

The 2014 St. Louis Regional Food Study

The St. Louis Regional Food Study aims to draw connections between food, health, and the environment and serve as an advocacy tool for individuals and groups working for a more sustainable food system that promotes healthy food, better access, a clean environment, and a strong local food economy. By taking a look at the food we eat and how it's produced, this study investigates some of the systemic causes of disease, illness, and even socioeconomic injustice in our area. But before we can attempt to solve these problems, it's important to dig deep into the current state of our food system. This study serves as a comprehensive investigation of food and health in our St. Louis region. The seven chapters of the study cover a wide array of topics from the consequences of industrialized food production to the pressing issues facing our health, land, and food today. We hope that this study is enlightening, but more so, that it serves as a jumping off point for the citizens of this region to take action and protect the health of our people, land, and food.

The full study is available by request on our website (moenviron.org) and an abridged version of the study is available for free. This summary highlights some key information drawn from the U.S. Department of Agriculture (USDA), local and national census data, Center for Applied Research and Environmental Systems (CARES), and various health and food scholars. We specifically utilized the most recent data available from the past decade to provide a comprehensive look at the state of food and health in the St. Louis region. For a more in depth look at these issues, and the complete list of citations, see the full study.

The St. Louis Regional Foodshed

The Status of Food in Our Community

Within the 100-mile radius of St. Louis, more than four million people

live in 59 counties across two states with the nation's most powerful river running between them. In Chapter 1, we've defined this 100-mile radius as our "Foodshed" to better understand the relationships among our land, environment, food, health, and economy.

For a region that identifies with agriculture, less than two percent of the Foodshed's workforce is employed in the sector. This chapter introduces data that illustrates how our industrialized food system and the industries in its supply chain are instead globally sourced. Using surveys of our own grocery basket and nationally conducted studies, we document that most of our food is processed and originates far away from our homes. As a result, our region suffers economic, environmental, and nutritional losses.

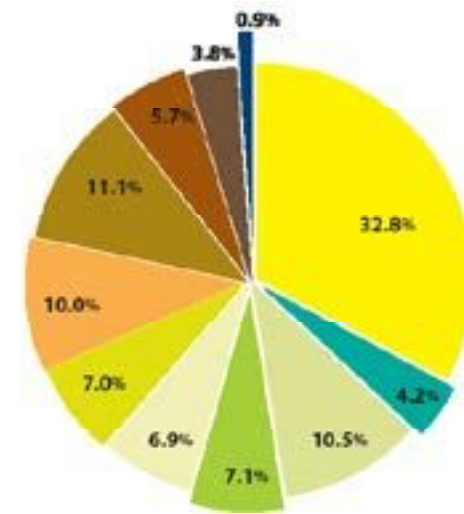
Within the 100-mile radius of St. Louis, more than four million people live in 59 counties across two states. We've defined this area as our "Foodshed."

What We Eat & Our Health

Obesity, Diabetes and the Nutritional Consequences of Our Food System

The health and eating habits of people in the St. Louis Regional Foodshed mirror national trends. In this chapter, we examine how these trends in food consumption have moved toward convenience foods – processed, pre-made, and often containing a number of additives such as corn starch, oil, salt, and sugar. As a result, we over-consume sugars and meats while under-consuming vegetables, whole fruits, and whole grains.

Overall, we are eating more food calories than previous generations and often getting less nutrition. This portion of the study utilizes various charts, graphs, and data sets to investigate the consequences of our industrialized food system. We've concluded that ultra-processed foods have little to offer our bodies in terms of vitamins, minerals, and fiber, but offer generous (often excessive) calories.



United States Per Capita Consumption of Major Food Commodities, 2009



Our food consumption patterns are reflected in our region's burden of disease, especially obesity and diabetes. In 2009, 9.5 percent of the Foodshed's adult population was diabetic. Overall, 30.4 percent of the total adult Foodshed population was obese. The Missouri portion of the Foodshed in particular has disproportionately high rates of diabetes and obesity.

Areas in the region with the highest rates of obesity and diabetes overlap with areas that have few fresh food grocery stores. Issues of limited food access and no true consumer choice are at the center of the problem of "food deserts," which are described by the USDA as "urban neighborhoods and rural towns without ready access to fresh, healthy, and affordable food." Nearly half a million people or 12 percent of the St. Louis Regional Foodshed population, live in one of 125 Food Desert Tracts. However,



St. Louis regional farmers' markets, like this one selling eggplant in the Tower Grove neighborhood, provide consumers with a way to purchase goods directly from farmers and food producers.

Chapter 2 also illustrates how the location of grocery stores is only part of the complex food puzzle. Even if stores are accessible, fresh food often costs more per serving than processed food, providing new challenges as we strive for a healthy, affordable, and accessible food system.

The Food Economy The Cost of Industrialized Food & the Fiscal Benefits of Localization

In Chapter 3, we tackle a universal, though often unreported, truth: Food is big money. According to the USDA's Economic Research Service, the St. Louis Regional Foodshed and its four million plus residents spent about \$17.2 billion on food in 2011.

Because food typically does not travel

directly from farmer to consumer, most of the \$17.2 billion spent on food in our Foodshed does not reach the farmers and ranchers who produce it. According to agricultural data, our region emphasizes production of corn, soybeans, and wheat, and we import many of our fruits and vegetables year-round from states thousands of miles away and countries across the globe. Meanwhile, as Chapter 3 illustrates, a handful of nations buy our region's agricultural products.

Instead, we've discovered through this study that obtaining food from local sources places more consumer dollars directly into the hands of farmers, rather than in the hands of "middlemen" industries. Returning food production to the region and redistributing the consumer food dollar to local industries may help us respond to unemployment and energize our local economy with money we already spend. To achieve this goal, we will need more consumers—including hospitals,

universities, and businesses—to commit to buying local food, even if it costs more at first. We will need to help consumers understand the benefits of higher quality food for our health and the health of our economy.

The USDA’s Economic Research Service reports that the St. Louis Regional Foodshed and its four million plus residents spend about \$17.2 billion on food. However, most of that money does not reach the farmers and ranchers who produce it.

Land

An Exploration of the Foodshed’s Farms and Urban Development

Over the last century, we have experienced an increase in urban development and a decrease in land in farms in the St. Louis Regional Foodshed. Chapter 4 of the study employs charts and regional data to track changes in our land and its use over time. In a span of 82 years, from 1925 to 2007, the number of farms in the St. Louis Regional Foodshed decreased from 137,770 in 1925 to 48,864 in 2007, while the average farm size expanded from 134 acres in 1925 to 284 acres, in 2007.

In order for agricultural land to be highly productive, its soil must provide

crops with proper nutrients. The St. Louis Regional Foodshed is fortunate to have high quality soils, but as the region’s population has increased, urban development has expanded onto some of the region’s best soils for crop production. In only a few generations, some farmland has been replaced with shopping malls and subdivisions.

The St. Louis Regional Foodshed may need to consider farmland preservation strategies in its urban and commuter areas to increase local food production. This portion of the study explores options for urban development planning alongside soil conservation. While Chapter 4 illustrates that the St. Louis Regional Foodshed contains soil classes well suited for plant growth, if particular areas of the region have soil contaminated with pollutants or degraded by intensive agriculture practices, soil restoration and remediation practices must be implemented before using those soils for local food production.

What We Grow Building Crop Diversity in the St. Louis Area

As the number of farms decreased and the average farm size increased, farms began to grow only one or two crops instead of maintaining the diversity found on earlier



The Missouri Census of Agriculture states that that 64 percent of the land in the St. Louis region is farmland, including cropland, pastureland, woodland, and farmsteads.

farms. Chapter 5 of the study examines how largely because of the Farm Bill and U.S. Food policy, grains began to dominate cropland while fewer acres were dedicated to fruits and vegetables.

This portion of the study details how farmers in the St. Louis Regional Foodshed have followed the national pattern, growing fewer “food table” crops like fruits and vegetables and more “food system” crops such as corn, soybean, hay, wheat used in processed food and livestock feed. As the charts, illustrations, and graphics of the chapter illustrate, more than 9.3 million acres, or 94 percent of the region’s total cropland, produced “Food System” crops in 2007. Meanwhile, “Food Table” crops made up a mere 0.1 percent of the reported cropland acreage in 2007. This imbalance mirrors our overconsumption of grain products, sweeteners and processed foods.

With fewer acres producing fruits and vegetables locally, Americans import more and more of the fruits and vegetables essential for good health. Since 1990, the contribution of imports to the U.S. food supply has increased in almost every category year- round – both plant food products and animal food products. Fortunately, some farmers in the region recognize the importance of fruit and vegetable production. In 2007, 1,198 operations in the Saint Louis Regional Foodshed harvested vegetables.



Though still produced in the region, the number of counties growing fresh fruits and vegetables such as watermelon, green beans, tomatoes, and squash has decreased in recent years according to Missouri and Illinois Census of Agriculture data. In fact, in every fruit and vegetable category reported, the number of counties producing those fruits and vegetables decreased between 1925 and 2007.

In addition, some small farms are producing organic crops. We examine this trend in Chapter 5 and provide examples of regional business and farms investing in fruits, vegetables, and organic growing methods.

What We Raise

Livestock Farming in the St. Louis Regional Foodshed

In Chapter 6 of the Study, we examine trends in livestock raising and meat

consumption in the foodshed. Our data shows that residents of the Saint Louis Regional Foodshed, like most Americans, eat a lot of meat. Americans today consume 50 pounds more meat per capita than their 1950s counterparts. We also raise a lot of livestock. Yet, despite our eating habits, the Saint Louis Regional Foodshed’s total pastureland (supporting grazing livestock) has decreased 53 percent over the past 82 years. Though we have fewer pasture acres and fewer farms in our region, we are raising more beef and pork than in the past. In fact, in 2010, Missouri ranked in the top six of pork producing states.

As the chapter details, much of America’s livestock production no longer occurs on pasture. Most animals are now produced for human consumption in Concentrated Animal Feeding Operations (CAFOs) or confinements known as Animal Feeding Operations (AFOs). Hogs and poultry raised in confinements spend their entire lives indoors, packed in expansive buildings. Cattle typically spend the first few months of their lives on pasture, before being shipped to feedlots to be fattened on grain prior to slaughter. The St. Louis Regional Foodshed is home to dairy, poultry, and hog CAFOs, many of which are described in the study.



The Saint Louis Regional Foodshed is home to four American Grassfed Association (AGA) certified farms that offer an alternative to feedlot cattle. AGA certification is based on four categories: Diet, Confinement, Antibiotics and Hormones, and Origin.

Yet, there are positive forces at work in the Foodshed. Some producers in the region are raising livestock outside the CAFO system. Though most of the region's cattle are finished at feedlots outside the region, the Saint Louis Regional Foodshed is home to four American Grassfed Association (AGA) certified farms that offer an alternative to feedlot cattle. The AGA certification, detailed in Chapter 6, focuses on raising animals on grass and forage from weaning until harvest. The animals are not confined to feedlots and are never treated with antibiotics or growth hormones.

Consolidation in the meat industry has reduced markets where independent farmers can sell animals. Fewer markets and fewer slaughter houses make the meat business a meat packer's market. Failures to restrict monopolies in the food industry have resulted in a lack of competition, which severely impacts farmers. For example, three companies control 90 percent of the beef industry; four companies control 66 percent of the pork industry; and four companies control 60 percent of the poultry industry.

Health Implications of the Livestock We Raise

Many scientists, nutrition experts, and concerned citizens have begun to examine the health implications of eating so much meat and, in particular, meat produced in an industrialized system. Because animals in confinement eat grains and specially formulated feed mixes that contain hormones, antibiotics, and other additives, industrial scale production processes pose risks for consumers including exposures to pathogens, antibiotics, and growth hormones. In Chapter 6, we illustrate the consequences of this feeding process, including how dairy and meat products from CAFOs contain less nutrition compared to pasture-raised cattle.

Environmental Implications of the Livestock We Raise

Chapter 6 utilizes regional agricultural and environmental data to prove yet another dangerous consequence of the Industrialized livestock system: CAFOs generate harmful pollution. Employees of CAFOs and feedlots are at risk of serious health problems due to pollution emissions on site from particle pollution, methane, ammonia, and hydrogen sulfide gas. This pollution is mainly a result of CAFOs housing large numbers of animals, which create extraordinary quantities of animal waste on small areas of land. Most CAFO waste in the U.S. is applied to farmland, which, as the chapter details, also poses risks to water sources.



Many scientists, nutrition experts, and concerned citizens have begun to examine the health implications of eating meat, fruits, and vegetables produced in an industrialized system using chemical pesticides and fertilizer.

This study also finds that CAFOs waste necessary farm resources. Confined livestock consume an enormous amount of grain and require significant supplies of water. In fact, the production of one pound of beef requires 1,857 gallons of water. In addition, the field crops grown to feed livestock are more water resource intensive than most fruits and vegetables. As water resources increasingly become a concern across the globe, including most of the western U.S., we explore how a reduction in industrialized farming could help conserve our resources and ensure environmentally sustainable food production.

Food Safety in the Food System

Pressing Issues of Health, Food, and the Environment

Our farming system has industrialized to meet the current American diet while also maximizing profits for industrial producers. In the process, the safety of our food, water, and the environment are often compromised. In Chapter 7, we

explore a variety of food-related health problems and how antibiotic-resistance, environmental damage, soil degradation, and water pollution are increasingly persistent problems.

Pesticides

The use of chemical pesticides has skyrocketed in conjunction with the adoption of industrial agriculture methods. As the chapter details, long-term health effects of pesticide exposures can range from higher risk of cancer to "disruption of the body's reproductive, immune, endocrine, and nervous systems." Pesticides in the environment have fueled the increase of pesticide-resistant weeds and insects, to which farmers often respond with more or different pesticides. Various fauna and flora, including bird and insect populations that have important and advantageous roles within the ecosystem, suffer pesticide impacts. Our Food Study thus concludes that by shifting to an agricultural system that does not heavily rely on harmful chemical additives, we can reduce costs for farmers while making food safer and avoiding the known and unknown risks of pesticides.

Organic and Chemical Fertilizers

Farmers use livestock manure to fertilize crops, or they may rely on chemical fertilizers or judicious use of cover crops and careful crop rotations. Livestock in confined operations produce quantities of manure in amounts far greater than can be regularly applied on cropland. When producers apply more manure on cropland fields than crops will use, they risk water contamination that can harm drinking water quality, kill fish, and create algal blooms. But as the study warns, over-application of chemical fertilizer poses the same threats as manure. Research indicates that chemically fertilized plots also show less biologic activity in the soil food web, thereby threatening the biodiversity of our foodshed land.

Foodborne Pathogens

As Chapter 7 explains, the industrial food production process is linked to high numbers of food-borne illnesses annually. The U.S. Centers for Disease Control (CDC) estimates that each year roughly 1 in 6 Americans (or 48 million people) get sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases. The massive scale of slaughtering and processing operations amplifies the public health impacts of contamination. As a result, “[a] single animal infected with E. coli 0157:H7 can contaminate 32,000 pounds of ground beef.” We conclude that by eliminating the conditions in which harmful bacteria thrive (such as industrialized feedlots) and deconstructing the assembly line-like processing and manufacturing of food, fewer Americans, and fewer residents of the St. Louis Regional Foodshed would be at risk for food-borne pathogen exposure

Antibiotics and Growth Hormones

Antibiotic use in livestock production is another area prompting greater concern as its effects become more broadly recognized. The graphics, charts, and illustrations of Chapter 7 detail that approximately 80 percent of antibiotics made in the U.S. are used in animal production to boost growth, even though researchers note antibiotic abuse poses dangers for humans and animals. Growth hormone use in livestock production is also a major health concern, and in particular, the use of recombinant bovine growth hormone

Roughly 70 percent of all processed foods are made from genetically modified (GM) products.



David Pimentel, a Cornell entomologist, estimates that roughly “0.1% of applied pesticides reach the target pests, leaving the bulk of the pesticides (99.9%) to impact the environment.”

Genetically Modified Organisms

This chapter reveals some surprising statistics in regards to the quality and origins of the food we consume. Today, approximately 85 percent of American corn and 91 percent of American soybeans are genetically modified (GM) and estimations conclude that roughly 70 percent of all processed foods are made from genetically modified products. The genes of these plants are manipulated to make them resistant to insects and tolerant to herbicide. Since GM foods have only recently been integrated into the food supply, health risks, such as new food allergens, are not completely understood and can arise quickly without warning. Genetically modified food may be harmful to immune systems and vital organs. GM food poses other risks to animals, the environment, and specifically to humans, including higher risks of toxicity, allergenicity, antibiotic resistance, immune-suppression and cancer. Environmental concerns of GM crop production detailed in the chapter include contamination of wild/non-GM varieties and insect resistance.

Fossil Fuels

As this study illustrates, our current food system depends on fossil fuels in every step of the food supply chain. Pesticides and fertilizers are fossil fuel-based. Fossil fuels are also required to power industrial machinery. In addition, the food production system also accounts for 17 percent of all fossil fuel use in the United States. Much of the energy is for transportation that could be reduced with a self-sufficient, localized food system in the St. Louis region.

Conclusion and Recommendations

After reviewing the data within the study about our current food system and the impact it has on our economy, health, safety and environment, we conclude the industrialized agriculture system does not promote human or environmental health of the St. Louis Regional Foodshed. It is evident that the region, as well as the rest of the nation, is in a state of food and nutrient insecurity. Our ecosystems are imperiled. Our health is at stake.

This study finds that by shifting the Saint Louis Regional Foodshed’s agricultural framework to a local system in which farmers minimize chemical inputs, employ more diversified operations and deliver fresher, more nutrient-dense food, the health and environmental risks associated with industrial food production can be reduced.

Our Foodshed has the farmland and the farmers, the ranchers and the resources, the soil and the water. We have the power to change our current food system by paying attention to where our food is grown, supporting local agriculture, starting a backyard or community garden, voicing our opinion to our local and state politicians, and collaborating with others in our communities who value nutritious, chemical-free and healthy food. Together, we can create the food system that best serves the people of the St. Louis Regional Foodshed by promoting healthy food, better access, a clean environment, and a strong local economy.

Looking Ahead

Moving forward from the St. Louis Regional Food Study, the following areas of inquiry and collaboration can help us grow a more robust local food system in our region to ensure the health of the foodshed’s residents and land:

Opportunities for Action

1. Assess the current policies in Missouri and Illinois that promote or hinder small-scale farms and local agriculture.
2. Assess local zoning ordinances and propose ordinance amendments that promote urban agriculture based on city-by-city agriculture capability determinations.
3. Identify financing needs and opportunities for local food producers, distributors and retailers.
4. Train lenders to make good food and farm loans.
5. Advocate for public investments in traditional plant breeding programs to improve cover crops, perennial grain, and food crops.
6. Assess local farm labor/training needs and challenges; identify problems, innovative partnerships and potential solutions.
7. Increase awareness and development of farm to buyer programs.
8. Identify solutions to increase use of local food in schools, childcare programs, hospitals, and institutions.
9. Convene stakeholders to draft a Regional Food Plan.
10. Assess local food infrastructure for processing, warehousing and distribution; identify needs and solutions.

11. Determine ways to increase fruit and vegetable production, and particularly, through USDA and Missouri Dept. of Agriculture cost-share programs

Areas of Further Study

1. Calculate how much of the region’s food dollars leave the region; Calculate the economic impact of each dollar spent on local food.
2. Conduct soil testing on the region’s cropland to determine if pollutants or mineral deficiencies are hindering production potential. Also conduct soil testing for pollutants like lead on urban land to determine the capacity for urban areas to develop urban agriculture efforts.
3. Calculate the area’s production potential of specific fruits and vegetables using season extending mechanisms, such as hoop houses.
4. Compare nutrient values of fruits and vegetables transported thousands of miles to fruits and vegetables grown locally and frozen or canned for out-of-season

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