an even broader level. However, environmental advantage (in terms of locations with higher than average water or land quality) also remained significantly and positively associated with perceived high impact on natural, financial-built capital (both types), and cultural capital. This relationship largely demonstrates, on a more regional level, that – at least in terms of environmental quality – disadvantage may beget disadvantage and advantage may beget advantage, as suggested already in the literature on community gardening (Santo et al. 2016; Reynolds 2015; Ghose and Pettygrove 2014), but that this pattern varies by type of outcome.

Only in one case did environmental disadvantage (specifically, below average water quality) remain positively associated with perceived high impact on an outcome variable. In the case of financial-built capital ('introduced new economic opportunities'), previous research has found that many compromised water resources in Appalachia exist in places where natural resource-related industries used to be prevalent and/or in places where industry and governmental agencies have underinvested in basic water/sewer infrastructure (Hendryx & Zullig 2009; Cantor et al. 2017).

Overall, what these analyses suggest is that – as theorized in previous reviews of community gardening scholarship (Guitart et al. 2012; Drake & Lawson 2015) – contextual factors do influence perceptions of community-level outcomes, particularly for tangible types of outcomes that contribute to natural and financial-built capitals. Otherwise, individual/household characteristics may better explain variation in perceived community-level outcomes, particularly for intangible types of outcomes that contribute to social and human capitals. In this study, cultural capital bridged these patterns in that contextual factors and individual/household characteristics were significantly associated with perceived high impact. This may be explained by the nature of community gardening as a sustainable development strategy; as an 'intangible outcome' cultural capital is highly dependent on human characteristics and activities, but realization of these cultural outcomes is also highly dependent on having quality land on which to practice food and agricultural traditions (Saldivar-Tanaka & Krasny 2004; Baker 2013).

Study Limitations and Future Directions

While reaching 41 counties and including 22 gardening partner sites, this study remains limited to a distinct geographic region (Central Appalachia) that experiences some variation, but not necessarily a great deal, in socioeconomic and environmental conditions (Pollard & Jacobsen

2017). Future research should conduct comparative work to tease out the associations between contextual factors and community gardening outcomes across geographical areas that vary even more widely, allowing rural versus urban comparisons or inter-regional comparisons. Relatedly, this study was limited in partner site variation because they were all to some degree shaped by the rules and practices of the Grow Appalachia initiative (see Paper A in this dissertation). No significant effects related to program characteristics were found in this study, but different results could be found when comparing across community gardening activities initiated by different programs with more diverse goals and target populations. As seen in Appendices 4A-4G, the logistic regression models also have a relatively low goodness-of-fit (reported as Nagelkerke R Square values), indicating that the variation in the independent values may be more fully explained by variables that were not available and thus not included for this particular analysis.

Additionally, this study examined community-level outcomes, but from the perspective of individual program participants. Although this was intentionally designed to fill current methodological gaps in sustainable community development and community gardening literature while simultaneously meeting Grow Appalachia's evaluation goals, future research may use additional methods, like hierarchical linear modeling or longitudinal data collection, that could better account for nested data and move beyond perceived outcomes towards empirically demonstrated outcomes across broader contexts, programs, and populations. And lastly, although the methods of data collection used for this study – mixed mode surveys distributed through networks of community-based gatekeepers – led to an acceptable response rate overall, these data collection procedures may have introduced some bias into the research sample and study findings, by prioritizing some Grow Appalachia partner sites and populations over others in terms of resources, literacy, and accessibility. Limitations such as these should be taken into

account in future research on community gardening outcomes so that the voices of all gardening organizations and participants are heard, not just those who view their respective programs more favorably or who have greater ability to participate in the research process.

Conclusions

This study was designed to examine the effect of economic and environmental context on different types of community-level outcomes of community gardening initiatives. To provide a rigorous test, the study controlled for partner site and individual/household characteristics. Ultimately, the findings suggest that the relationship between context and community-level outcomes depends on the specific type of community-level outcome one examines as well as different contextual factors. The relationship may also vary depending on how one operationalizes different types of outcomes, suggesting a need for more nuanced and multifaceted approaches to understanding and measuring community-level outcomes / community capitals to help avoid prioritizing certain outcomes or populations over others (Chaskin et al. 2001; Flora & Flora 2015). In general, the findings suggest that, in many ways, places and/or people who experience some form of advantage, be it environmental quality or household income, may be more likely to perceive better outcomes, especially for tangible community outcomes. But in some cases, disadvantage – be it the socioeconomic status of a county or individual educational attainment – may also predict greater perceived outcomes, especially for new economic opportunities and human health outcomes. This suggests that community gardening, as a sustainable community development strategy, may have positive impacts on places that experience socioeconomic disadvantage, but only if (1) these places have the environmental quality to support these endeavors and (2) if the initiatives intentionally design

programs to meet the needs of participants that experience disadvantage at the individual/household level.

Community gardening programs are increasingly being included in local/regional development plans and receiving public funding. Therefore, they must be designed in a way that takes into account contextual constraints and meets the needs of all interested and potentially interested people through program flexibility and intentionality. Future research on these topics should considering taking a regional or comparative approach to tease out associations between contexts, program structures, and populations, and pursue innovative and sensitive research methods to reach those communities and individuals who may often be left out of the discussion and design of community gardening and other sustainable community development initiatives. Otherwise, the potential gains through rural community gardening may be offset by counter tendencies to replicate long-established patterns of uneven development and social inequality.

References

Allen, J.O, K. Alaimo, D. Elam, and E. Perry. 2008. "Growing vegetables and values: Benefits of neighborhood-based community gardens for youth development and nutrition. *Journal of Hunger & Environmental Nutrition* 3:418-439.

Armstrong, D. (2000). "A survey of community gardens in upstate New York: Implications for health promotion and community development." *Health & Place* 6:319–327.

Baker, Lauren E. 2013. "Tending Cultural Landscapes and Food Citizenship in Toronto's Community Gardens." *Geographical Review* 94(3):305–25.

Billings, Dwight B. and Kathleen M. Blee. 2000. *The Road to Poverty: The Making of Wealth and Hardship in Appalachia*. Boston: Cambridge University Press.

Blair, D. 2009. "The child in the garden: An evaluative review of the benefits of school gardening." *Journal of Environmental Education* 40:15-38.

Cantor, J., L. Krometis, E. Sarver, N. Cook, B. Badgley. 2017. “Tracking the downstream impacts of inadequate sanitation in central Appalachia.” *Journal of Water and Health* 15(4):580-590.

Chaskin, R. J., P. Brown, S. Venkatesh, and A. Vidal. 2001. *Building Community Capacity*. New York: Aldine de Gruyter.

Drake, Luke and Laura J. Lawson. 2014. “Validating Verdancy or Vacancy? The Relationships of Community Gardens and Vacant Lands in the U.S.” *Cities* 40:133–42.

Drake, Luke and Laura J. Lawson. 2015. “Results of a US and Canada Community Garden Survey: Shared Challenges in Garden Management amid Diverse Geographical and Organizational Contexts.” *Agriculture and Human Values* 32(2):241–54.

Draper, C. and D. Freedman. 2010. “Review and Analysis of the Benefits, Purposes, and Motivations Associated with Community Gardening in the United States.” *Journal of Community Practice* 18(4):458-492.

Eller, Ronald D. 2008. *Uneven Ground: Appalachian since 1945.* Lexington: University Press of Kentucky.

Emery, Mary and Cornelia Flora. 2006. “Spiraling-Up: Mapping Community Transformation with Community Capitals Framework.” *Community Development* 37(1):19–35.

Environmental Protection Agency. 2018. “EPA’s Environmental Quality Index Supports Public Health.” Retrieved 1 February 2018. https://www.epa.gov/healthresearch/epas-environmental-quality-index-supports-public-health.

Firth, Chris, Damian Maye, and David Pearson. 2011. “Developing ‘community’ in Community Gardens.” *Local Environment* 16(6):555–68.

Flora, C.B., M. Emery, S. Fey, and Co. Bregendahl. 2004. “Community Capitals : A Tool for Evaluating Strategic Interventions and Projects.” *North Central Regional Center for Rural Development*.

Flora, C.B. and J.L. Flora. 2015. *Rural Communities: Legacy and Change* (5th ed.) Boulder, CO: Westview Press.

Glover, T.D., 2004. “Social capital in the lived experiences of community gardeners.” *Leisure Sciences* 26:143–162.

Gough, Meghan Z. and John Accordino. 2013. “Public Gardens as Sustainable Community Development Partners: Motivations, Perceived Benefits, and Challenges.” *Urban Affairs Review* 49(6):851–87. Retrieved (http://journals.sagepub.com/doi/10.1177/1078087413477634).

Graham, H., D.L. Beall, M. Lussier, P. McLaughlin, and S. Zidenberg-Cherr. 2005. "Use of school gardens in academic instruction." *Journal of Nutrition Education & Behavior* 37:147-151.

Graham, H. and S. Zidenberg-Cherr. 2005. "California teachers perceive school gardens as an effective nutrition tool to promote healthful eating habits." *Journal of the American Dietetic Association* 105:1797-1800.

Green, G.P. and A. Goetting. 2010. *Mobilizing Communities: Asset Building as a Community Development Strategy*. Philadelphia, PA: Temple University Press.

Grow Appalachia. 2017a. "Grow Appalachia: About Us." Last accessed 31 March 2016. http://growappalachia.berea.edu/#.

Grow Appalachia. 2017b. "2016 Annual Report." PDF received from Grow Appalachia headquarters.

Guitart, Daniela, Catherine Pickering, and Jason Byrne. 2012. "Past Results and Future Directions in Urban Community Gardens Research." *Urban Forestry and Urban Greening* 11(4):364–73.

Hanna, A. K., & Oh, P. 2000. "Rethinking urban poverty: A look at community garden." *Bulletin of Science, Technology and Society* 20:207–216.

Hendryx, Michael and Keith J. Zullig. 2009. "Higher Coronary Heart Disease and Heart Attack Morbidity in Appalachian Coal Mining Regions." *Preventive Medicine* 49(5):355–59.

Keesling, Randall. 2011. "Gatekeeper." Pp. 300–301 in *Encyclopedia of Survey Research Methods*. Last accessed 5 May 2018. http://methods.sagepub.com/reference/encyclopedia-of-survey-research-methods/n200.xml.

Kim, Brent F. et al. 2014. "Urban Community Gardeners' Knowledge and Perceptions of Soil Contaminant Risks." *PLoS ONE* 9(2):1–9.

Kingsley, Jonathan and Mardie Townsend. 2006. "'Dig In' to Social Capital: Community Gardens as Mechanisms for Growing Urban Social Connectedness." *Urban Policy and Research* 24(4):525–37.

Kingsley, Jonathan, Mardie Townsend, and Claire Henderson-Wilson. 2009. "Cultivating Health and Wellbeing: Members' Perceptions of the Health Benefits of a Port Melbourne Community Garden." *Leisure Studies* 28(2):207–19.

Krasny, Marianne E. and Keith G. Tidball. 2009. "Community Gardens as Contexts for Science, Stewardship, and Civic Action Learning." *Cities and the Environment* 2(1):1–18.

Lawson, L. 2005. *City bountiful: A century of community gardening in America*. Berkeley: University of California Press.

Lichter, Daniel T. and David L. Brown. 2011. “Rural America in an Urban Society: Changing Spatial and Social Boundaries.” *Annual Review of Sociology* 37(1):565–92.

Lobao, Linda. 2004. “Continuity and Change in Place Stratification: Spatial Inequality and Middle-Range Territorial Units.” *Rural Sociology* 69(1):1–30.

Lobao, L.M., G. Hooks, and A.R. Tickamyer. 2007. *The Sociology of Spatial Inequality*. Albany, NY: State University of New York Press.

Lyson, T.A. and W.W. Falk. 1993. *Forgotten Places: Uneven Development in Rural America.* Lawrence, KS: University Press of Kansas.

McClintock, Lobdell, Danelle T., Jyotsna S. Jagai, Kristen Rappazzo, and Lynne C. Messer. 2011. “Data Sources for an Environmental Quality Index : Availability , Quality , and Utility.” 101:277–85.

Meadows, D. 2000. “How does your garden grow?: Two brothers talk carbon sequestration.” Grist [Seattle]. Retrieved March 15, 2018 from http://www.grist.org/com ments/citizen/2000/11/06/how/.

Miller, Meenar, Mahbubur R. 2015. “Nonprofit-Driven Community Capacity-Building Efforts in Community Food Systems.” *Journal of Agriculture, Food Systems, and Community Development* 6(1):77–94.

Okvat, Heather A. and Alex J. Zautra. 2011. “Community Gardening: A Parsimonious Path to Individual, Community, and Environmental Resilience.” *American Journal of Community Psychology* 47(3–4):374–87.

Pender, J., Marré, A., & Reeder, R. 2012. “Rural Wealth Creation Concepts, Strategies, and Measures.” *USDA-ERS Economic Research Report*, (131).

Pigg, Kenneth, Stephen P. Gasteyer, Kenneth E. Martin, Kari Keating, and Godwin P. Apaliyah. 2013. “The Community Capitals Framework: An Empirical Examination of Internal Relationships.” *Community Development* 44(4):492–502.

Pollard, K. and L.A. Jacobsen. 2017. “The Appalachian Region: A Data Overview from the 2011-2015 American Community Survey Chartbook.” Report prepared for the Appalachian Regional Commission under contract #CO-18662-16. https://www.arc.gov/research/researchreportdetails.asp?REPORT_ID=132.

Poulsen, M.N., K.R.S. Hulland, C.A. Gulas, H. Pham, S.L. Dalglish, R.K. Wilkinson, and P.J. Winch. 2014. “Growing an Urban Oasis: A Qualitative Study of the Perceived Benefits of Community Gardening in Baltimore, Maryland.” *Culture, Agriculture, Food and Environment* 36(2):69–82.

Pudup, Mary Beth. 2008. “It Takes a Garden: Cultivating Citizen-Subjects in Organized Garden Projects.” *Geoforum* 39(3):1228–40.

Reynolds, Kristin. 2015. “Disparity despite Diversity: Social Injustice in New York City’s Urban Agriculture System.” *Antipode* 47(1):240–59.

Saldivar-Tanaka, Laura and Marianne E. Krasny. 2004. “Culturing Community Development, Neighborhood Open Space, and Civic Agriculture: The Case of Latino Community Gardens in New York City.” *Agriculture and Human Values* 21(4):399–412.

Santo, Raychel, Anne Palmer, and Brent Kim. 2016. “Vacant Lots to Vibrant Plots: A Review of the Benefits and Limitations of Urban Agriculture.” (May):35. Retrieved (http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/urban-ag-literature-review.pdf).

Shinew, K. J., Glover, T. D. and Parry, D. C. 2004. “Leisure spaces as potential sites for interracial interaction: community gardens in a segregated urban area.” *Journal of Leisure Research* 36(3):336–355.

Teig, Ellen et al. 2009. “Collective Efficacy in Denver, Colorado: Strengthening Neighborhoods and Health through Community Gardens.” *Health and Place* 15(4):1115–22.

Tickamyer, Ann R. 2000. “Space Matters! Spatial Inequality in Future Sociology.” *Contemporary Sociology* 29(6):805–13.

Tickamyer, Ann R. and Cynthia M. Duncan. 1990. “Poverty and Opportunity Structure in Rural America.” *Annual Review of Sociology* 16(1990):67–86.

Voicu, I., & Been, V. 2008. “The effects of community gardens on neighboring property values.” *Real Estate Economics* 2:241–283.

Appendices 4A-4G

Table 4A-1. Logistic regression for **county economic status** predicting likelihood of reporting **improved soil and water quality** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.241	.116	1.273	.173	.186	1.189	.186	.463	1.204
Place: Socioeconomic									
ARC County Economic Status	-.427	.185	.652*	-.426	.185	.653*	-.216	.207	.806
Program Characteristics									
Years as a GA Partner Site				.094	.201	1.099	-.058	.213	.944
Individual/HH Characteristics									
Age							.000	.007	1.000
Gender							.072	.205	1.074
Educational Attainment									
Some College							-.213	.247	.808
4-Year Degree							-.641	.273	.527*
Post-Graduate Degree							-.898	.324	.407**
HH Income									
$20k-29k							.082	.275	1.086
$30k-49k							.556	.250	1.744*
$50k or More							.087	.268	1.091
Years in Program									
2 Years							.051	.232	1.053
3 Years or More							.510	.249	1.665*
-2 Log Likelihood Ratio	678.826			678.606			658.376		
Nagelkerke R Square	.014			.015			.068		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4A-2. Logistic regression for **environmental quality** predicting likelihood of reporting **improved soil and water quality** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	-.348	.136	.706	-.496	.212	.609	-.216	.462	.805
Place: Environment									
Water Quality Index	.483	.198	1.620*	.458	.200	1.582*	.510	.206	1.666*
Land Quality Index	.462	.195	1.588*	.506	.201	1.659*	.356	.215	1.428[a]
Program Characteristics									
Years as a GA Partner Site				.191	.210	1.210	-.012	.223	.989
Individual/HH Characteristics									
Age							-.003	.007	.997
Gender							.054	.208	1.055
Educational Attainment									
Some College							-.156	.250	.855
4-Year Degree							-.591	.276	.554*
Post-Graduate Degree							-.806	.326	.447*
HH Income									
$20k-29k							.086	.279	1.090
$30k-49k							.537	.254	1.711*
$50k or More							.085	.270	1.088
Years in Program									
2 Years							.064	.233	1.066
3 Years or More							.607	.250	1.834*
-2 Log Likelihood Ratio	666.213			665.388			646.016		
Nagelkerke R Square	.048			.050			.099		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4B-1. Logistic regression for **county economic status** predicting likelihood of reporting **new economic opportunities** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.378	.118	1.459	.140	.186	1.151	-.274	.468	.760
Context: Socioeconomic									
ARC County Economic Status	-.564	.186	.569**	-.561	.187	.570**	-.420	.208	.657*
Program Characteristics									
Years as a GA Partner Site				.331	.202	1.392	.236	.214	1.266
Individual/HH Characteristics									
Age							-.001	.007	.999
Gender							.350	.207	1.419[a]
Educational Attainment									
Some College							.151	.250	1.163
4-Year Degree							-.394	.274	.675
Post-Graduate Degree							-.793	.324	.453*
HH Income									
$20k-29k							.220	.277	1.246
$30k-49k							.642	.252	1.900*
$50k or More							.462	.273	1.587[a]
Years in Program									
2 Years							.083	.233	1.086
3 Years or More							.469	.252	1.598[a]
-2 Log Likelihood Ratio	672.642			669.964			649.133		
Nagelkerke R Square	.025			.032			.086		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4B-2. Logistic regression for **environmental quality** predicting likelihood of reporting **new economic opportunities** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.116	.135	1.123	-.284	.211	.753	-.720	.466	.487
Context: Environment									
Water Quality Index	-.500	.200	.606*	-.575	.204	.563**	-.570	.211	.566**
Land Quality Index	.526	.198	1.692**	.650	.207	1.915**	.507	.220	1.660*
Program Characteristics									
Years as a GA Partner Site				.521	.211	1.683*	.366	.223	1.441
Individual/HH Characteristics									
Age							.002	.007	1.002
Gender							.375	.208	1.455[a]
Educational Attainment									
Some College							.096	.252	1.101
4-Year Degree							-.397	.277	.672
Post-Graduate Degree							-.835	.326	.434**
HH Income									
$20k-29k							.165	.280	1.180
$30k-49k							.586	.254	1.797*
$50k or More							.463	.273	1.589[a]
Years in Program									
2 Years							.111	.233	1.117
3 Years or More							.555	.252	1.741*
-2 Log Likelihood Ratio	672.049			665.881			643.761		
Nagelkerke R Square	.026			.043			.099		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4C-1. Logistic regression for **county economic status** predicting likelihood of reporting **improved access to fresh foods** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	1.285	.140	3.615	1.388	.223	4.009	1.509	.532	4.523
Context: Socioeconomic									
ARC County Economic Status	-.482	.209	.618*	-.484	.209	.616*	-.319	.235	.727
Program Characteristics									
Years as a GA Partner Site				-.141	.234	.868	-.292	.249	.747
Individual/HH Characteristics									
Age							-.010	.008	.990
Gender							.322	.232	1.380
Educational Attainment									
Some College							-.356	.291	.701
4-Year Degree							-.501	.319	.606
Post-Graduate Degree							-.861	.368	.423*
HH Income									
$20k-29k							.015	.305	1.015
$30k-49k							.511	.287	1.667[a]
$50k or More							.681	.324	1.975*
Years in Program									
2 Years							.721	.282	2.057*
3 Years or More							.719	.292	2.053*
-2 Log Likelihood Ratio	553.580			553.214			532.371		
Nagelkerke R Square	.016			.017			.077		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4C-2. Logistic regression for **environmental quality** predicting likelihood of reporting **improved access to fresh foods** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.884	.148	2.421	.883	.238	2.418	1.069	.520	2.912
Context: Environment									
Water Quality Index	-.138	.228	.871	-.138	.230	.871	-.119	.238	.887
Land Quality Index	.572	.227	1.771*	.572	.234	1.772*	.502	.251	1.652*
Program Characteristics									
Years as a GA Partner Site				.002	.241	1.002	-.190	.256	.827
Individual/HH Characteristics									
Age							-.010	.008	.990
Gender							.335	.233	1.398
Educational Attainment									
Some College							-.365	.292	.694
4-Year Degree							-.462	.319	.630
Post-Graduate Degree							-.820	.368	.440*
HH Income									
$20k-29k							-.011	.306	.989
$30k-49k							.457	.289	1.579
$50k or More							.677	.324	1.968*
Years in Program									
2 Years							.737	.281	2.089**
3 Years or More							.809	.291	2.246**
-2 Log Likelihood Ratio	552.292			552.292			530.080		
Nagelkerke R Square	.019			.019			.084		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4D-1. Logistic regression for **county economic status** predicting likelihood of reporting **rejuvenated local food traditions** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.575	.120	1.778	.455	.189	1.576	.892	.474	2.440
Context: Socioeconomic									
ARC County Economic Status	-.617	.187	.540***	-.615	.187	.541***	-.482	.209	.617*
Program Characteristics									
Years as a GA Partner Site				.168	.204	1.183	.076	.216	1.079
Individual/HH Characteristics									
Age							-.012	.007	.988[a]
Gender							.015	.209	1.015
Educational Attainment									
Some College							-.316	.255	.729
4-Year Degree							-.677	.280	.508*
Post-Graduate Degree							-.793	.327	.453*
HH Income									
$20k-29k							.109	.278	1.115
$30k-49k							.721	.256	2.056**
$50k or More							.607	.276	1.836*
Years in Program									
2 Years							.437	.238	1.548[a]
3 Years or More							.488	.254	1.629[a]
-2 Log Likelihood Ratio	660.910			660.231			640.186		
Nagelkerke R Square	.029			.031			.083		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4D-2. Logistic regression for **environmental quality** predicting likelihood of reporting **rejuvenated local food traditions** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.193	.135	1.213	-.068	.210	.934	.376	.464	1.456
Context: Environment									
Water Quality Index	-.306	.201	.737	-.352	.204	.703[a]	-.319	.210	.727
Land Quality Index	.559	.200	1.748**	.638	.207	1.893**	.493	.220	1.638*
Program Characteristics									
Years as a GA Partner Site				.341	.211	1.406	.183	.223	1.201
Individual/HH Characteristics									
Age							-.009	.007	.991
Gender							.029	.210	1.030
Educational Attainment									
Some College							-.358	.255	.699
4-Year Degree							-.686	.281	.504*
Post-Graduate Degree							-.826	.327	.438*
HH Income									
$20k-29k							.065	.279	1.067
$30k-49k							.663	.257	1.940**
$50k or More							.617	.275	1.853*
Years in Program									
2 Years							.475	.237	1.608*
3 Years or More							.595	.253	1.813*
-2 Log Likelihood Ratio	663.573			660.956			639.851		
Nagelkerke R Square	.022			.029			.084		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4E-1. Logistic regression for **county economic status** predicting likelihood of reporting **new and strengthened social relationships** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.518	.119	1.679	.417	.188	1.517	-.096	.468	.909
Context: Socioeconomic									
ARC County Economic Status	-.456	.187	.634*	-.454	.187	.635*	-.208	.208	.756
Program Characteristics									
Years as a GA Partner Site				.140	.203	1.151	.033	.214	1.034
Individual/HH Characteristics									
Age							.001	.007	1.001
Gender							.390	.207	1.477[a]
Educational Attainment									
Some College							-.091	.253	.913
4-Year Degree							-.500	.277	.606[a]
Post-Graduate Degree							-.728	.325	.483*
HH Income									
$20k-29k							.216	.278	1.241
$30k-49k							.595	.253	1.813*
$50k or More							.569	.274	1.766*
Years in Program									
2 Years							.056	.233	1.058
3 Years or More							.518	.255	1.679*
-2 Log Likelihood Ratio	665.179			664.702			646.253		
Nagelkerke R Square	.016			.017			.066		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4E-2. Logistic regression for **environmental quality** predicting likelihood of reporting **new and strengthened social relationships** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.298	.135	1.347	.131	.209	1.140	-.306	.462	.737
Context: Environment									
Water Quality Index	-.158	.199	.854	-.187	.201	.830	-.187	.207	.830
Land Quality Index	.218	.197	1.244	.268	.203	1.307	.116	.217	1.123
Program Characteristics									
Years as a GA Partner Site				.218	.208	1.243	.055	.221	1.056
Individual/HH Characteristics									
Age							.004	.007	1.004
Gender							.393	.207	1.481[a]
Educational Attainment									
Some College							-.128	.253	.880
4-Year Degree							-.550	.277	.577*
Post-Graduate Degree							-.807	.325	.446*
HH Income									
$20k-29k							.197	.278	1.218
$30k-49k							.579	.253	1.785*
$50k or More							.593	.274	1.809*
Years in Program									
2 Years							.086	.232	1.090
3 Years or More							.566	.253	1.762*
-2 Log Likelihood Ratio	669.746			668.657			647.193		
Nagelkerke R Square	.004			.007			.064		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4F-1. Logistic regression for **county economic status** predicting likelihood of reporting **improved overall human health** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.378	.118	1.459	.203	.186	1.225	.873	.472	2.393
Context: Socioeconomic									
ARC County Economic Status	-.502	.186	.606**	-.499	.186	.607**	-.358	.209	.699[a]
Program Characteristics									
Years as a GA Partner Site				.243	.202	1.276	.030	.214	1.030
Individual/HH Characteristics									
Age							-.010	.007	.990
Gender							.175	.208	1.192
Educational Attainment									
Some College							-.545	.252	.580*
4-Year Degree							-.634	.278	.531*
Post-Graduate Degree							-1.02	.327	.360**
HH Income									
$20k-29k							-.216	.279	.806
$30k-49k							.367	.253	1.443
$50k or More							.171	.271	1.187
Years in Program									
2 Years							.092	.232	1.097
3 Years or More							.847	.258	2.332***
-2 Log Likelihood Ratio	673.572			672.114			647.243		
Nagelkerke R Square	.020			.024			.088		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4F-2. Logistic regression for **environmental quality** predicting likelihood of reporting **improved overall human health** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.053	.134	1.055	-.211	.209	.902	.499	.462	1.648
Context: Environment									
Water Quality Index	-.057	.197	.944	.393	.202	1.482	-.097	.207	.907
Land Quality Index	.314	.195	1.369	.344	.208	1.410*	.308	.217	1.361
Program Characteristics									
Years as a GA Partner Site				.344	.208	1.410[a]	.089	.221	1.094
Individual/HH Characteristics									
Age							-.009	.007	.991
Gender							.177	.208	1.194
Educational Attainment									
Some College							-.566	.252	.568*
4-Year Degree							-.648	.278	.523*
Post-Graduate Degree							-1.05	.326	.351***
HH Income									
$20k-29k							-.240	.279	.787
$30k-49k							.332	.253	1.394
$50k or More							.182	.271	1.200
Years in Program									
2 Years							.124	.231	1.133
3 Years or More							.928	.257	2.529***
-2 Log Likelihood Ratio	678.201			675.447			648.166		
Nagelkerke R Square	.007			.015			.086		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4G-1. Logistic regression for **county economic status** predicting likelihood of reporting **improved organic gardening skills/knowledge** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.961	.129	2.614	1.049	.208	2.853	.914	.505	2.495
Context: Socioeconomic									
ARC County Economic Status	-.229	.200	.795	-.231	.201	.794	-.056	.227	.945
Program Characteristics									
Years as a GA Partner Site				-.120	.222	.887	-.284	.237	.753
Individual/HH Characteristics									
Age							-.011	.007	.989
Gender							.301	.224	1.351
Educational Attainment									
Some College							-.480	.278	.619[a]
4-Year Degree							-.533	.308	.587[a]
Post-Graduate Degree							-.719	.358	.487*
HH Income									
$20k-29k							.749	.310	2.115*
$30k-49k							.925	.278	2.521**
$50k or More							.758	.298	2.134*
Years in Program									
2 Years							.819	.267	2.269**
3 Years or More							.898	.283	2.456**
-2 Log Likelihood Ratio	598.459			598.163			565.835		
Nagelkerke R Square	.004			.005			.094		

[a]p<.10; *p<.05; **p<.01; ***p<.001

Table 4G-2. Logistic regression for **environmental quality** predicting likelihood of reporting **improved organic gardening skills/knowledge** (N=494)

	Model 1			Model 2			Model 3		
Variable (Groupings)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)	B	SE(B)	Exp(B)
Constant	.682	.143	1.977	.738	.227	2.092	.758	.498	2.143
Context: Environment									
Water Quality Index	.168	.217	1.183	.177	.219	1.194	.225	.229	1.253
Land Quality Index	.256	.213	1.291	.239	.219	1.270	.163	.238	1.177
Program Characteristics									
Years as a GA Partner Site				-.073	.228	.929	-.261	.244	.770
Individual/HH Characteristics									
Age							-.012	.007	.988[a]
Gender							.300	.225	1.350
Educational Attainment									
Some College							-.453	.278	.635
4-Year Degree							-.492	.308	.611
Post-Graduate Degree							-.658	.358	.518[a]
HH Income									
$20k-29k							.752	.311	2.122*
$30k-49k							.910	.279	2.485***
$50k or More							.750	.298	2.117*
Years in Program									
2 Years							.821	.267	2.273**
3 Years or More							.930	.282	2.534***
-2 Log Likelihood Ratio	596.629			596.525			563.674		
Nagelkerke R Square	.009			.009			.100		

[a]p<.10; *p<.05; **p<.01; ***p<.001

CHAPTER 5:

CONCLUSION

For many of the issues affecting rural America today, from persistent poverty to economic restructuring and environmental degradation to human health disparities, the sub-region of Central Appalachia serves as an instructive case study to help researchers and practitioners alike to better understand the drivers, outcomes, and appropriate resolutions of these issues (Blee & Billings 2000; Eller 2013). In response to federal policies and programs that have exacerbated the trends of uneven development and social/environmental inequalities that have long affected this region, many grassroots, placed-based initiatives have evolved throughout the Appalachian region (Keefe 2009; Fisher and Smith 2012). But how do these initiatives support sustainable community development within Central Appalachia? What are the outcomes of these efforts and how are they distributed among people and places? And how are they shaped or limited by the physical and social context of this sub-region? Using the conceptual framework of community-capacity building and a mixed methods approach, these are the questions this study strove to answer.

This final chapter is structured as follows; first, findings from the three empirical chapters are integrated to address the three overall research questions, including the overall theoretical contributions of the study. Next, this chapter addresses the overall contributions of this dissertation research project for policy and practice considerations, followed by a discussion of the study's limitations and opportunities for future research. Lastly, the researcher stance will be revisited, reflecting on the benefits and drawbacks of collaborating with a non-profit organization to conduct a participatory action research project addressing sustainable development in Central Appalachia.

General Themes and Conclusions

Through what processes do grassroots, place-based initiatives contribute to sustainable community development in Central Appalachia?

This research question is largely interested in the processes by which community capacity is built via grassroots, place-based initiatives through the lens of Grow Appalachia's community gardening programs and network. This question about processes was largely addressed in Paper A ("Brokering Community Food Security"), which described the structure, roles, processes, and 'rules' that are embedded within the Grow Appalachia initiative. This paper, and the overall dissertation research project, extend our understanding of community capacity building by demonstrating how the different levels of agency described by Chaskin et al. (2001) – individuals, organizations, and networks – and their functions are highly interdependent and work in concert to build community capacity. For example, the effectiveness of local partner site programs and the overall interorganizational network were strongly driven by the characteristics of individual site coordinators, as determined and selected for by Grow Appalachia headquarters staff. In turn, limited organizational resources also restricted the ability of individual partner site coordinators to perform their program responsibilities, often exacerbating the restrictions experienced at the individual partner site level (e.g., limited time and capacity, underdeveloped professional skills). And when the individual or organizational level of agency was compromised, so was the overall network. So, to build community capacity overall, certain baseline capacities are needed at the levels of social agency; in this case study, those with the highest impact (in terms of either benefits or costs) seemed to be human and financial resources.

Additionally, the findings of this dissertation research project problematize the concept of broker organizations (Chaskin 2001) as leaders in community capacity building, demonstrating that they not only perform tasks necessary for enabling interorganizational collaboration, like

facilitating access to resources and providing technical assistance (Chaskin 2001; Selden et al. 2006; Chen & Grady 2010), but they also exist at the top of an organizational hierarchy in which they set the 'rules' that determine what organizations are in or out of a network and the nature of the community capacity building work at the local level. As interorganizational coordination and cooperation are increasingly promoted as strategies for community capacity building in both urban and rural settings (Rich, et al. 2001; Takahashi & Smutny 2001; Provan & Lemaire 2012), it is essential to understand how the hierarchical structure and 'rules' set by the broker organization may lead to benefits or costs experienced by the various network participants. These 'rules' also affect the dimensions of capacity that are built and for whom, illustrating further how strategy (Chaskin et al. 2001) is directly tied to function and outcomes of community capacity and capacity building efforts.

Lastly, the strategies employed by Grow Appalachia are not limited to interorganizational networks or coordination alone. The entire dissertation research project, including all three empirical chapters, are viewed through the broad frame of civic agriculture, or more practically, community gardening as a strategy to enhance both community food security and entrepreneurship. As demonstrated in the introduction, community gardening, and civic agriculture ventures more generally, can contribute to community capacity building through entrepreneurship and social capital development. Although outcomes like these will be discussed in more detail below, the work of Grow Appalachia also brings the concepts of community food security and culturally appropriate methods of food production and consumption – themes more common to community gardening research (Draper & Freedman 2010; Guitart et al. 2012) – more prominently into both the civic agriculture and community capacity-building literatures. Grow Appalachia, as an organization, chose community gardening as their community

development strategy because of the many aspects of community and individual wellbeing they can affect, but also because this strategy is compatible with Appalachia's traditions of self-sufficiency and subsistence agriculture (Lundy 2016). In this way, Grow Appalachia's civic agriculture strategy frames localized systems of consumption and production not as an end in themselves, but a means to the ends of cultural revitalization, community food security, *and* economic and social development.

What are the outcomes of these initiatives and how are they distributed among different people and places?

Each of the three empirical chapters details how the grassroots, place-based efforts of Grow Appalachia have produced positive outcomes, as perceived by initiative staff and participants alike. Paper A ("Brokering Community Food Security") described how participation in the Grow Appalachia interorganizational network led to increased organizational capacity, improved access to resources, better achievement of organizational goals, expanded interorganizational networks, and professional and leadership development of site coordinators and staff, supporting similar findings from prior research on interorganizational collaboration (Chaskin 2001; Selden et al. 2006; Chen & Grady 2010). These kinds of outcomes are characterized as strategies for building capacity according to Chaskin et al. (2001), so in these ways, Grow Appalachia efforts are building capacity *for* building capacity, strengthening the essential building blocks needed to pursue successful community capacity building functions and outcomes.

While Paper A detailed the outcomes of grassroots, place-based initiatives at the organizational level of social agency, Paper B ("Coal Is In Our Food, Coal Is In Our Blood") and Paper C ("Does Context Matter?") provided insights as to the outcomes experienced at the level

of individuals and communities, respectively. The individual, everyday environmental experiences and constraints presented in Paper B were consistently couched in the natural, built, human health, and socioeconomic benefits provided by the program, in conjunction with the costs and barriers. And although the degree to which they were ranked did vary, the survey data analysis of Paper C demonstrated that Grow Appalachia participants overwhelming reported moderate to high levels of community-level outcomes across all dimensions of the community capital framework (Flora & Flora 2015). The kinds of outcomes that were perceived as experiencing the highest impacts, both qualitatively and quantitatively, were those with implications for human capital development (knowledge, skills, abilities, and health) and social relationships and cultural traditions, resonating with past research on community gardening (Ferris, et al. 2001; Firth, Maye, & Pearson 2011; Ghose & Pettygrove 2014; Lawson 2005; McIlvaine-Newsad & Porter 2013; Saldivar-Tanaka & Krasny 2004). Less strong were the financial and natural environment benefits, despite the claims of previous scholarship on community gardening and civic agriculture writ large (Lyson 2004; Trauger et al. 2010).

But not all of these outcomes were positive and they were not distributed equally across people, organizations, or places. Paper A demonstrated how the rules set and enforced by Grow Appalachia as a broker organization have negative, not just positive, outcomes for organizational and program processes, and therefore may privilege the participation of organizations and individuals who have certain capacities already in place before joining the interorganizational network or local program sites. Paper B further revealed the nature of unintended negative consequences of community gardening experienced by individuals in the Grow Appalachia service area, which, again, have a greater impact on those individuals who may already be experiencing disadvantage, from poor human health to limited socioeconomic means. Paper C

demonstrated how these inequalities are also distributed at the perceived community-level between different Central Appalachia communities, depending on socioeconomic, environmental, and individual characteristics. Taken individually and together, the findings of the three empirical chapters echo the importance of inequalities, as identified in some previous civic agriculture and community gardening literature (Mares & Alkon 2011; Slocum 2006; Reynolds 2015; Tarng 2015; Santo et al. 2016), and further extend our understanding of community capacity building by highlighting how these processes and their outcomes are associated with differences between community-based organizations, people, and places, and how these associations may exacerbate marginalization already experienced by individual people or specific social groups.

Previous scholarship on community gardening and other civic agriculture ventures has applauded these initiatives for being multi-dimensional panaceas of sustainable community development (Lyson 2004; Okvat & Zautra 2011; Guitart et al. 2012; Phillips & Wharton 2016; Santo et al. 2016). While this dissertation research project does support this claim to some extent, its contribution lies in demonstrating how not all dimensions or outcomes of sustainable development are perceived, affected, or distributed equally through grassroots, place-based initiatives, raising the familiar and critical questions of sustainable development of/for what? And for whom? In this dissertation research project, community gardening and civic agriculture were found to be susceptible to many of the same inequalities and uneven distribution of impacts that are common critiques of more conventional or top-down approaches to community and economic development (Keefe 2009; Green & Goetting 2010; Eller 2013). Additionally, these varied results demonstrate the importance of examining multiple dimensions and measures of community- and individual-level outcomes of civic agriculture and other grassroots, place-based

initiatives in order to understand and continually improve these initiatives. This research also demonstrates the importance of conceptualizing these outcome dimensions in more than one way – especially human capital development. While these outcomes are often conceptualized in terms of human knowledge and skill development (Flora & Flora 2015), human physical and mental health outcomes (and challenges) may be missed if we do not allow for multiple measures and narratives in our work on community development, especially in communities like Central Appalachia that have long struggled with human health disparities and inadequate access to healthcare (Morrone & Buckley 2011).

How are these initiatives shaped by the context of Central Appalachia?

Papers B ("Coal Is In Our Food, Coal Is In Our Blood" and C ("Does Context Matter?") demonstrated that context does indeed shape the processes and outcomes of the grassroots, place-based initiatives examined within this dissertation research project. Previous work on community development and community capacity building has made this claim (Chaskin et al. 2001; Pender et al. 2012), but little empirical research has demonstrated the actual ways in which the effects of context differ by the type of outcome or by individuals. The findings of both Paper B and Paper C showed how different types of environmental disadvantage (poor land quality or access, contaminated water sources, inadequate infrastructure, et cetera) can constrain the processes and positive outcomes of these initiatives at individual and community levels, a point that has been made in urban community gardening literature (Bugdalski et al. 2014; Guitart et al. 2012; McClintock 2012), but has not yet been explicitly addressed in literature concerning similar subsistence-based activities in rural locations. These contextual constraints are particularly damaging for people and households of limited economic means or poor health (Paper B) and

have significant limitations on tangible and cultural capital outcomes, as perceived by program participants (Paper C).

That said, the findings of this dissertation research project also demonstrated some ways in which contextual disadvantage – largely understood as county economic status – can have positive associations with initiative outcomes, particularly those that create economic opportunities and rejuvenate local cultural traditions (Paper C). In this way, county disadvantage may also create needs and opportunities for positive outcomes. These findings further problematize the premise of place-based development by showing that characteristics of places can promote or facilitate sustainable economic and community development, but they can also deter it. By focusing solely on the assets, amenities, or opportunities available within a given context, community development and rural scholars and practitioners may minimize the ways in which existing disadvantages or inequalities can negatively impact or constrain the outcomes of grassroots, place-based initiatives. This dissertation study also adds to the natural resource dependency literature by demonstrating not just the historical or contemporary effects of a natural resource dependent past, as most previous literature has done (Stedman 2013; Krannich et al. 2014), but also how this condition provides both opportunities for and constraints on future sustainable development efforts.

Considerations for Policy and Practice

While this dissertation research project focused primarily on initiatives that originated from the grassroots level, it has raised questions and findings relevant to policymakers at the federal and state levels as well. The findings of all three empirical chapters, but especially Paper A, demonstrated how resource scarcity can constrain the work of community-based organizations and their interorganizational networks, leading to unfulfilled missions or outcomes

that exacerbate existing inequalities. Community-based organizations, particularly in resource poor and rural communities, play a necessary role in tailoring social services, poverty relief, and economic development programs to meet the nuances of local contexts – but only if the proper tools are made available to do so. This may be addressed through federal or state programs that not only provide financial or technical resources to community-based, but also strive to improve accessibility and support in the application and evaluation processes of already existing programs. Better resourced community-based organizations may also be better equipped to tackle (or work in conjunction with other actors to tackle) the drivers of uneven development and social and environmental inequality, in addition to providing the safety net programs necessary to enhance the quality of everyday life in these communities.

Additionally, Papers B and C demonstrated the importance of clean and accessible biophysical environments, especially for grassroots initiatives based on subsistence activities that require good quality and safe natural resources. Issues of environmental quality affect many disadvantaged rural communities (Lichter & Brown 2011), and many of these issues are tied to the practices of outside corporations and insufficient government regulations for resource extraction, industrial production, and waste disposal (Taylor 2014; Morrone & Buckley 2011). Federal and state policies and programs must be better designed to not only address the environmental hazards that exist in many rural (and urban) communities that are impeding future sustainable development, but must also prevent further environmental inequalities from arising. The people and organizations that exist within these communities and experience firsthand the environmental inequalities and injustices of past and current industrial practices do not have the means to, nor should they have to, clean up after corporations and government agencies. Past sustainable development (collaborative and individual) programs by the Appalachian Regional

Commission, Environmental Protection Agency, United States Department of Agriculture, and the Department of Housing and Urban Development has historically focused on infrastructure development (Eller 2013); future ones should address the natural as well as built environment due to their entangled relationship, as seen in Paper B, by ensuring not only the presence of clean and safe environments, but also reliable access to them.

As for practice considerations, the findings of this dissertation research project illuminate both the strengths and the weaknesses of grassroots, place-based initiatives grounded in a civic agriculture approach. Much can be learned from the Grow Appalachia initiative and their interorganizational network's place-based approach, particularly in the ways they use regional resource sharing practices and local food and subsistence traditions to break down social barriers and rejuvenate struggling community-based organizations. That said, the work of Grow Appalachia also demonstrates how civic agriculture ventures – particularly community gardening – cannot deliver all things for all people. For example, the tension between entrepreneurship and community food security efforts (as discussed in Paper A), raises questions about whether these two missions can be meaningfully achieved at the same time. Which comes first or better enables the other? Or do we compromise one for the other? (And who loses or gains from this trade-off?) Practitioners (and scholars) must be more intentional about our goals for civic agriculture ventures and what we think they can achieve and what they cannot, which will likely vary by venture type, place, and participants, as seen in this dissertation research project.

Lastly, the findings of this dissertation project have also demonstrated how grassroots, place-based development initiatives are not inherently free of inequalities or absent uneven results. Civic agriculture ventures, and other types of grassroots sustainable development initiatives, must continue to pursue practices and programs that seek to be inclusive of and

accessible for marginalized populations. How can we better reach the people and households that cannot show up to every meeting or who cannot afford the upfront or ongoing costs (hard or soft) of participating in grassroots initiatives? How can their interests and needs be better represented within the design, implementation, and evaluation of these types of programs? Additionally, how can these initiatives be best supported so that they may help to address the drivers of systemic inequalities and under- and uneven development, beyond or in addition to meeting the everyday needs of their service populations? The first step in addressing these questions is using reflective practices and evaluation to help recognize and be realistic about the limitations of grassroots, place-based development initiatives. The next may be continuing to support and enhance interorganizational collaboration and co-learning through increased federal and state resources (as discussed above) to broaden service populations, create more innovative and inclusive service activities and organizational practices, and diversify the perspectives included in the design of grassroots initiatives.

Study Limitations and Future Research

This dissertation research project is susceptible to some limitations that help to illuminate opportunities for future research. First, while the results of this project offered some insights into how context matters for sustainable community development, the types of context included in this project's design are relatively similar across environmental, social, and economic dimensions. While there is definitely variation between places and populations within Central Appalachia, future research should examine the influence of contextual factors on sustainable development processes and outcomes across places and populations that vary more widely to continue broadening our understanding of how context affects important social experiences and outcomes. For example, how might findings differ between vastly different rural environments,

ones with a long history of natural resource dependency and ones without such history? Or between rural- and urban-based initiatives?

Future research could also examine differences among more diverse types of grassroots initiatives and leading organizations. This study focused on rural community gardening, as defined by Grow Appalachia's vision and mission, with in-depth examination of only four of the 2016 partner sites. How might community gardening outcomes differ from those of other civic agriculture ventures or other grassroots, place-based approaches? Limited time and resources prevented research engagement with other partner sites and additional interviewees, and constrained the time spent at each case study site. A better resourced and more fully ethnographic approach could uncover additional or different findings than what is presented in this dissertation research project, and might help to reveal and address the perspectives of even harder-to-reach populations. The cross-sectional nature of this particular project also limits our understanding to one snapshot of time; better understanding of how inequalities form and persist or are addressed could come with more longitudinal work.

Although this case study has expanded our understanding of broker organizations and interorganizational networks and collaboration, only one broker organization and one interorganizational network were examined in this study, limiting the generalizability of the results. Future research should continue to problematize the concept and work of broker organizations so that scholars, policymakers, and practitioners may better understand and address the costs and benefits of these arrangements towards improving the experiences and capabilities of organizations, their staff, and their service populations. Additionally, future research should continue to tease apart the influences of power, hierarchy, and inequality of community capacity building efforts, for insights on potentially more inclusive strategies as well as more holistic

definitions of what community capacity (and the goals of building it) may be. Lastly, although environmental factors were an important part of the constraints and limitations identified throughout the course of this dissertation research project, no physical sampling or testing were done to confirm distribution of or exposure to contaminants. Future research could take a more interdisciplinary approach to integrate both social and biophysical sciences to understand both human perceptions and experiences as well as the physical distribution and sources of environmental inequalities.

Researcher Stance Revisited

The most basic premise of participatory action research (PAR) is that "changes occur either within the setting and/or within the researchers themselves" (Herr & Anderson 2005:4). In the case of this dissertation research study, both have occurred. Considering the Grow Appalachia organization as the 'setting' for this project, this multi-year process has resulted in some changes in both the operation of headquarters' practices as well as the translation to local partner site programs. Grow Appalachia headquarters has taken strides to improve their budget, reporting, and regional networking processes to better build organizational capacity by reducing burdens on site coordinators and better meeting the needs of local service populations. Recognizing the power of narrative within my own fieldwork experiences, they funded an Americorps VISTA volunteer in Fall 2016/Spring-Summer 2017 to collect additional program participants' stories from across their entire service region, generating further comprehensive in-depth insights about the Grow Appalachia experience at the local level that could be used to improve program practices and add a more human element to funding reports. Lastly, from 2017 to 2018, they have also made a number of staff role changes, adjustments that have more

strongly redirected their work towards social enterprise and beginning farmer development rather than direct poverty or food insecurity relief.

None of these changes can be fully credited to me or the dissertation research project. That said, a number of informal conversations with Grow Appalachia headquarters staff over the past several years have indicated that my presence, questions, and informal feedback may have not so much offered new ways of framing or approaching their work, but rather given them the evidence and confidence to make changes they had been considering prior to my arrival (e.g., budget process adjustments, targeted work on social exclusion at partner site programs) or stick with a tried and true approach (e.g., prioritizing home gardening plots over shared community plots). The formal outreach documentation, in development at the time of this writing, will be helpful for future funding reports and proposals; but the process of designing and conducting the program evaluation together has also resulted in its own important programmatic changes, justifying an organizational ethnographic approach that doesn't simply conduct research *on* or *for* organizations, but also *with* organizations (Neyland 2008).

As for changes to the researcher, I've drawn a number of lessons from this dissertation venture that have further informed and strengthened my action researcher / public scholar / educational organizer (AR/PS/EO) orientation (Peters et al. 2010). By taking a mixed methods approach, I was able to continually develop the overall research project and adapt to the interests, needs, and resources of Grow Appalachia, which was imperative for maintaining my rapport and trust with Grow Appalachia headquarters and, ultimately, resulted in more rigorous and comprehensive research findings (Hesse-Biber 2010).[22] My work at headquarters and with

[22] For example, I had originally planned to conduct the gardener survey at a sample of partner sites; Grow Appalachia wanted to distribute it to all 32 2016 partner sites for a full program evaluation, and so we expanded that phase of the project. Additionally, a site coordinator survey was not included in my study, but Grow Appalachia suggested it as a way to triangulate what we had learned from the in-depth interviews.

individuals at my sub-case study sites also illuminated for me the complexity of insider-outsider positionality. Although I approached Grow Appalachia primarily as an outsider, I quickly became (and realized many of the ways I already was) an insider of the organization and its service population, based upon how my presence shaped conversations at headquarters as well as my own gardening experiences and upbringing in a rural, lower-to-middle income household that relied on entrepreneurship endeavors for its main source of income. While it could be argued that this approach and my multiple positionalities (Collins 1990) compromised some aspects of the research process, I also argue these became resources for gaining access, building rapport, grounding my analysis and findings more strongly within my fieldwork observations, and discovering how this dissertation research project fits into and expands upon previous research and theory. Even more practically, I have also found that conducting a PAR project with an organization enhanced my individual accountability; I needed to finish my dissertation not only for my own gain, but also for the gains of Grow Appalachia and their service population.

Even for a study as involved as a dissertation, full field submersion and engagement with Grow Appalachia on all pieces of the research project proved difficult. While the research questions, design, and data collection instruments were developed in collaboration with Grow Appalachia headquarters' staff, the analysis and writing phases have been conducted solely by myself. This has occurred for multiple reasons, including ethical constraints of IRB-approved research, the expectations and requirements of a PhD process, and time and resource limitations. Reciprocity has also proved to be on an ongoing challenge. Throughout the project process, I have experienced anxieties related to how best to share my findings – When? How? How much? And with whom? I have learned that in future PAR projects, I must not promise anything that I am not sure I can definitely deliver, and that timelines must be flexible to account for

professional and personal hiccups – on my end and theirs. I've also learned that while action leads to changes within the organization (ideally), the changes may not be what I had intended or expected, that maintaining a neutral stance on these changes is not easy nor always appropriate, but being present and always willing to listen provides a way forward at some of the most confusing or defeating of fieldwork times. All in all, I look forward to continuing my work with Grow Appalachia in some capacity (service learning, longitudinal evaluations) in my new professional roles to come and to applying these lessons in new PAR settings.

Concluding Thoughts

This dissertation has examined how, for what, and for whom grassroots, place-based initiatives grounded in civic agriculture may (or may not) address the conditions associated with historical natural resource dependency and patterns of uneven development in the region of Central Appalachia. The findings suggest that interorganizational collaboration grounded in community gardening networks can lead to a number of positive outcomes across the region, building individual and organizational capacities towards building overall community capacity. That said, the case of Grow Appalachia suggests that rural collaborative gardening networks may also contribute to uneven development and/or exacerbate social and environmental inequalities. These outcomes are not intentional, but are instead largely driven by organizational resource scarcity, inaccessibility of initiative activities and services, and the environmental and socioeconomic contexts in which they are operating.

These results imply that grassroots, place-based initiatives should not be assumed to be in all cases a solution that overcomes the uneven outcomes of previous efforts; rather, they must be critically examined just as scholars and practitioners have often scrutinized more conventional, top-down approaches to community and economic development to meaningfully address

systemic inequalities and build effective community capacity for all. The results also imply that we should continue to avoid singular approaches to community development; we need top-down and bottom-up interventions, informed by more reflective practices at both levels. These approaches, and the combination thereof, should also vary by people and places, with flexibility for place-based design, implementation, and evaluation built in to more regional approaches. In many ways, the socioeconomic and environmental conditions of Central Appalachia can be viewed as a microcosm of how the processes of globalization, neoliberal capitalism, and industrial restructuring have made massive changes to much of rural and urban America (Eller 2013; Bailey et al. 2014). Although this study may be a case study of one interorganizational initiative, recognizing the transferability of the conditions affecting Central Appalachia can also help to transfer this dissertation's implications for research, theory, policy, and practice to address similar sustainable development processes elsewhere for the enhanced wellbeing of all people and places.

References

Allen, P. 2004. *Together at the Table: Sustainability and Sustenance in the American Agrifood System*. University Park, PA: The Pennsylvania State University Press.

Billings, Dwight B. and Kathleen M. Blee. 2000. *The Road to Poverty: The Making of Wealth and Hardship in Appalachia*. Boston: Cambridge University Press.

Bailey, C., L. Jensen, and E. Ransom. 2014. "Introduction and Overview." Pp. xiii-xxx in C Bailey, L Jensen, & E Ransom (eds.) *Rural America in a Globalizing World: Problems and Prospects for the 2010s*. University Park, PA: Penn State Press.

Bugdalski, L., L.D. Lemke, and S.P. McElmurry. 2014. "Spatial Variation of Soil Lead in an Urban Community Garden: Implications for Risk-Based Sampling." *Risk Analysis* 34(1):17–27.

Chaskin, R. 2001. "Building Community Capacity: A Definitional Framework and Case Studies From a Comprehensive Community Initiative." *Urban Affaires Review* 36(3):291–323.

Chaskin, R.J., P. Brown, S. Venkatesh, and A. Vidal. 2001. *Building Community Capacity*. New York, NY: Walter de Gruyter, Inc.

Chen, Bin and Elizabeth A. Graddy. 2010. "The Effectiveness of Nonprofit Lead-Organization Networks for Social Service Delivery." *Nonprofit Management and Leadership* 20(4):405–22.

Collins, P.H. 1990. *Black feminist thought: Knowledge, consciousness and the politics of empowerment.* New York, NY: Routledge.

DeLind, L.B. 2002. "Place, Work, and Civic Agriculture: Common Fields for Cultivation." *Agriculture and Human Values* 19:217–24.

Draper, C., & Freedman, D. 2010. "Review and analysis of the benefits, purposes, and motivations associated with community gardening in the United States." *Journal of Community Practice 18*(4):458-492.

Eller, R. 2013. *Uneven ground: Appalachia since 1945*. University Press of Kentucky.

Ferris, J., C. Norman, and J. Sempik. 2001. "People, Land and Sustainability: Community Gardens and the Social Dimension of Sustainable Development." *Social Policy & Administration* 35(5):559–68.

Firth, C., D. Maye, and D. Pearson. 2011. "Developing 'community' in Community Gardens." *Local Environment* 16(6):555–68.

Fisher, Stephen L. and Barbara Ellen Smith. 2012. *Transforming Places: Lessons from Appalachia*. Champaign: University of Illinois Press.

Flora, C.B. and J.L. Flora. 2015. *Rural Communities: Legacy and Change* (4th ed.) Boulder, CO: Westview Press.

Ghose, R. and M. Pettygrove. 2014. "Urban Community Gardens as Spaces of Citizenship." *Antipode* 46(4):1092–1112.

Green, G.P. and A. Goetting, (eds). 2010. *Mobilizing Communities: Asset Building as a Community Development Strategy.* Philadelphia, PA: Temple University Press.

Guitart, D., C. Pickering, and J. Byrne. 2012. "Past Results and Future Directions in Urban Community Gardens Research." *Urban Forestry and Urban Greening* 11(4):364–73.

Herr, K. and G.L. Anderson. 2005. *The Action Research Dissertation: A Guide for Students and Faculty*. Thousand Oaks: SAGE Publications.

Hesse-Biber, S.N. 2010. *Mixed Methods Research: Merging Theory with Practice*. New York, NY: The Guilford Press.

Hinrichs, C.C. 2003. "The practice and politics of food system localization." *Journal of Rural Studies* 19(1):33-45.

Keefe, S.E. 2009. *Participatory Development in Appalachia: Cultural Identity, Community, and Sustainability*. Knoxville, TN: The University of Tennessee Press.

Krannich, R.S., B. Gentry, A.E. Luloff, and P.G. Robertson. 2014. "Resource Dependency in Rural America: Continuities and Change." Pp. 208-225 in C. Bailey, L. Jensen, & E. Ransom (eds.), *Rural America in a Globalizing World: Problems and Prospects for the 2010s.* Morgantown, WV: West Virginia University Press.

Lichter, Daniel T. and David L. Brown. 2011. "Rural America in an Urban Society: Changing Spatial and Social Boundaries." *Annual Review of Sociology* 37(1):565–92.

Lawson, L.J. 2005. *City Bountiful: A Century of Community Gardening in America.* Berkeley, CA: University of California Press.

Lundy, R. 2016. *Victuals: An Appalachian Journey, With Recipes*. New York, NY: Clarkson Potter.

Lyson, T.A. 2004. *Civic Agriculture: Reconnecting Farm, Food, and Community*. Lebanon, NH: University Press of New England.

Mares, Teresa Marie and Alison Hope Alkon. 2011. "Mapping the Food Movement: Addressing Inequality and Neoliberalism." *Environment and Society* 2(1):68–86.

McClintock, N. 2012. "Assessing Soil Lead Contamination at Multiple Scales in Oakland, California: Implications for Urban Agriculture and Environmental Justice." *Urban Studies and Planning Faculty Publications and Presentations*. Paper 94.

McIlvaine-Newsad, H. and R. Porter. 2013. "How Does Your Garden Grow? Environmental Justice Aspects of Community Gardens." *Journal of Ecological Anthropology* 16:69–75.

Morrone, M. and G. L. Buckley. 2011. *Mountains of injustice: Social and environmental justice in Appalachia*. Columbus, OH: Ohio University Press.

Neyland, D. 2008. *Organizational Ethnography*. Los Angeles: SAGE Publications.

Okvat, H.A. and A.J. Zautra. 2011. "Community gardening: A parsimonious path to individual, community, and environmental resilience." *American Journal of Community Psychology* 47(3-4):374-387.

Pender, J., Marré, A., & Reeder, R. 2012. "Rural Wealth Creation Concepts, Strategies, and Measures." *USDA-ERS Economic Research Report*, (131).

Peters, S.J., T.R. Alter, and N. Swartzbach. 2010. *Democracy and Higher Education: Traditions and Stories of Civic Engagement*. East Lansing, MI: Michigan State University Press.

Phillips, R. and C. Wharton. 2016. *Growing Livelihoods: Local food systems and community development*. New York, NY: Routledge.

Provan, Keith G. and Robin H. Lemaire. 2012. "Core Concepts and Key Ideas for Understanding Public Sector Organizational Networks: Using Research to Inform Scholarship and Practice." *Public Administration Review* 72(5):638–48.

Rich, Michael J., Micheal W. Giles, and Emily Stern. 2001. "Collaborating to Reduce Poverty: Views from City Halls and Community-Based Organizations." *Urban Affairs Review* 37(2):184–204.

Saldivar-Tanaka, L. and M.E. Krasny. 2004. "Culturing Community Development, Neighborhood Open Space, and Civic Agriculture: The Case of Latino Community Gardens in New York City." *Agriculture and Human Values* 21(4):399–412.

Santo, R., A. Palmer, and B. Kim. 2016. "Vacant Lots to Vibrant Plots: A Review of the Benefits and Limitations of Urban Agriculture." Report prepared for the Johns Hopkins Center for a Livable Future. https://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-for-a-livable-future/_pdf/research/clf_reports/urban-ag-literature-review.pdf

Selden, Sally Coleman, Jessica E. Sowa, and Jodi Sandfort. 2006. "The Impact of Nonprofit Collaboration in Early Child Care and Education on Management and Program Outcomes." *Public Administration Review VO - 66* (3):412.

Slocum, Rachel. 2006. "Anti-Racist Practice and the Work of Community Food Organizations." *Antipode* 38(2):327–49.

Stedman, R.C. 2013. "Resource dependence and rural development." Pp. 77-91 in G.P. Green (ed.), *Handbook of Rural Development*. Cheltenham, UK: Edward Elgar Publishing.

Takahashi, Lois M. and Gayla Smutny. 2001. "Collaboration Among Small, Community-Based Organizations: Strategies and Challenges in Turbulent Environments." *Journal of Planning Education and Research* 21:141–53.

Tallichet, S.E. 2014. "Got Coal? The High Cost of Coal on Mining-Dependent Communities in Appalachia and the West." Pp. 279-295 in C. Bailey, L. Jensen, & E. Ransom (eds.) *Rural America in a Globalizing World: Problems and Prospects for the 2010s*. University Park, PA: The Pennsylvania State University Press.

Tarng, Danny W. 2015. "Privilege and Allyship in Nonprofit Food Justice Organizations." *Journal of Agriculture, Food Systems, and Community Development* 5(4):173–77.

Taylor, D.E. 2014. *Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility*. New York, NY: New York University Press.

Trauger, A., C. Sachs, M. Barbercheck, K. Brasier, and N.E. Kiernan. 2010. "'Our Market Is Our Community': Women Farmers and Civic Agriculture in Pennsylvania, USA." *Agriculture and Human Values* 27(1):43–55.

APPENDIX A

Verbal Informed Consent Script

Hello, my name is Elly Engle. I am a graduate student at Penn State University in the Rural Sociology program, and I am here doing research that will be used in my dissertation.

I am studying the community development impacts of rural community garden programs. I would like to ask you a series of questions about your role in your garden program [Grow Appalachia] and your observations about the impact it has had it your community [region].

The information you share with me will be of great value in helping me to complete this research project, the results of which could significantly enhance our understanding of these important processes and provide practical feedback for Grow Appalachia and other rural community garden programs.

This interview/survey will take about an hour of your time.

There is no risk of a breach of confidentiality. I will not link your name to anything you say, either in the transcript of this interview/survey or in the text of my dissertation or any other publications. There are no other expected risks of participation.

Participation is voluntary. If you decide not to participate, there will be no penalty or loss of benefits to which you are otherwise entitled. You can, of course, decline to answer any question as well as to stop participating at any time.

If you have any additional questions concerning this research or your participation in it, please feel free to contact me, my dissertation supervisor or our university research office at any time.

(The respondent will be given an information card, when applicable, containing name, institutional affiliation, and contact information.)

I would like to record our discussion, so that I can have an accurate record of the information that you provide to me.

I will keep the all of the information you share with me confidential and securely in my possession.

Do you have any questions about this research? Do you agree to participate? [Interview: May I record this conversation?]

If so, let's begin….

APPENDIX B

Headquarters' Staff Semi-Structured Interview Protocol

Interviewee Background

- How did you come to be in Berea?
    - A part of this program?
- What is your formal position at Grow Appalachia? How did it come to be?
    - How long have you been in this position?
    - What all does it entail?
    - What does your typical work week look like?
    - How often do you interact with partner sites?
        - In what capacity?
        - Through what mediums? (Site visits, phone calls?)

Program Background & Perspectives

- How did Grow Appalachia come to be?
- In what ways has it evolved since it started?
- How do you see GA's main purposes or goals?
- From your perspective, what is GA doing well? Example(s)?
- Where do you see additional opportunities to change or grow?
    - What are the barriers that keep you from getting there?
- Who does GA intend to reach? (Target population?)
    - How does this compare to who actually participates?
- From your perspective, how does the relationship with Berea College impact the work that you do at Grow Appalachia?
- What types of community/network partnerships have you seen as most beneficial for the work that GA does?

Appalachia & Place

- What does it mean to be working in Appalachia?
    - What does Appalachia mean to you?
    - How does the program address issues unique to Appalachia?
    - How do unique characteristics of Appalachia affect the program?
- How does working in rural places affect the program?
    - Particular opportunities? Needs?
    - Barriers?
- From your perspective, what does it mean to be coal-impacted? (What have you observed in the places where GA is?)
    - What opportunities does that create?
    - What challenges?
- Ag/food traditions? Heritage?

- Affect production practices? Preparation/Preservation practices? What they want to grow?

Program Operation

- From your perspective, what makes an ideal partner site?
  - What are some reasons a partner site would not get funded?
  - Asked to leave the program?
- What characteristics make some programs more successful than others?
  - More challenging?
- What is the relationship like between partner sites and GA?
  - What's an example of a really good relationship with a partner site?
  - What about one that's been more challenging?
- What kinds of resources are made available to the sites?
  - What resources do the sites need most?
- How do the sites/participants use what they grow?
  - Personal consumption? Shared with family/neighbors? Entrepreneurship?
- What types of things do you learn from the reporting process?
  - How has this feedback affected the way the program works?
- Has a partner site ever provided feedback that has changed the way you do something in the GA program?
- Relationship with John Paul??
- What resources do you access (and/or still need) to run GA effectively?

Program Outcomes/Impacts

- From your perspective, what are some examples of benefits that GA has provided to its partner sites?
  - Individual benefits?
  - Regional benefits?
  - Environmental? Social? Cultural? Built? (etc.)
- What has this program brought to region that wasn't here before?
  - Has the community (or individuals in the community) been able to achieve (or not achieve) things that were not previously possible?
  - Has it created or brought to light any new or unexpected challenges?
- Have there been any other (unintended) consequences from GA in the region/partner sites? Maybe where things haven't gone so well?
- What kind of feedback on the program have you gotten from other people in the region/community who don't participate directly in the garden program(s)?
  - People at Berea?
  - Other ag/food people?
  - (Potential) Funders?
  - People in the partner site communities?
- Complaints??

APPENDIX C

Partner Site Coordinator Semi-Structured Interview Protocol

Interviewee Background

- How did you come to be in [this community]? (How long?)
    - A part of [this organization]? (Formal position?)
    - A part of Grow Appalachia?
    - Occupation/Job history?
- What is your formal position at [your organization/in regard to GA]?
    - How long have you been in this position?
    - How did it come to be?
    - What are you responsibilities?
    - How often do you interact with other partner sites?
        - In what capacity?
- What all is included in your Grow Appalachia site?

Appalachia & Place

- What does it mean to be working in Appalachia? In [your community]?
    - What does Appalachia mean to you?
    - What characteristics of Appalachia affect the way the program works? (Opportunities? Needs? Challenges?)
- What does it mean to be working in a rural community?
    - Particular opportunities? Needs?
    - Barriers?
- What about being in a coal-impacted community?
    - Opportunities? Needs? Challenges?
    - How does this affect the work?
- History/cultural environment – Opportunities? Challenges?
- Physical environment (land, water, weather) – Opportunities? Challenges?

Program Perspectives

- Why did you join the Grow Appalachia program?
    - What are your main purposes or goals? Are you meeting them?
    - How have these changed over time?
- What is your relationship like with GA?
    - Are there things you particularly like?
    - Things you would like to change?
- What kind of resources have you used GA funds to purchase over time? How has this changed? (And why?)
- Most beneficial resource(s) provided by Grow Appalachia?

Program Operation

- How do you recruit gardeners?
    - Who do you intend to reach at your site? (Target population?)
    - Contact? Agreement? Expectations?
    - Turnover rates? How many keep gardening? (In touch after they leave the program?)
    - Why do some gardens fail or succeed?
- What do people want to grow? How do the sites/participants use what they grow?
    - Personal consumption? Shared with family/neighbors? Entrepreneurship?
- From your perspective, what is going well? Example(s)? (Strengths)
- What is going not so well (yet)? Example(s)? (Weaknesses)
    - What are the barriers that keep you from getting there?
- Do you see any additional opportunities to change or grow? (GA and/or your site?)

Program Outcomes/Impacts

- From your perspective, what are some examples of benefits that have come from this work? (Individual benefits? Regional benefits? Environmental? Social? Cultural? Built?)
- What has this program brought to this community that wasn't here before?
    - Has the community (or individuals in the community) been able to achieve (or not achieve) things that were not previously possible?
    - Has it created or brought to light any new or unexpected challenges?
- What has the program done for your organization or partners?
    - Your community? Your participants?
- Have there been any other (unintended) consequences from GA in the region/partner sites? Maybe where things haven't gone so well?
- What kind of feedback on the program have you gotten from other people in the region/community who don't participate directly in the garden program(s)?
    - Complaints??

In Closing

- Most challenging? Most rewarding?
- What does this work mean to you? Why do you do it?
- How have you grown as a person?
- Lessons learned? What has surprised you?
- What is the future of Grow Appalachia/your site?
- Story that demonstrates the impact of the program?

Ongoing Work

- What did I forget to ask about? Anything else I should know?
- Who else should I talk to? (Staff, volunteers, organization staff?)
- Events I should attend?

APPENDIX D

Partner Site Staff Semi-Structured Interview Protocol

Interviewee Background

- How did you come to be in [this community]? (How long?)
    - A part of [this organization]? (Formal position?)
    - A part of Grow Appalachia?
- Occupation/Job History?
- Food/gardening experience?
- What is your formal position at [your organization/in regard to GA]?
    - How long have you been in this position?
    - How did it come to be?
    - What are you responsibilities?

Appalachia & Place

- What does it mean to be working in Appalachia? In [your community]?
    - What are the issues/needs in your community?
    - What characteristics of Appalachia affect the way the program works? (Opportunities? Needs? Challenges?)
- What does it mean to be working in a rural community?
    - Particular opportunities? Needs?
    - Barriers? Challenges?
- What about being in a coal-impacted community?
    - Opportunities? Needs? Challenges?
    - How does this affect the work?
- History/cultural environment – Opportunities? Challenges?
- Physical environment (land, water, weather) – Opportunities? Challenges?

Program Perspectives

- Why is Grow Appalachia a good fit for your community?
- Why did you join the Grow Appalachia program?
- Do you see any additional opportunities to change or grow? (GA and/or your site?)

Program Operation

- Tell me about your participants…
    - How do you recruit your gardeners?
    - Contact? Agreement? Expectations?
    - Why do some gardens fail or succeed?
    - Who do you intend to reach at your site? (Target population?)

- What do people want to grow? How do the sites/participants use what they grow? (Personal consumption? Shared with family/neighbors? Entrepreneurship?)
- From your perspective, what is going well? Example(s)? (Strengths)
- What is going not so well (yet)? Example(s)? (Weaknesses)
    - What are the barriers that keep you from getting there?
- What has been most challenging? Most rewarding?
- Most beneficial resources provided by Grow Appalachia?

Program Outcomes/Impacts

- From your perspective, what are some examples of benefits that have come from this work? (Individual benefits? Regional benefits? Environmental? Social? Cultural? Built?)
- What has this program brought to this community that wasn't here before?
    - Has the community (or individuals in the community) been able to achieve (or not achieve) things that were not previously possible?
    - Has it created or brought to light any new or unexpected challenges?
- What has this program done for your organization?
- Have there been any other (unintended) consequences from GA in the region/partner sites? Maybe where things haven't gone so well? Conflict?
- What kind of feedback on the program have you gotten from other people in the region/community who don't participate directly in the garden program(s)?
    - Complaints??

In Closing

- What is the future of your Grow Appalachia site?
- What does this work mean to you? Why do you do it?
- How have you grown? (As a person, as a program?)
- What are your biggest lessons learned?
    - What has surprised you?
- Story that demonstrates the impact of the program?

Ongoing Work

- What did I forget to ask about? Anything else I should know?
- Who else should I talk to? (Staff, volunteers, organization staff?)

APPENDIX E

Gardener Participant Unstructured Interview Protocol

Interviewee Background

- How did you come to be in [this community]? (How long?)
- Occupation/Job History?

Program Perspectives

- Why is Grow Appalachia a good fit for your community?
- Why did you join the Grow Appalachia program?
- Do you see any additional opportunities to change or grow? (GA and/or your site?)

Program Participation & Gardening Practices

- How did you learn about Grow Appalachia?
- Tell me about/show me your garden.
    - What do you grow?
    - How do you use what you grow?
    - How did you learn how to garden?

Program Outcomes/Impacts

- What benefits have you experienced from participating in the Grow Appalachia program?
- What has gone well?
- What are the most beneficial resources provided by Grow Appalachia?
- What has this program brought to this community that wasn't here before?
- What hasn't gone well? What challenges have you experienced?
    - Water? Soil?
    - Resources?
- Any recommendations to improve the program?

In Closing

- Do you plan to participate in Grow Appalachia next year?
- What has Grow Appalachia meant to you? Your family?

Ongoing Work

- What did I forget to ask about? Anything else I should know?

APPENDIX F

Field Observation Checklist

Potential Events for Observation

- Organized Workdays/Maintenance Days
- Educational Workshops, including but not limited to:
    - Garden planning
    - Garden planting
    - Basic garden maintenance
    - Heart-healthy cooking
    - Food preservation
    - Cold weather gardening/off-season prep

Points of Observations

- Educational curriculum (content)
- Composition and number of participants
- Planting/gardening/harvesting/preservation practices of participants
- Garden layout
- Resources available at garden sites (eg. tool shed, tools, irrigation system) and their use/maintenance (or lack thereof)
- Labor tasks/practices for employees
- Additional garden assets (eg. chickens, bee hives)
- Nearby businesses/community assets (eg. where is the garden site located in regard to the community population and layout)
- Signage
- Market stands, entrepreneurial assets, etc.

Types of Interactions for Observation

- Educational curriculum (delivery, group instruction)
- Educational curriculum (one-on-one instruction)
- Interactions between gardeners
- Interactions between gardeners and employees/volunteers
- Interactions between gardeners and program coordinator(s)
- Potlucks/shared meals

APPENDIX G

Site Coordinator Survey Instrument

(See following PDF.)

Site Coordinator Introduction

Hello! Thank you for taking part in this survey about your experience with the Grow Appalachia program. Your responses will be helpful to both Grow Appalachia's continued efforts to serve you and your community, as well as my own dissertation research project about the impacts of community-based gardening programs in rural areas.

This survey should take about 20 minutes to complete and should be filled out individually by the members of your organization that have any connection to the Grow Appalachia program. Although we ask which GA site you represent and your position at the site, we promise that your responses will not be linked to your location or identity in the summaries provided to Grow Appalachia headquarters. This personal information serves two purposes: one, it allows us to know who has (or has not) responded to the survey and, two, it allows us to compare your responses across sites in our summaries. This means anything that you contribute will be kept completely confidential. In addition, your participation is entirely voluntary, and your responses will be stored in a password-protected database that only I can access.

Your responses will be used to supplement future funding proposals and improve the overall program experience so that Grow Appalachia may continue to serve you and future participants. If you have any questions before or after the survey, you may contact me, Elly Engle, at ewe5019@psu.edu.

Thanks again!

Elyzabeth (Elly) Engle
PhD Candidate, Rural Sociology
Penn State University
Department of Agricultural Economics, Sociology, and Education
111 Armsby Building
University Park, PA 16803
814.404.8947
ewe5019@psu.edu

Which Grow Appalachia Site do you represent?

Which best describes your current role in Grow Appalachia?

- ○ Site Coordinator
- ○ Former Site Coordinator
- ○ Field Coordinator
- ○ Other position (please specify):

Site Background Information

Please tell us more about you and your site's involvement with the Grow Appalachia program.

What year did you personally become involved with Grow Appalachia at your site?

Since the beginning of your GA site, approximately how many families have participated in your program?

0 Families

Since the beginning of your GA site, how many people have you employed (full or part-time) to support the GA program, including yourself?

0 People

How did you first learn about Grow Appalachia (GA)?
(Please select all that apply.)

- [ ] Friend / neighbor / family member
- [ ] Former or current GA site coordinator / staff
- [ ] GA Headquarters Staff
- [ ] Church or community meeting
- [ ] Media (radio, TV, newspaper)
- [ ] Website or online listserv
- [ ] Social media (Facebook, Twitter)
- [ ] Other (please specify):

Why did you and/or your organization initially join the Grow Appalachia program?

How would you describe the level of your knowledge / skills in the following areas both BEFORE and AFTER joining the Grow Appalachia program?

	BEFORE JOINING GA						
	Not knowledgeable at all	Somewhat knowledgeable	Moderately knowledgeable	Very knowledgeable	Extremely knowledgeable	Not knowledgeable at all	Somev knowledg
Gardening	○	○	○	○	○	○	○
Home Cooking	○	○	○	○	○	○	○
Food Preservation (e.g. canning, drying, freezing)	○	○	○	○	○	○	○

In general, how important have the following resources been for you to learn more about gardening, cooking, and/or food preservation?

	Not important at all	Somewhat important	Moderately important	Very important	Extremely important
Grow Appalachia workshops	○	○	○	○	○
Grow Appalachia website and handouts	○	○	○	○	○
Internet (Google, blogs)	○	○	○	○	○
Books	○	○	○	○	○
Extension office / resources	○	○	○	○	○
Master Gardeners' program	○	○	○	○	○
Family / Friends / Neighbors	○	○	○	○	○
Other (please specify):	○	○	○	○	○

GA Site Operation

Please tell us more about the operation of your Grow Appalachia site.

During a typical growing season, how do you recruit new growers to your GA program? (Please select all that apply.)

- ☐ Personal family, friends, or neighbors
- ☐ Local media advertisements (TV, radio, newspaper, etc.)
- ☐ Website or email listservs
- ☐ Social media (e.g. Facebook, Twitter)
- ☐ Community or church meetings
- ☐ Local extension office
- ☐ Other (please specify):
- ☐ Other (please specify):

During a typical growing season, about how often do you use each of these methods of communication to reach your growers?

	Never	Once a Month	A Few Times a Month	Once a Week	Daily
Email	○	○	○	○	○
Phone (Call/Text)	○	○	○	○	○
Postal Mail	○	○	○	○	○
Facebook / Social Media	○	○	○	○	○
Other (please specify):	○	○	○	○	○

In your best estimate, approximately how many of your growers use these GA-supported resources at your site in a typical growing season?
(If you do not provide any of these resources at your site, please indicate so by checking 'N/A.')

	None of our Growers	A few of our Growers	About half of our Growers	Most of our Growers	All of our Growers	N/A - We do not provide this resource.
Plants and/or seeds	○	○	○	○	○	○
Garden tools	○	○	○	○	○	○
Organic fertilizer	○	○	○	○	○	○
Organic pesticides/herbicides	○	○	○	○	○	○
Canning equipment/supplies	○	○	○	○	○	○
Garden bed materials (e.g. trellising, raised bed frames, black plastic)	○	○	○	○	○	○
Irrigation materials (e.g. rain barrel, dripline)	○	○	○	○	○	○
Season extension materials	○	○	○	○	○	○
Tilling and/or plowing	○	○	○	○	○	○
Garden labor (e.g. help with weeding or harvesting)	○	○	○	○	○	○
Chickens and/or chicken tractors	○	○	○	○	○	○
Bee keeping supplies	○	○	○	○	○	○
Farmers' market	○	○	○	○	○	○

Community kitchen	○	○	○	○	○	○
Other (please specify):	○	○	○	○	○	○
Other (please specify):	○	○	○	○	○	○

Listed below are the workshops required by Grow Appalachia. In a typical growing season, which of these were the most helpful to your growers? Please rank them in order of helpfulness by dragging them into place, with the first being most helpful, and the last being the least helpful.

- Garden Planning
- Garden Planting
- Basic Garden Maintenance
- Heart Healthy Cooking
- Food Preservation
- Cold Weather Gardening / Off-Season Preparations

In additional to the six required workshops, have you hosted any additional workshops on non-required topics since the establishment of your site? If so, please share the topics covered.

- ○ Yes (please describe):
- ○ No
- ○ Not sure

In a typical growing season, about how many of your Grow Appalachia workshops do each of th stakeholders lead for your site?

	Some of	About half	M

	Never	the workshops	of the workshops	wor
Site Coordinator	○	○	○	
Site Staff	○	○	○	
Grow Appalachia Headquarters Staff	○	○	○	
Extension Agent or Master Gardener	○	○	○	
Current or Former Growers	○	○	○	
Other (please specify):	○	○	○	

About how much of the site-generated revenue raised by your program in the past year (2016) has come from the following sources?

	None at all	A little	A moderate amount	A lot	All of it
Plant or seed sales	○	○	○	○	○
Value-added food products (e.g. honey, eggs, pickles, jam, hot sauce)	○	○	○	○	○
Body care/beauty products	○	○	○	○	○
Printed materials (e.g. calendars, books)	○	○	○	○	○
Wholesale produce (e.g. selling to restaurants, schools)	○	○	○	○	○
Community fundraisers (e.g. community dinners, donation drives)	○	○	○	○	○
Community-supported agriculture program	○	○	○	○	○
Other (please specify):	○	○	○	○	○

Since the beginning of your Grow Appalachia site, what external grants have you applied to in order to support your program (in addition to GA funds)?
(Please list all that apply.)

Of the grants listed above, which have you been successful in obtaining and for how much money?
(Please indicate the name of the grant, followed by the amount awarded.)

GA Personal Impacts

Please tell us more about how the Grow Appalachia program has impacted you, professionally and personally.

To what extent has working with the Grow Appalachia program improved the following professional skills:

	Not at all	A little	A moderate amount	A lot	A great deal
Computer / Computer program skills	○	○	○	○	○
Budget / Financial management	○	○	○	○	○
Fund-raising	○	○	○	○	○
Grant writing	○	○	○	○	○
Event planning	○	○	○	○	○
Communications	○	○	○	○	○
Time management	○	○	○	○	○
Marketing	○	○	○	○	○
Delegation / Staff Management	○	○	○	○	○
Leadership skills	○	○	○	○	○

To what extent has working with the Grow Appalachia program improved your knowledge and skills in the following areas:

	Not at all	A little	A moderate amount	A lot	A great deal
Organic gardening methods	○	○	○	○	○
Fruit and vegetable varieties	○	○	○	○	○
Heart healthy cooking	○	○	○	○	○
Food preservation	○	○	○	○	○
Garden season extension	○	○	○	○	○
Local food systems	○	○	○	○	○
State and local food policies (e.g. cottage laws)	○	○	○	○	○

To what extent has working with Grow Appalachia impacted you and your household's health and financial situation in the following ways:

	Not at all	A little	A moderate amount	A lot	A great deal
Strengthened my connection to the outdoors	○	○	○	○	○
Increased the amount of fresh food eaten by my household	○	○	○	○	○
Made me and my household healthier	○	○	○	○	○
Encouraged me and my household to be more physically active	○	○	○	○	○

To what extent has working with Grow Appalachia impacted you and your household's financial situation in the following ways:

	Not at all	A little	A moderate amount	A lot	A great deal
Reduced my household's grocery costs	○	○	○	○	○
Made gardening a more affordable activity for my household	○	○	○	○	○
Improved my					

household's financial security	○	○	○	○	○

To what extent has working with Grow Appalachia impacted you in the following social and personal ways:

	Not at all	A little	A moderate amount	A lot	A great deal
Made me more active in my community	○	○	○	○	○
Increased my connection to my community	○	○	○	○	○
Introduced me to new people	○	○	○	○	○
Increased how often I interact with people of different backgrounds than myself	○	○	○	○	○
Helped to continue family food traditions	○	○	○	○	○
Helped to create new family food traditions	○	○	○	○	○
Improved my self-esteem	○	○	○	○	○

GA Organizational Impacts & Challenges

Please tell us more about how partnering with Grow Appalachia has impacted your organization and the barriers you may have encountered while working on your site's program.

Since the beginning of your partnership with Grow Appalachia, to what extent has your organization been impacted in the following ways:

	Not at all	A little	A moderate amount	A lot	A great deal
Strengthened connections within the community	○	○	○	○	○
Built connections outside of the	○	○	○	○	○

community					
Increased its financial sustainability	○	○	○	○	○
Improved external grant opportunities	○	○	○	○	○
Increased its ability to meet organizational goals	○	○	○	○	○
Improved its environmental practices	○	○	○	○	○
Strengthened its overall organizational mission	○	○	○	○	○

Since the beginning of your Grow Appalachia program, to what extent has your GA program experienced the following organizational barriers:

	Not at all	A little	A moderate amount	A lot	A great deal
Limited financial resources	○	○	○	○	○
Lack of organizational support	○	○	○	○	○
GA staff turnover	○	○	○	○	○
Lack of reliable volunteers	○	○	○	○	○
Limited time for GA work	○	○	○	○	○
Submitting GA blog posts in a timely manner	○	○	○	○	○
Loss of growers throughout season	○	○	○	○	○
Poor workshop attendance	○	○	○	○	○
Failed site generated revenue ventures	○	○	○	○	○
Limited gardening, cooking, and/or food preservation experience within organization	○	○	○	○	○
Limited food entrepreneurship or policy experience within organization	○	○	○	○	○
Few or negative community partnerships or relationships	○	○	○	○	○
Unclear communication from GA HQ	○	○	○	○	○

GA Community Impacts & Challenges

Please tell us more about how partnering with Grow Appalachia has impacted your overall community, as well as the barriers you and your growers may have encountered to participation or success.

To what extent have your growers and community overall benefited from the Grow Appalachia program in the following ways:

	Not at all	A little	A moderate amount	A lot	A great deal
Revitalized local food traditions	○	○	○	○	○
Improved overall health	○	○	○	○	○
Improved overall access to fresh foods	○	○	○	○	○
Introduced new economic opportunities (e.g. jobs, farmers' markets)	○	○	○	○	○
Built new and strengthen old social relationships	○	○	○	○	○
Improved soil and water quality	○	○	○	○	○
Increased the use organic gardening methods	○	○	○	○	○
Increased the prevalence of heirloom plant varieties	○	○	○	○	○

To what extent do your program and/or growers experience the following community barriers to participation or success:

	Not at all	A little	A moderate amount	A lot	A great deal
Limited local access to gardening, cooking, or food preservation materials	○	○	○	○	○
Limited access to a greenhouse	○	○	○	○	○

Poor seed and/or plant quality available locally	○	○	○	○	○
Limited access to a certified community kitchen	○	○	○	○	○
Limited access to markets to sell produce or value-added products	○	○	○	○	○
Lack of university extension services	○	○	○	○	○
Theft and/or vandalism in home or community garden plots	○	○	○	○	○

To what extent do your growers experience the following individual barriers to participation or success:

	Not at all	A little	A moderate amount	A lot	A great deal
Limited financial resources	○	○	○	○	○
Lack of land ownership	○	○	○	○	○
Lack of transportation to workshops / events	○	○	○	○	○
Lack of access to childcare during workshops / events	○	○	○	○	○
Limited internet or phone access	○	○	○	○	○
Limited time due to job(s)	○	○	○	○	○
Personal or family health issues	○	○	○	○	○
Limited physical mobility (e.g. disabled, elderly)	○	○	○	○	○
Food waste / Too much food produced at one time	○	○	○	○	○
Poor relationships with other community members	○	○	○	○	○
Limited gardening knowledge / skills	○	○	○	○	○
Limited cooking knowledge / skills	○	○	○	○	○
Limited food preservation	○	○	○	○	○

knowledge / skills

To what extent do your growers experience the following physical barriers to participation or success:

	Not at all	A little	A moderate amount	A lot	A great deal
Animal or insect pests	○	○	○	○	○
Plant disease	○	○	○	○	○
Abundance of weeds / grass in growing areas	○	○	○	○	○
Floods and/or mudslides	○	○	○	○	○
Drought	○	○	○	○	○
Extreme temperatures	○	○	○	○	○
Variable weather patterns	○	○	○	○	○
Poor soil quality	○	○	○	○	○
Rocky soils	○	○	○	○	○
Limited flat land / Steep slopes	○	○	○	○	○
Lack of access to clean water	○	○	○	○	○
Pollution from nearby industry (e.g. mining, logging, manufacturing, energy plant)	○	○	○	○	○

Overall Satisfaction with GA Program

Please indicate your overall satisfaction with the Grow Appalachia program.

Given your experience with the GA program, how likely are you to...

	Extremely unlikely	Somewhat unlikely	Neither likely nor unlikely	Somewhat likely	Extremely likely
Submit a proposal next year?	○	○	○	○	○
Recommend this program					

to another organization?	○	○	○	○	○
Continue your organization's gardening program, with or without GA support?	○	○	○	○	○

How satisfied are you with your Grow Appalachia experience?

Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
○	○	○	○	○

Open-Ended Questions

Please share your feedback about the Grow Appalachia program.

In your opinion, what do you like most about being a part of Grow Appalachia?

In your opinion, what changes could Grow Appalachia make to better serve you, your organization, and/or your community?

Personal Characteristics

To conclude, please share some information about you and your household. Your responses will be kept completely confidential.

In which county do you currently live?
(Please provide county and state. Example: Madison County, Kentucky.)

What was your age on your last birthday?

0 Years

How long have you lived (or worked) in the county that hosts your Grow Appalachia site?

0 Years

Are you:

- Female
- Male
- Other

Which best describes you?

- White / Caucasian
- Hispanic or Latino
- Black or African American
- Asian or Pacific Islander

- ○ Other (please specify):

What is the highest level of formal education you have completed?

- ○ Some high school or less
- ○ High school graduate
- ○ Vocational school / Technical school / Some college
- ○ Four-year college degree
- ○ Post-graduate degree (e.g. MS, MBA, Ph.D., MD)

Which best describes your current employment status?

- ○ Employed, Full time (35+ hours per week) - One job
- ○ Employed, Full time (35+ hours per week) - Two or more jobs
- ○ Employed, Part time (Less than 35 hours per week)
- ○ Unemployed, Currently looking for work
- ○ Unemployed, Currently NOT looking for work
- ○ Student
- ○ Military
- ○ Retired
- ○ Disabled, Not able to work
- ○ Other (please explain):

Have you or anyone in your household ever been employed in a natural resource-related industry (e.g. coal or gas mining, forestry, fisheries, or agriculture)?

- ○ Yes (please specify which industry or industries):

- ○ No

Do you or anyone else in your household identify as a military veteran or service member?

- ○ Yes
- ○ No

Which best describes your current marital status?

- ○ Single, never married
- ○ Married or domestic partnership
- ○ Widowed
- ○ Divorced
- ○ Separated

How many people of each age group are currently in your household?

- 0 Under 12 years old
- 0 12-17 years old
- 0 18-24 years old
- 0 25-54 years old
- 0 55-74 years old
- 0 75 years old or older

How you or any member of your household been diagnosed with any of the following medical issues?
(Please select all that apply.)

- ☐ Hypertension (High blood pressure)

- [ ] Diabetes
- [ ] Obesity
- [ ] Cardiovascular disease
- [ ] Cancer
- [ ] Other (please specify):

What was your annual household income from all sources before taxes last year (2015)?

- ○ $9,999 or less
- ○ $10,000-19,999
- ○ $20,000-29,000
- ○ $30,000-49,000
- ○ $50,000-79,000
- ○ $80,000-99,999
- ○ $100,000 or above

Do you currently receive any federal or state-based assistance (e.g. Disability, SNAP, WIC)?

- ○ Yes (please specify which program(s)):
- ○ No

Final Question

Is there anything else you would like to add?

Thank You

Thank you for your time and feedback! We look forward to reviewing your responses.

If you have any further questions, you can reach me at:

Elyzabeth (Elly) Engle
PhD Candidate, Rural Sociology
Penn State University
Department of Agricultural Economics, Sociology, and Education
111 Armsby Building
University Park, PA 16803
814.404.8947
ewe5019@psu.edu

APPENDIX H

Gardener Participant Survey Instrument

(See following PDF.)

GROW APPALACHIA

PennState College of Agricultural Sciences

Hello, Grow Appalachia gardener!

First, we would like to thank you for your dedication to your gardens this year. We know it was a long and challenging season, so thank you for your hard work to produce food for your family. You, your neighbors and other Grow Appalachia families across the region have collectively grown more than 480,000 pounds of healthy produce this year!

We are in the heart of evaluation time at Grow Appalachia Headquarters in Berea, KY. This is the time of year when we look back at our work throughout the growing seasons and try to find ways to improve and strengthen our program. Your input and feedback are what allow us to better serve families just like you.

We would appreciate hearing back from you by **Monday, January 9th**. This survey will take about 20-30 minutes to complete and should be filled out by the person in your household who's most involved with the Grow Appalachia program. When you have filled out the full form, please send it back to Grow Appalachia Headquarters using the attached, pre-stamped return envelope. Your responses to this survey will be kept confidential, so the personal information you provide will be stored in a password-protected database and only viewed as part of full summaries. If you have any questions or concerns about the survey, you may contact us at the information listed below.

This feedback is important for Grow Appalachia's evaluation efforts as well as an ongoing dissertation research project for Elly Engle, a PhD student who is visiting us from Penn State University. We all thank you again for taking the time to complete this survey and for all that you do for your community and for your family!

Grow Appalachia Headquarters

Berea College
CPO 2122, 101 Chestnut St.
Berea, KY 40404
(859) 985-3687
info@growappalachia.org

Elyzabeth (Elly) Engle

Penn State University
111 Armsby Building
University Park, PA 16802
(814) 404-8947
ewe501[illegible]212 u.edu

"Why try to explain miracles to your kids when you can just have them plant a garden?"

-Robert Brault

Please tell us more about how you became involved with the Grow Appalachia (GA) program. (Select only one answer per question unless directed otherwise.)

1. Which GA partner organization do you (or did you) belong to?

2. What year did you first become involved with Grow Appalachia?

3. Which best describes your current role in Grow Appalachia?

- ☐ First-year participant
- ☐ Second-year participant
- ☐ Participant for three or more years
- ☐ Former participant still involved with the program
- ☐ Former participant NOT currently involved with the program

4. If you indicated you are not currently involved with GA, why not?

5. Thinking back, how did you first learn about the GA program? (Check all that apply.)

- ☐ Friend / neighbor / family member
- ☐ Former or current GA site coordinator
- ☐ GA Headquarters staff
- ☐ Church or community meeting
- ☐ Local media (radio, TV, newspaper)
- ☐ Website or email listserv
- ☐ Social media (Facebook, Twitter)
- ☐ Other (please specify): _____

6. Thinking back, how important were the following reasons for why you joined GA?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Learning more about gardening	☐	☐	☐	☐	☐
Learning more about cooking	☐	☐	☐	☐	☐
Learning more about food preservation	☐	☐	☐	☐	☐
Increasing the amount of fresh food available to my family	☐	☐	☐	☐	☐
Producing and eating more organic food	☐	☐	☐	☐	☐
Increasing our access to gardening resources	☐	☐	☐	☐	☐
Selling what I produce for extra income	☐	☐	☐	☐	☐
Meeting new people	☐	☐	☐	☐	☐
Interacting with people I already knew	☐	☐	☐	☐	☐
Addressing my or my family's health concerns	☐	☐	☐	☐	☐
Other (please specify):	☐	☐	☐	☐	☐

7. Thinking back, how would you describe your knowledge / skills in the following areas *BEFORE* joining the GA program?

	Not knowledgeable at all	Somewhat knowledgeable	Moderately knowledgeable	Very knowledgeable	Extremely knowledgeable
Gardening	☐	☐	☐	☐	☐
Home Cooking	☐	☐	☐	☐	☐
Food Preservation (e.g. canning, drying, freezing)	☐	☐	☐	☐	☐

8. How would you describe your knowledge / skills in the following areas *AFTER* joining the GA program?

	Not knowledgeable at all	Somewhat knowledgeable	Moderately knowledgeable	Very knowledgeable	Extremely knowledgeable
Gardening	☐	☐	☐	☐	☐
Home Cooking	☐	☐	☐	☐	☐
Food Preservation (e.g. canning, drying, freezing)	☐	☐	☐	☐	☐

9. Thinking back, which of these statements best described your household *BEFORE* joining the GA program?

- ☐ We always had enough food to eat and the kinds of foods we wanted.
- ☐ We always had enough food to eat but not always the kinds of foods we wanted.
- ☐ Sometimes we didn't have enough food to eat.
- ☐ Often we didn't have enough food to eat.

10. Which of these statements best describes your household *AFTER* joining the GA program?

- ☐ We always have enough food to eat and the kinds of foods we want.
- ☐ We always have enough food to eat but not always the kinds of foods we want.
- ☐ Sometimes we don't have enough food to eat.
- ☐ Often we don't have enough food to eat.

Please tell us more about your experience with the Grow Appalachia program.
(If you did not grow a garden in 2016, please answer the questions in this section thinking back to your most recent gardening experience with Grow Appalachia.)

11. Which best describes the type of grower you were this past season (2016)?

- ☐ Home Grower: Your garden was located at home and you grew primarily for family eating.
- ☐ Community Garden Grower: Your garden was located somewhere other than home and you grew primarily for family eating.
- ☐ Market Grower: Your garden was located at home or elsewhere and you grew food primarily to sell.
- ☐ I did not grow a garden in 2016. (Please explain why): _____

_____

_____

12. If you were a Community Garden Grower, why did you use a community garden plot instead of one at your home?

13. Approximately how large was your growing space? _____ **square feet**

14. In the past year (2016), what did you grow and/or raise? (Check all that apply.)

- ☐ Vegetables
- ☐ Fruits and/or berries
- ☐ Herbs
- ☐ Flowers
- ☐ Chickens for eggs
- ☐ Chickens or other animals for meat
- ☐ Bees for honey
- ☐ Other (please specify): _____

15. During which seasons did you garden this past year (2016)? (Check all that apply.)

- ☐ Spring
- ☐ Summer
- ☐ Fall
- ☐ Winter

16. What water sources do you generally use to care for your gardens? (Check all that apply.)

- ☐ County or city water
- ☐ Personal well
- ☐ Creek or pond
- ☐ Natural rain / Rain barrel

17. In general, how important have the following resources been for you to learn more about gardening, cooking, and/or food preservation?

	Not important at all	Somewhat important	Moderately important	Very important	Extremely important
Grow Appalachia workshops	☐	☐	☐	☐	☐
Grow Appalachia websites and/or handouts	☐	☐	☐	☐	☐
Internet (Google, blogs)	☐	☐	☐	☐	☐
Books / Magazines	☐	☐	☐	☐	☐
Extension office / resources	☐	☐	☐	☐	☐
Master Gardeners' program	☐	☐	☐	☐	☐
Family / Friends / Neighbors	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐

18. Listed below are the workshops required by Grow Appalachia. Which of these were the most helpful to you? Please rank them in order of helpfulness, with one being most helpful and six being the least helpful.

_____ Garden Planning

_____ Gardening Planting

_____ Basic Garden Maintenance

_____ Heart Healthy Cooking

_____ Food Preservation

_____ Cold Weather Gardening / Off-Season Preparations

19. Listed below are several resources Grow Appalachia sites may have for their growers. For each, please indicate if your site had it and how important these resources have been to you and your household. (If it is not available at your site, check 'N/A.')

	Not important at all	Somewhat important	Moderately important	Very important	Extremely important
Plants and/or seeds	☐	☐	☐	☐	☐
Garden tools	☐	☐	☐	☐	☐
Organic fertilizer	☐	☐	☐	☐	☐
Organic pesticides / herbicides	☐	☐	☐	☐	☐
Canning equipment / supplies	☐	☐	☐	☐	☐
Garden bed materials (e.g. trellising, raised bed frames, black plastic)	☐	☐	☐	☐	☐
Irrigation materials (e.g. rain barrel, dripline)	☐	☐	☐	☐	☐
Season extension materials	☐	☐	☐	☐	☐
Tilling and/or plowing	☐	☐	☐	☐	☐
Garden labor (e.g. help with weeding or harvesting)	☐	☐	☐	☐	☐
Chickens and/or chicken tractors	☐	☐	☐	☐	☐
Bee keeping supplies	☐	☐	☐	☐	☐
Farmers' market	☐	☐	☐	☐	☐
Community kitchen	☐	☐	☐	☐	☐
Other (please specify):	☐	☐	☐	☐	☐

20. Out of all the food you grew during the 2016 season, what percent of the produce went to each of the following uses? (Please indicate an estimated percentage for each category, from 0 to 100. All together, they should all add up to 100 percent.)

_____ Eating fresh at home

_____ Preservation for eating later (eg. dried, canned, frozen)

_____ Sell at market or to others

_____ Share with family and friends

_____ Donate to a local church or organization

_____ Compost or waste

_____ Other (please specify): _____

21. Have you sold any of your garden products in the past year (2016)?

- ☐ Yes (Please answer Questions #20-#26)
- ☐ No, and I don't plan to in the future (Please skip to Question #27)
- ☐ No, but I would like to in the future (Please skip to Question #27)

If you answered 'yes' to Question #21, answer Questions #22-#28 to tell us more about your experience selling your products. (If you answered 'no' to Question #21, skip to Question #29.)

22. How many years have you been selling garden products to others? ☐ **years**

23. Thinking back, to what extent did each of these reasons motivate you to start selling your garden products?

	Not at all	A little	A moderate amount	A lot	A great deal
Increase my household income	☐	☐	☐	☐	☐
Meet new people	☐	☐	☐	☐	☐
Get rid of extra food from my garden	☐	☐	☐	☐	☐
Support local market programs	☐	☐	☐	☐	☐
Increase the amount of healthy food available in my community	☐	☐	☐	☐	☐
Other (please specify):	☐	☐	☐	☐	☐

24. During this past year (2016), what garden products did you sell? (Check all that apply.)

- ☐ Fresh vegetables
- ☐ Fresh fruits and/or berries
- ☐ Fresh or dried herbs
- ☐ Flowers
- ☐ Value-added products (e.g. canned goods, dried goods, baked goods, skin care products)
- ☐ Eggs
- ☐ Meat
- ☐ Honey
- ☐ Other (please specify): _____

25. Approximately how much of your 2016 sales happened through the following outlets?

	None	Some of my sales	About half of my sales	Most of my sales	All of my sales
Farmers' market	☐	☐	☐	☐	☐
Roadside stand	☐	☐	☐	☐	☐
Farm store	☐	☐	☐	☐	☐
Box subscription or 'CSA' program	☐	☐	☐	☐	☐
Wholesale (e.g. store, restaurant, school)	☐	☐	☐	☐	☐
Online (e.g. Facebook, email)	☐	☐	☐	☐	☐
Other (please specify):	☐	☐	☐	☐	☐

26. Approximately how much of your 2016 sales were resale products (products grown or made by someone other than you or your household)?

None	Some of my sales	About half of my sales	Most of my sales	All of my sales
☐	☐	☐	☐	☐

27. Approximately how much money did you make in 2016 by selling your garden products?

- ☐ Less than $100
- ☐ $101 - $500
- ☐ $501 - $1,000
- ☐ $1,001 - $2,500
- ☐ $2,501 - $5,000
- ☐ $5,001 - $10,000
- ☐ $10,001 - $20,000
- ☐ More than $20,000

28. Have you ever received any grants or participated in any programs beyond Grow Appalachia that support your production? (e.g. Kentucky State University's Small Farm Grants, GAP certification, or the Appalachian Proud program.)

- ☐ Yes (please describe all):
- ☐ No

219

Please tell us more about how the Grow Appalachia program has impacted you and your household.

29. To what extent has participating in the GA program improved your knowledge / skills in the following areas?

	Not at all	A little	A moderate amount	A lot	A great deal
Organic gardening methods	☐	☐	☐	☐	☐
Fruit and vegetable varieties	☐	☐	☐	☐	☐
Heart healthy cooking methods	☐	☐	☐	☐	☐
Food preservation methods	☐	☐	☐	☐	☐
Garden season extension	☐	☐	☐	☐	☐
Local food systems	☐	☐	☐	☐	☐
State and local food and farming policies (e.g. GAP certification, cottage laws)	☐	☐	☐	☐	☐

30. To what extent has participating in GA impacted you and your household's health in the following ways?

	Not at all	A little	A moderate amount	A lot	A great deal
Strengthened our connection to nature	☐	☐	☐	☐	☐
Increased the amount of fresh food available to my household	☐	☐	☐	☐	☐
Made us feel healthier	☐	☐	☐	☐	☐
Encouraged us to be more physically active	☐	☐	☐	☐	☐

31. To what extent has participating in GA impacted your household's finances in the following ways?

	Not at all	A little	A moderate amount	A lot	A great deal
Reduced our grocery costs	☐	☐	☐	☐	☐
Made gardening more affordable	☐	☐	☐	☐	☐
Made us more financially secure	☐	☐	☐	☐	☐

32. To what extent has participating in GA impacted you in the following personal ways?

	Not at all	A little	A moderate amount	A lot	A great deal
Made me more active in my community	☐	☐	☐	☐	☐
Increased my connection to my community	☐	☐	☐	☐	☐
Introduced me to new people	☐	☐	☐	☐	☐
Increased how often I interact with people of different backgrounds than myself	☐	☐	☐	☐	☐
Helped to continue family food traditions	☐	☐	☐	☐	☐
Helped to create new family food traditions	☐	☐	☐	☐	☐
Improved my self-esteem	☐	☐	☐	☐	☐
Improved my professional skills (e.g. marketing, computer skills)	☐	☐	☐	☐	☐

Please tell us more about how you think Grow Appalachia has impacted your overall community.

33. To what extent has your community benefited from GA in the following ways?

	Not at all	A little	A moderate amount	A lot	A great deal
Revitalized local food traditions	☐	☐	☐	☐	☐
Improved overall health	☐	☐	☐	☐	☐
Improved access to fresh foods	☐	☐	☐	☐	☐
Introduced new economic opportunities (e.g. jobs, farmers' markets)	☐	☐	☐	☐	☐
Built and strengthened social relationships	☐	☐	☐	☐	☐
Improved soil and water quality	☐	☐	☐	☐	☐
Increased the use of organic gardening methods	☐	☐	☐	☐	☐
Increased the prevalence of heirloom plant varieties	☐	☐	☐	☐	☐

Please tell us more about the barriers you may have experienced while participating in the Grow Appalachia program.

34. To what extent have the following community-level barriers limited your participation or success in the GA program?

	Not at all	A little	A moderate amount	A lot	A great deal
Limited local access to gardening, cooking, or food preservation materials	☐	☐	☐	☐	☐
Limited access to a greenhouse	☐	☐	☐	☐	☐
Poor seed and/or plant quality	☐	☐	☐	☐	☐
Limited access to a certified community kitchen	☐	☐	☐	☐	☐
Limited access to markets for selling garden products	☐	☐	☐	☐	☐
Lack of university extension services	☐	☐	☐	☐	☐
Theft and/or vandalism in home or community garden plots	☐	☐	☐	☐	☐

35. To what extent have the following individual barriers limited your participation or success in the GA program?

	Not at all	A little	A moderate amount	A lot	A great deal
Financial costs	☐	☐	☐	☐	☐
Lack of land ownership	☐	☐	☐	☐	☐
Lack of transportation to workshops	☐	☐	☐	☐	☐
Lack of childcare during workshops	☐	☐	☐	☐	☐
Limited internet or phone access	☐	☐	☐	☐	☐
Limited time due to job(s)	☐	☐	☐	☐	☐
Personal or family health issues	☐	☐	☐	☐	☐
Limited physical mobility (e.g. disabled, elderly)	☐	☐	☐	☐	☐
Food waste / Too much food at once	☐	☐	☐	☐	☐
Disagreements with other community members	☐	☐	☐	☐	☐
Limited gardening knowledge / skills	☐	☐	☐	☐	☐
Limited cooking knowledge / skills	☐	☐	☐	☐	☐
Limited food preservation knowledge / skills	☐	☐	☐	☐	☐

36. To what extent have the following physical and natural barriers limited your participation or success in the GA program?

	Not at all	A little	A moderate amount	A lot	A great deal
Animal or insect pests	☐	☐	☐	☐	☐
Plant disease	☐	☐	☐	☐	☐
Abundance of weeds or grass	☐	☐	☐	☐	☐
Floods and/or mudslides	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐
Extreme temperatures	☐	☐	☐	☐	☐
Variable weather patterns	☐	☐	☐	☐	☐
Poor soil quality / Rocky soil	☐	☐	☐	☐	☐
Limited flat land / Steep slopes	☐	☐	☐	☐	☐
Lack of clean water	☐	☐	☐	☐	☐
Pollution from nearby industry (e.g. mining, logging, manufacturing, energy plant)	☐	☐	☐	☐	☐

Please indicate your overall satisfaction with the Grow Appalachia program.

37. Given your experience with the GA program, how likely are you to...

	Extremely unlikely	Somewhat unlikely	Neither likely or unlikely	Somewhat likely	Extremely likely
Participate in Grow Appalachia again next year?	☐	☐	☐	☐	☐
Recommend this program to another person?	☐	☐	☐	☐	☐
Continue gardening next year, whether or not you're involved with Grow Appalachia?	☐	☐	☐	☐	☐
Continue cooking and preserving food at home, whether or not you're involved with Grow Appalachia?	☐	☐	☐	☐	☐

38. How satisfied are you with your Grow Appalachia experience?

Extremely dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Somewhat satisfied	Extremely satisfied
☐	☐	☐	☐	☐

Please share your feedback about the Grow Appalachia program.

39. In your opinion, what do you like most about the Grow Appalachia program?

40. In your opinion, what changes could Grow Appalachia make to better serve you and your community?

To conclude, please share some information about you and your household. Your responses will be kept completely confidential.

41. In which county do you currently live? (Example: Madison County, Kentucky)

42. How many years have you lived in this county? ☐ years

43. What was your age on your last birthday? ☐ years

44. Are you:

- ☐ Male
- ☐ Female

45. Which best describes you?

- ☐ White/Caucasian
- ☐ Hispanic or Latino
- ☐ Black or African American
- ☐ Asian or Pacific Islander
- ☐ Other (please specify): _____

46. What is the highest level of formal education you have completed?

- ☐ Some high school or less
- ☐ High school graduate
- ☐ Vocational school/technical school/some college
- ☐ Four-year college degree
- ☐ Post-graduate degree (MS, MBA, Ph.D., MD)

47. Which best describes your current employment status?

- ☐ Employed, Full time (35+ hours per week) -- One job
- ☐ Employed, Full time (35+ hours per week) -- Two or more jobs
- ☐ Employed, Part time (Less than 35 hours per week)
- ☐ Unemployed, Currently looking for work
- ☐ Unemployed, Currently NOT looking for work
- ☐ Student
- ☐ Retired
- ☐ Disabled, Not able to work
- ☐ Other (please explain): _____

48. How do you describe your current marital status?

- ☐ Single, never married
- ☐ Married or domestic partnership
- ☐ Widowed
- ☐ Divorced
- ☐ Separated

49. Including you, how many people of each age group are currently in your household?

_____ Under 12 years old

_____ 12-17 years old

_____ 18-24 years old

_____ 25-54 years old

_____ 55-74 years old

_____ 75+ years old

50. Has anyone in your household ever been employed in a natural resource-related industry (eg. coal or gas mining, forestry, fisheries, or agriculture)?

- ☐ Yes (please specify which industry):
- ☐ No

51. Does anyone in your household identify as a military veteran or service member?

- ☐ Yes
- ☐ No

52. Has any member of your household been diagnosed with any of the following medical issues? (Please check all that apply.)

- ☐ Hypertension (high blood pressure)
- ☐ Diabetes
- ☐ Obesity
- ☐ Cardiovascular (heart) disease
- ☐ Cancer

53. Is your home currently:

- ☐ Owned
- ☐ Rented

54. What was your annual household income from all sources before taxes last year (2015)?

- ☐ $9,999 or less
- ☐ $10,000-19,999
- ☐ $20,000-29,000
- ☐ $30,000-49,000
- ☐ $50,000-79,000
- ☐ $80,000-99,999
- ☐ $100,000 or above

55. Do you currently receive any federal or state-based assistance (eg. Disability, SNAP, WIC)?

- ☐ Yes (please specify which program(s)):
- ☐ No

226

Thank you for your time and contributions. Your feedback is very important to us!

If there is anything else that you'd like to add, please do so in the blank space below.

VITA

Elyzabeth W. Engle

EDUCATION

2018	Ph.D. Rural Sociology, The Pennsylvania State University Dual-Title: Human Dimensions of Natural Resources and the Environment Certificates: Graduate School College Teaching, Online Teaching
2014	M.S. Rural Sociology, The Pennsylvania State University
2012	B.S. Environmental Science & Politics, Juniata College

ACADEMIC PUBLICATIONS (Peer Reviewed)

Engle, E.W. and M.W. Halsell. 2017. "Mining Community Sustainability Certification Programs for Engaged Scholarship Opportunities." *Journal of Community Engagement and Higher Education* 9(3):62-73.

Engle, E.W., S.H. Barsom, L. Vandenbergh, G.E. Sterner III, and T.R. Alter. 2017. "Developing a Framework for Sustainability Meta-Competencies." *International Journal of Higher Education & Sustainability* 1(4):285-303.

Rhubart, D.C. and E.W. Engle. 2017. "Environment & Health." Pp. 299-321 in *Rural Poverty in the U.S.*, edited by J. Sherman, A. Tickamyer, and J. Warlick. NY, NY: Columbia University Press.

Haney, J.M., M.D. Ferguson, E.W. Engle, K. Wood, D.K. Olcott, A.E. Luloff, and J.C. Finley. 2015. "Defining the "C" in Community-Supported Agriculture." *Journal of Agriculture, Food Systems, and Community Development* 5(3):27-43.

PRESENTATIONS AT PROFESSIONAL MEETINGS (2017 only)

Engle, E.W., 2017, "A Rural Food-Energy-Water Nexus: Environmental Justice Implications of Community-Based Gardening Programs in Central Appalachia," Rural Sociological Society.

Engle, E.W., 2017, "Coal is in our Food, Coal is in our Blood": Environmental Justice Implications of Community-Based Gardening Programs in Rural Appalachia," Energy Impacts Symposium.

Engle, E.W. and P.D. Buckland, 2017, "Integrating a Meta-Competencies Framework into Sustainability Curriculum Design," Association for Environmental Studies and Sciences.

Engle, E.W. and C. Mullins, 2017, "Building Community Capacity, One Garden at a Time: A Collaborative Evaluation of the Grow Appalachia Program," Appalachian Studies Association.

SELECTED GRANTS & HONORS

2018 Alumni Association Dissertation Award [Penn State]
2018 College of Ag. Sciences Outstanding Dissertation Award [Penn State]
2018 Paul Hand Award for Graduate Student Teaching Achievement [Penn State]
2016 Rural Sociological Society Dissertation Research Award ($2,500)
2016 Garden Club of America's Douglas Dockery Thomas Fellowship Award ($4,000)

RESEARCH & TEACHING EXPERIENCE

2017-2018	Research Assistant, Dept. of Ag. Economics, Sociology, & Education, Penn State
2016-2017	Instructor of Record, "Foundations of Sustainability Leadership", Penn State
2014-2015	Teaching Assistant, "Society and Natural Resources", Penn State
2013-2017	Research Assistant, Penn State's Sustainability Institute
2012-2013	Research Assistant, Dept. of Ag. Economics, Sociology, & Education, Penn State

SELECTED OUTREACH & PUBLIC ENGAGEMENT

Data Analyst, "Farmers' Perceptions of Sustainability Indicators," Pennsylvania Association for Sustainable Agriculture, Summer/Fall 2017

Invited Panelist, Documentary: "After Coal," (1) Penn State's Sustainability Institute, November 2016; (2) Bucknell University, April 2017

Invited Speaker/Facilitator, "Integrating Sustainability Competencies into Curriculum for Higher Education," University of Richmond, Richmond, VA, August 2016