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Models to Incorporate Agriculture into Urban Policy and Planning in Small to Mid-Size Rust Belt Towns

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Submitted to the Department of Political Science of Allegheny College in partial fulfillment of the requirements for the degree of Bachelor of Arts.

I hereby recognize and pledge to fulfill my responsibilities as defined in the Honor Code and to maintain the integrity of both myself and the College community as a whole.

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Abstract

Academic literature suggests that urban agriculture has many individual and community benefits, however, this literature is typically focused on large metropolitan areas. This project includes a study on the small and mid-size Pennsylvania Rust Belt towns of Meadville and Erie. The case studies have shown through documentation and anecdotal evidence that urban agriculture has been an emerging practice in these towns. Urban agriculture models adopted by larger Rust Belt cities were studied to see if they could feasibly be applied to smaller municipalities. The most promising model that small and mid-size towns should adopt is a food policy council. A food policy council is a non-governmental entity that studies food-related problems in the community as well as potential solutions from the successes of other communities. With this information the council advises urban policymakers and planners on how to mitigate food and agriculture-related problems in the community.

Introduction

Urban agriculture is not a new practice by any means. For the past century, as more and more people moved into urban areas in the United States, citizens have participated in urban agricultural activities in many different ways, both commercial and otherwise. Urban agriculture includes private backyard gardens, community gardens, schoolyard gardens, and any other way that people can grow and raise food in urban areas. Current academic literature suggests that there are many ways that communities can benefit from urban agriculture, including providing beautifying green space, helping the local economy, and combating blight and food insecurity. However, most of the academic discourse surrounding urban agriculture movements is about larger US cities such as New York City, Los Angeles, and Chicago. The question at hand is: how can small and mid-sized towns incorporate agriculture?

The theory of this study is that small and mid-sized towns can incorporate agriculture by examining models adopted by larger cities to see what can be feasibly applied to their town. Many smaller towns and cities already participate in urban agricultural activities, but not in a uniform way. Many municipalities also have zoning ordinances that do not permit activities such as community gardening or commercial urban farming. This study urges municipal governing bodies to re-examine the policies that pertain to urban agriculture, as there are many community benefits regardless of the size of the municipality.

For this study, urban agriculture models from larger cities, specifically in what is referred to as the American Rust Belt region, are examined to see if they can be applied to smaller Rust Belt towns. The towns of Meadville, Pennsylvania, and Erie, Pennsylvania are used to represent 'small to mid-sized Rust Belt towns', respectively. Residents of these towns are interviewed to

collect data that will be used to create case studies highlighting the current urban agriculture scene.

This report will begin with literature-based background information, as well as anecdotal evidence from the interviews conducted in both towns. The first chapter will provide background information on what the American Rust Belt is and clearly defines the term 'urban agriculture'. It will examine why citizens utilize urban agriculture, what they produce, and how they produce it. It will then discuss the community benefits of urban agriculture, followed by some common roadblocks. The second chapter will address various models, both civilian and governmental, that were adopted in the Rust Belt cities of Detroit, Pittsburgh, and Cleveland. The third chapter will consist of the case studies conducted on urban agriculture that has already been established in Meadville and Erie. Finally, this report will conclude by taking various models from the larger Rust Belt cities in this study, and suggesting how they can be applied to the specific needs of smaller Rust Belt towns. With the data collected through this study, recommendations will be made to small and mid-sized Rust Belt towns like Meadville and Erie on how they can best incorporate urban agriculture.

The purpose of this study is to discover the ways that smaller US towns and cities can incorporate agriculture. Urban agriculture has proven to possess the ability to transform communities for the better. When city policymakers and urban planners make agriculture a priority, it will ultimately have a positive effect on the development (or re-development in the case of the Rust Belt) of a community.

Chapter I: Background

In order to create relevant and efficient policies and development plans, it is crucial for city policymakers and urban planners to have a basic understanding of urban agriculture. Anything beyond basic knowledge can be addressed by professionals and experts in the field of urban agriculture. The background information provided in this chapter will answer questions such as: "what is urban agriculture?", "what is its importance?", and "how can it solve community problems?". Urban planners and policymakers must be convinced that incorporating agriculture into their cities is a priority before they decide how to do so.

The American Rust Belt

The "Rust Belt" refers to the Great Lakes and upper Midwest regions of the US. The Rust Belt consists of the entire state of Ohio, and the majority of Pennsylvania, Indiana, and Michigan (and arguably parts of New York, West Virginia, Wisconsin, and Illinois). The eastern part of this region was heavy in manufacturing metals, while the western part was a big part of the automotive industry. This is why Pittsburgh, Pa is known for its steel mills (which is what their professional football team is named for: the

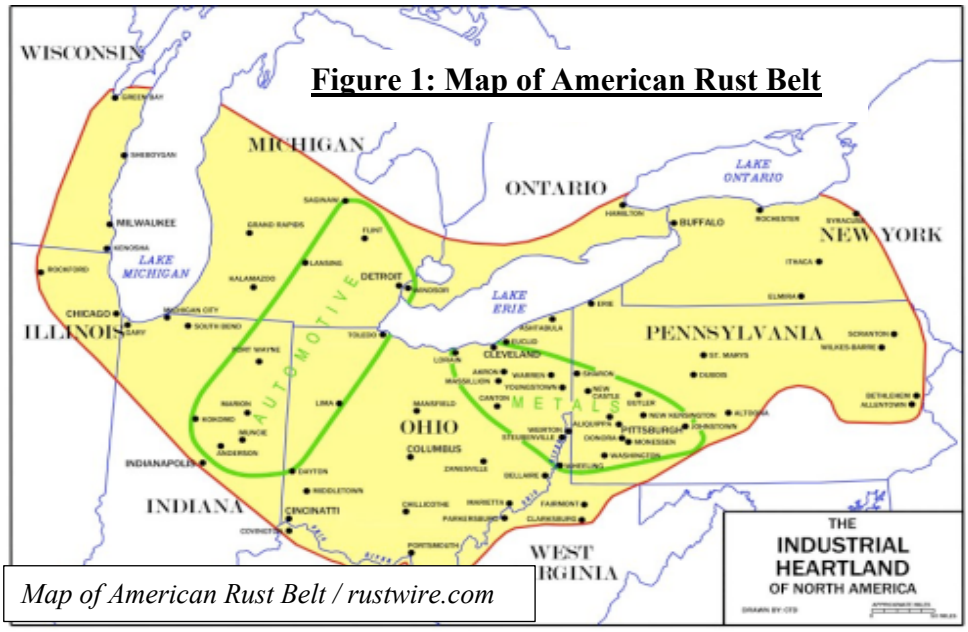


Figure 1: Map of American Rust Belt

Map of American Rust Belt / rustwire.com

Steelers), and Detroit, Mi is known for automobile manufacturing companies like General Motors. The following figure is a map that depicts the states that make up the Rust Belt region, along with the major industries and major industrial cities.

The Rust Belt gets its name from the steady decline of these industries since the 70s and 80s as American companies moved to other regions of the country or overseas for cheaper manufacturing. The hallmark traits of Rust Belt towns are abandoned factories, population decline, and the rise of poverty and unemployment as companies lay off workers or move out of town. Some cities were able to adjust to the major decline in the metal and automotive manufacturing industries. Pittsburgh, for instance, went from being a major steel-manufacturing city to housing tech-based companies. The city was able to adapt to these changes fairly well, but many cities did not have the same luck. Rust Belt cities and towns are in need of new and innovative projects to revitalize communities, alleviate the effects of declining industry, and move toward a brighter future.

What is Urban Agriculture?

Urban agriculture comes in many different forms. There are different types, different crops to grow and livestock to raise, and different methods of production. According to the United States Department of Agriculture, urban agriculture includes: city and suburban agriculture that takes the form of backyard, roof-top, and balcony gardening, as well as community gardening in vacant lots and parks, roadside urban fringe agriculture and livestock grazing in open space (USDA 2019). Urban agriculture is not a new practice, but cities around the US have different laws that regulate various aspects of it. For instance, Meadville, PA allows

community gardens in the city, but commercial agriculture is not permitted. It is important for policymakers and urban planners to have an understanding of the reasons why people decide to grow in urban areas, what they are able to grow (or raise), and how they are able to do this. When city officials have knowledge of the background of urban agriculture, they will be able to create policies that will be beneficial to urban growers and the community.

Types of Urban Agriculture

Growing and/or raising food for the purpose of feeding oneself and one's family is called *subsistence agriculture*. These growers leave little to no crop left for the purpose of sales. This is the typical backyard garden that people often have or even a chicken coop. Subsistence agriculture is the original type of urban agriculture. Regardless of legal limitations, it has and always will be practiced in urban areas around the county. It is significantly more difficult to regulate than other types of urban agriculture such as community gardening and commercial farming, as it is not public.

Community gardens were at the center of the urban agriculture movement back in the 1960s and 70s and continue to be in present-day America (Cohen and Reynolds 2016). Gardens are found within neighborhoods, school grounds, or in institutions such as prisons, hospitals, rehabilitation centers, or shelters for the homeless and/or victims of domestic violence. Some gardens may have individual beds for patrons to grow food on their own, but in many cases, these gardens have shared spaces for everyone to work on and harvest together. Neighborhood gardens, like most community gardens, are not only for growing food, but are community managed space made open to the public. They are a place for gathering, culture, recreation, food production, and much more (Campbell 2017). In the case of institutional gardens, they have

served as a sort of rehabilitation and therapy for patients, inmates, and shelter residents. School gardens, in particular, are notable for their ability to be utilized as a teaching tool to youth.

An urban farm is a for-profit business that operates within city limits. Commercial urban agriculture adds even more facets to the mix. According to the United States Department of Agriculture, a farm is defined as:

> Any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the year. Since the definition allows for farms to be included even if they did not have at least $1,000 in sales, but normally would have, a system is developed by USDA's National Agricultural Statistics Service for determining when a farm normally would have. These are called point farms. If a place does not have $1,000 in sales, a "point system" assigns dollar values for acres of various crops and head of various livestock species to estimate a normal level of sales. Point farms are farms with fewer than $1,000 in sales but have points worth at least $1,000. Point farms tend to be very small. Some, however, may normally have much larger sales, but experience low sales in a particular year due to bad weather, disease, changes in marketing strategies, or other factors. For farms with production contracts, the value of the commodities produced is used, not the amount of the fees they receive. Changes are made to the point system over time (USDA 2018).

The USDA takes a census of operating farms and working farmers every ten years, just like the US census that counts citizens.

Urban farmers sell their products wholesale to restaurants, food distributors such as grocery stores and co-ops, and institutions such as schools and hospitals. They also have the option to sell their produce for retail value at local farmers markets, which is why urban farms

are sometimes referred to as "market gardens" as well. Another option for urban farmers is to sell shares of their crop through a program called a CSA, or community-supported agriculture. CSA's are similar to a subscription to a magazine where local residents buy into "shares" of the farmer's crop yield and will typically receive a certain amount of food from that crop once a week or so during the growing season.

Commodities

There is a variety of commodities that can be produced in an urban area, such as vegetables, fruits, nuts, legumes, herbs, flowers, and livestock. However, every city has regulations that limits what can be produced. Raising livestock might sound ridiculous, but it has it is definitely feasible. The typical city doesn't necessarily have the amount of space required to raise healthy large animals such as bovine or horses, but there is enough space to raise much smaller livestock. It is entirely possible to raise small goats, fowl, and even sheep in cities. This, of course, requires restrictions to the size of the livestock and number in flock or herd, as well as the conditions of the land that they are being raised on. Raising livestock also requires the appropriate infrastructure such as chicken coops or some sort of structure for the animals to reside in. There must be a sufficient amount of space for livestock to wander and graze, enclosed by proper fencing. Raising livestock is a convenient and cost-effective way for families or individuals to obtain produce such as eggs, poultry, milk, and wool.

Aquaculture, raising finfish, shellfish, and aquatic plants, is also feasible in an urban setting. Fish hatcheries raise fish in the early stages of life, then fish larvae or juvenile fish are sent to fish farms where they will be raised for the purpose of human consumption once they are fully grown. According to the USDA, aquaculture has increased in popularity rapidly in the past 20 years (USDA National Agricultural Library 2019). Aquaculture now produces half of the

world's fish that is used for human consumption, with about 580 different aquatic species currently being farmed (Food and Agriculture Organization of the United Nations). By 2015 it is estimated that aquaculture had become a nearly $160 billion (USD) industry worldwide (Food and Agriculture Organization of the United Nations 2019).

An urban fish farmer could place large pools or aquariums on a rooftop, deck, backyard, empty lot, etc. to raise their fish. Farmers would be able to sell their fish to local fish markets, grocery stores, and restaurants. Aquaculture would be especially beneficial for landlocked regions that typically have to import their fish from distant places. With more localized fish production in landlocked regions, the prices of fish will be lower, as well as the amount of time it takes for fish to be transported from producer to consumer, keeping produce much fresher.

Apiculture, or beekeeping, is also a viable option to raise in an urban setting, as beehives take up very little space. Beekeepers raise honey bees (as a business or a hobby) for the purposes of harvesting beeswax, honey, and other edible bee products, or to sell to other beekeepers (USDA National Agricultural Library). Bees also play a crucial role in crop production, as they provide pollination services. Beekeepers would be able to place their colonies and equipment in backyards, vacant lots, etc. based on local beekeeping regulations.

As always, there are some aspects of beekeeping that must be especially considered in an urban area. The biggest issue with raising bees is that some people in the surrounding area might be allergic to insect stings. Insect sting allergies affect about 5% of the population and can be deadly due to anaphylaxis (Asthma and Allergy Foundation of America 2019). Insect sting anaphylaxis is the cause of 90-100 deaths per year in the US (Asthma and Allergy Foundation of America; American College of Allergy, Asthma, and Immunology 2018). Expertise in beekeeping is a must, as it is important to have someone who knows what they are doing.

Permission from the surrounding residents ensures that there is no one within close proximity to the hives who has a bee sting allergy. Urban beekeepers must follow local regulations as well as 'best practices' published by the state's Department of Agriculture. Residents in the surrounding area might not like bees being raised next door and might even be afraid of beekeeping due to stigma. Educating neighbors on beekeeping may be in the urban beekeeper's best interest.

Raising animals in the city can be tricky. However, lucky for many farmers, growing vegetables, fruits, legumes, nuts, flowers, and herbs is a lot simpler. Diversified vegetable farming is perhaps the most popular when people think of urban agriculture. Vegetables such as carrots, pole beans, peas, lettuce, squash, onions, radishes, and peppers have always been common commodities grown in the city. Fruits and nuts can be grown as well. A community garden for instance could have apples, pears, blueberries, citrus fruits, raspberries, grapes, strawberries, and various nut trees. There are already plenty of trees in cities, why not include fruit-bearing trees? An urban vineyard is also a possibility. Orchards and vineyards can be planted in vacant lots, backyards, or schoolyards. Microgreens and flowers just might be the easiest to grow out of all urban commodities. Microgreens are herbs and other small plants that can be harvested. The name "microgreen", it is pretty telling of the size of these plants. Because they take up very little space, they are the ideal plants to grow in an urban setting. Herb and flower gardens are seen all over cities, as they are used for aesthetic purposes as well as for harvesting.

Methods of Urban Growing

There are a few different growing methods for an urban farmer to choose from. The method that is most commonly associated with agriculture is growing directly in the ground. Depending on what is being cultivated and the location, this is a viable option. Planting

in raised beds is a very good method for urban agriculture and has been adopted by many urban farmers. A raised bed is created with a wooden square or rectangular frame that is then filled with topsoil or compost. This is an alternative to growing crops directly in the ground when the soil is not very fit for growing healthy crops. Lead and other pollutants are often be found in vacant lots or areas near houses, buildings, roads, and parking lots. Raised beds allow for a buffer between the ground and the plants. Growing plants in compost is also generally a good practice, as soil may not necessarily be contaminated, but it could potentially be nutrient-poor. Container gardens are similar to raised beds in that crops are not being planted directly into the ground. However, the difference is that container gardens have a bottom that separates the topsoil or compost from the earth below. Plants can be grown in containers that are of different sizes and shapes. This is a method that farmers are able to get pretty creative with.

Direct planting, raised beds, and container gardening are common for backyard gardens, but larger agriculture operations tend to need more infrastructure on top of those three methods, such as high tunnels and greenhouses. High tunnels, also referred to as hoop houses, are large, movable structures that protect crops from extreme weather such as harsh sunlight, frosts, and excessive rainfall. High tunnels allow for an extended growing season in colder climates, as a farmer is able to sow her seeds earlier in the spring and harvest until later in the fall because the material of the hoop house traps heat from the sun to keep the temperature naturally warmer inside of the structure. Greenhouses are more permanent structures built with much heavier materials. Greenhouses tend to be temperature-controlled and allow farmers to grow plants during the winter in colder climates.

Rooftop gardens are more common in dense urban areas with many tall buildings. They can be built on pretty much any building with a flat, accessible roof. Not only is this another

great use of space, but having vegetation on rooftops, or green roofs, has some other benefits as well. Rooftop vegetation reduces rainwater accumulation by absorbing excess water. It also acts as a natural air filter that cleans up air pollutants. Vertical farming is another possibility for growing crops in dense urban areas. Vertical farming is incredibly ideal for urban spaces, as the name itself implies an operation that grows up instead of out, which takes up a lot less space. Not only is vertical farming frugal with space, but in commercial operations, it can reclaim spaces such as abandoned warehouses or old shipping containers.

When plants are grown indoors, the facility must be a temperature-controlled environment with precise lighting (sun lamps) and nutrients. These plants are grown in stacked layers. Vertical farming techniques have been used in residential backyards and inside people's homes. However, vertical farming has recently become popular as a commercial operation with the help of advancing technologies (Birkby 2016). There are currently only a handful of vertical farming companies in the US, but growth in this industry is relatively rapid (Birkby 2016). There are three different methods of vertical farming: hydroponics, aeroponics, and aquaponics.

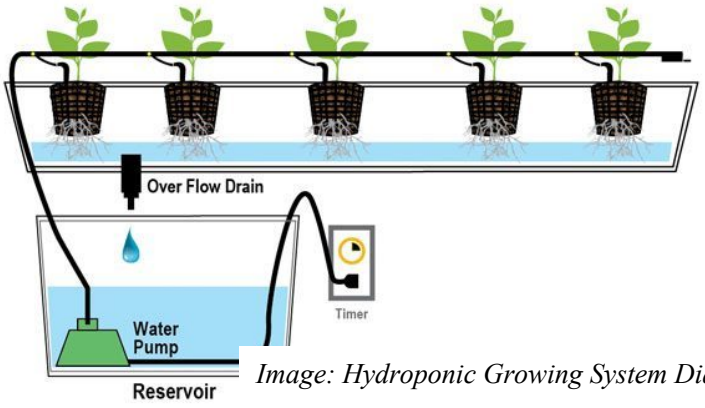


Image: Hydroponic Growing System Diagram

Hydroponics is currently the main method of indoor growing. It is a system in which plants are grown in a nutrient-rich, soil-free solution.

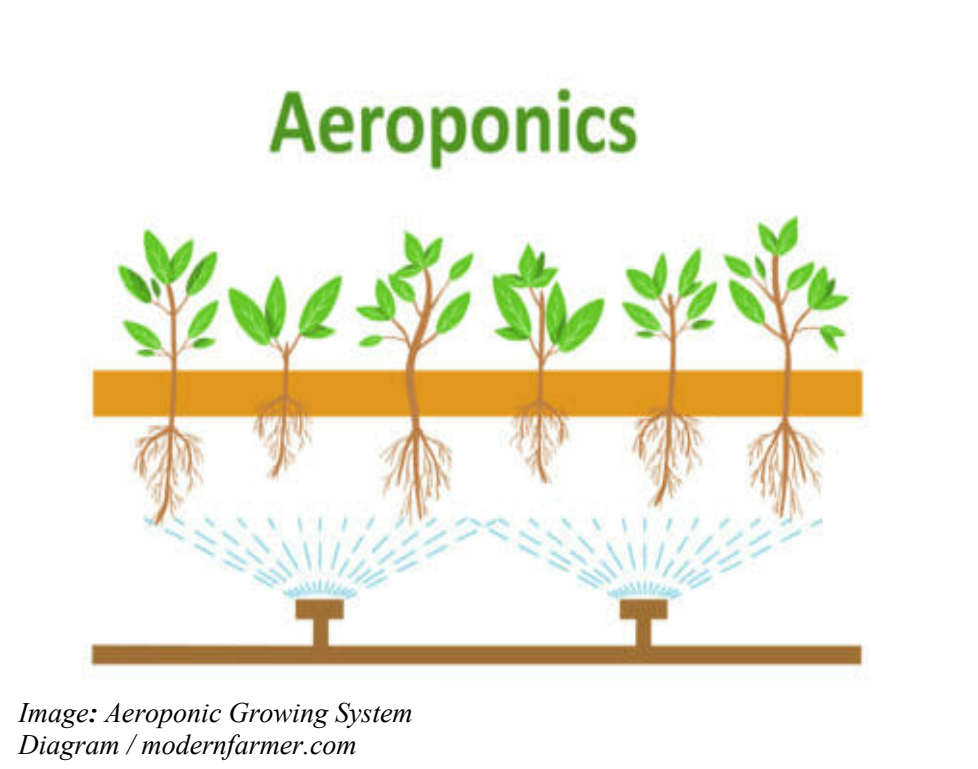


Image: Aeroponic Growing System Diagram / modernfarmer.com

Aeroponics is a technology developed by NASA in the 1990s (Birkby 2016). It involves growing plants in an air/mist environment with little water and without soil (Birkby 2016). The aeroponics system uses about 90% less water than typical hydroponic systems and plants absorb more nutrients and vitamins with this method (Birkby 2016). It is still relatively new and therefore not as popular as the hydroponic system, but as its incredible efficiency shows, it will most likely become much more common in the next few decades.

Finally, aquaponic systems combine growing plants and fish. The nutrients from fish excretion are pumped into the growing beds containing plants. In turn, the plants purify the water, which is then pumped back into the fish tank. This method is not as popular with commercial vertical farming, as most companies focus on growing plants alone (Birkby 2016).

Commercial vertical farming is an efficient way of producing food. The temperature-controlled indoor environment of vertical farming operations allows for continued growth and harvesting throughout the year in non-tropical climates. Indoor growing protects crops from harsh, unpredictable weather conditions and eliminates the need for pesticides almost entirely. However, the downside of growing indoors eliminates the ecosystem service of pollination that insects naturally provide outdoors. Vertical farming is great for water conservation, which is a large issue with traditional farming. Hydroponics uses about 70% less water than traditional farming practices (Birkby 2016). On the other hand, energy consumption for grow lights, temperature control, and pumping systems can be very costly.



Image: Aeroponic Growing System / photography by Globe Guide Media Inc. / modernfarmer.com

History of Urban Agriculture in America

Growing and raising food in an urban area is not a new practice. For as long as people have been living in cities in America, citizens have grown and raised their own food, legally or otherwise. As American citizens began to move from rural areas to cities, many brought their agricultural practices with them. Urban agriculture has its relevance during crucial points in American history. It has given citizens food security during very uncertain times. Urban agriculture initiatives have been led by individuals, civilian groups through grassroots

movements, and the US government. Urban agriculture projects continue on to this day with the purpose of increasing the overall quality of life for Americans all over the country.

Civilian Initiatives

After the devastating stock market crash in 1929, the Great Depression was a difficult time for Americans. The effects of the market crash were felt for over a decade, and many Americans suffered greatly, as this was a time of extreme poverty and hunger. Backyard and community gardens emerged en masse during this period out of pure necessity (Haywood 2017). Many city-dwellers turned to subsistence farming by cultivating fruits and vegetables from backyard gardens to provide for themselves and their families.

In the 1950s, community gardens retained their popularity in the form of schoolyard gardens (Haywood 2017). Schoolyard gardens allowed young students to learn the life skills and knowledge that gardening provides. Students learned about ecology as well as how to care for plants and work with others to achieve a common goal. In the 1970s, community gardening became a grassroots movement in response to food insecurity and blight in urban neighborhoods. Community members came together and used urban gardening as a tool to combat many problems that their neighborhoods faced. Grassroots movements have always been a crucial part of social justice because they are started by the people who are immediately affected by community problems. The Green Guerillas, for example, originated in New York City in 1973 with the purpose of transforming their neighborhoods. Historically, grassroots organizations have been the ones to initiate change in their communities.

Government-Sponsored Initiatives

During both World Wars, the US government encouraged citizens to grow their own food by promoting what were called, "liberty" or "victory" gardens. Not only did wartime slow down the production of various goods as men went off to fight, but food was constantly diverted to the European front for American soldiers. In 1917, the National War Garden Commission was formed to encourage American citizens at home to contribute to the war effort by producing their own food (Schumm 2014). The NWGC advised citizens to utilize all excess land that was not already being used for agricultural production; this included backyards, schoolyards, company grounds, parks, and vacant lots (Schumm 2014). Additional initiatives targeted both adults and children to "sow the seeds of victory" by producing food (Schumm 2014).

During World War I, 3 million new garden plots were planted in 1917, and by 1918 there were over 5 million gardens producing food in the US (Schumm 2014). World War II created a similar scenario in the US, as "victory gardens" re-emerged. About 20 million gardens produced food by 1944, and it is estimated that over 40% of all fresh fruits and vegetables consumed in the United States were produced by these gardens (Schumm 2014; Haywood 2017). In 1976, the US Department of Agriculture (USDA) began the Urban Gardening Program. The purpose of this program was to teach gardening skills and provide nutrition assistance to low-income families in urban areas. By the late 1980s, the program has worked to grow millions of dollars' worth of produce and spread to 23 cities across the US (Hugunin et. al. 2016). However, federal budgets cuts ended the program in 1994 (Hugunin et. al. 2016).

How Might Cities and Towns Benefit from Urban Agriculture?

There is plenty of literature that describes the ways that cities can benefit from urban agriculture. It provides communities with beautiful greenery and is a viable solution to remove run-down properties and vacant lots, it is good for local ecology, it is good for the social wellbeing of the community as well as the physical and mental health of community members, and it is also good for the local economy. Urban agriculture has benefited cities of different sizes all over the United States. The benefits of urban agriculture have been studied and written about in journals in different disciplines. Aside from academic literature, the people I interviewed for this project all shared the belief that urban agriculture is beneficial in general but is also beneficial to both Erie and Meadville.

Community Revitalization

The way a community looks and its prosperity have a cyclical relationship. The aesthetics of a community reflect its prosperity, and its prosperity is partly dependent on its aesthetic. A community that is run-down and dirty will not attract newcomers and will also cause people to pack up and leave their residence for a better-looking place to live. Negative population growth will have a negative impact on the community's social and economic wellbeing. Blight is a visibly unappealing, neglected condition of an urban area. It is vacant lots with overgrown vegetation, run-down and abandoned building structures, etc.

Although cities do in fact have the authority to make private landowners fix up their properties, that doesn't always happen on a citywide basis. However, in a news article published in January of 2019 titled: "Erie Fights Blight", author Kevin Flowers writes about the city of Erie's current project of acquiring run-down properties to repurpose them. Rust Belt towns especially have a blight problem because of their negative population growth and economic

downturn in the past few decades. Urban agriculture will help a community's issue with blight by not only making it greener and more inviting, but also repurposing run-down properties and vacant lots.

Environmental Impacts

As we move toward the uncertain future, cities across the globe are looking for ways to shrink their carbon footprints as well as prepare for the inevitable effects of climate change. Sustainability should be the goal for municipal policymakers. Urban agriculture will help mitigate the effects of climate change in the near future. Ecosystem services are the benefits that nature provides. Cities receive ecosystem services from the vegetation that grows within them. For instance, green roofs provide temperature regulation by insulating buildings, they can prevent flooding and water damage by soaking up access rainwater, and they filter the air of pollutants such as particulate matter (PM) (Kim et. al. 2016). Urban agriculture also contributes to local biodiversity, which is important to a city like Erie that cherishes its natural resources. One of Erie's big industries is tourism, specifically ecotourism of the beautiful Presque Isle and Lake Erie. Agriculture in the city will not only add to the beauty of the surrounding nature, but it will also help to protect and restore natural resources.

Social Integration:

Urban agriculture has proven itself to have great social benefits for participants. We know that subsistence agriculture is a pretty isolated concept, and urban farms aren't inherently very social either, but community gardens have a way of bringing all sorts of people together. The ability that community gardens have to bring together diverse groups of people is astounding. Community members from different racial, ethnic, and socioeconomic backgrounds

are able to come together in one place, united by the common interest of gardening (Kim et. al. 2016). This integration of diverse social groups has shown its potential to bridge existing gaps and even ease tension amongst groups (Kim et. al. 2016).

Being a place of social integration, the community garden allows community members to gain access to helpful social tools that may otherwise be unavailable to them. It gives community members the opportunity to gain an invaluable asset: social capital (Kim et. al. 2016; Glover et.al. 2005). Social capital theory is based upon the idea that social relationships are a resource that can, in turn, lead an individual to more resources (Glover et. al. 2005). Studies have shown how community gardens do in fact *enhance* the social capital of regular participants, creating networks among neighbors, people from diverse backgrounds, and those who hold different positions of power (Kim et. al. 2016). Not only is the community garden a social place by nature, but it allows people from all types of backgrounds to come together. This creates the opportunity for community members to meet others whom they otherwise may not have been in social contact with. When participating in events at the community garden, community members (consciously or otherwise) make an investment in social relations that will result in a return in benefit (Glover et. al. 2005). This goes for the individual as well as social units such as families or households.

These gardens serve as a safe, neutral space for community members. They are also a so-called "third space" outside of work and home for many adults (Kim et. al. 2016; Glover et. al. 2005). Community gardens are unique in that they have the potential to act as cultural and social neighborhood centers as well as a place to grow food (Kim et. al. 2016). Many community gardens become a meeting space for neighbors to discuss issues pertinent to their neighborhood (Kim et. al. 2016).

Educational Opportunities

Community gardens offer a wealth of knowledge to participants, especially to young people. Gardening programs for students in schools as well as community gardens for neighborhood youths give young people the opportunity to learn valuable life skills. This is why garden education has been added to the curriculum of schools all over the country. Through gardening programs, young people learn about environmental stewardship, environmental science, cultural heritage, and healthy eating (Kim et. al. 2016). The social aspect of community garden spaces provides youths with the opportunity to fine-tune interpersonal skills such as leadership and teamwork (Kim et. al. 2016). Finally, gardening gives youths the responsibility of taking care of other living things. Some people will say that plants are a lot like people: they require time and care to grow. That being said, raising plants can be seen as a metaphor for human growth and transformation.

Arguably, the most important skill that these garden programs teach youths (and anyone else involved) is how to grow their own food. Knowing how to produce one's own food is, at its most basic level, lifesaving. On a higher level, when people are empowered through producing their own food, they become what Kim et. al. call "food citizens": "As they [consumers] shift from being passive consumers of food to becoming co-producers and gain control over how their food is produced and distributed, participants become what scholars refer to as "food citizens" (Kim et. al. 2016)." "Food citizens" are urban food consumers (i.e. every person in any given city) who have been reconnected to food production and the food system (Kim et. al. 2016). Most city-dwellers remain disconnected from their local food system other than buying food and consuming it. When agriculture is introduced into the city, it exposes the community to

the otherwise hidden side of the food system. Citizens are then able to go from being passive consumers to active, informed: "food citizens" (Kim et. al. 2016).

The urban agriculture movement has provided the type of workforce training that helps groups of people who systematically have a difficult time navigating through the workforce, such as disabled people, immigrants, and the formerly incarcerated (Kim et. al. 2016). Established in 1990 in Santa Cruz, California resides the Homeless Garden Project farm. The mission of this farm is to provide job training and transitional employment to homeless individuals (Hanson and Marty 2012). The farm provides jobs and classes on agroecology and the workforce to homeless men and women who have shown a promising future through their commitment to self-recovery. It is made very clear that this is not a charity: the employees of the farm are workers who earn fair wages for their labor (Hanson and Marty 2012). HGP is a working farm that provides fresh produce sales to the surrounding community. Once hired, workers are taught farming skills alongside workforce development curriculum. They learn how the skills necessary to find employment after their stint working with HGP. The project provides workers with a trade, entrepreneurial skills, and professional knowledge, all of which are invaluable tools that workers might not have learned otherwise. A handful of former HGP workers have even gone on to establish their own urban farms (Hanson and Marty 2012).

Local Economy

The local economy can benefit from urban agriculture in a number of ways. According to Fortuna, "Areas having more small farms have lower poverty and unemployment rates, higher average household incomes, and greater socioeconomic stability" (Fortuna 2017). This applies to small farms both urban and rural. Urban agriculture implies smaller farming operations

almost by nature, in both physical spaces occupied and the size of the business. Large industrial farms produce food for large corporations, not necessarily the local community.

Urban farms have the potential to create jobs for people. Small "family" farms employ more people per acre than large industrial farms (Fortuna 2017). A study conducted in Minnesota found that farms with an annual gross income of about $100,000 made 95% of their purchases locally, whereas farms with an annual gross income above $900,000 made less than 20% of their expenditures locally (Food Print 2019). When small farms begin to disappear, their local communities take a hit. Studies have shown the detrimental effects that large, industrial farming operations have on nearby communities (Food Print 2019). Small farms tend to be more committed to the surrounding community than large farming operations. In fact, local investments made by small farms produce what is called a "multiplier effect": for every dollar a small local farm spends, a percentage remains in the local economy, contributing to the economic health of the community (Fortuna 2017).

"Agribusiness", or commercial farming, will bring more capital to the area (Kim et. al. 2016). Economic benefits also extend to local industries outside of food production. Businesses such as farm supplies and equipment, restaurants, and insurance companies are bound to benefit from increasing numbers of local food producing businesses. Small farms are more likely to purchase inputs locally, keeping more money in the local economy (Fortuna 2017). Keeping food local also reduces the cost of transportation, which saves businesses and consumers money.

Community Health

Community health and wellbeing on an individual and group levels are vital for the survival of the community. A food desert is the name given to an area, usually urban, where much of the population lives at least one mile (10 in rural areas) from the nearest supermarket or

large grocery store (USDA 2019). Food deserts may have convenient stores but little to no access to fresh, healthy food. Food deserts tend to be low-income and/or communities of color. Most of the city of Meadville, and multiple neighborhoods in Erie have been identified as food deserts by the USDA. Bringing agriculture into cities will alleviate the impact of food insecurity.

When community members can produce their own fresh, nutritious food, it makes for a food *sovereign* community. The difference between food *security* and food *sovereignty* is that the control community members have over their access to nutritious food. The ultimate goal is to have self-reliant, food sovereign communities. Urban agriculture cannot replace traditional farming or super markets, but it gives urban-dwellers the ability to supplement their diets and save some money (Kim et. al. 2016).

Urban agricultural activities are great for individual health aside from a nutritious diet. Farming and gardening provide physical health benefits due to the nature of the work itself, as well as exposure to fresh and sunlight. This can carry over to mental and emotional health, as farming and gardening are stress-reducing activities that provide the individual with the feeling of accomplishment and purpose of growing plants, much needed contact with nature, and strengthening social relationships through community gardening (Kim et. al. 2016). These benefits align perfectly with public health efforts to get citizens to maintain their personal health and wellbeing.

Common Roadblocks

Land use ordinances and zoning are by far the biggest roadblocks to urban agriculture. Many cities do not permit community gardens and urban farms. Meadville and Erie used to be

cities like that until groups of individuals decided to challenge the existing regulations. Regulating the use of urban spaces serves it purpose, but many land use ordinances are outdated and therefore not longer useful. Urban policymakers also might not see urban agriculture as a pertinent aspect of zoning until citizens bring it up. Along with land use, land access is another major problem. This is a problem for both rural and urban farmers. It can be difficult to find a decent parcel of land to grow on, and many urban farmers rent their land. Long-term land tenure is difficult for urban growers to come by.

Funding is also difficult for growers to come by. Whether a group or individual plans to establish a community garden or urban farm, they will need plenty of funding for land, utilities, tools, and general business needs. There are grants for community gardens and urban farms, as well as general business funding to start a business. However, that process can be pretty lengthy and time-consuming. Finally, neighbors are another big roadblock to urban agriculture. If the people who live within close proximity to an urban agricultural project that they do not like, they can always complain to the city about it, making things even more difficult for urban growers.

The Bigger Picture

So, how does urban agriculture fit into the bigger picture? When it comes down to it, urban agriculture is only part of the solution to some of the problems that Rust Belt towns face. The economic instability, population loss, poverty, food insecurity, and blight that Rust Belt cities and towns tend to face cannot be resolved by urban agriculture alone. It will never replace manufacturing as the main industry, and it cannot replace traditional rural agriculture; however, bringing agriculture into urban communities like Erie and Meadville will alleviate the

impact of the problems aforementioned. Urban agriculture has many benefits and therefore should play a role in the redevelopment of Rust Belt cities and towns. Models of urban agricultural projects that were adopted by other Rust Belt cities will be explored in detail in the next chapter. This will lay the framework for potential new projects that Erie and Meadville could take on in upcoming years to incorporate agriculture into the cities' urban policy, planning, and redevelopment.

Chapter II: Models

Model Cities

The cities of Detroit, Michigan; Pittsburgh, Pennsylvania; and Cleveland, Ohio are all considered "Rust Belt" cities. Along with Erie and Meadville, these cities have suffered a decline in industry for the past several decades. All of these communities have been struggling with poverty, blight, and food insecurity. The following is a table that shows demographic factors of the three cities, all of which were provided by the United States Census Bureau. The table shows many similarities between the three cities. The most important takeaway from this table is 1) the decline in population from the 2010 census to the estimations determined for 2017, and 2) the poverty rate of all three cities is 10 or more percentage points higher than the national average (12%) (US Census Bureau 2019). The negative population growth and higher poverty rates are characteristics that these three cities share, along with both Erie and Meadville. These characteristics are common among Rust Belt cities regardless of size.

Table 1: Demographics of Model Rust Belt Cities

	Detroit	Pittsburgh	Cleveland
Official population (2010)	713,777	305,704	396,815
Estimated population (2017)	**673,104**	**302,407**	**385,525**
Land area in sq. mi. (2010)	138.75	55.37	77.7
Population/ sq. mi. (2010)	5,144	5,521	5,107
Racial majority	79% black	66.6% white	50.4% black
Median household income	$27,838	$44,092	$27,854
Per capita income	$16,433	$30,397	$18,844
Poverty	**37.9%**	**22%**	**35.2%**

Demographics from US Census Bureau

Detroit, Michigan

The Michigan Urban Farming Initiative

To address community problems such as food insecurity and blight in Detroit, a non-profit organization run by volunteers called the Michigan Urban Farming Initiative was created. MUFI's mission is to tackle these problems by bringing sustainable agriculture to the residents of Detroit. The organization has a handful of projects planned, but its main project is a 3-acre plot of land that has served as its campus since 2011. The MUFI campus houses many of its working projects. Part of the campus is a working farm, and the other parts serve as interactive teaching tools for community members of all ages. According to the organization's website, MUFI has grown and given out over 50,000 pounds of produce to 2,000 homes within a 2-mile radius of the campus (MUFI 2019). MUFI is the perfect model of a community-led initiative that actively combats food insecurity in its neighborhood.

Detroit Black Community Food Security Network

The Detroit Black Community Food Security Network was established in 2006 by residents of Detroit. The DBCFSN is dedicated to the grassroots food justice movement in their city. The organization has many different projects, including an urban farm called D-Town Farm. D-Town Farm grows fruits and vegetables, raises bees, and has a water retention pond, solar energy, and large-scale composting on site (DBCFSN 2019). The seven-acre farm sells produce on site and at Eastern Market. The farm is open to the public, as there are frequently educational tours given to show people what agriculture is all about. The DBCFSN has worked closely with local policymakers since the beginning. In 2006, the organization brought forth the concern that the city was lacking a thorough food security policy. They were tasked with

drafting such a policy, and in 2008 the Detroit City Council voted to adopt the food security policy that the organization created (DBCFSN 2019). Later that year, with the help of DBCFSN, the city council passed a resolution that created a food policy council (DBCFSN 2019).

Detroit Food Policy Council

The Detroit Food Policy Council began meeting in 2009 and continues on to this day. The council is tasked with advising policymakers on how to make a food secure and ultimately food sovereign Detroit. The council consists of twenty-one members, which includes representatives from different parts of the local food system, governmental representatives (from the mayor's office, Detroit City Council, and the department of health), and a youth representative (Detroit Food Policy Council 2019).

Comprehensive Urban Agriculture Ordinance

In 2013, the City of Detroit adopted amendments to its zoning ordinance. These amendments specifically pertained to agriculture. Although Detroit has over 1,400 urban farms and gardens, and agriculture had been practiced all over the city, the ordinance made it legal to grow crops. The City of Detroit Urban Agriculture Ordinance (2013) begins with agricultural terms as the city defines them. It defines what the city considers to be an urban farm, urban garden, and farmers market. Structures such as greenhouses and high tunnels are also clearly defined, as infrastructure is a major focus of city zoning codes. The ordinance then goes on to clarify how urban agricultural projects are to be approved by the city, how garbage should be handled, compost, property maintenance, drainage, etc.

Pittsburgh, Pennsylvania

Grow Pittsburgh

The mission of Grow Pittsburgh is mainly to teach people how to grow food. It was founded in 2005 as a non-profit that works as a resource guide for community gardeners and urban farmers in the Pittsburgh area (Grow Pittsburgh 2019). The organization helps people who have in interest in started their own garden or farm, as well as already established gardens and farms. The education aspect that Grow Pittsburgh focuses on gives people the tools to become food sovereign, and the more people learn how to grow food, the more food sovereign a community will be.

Black Urban Gardeners and Farmers of Pittsburgh Co-op

Much like DBCFSN, the Black Urban Gardeners and Farmers of Pittsburgh Co-op focuses specifically on the needs of the black community in Pittsburgh. Food deserts and otherwise food insecure communities tend to overlap with black communities. This is the case all over the country. In an effort to address this disparity, the organization was created by black citizens for black citizens.

Cleveland, Ohio

Urban Agriculture Innovation Zone

An innovation zone is land and funds that a city sets aside for local businesses to obtain and use. This benefits the local economy and community development by investing in local

businesses and utilizing vacant urban space. The Urban Agriculture Innovation Zone is set aside specifically for the use of food production. This could be community gardens or commercial urban farms. The project has financial support from the USDA, Ohio Department of Agriculture, and the Ohio State University Extension (Cleveland-Cuyahoga Food Policy Coalition 2010). This is a unique opportunity for the development of agriculture in the city of Cleveland.

Cuyahoga County Land Bank & City of Cleveland Land Reutilization Program

The Cuyahoga County Land Bank was created in response to the trend of home foreclosures all around the US. It is a non-profit entity that works to reclaim vacant properties. The organization acquires blighted properties to rehabilitate and repurpose. The rehabilitation of blighted properties can be used for different purposes, including gardening and green spaces. These efforts to reduce blight are in the hopes of increasing property values, as well as the quality of life for the residents in surrounding areas. The operation is mostly funded by penalties and interest on collected delinquent real estate taxes. It is also funded by grants, revenue from selling properties to private owners and housing developers, and donations. The Land Reutilization Program is for the city of Cleveland specifically. It is similar to the Cuyahoga County land bank, but its goal is to rehabilitate city properties.

Careful Considerations

Social Concerns

Urban agriculture projects are not innately helpful to community members. Depending on the intent of a project, as well as the way it is planned and carried out, it can even have

harmful effects on the surrounding neighborhood. The big questions are, who is leading these projects? And who will benefit from these projects? The Detroit Black Community Food Security Network was established when black residents asked those questions.

> We observed that many of the key players in the local urban agriculture movement were young whites, who while well-intentioned, nevertheless, exerted a degree of control inordinate to their numbers in Detroit's population. Many of those individuals moved to Detroit from other places specifically to engage in agricultural or other food security work. It was and is our view that the most effective movements grow organically from the people whom they are designed to serve. Representatives of Detroit's majority African-American population must be in the leadership of efforts to foster food justice and food security in Detroit. (DBCFSN 2019).

Urban agriculture projects that are meant to benefit certain neighborhoods should be led by the same community members who are supposed to be benefitting from it.

Environmental concerns

Although urban agriculture is typically on a much smaller scale than traditional rural farming, it can still have a negative impact on the environment when practiced irresponsibly. In fact, urban agriculture has a unique impact on citizens because of the number of people who live in close proximity compared to rural areas. Irresponsible practices would have a direct impact on city residents. Pesticides and herbicides, along with heavy fertilizer use and poor drainage, can result in groundwater contamination. Excessive use of utilities like water or electricity is another potential issue, as it requires more use of fossil fuels which contributes to the carbon footprint of the city. In order to ensure the health and safety of the environment and residents, it is incredibly important for cities to make certain that urban growers are utilizing sustainable

farming techniques. Grassroots organizations like Grow Pittsburgh and the Detroit Black Community Food Security Network that aim to educate community members on sustainable agricultural practices play a crucial role in ensuring the protection of the environment.

Health concerns

Pollution of all kinds is a pervasive problem in most US cities, some more than others. One major concern about growing food in the city is the level of pollution that urban areas have compared to the traditional rural areas. Air, water, and soil pollutants have the potential to affect crops and even the health of consumers in a negative way. At best, crops won't grow very well; at worst, crops will be contaminated and unable to be consumed by humans. Soil testing and having knowledge of the history of the site and general area will help to diminish the chances of food contamination by pollutants.

Economic concerns

It is a major possibility that gardening projects aimed at revitalizing neighborhoods could result in the gentrification and ultimately uprooting of low-income residents, especially tenants. Gentrification is the process of driving low-income residents out of an urban area by making renovations that increase property values and attract wealthier residents. When property values increase it is great for homeowners. However, renters could be faced with a living arrangement that they can no longer afford. As previously discussed, when community gardens begin to pop up around a neighborhood, the beautifying aspect of nature coupled with less run-down properties makes the property values of the neighborhood increase. This can be good for a neighborhood, but it can also cause the displacement of residents who can no longer afford to live in the neighborhood. Proper measures must be taken to ensure that the redevelopment

projects are designed to benefit the most vulnerable residents (i.e. low-income, people of color) (Kim et. al. 2016). That being said, the ultimate goal should be to improve the lives of current residents, not to simply increase property values in the area.

Affordable, available property is difficult to come by for both urban and rural growers. It is common for community gardens and urban farms to be located on rented land. Renting property can be tricky for a few reasons. Renting is not a long-term which makes for an uncertain future for growers. It also does not give the renter much autonomy to utilize that space. Independent landowners or the city might restrict any permanent changes to the land. That being said, money and resources are big obstacles to establishing community gardens and urban farms. Community gardens and other non-commercial agriculture projects specifically have a difficult time with funding due to the fact that they produce no capital. Unless potential investors and city officials understand the importance of non-monetary benefits to the community, these projects can have a hard time taking off.

Chapter III: Case Studies

Meadville and Erie represent the small and mid-size Rust Belt towns in this study. Just like Detroit, Pittsburgh, and Cleveland, both towns possess the hallmark Rust Belt traits of negative population growth and high poverty rates, as the following table shows. Those traits have also led Rust Belt towns and cities to deal with blight and food insecure neighborhoods. So, what can these communities do to combat these pervasive problems? There are citizens in both Meadville and Erie who have recognized these problems and already began working to solve them in the past decade.

Table 2: Demographics of Meadville and Erie

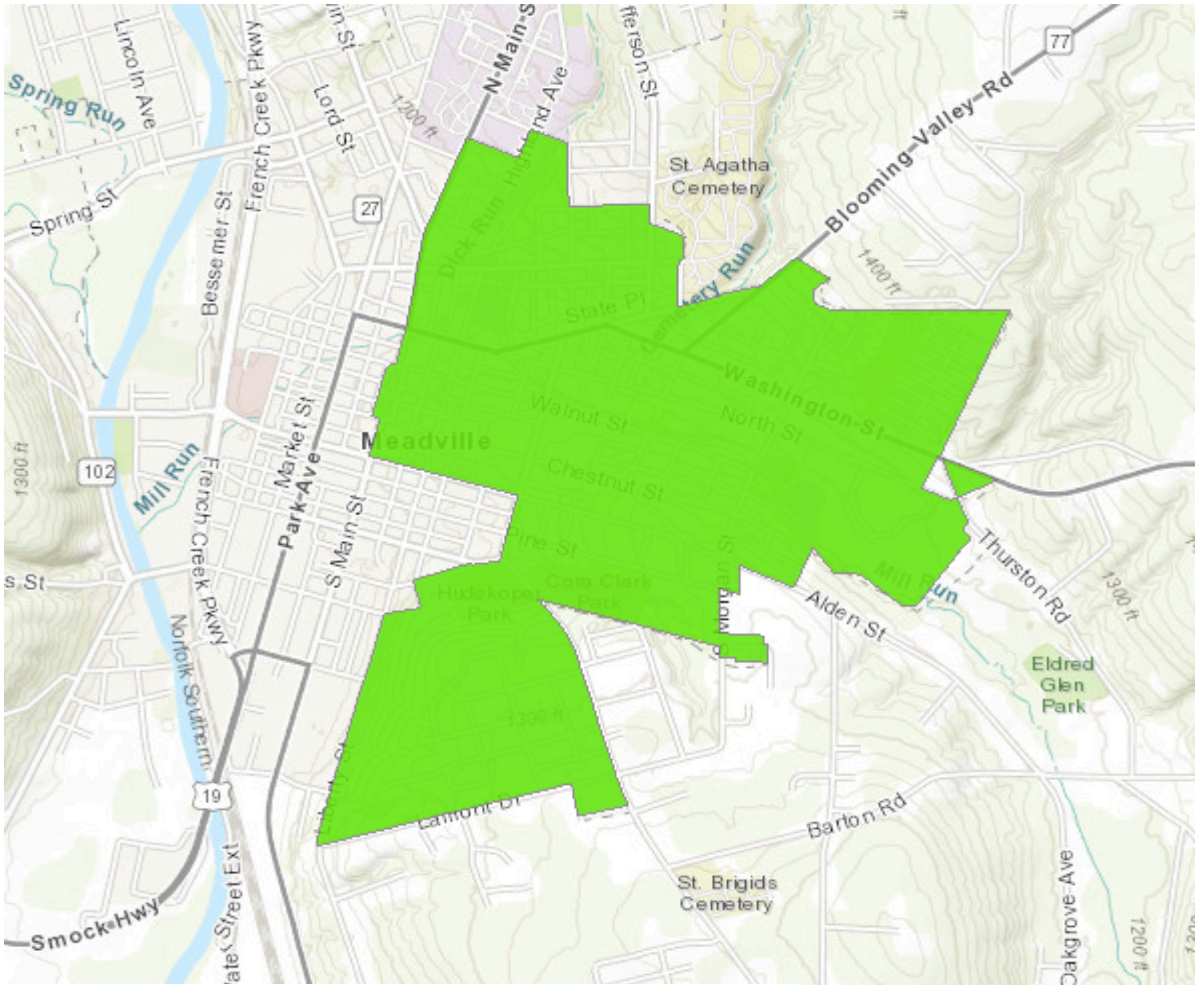
	Meadville	**Erie**
Official population (2010)	13,388	101,786
Estimated population (2017)	**12,973**	**97,369**
Land area in sq. mi. (2010)	4.38	19.0
Population/sq. mi. (2010)	3,060	5,334
Majority race	89.2% white	74.4% white
Median household income	$33,848	$35,802
Per capita income	$22,166	$20,175
Poverty	**24.9%**	**26.8%**

Demographics from US Census Bureau

Case Study #1: Meadville, Pennsylvania

The city of Meadville, Pennsylvania was established in 1788 (City of Meadville 2019). Surrounded by rural agriculture, it is a relatively small town of almost 13,000 residents. The following figure is a map of the city of Meadville from the USDA Food Access Atlas. The green area represents neighborhoods that are low-income and have low-access to grocery stores. One in four Meadville residents live in poverty, and a large portion of the town has been labeled food insecure by the USDA. Food insecurity is an issue that some Meadville residents have decided to take on in the past few years.

Figure 2: Food Access Research Atlas: Meadville, Pa



From US Dept. of Agriculture Economic Research Service, 2017

Grassroots: Urban Agriculture Organizations and Projects

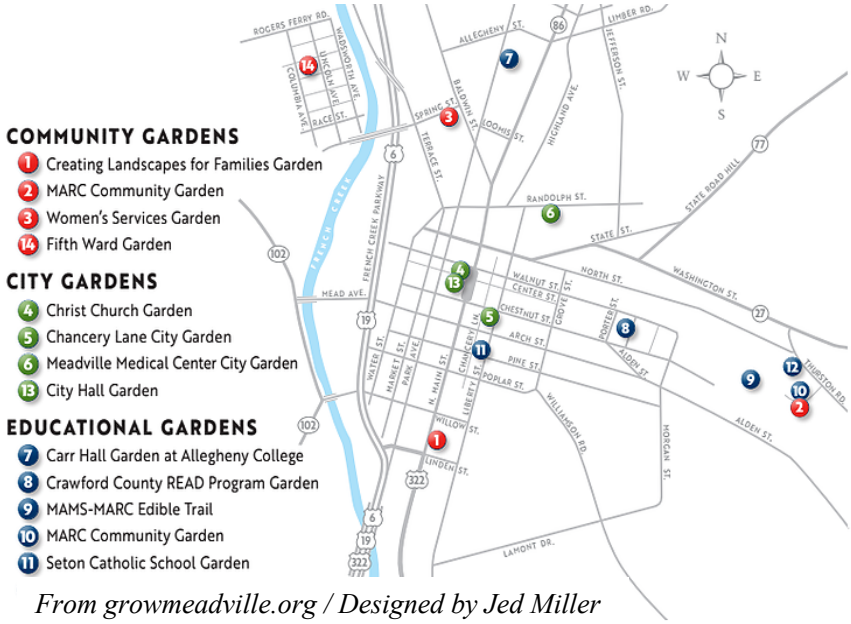
Being in a pretty rural place, Meadville has always been supportive of local agriculture. The Meadville Market House is a historic building that has been preserved as a marketplace for local vendors. The market sells vendors' homemade crafts and goods and has regular store hours. The Market House also established a "mobile market", where a vehicle drives around to low-income, low-access neighborhoods to sell affordable, fresh, and nutritious produce to residents. The mobile market operates in the summer and has regular scheduled stops most days of the week. It has proven to be a great and innovative way to mitigate the problem of food insecurity in Meadville.

Meadville, Pa is a college town, home to Allegheny College, a private institution. The college has been at the "top of the hill" for over 200 years. Institutes of higher learning are an excellent resource for a small town like Meadville. The college is well known for its department of environmental science and sustainability. Right next to the department building, Carr Hall, resides a large garden nicknamed the "Carrden". The Carrden is an active part of the environmental science curriculum for many students who choose to focus on agriculture. Various vegetables, fruits, flowers, and herbs are grown in the Carrden, and the department is always looking for ways to expand. The Carrden sells its produce to the dining hall, which in turn provides food waste for compost to use in the garden.

Within the city, there is a widespread movement for community gardens. Grow Meadville is the organization that was established in 2016 with the mission to get Meadville residents involved in growing local and healthy produce (Grow Meadville 2018). As the following map shows, the organization is a network of community, city, and educational gardens

throughout the Meadville area. Grow Meadville is currently thriving and always has plans of expansion for the organization.

Figure 3: Map of Grow Meadville Gardens



From growmeadville.org / Designed by Jed Miller

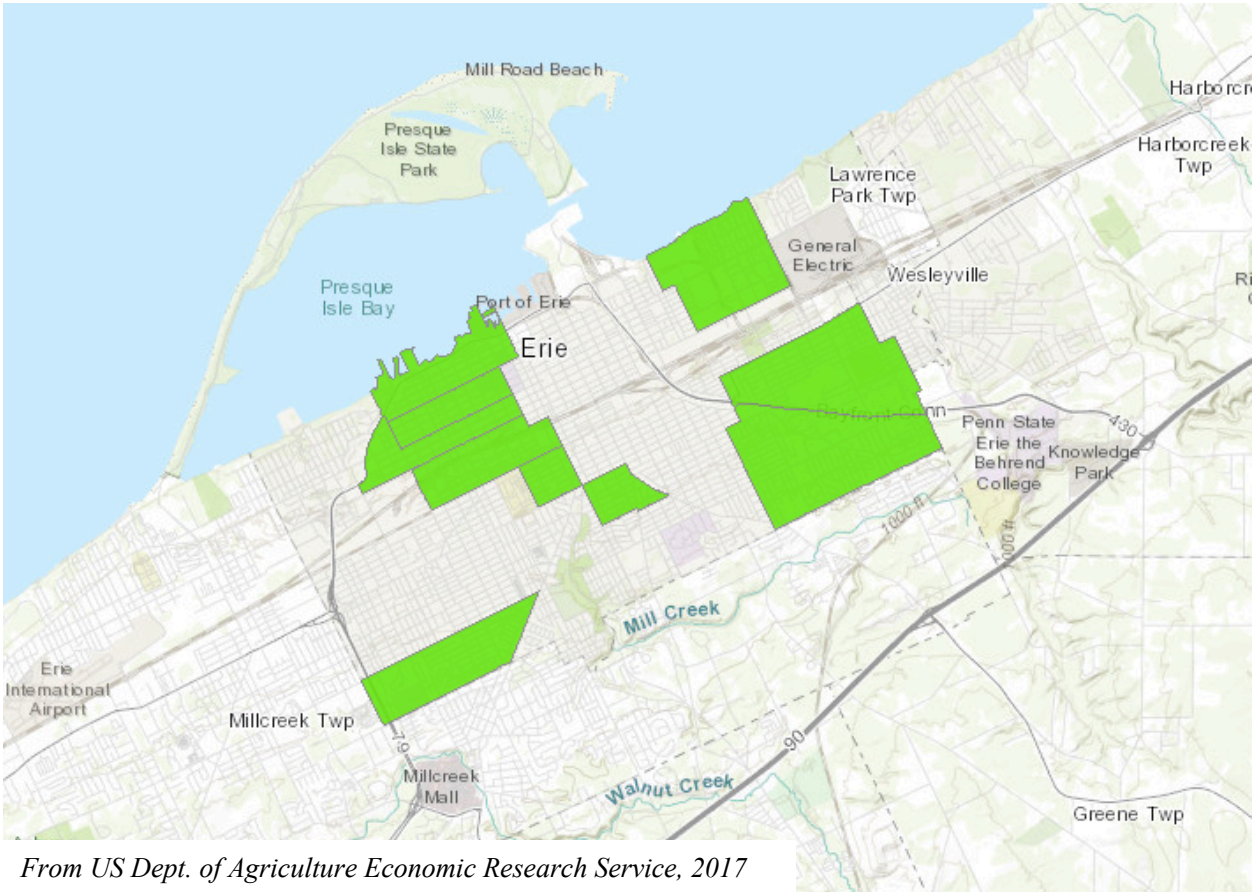
Regulations and Policies

There are two important regulatory roadblocks to urban agriculture in Meadville. Kerstin Ams, who is manager of the Allegheny College "Carrden" and volunteers as a member of the Meadville Market Authority, explained during her interview that the city does not allow commercial urban agriculture and that the reason why community gardening is acceptable is because there is a moratorium on the regulation that prohibits urban agriculture (Kerstin Ams 2019). The moratorium is set to expire, so Meadville residents who are passionate about the wellbeing of their community are working towards city policy change by advocating for a provision that allows community gardens and urban farms in the city. This would allow for more permanent gardening projects that will be able to continue to develop.

Case Study #2: Erie, Pennsylvania

Founded in 1795, the city of Erie, Pennsylvania is a mid-size town of almost 100,000 residents. Erie County, which is composed of many smaller townships, is located at the northernmost point of Pennsylvania, right alongside Lake Erie. The following figure is a map of the Erie metropolitan area. The green represents the neighborhoods that have been determined to be food deserts. Erie has multiple food deserts that are sprawled out as opposed to one mass that covers the majority of the city on Meadville's map. Food deserts and food insecurity are what the organizations with community gardens and businesses with urban farms strive to mitigate in the city of Erie.

Figure 4: Food Access Research Atlas: Erie, Pa



From US Dept. of Agriculture Economic Research Service, 2017

Grassroots: Organizations and Small Businesses

The Sisters of Saint Joseph is a religious order of women who vow to adhere to the SSJ mission of serving their neighborhoods. The SSJ Neighborhood Network in Erie was created for that purpose. The mission statement of the SSJNN is "to provide leadership, advocate for local residents, and partner with the broader community to develop opportunities for both personal growth and neighborhood revitalization." (SSJNN 2019). The SSJNN has a network of gardens, each with its own purpose. Gretchen Durney, who supervises the teen workers program, informed that the SSJNN has multiple community gardens as well as a market garden that sells its produce at the Little Italy farmers market (Gretchen Durney 2019). She went on to explain further that, "The farmers market that we run, that's been great for our own benefits of bringing people into the neighborhood with the market. With the kids growing there, and selling at the market, but then for other farmers so in that way it's helping the local economy and the local food scene." (Gretchen Durney 2019). The SSJNN garden project has proven to be beneficial to many different groups of people.

On the commercial small business side of urban agriculture, Amanda Hines has explored the innovative world of hydroponic growing. Amanda Hines is the owner of No Dirt Farms, an organic hydroponic food business that she began about four years ago. Her goal is to help people access fresh, nutritious food and teach them about hydroponic growing. She currently sells her produce to the Co-op in Erie, farmers market in Edinboro, a banquet hall down the road from her business, and the newly opened Oasis Market in the center of Erie. She has been very successful so far in her endeavors, and she has plans to expand the physical site of her business once she acquires funding from grants and/or investors (Amanda Hines 2019).

Government Involvement: Regulations and Policies

For the past decade or so, the city of Erie has been making changes in order to move toward a brighter future. The city has a couple new projects in the works that affect agriculture in the city. The first is changes in zoning and land use. In 2017 the City of Erie Zoning Ordinance was amended to permit urban gardens and market gardens in certain areas of the city. The second is a huge redevelopment project that the city has taken on. The goal is to revitalize the city and promote local small businesses by reclaiming blighted properties and turning them over to responsible parties who will rehabilitate them. The City is looking towards more creative and innovative projects to revitalize Erie.

Conclusion and Recommendations

Based on documentation and anecdotal evidence, findings from the case study show that urban agriculture has been on a slow but steady upcoming in the cities of Meadville and Erie. Both cities contain a plethora of residents who are professionals, experts, or advocates of urban agriculture. These residents have come together to create small food growing businesses, community gardens, youth programs, and food markets for the cities. There have also been residents who went to the City to challenge various regulatory roadblocks to urban agriculture. Both cities have changed their policies to better accommodate the development of urban agriculture, as they have been shown the many potential benefits.

Meadville has a moratorium on policy that prohibits urban agriculture such as community gardening and commercial urban farming. This moratorium, although a temporary fix, has allowed the city to develop a network of community gardens called Grow Meadville. As the ending of the moratorium nears, Meadville citizens have come together to get city policy to permit urban agriculture for good. In Erie, the city's zoning ordinance was amended to permit urban gardens and garden markets in certain zones of the city.

Urban agriculture in Meadville and Erie has come a long way in the past decade, but there is still so much more that can be done. Models from the larger Rust Belt cities of Detroit, Pittsburgh, and Cleveland provide the potential of even further development of urban agriculture in smaller Rust Belt towns. The two most promising models to adopt seem to be a food policy council, and an urban agriculture innovation zone.

Beginning with the food policy council, all three of the model cities studied have one. Food policy councils are often initiated by grassroots organizations, just like the ones that Meadville and Erie have. A food policy council is an entity dedicated to food and agriculture-

related problems in the community. For instance, they address the issue of food deserts and food insecurity in the city by conducting in-depth research and advising city policymakers and planners on what could be done to solve this problem. A food policy council can be big with multiple sectors and multiple projects underway, or it could small and simple. The fact of the matter is that cities and towns need an entity such as a food policy council that is dedicated to solving food-related issues in the community.

The City of Cleveland announced its plans of establishing an urban agriculture innovation zone back in 2010. Although land banks can be very helpful in obtaining land, an urban agriculture innovation is created specifically for the development of agriculture in a city. It is a large parcel of city-owned land that is given to various groups and businesses in sections for the purpose of food production. This could be for community gardening or commercial farming. Either way, it is the city's direct way of supporting the development of urban agriculture in the community.

Going forward, more models from Rust Belt cities should be examined for potential application in smaller cities and towns in the region. The case studies of Meadville and Erie can be further expanded and magnified as well. Gretchen Durney explained how urban agriculture can help the situation in Rust Belt towns during her interview when she said,

> It [urban agriculture] definitely can play a role in our rebirth of the city, so to speak. I think when people talk about this replacing jobs in the Rust Belt, it's not going to be, obviously, a manufacturing thing, it's not going to be the next GE or something. But you can't think of it like that. It's going to help, you know, period. So, small-scale if it is, but yeah it will help. (Gretchen Durney 2019).

Rust Belt cities may be of varying sizes, but the important takeaway is how Rust Belt cities and towns are overcoming their unfortunate pasts and moving toward brighter futures with the help of agriculture.

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