

Food Insecurity in Appalachia: Understanding and Addressing Appalachian Food Insecurity

through Community Wealth Building Interventions

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Abstract

This paper serves to explore the multifaceted complexities of food insecurity in the Appalachian region. This paper will delve into the current converse impacts food insecurity has in the areas of environment, health, government, socio-cultural practices, spatial built environments, non-profit organizations, and economics. This paper also features a review of the complex system of Appalachian food insecurity and an understanding of how community wealth building as an economic framework can influence and intervene in the current system's leverage points. Through a comprehensive analysis of the available literature and a recommendation of influenceable leverage points this paper seeks to synthesize and inform a target audience of stakeholders such as policymakers, educators, non-profit organizers, and community members to remedy the issue of Appalachian food insecurity and recognize this problem not a uniform, isolates issue but as a broader system of disparities impacted by existing economic models and community practices.

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The Appalachian region is characterized by lush, mountainous geography intertwined with picturesque views, diverse landscapes, and rich, unique culture. Within these mountains, there are three distinct sections—Northern, Central, and Southern Appalachia—that stretch across 13 states, 423 counties, and over 206,000 square miles of land (Landscape Partnership, n.d.). The region is home to over 26 million people, ranging from southern New York to the northernmost part of Mississippi, but it also consists of long broad ridges, steep slopes, deep gorges, and valleys that allow for a broad range of microhabitats (Landscape Partnership, n.d.). Despite its natural beauty, biodiversity, and culture, Appalachia struggles with the stark reality of food insecurity. For many of its inhabitants, this struggle severely overshadows the beauty and uniqueness of the region.

Food insecurity is defined as a household-level economic and social condition of not having access to a sufficient amount and adequate quality of food required to meet one's basic needs (Kerrick et al., 2023). Across the United States, approximately one in every ten households suffers from food insecurity, yet within Appalachia, this percentage is even higher. In the Appalachian region, 13% of the population, or around 3.5 million people are considered food insecure, with Central Appalachia having the highest rate of food insecurity of the three sections (Kerrick et al., 2023).

Additionally, the repercussions of food insecurity extend far beyond the feeling of hunger. Both individually, and at the household level, food insecurity can lead to increased health risks, higher health costs, further financial hardship, poor dietary quality, and challenges with

mental health (Kerrick et al., 2023; Feeding America, n.d.). There are also environmental, spatial, sociocultural, governmental, organizational, and economic drivers and factors that require consideration. To better understand the high prevalence of food insecurity in Appalachia, it is vital to examine these numerous drivers and factors that exacerbate the issue. This literature review serves as a tool to further navigate the drivers and factors of food insecurity in Appalachia, shedding light on the potential pathway for intervention through community wealth building practices.

Literature Review

Appalachian Environment

The environment in Appalachia has a deep history that has led to where they are today, much of it sparked from coal mining in the region. The Appalachian coalfield extends through most of the Appalachian mountains, ranging from Pennsylvania to Alabama (Zipper & Skousen, 2021). Much of this history began in the 1700s when coal mining in Appalachia started as a way to heat homes, and from there, the mining industry expanded (Zipper & Skousen, 2021). With the country's industrialization, Appalachian coal became an essential factor in steel manufacturing, leading to a continued increase in mining in the region (Zipper & Skousen, 2021). Throughout the World Wars and changing energy sources, Appalachia managed to supply “more than 70% of US coal through the early 1970s” (Zipper & Skousen, 2021). As the years continued, the use of coal declined, but the region's legacy left a lasting environmental impact (Zipper & Skousen, 2021).

The effects of the mining used in Appalachia: Surface coal mining has many long-lasting effects, many of which lead to water and land damage in the community (Basic Information about Surface Coal Mining in Appalachia | US EPA, 2016). Some large-scale changes include the loss of forested areas, fragmentation of forests, and the conversion of forests to different habitats, causing the loss of native species (Basic Information about Surface Coal Mining in Appalachia | US EPA, 2016). Approximately 2.5 million acres of the biodiverse forest in Appalachia have been lost since coal mining began (Zipper & Skousen, 2021). There have been attempts at reclaiming the mine land in the region, but much of it has been taken over by exotic invasive plants (Sena et al., 2020). Since these mine land regions are so altered, returning the area to its original condition is a complex task, but many are attempting to do so (Sena et al., 2020).

Mining has also changed the water quality in these mined areas, bringing down water with concentrated levels of major chemical ions and selenium, which can have toxic effects on local animals (Basic Information about Surface Coal Mining in Appalachia | US EPA, 2016). The water from these mines flows downstream and into many communities. The water downstream has also been found to have increased sediments, ions, metals, and nitrogen (Griffith et al., 2012).

This leads us directly to the issue of inadequate water supplies in the Appalachian community. In some parts of central Appalachia, access to proper in-home drinking water is limited, with more than 10% of homes lacking (Patton et al., 2020). It is also important to note that contaminants are still more likely even with proper in-home drinking water due to lower compliance with water quality regulations in rural regions (Patton et al., 2020). Without access to

clean water, many area residents turn to alternative water supplies, including roadside spring water (Patton et al., 2020). This is a concern due to the high levels of chemicals and the high amount of *E. coli* found in these roadside springs (Patton et al., 2020). Another study found high levels of fecal bacteria found at local drinking water springs in the Appalachian region of Kentucky (Arcipowski et al., 2017). For those with access to water at home, many cannot afford to have the water tested regularly or do not know how the testing is done, avoiding the process altogether (Arcipowski et al., 2017).

Overall, mining has left a large impact on the environment in Appalachia. It has caused the loss of over 2.5 million acres of biodiverse forest (Zipper & Skousen, 2021). It has also brought negative changes in the local downstream water (Basic Information about Surface Coal Mining in Appalachia | US EPA, 2016). All of this has led to distrust in local water sources and left many people with unsafe drinking water (Arcipowski et al., 2017; Patton et al., 2020). These impacts will be felt in the Appalachian environment for a long time.

Farmland and agriculture in Appalachia have changed significantly over time due to the various industrial shifts in the region (Agriculture and Local Food Economies in the Appalachian Region, 2022). Appalachia used to be home to high amounts of livestock production since the area is naturally unfit for large quantities of agricultural farming, with the area being mountainous and heavily forested (*The Limits of Subsistence: Agriculture and Industry in Central Appalachia on JSTOR*, 2019). With the location being unsuitable for extensive farming, self-subsistence farming became the way of the land, relying on hillsides to grow crops for their families (The Limits of Subsistence: Agriculture and Industry in Central Appalachia on JSTOR, 2019). This was a challenging task as the forest often recaptured the farmed land, forcing them to

shift to a different field within a few short years (The Limits of Subsistence: Agriculture and Industry in Central Appalachia on JSTOR, 2019).

This leads us to the three primary agricultural industries within the region: timber, coal, and tobacco. Each of these industries took over the agriculture in the area and were the large economic drivers of their time (Agriculture and Local Food Economies in the Appalachian Region, 2022). Currently, each of these industries still holds a place in the land of Appalachia but has allowed more room for individual farmlands and differing agriculture (Agriculture and Local Food Economies in the Appalachian Region, 2022).

Nowadays, “Appalachia has smaller farms, and lower rates of agriculture use compared to the United States” (Agriculture and Local Food Economies in the Appalachian Region, 2022). According to Jackson, almost 80% of the farms in the Appalachian subregions are small farms with less than 180 acres (Jackson et al., 2015). The region also only has 28% of land devoted to agriculture compared to the national 40% (Agriculture and Local Food Economies in the Appalachian Region, 2022). This is considered an indicator of lower amounts of agricultural self-reliance in the area (Agriculture and Local Food Economies in the Appalachian Region, 2022). These numbers are driven by the region's rugged land and the wooded farmland, which does not allow agriculture to grow (Agriculture and Local Food Economies in the Appalachian Region, 2022). Similar to the original use of land, livestock and animal products are a significant part of agriculture sales (*Agriculture and Local Food Economies in the Appalachian Region*, 2022). These sales of animal products go into the national supply chain, leaving the region before being sold to other local consumers (*Agriculture and Local Food Economies in the Appalachian Region*, 2022).

Overall, farmland and agriculture in Appalachia have been through many different phases, from small, self-sustaining farming (*The Limits of Subsistence: Agriculture and Industry in Central Appalachia on JSTOR*, 2019) to industries such as tobacco, coal, and timber taking over until more recently (*Agriculture and Local Food Economies in the Appalachian Region*, 2022). We are now facing a loss of farmland in the region. What we grow is sent to the national supply chain (*Agriculture and Local Food Economies in the Appalachian Region*, 2022).

Spatial

The Appalachian Region is home to the Appalachian Mountain Range, whose creation began over 500 million years ago, leaving us with what we know today (*Mountains of the Heart*, 2016). The terrain of Appalachia has many different levels of topography, including mountains, high and low plateaus, and plains (*Appalachian Regional Commission*, 2024). This region of land stretches over 195,000 square miles, encompassing over 12 states on the east coast (*Appalachian Regional Commission*, 2024).

These reaching mountains pose a problem for those who live and work in the community, creating long commuting times in these rural areas (Mather, 2004). This is represented by minimal public transportation, “only 1% of workers took public transportation to work in 2000” (Mather, 2004). This lack of public transportation has created a car dependency in the region. For many, private transportation is the only means of transportation (Black & Sanders, 2007).

There have been many suggestions to solve the issue of isolating the Appalachian community from national markets, and the Appalachian Development Highway System has been a significant change (Widner, 1990). This highway system is a 3,090-mile-long corridor linking national highways to generate economic growth (*Appalachian Regional Commission*, 2024).

This system has created more reliable travel for communities that were once shut off from market access (Appalachian Regional Commission, 2017).

This mountainous region of Appalachia has many unique qualities, including mountains, valleys, plateaus, and plains (Appalachian Regional Commission, 2024). It also has transportation and accessibility problems that have yet to be solved (Black & Sanders, 2007).

The Appalachian Development Highway System is providing a start to connecting isolated communities to economic markets (Appalachian Regional Commission, 2024). However, there is still a long way to go with limited public transportation in the region (Mather, 2004).

Socio Cultural

The culture of Appalachia is not only rich and multifaceted, but it also encompasses a variety of different traditions, values, and community-based practices that have evolved throughout the years. With this being said, understanding the cultural practices and dynamics is essential in comprehensively addressing food insecurity, which is deeply intertwined with other health, economic, environmental, and spatial factors. According to *Appalachia and the Concept of Culture* by Allen Batteau (1979), understanding the culture of Appalachia requires people to separate it from the general culture of other rural groups in the South. This requires that certain assumptions of the concept of culture need to be modified to truly share an understanding of this unique culture. To do this, Batteau suggests a new understanding of culture that is contingent, negotiated, and politically constituted (Batteau, 1979). Appalachia is often constructed as “the land of hillbillies,” further feeding into the narrative of the “culture of poverty” (Murphy, 2023).

The culture of poverty, in the context of Appalachia, includes this recurring idea that there is something inherently present in Appalachian culture that makes people backward, lazy,

and poor (Lennon, 2022). Elizabeth Catte, author of *What You Are Getting Wrong About Appalachia* (2018) discusses this sentiment further, explaining that misconceptions currently presented relating to Appalachia share a common ideology that Appalachia is not fundamentally a part of the United States, it is a place within a place, and it isn't a place, but a problem struggling to be addressed (McEvers & Catte, 2018). Despite this, Catte emphasizes that Appalachia is a part of the United States and there is no mysterious culture that can properly explain the reality of living in the area (McEvers & Catte, 2018).

Overall, structural and ideational approaches to culture struggle to explain the history of exploitation and class privilege that is present within contemporary societies, leading to the limitation or rejection of the use of culture to explain the behaviors of individuals (Batteau, 1979). In the context of Appalachia, the culture of poverty narrative is built upon the idea that the region consists mainly of white, uneducated, lazy, violent, hungry, and poor individuals who share unique traditions key to their survival (Murphy, 2023). These traditions, which were often key to survival for many Appalachian communities, included foraging and hunting for regional game such as deer, possums, squirrels, and raccoons (Roberts, 2010). Despite being a necessity for many people within the region, these cultural implications are often transformed into entertainment pieces that take the region's struggles with hunger and poverty and frame them as humor (Murphy, 2023). Instead of questioning the implications of this negative image of Appalachians, tourists and the media sought this image out. (Roberts, 2010).

In the context of food insecurity, multiple barriers in the Appalachian region impede diet quality and increase the prevalence of food insecurity (Batey et. al., 2023). Some of the concerns of people who live in Appalachia include the time commitment and high costs associated with

healthy cooking, as well as limited knowledge of proper nutrition and fears associated with adopting new eating behaviors (Batey et. al., 2023). Considering this, health-focused interventions that are culturally informative can be used to address food insecurity in Appalachia. Research from Batey and others (2023) aimed to properly identify the aspects of Appalachian culture that can be used to address food insecurity. Their findings include four common themes that shape the attitudes and perceptions of people from the Appalachian region who struggle with poverty and food insecurity. These themes include community decline and economic hardship, shifts in multigenerational food traditions, responses to limited food access, and the value of social and familial units (Batey et. al., 2023).

Educational Outcomes

Obtaining an education often serves as a cornerstone of socioeconomic well-being by offering different pathways to economic stability, social mobility, and improved health outcomes. However, in the context of Appalachia, the educational landscape of the region presents a complex image of disparities in the access, quality, and outcomes of education (Scommegna, 2012). Education in Appalachia has struggled continuously, compared to other regions within the United States, despite an overall improvement in test scores and education as a whole (Estep, 2021). Children struggling with food insecurity are also negatively impacted before they even enter school in some cases. Nutritional deficiencies such as iron can impact a child's cognitive, socio-emotional, motor, and physiological health to the point of altering their brain structure permanently, showing a further connection to food insecurity and academic performance (No Kid Hungry, 2023).

Technological Literacy

In an era that is so heavily defined by the most innovative and rapid technological advancements, there are still communities in Appalachia that struggle with digital inequity issues. Technological literacy is often considered one of the most important languages in the world to know, but Appalachia is currently struggling with a digital divide since many communities in the region lack Wi-Fi hotspots and internet towers (Hamby et. al., 2018; Khan et. al., 2020). This, alongside core Appalachian values of privacy, self-reliance, and humility, further influences the role of technology in food insecurity in the region.

Technological literacy digital technology is also revolutionizing the food system by impacting every part of America's food system (George & Tomer, 2022). Aspects such as growing, processing and packaging, distribution, consumption, retail, and food waste all have direct impacts on the increase of digitalization (George & Tomer, 2022). Traditionally, low-income communities, like those in the Appalachian region, are defined by their asymmetric access to the food system (Dikoda, 2021). Current technological innovations are looking to make this access more inclusive overall by creating cost-effective solutions to enhance collaboration and the availability of knowledge to struggling communities (Dikoda, 2021). While motivations for Internet use vary, people can use the Internet to seek information, entertain themselves, connect with others, or educate themselves (Khan et. al., 2020). With the current digital divide that is affecting Appalachia, residents of this region struggle to be included in the newly digitized food system, limiting food access, distribution, and farming techniques that could be used to address food insecurity.

Resource Depletion

In Appalachia, resource depletion poses a major threat to food security, exacerbating the ongoing challenges the region is already facing. The Appalachian Mountains are rich in natural resources and biodiversity that has helped sustain life for over 8,000 years, but many residents still struggle with food insecurity due to the mining industry (Harley & Wexner, 2022).

Appalachia has a historical dependence on natural resource extraction industries which plays an important role in the local economy in the region (Engle, 2019; McIlmoil & Hansen, 2009).

Despite its importance, the resource-rich regions of the Appalachian Mountains and their residents have historically been exploited to fuel industrialization across the United States (Harley & Wexner, 2022). Coal mining alone has destroyed over one million acres of forest and farmland and buried over a thousand miles of streams in the region but has left the Appalachians with nothing to show for it because much of the revenue generated through coal leaves the region, leaving little behind to support public services and social programs needed in the area (Harley & Wexner, 2022)

National and global energy economies have gone through periods of rapid change, marking a decline in demand for Appalachian mining (Zipper & Skousen, 2021). Over the last several years, Appalachia has felt the effects of this decline, which is characterized by a lack of jobs, a decline in the local economy, and the environmental impacts of coal mining (Shepherd-Powell, 2017). Mountaintop removal mining (MTR) and strip mining are both commonly used practices for mining coal in Appalachia (Shepherd-Powell, 2017). These methods differ from traditional mining methods that occur underground by decreasing the number of jobs required and increasing the amount of coal that can be extracted (Shepherd-Powell, 2017). These newer methods, overall, have led to covering the coal-mined

areas with materials that resemble soil, called mine soils (Zipper & Skousen, 2021).

Additionally, these methods permanently alter the land to what is called “the post-mining state,” which means vegetation, trees, and other forms of biodiversity will never return to their prior state (Shepherd-Powell, 2017; Zipper & Skousen, 2021).

In the context of food security, this permanent alteration of land that could be used for farming and food production further impacts the Appalachians. According to the Appalachian Regional Commission, between 2007 to 2017, Appalachia lost farms and farmland at a higher rate than the U.S. as a whole (Karp et. al., 2022). 28% of the Appalachian region's land area is devoted to farmland, showing a relationship between the acres of farmland per capita as a potential indicator for agriculture self-reliance, or the total amount of land within the region that is available to feed people within the same region (Karp et. al., 2022). Appalachia requires the implementation of strategies that promote more sustainable management of land, conservation, and ways to safeguard the natural resources of the region to ensure long-term food security for residents (Karp et. al., 2022; Harley & Wexner, 2022).

Discrimination

To a large portion of Americans, Appalachia is perceived as an area characterized by its uneducated and unsophisticated residents (Rhee & Scott, 2018). “Appalachian” as a term is also often wrongly misunderstood to represent a single culture of rural White poverty conceptually shaped by the stereotypical images portrayed through media and film (Cummings-Lilly & Forrest-Bank, 2019). Common portrayals of Appalachians are that they are incestuous hillbillies who have too many children, store dozens of junked cars in their front yards, and tote around shotguns, further promoting this image of inferiority to the rest of the United States (Walker,

2013). Microaggressions towards people of the region are broadly accepted without considering the oppression people in Appalachia face, leading to an unrecognized form of discrimination referred to as “Appalachiaism” (Cummings-Lilly & Forrest-Bank, 2019; Walker, 2013).

Appalachiaism is discrimination based on the traditions and lifestyles of people who are born, raised, and/or currently reside in the Appalachian region (Walker, 2013). This discrimination includes biases against the way they dress, their accents, substandard living conditions, and poverty (Walker, need date). Despite the clear stigmatization and stereotyping of people in the Appalachian region, there is a lack of acknowledgment that these stigma and stereotypes are rooted in oppression and marginalization (Cummings-Lilly & Forrest-Bank, 2019).

Health

There is a strong correlation between health and food security. The ability to regularly and safely access an adequate, healthy supply of food can detrimentally impact overall health (Hanmer et al., 2021). In a highly food insecure area like the Appalachian region, specifically the central Appalachian region, there is a strong correlation between the food insecurity experienced by Appalachian community members and their poor health outcomes (Batey et al., 2023). However, the correlation between health outcomes and food insecurity is more complex than recognizing food access as the only factor influencing health in this disparaged region. Several factors influence and intersect food access and health including personal finances, access to healthcare, and access to health insurance (Wray et al., 2021).

Personal finances and poverty impact one’s ability to both provide for personal or household health demands as well as to purchase nutritional, healthy food to prevent negative

health outcomes (Habibov et al., 2019). Households experiencing deep food insecurity often struggle with being forced to decide between the purchase of food and budgeting money for bills and other expenses like medical care (Johnson et al., 2021). In Appalachia, nearly 24% of Appalachian's medical debt has gone into collections compared to the national average of 17% (Consumer Financial Protection Bureau, 2022). This debt not only impacts one's ability to afford and receive healthcare but can have compounding impacts on one's health in the form of stress and continuing chronic illness (Habibov et al., 2019). Appalachia has a 17% higher mortality rate of heart disease than the national average (American Psychiatric Association, 2018). The health disparities compared to the national average are not just limited to heart-disease-related death, as Appalachian residents are 10% more likely to be diagnosed with cancer, 14% more likely to suffer a stroke, and 11% more likely to have diabetes (Marshall et al., 2017).

One's ability to access healthcare is also a paramount factor in both influencing and influenced by food security. In Appalachia, there is a noticeable lack of healthcare providers (Appalachian Regional Commission, n.d). The availability of dentists in Appalachia is 26% lower than the national average and the availability of primary care physicians is 20% lower than the national average (Appalachian Regional Commission, n.d.). When an area experiences a lack of available physicians, pharmacies, hospitals, hospital beds, trauma centers, or affordable healthcare, this is referred to as a "healthcare desert" (Brinzac et al., 2023). Nearly all Appalachian counties are recognized as healthcare deserts to varying degrees (Nguyen et al., 2021). Health insurance qualification also deeply influences health outcomes. Eight states in the Appalachian region regularly have uninsured rates higher than the national average, with Georgia and Mississippi being nearly double the national average (Berchick et al., 2018).

Government

The United States Department of Agriculture defines food insecurity as “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.” (USDA Economic Research Service, 2023). At the national level, the United States government has responded to food insecurity in numerous ways, primarily by using the Supplemental Nutrition Assistance Program (SNAP) and the Supplemental Nutrition Program for Women, Infants, and Children (WIC). SNAP, previously known as Food Stamps, is the largest federal nutrition assistance program with over 41 million people participating (Virginia Department of Social Services, 2024). SNAP helps provide funds that qualifying individuals and families can spend on food at grocery and convenience stores. By helping millions of Americans, SNAP and WIC programs also help stimulate the economy. For instance, every dollar in benefits resulted in \$1.74 in economic activity during the last recession. The eligible beneficiaries get \$56 in value from every \$1 the government spends on SNAP benefits, which is immediately spent in local communities, thereby helping local Appalachians (*The United States Can End Hunger and Food Insecurity for Millions of People* 2022). Roughly 14% of Appalachian households receive SNAP benefits, which is higher than the national SNAP participation rate. This suggests that while Appalachia experiences food insecurity at higher rates, the region overall is more effective at enrolling eligible households compared to the US overall (*Food Insecurity in Appalachia* 9).

While SNAP is an important program, it only benefits households and families whose income is at or below 130% of the federal poverty line. So, even though a significant number of SNAP beneficiaries experience food insecurity, the Virginia State Office of Rural Health

suggests that SNAP benefits alone do not fully address the economic challenges associated with food insecurity, given its impact on both physical and cognitive well-being (Aboali, 2022). This is especially true in the South Central and subregions of Appalachia. Additionally, healthy food options under SNAP are somewhat limited, especially in southwest Virginia which generally lacks fresh produce, meat, and dairy. Complementary to SNAP, WIC, piloted in 1974, provides federal grants to states for supplemental foods, health care referrals, and nutrition education to low-income, pregnant, breastfeeding, and non-breastfeeding postpartum women, infants, and children up to age five (*USDA Food and Nutrition Service*). Over 15% of children lived in food-insecure households in 2018, and WIC benefits over 3.5 million children monthly (*Food Insecurity in Appalachia 21*).

While SNAP itself does not provide enough support to low-income individuals and families, local government organizations have worked alongside the federal government to increase the power of SNAP benefits. For example, the Gus Schumacher Nutrition Incentive Program (GusNIP) brings together stakeholders from various parts of the food and healthcare systems to increase funding for produce production and consumption to low-income households in Appalachia (*Food Insecurity in Appalachia 75*). This helps increase the affordability of fruits and vegetables through partnering nutrition-incentive programs, such as the Produce Prescription Program and the National Training, Technical Assistance, Evaluation, and Information Centers Program (NTAE). The Produce Prescription Program helps increase the consumption of fresh produce for patients with diet-related health conditions and works with hospitals, clinics, and provider groups to serve community members, and the NTAE helps provide nutrition incentive projects and to GusNIP as a whole (*Food Insecurity in Appalachia 77*). These two programs

have provided competitive grants for projects offering produce incentives to people participating in SNAP. GusNIP has also funded over 20 projects in Appalachia and invested \$16,274,519. This incentive program has helped benefit local farmers and grocers, which supports the regional economy and local producers and increases the affordability of fruits and vegetables in low-income households (*Food Insecurity in Appalachia* 79).

Organizational

In addition to governmental organizations, nonprofits and faith-based organizations have helped combat food insecurity in Appalachia. For instance, Feeding America is a nationwide network of food banks, food pantries, and community-based organizations in the US working to create a future where no one is left hungry (*Feeding America*). Within Feeding America, the subdivision, Feeding Southwest Virginia helps foster community partnerships by distributing food throughout the region with mobile food pantries and marketplaces (*Feeding Southwest Virginia*). In 2023, Feeding Southwest Virginia distributed roughly 18.4 million pounds of food, helping over 100,000 individuals. Furthermore, the program Virginia Fresh Food Match helps double SNAP dollars as well as accepts benefits from local farmers markets and grocers (*VA Fresh Food Match*).

Feeding America notes that the average rate of food-insecure individuals for five states in the Appalachian region is almost 14%, compared to the nationwide average of 12.5%. According to *The Appalachian Voice*, the non-profit Community Food Initiatives, based in Athens County, Ohio, provides healthy, locally sourced food for the community. The organization includes community and school gardens that teach children about local, sustainable food sources and how important and empowering gardening can be (*The Appalachian Voice*). They support culture &

community, education & empowerment, justice, and collaboration to help bring local, healthy food to those in need (*Community Food Initiatives*). Another similar organization known as Facing Hunger Foodbank, based in Huntington, West Virginia is a regional nonprofit working to combat food insecurity in Appalachia. Facing Hunger distributes about 7.4 million pounds of food each year and helps over 116,000 people across 17 counties across West Virginia, eastern Kentucky, and southeastern Ohio (*The Appalachian Voice*). Finally, Facing Hunger also operates mobile food pantries mostly in food deserts, which inherently provide little to no opportunity for residents to access healthy and nutritious foods.

Lastly, another significant organization that helps address food insecurity is Appalachian Sustainable Development (ASD). Primarily utilized in central Appalachia, ASD operates Healthy Families-Families Farms to keep the unusual-looking produce, called “seconds,” that do not meet the aesthetic retail guidelines out of the trash as well as make more nutritious foods accessible. While ASD originally began exclusively in counties in northeastern Tennessee and southwest Virginia, it was expanded to include West Virginia, eastern Kentucky, and southeast Ohio. It focuses on strengthening local and regional economics by helping beginner farmers focusing on building their farming business and planning around growing demand. ASD also runs the Appalachian Harvest Food Hub as a rural food hub. After tobacco production was deregulated, many local farmers’ incomes decreased drastically. To help increase farm production, the food hub team transitioned farmers away from growing tobacco to produce, allowing them to remain on their family farms. The Harvest Food Hub has generated over \$27 million of produce for wholesale grocers and produce brokers while facilitating about 4.5 million pounds of food box donations between 2020 and 2021.

Economics

The perception of Appalachia as a poor, disparaged region in the United States has been vastly accepted for generations. However, this perception takes for granted the falsity that Appalachia has and always will be a poor, disparaged region. Appalachia first began to see an economic boom in the mid 18th century when coal mining became the region's primary industry. Coal was essential to supply energy to America until the mid twentieth century (Zipper et al., 2021). Coal mining declined due to competition among other alternative, renewable energy sources and left a wave of resource depletion and economic hardship in its wake. Appalachia was left heavily depleted of jobs when the coal industry began to decline (Kratzer, 2015). Despite Appalachia's continuous coal mining efforts, job opportunities in the industry are sparse as nearly thirty thousand Appalachian coal mining jobs have been lost in the last decade (Labor Network for Sustainability, n.d.). This trend is only expected to worsen as what was once a vital energy industry, will supply less than 30% of the United State's energy by the year 2030 (EPA, 2014). Appalachia has attempted to switch into other industries to further promote economic development but this proves to be difficult as the shifting of industry has left many communities grappling with poverty, severe resource depletion, lacking infrastructure, and severe economic instability (Harley, 2022).

The shift towards industry instability in Appalachia has had a lasting impact on the economy. The Appalachian region experiences poverty at higher rates than the rest of America, with county poverty rates ranging from 6.5% to 41% with the average poverty rate falling approximately at 16.3% (Appalachian Regional Commission, 2017). Poverty is deeply embedded in Appalachia and the transition of industries has left Appalachia in a state of disproportionate

job training opportunities and job availability. The available jobs in the Appalachian region are not sufficient enough to account for the unemployment left in the wake of the transition away from coal mining. The lack of available jobs has influenced Appalachian governments to allow private prison systems to establish residency in rural Appalachian communities in order to offer job training and availability as well as to remedy the rise in criminal activity seen in disparaged areas within the Appalachian region (Odermann, 2020). Appalachia has been home to 29 state and federal prisons since 1989, with the majority of these prisons being in environmentally and economically degraded communities (Pierce, 2021). While the prison system has led to job availability it has also led to higher incarceration rates and a noticeable racial as well as economic imbalance in incarcerated individuals (Perdue & Sanchagrin, 2016). The industry shift away from coal has not only allowed for prison systems to establish a home in Appalachia, but it has also encouraged large, corporate-owned businesses to dominate the economic portfolio of Appalachian communities in place of small and locally owned businesses. This is particularly evident in the noticeable lack of affordable, locally owned grocery stores, farmer's markets, and restaurants in Appalachia effectively putting large sections of Appalachia in a food desert (Richards, 2012). Many Appalachian communities are dependent on dollar stores and fast food restaurants, companies specifically developing more franchises in Appalachia to capitalize off of failing economies in need of jobs and experiencing scarcity in food (Thatcher et al., 2017).

The economic history in Appalachia is unfortunately not just evidentiary of the fallout from resource depletion and insatiable industry transition but rather an externality produced as the result of a capitalistic market that has often been dominated by bureaucratic corporations known as corporate capitalism (The Heritage Foundation, n.d.). Corporate capitalism not only

promotes industry domination and provides little resources for communities dependent upon industry when there is a market failure, it also worsens the wealth divide (Lierse et al., 2022).

This economic framework encourages economic growth to the detriment of others and provides little incentive for large corporations to have concern for the general well-being of the communities serviced by the corporation. This often places the burden of social welfare and concern for social good in the hands of governmental organizations and non-profit organizations concerned with alleviating community hardship.

Community Wealth Building

Community wealth building is an economic development model rooted in inclusivity and prioritization of local ownership, resource access, and community-owned control over economic decisions/profits (Democracy Collaborative, n.d.). Community wealth building is the applicable framework that could be utilized to introduce solutions to Appalachian Food Insecurity that are informed through the theoretical framework of Doughnut Economics. Doughnut Economics is an economic model with a circular “doughnut” consisting of two concentric rings: a social foundation, to ensure that no one is left falling short of life’s essentials, and an ecological ceiling, to ensure that humanity does not collectively overshoot the planetary boundaries that protect Earth's life-supporting systems (Doughnut Economics Action Lab, n.d.). Doughnut economics and community wealth building are paramount in not only addressing the shortcomings of the Appalachian economy, but in understanding the interconnected system presented.

Appalachian Food Insecurity System Leverage Points and Interventions.

Appalachian Food insecurity is a complex and multifaceted system consisting of varying factors influencing and being influenced by the system in place. This paper has identified several leverage point and has developed leverage point interventions that have been informed by a community wealth building and doughnut economic perspective. (See systems map as figure 1 in Appendix).

Local Food Production. One of the largest contributing factors to the lack of adequate, consistent access to healthy, nutritious food in the Appalachian region is the inherent lack of locally produced food items that are affordable to the majority of the communities present in Appalachia. One solution to this would be to support the development of larger Community Supported Agriculture (CSA) programs. Community Supported Agriculture programs are programs that encourage local food production through community members pledging and providing financial and personal support to local food producing entities like farms or community gardens (USDA, n.d.). The support of the community towards local food producers not only provides fresh produce to the community but also ensures that finances provided towards food producers are kept within the community as opposed to being provided to larger corporate entities.

Food Distribution Networks and Accessibility. Lack of available food is not the only barrier present in providing the communities in Appalachia with fresh, local, healthy food. The ability to gain access through transportation is another barrier currently faced in Appalachia. One solution to this is to develop community food distribution systems and delivery services to those in need. Another component of this is to enhance local transportation systems. This could be

done through both a community driven, volunteer-based delivery service or it could be done via the utilization of a widened public transportation system range to meet those in remote areas in need of transportation to access food. This cuts down on the need for single-family or single-driver vehicles if there is a carpool or multiple-passenger accommodation to distribute food and access opportunities.

Economic Policy Reform. A larger contributor to the financial, environmental, social, and spatial elements of Appalachian food insecurity relates to the current capitalist economic market in place. This economic market is in large part responsible for the resource depletion and lack of available community finances in more urban areas of Appalachia. These communities are in dire need of economic restructuring that utilizes surrounding anchor institutions such as larger universities and businesses to support local business opportunities. However, economic policy reform also comes in the form of restructuring the financial institutions supporting these communities and moving away from outside financial institutions in favor of more local community-based financial institutions.

Just Transition and Social Norms. When the coal industry began to fade in Appalachia as a result of changing energy demands, the Appalachian region most heavily involved in the coal production industry was left in shambles. Doughnut economics emphasizes a just transition to ensure the individual community members feel empowered to inform decisions regarding economics and finances within their community. It is also important that the community fosters and values a culture driven on supporting and uplifting the voices of those that have historically been lost in the narrative. The community wealth building model supports a community informed and prepared on how to handle economic and social transition. The community wealth

building model implemented in this regard could include community campaigning for the support and recognition of underserved voices and cultures in conversation surrounding food access to ensure food as a culture is not lost in the transition to different food sources.

Sustainable Land Use. The doughnut economics model seeks to ensure that social and environmental concerns are considered in economic matters. In Appalachia, vast stretches of land have been utilized for resource depletion and corporate farmland that does not benefit the communities housing such facilities. The doughnut economic model would suggest it is best to utilize space that already exists within Appalachia that is safe to use for public food interest projects such as community gardens and community supported agriculture programs. The doughnut economics model also suggests that it is better to utilize land in ways that are sustainable as opposed to continuing to utilize the available land for the purposes of resource depletion.

Conclusion

This paper highlighted the nuanced and multifaceted complexities that pertain to addressing food insecurity in Appalachia. Some factors talked about that contribute to or exacerbate food insecurity in this region include the decline of coal mining, which has depleted jobs and economic opportunities in the region. Furthermore, because most of Appalachia is rural, there tends to be less economic opportunity in Appalachia compared to other metropolitan cities in the US. There have also been numerous shifts within the farming and agriculture industry throughout the past few generations, decreasing the amount of produce grown and the size of the farms. While community engagement and educational outreach have attempted to restore community and school gardens in the area, these once-critical skills are no longer being practiced

or passed down to future generations. Sociocultural factors such as discrimination and incarceration rates keep the Region in poverty, highlight the racial disparities present today, and prevent incarcerated Appalachians from securing a job. Government mistrust has led to a prevailing cycle of vulnerability and marginalization. It has also led to a decline in political participation, which reinforces the cycle of food insecurity. Finally, while federal and local governments as well as local non-profit organizations have attempted to restore food security to the region, oftentimes, these attempts fall short of what is needed to combat food insecurity entirely. To combat food insecurity in Appalachia, it is important to support local policymakers and interventions designed to reduce hunger and food insecurity. It is also important to build a long-term, equitable, and sustainable food system that focuses on the unmet needs of the region's economy and landscape. Lastly, it is critical to address food insecurity in a way that is culturally sensitive and satisfies the dietary needs of all Appalachians.

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Appendix

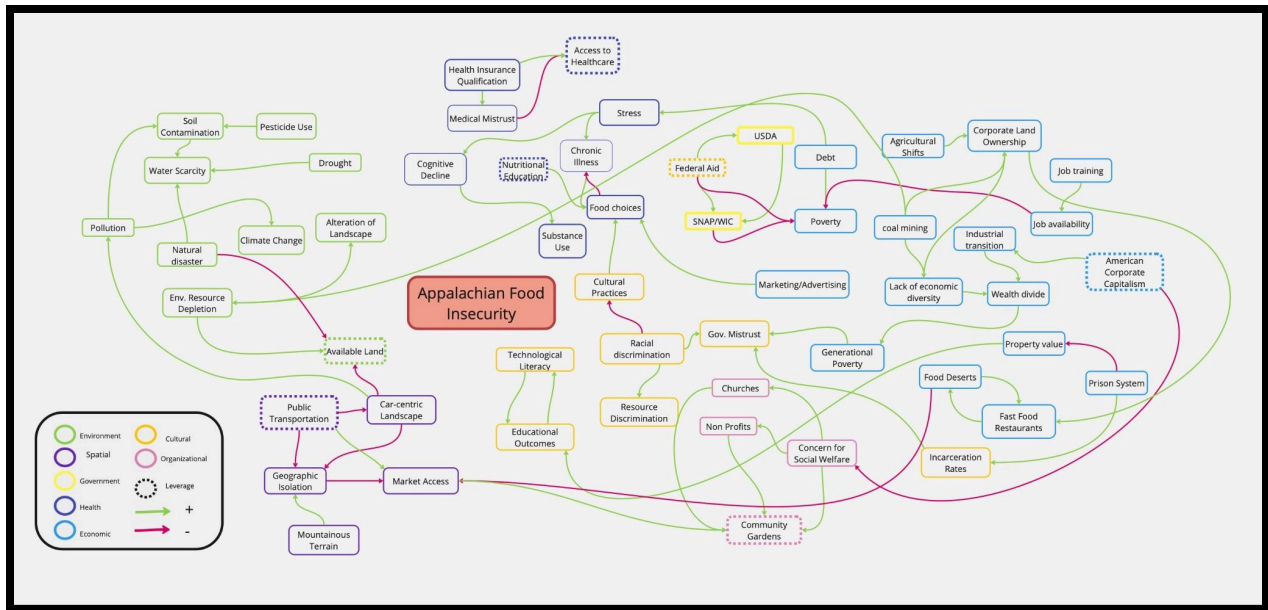


Figure 1