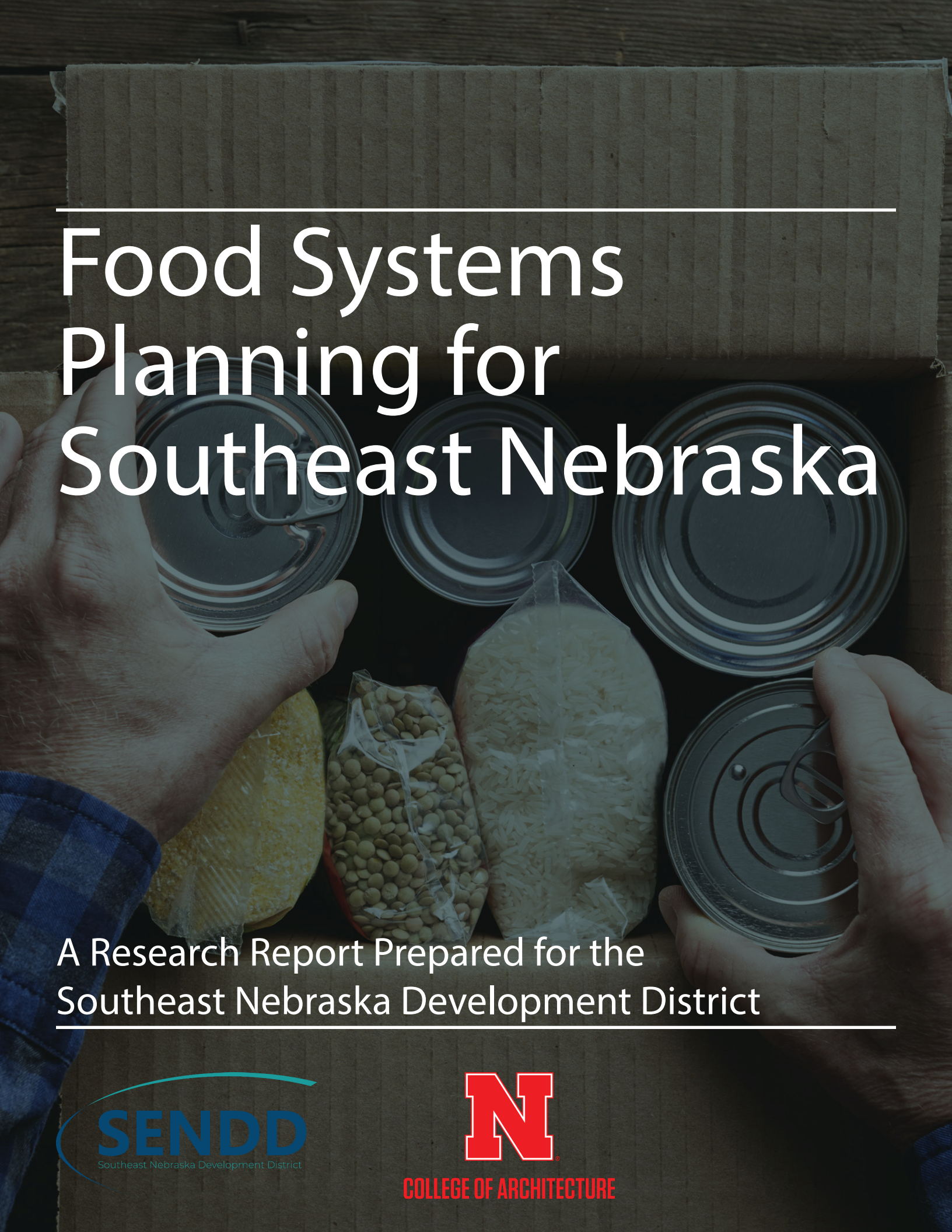

Food Systems Planning for Southeast Nebraska

A Research Report Prepared for the Southeast Nebraska Development District

SENDD
Southeast Nebraska Development District

COLLEGE OF ARCHITECTURE

Contents

CRPL 840 Final Report 2022

University of Nebraska-Lincoln

Southeast Nebraska Development District (SENDD)

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College of Architecture

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Course Information

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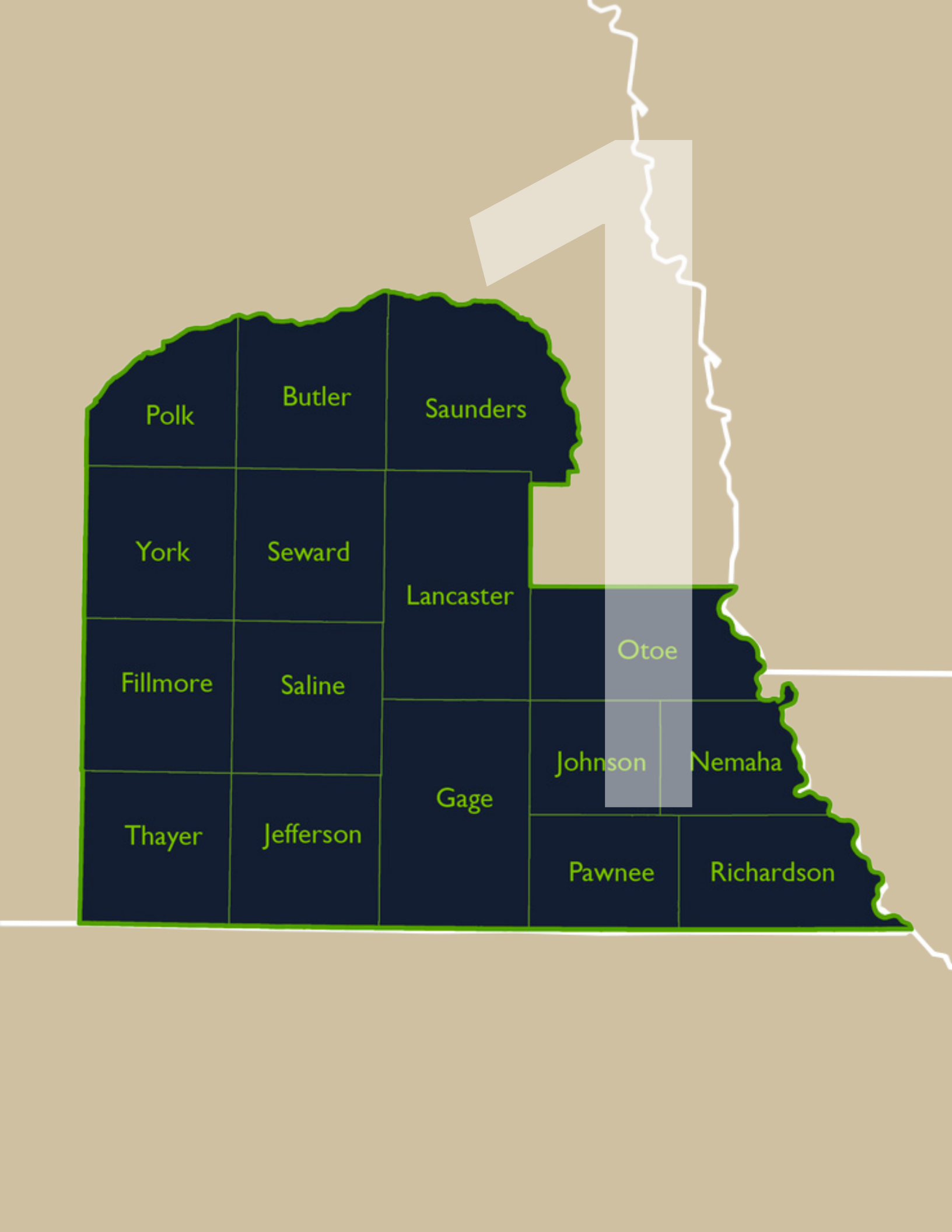
Executive Summary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Executive Summary

This report, which has been prepared by the graduate students and Instructor of CRPL 840: Planning Methods and Analysis for the Southeast Nebraska Development District (SENDD), describes research on and recommendations regarding food systems planning for the Southeast (SE) Nebraska region. SE Nebraska comprises the 16 current member counties of the Development District (Figure 1). Key sections include this 1: Executive Summary; Chapter 2: Demographic, Socioeconomic, and Business Conditions in Southeast Nebraska; Chapter 3: Food Market Gaps and Food Deserts; Chapter 4: Equity Concerns in Food Access; and Chapter 5: Implications and Recommendations. This document also includes an Appendix. In Chapter 2, authors summarize baseline data on demographic, socioeconomic, and employment/business conditions for Lincoln, NE, and the greater SE Nebraska region—providing useful context for understanding the region and research on the regional food system presented in subsequent chapters. In Chapters 3–5, authors present research and findings on issues affecting food supply (Chapter 3) and consumer demand and food access concerns (Chapter 4) in SE Nebraska. In Chapter 5, implications and recommendations for addressing these issues and concerns are offered for policymakers, planners, and practitioners with stakes in the regional food system.

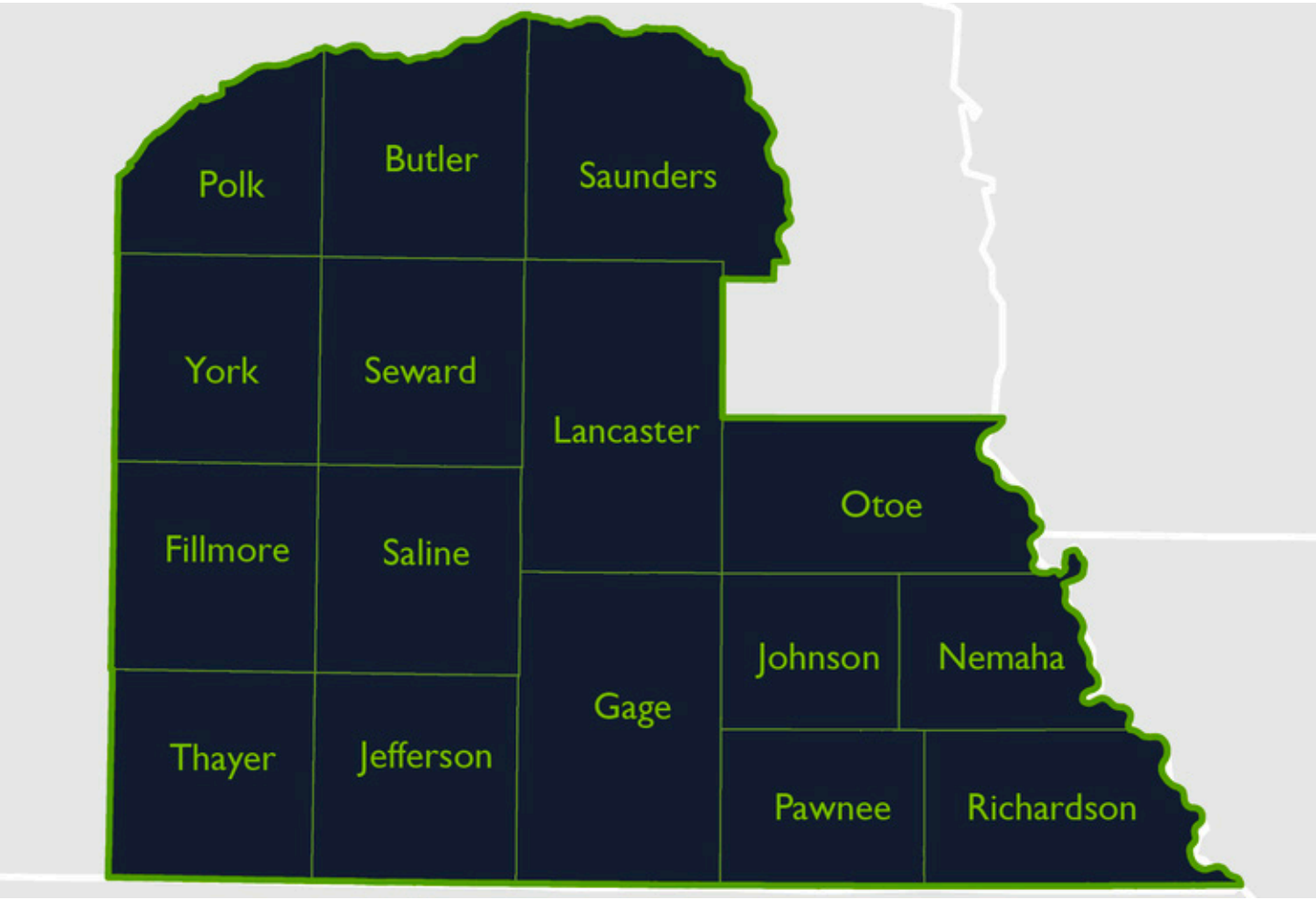


Figure 1. Map of the SE Nebraska region.
(Source: sendd.org)

Chapter 2: Demographic, Socioeconomic, and Business Conditions in Southeast Nebraska

Chapter 2 summarizes baseline demographic, socioeconomic, and business/employment information for two areas of interest: (1) Lincoln, Nebraska, and (2) the greater 16-county Southeast Nebraska Region. Using publicly available data primarily collected by the US Census Bureau, authors present and visualize statistics estimating population, demographics, education, and socioeconomic characteristics for resident populations of Lincoln and SE Nebraska, as well as information on business establishments operating in these areas. Notably, in this analysis of business establishments, special attention is paid to industries involved in the food system, including Manufacturing, Retail Trade, and Accommodations and Food Services.

Chapter 3: Food Market Gaps and Food Deserts

In Chapter 3, authors assess the health of the regional food system and consider strategies for future investment. This chapter pays particular attention to issues affecting the supply side of the food economy, including food production and distribution and financial barriers to entry facing food producers in Southeast Nebraska. Findings show that while SE Nebraska is abundant in agricultural production, a focus on growing "traditional crops" (i.e., corn and soybeans) for export means that much of the region's produce does not contribute meaningfully to the local food system. There are a small number of farms in the region that grow produce for local consumption; however, methods of distributing this produce to consumers, independent retailers, or larger institutions are limited and in need of additional investment or expansion for the region to benefit from this local production. The supply of locally produced food in Southeast Nebraska is also impacted by the high barriers to entry into agriculture for new farmers, and accordingly, SENDD might consider advocacy or other measures to support local producers.

Chapter 4: Equity Concerns in Food Access

In Chapter 4, authors present research focused on food demand–the consumer side of the food economy–specifically examining the prevalence and distribution of food insecurity in the Southeast Nebraska region. Findings suggest that resident populations of certain areas, such as portions of Otoe, Johnson, and Pawnee counties are at higher risk for food insecurity due to lower median household incomes, less vehicle access, and less proximity to supermarkets. Reported statistics on food security support this evaluation, with Pawnee, Otoe, Richardson, and Gage counties showing relatively higher rates of food insecurity than other SE Nebraska counties. Food insecurity is particularly pronounced among children, and may be exacerbated by climate change impacts as well as lasting problems associated with the COVID-19 pandemic, including supply chain disruptions and financial hardship. Certain areas of Southeast Nebraska with more racially diverse populations, including areas of Lancaster and Saline counties, as well as rural residents in the region may be at greater risk of not being able to access enough nutritious and culturally relevant foods. Areas and populations identified that face more food insecurity or may be at greater risk of food access issues should be targets of intervention to alleviate regional food-related inequalities.

Chapter 5: Implications and Recommendations

Chapter 5 presents recommendations for policymakers, planners, and practitioners that might serve to bolster Southeast Nebraska's food supply and promote food security among Southeast Nebraska residents. These include expanding Farm to School programs; funding micro-farming and non-traditional agricultural ventures, which could contribute diverse produce to the local food supply; promoting access to culturally relevant foods and local food markets; accommodating shifts in agriculture to continue local traditions; and leveraging technology, aggregation of data, and resources to better understand food systems and programs for suppliers in the region and greater Nebraska.

Demographic, Socioeconomic, and Business Conditions in Southeast Nebraska


2

Introduction

This chapter will examine the demographic, socioeconomic, and business/employment characteristics in two defined areas: Lincoln, and Southeast Nebraska. Lincoln city (Lincoln), Nebraska, is located in Lancaster County. It is the second largest city in the state, the state capitol, and home to the state's flagship, land grant institution, the University of Nebraska.

Southeast Nebraska (SE Nebraska) is the sixteen-county region that makes up the Southeast Nebraska Development District (SENDD). Counties included in this region are Butler, Fillmore, Gage, Jefferson Johnson, Lancaster, Nemaha, Otoe, Pawnee, Polk, Richardson, Saline, Saunders, Seward, Thayer, and York counties. Data used for this report came from various sources including the 2010 and 2020 decennial census, as well as the American Community Survey (ACS) estimates for 2010, 2015, and 2020.

Demographic Conditions

Lincoln, NE, has seen steady growth over the past decade. Currently, the estimated population of the city is 292,648, according to 2021 ACS 1-year estimates. This number is up from 253,035 and 286,388 in 2010 and 2020, respectively (2010, 2020 Decennial Census; Figure 2). Overall, this means that Lincoln is experiencing steady growth. During the past decade, the growth in Lincoln has led to an average annual percent change

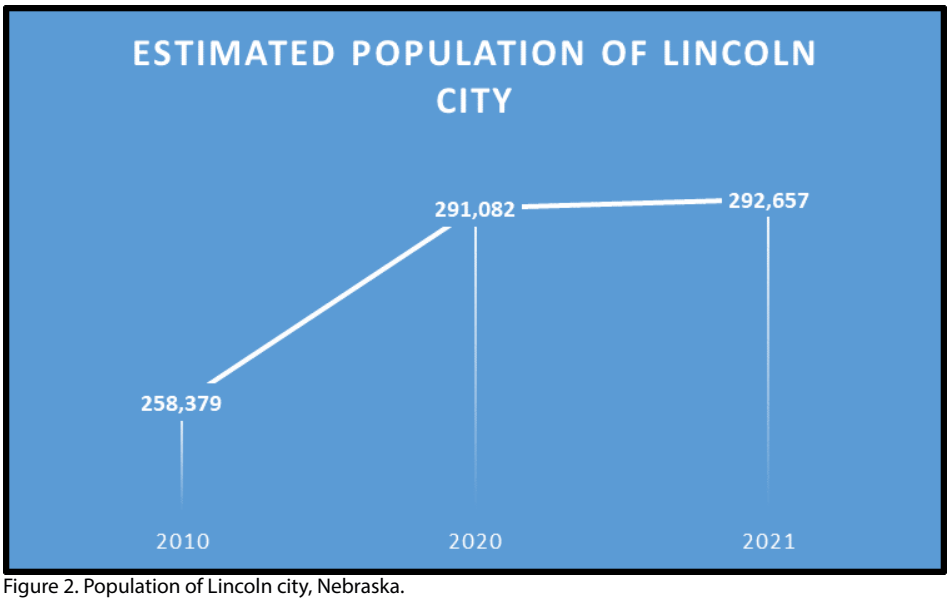


Figure 2. Population of Lincoln city, Nebraska.

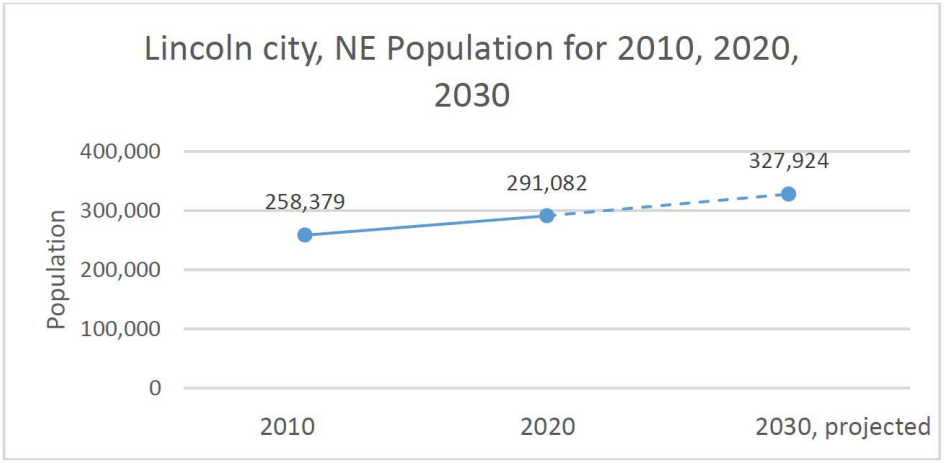


Figure 3. Projected Population of Lincoln in 2030.

of 1.2% in population (ACS 5-year Estimates). Assuming the city continues to grow at this rate, Lincoln's population is projected to be 327,924 in 2030 (see Figure 3).

Source: 2010 and 2020 Decennial census

A population pyramid for Lincoln (Figure 4) in 2020 reflects this mild growth, with many of the age categories being similar in size. There is an anomaly in this population pyramid that can be seen in the population aged between late teens and early thirties. This sudden bulge in population can most likely be attributed to the presence of the University of Nebraska–Lincoln, which has a student body of 25,000+ people. There may also be a carryover effect that comes along with attracting a large number of students, where recent graduates and young professionals stay in Lincoln before many of them move away as their careers advance.

If we expand the scope of this analysis to include the sixteen counties in SE Nebraska, we find a population of 473,452 (ACS 2020 5-year estimates). The demographics in this region can be similarly compared to those of Lincoln, though with expected minor variances due to the rural nature of these counties. Both Lincoln and SE Nebraska have slightly more males than females, Lincoln is 50.5% male, while SE Nebraska is 50.2% males (ACS 2020 5-year estimates). Lincoln and SE Nebraska are experiencing similar increases in their aging populations. SE Nebraska saw a 1.6% increase in people aged 65 and older between 2015 and 2020 according to ACS 5-year estimates for 2015 and 2020.

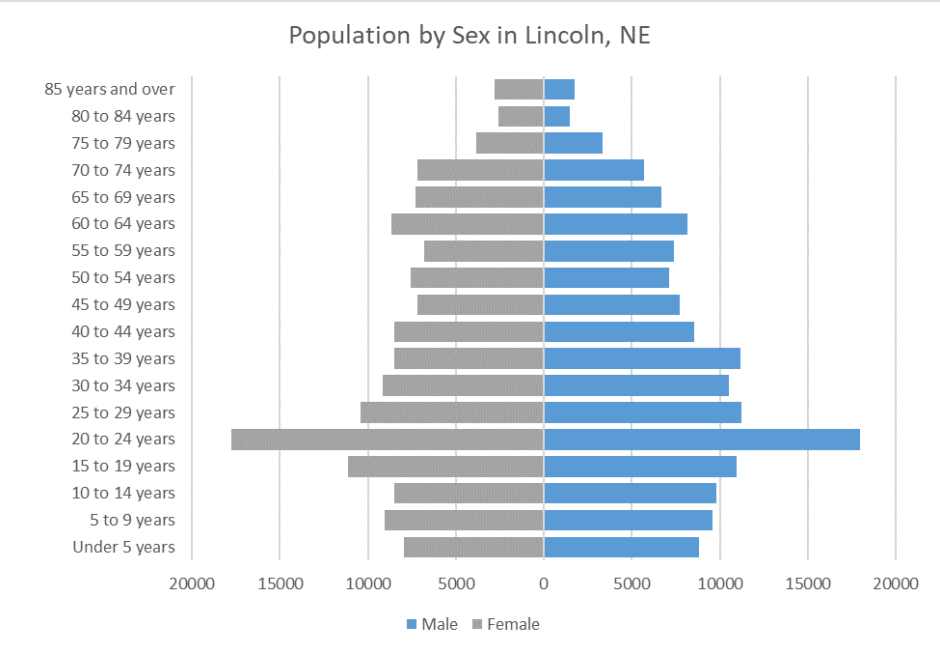


Figure 4. 2020 Lincoln, NE, population pyramid.

Observing these populations by race/ethnicity reveals that the general makeups of both study areas are similar, though Lincoln does display greater diversity (Table 1). Examining data from the 2020 ACS 5-year Estimates shows that 83.98% of Lincoln's population identified as White, while SE Nebraska had a higher figure—88.16%. Further evaluation of the racial breakdown of these places highlighted that the second and third largest racial groups in each area were Asian, followed closely by Black or African American, respectively. Both areas also have a low proportion of their populations identifying as American Indian or Alaska Native (0.69%, Lincoln; 0.59%, SE Nebraska) compared to the national rate of 1.3% (2020 ACS 5-year Estimates).

Table 1. Race/Ethnicity in Lincoln and SE Nebraska (SENDD).

Race/Ethnicity	SENDD	Lincoln
White	88.16%	83.98%
Black or African American	2.91%	4.27%
American Indian and Alaska Native	0.59%	0.69%
Asian	3.13%	4.64%
Native Hawaiian and Other Pacific Islander	0.06%	0.07%
Some other race	1.36%	1.50%
Two or more races	3.90%	4.85%
Hispanic (of any race)	6.85%	7.79%

Socioeconomic Conditions

In 2020, SE Nebraska and Lincoln had very similar average household incomes, with SE Nebraska averaging $79,969 and Lincoln $79,255 (ACS 5-year Estimates; Table 2). From there, socioeconomic characteristics start to diverge. For example, Lincoln recorded a poverty rate of 12.8%, approximately one and a half percent higher than the rate recorded in SE Nebraska (ACS 5-year Estimates). Though one might assume that a higher rate of poverty indicates a larger portion of the population not actively employed, the 2020 ACS 5-year Estimates demonstrate otherwise. This data indicates that Lincoln has an employment rate of 68.4%, while SE Nebraska recorded that 66.5% of the population was employed (ACS 5-year Estimates).

Table 2. Income, Poverty, and Employment Rate in SE Nebraska (SENDD) and Lincoln.

2020	Southeast Nebraska	Lincoln
Average Income	$79,696	$79,255
% in Poverty	11.30%	12.80%
% Employed	66.50%	68.40%

Both populations have similar levels of basic education. In SE Nebraska, 92.7% of the population has at least a high school degree, and in Lincoln this number is 92.9%—only two-tenths of a percent difference (ACS 5-year Estimates; Table 3). There is a disparity when examining who has a bachelor's degree or higher, which would most likely be explained by the location of the University of Nebraska–Lincoln and other higher-education institutions in the city. Nearly six percent more of the population holds a bachelor's degree or higher in Lincoln (39.9%) compared to the population of the greater SE Nebraska region (34.1%) (ACS 5-year Estimates).

Table 3. Education statistics for SE Nebraska and Lincoln.

Education Level	Southeast Nebraska	Lincoln
High School or higher	92.70%	34.10%
Bachelor's degree or higher	92.90%	39.90%

Over the past decade, residents of Lincoln were more likely to remain employed. The ACS 5-year estimates show that there was a 5.6% unemployment rate for Lincoln in 2010. In 2015, this number saw a modest decline, with the unemployment rate at 5.3%. A more dramatic decrease occurred between 2015 and 2020, where there was a 34% reduction placing the unemployment rate at 3.5% (2015, 2020 ACS 5-year Estimates; Figure 5).

The number of people in Lincoln receiving SNAP benefits has been fluctuating. In 2010, 8,004 people had received Food Stamp/ SNAP benefits in the past twelve months. This number increases over the next five years, which is when this number peaks. There were 10,602 people receiving these benefits in 2015. Recent years have seen this number decrease, though not to the level of 2010, to 9,775 people with these benefits in 2020 (2010, 2015, 2020 ACS 5-Year Estimates; Table 4).

Returning focus to SE Nebraska—in 2020, 11.6% of the population reported having at least one disability, and 5% reported not having access to a private vehicle for transportation (ACS 5-year Estimates; Table 5). Additionally, 6.6% of the population was foreign-born, which can most likely be attributed to Lincoln serving as a regional hub for the resettlement of immigrants and refugees (ACS 5-year Estimates).

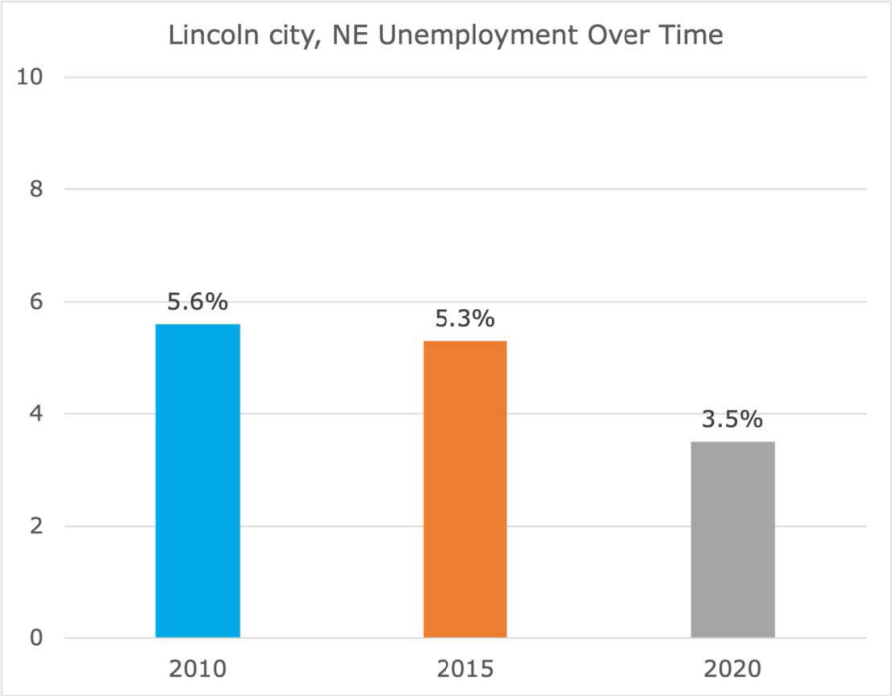


Figure 5. Unemployment rate in Lincoln, NE, over time.

Table 4 Food Stamp/SNAP Benefits in Lincoln.

Lincoln city, NE	2010	2015	2020
Population with Food Stamp/SNAP benefits in the past 12 months	8,004	10,602	9,775

Table 5. Percent of the population isabled, Foreign Born, No Vehicle Access in SE Nebraska.

SENDD	2020
% Disabled	11.60%
% Foreign Born	6.60%
% With no vehicles available	5.00%

Business Conditions

The economy in Lincoln supported 156,847 jobs as of 2020 (ACS 5-year Estimates). When the total number of jobs is broken up into their respective industries (Figure 6), there are several that stand out. First, the largest sector in Lincoln is Education, Health Care, and Social Assistance, which accounts for 43,313–27.61% of all jobs. This is followed by Retail with 16,999 (10.84%), and Professional, Scientific, and Management with 15,826 (10.09%) (ACS 5-year Estimates). Interestingly, Transportation, Warehousing, and Utilities stands out as one of the sectors experiencing the most growth. Between 2015 and 2020, there was 18.20% growth in the number of jobs in this sector—6,656 jobs in 2020 (ACS 5-year Estimates).

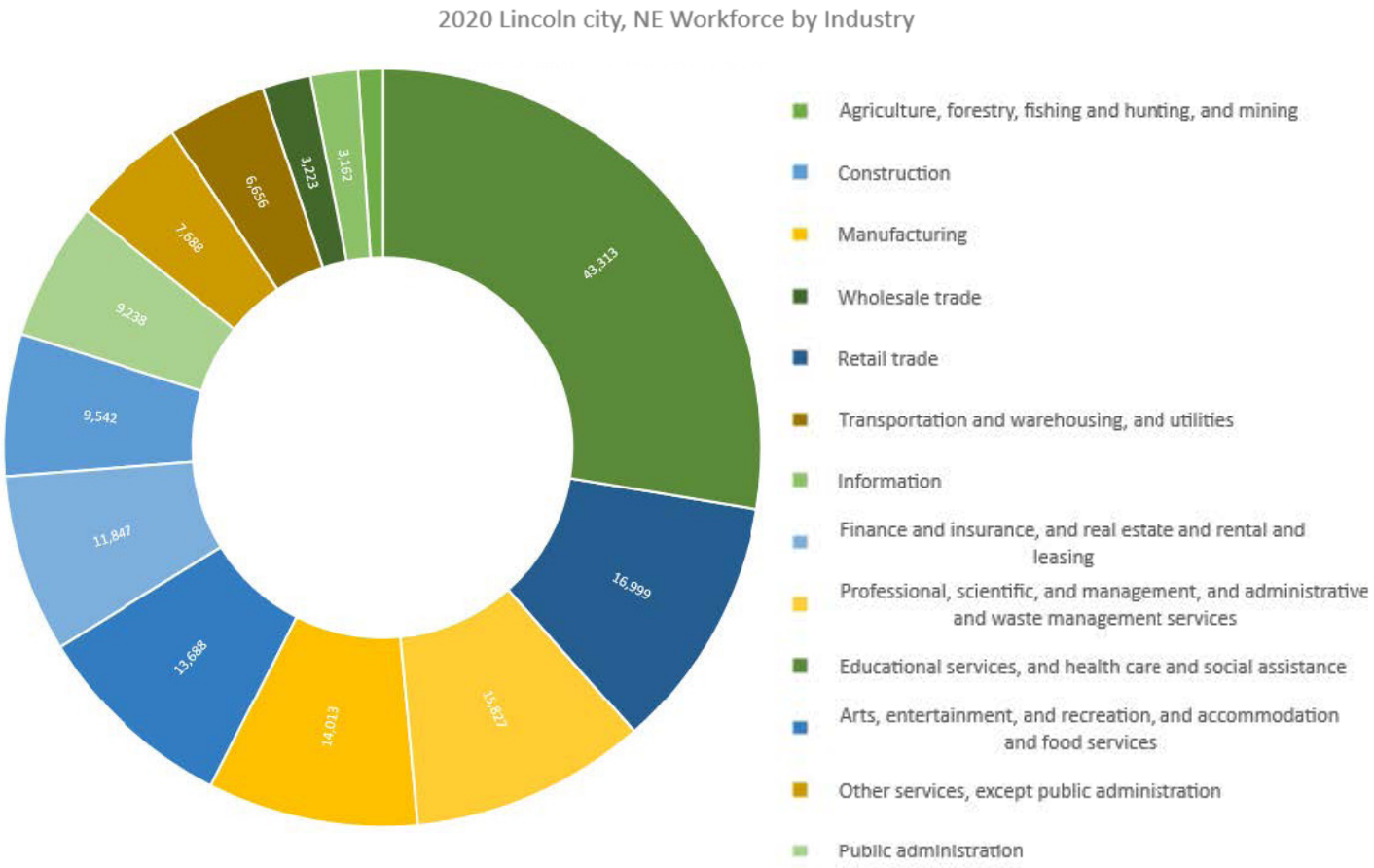


Figure 6. Lincoln workforce by industry.

In recent years, there has been growth in the number of establishments operating within the greater SE Nebraska region (Table 6). In 2018, the total number of establishments grew to 47,539, up from 45,410 in 2015 (2019 County Business Patterns, 2017 Economic Census, 2018 Nonemployer Statistics). Though this growth lends itself to a healthy economy any remaining momentum is fading or missing all together. Annual growth among establishments slowed to 0.61% in 2018, a trend that seems to be continuing today (2019 County Business Patterns, 2017 Economic Census, 2018 Nonemployer Statistics).

Table 6. Number of business establishments in SE Nebraska.

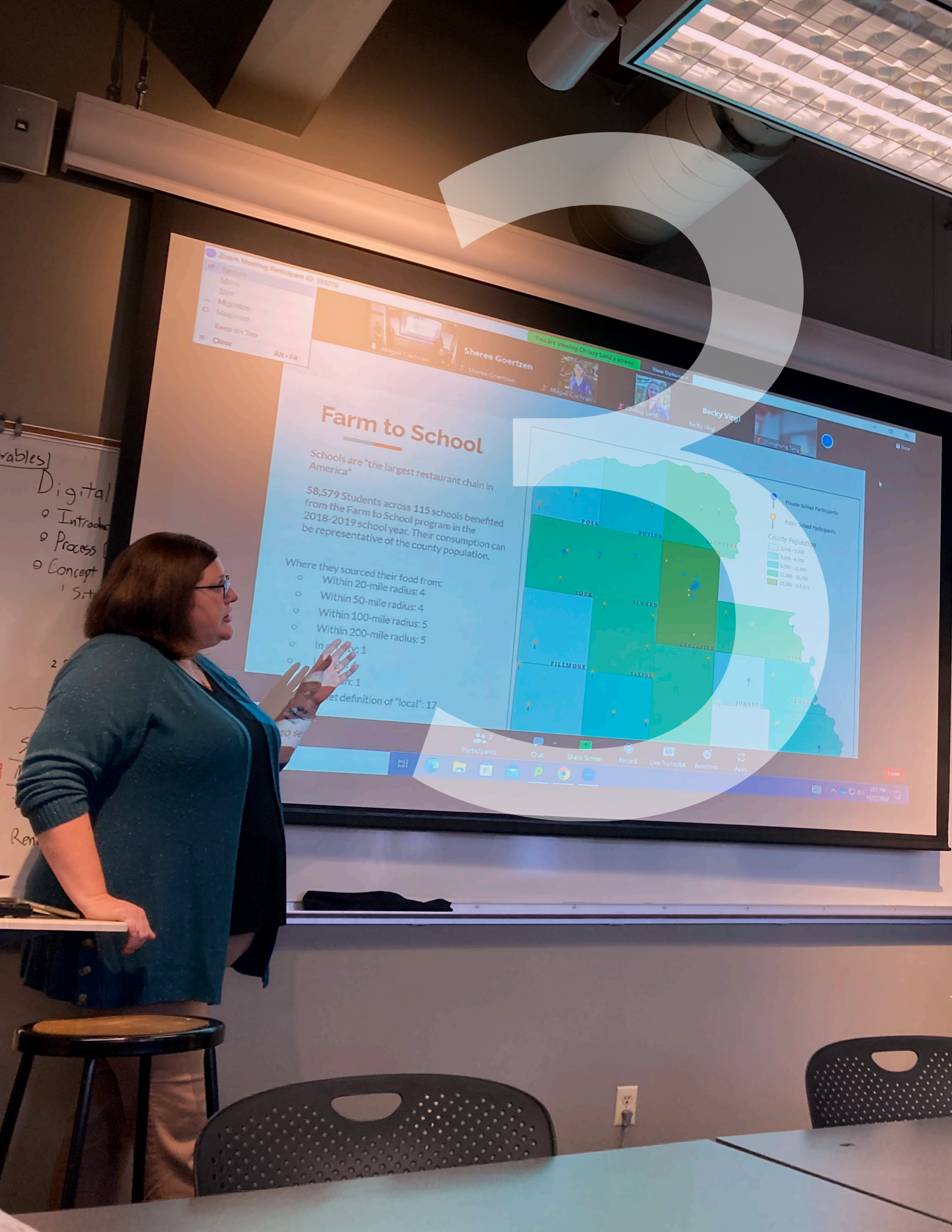
	Employer Establishments	Nonemployer Establishments	Total Establishments	% Annual Growth
2015	12,904	32,506	45,410	
2016	13,038	33,243	46,281	1.92%
2017	13,249	34,002	47,251	2.10%
2018	13,284	34,255	47,539	0.61%

A breakdown of employer establishments in SE Nebraska by their North American Industry Classification System (NAICS) code shows that of the 13,286 establishments—3.39% were 31-33: Manufacturing; 8.19% were 72: Accommodations and Food Services; while 44-45: Retail Trade made up 12.22% (2019 County Business Patterns, 2017 Economic Census, 2018 Nonemployer Statistics; Table 7).

Table 7. SE Nebraska establishments by NAICS sector.

NAICS	Employer Establishments	% Of Total Employer Establishments
All Sectors:	13,286	100.00%
31-33: Manufacturing	450	3.39%
44-45: Retail Trade	1,623	12.22%
72: Accommodations and Food Services	1,088	8.19%

Food Supply: Food Market Gaps and Food Deserts


Farm to School
Schools are "the largest restaurant chain in America"
58,579 Students across 115 schools benefited from the Farm to School program in the 2018-2019 school year. Their consumption can be representative of the county population.
Where they sourced their food from:
Within 20-mile radius: 4
Within 50-mile radius: 4
Within 100-mile radius: 5
Within 200-mile radius: 5
Sheree Goertzen
Becky Virgl
Private School Participants
Public School Participants
County Population
POLK
BUTLER
YORK
SEWARD
FILLMORE
SALINE
LANCASTER
JOHNSON
Participants
Chat
Share Screen
Record
Live Transcript
Reactions
Apps

Overview

In this section, the authors determine that a robust regional food system can bring food security and economic benefit to the community that it serves. For the Southeast Nebraska Development District (SENDD) to assess the health of the food system in its sixteen-county region and consider strategies for future investment, it first needs to understand this system's successes, and whether there are any gaps–such as an insufficient amount of farmers of fresh produce, or inequity in food access. Central to this chapter are questions related to the supply side of the food economy. The production of food and its distribution methods are examined, along with a look at financial barriers to entry for food producers. Utilizing a mixed methods approach, information was gathered from primary sources by interviewing stakeholders in the food economy–such as farmers and community bankers–and from secondary sources such as the U.S. and Nebraska Departments of Agriculture, the Agricultural Census, and so on. Findings show that while the Southeast Nebraska region is abundant in agricultural production, the focus has been on the production of traditional crops (corn and soybeans) for export, and not on growing produce that feeds local communities. A small number of farms exist in the region that produce food for local consumption, but the methods to distribute this product to consumers, independent retailers, or larger institutions are limited, and in need of additional investment or expansion for the region to benefit from local food production. The supply of locally produced food is also impacted by the high barriers to entry into agriculture for new farmers. With high up-front expenses, including the cost of land and seed, as well as rigid loan approval requirements from lenders, many prospective farmers are unable to start an operation, let alone grow a profitable one. Numerous recommendations follow in Chapter 5 which further outline the approaches that SENDD can take to address these gaps and barriers.

Introduction

Increasing access to locally produced food can enable communities to close gaps that exist in the food market and shrink food deserts. Though many community members have expressed a desire for more locally sourced food, meeting this desire has proven difficult, as there are significant challenges in the form of food production and distribution. The agriculture industry in Southeast Nebraska plays a significant role in the regional economy, and the continued health of this economy is important in the effort to increase access to locally produced food. Shortcomings in existing operations for the production and distribution of food can be seen throughout the region and have been made increasingly evident during the COVID-19 pandemic: "As the COVID-19 pandemic has graphically demonstrated, our national and global food system is subject to distribution bottlenecks and breakdowns. Having our own centralized food production and distribution capability greatly increases the likelihood that both we–and our children–will always have plenty to eat" (Nebraska Legislature 2020).

Research Questions

The motivation of the authors of this section, in formulating the following research questions, was to gather a breadth of information on the food system in Southeast Nebraska without excluding relevant problems and solutions. Furthermore, it was an attempt to make sure that data was focused on the most relevant information so that the user groups most able to make an impact on the food systems were accounted for. With that in mind our first research question reads:

1. What food production and distribution methods are available in Southeast Nebraska?

With this question we were able to look at how the food system in Southeast Nebraska was effectively functioning as it stands today. We wanted to analyze where food was coming from, who it was going to, and what middlemen exist in the process of delivering food from the grower to the consumer. Naturally, as we analyzed the food system, we hypothesized that we would find tension spots and breakdowns in the system. By understanding the process as a whole, we would be better suited to understand

its efficiencies. This question led us to two important sub questions about processing and dissemination of food and about the communication of services and processes to everyone involved in the food system. These questions read as follows:

- Is there a method of communication to inform producers on changing demand for produce from the community?

- Is food processing available and communicated to producers?

Once we had an understanding of the food system's current operations, we knew there would be barriers to access for all levels of the system that prevent some of its inefficiencies from being easily remedied. From the conception of the project, we had been informed anecdotally that the district typically was too wealthy for a large amount of government grants and aid. Our first goal in understanding barriers to access was to unpack that assumption:

2. What are the barriers to access in receiving funding for farmers or producers in SENDD, especially when the affluence of the district can exclude people from federal or state grants?

Similarly to question one, it was important for us to gain a full understanding of what the process of funding a farm operation might look like before being able to tailor recommendations. We wanted to ensure we had an understanding of traditional bank lending from a community-level bank, the types of government-sponsored funding typically available, and then explore alternatives to these two more traditional lending streams:

- What funding alternatives are available?

Finally, the counties within Southeast Nebraska do not meet traditional markers for need-based funding. Diversity is low overall, and income is typically higher than poverty classifications. Despite this, farming and food production is becoming increasingly out of reach. Therefore, we speculated that there must be additional factors at play in the region that are creating barriers to access for local producers:

- What cultural and social factors need to be considered to increase equity from the supply side?

Methods

A mixed methods approach was taken, which involved both quantitative and qualitative data collection and analyses. Furthermore, the methodology utilized both primary and secondary data sources. The primary sources include interviews conducted with experts in the field of rural agriculture, rural food systems, and the financial/banking sector. The secondary data sources include, but are not limited to, Census data (American Community Survey, or ACS), ArcGIS Analyst data about the Southeast Nebraska region, and numerous other studies, polls, and journal articles that provided a mixture of qualitative and quantitative data for our analysis. The interviews were performed as one-on-one, informal phone conversations or more formal video Zoom conversations, each with guiding questions selected by the research team member leading the interview and directed to learn more about different aspects of rural agriculture, rural food systems, and the financial/banking sectors. Interviewees included:

- Kevin Thiele is the Sr. Vice President and a Board Director at Wahoo State Bank with decades of experience in agriculture lending.

- Sarah Smith with the Nebraska Department of Education is the Farm to School specialist for the state of Nebraska and specializes in connecting public and private schools with the local farming community for their fresh produce needs.

- Mindy Mcgrew is the owner of Little Red Farm and Farmer's Market in Otoe County, Nebraska, which is a small-scale farm operation focused on selling raw milk, animal proteins, eggs, and non-produce goods.

- Liz Ruskamp is a US Soybean Export Council Industry Relations Specialist who grew up in the Southeast Nebraska region; her family is breaking into traditional crop agriculture and has found

some unconventional ways to transition into the field. Her knowledge comes with both personal and professional levels of understanding of agriculture and the community that surrounds it.

- Casey Foster is the Ag Program Manager for the Nebraska Department of Agriculture. He recommended the use of the Nebraska Department of Agriculture's (NDA) "Nebraska Farmers Market and Produce Vendor Search" tool and to reach out to Vanessa Wielenga.

- Vanessa Wielenga, R.D., is the Associate Extension Educator focused on Food Access; she directly coordinates state healthy food access initiatives such as the 'Double Up Food Bucks' program.

Findings

Key Terms

- Traditional Crop Agriculture: refers to Corn and Soybean farming within Nebraska

- Micro-Farm: a farm operation with sales less than $2,500 annually

- Community Bank: locally-operated bank that makes majority of deposits and loans to local residents and businesses, using "relationship-banking" with local metrics and know-how over model based underwriting; in Nebraska, typically operate with $50-150M in lending power

- School Food Authorities (SFAs): Schools or groups of schools which are eligible to receive federal meal reimbursements and school food program support

- Farm Service Agency (FSA): an agency of the US Dept of Ag, focused on serving farmers, ranchers, and ag partners through the delivery of ag-related programming and funding

Research Question #1

What food production and distribution methods are available in Southeast Nebraska?

Food Production

Identifying food market gaps or food deserts in the region starts with determining what food is being grown for consumption by those in the Southeast Nebraska community. There is a large amount of data available for farm operations in Nebraska, but much of it is limited to providing in-depth details about farms which practice traditional crop agriculture, such as the growth of corn and soybeans for commodity farming. The research approach taken, therefore, was one which eliminated from analysis (as much as possible) the farms which do not grow produce that is available directly to the local community for consumption.

The most effective tool for isolating the direct-to-consumer farming operations from the rest of the farming population was the Nebraska Department of Agriculture's (NDA) "Nebraska Farmers Market and Produce Vendor Search" which allows users to identify produce growers through a search by county or city (Nebraska Department of Agriculture 2022). Information about the farming operation is provided by the owner and includes details such as what produce is grown, where they are located, whether they have a presence in any local farmers markets, and whether they accept federal food subsidies through programs such as the Supplemental Nutrition Assistance Program (SNAP) and Senior and Womens, Infants, and Children (WIC) Farmers Market Nutrition Programs. Users of the site could also search for Farmers Markets by county or city and find the locations and hours of operation for the various markets.

Through an analysis of the produce growers for each of the 16 counties in southeast Nebraska, it was determined that there are 149 direct-to-consumer farm operations.

Through an analysis of the produce growers for each of the 16 counties in southeast Nebraska, it was determined that there are 149 farm operations that grow produce available direct-to-consumer. The number of produce vendor farms is quite low, relatively, considering the number of farms in the region. Analyzing data from the 2017 Census of Agriculture, it was determined that there are 11,767 farms operating in the Southeast Nebraska region ("USDA - National Agricultural Statistics Service - 2017 Census of Agriculture - Volume 1, Chapter 2: County Level Data" 2017). Many of these farms operate more than 100 acres, some up to more than 1,000 acres. Direct-to-consumer farmers of produce would most likely, we determined, operate on a smaller scale, and therefore we conducted a search for smaller farms in the region. For farms sized 10 to 49 acres, we found there to be 2,646 operations. For farms sized one to 9.9 acres, there were found to be 916 operations. The largest concentration of these smaller-sized farms can be found in Lancaster County. While trends seen statewide indicate that the number of total farms has decreased while the average size increased, Lancaster County served as an exception to this, with smaller farms surviving there. Microfarms are farms which are less than five acres in size and which have sales under $2,500 annually. These microfarms account for 42% of the farms in the county ("Comprehensive Economic Development Strategy" 2021 and Agribusiness: Illinois College Online 2019).

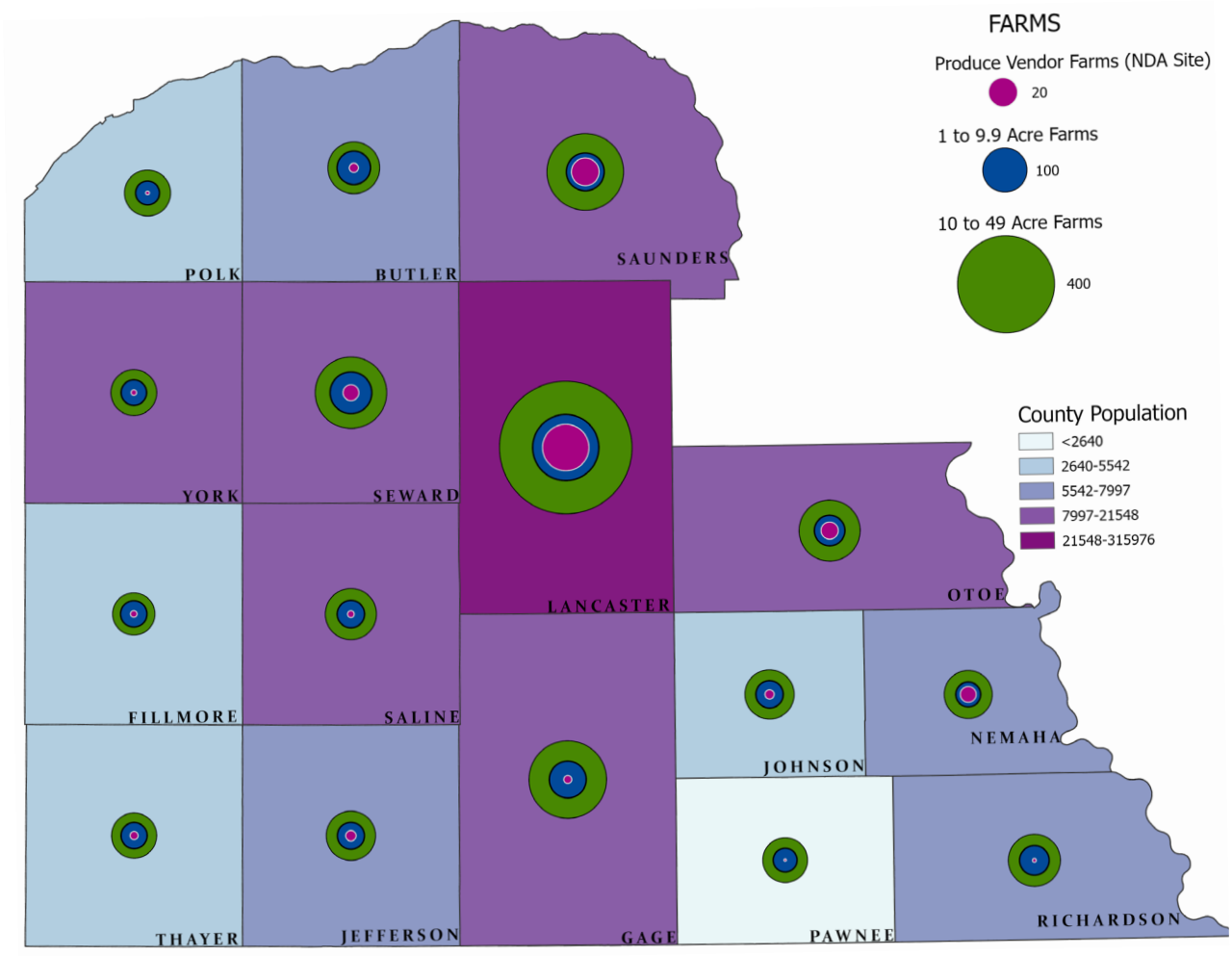


Figure 7: The populations of the 16 counties in Southeast Nebraska, with visual depiction of the amount of small-sized and micro-sized farms in the area.

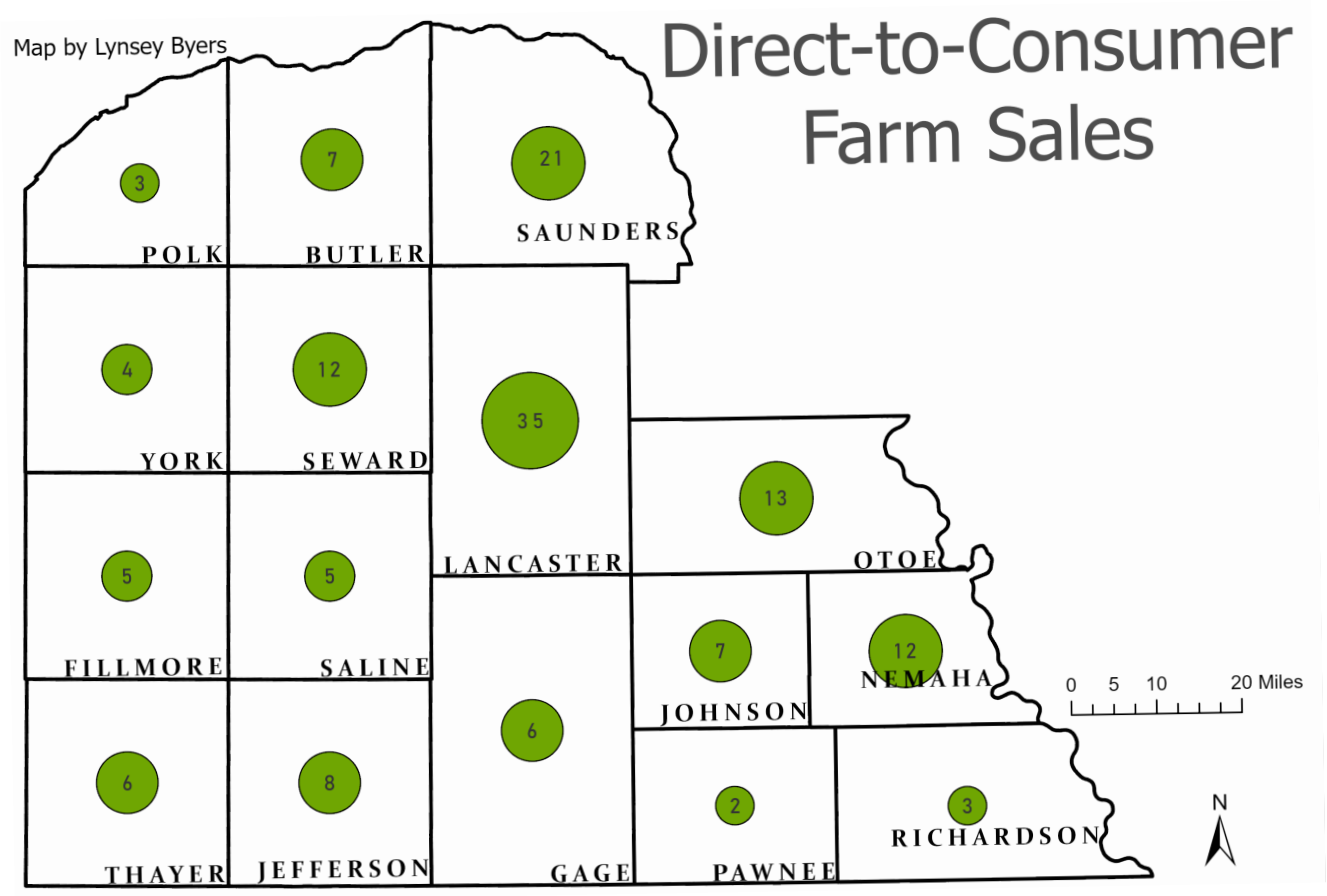


Figure 8:The number of direct-to-consumer farm operations found in each county of Southeast Nebraska.

The 2017 Census of Agriculture provides county-level information about the number of farm operations that produce fruits, nuts, and/or vegetables and, in some cases, also indicates the number of acres harvested for that food item. The Nebraska Department of Agriculture's produce vendor tool also indicates what types of produce each vendor grows and sells, if the vendor has provided that information.

Table 8: Contains data from the 2017 Census of Agriculture and indicates the number of operations in Southeast Nebraska which grow the produce item listed (National Agricultural Statistics Service 2017).

	Produce Item		# of Operation
1	EGGPLANT		21
2	ESCAROLE & ENDIVE		2
3	GARLIC		26
4	GREENS		39
5	HERBS		18
6	HORSERADISH		6
7	LETTUCE		133
8	MELONS		53
9	OKRA		10
10	ONIONS		58
11	PARSLEY		8
12	PEAS		28
13	PEPPERS		89
14	POTATOES		45
15	PUMPKINS		49
16	RADISHES		40
17	RHUBARB		4
18	SPINACH		26
19	SQUASH		96
20	SWEET CORN		39
21	SWEET POTATOES		20
22	TOMATOES		68
23	TURNIPS		22

There are positives and drawbacks to the use of these data sources (i.e. the Nebraska Department of Agriculture Search Tool and the 2017 Agricultural Census). It is possible that the NDA's tool is not comprehensive and inclusive, in the sense that other produce growers could be in the region yet are not currently found in the tool. There is a disclaimer on the website, which indicates that the information on the site is submitted by the entities listed and that it is their responsibility to maintain listings for accuracy. Additionally, the tool lacks information regarding the size of the farm operation or how much of the produce they have harvested during the recent harvest season. The data from the NDA tool, however, could be more recent than that in the 2017 Agricultural Census. Given that the data in use was gathered five years ago, it is possible that the number of farm operations has changed and that the 2017 data is not a current reflection of the direct-to-consumer farming landscape in the region. There will be an additional agricultural census released for 2022 data, but that is not currently available. To try to include a more accurate picture of what food is produced in the region, both sources (the NDA tool and the 2017 agricultural census) are relied upon in this research, despite their discussed limitations.

In addition to produce grown, the southeast Nebraska region is also home to several livestock productions. There are a total of 4,969 farms, which contain livestock that can include: beef (cattle), cows (liquid milk), chickens (broilers), chickens (layers), hogs, and sheep (including lambs). Beef is overwhelmingly the most populous livestock commodity in the region ("USDA - National Agricultural Statistics Service - 2017 Census of Agriculture - Volume 1, Chapter 2: County Level Data" 2017). No reliable information could be found regarding the number of livestock operations that are largely for commodity and export versus those which also provide direct-to-consumer sales.

Food Distribution

For a typical food consumer, produce items will be purchased from grocery stores and at farmers markets. Food distribution data resources were similar to food production data resources in terms of reliability and completeness of the information. The Nebraska Department of Agriculture's (NDA) "Nebraska Farmers Market and Produce Vendor Search" was utilized to identify the various farmers markets which operate in the region. There was no one data source which was determined to be complete and reliable for listing all grocery stores in the region, so for this research we aggregated the list of stores ourselves, utilizing web searches (e.g., Google) to locate stores in each county. Addresses were collected for both stores and farmers markets so that they could be mapped using ArcGIS Pro software.

Additionally, census tracts where median household incomes qualify residents for federal food assistance programs (such as SNAP and WIC) were isolated to draw attention to areas where community members may experience more food insecurity, and thus, need additional food access.

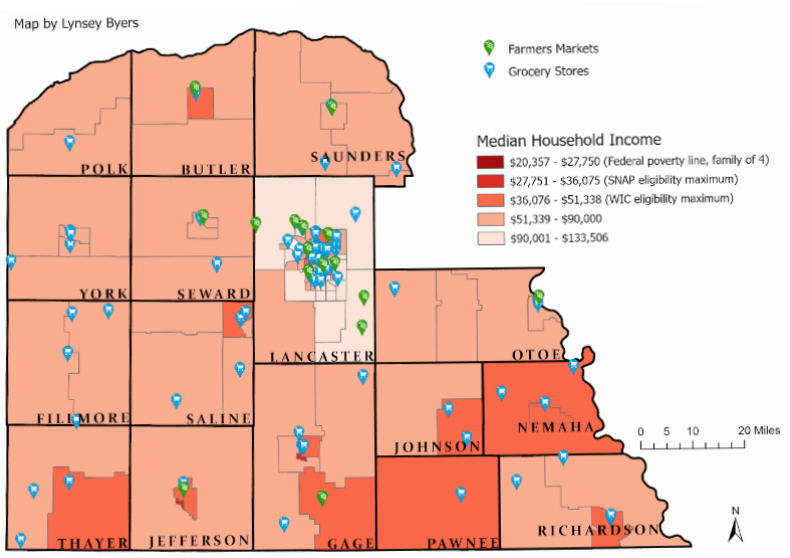


Figure 9: Grocery Stores and Farmers Markets found in the region along with Median Household Income which highlights areas where lower incomes and food equity could be of concern.

Food Distribution through the Farm to School program

Federal assistance for food access

for children is, in part, provided through several school-based nutrition programs, such as the School Breakfast Program and National School Lunch Program. Nebraska's Department of Education coordinates the Farm to School program, which operated in 115 schools in southeast Nebraska in the 2018–2019 school year (Nebraska Department of Education Nutrition Services 2022) and serves as a reliable source of fresh produce for students, in many cases procured locally in the region. The program began in 2009 and has grown to be an active contributor in school classrooms and communities. The program touts many nutritional and educational benefits along with the economic benefits it brings to school districts, local producers, and their communities. "Farm to school procurement is a business relationship between school nutrition administrators charged with feeding our children, and the local farmers and market gardeners who supply the food. Likewise, these same growers are contributing heavily through property taxes that build the budgets of our local school districts" (Nebraska Legislature 2020). The financial benefit to local communities alone is significant enough to warrant the extension of the program to the entire state of Nebraska, which the state legislature passed in 2021. "Each dollar invested in farm to school stimulates an additional $0.60-$2.16 of local economic activity. Sales

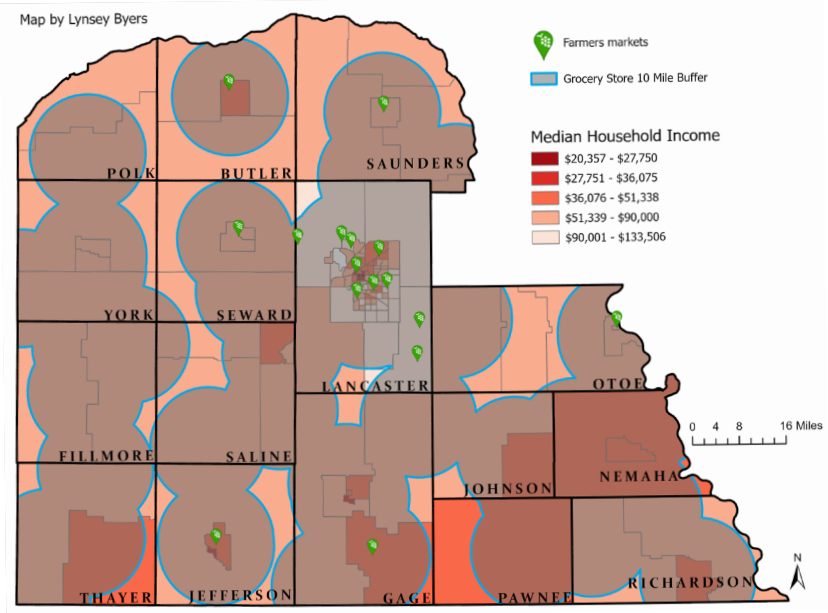


Figure 10: Highlighting census tracts whose residents' household incomes qualify them for federal food assistance programs such as SNAP or WIC.

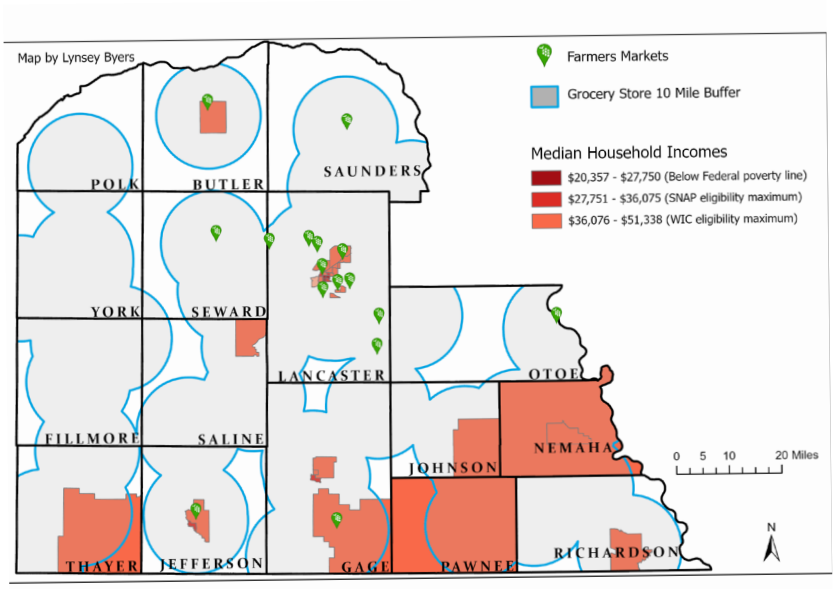


Figure 11: Highlighting census tracts whose residents' household incomes qualify them for federal food assistance programs such as SNAP or WIC.

to institutions can establish long-term revenue streams for individual food producers, and provide new opportunities for market diversification" (Nebraska Legislature 2020).

The program doesn't just feed kids' stomachs, it feeds their brains as well. An important component of the program is focused on inspiring kids to consider future careers in agriculture. Lincoln Public Schools is the largest School Food Authority (SFA) participant in the region, feeding over 42,000 students through the program with $823,874 in purchases of local food, which they define as

food produced within 250 miles of Lincoln. They have adopted innovative and educational ways to integrate the local food into the daily lives of the students.

"Each dollar invested in farm to school stimulates an additional $0.60-$2.16 of local economic activity. Sales to institutions can establish long-term revenue streams for individual food producers, and provide new opportunities for market diversification" (Nebraska Legislature 2020).

Figure 12: Farm to School program infographic from Lincoln Public Schools, illustrating the many ways in which they have benefited from the program.

While the program reaches over 58,000 students in Southeast Nebraska, more can be done. Nebraska has one of the lowest participation rates in the School Breakfast Program, with only three states having lower rates. During the 2018–2019 school year, only about 44.7 percent of children who participated in the school lunch program also participated in the School Breakfast Program (Nebraska Department of Education Nutrition Services 2022)

Increasing participation in these programs and ensuring fresh and healthy food access for children remains a work in progress and one that involves intergovernmental relations with collaboration between the Nebraska Department of Education and other groups, such as the Nebraska Extension's Farm to School Institute and the USDA Farm to School grant program, which is federally run. In an interview with an administrator with the Nebraska Department of Education, it was shared that Nebraska has received continued funding from the USDA Farm to School grant program as well as additional injections of funds from Local Food for Schools, the Local Food Purchase Assistance Program, and Supply Chain Assistance Funds. Each of these are additional injections of assistance from ARPA (American Rescue Plan Act) federally approved and distributed funding and all of which require coordination and collaboration across multiple agencies and sectors (public, private, nonprofit) to ensure that the assistance is used in the best and most equitable way possible.

The LR337 Task Force, which examined the Farm to School program in 2020, and which was pivotal in the recent approval to extend the program statewide, identified one of the fundamental difficulties that is faced by schools and producers: logistics of food procurement. "Due to limited knowledge and/or capacity for sourcing and purchasing these local products, it is understandable that schools often purchase food for school meals and snacks from regional and national intermediaries and distributors. These suppliers have established extensive supplier networks with food processors and in some cases directly with growers, that can pool purchases to command the most favorable prices, and that have warehousing, storage, transportation and perhaps processing capabilities to service accounts reliably. They have evolved to serve the unique needs of institutional buyers that purchase in large volumes, that prepare and serve hundreds of meals daily within defined budgets and average meal costs, and that are subject to certain regulatory standards regarding food sourcing. It is also attractive to schools and other institutional customers that such suppliers can often deliver foodstuffs in readily usable forms that minimize preparation and cooking times otherwise required by food service staff" (Nebraska Legislature 2020). The impediments identified are all capable of being resolved, and some of these recommendations follow in Chapter 5.

Legislation and Regulation Impacting Food Production and Distribution

Nebraska has prioritized local agriculture growers and food producers in its legislation. Several important laws have been passed to facilitate production of small-batch local products including:

- LB 304: Cottage Food Law
  A person may prepare and sell food that is not Time/Temperature Control for Safety Food directly to the consumer at a public event or for pick up or delivery without obtaining a food establishment permit. (LB 304 § 81-2,280)

- LB 324: Beef purchasing direct from Farmer Herd/Animal share means an ownership interest in an animal or herd of animals generated by an inscribed contract between an informed end consumer and a farmer or rancher that contains a bill of sale to the consumer for an ownership interest in the animal or herd and a boarding provision under which the consumer boards the animal or herd with the farmer or rancher for care and processing and the consumer is entitled to receive a share of meat from the animal or herd; (LB 324 § 54-1902)

- NE Revised Statute 2-3969: Stipulations on Raw Milk and Dairy Farmers are allowed to sell raw, unpasteurized dairy such as milk and cream

directly to consumers as long as it is on their farm.
- There are also laws advocating for egg layers and other specific growers.

Is food processing available and communicated to producers?

Custom exempt plants are available for smaller farmers who are selling their meat at their farm via a herdshare agreement. LB 324: Beef and meat purchasing direct from farmer, which enables consumers by definition of ownership to allow livestock producers to offer home-raised meat that is processed at custom-exempt plants. The way to purchase meat is by means of a herdshare agreement, which is when a consumer is permitted to buy home-raised meat from the farmer by purchasing a share of the live animal before it is processed at a custom-exempt plant (LB 324 § 54-1902). This bill enables farmers to sell organic grass fed/grass finished meat, which is healthier and higher quality meat. It also enhances the resilience and sense of the community, as helping a small farmer who is also helping the community is a complete, symbiotic relationship. Both parties benefit from the herd share agreement, investing in your animals to eat is not only investing in a small farmer or small business, but more importantly is investing in your community.

This law (LB 324) also further produced an assistance program for independent processors, which assists in distributing funding to particular federally- or custom-exempt processing facilities who employ fewer than twenty-five people (Heavican 2021). However, Nebraska along with the state of Michigan, are the only two states in the Midwest without a state-run meat inspection program, meaning only federal and custom-exempt plants are operating in Nebraska (Orr 2021). Any farmer or rancher who is offering shares of animals has to be a Nebraska resident, and keep and log documentation pertaining to each individual animal sold via a herd share agreement (Heavican 2021). The producer also, whether it is a farmer or rancher, needs to give the consumer information on their livestock health and processing standards (Heavican 2021). Furthermore, recipients of funds once money is apportioned will be able to use funds for construction costs, monetary and resource enhancements, utilities ameliorates, equipment, technology, building rentals, costs pertaining to heightened oversight and educational and workforce training according to Heavican (2021). NE Revised Statute 2-3969 also enables a farmer to sell raw dairy (milk/cream) as long as it is sold directly to the consumer but sale has to be done on farm.

LB 304: Cottage Food Law

The Cottage Food Law (LB 304) gives individuals the legal ability to be able to sell homemade goods that are permitted for sale at a Farmer's Market straight to the consumer and can be sold via the producer's home, at fairs, festivals, online, or at other events held publicly within the state borders of Nebraska (LB 304 § 81-2,280). The bill enables these smaller producers to sell baked goods that don't contain toppings or fillings that would need to be kept refrigerated, even pies as long as they are not made with a dairy-based filling (LB 304 § 81-2,280). Candies such as fudge, toffee, brittles, chocolate, cotton candy, etc can also be sold under the Cottage Food Law (LB 304 § 81-2,280). Condiments such as oil or honey can be sold, but cannot contain garlic or herb mixtures; vinegar as well as syrups, however, can be sold even if they are infused with herbs and produce (LB 304 § 81-2,280). Dry goods like dry fruit, cereals, dry coffee beans, dry pasta, spices, baking and soup mixes, and seasonings are also permissible (LB 304 § 81-2,280). Preserved foods like marmalades, except those with peppers unless the pH test that comes back from a lab is under 4.2, jams, and jellies are legal under this law (LB 304 § 81-2,280). Snacks like chocolate-covered nuts or pretzels, caramel corn, crackers, popcorn, kettle corn, granola, nuts, and seeds are also lawfully able to be sold by a producer under this law (LB 304 § 81-2,280). All a producer has to do is pass a food safety course offered by Nebraska Extension, and the course itself can be completed at home

online, or conducted in person for $20-$25 (LB 304 § 81-2,280). The producer also, conveniently, can register their cottage food business for free online with the Nebraska Department of Agriculture. However, if the producer is only selling food at a farmer's market, they do not have to register with the Department of Agriculture, according to the Nebraska Department of Agriculture (LB 304 § 81-2,280). The food can't be sold at grocery stores, restaurants, or any other food establishments that are commercial (LB 304 § 81-2,280). If these cottage foods would be allowed to be sold in commercial food establishments, it would contribute to greater food access in the region. This law affects the SE Nebraska region in the fact that producers or individuals now have the ability to sell these foods listed above produced at home to a broader number of people especially considering they can sell them at home or via an online order. Furthermore, while most of these foods may not be traditional produce, meat, or dairy, these are still foods that people can eat. This variety of foods being permissible to produce and distribute enhances a different form of small time production and distribution directly to the consumer. Even without the commercial establishment retail for cottage food producers, they have the ability in SE Nebraska to have more food production and distribution with this law in place. Even if you can't go to the local farmer's market, a venue, or the producer's home for pick up, you can still order online and have it shipped to you. This further explains how the cottage food law is expanding production for producers and enabling distribution direct to the consumer.

What organizations or institutions exist to facilitate the production and distribution of food within Southeast Nebraska?

Mindy Mcgrew is the owner of Little Red Farm in Otoe County. She sells raw milk and cream. This is due to passage of Nebraska Revised Statute 2-3969, which states that farmers are allowed to sell raw, unpasteurized dairy such as milk and cream directly to consumers as long as it is on their farm. Mindy also sells meat through a herdshare agreement, all on her farm. Her farm has a farmer's market on it where she sells all these products. She also sells eggs and other things like milk/coffee bombs. Her chickens are pasture raised and her cows are grass fed. She can use custom exempt plants for selling herdshare meat to the consumer, as long as the consumer invests by buying shares in the animals they eat. This helps not only the small farmer, but also the community because it enhances their ability to conveniently and affordably access local meat and dairy.

Research Question #2

What are the barriers to access in receiving funding for farmers or producers in the SE Nebraska region, especially when the relative affluence of the district can exclude farmers and producers from federal or state grants?

Farm Service Agency (FSA)

While the FSA does offer additional support to new farmers, like down payment assistance and joint financing, the applicant must still have good credit and proof of income. Once these requirements are met, funding through the FSA is limited to only fifty percent of what is needed for operations to begin. This leaves young and new farmers reliant on other sources of funding. Many work with community banks, or possibly private third-party investors, to cover the remaining financial needs. Add to this the amount of work that is needed to receive government funding, it is easy to see how applicants could become overwhelmed and potentially opt out of pursuing this support.

High Cost of Entry

The ever increasing, high cost of entry for farmers and ranchers in SE Nebraska is including but not limited to farmland price increases, an increase in prices of supplies like pesticides, herbicides, grains, farm equipment, tractors, diesel, etc.

The cost of entry into the agriculture industry is prohibitively high, particularly

for traditional agriculture, which makes up the majority of farm activities in the SE Nebraska region. Those individuals interested in entering a career in agriculture must overcome the difficulty of funding their operation with costs that continue to grow. A potential farmer must secure land and equipment before operations even begin. The cost of land in SE Nebraska averaged $4,921 per acre in 2017 (USDA Census of Agriculture 2017), with prices continuing to rise. Machinery and other equipment proves to be another significant expense facing farmers. A new combine can cost over one million dollars. A new tractor can cost a farmer several hundreds of thousands of dollars, not including the necessary implements needed to properly use these machines. Additionally, the average cost of seed per farm in SE Nebraska was another $44,500 per year. While land and machinery can be rented, these costs are still required up front with any potential revenue months away.

The US government does recognize that the high cost of entry is a challenge for agriculture, as evident through the existence of the Department of Agriculture's Farm Service Agency "Beginning Farmer" program. This program provides direct and guaranteed financing to farmers and ranchers who are starting in the industry. The funding provided through this program allows for the acquisition of land and necessary machinery, as well as covering necessary operational and living costs. However, receiving funds is contingent on the applicant meeting the USDA's definition of a "beginning farmer." Notably, the applicant cannot have operated a farm in the last ten years; and if the applicant is an entity, all members must meet the criteria of being a beginning farmer and must be related either through marriage or blood. While this funding is an important support for the industry, according to Kevin Thiele, Senior Vice President at Wahoo State Bank, it can no longer come close to adequately covering the expenses that young farmers face.

Cost of Maintenance and Operation

John Deere fought hard to block the signing of legislation, LB543 - the Agricultural Equipment Right-To-Repair Act, which requires manufacturers to make available the parts, means, and instructions necessary to repair farm equipment and machinery independently. For food supply in SE Nebraska, this could potentially ruin a farmer's harvest or season if they are not able to work, fix and repair their tractors. John Deere told Nebraska's unicameral legislative senators that, "Deere & Co. supports farmers repairing their equipment, but they don't support the "right to modify." (Byrne 2022) They claim that farmers can already fix 98% of their equipment, so there is not a problem for legislators to address. Byrne goes on to state that, "2% of repairs that Deere blocks are many problems that can take a machine down 100%" (Byrne 2022). The bill, according to the Nebraska Legislature's website (https://nebraskalegislature.gov/bills/view_bill.php?DocumentID=44446) has been indefinitely postponed, and it seems as if farmers are being put into a corner when it comes to their own equipment. Furthermore, if farm equipment goes down in the middle of the season, it will certainly cost farmers their harvests, which would directly affect the supply available to consumers, especially feed for livestock in SE Nebraska. While the majority of agriculture in the region is corn and soybean crops, these issues affect farms of all sizes, and likely will be harder for smaller farms to recover from, due to lower budgets and profit margins. A farmer from Ceresco, Nebraska which is a small village in Saunders county who had his $250,000 tractor go out of commission talks about the struggles of having to deal with the ever changing technology in farm equipment. (Olivia 2017) The issue specifically was with a computer loaded with troubleshooting software that connects to a port inside the tractor to identify and resolve the problem. (Olivia 2017) Only manufacturers and authorized dealers are allowed

that tool, and they are charging hundreds of dollars in fees to use it. (Olivia 2017) For farmers in an increasingly compressed industry, not being able to fix the equipment they paid for will affect the way farmers in SE Nebraska are able to fix their equipment without all this hassle and potential financial burden. If they can't use their tractors for harvest, what they can produce for local consumption would be utterly ruined. In an interview, Mindy Mcgrew from Little Red Farm in Otoe County shared that Nebraska had a drought last season and some farmers lost around 50% of their harvests. Farmers, ranchers, and producers should strongly consider another push for some type of Agricultural Equipment Right-To-Repair Act that will enable them to fix their equipment's technical and mechanical issues, to further assist in avoiding a loss of harvest. This video link below shows specifically in Nebraska what these farmers are having to wrestle with in Nebraska when it comes to the whole problem of dealing with not being able to fix or repair their own farm equipment. https://www.youtube.com/watch?v=F8JCh0owT4w.

Barriers to Access

At this time, there is a need to facilitate entry for or otherwise encourage younger farmers to enter the agriculture industry in SE Nebraska. According to the 2017 USDA Census of Agriculture, the average age of a farmer in SE Nebraska counties is 57 years old. As many farmers approach retirement age, many will be looking for a way to pass their operation to a younger generation.

This transition poses several challenges that must be overcome. The first is a lack of interest in agriculture from the younger generations, which makes it difficult for existing operations to find new owners. Traditionally, farm operations have been passed down through families, with children or grandchildren taking control once a farmer retires (Hamilton 2010). Though, because of the decline of interest in agriculture, many of these farmers do not have a successor in line to inherit their farm operations. Even if there is an individual to pass ownership to, most farm operations are not financially set up for the new owner to be successful without further support (Hamilton 2010).

Corn and soybean farming largely do not directly impact the food system in the region, instead going towards ethanol, livestock feed, and exports, but the secondary impacts these crops have on the food system are tremendous. Without these crops for ethanol and biofuel alternatives, gas prices will rise significantly; without these crops for livestock feed, meat prices will rise significantly. Finally, without a new generation in place to take over established family farms, farmers looking to retire will be forced to sell their farms to large farm corporations, similarly to what happened with pork farming in the 1980s (Thiele; Ruskamp, 2022). This can have severe repercussions on small scale farms in the district because it will price out the community banks on which our local economy thrives, furthering funding issues and the conglomeration of agriculture.

Mindy Mcgrew of Little Red Farm shared in an interview that most farmers she knows not only do not know about being able to receive funds from federal or state grants. Furthermore even if they did they would not know where to apply or how to apply. Mindy stated that she knew that the Department of Agriculture can provide funding for farmers and producers seeking assistance. Another big part of barriers for farmers in receiving funds and grants is the fact that some farmers are generational farmers, and have been farming with generationally handed down techniques. Farmers do not want to lose their freedom of farming by receiving money that has strings attached, which could inevitably hamper their ability to farm effectively and productively. The funds can lead to oversight over their production that not only makes producers uncomfortable but also takes away their ability to produce the foods the way they want. Mindy shared that amongst farmers she knows in Otoe County, they want

to farm the way they know how to and when grants and funding take away natural farming practices and move to a more industrialized approach it can ruin smaller scale farmers, and not only ruin their products, but can ruin their relationship with the community, as well as the farms they use to feed not only their own communities but their own families. There are also too many regulations and hoops to jump through that would entice producers to even want to pursue funds or grants. Also unexpected things happen, animals can get sick, land can get spoiled, bad weather or natural disasters like the 2019 floods in Nebraska can destroy cattle, livestock, crops, farmland, infrastructure, etc and can completely wipe away everything a farmer, producer, or rancher owns. These unforeseeable and catastrophic events are further reasons why some producers, farmers, and ranchers are more reluctant when it comes to taking loans, grants, and funds. If they lose everything with all these financial strings attached, often the operation will be forced to close, furthering strain on the local food system.

Conclusions

The Southeast Nebraska Development District (SENDD) aims to bolster the regional food system of the 16-county area that it serves. The biggest issues facing producers within the food system of southeast Nebraska are a prohibitively high cost of entry, increasing maintenance and supply costs, and bureaucracy around existing funding. Many more gaps have been exposed since the COVID-19 pandemic—supply chain issues, labor shortages, and inflation continue to strain producers' ability to grow affordable, local food. On top of this, the rural nature of the region compounds the difficulties in food distribution once food has been produced.

Our group set out to identify issues affecting and means of improving the production and distribution of food within SE Nebraska in order to support the growth of the regional food system.This was accomplished through analysis of qualitative and quantitative data resources available regarding production, distribution, and financing in the food industry.

A small number of farms exist in the region which produce food for local consumption, but the methods to distribute this produce to consumers, independent retailers, or larger institutions are limited and in need of additional investment or expansion for the region to benefit from local food production. The supply of locally produced food is also impacted by the high barriers to entry into agriculture for new farmers. With high up-front expenses including the cost of land and seed and rigid loan approval requirements from lenders, many prospective farmers are unable to start an operation, let alone grow a profitable one. Numerous recommendations follow in Chapter 5 which further outline the approaches that SENDD can take to address these gaps and barriers.

Equity Concerns in Food Access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Overview

The study of food demand (i.e., the consumer side of the food economy) largely pertains to specific demographic information–who faces food insecurity and where they are located. Likewise, the analyses of racial composition and socioeconomic stratification across Southeast Nebraska are principal elements in answering this question. This chapter will pertain directly to the current state of food demand and equity in the sixteen-county Southeast Nebraska region. The goal of this chapter is to present the data in a manner conducive to and useful for the applications utilized and produced by the Southeast Nebraska Development District (SENDD). In Chapter 5, the conclusions drawn from the information compiled here will be combined with the conclusions of Chapter 3 to produce more holistic recommendations. The data compiled and interpreted here is from publicly available resources such as the US Census Bureau and Feeding America.

The majority of the corn produced in Southeast Nebraska is exported, and that which is not exported is used primarily for livestock feed or ethanol production (Nebraska Corn Board 2022). Local food is most commonly available at local grocery stores, farmers' markets, or through school lunch programs working with local food suppliers. (University of Nebraska - Lincoln, n.d.) One geographic area of concern is Lincoln, as the city has some of the most diverse communities in southeast Nebraska, including many Hispanic communities and refugee populations. These communities are often where the question of culturally relevant foods is most pertinent, as many of these communities are accustomed to–or may only feel confident cooking–a particular type of cuisine. These food traditions may call for grains, spices, and produce not readily available in Nebraska–much less grown locally in Nebraska. The authors have, therefore, undertaken research in an attempt to find ways to bring those who are food insecure closer to local outlets providing culturally relevant foods. The authors have formulated recommendations concerning relevant findings. When dealing with food insecurity, social access is a determining factor alongside geographic access. Individual geographies have, therefore, not been targeted in these recommendations–instead particular social determinants have. These recommendations, designed to be broad and widely applicable suggestions, are attempts to help SENDD alleviate food insecurity across the Southeast Nebraska region.

Introduction

While food insecurity affects people in all regions of the world, an examination of the problem in an area dense with agricultural practices can lead to a variable-rich and often multi-faceted research methodology. Southeast Nebraska is one such example, as Nebraska is one of the most agriculturally oriented states in the nation, producing goods such as beef, corn, and soybeans (Nebraska Department of Agriculture 2022). Given that these products are largely distributed out of the state, are utilized for purposes other than human food, and alone do not constitute a balanced diet, the research in this study examines how any healthy, culturally relevant food can be accessed by those who are facing food insecurity. Before this can be answered, however, a detailed examination of demographic trends, diet trends, and geographic distribution of those who face food insecurity is needed.

Currently, there is a serious need to address food insecurity in Nebraska, particularly in Southeast Nebraska. 1 in 10 people in Southeast Nebraska faces food insecurity (Food Bank of Lincoln 2022). This means that 49,810 people, including 14,900 children, are estimated to be food insecure in the region, as of data from 2012 (Feeding America 2012). Among refugee and minority populations, a disproportionate number of persons suffer from food insecurity. The most diversity within the region exists in Lancaster County, specifically Lincoln, as 36.3% of all refugees in Nebraska exist in Lancaster County (Zhang 2020). Over half of all the refugees surveyed reported their primary language as Karen, as most are Burmese refugees. Along with high rates of food insecurity among minority populations, another variable that is highly determinant of food insecurity is rurality. People living in rural areas are much more likely to have poorer access to food than those living in urban

areas. Nationwide, nine out of ten of the counties with the highest food insecurity exist in sparsely populated, very rural areas (Feeding America 2021). It is for this reason that refugee and minority populations, along with food insecure people in rural areas, are heavily focused upon in this chapter.

Research Questions

Food insecurity is the state of being without reliable access to a sufficient quality of affordable, nutritious food (USDA 2006). In this chapter we ask:

1. What kinds of inequalities exist in Southeast Nebraska's food systems?

2. What kinds of actions can be undertaken to alleviate the inequalities existing in Southeast Nebraska's food systems?

These questions investigate what is being asked of the Southeast Nebraska Development District to develop a successful regional food systems plan. The harmful consequences of inequalities are many, but a consequence of this inequality can be understood straightforwardly as hunger; food insecurity is recognized as a household-level social condition which prevents members of a household accessing adequate amounts of food, and hunger as the resulting physiological condition that follows. Simply put, these questions investigate who goes hungry and why (USDA 2022, Feeding America 2022).

Methods

The authors of this chapter utilized a mixed methods approach, having collected qualitative data through the process of interviewing various stakeholders involved in Southeast Nebraska's food system, and quantitative data through a variety of primary and secondary resources—primarily the USDA's Food Access Research Atlas. Interviews were conducted with individuals and entities who are a part of the food system network and do specialized work within Southeast Nebraska.

A director of this research, Dr. Abigail Cochran, cautioned one of the authors—and primary cartographer in Chapter 4—about the boundary problem; that is, the phenomena where actual spatial distributions are misrepresented because of the arbitrary arrangements of boundaries. Put differently, the importance of spatial proximity is lost because (in this instance, political and administrative) boundaries make the data artificially distant. In this case, the question was raised of whether or not SE Nebraska counties and census tracts along the Iowa and Kansas borders are truly far from a supermarket, or if they are far from Nebraskan supermarkets (though close to supermarkets in Iowa and Kansas.) The primary cartographer of this chapter developed the following reflection on this issue:

In the USDA's Food Research Atlas—where nearly all of the information used to generate the choropleth maps included in this chapter came from—the only functional boundaries are census tracts. When mapping, this cartographer introduced the boundaries of county and state for the purpose of displaying a discrete data set. Those boundaries, however, had nothing to do with the gathering of the data—they operate ex post facto. That, of course, does not mean that the boundary problem is not at play within the USDA's data set in reference to census tracts. In an explanatory story map about the Food Atlas, however, the USDA specifically discusses the methods it used. The USDA writes that to assess distance to the nearest 'food store', "...the country is geographically divided into 0.5-km… square grids, and data on the population are aerially located to these grids. Then, distance to the nearest food store is measured for each grid cell by calculating the distance between the geographic center of the 0.5-km square grid that contains estimates of the population—number of people and other subgroup characteristics—of the grid with the nearest food store." (USDA 2022) Regarding this method, the USDA has made themselves somewhat opaque to the cartographer, but from what they understand, the boundary problem is only at play on the scale of half a kilometer, or not at play at all. The use of the term 'grocery' on these maps reflects the USDA's definition of 'food stores', and includes only 'superstores/supercenters', 'supermarkets', and 'large grocery stores'—which is then further defined by the USDA. This story map and further discussions from the USDA regarding their definitions can be found in the bibliography (USDA 2022).

Findings

This section reflects insight gained from the investigation of primary sources, as well as geospatial analysis using the USDA's Food Access Research Atlas. Work began with an assumption of inequality within Southeast Nebraska—an assumption which was proved accurate as the authors navigated the data—as well as a presumed relationship between inequality and food insecurity. This presumed relationship was confirmed by research which "...suggests that spatial inaccessibility to food stores adversely affects the health status of individuals living in predominantly low income or racial minority geographic areas." (Wood and Horner 2016) Put another way, findings were primarily motivated by the knowledge that "...higher income, high vehicle access, and white populations are more accessible to food opportunities than lower income, low vehicle access, and African American populations…" and that the authors had to, therefore, connect Southeast Nebraska's demographic makeup to the many elements of food insecurity (Wood and Horner 2016).

Income, Vehicle Access, and Distance to Grocery Stores in SE Nebraska

Income, vehicle access and distance to grocery stores became important lenses for understanding prevalence of food insecurity in Southeast Nebraska. Figures 13, 14, and 15 give an impression of the geographical distribution of these qualities throughout Southeast Nebraska.

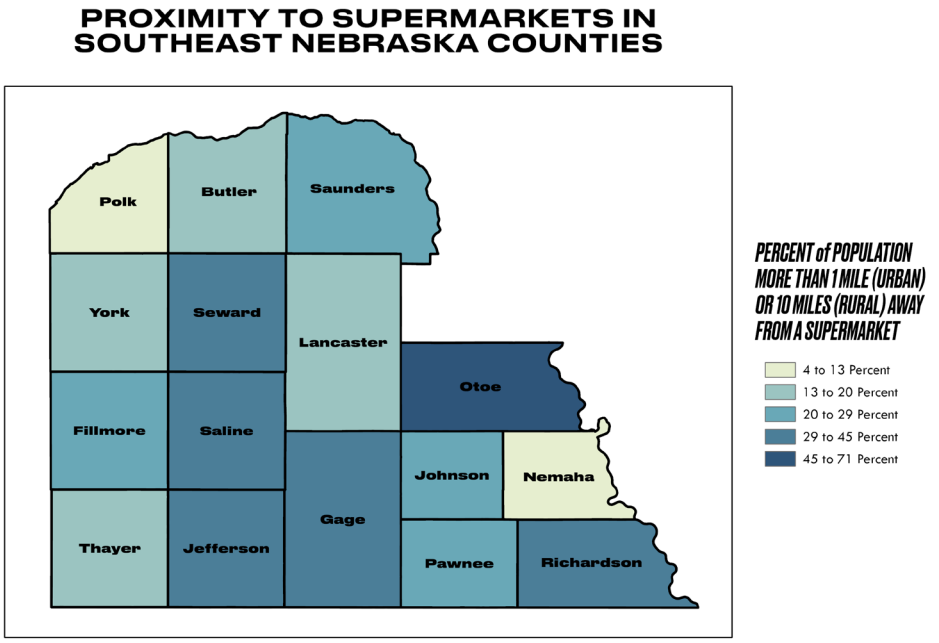
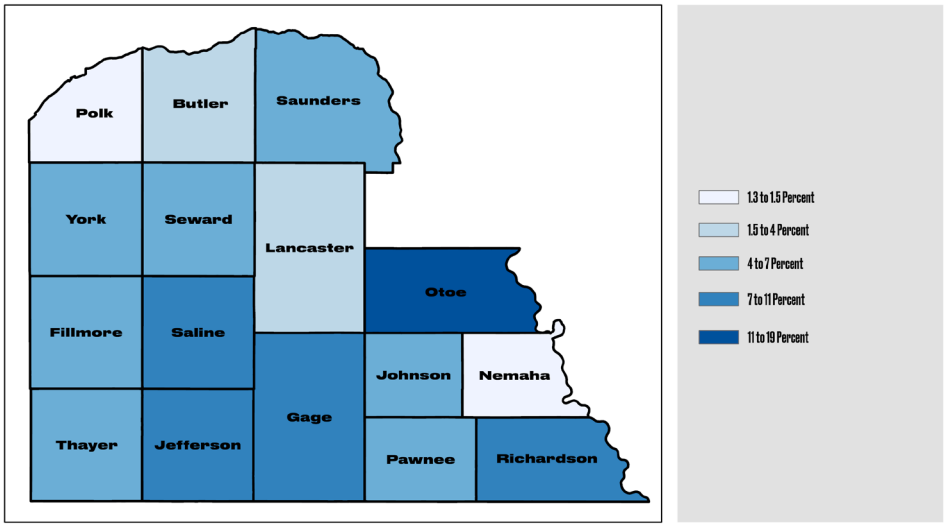


Figure 13: Proximity to Supermarkets in Southeast Nebraska

As previously noted, rurality is a contributing factor to food insecurity, and the distance to a grocery store is directly correlated with rurality. In Figure 13, two different distance metrics were used to determine what could be considered a significant distance from a supermarket — more than one mile for urban populations and more than ten miles for rural populations. On a county-by-county basis, Figure 13 shows that Otoe county has the highest percentage of people who live a significant distance from a grocery store, at 71 percent; Nemaha and Polk Counties, which range anywhere from 4 to 13 percent, have the lowest percentages of population significantly far from a grocery store.

These results are again reflected in the next figure, Figure 14, which pairs both the percentage of individuals who live a significant distance from a grocery store with the percentage of individuals designated as low income. In SE Nebraska, the percentage of low income and with low access to a grocery store ranges from 1.3 to 19 percent, with, again, Otoe displaying the highest representation of this demographic and Polk and Nemaha displaying the least. Considering these the two maps, the significant overlap between percent with a significant distance to a grocery store and percent low-income and low access points towards a positive correlation between distance to a grocery store with the designation of low income.While examining these two variables on a county level, data displayed through graduated colors by census tract provides an even

PERCENT LOW INCOME AND WITH LOW ACCESS TO GROCERY IN SOUTHEAST NEBRASKA, BY COUNTY



Source: USDA Food Research Atlas, Created by MC Raterman

Figure 14: Percent of Individuals with Low Income and Low Access to Grocery Stores

closer look at the correlation between income and distance from a grocery store. In Figure 14, an additional key factor was added: the percentage of a tract's population without a car. In the map on the right, in the same way the data was combined in the previous map, the percentage of people that live a significant distance from a grocery store and those who do not own a car are combined. This time, however, the distance to a grocery store was provided as a flat rate of over 0.5 miles, as census tracts show within metropolitan areas as well.

Pawnee county is an apparent outlier; the entire county is one census tract, and it is one of the counties with the lowest population examined in this study. This tract, along with a tract in the neighboring Johnson County and two tracts in Otoe County, represents the rural areas where 9.2 to 14.3 percent of the population does not own a vehicle nor live within 0.5 miles of a grocery store. There are some tracts within metropolitan Lincoln as well; these results can be tempered by considering public transit services, multimodal infrastructure, and an overall increase in the ease of transportation outside vehicle infrastructure within urban areas.

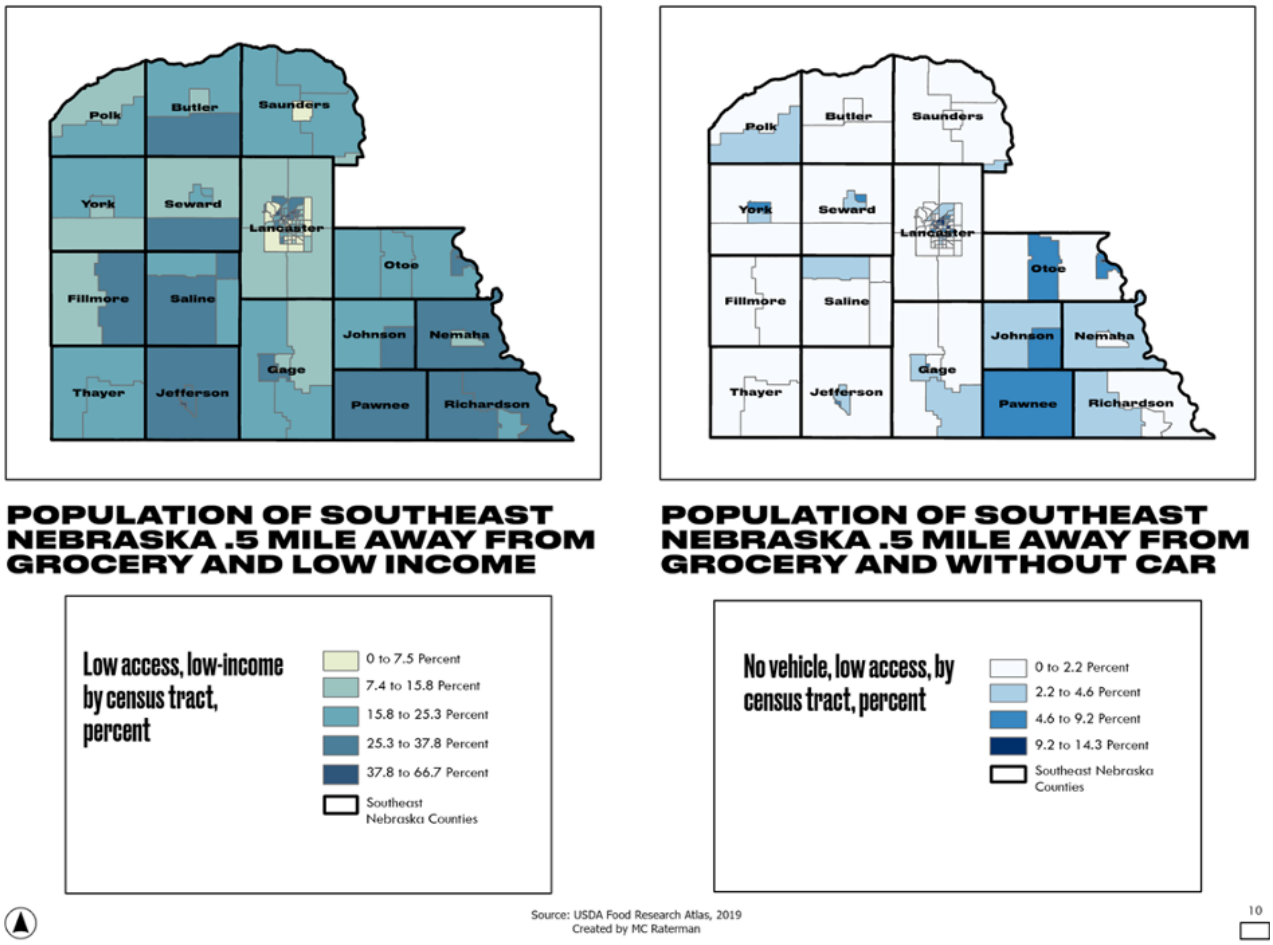


Figure 15: Proximity to Supermarkets in Southeast Nebraska

Food Insecurity and Affordability

Work published in Applied Economic Perspectives and Policy found increases in the price of food to significantly correlate with increases in rates of food insecurity (Gregory and Coleman-Jensen 2013). The authors of this study write that "...the average effect of food prices on the probability of food insecurity is positive and significant: a one-standard deviate increase in food prices is associated with increases of 2.7 [percent in household food insecurity], 2.6 [percent in adult food insecurity], and 3.1 [percent in child food insecurity] …"This research implies two things: one, income has something to do with food insecurity, and two, children suffer disproportionately from increases in food prices. The former implication is congruent with the fact that proximity to Walmart Supercenters—which lower food prices and expand food availability—can be correlated with improvements in household and child food security (Courtemanche et al. 2018). This is not to say that Walmart is the solution to food insecurity, simply that food security may have a positive relationship with purchasing power.

Food Insecurity Among Children

Research published in Applied Economic Perspectives and Policy has demonstrated that food insecurity among children in the US has risen precipitously since 2018 (Gundersen et al. 2020). Trevor Nederlof of Farm 2 Facts, a data collection organization affiliated with the University of Wisconsin-Madison, demonstrated this information using the following graphic (Figure 15), which has been adapted by the section authors to display only Nebraska (Farm 2 Facts and Nederlof 2021).

In this graphic, Nederlof also

includes pertinent information regarding the intensely detrimental effect that food insecurity has on children's health and wellbeing, which they reiterated elsewhere in saying that one "...study found that children are twice as likely to have fair or poor health if they are experiencing food insecurity… [another] found that children facing food insecurity are 2.3 times more likely to be depressed or have suicidal thoughts" (Farm 2 Facts and Nederlof 2021). A large body of research confirms the vast developmental harm of food insecurity on children (Institute of Medicine 2013).

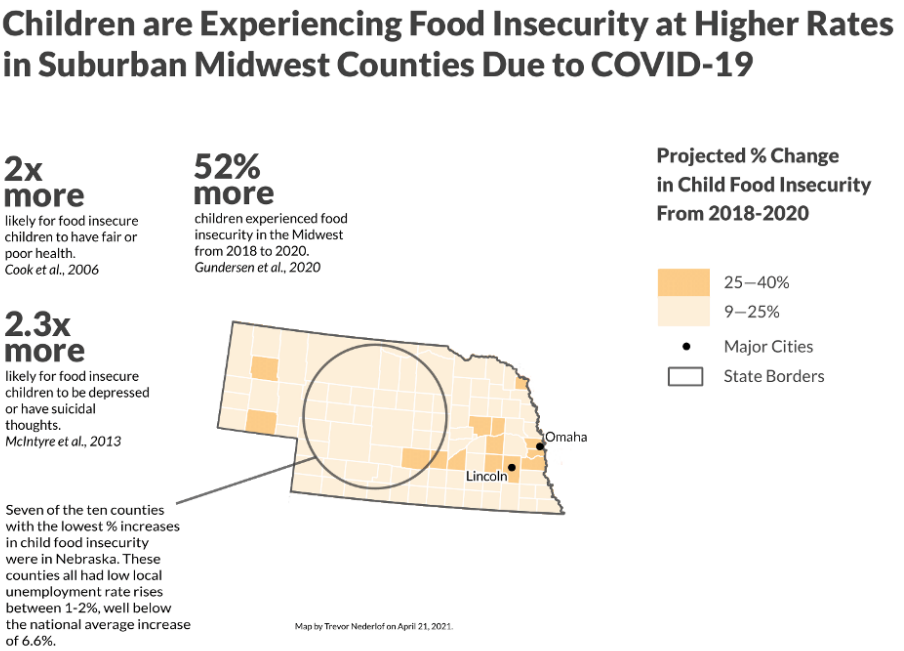


Figure 16: The Effects of COVID-19 on Suburban Midwest Counties
(Source: Farm 2 Facts and Nederlof 2021)

In addition to the conclusions that the aforementioned article reached on food insecurity for children, it also made an additional conclusion pertinent to this work; that food insecurity rates would have been far worse across the US "...if not for the resiliency of the agricultural supply chain in the face of COVID-19" (Gundersen et al. 2020). This lesson gathered could potentially be translated into a proactive stance, i.e. warding off food insecurity in the face of future uncertainty will require continued resilience from the agricultural supply chain, so the region should prepare accordingly. Furthermore, the authors of the aforementioned work conclude that as food prices are a key determinant of food insecurity, if "...price increases due to agricultural supply chain breakdowns [occurred, then] the food insecurity rates ...would have been much higher." (Gundersen et al. 2020). The authors reiterate this point by saying that this projected increase in food insecurity would be a result of increased unemployment and poverty, and not necessarily problems within the agricultural sector (Gundersen et al. 2020).

These conclusions can be appreciated in Figure 16 in specific reference to Nebraska, where Nederlof writes that "... seven of the ten counties with the lowest [percent] increases in child food insecurity were in Nebraska. These counties all had low local unemployment rate rises between 1–2%, well below the national average increase of 6.6%" (Nederlof 2022). Despite this resilience, one can observe percent increases of child food insecurity in Lancaster, Seward, Butler, and Otoe counties ranging between 25 and 40 percent, set against a backdrop of at least 9 percent and up to 25 percent increases across the United States.

This data lends further credence to the connection between food insecurity and purchasing power, i.e., lower levels of unemployment in Nebraska led to less steep increases in food insecurity.

Figure 16 shows a comparison of the percentage of total individuals (including children) and the percentage of total children facing food insecurity. In all sixteen counties, there is a higher rate of food insecurity among children than the total population. This is likely due to

Despite this resilience, one can observe percent increases of child food insecurity in Lancaster, Seward, Butler, and Otoe counties ranging between 25 and 40 percent, set against a backdrop of at least 9 percent and up to 25 percent increases across the United States.

the fact that one food-insecure adult may have multiple children that would then also be designated as food-insecure (Feeding America 2016). When comparing this graph with the populations of the corresponding counties, a very slight inverse relationship between population and food insecurity can be observed. Pawnee County, the least-populous county in the SE Nebraska Region, has the highest number of total food-insecure children and adults. Other counties with a very low population also see child food insecurity reach past 15%, such as Otoe and Gage. While Lancaster County has a relatively moderate amount of food-insecure individuals, the counties that border Lancaster are some of the least food-insecure — Saunders and Seward have very low levels. This may be due to the many small towns in these two counties that have some degree of grocery access. Figure 17 assists in the visualization of food insecurity across the sixteen counties, with the upper left map accounting for all individuals and the upper right map accounting for only children. While measured by different degrees of percentage, the relative level of child food insecurity is sometimes higher than that of adults. While there is likely some reason behind this inconsistency, there were no discernable causes that could be attributed to the change.

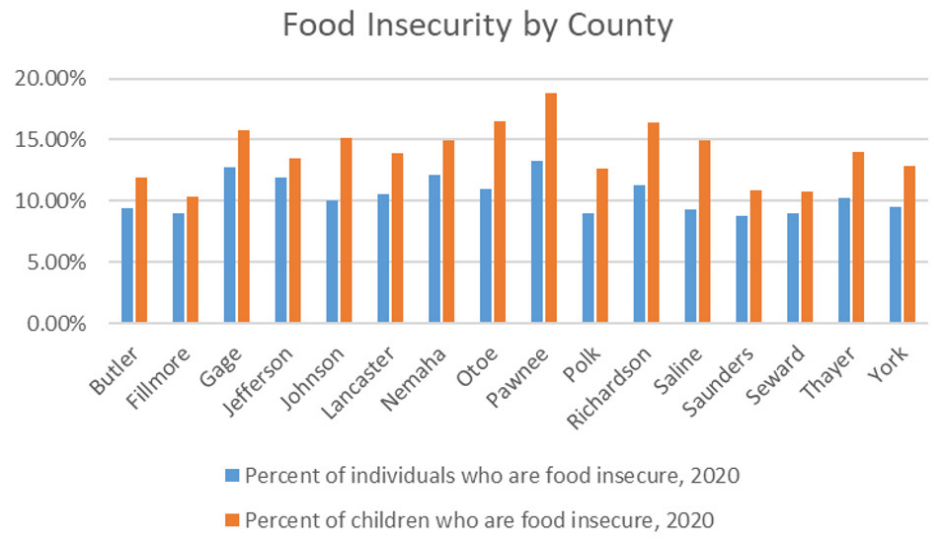


Figure 17: Food Insecurity of Total Individuals and Total Children by County

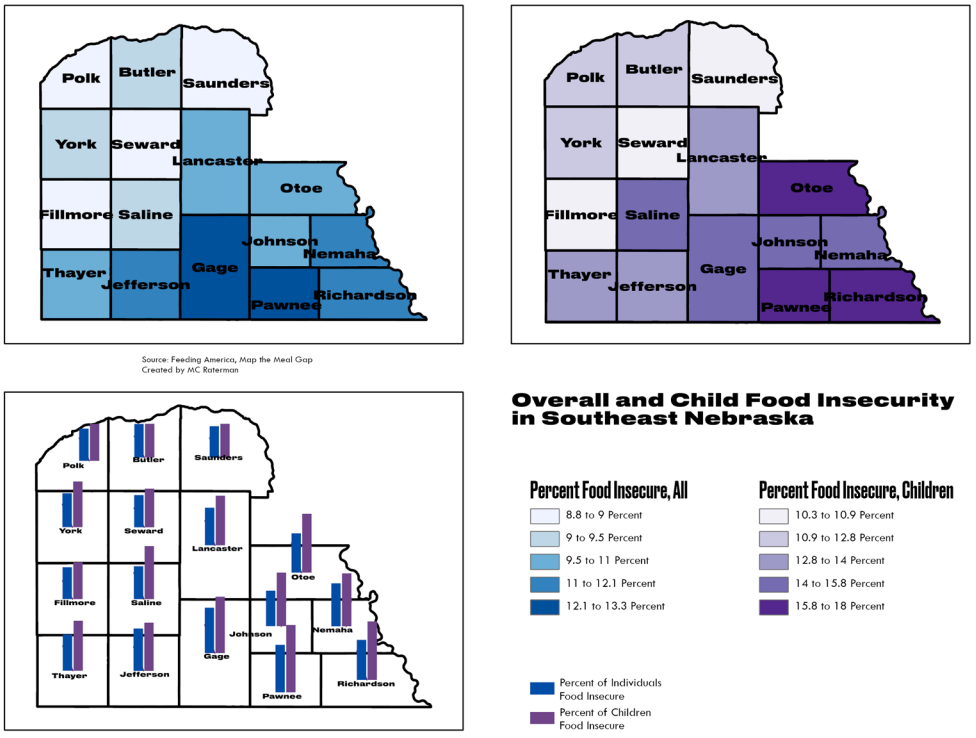


Figure 18: Overall and Child Food Insecurity in Southeast Nebraska

A salient variable in relation to total food insecurity is the nutritional value of the food purchased. Below, Figure 17 displays the total average food budget of people within a county compared to the average amount spent on snack food. While snack food expenses do not go up when total food expenses decrease, more rural and diverse counties such as Saline and Jefferson typically spend less on food overall. Whether this is due to increased use of SNAP benefits is unclear, but this data does demonstrate that populations are either buying cheaper food or buying less food overall.

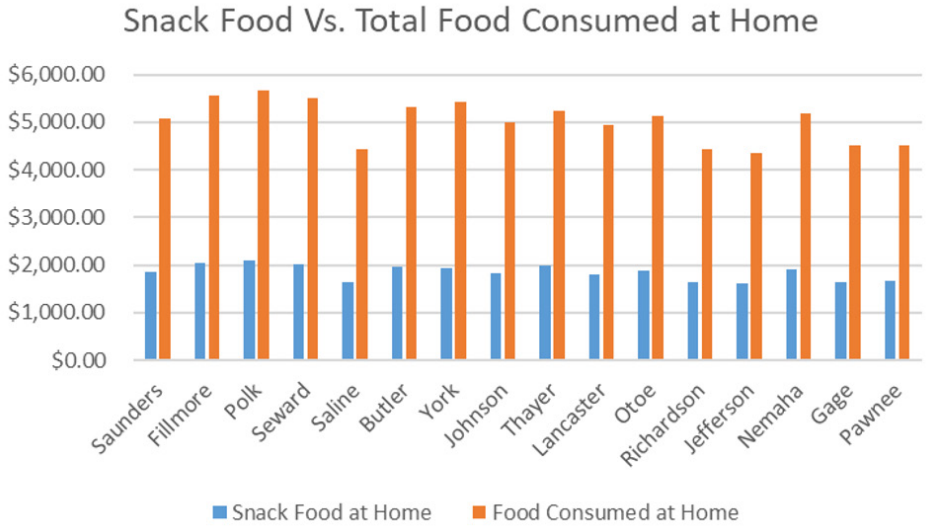


Figure 19: Snack Food Expenditures and Total Food Expenditures in Southeast Nebraska

Gender, Race, Rurality and Food Insecurity

Research published in Public Health Nutrition by Catherine Huddleston-Cases of the University of Nebraska Omaha (among other authors) indicates a bidirectional link between food insecurity and maternal depression in rural, low-income families—with Nebraska being one of the relevant study areas (Huddleston-Cases et al. 2009) This knowledge can be incorporated with a broader body of data that finds women to experience food insecurity at higher rates, owing to differences in education and income (Broussard 2019, 180-194).

While the correlation between food insecurity and gender tends to be more loosely tied, the connection of food insecurity to race is well established. The National Library of Medicine found in a June 2022 study that the occurrence of food insecurity is three times more likely for Black households and two times more likely for Hispanic households (National Library of Medicine 2022). The same study noted that this disparity is likely due to the "barriers that prevent equal access to food assistance programs," such as language barriers, lack of awareness of food resources and poor access to culturally relevant foods. For this reason, Figure 24 displays four maps, each representing the distribution of different races by census tract.

Although Figure 19 displays static data from 2019, when racial composition is analyzed over time, some surprising results emerge. From 2010 to 2018, the diversity in Nebraska as a whole (increase in minority populations such as Black, Asian, and Hispanic and a decrease in White population) has increased drastically. The Nebraska Minority Population Report Card as prepared by the Department of Health and Human Services, shows that there has been a 13.4% increase in the Black population between these years, a 29% increase in the Hispanic population, and a staggering 57.3% increase in the Asian population (Zhang 2020). Together, while minority populations in total have increased by 26.7%, the white population has only increased by a negligible 0.9%. The reason for the drastic increase in the Asian population is likely due to the increase in refugees from countries like Myanmar.

As the nation's population continues to diversify, the demand for culturally relevant foods in markets will continue to increase. However, diverse households generally face higher challenges in attaining food security due to the lack of culturally relevant food in their community (Berning, Norris, and Cleary 2022). Creating a food system that offers nutritious foods at farmers' markets, local grocery stores, and food hubs allows many families to access cuisines that cater to their needs. In concurrence, expanding public assistance programs such as the Supplemental Nutrition Assistance Program (SNAP)

and Double Up Food Bucks–a federal program that matches SNAP credits as an incentive for families to purchase more healthy produce–can expand the number of healthy foods available to families who are in the most need of support. Figure 20 below demonstrates an overlap between Southeast Nebraska households using SNAP and without a vehicle, suggesting the relevance of walkable markets that accept Double Up Food Bucks.

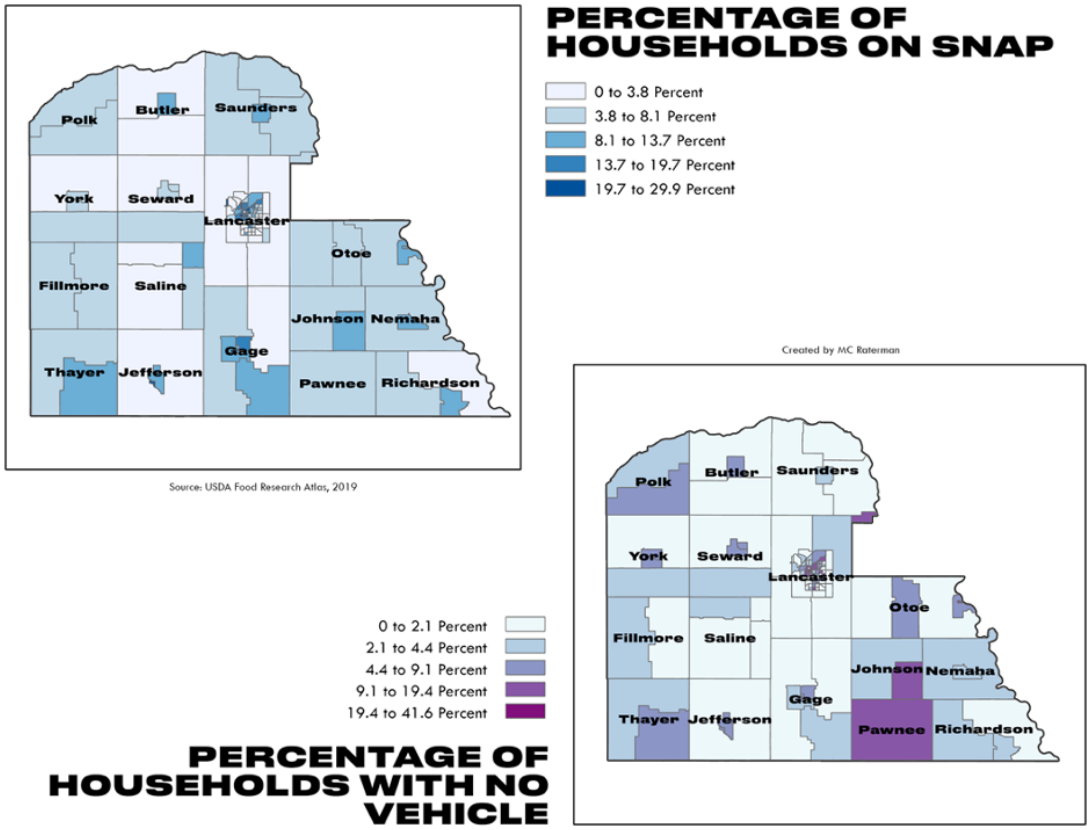


Figure 20: Percentage of Households with No Vehicle and Using Snap Benefits by Census Tract

An analysis on a county by county basis can reveal where minorities are moving within SE Nebraska. Figures 21, 22, and 23 are American Community Survey Estimates of racial consistency by county based on 2010, 2015 and 2020 5-year estimates. Of the sixteen counties in our study area, there are a few that stand out as having a significantly higher proportion of minorities. Across the three graphs, Saline County has seen the most drastic increase in minorities. The county went from well under 5% non-white in 2010 to consisting of almost 15% non-white by the year 2020, boasting a 32.1% increase from 2010 to 2018 (U.S. Census Bureau 2022). This is likely due to the very large Hispanic population in Crete city, located in Saline County. There has also been an increase in the size of the Asian population in Saline County, although the reasoning behind this was not studied.

Johnson County is also notable, as it boasts the largest percentage of Black or African American individuals of all the sixteen counties, including Lancaster. And between the years 2015 and 2020, there was a drastic increase in the number of those served as 'some other race'--this often equivalates to non-white Hispanic, considering it is not listed as an option. In fact, the level of diversity in Johnson County surpassed the diversity of Lancaster County, historically the most diverse of the SE Nebraska counties, between the years 2015 and 2020. Lancaster county has indeed grown in diversity as well, although the proportions of minorities within its non-white population have remained more or less the same.

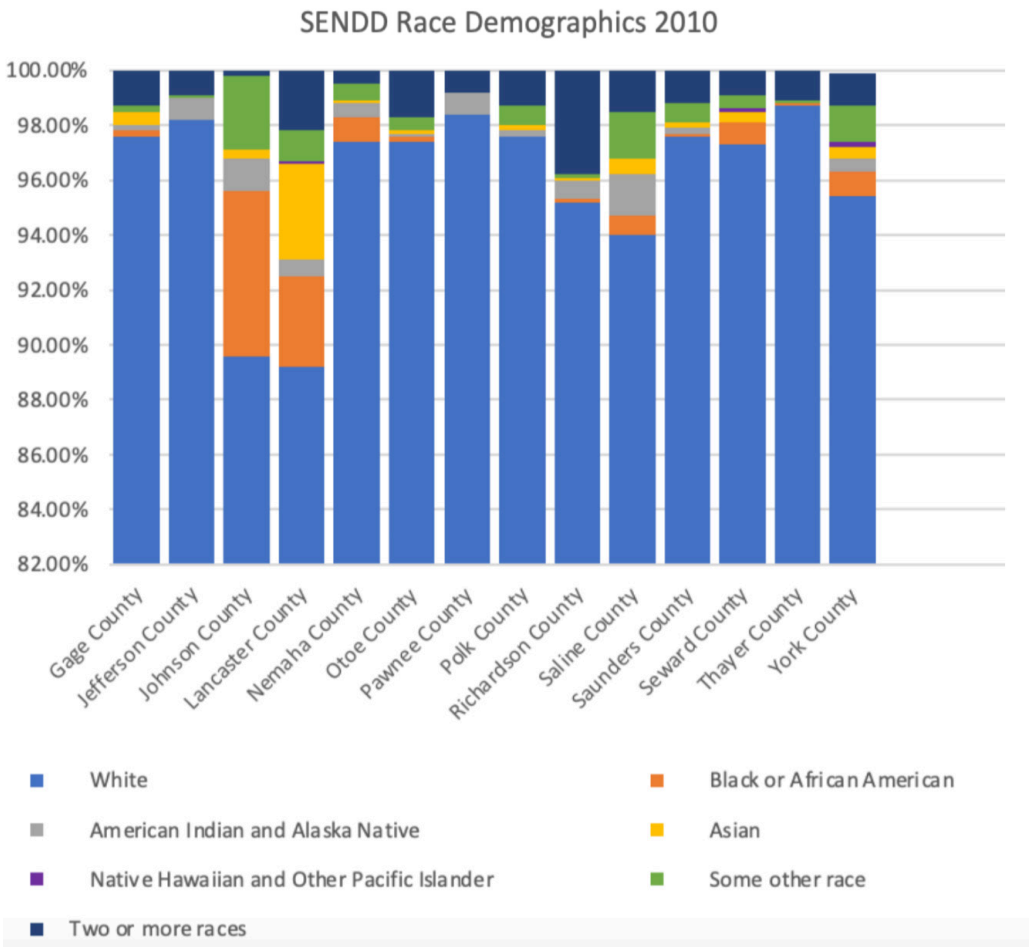


Figure 21: 2010 race demographics in SENDD

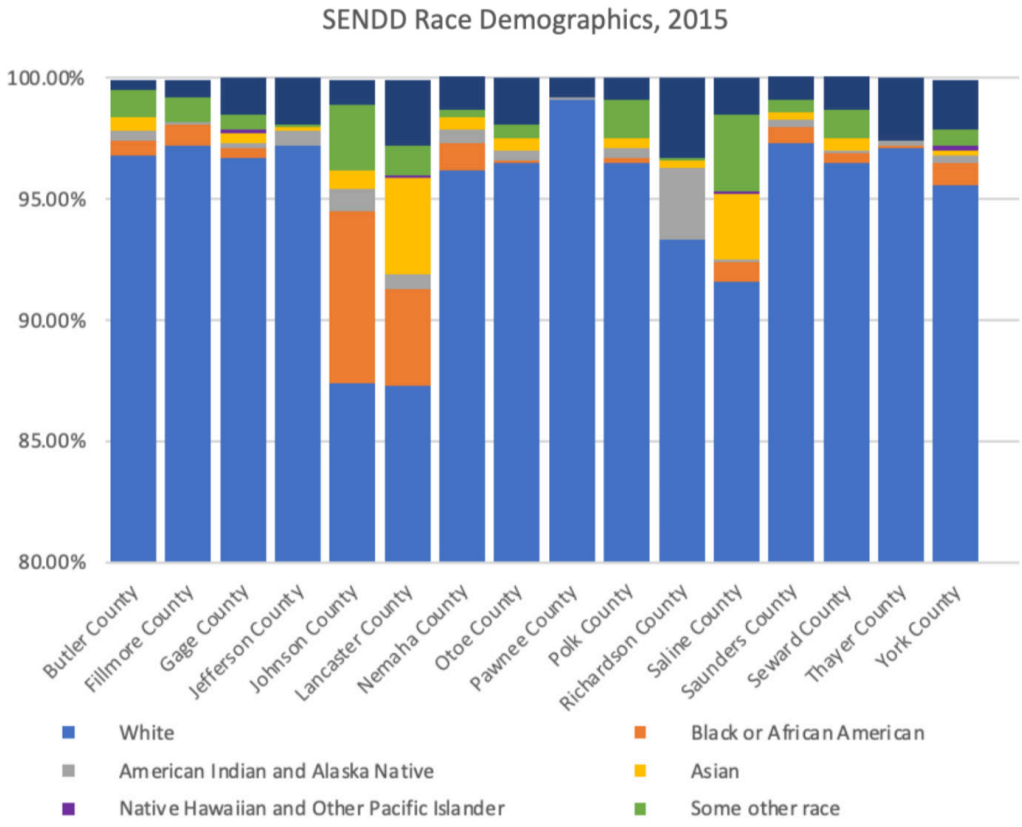


Figure 22: 2015 race demographics in SENDD

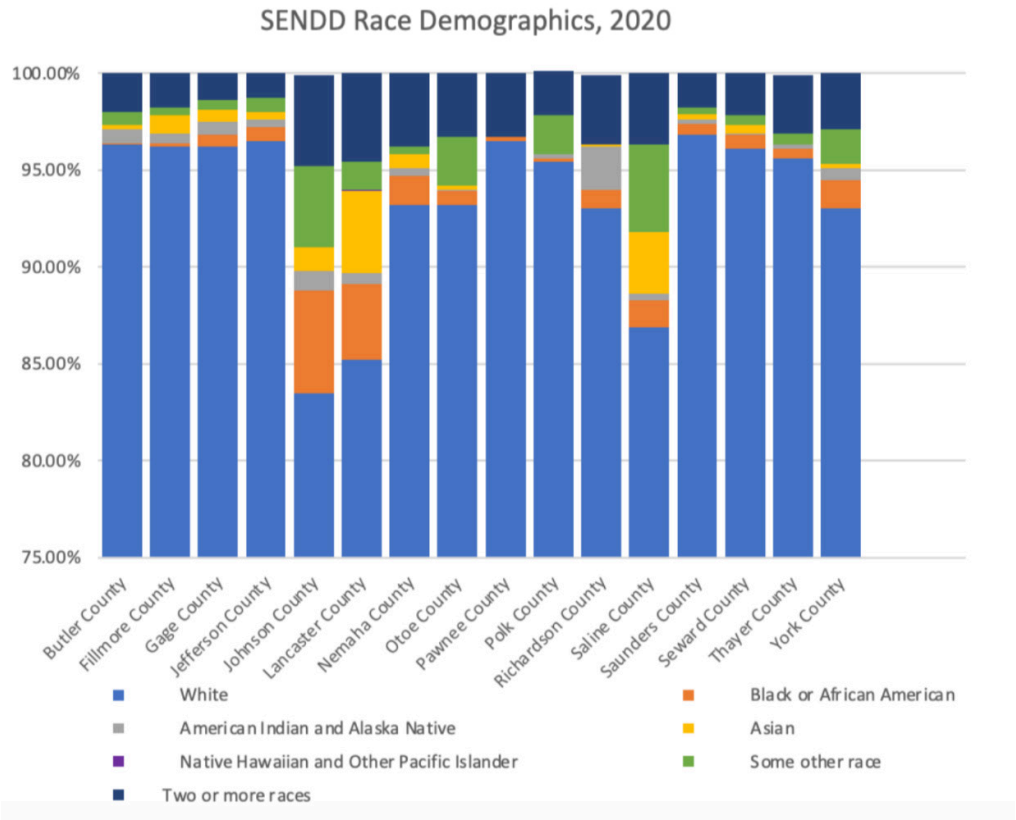


Figure 23: 2020 race demographics in SENDD

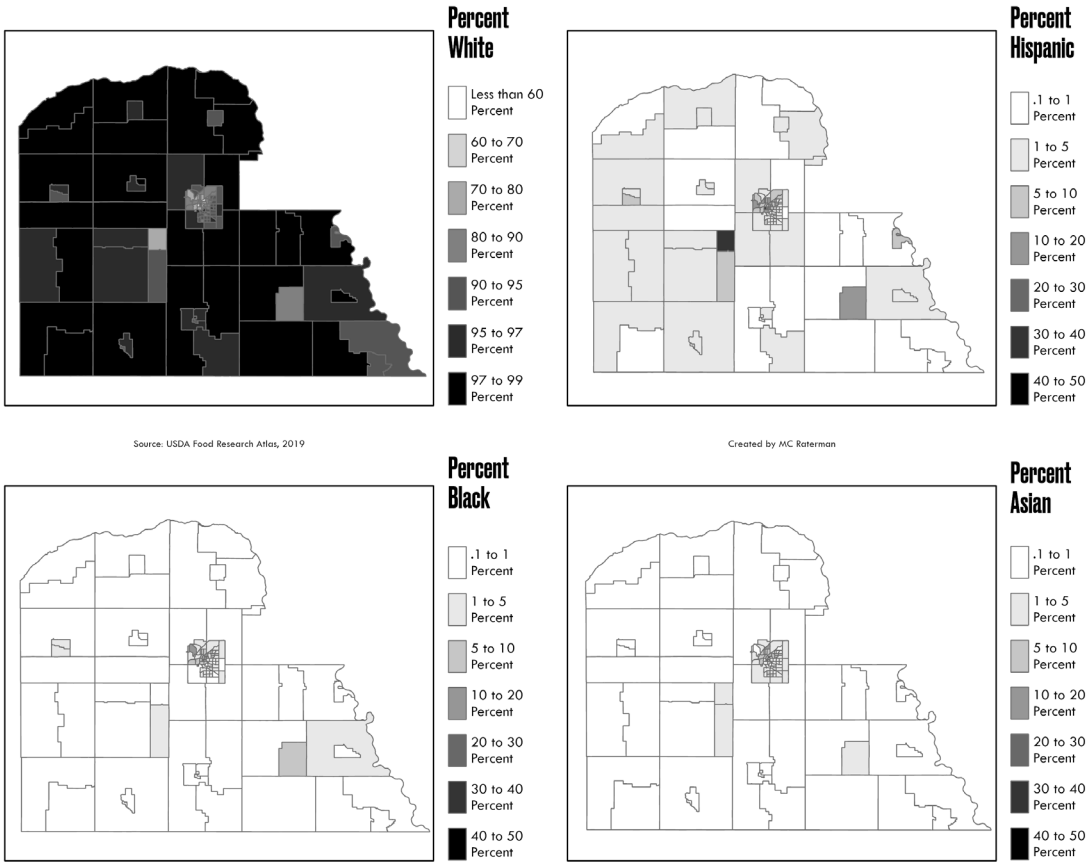


Figure 24: Racial Composition by Percentage

It is clear that the many census tracts within the city of Lincoln–in Lancaster County–are the most diverse, with, again, one outlier in Saline County—the town of Crete—of which nearly half of the population is Hispanic. It is also clear in the following figure that there is a much higher percentage of low-income individuals within Crete, as well as the Northern and Western census tracts within Lincoln. So, with income and race existing as the primary distinguishing demographic elements of more urban areas, Figure X also shows a distinguishing element of rural areas that has a significant influence on food security: vehicle access. Another study from the National Library of Medicine found that access to a vehicle is strongly associated with a significant increase in food security (National Library of Medicine 2019). This once again speaks to the strong influence of rurality on food insecurity.

The above Figure 25 demonstrates the correlation between those with low income and those with low access to a vehicle/without a vehicle. In most instances, the census tracts with high levels of low-income individuals are also the tracts with a high percentage of individuals without a vehicle. This is poignantly visible within the expanded Lancaster County and Lincoln city, whose Northwest and central tracts are the most afflicted with these ailments.

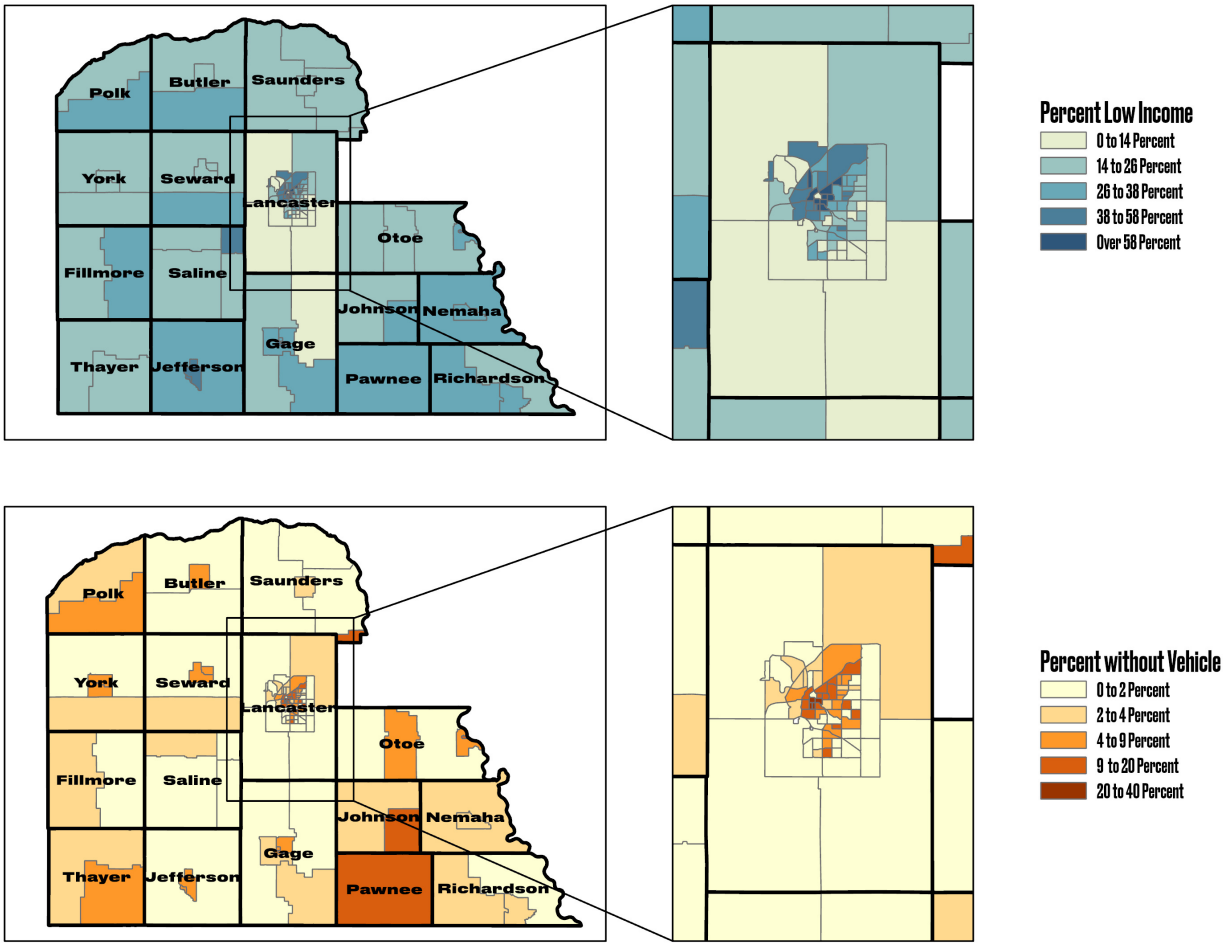


Figure 25: Low Income Designation and Vehicle Ownership in Southeast Nebraska

Conclusions

The Southeast Nebraska Development District wants to recognize the gaps in the area it serves in Nebraska. This chapter offers some understanding of who in Southeast Nebraska goes hungry and what characteristics potentially have a greater risk of food insecurity. Southeast Nebraska largely produces products that are distributed out of the state, are utilized for purposes other than human food, and alone do not constitute a balanced diet.

The inequities in the Southeast Nebraska food system can be narrowed down to children, rurality, race, access to a vehicle and gender. Disparities within the demographics are rooted in language barriers, lack of awareness of food resources, and poor access to culturally relevant foods. Those living in rural areas with low income and low access to a vehicle/without a vehicle are the main drivers for food insecure households.

Solutions for the concerns addressed will be discussed in Chapter 5. Southeast Nebraska's characteristics are generally rural, with the exception of the Lincoln metro, so the solutions will be applicable across the region and in different towns. These communities would benefit from taking those steps in order to have a more equitable food system accessible. The actions SENDD can take to alleviate the inequalities existing in Southeast Nebraska's food systems can alleviate the harmful consequences of inequalities that are present in the region.

Implications and Recommendations for Food Systems Planning


Hunter Arias

This chapter presents recommendations for policymakers, planners, and practitioners with stakes in the regional food system that, based on the findings presented in Chapters 3 and 4, might serve to bolster Southeast Nebraska's food supply and promote food security among SE Nebraska residents.regional food system that, based on the findings presented in Chapters 3 and 4, might serve to bolster Southeast Nebraska's food supply and promote food security among SE Nebraska residents.

Expansion of Farm to School Programming

While the Farm to School program has shown success in the schools that participate, its reach and impact could be much larger. "The economic benefits of farm to school percolate all through our local communities. By providing a stable, reliable market for local produce, edible dry beans, grains, eggs, dairy, and meat, farm to school enables Nebraska communities to start recapturing a portion of the 90 percent of our food dollar that is currently leaving the state. By keeping that money at home, our farmers and producers prosper."In December of 2020, the LR 337 Task Force produced a report to the Agriculture Committee after a closer examination of the Farm to School Programs. Many of the recommendations made here mirror what was found during the Task Force's examination, and it is recommended that in addition to the recommendations in this report, the full findings of the Task Force be reviewed (Nebraska Legislature 2020).

1. Expand the Farm to School program offerings to all public and private schools, preschools, and daycares in the region. The program is a consistent and healthy source of food for school-age children, especially those who are food insecure or lack access to fresh produce. The program is also a way to invest in educating the future generation of Nebraska's

"The economic benefits of farm to school percolate all through our local communities. By providing a stable, reliable market for local produce, edible dry beans, grains, eggs, dairy, and meat, farm to school enables Nebraska communities to start recapturing a portion of the 90 percent of our food dollar that is currently leaving the state. By keeping that money at home, our farmers and producers prosper."

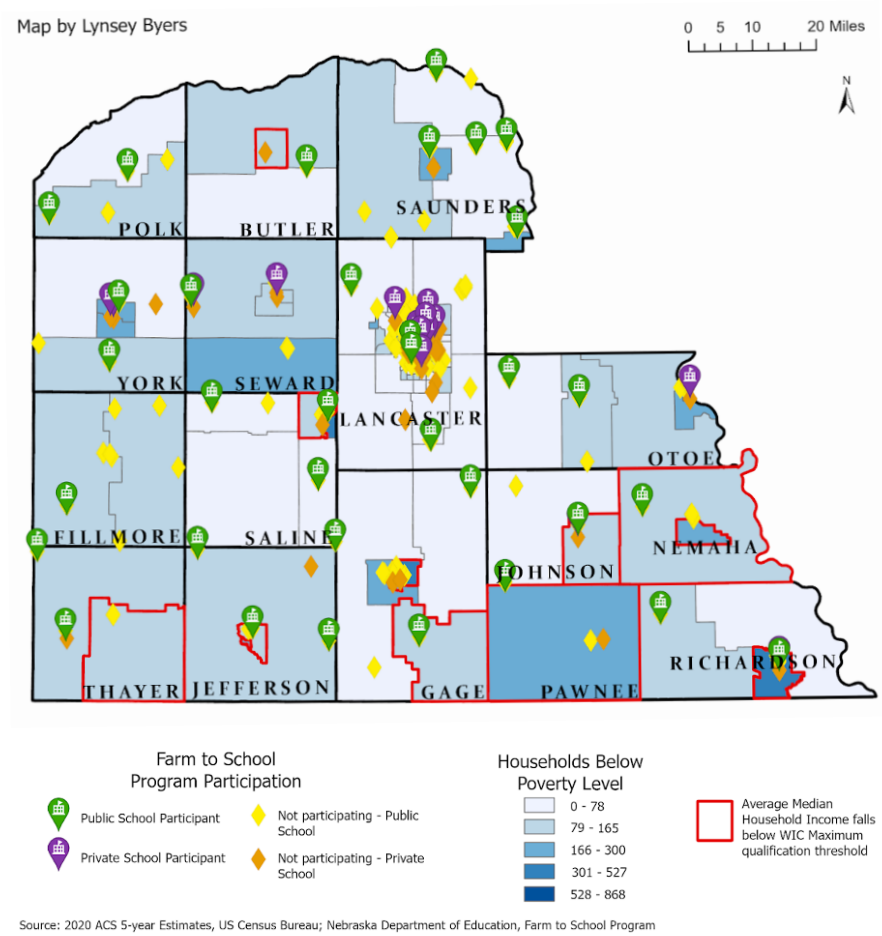


Figure 26: Public and Private schools in the region are identified in this map along with their participation status in the Farm to School program.

farmers by teaching today's students about food, farming, and agriculture

2. Support the creation of a Farm to School operating network in the Southeast Nebraska region, or in the entirety of the state, in partnership with the Nebraska Department of Education. This network could be responsible for raising awareness to the program in the community, doing school outreach and program support, as well as collecting key data and metrics relating to schools' participation in the program. Engage with the Nebraska Department of Education's Farm to Schools coordinator to participate in stakeholder planning discussions for the "Local Food for Schools" program to direct future funding opportunities to the southeast Nebraska region.

3. Private citizen stakeholders and farmers will need to make their support for the program evident to their local school district officials, some of whom may be reluctant to implement the program. SENDD can further emphasize the economic benefits to each school food authority's food budget spending being used primarily on local food versus food imported from other regions. "Each dollar invested in farm to school stimulates an additional $0.60-$2.16 of local economic activity. Sales to institutions can establish long-term revenue streams for individual food producers, and provide new opportunities for market diversification" (Nebraska Legislature 2020).

4. Improve procurement systems. Farm to School program administrators would be responsible for overseeing this improvement, but SENDD can help to facilitate this. Multiple schools identify difficulties in finding local producers that can supply the food items they want, in the quantities that they need, and in the timeframe or season that they are desired. Leveraging know-how from groups like Lone Tree Foods in Lancaster County (a local foods distributor that connects small farms and food producers to local restaurants, schools and families) could help the region build the food logistics muscle needed to help larger institutions and retailers source food they need from farmers in their community (https://www.lonetreefoods.com/).

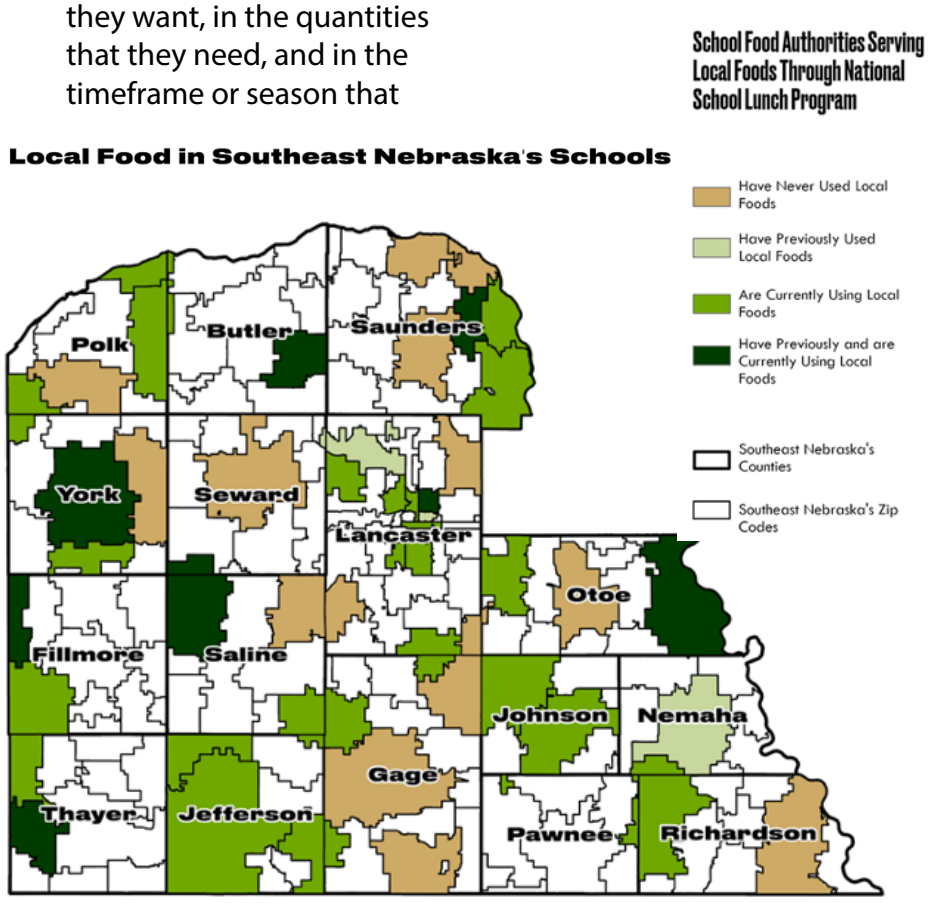


Figure 27: Schools Utilizing Local Food for School Lunches

Funding Micro-farming and Non-Traditional Agricultural Ventures

The majority of crop farming in Nebraska is centered around corn and soybeans. While these crops fund Nebraska's economy and exports, they do little in supplying the food system of the state, let alone the Southeast region of Nebraska (Census ACS Community Survey 2022). As mentioned in Chapter 3, the barriers to entry in these traditional crop agricultural ventures are extremely high. As an alternative, the authors of this report recommend expanding funding and support infrastructure for a more diverse crop base in the region. There are several methods we recommend to unify this process, including diversifying funding requirements to better support a variety of farm typologies, a focus on seasonality and desirability of food crops, and putting supports in place to ease the transition from hobby farming to commercial-level production.

1. Coordinate efforts with the Nebraska Department of Health and Human Services (DHHS) and the Local Food Purchase Assistance Cooperative Agreement Program (LFPA). In October of 2022 the USDA signed a cooperative agreement with Nebraska and the DHHS which seeks to purchase and distribute locally grown, produced, and processed food from underserved producers (USDA Agricultural Marketing Service 2022). This program has the potential to provide additional economic opportunities for farmers and producers, as well as to increase access to local, fresh food in underserved communities. Through the program, the USDA will award up to $400 million through authorization by the American Rescue Plan to improve food chain resiliency by supporting local, regional, and underserved producers through the purchase of food produced within the state or within 400 miles of delivery destination (USDA Agricultural Marketing Service 2022). Connecting the DHHS with community farmers, especially those from underserved communities and those looking to establish new farming ventures but who lack capital, would be useful in terms of exploring non-conventional funding streams.

2. Diversifying funding options through Advocacy. An important component in diversifying the food products of the region is advocacy. As mentioned previously, start-up costs for a new farm are increasing every year, and the current trend of inflation is only exacerbating the issue. More farmers are needing to rely more heavily on government funding programs to start and maintain their businesses. The USDA has a number of programs, like the Beginning Farmer Loan Program, that are designed specifically to help people break into the industry. Unfortunately, the application process for these funds can be long and difficult, and farmers can be disqualified for many different reasons, as referenced in Chapter 3. While some of the stipulations in place with these funds are necessary and important so that the funds go to the correct people, some limit new and creative business ventures unnecessarily. For example, a farmer can be disqualified from the program if not all business owners are related by blood or marriage. SENDD can help new farmers by advocating for a review of these policies. Another aspect of advocacy comes from helping to connect farmers to community banks. Certain populations of people, like those new to an area, young people, non-traditional business owners, or minorities, can have a more difficult time funding a new operation. Because of a lack of local connections or a lack of trust in institutions (Reeves, et. al., 2021), receiving funding for a farm operation can become more difficult. People new to the area or without strong connections to local farmers and business owners often miss out on the informal sharing of information and trade secrets, adding costs to an already expensive business. People who are distrustful of banks will be less likely to pursue traditional lending, especially if their previous encounters with banks dealt with model-based lending, rather than a community-based approach (Thiele, 2022). If a bank is not a good fit, people in this

situation might not know that another bank could be a better option. In these situations, SENDD can be a valuable advocate to help advise potential business owners and connect them with important resources, as well as sharing local know-how.

3. Support Systems for Expansion of Production

a. Ease of Entry for Non-traditional Agricultural Ventures. Unlike traditional crop agriculture, micro-farms and agricultural products that are not typical Nebraska ag products are becoming an increasingly viable way for new, non-generational farmers to break into the industry. Micro-farms are designated as farms that make less than $2,500 in revenue annually, which means that they are an incremental way to break into farming. Regardless of revenue, a farm can be started with a smaller plot of land with certain non-traditional crops. This is because these crops can have much higher density yields than corn or soybeans. Other types of crops can also be planted and harvested with smaller, less expensive machinery, or even by hand, making start-up investment much lower. Because of these factors, these types of agricultural ventures can be much easier for newcomers to the field to start. Additionally, according to Kevin Thiele, most farm loan applicants who are new to the industry often need supplemental income for several years until their business can sustain itself. This can be easier for smaller-scale farms because a large operation can already take up more than a full-time job's worth of work to maintain. Incremental growth starting with a small production can help to transition to full-time farm work gradually.

b. Contribution to the Food System. Another added bonus to these non-traditional crop farms is that they contribute more directly to the food system than corn or soybeans, which typically supply ethanol, livestock feed, and exports, so could be eligible for additional government grants or other funding. SENDD should make supporting and encouraging these farms a priority to help alleviate gaps in the food system. This can mean several things. First, corn, soybean, and livestock producers have major political power within the state, whereas small, independent growers of novelty produce often do not. SENDD can work with these growers to get a seat at the table in legislative discussions, and help change perception of these growers from antagonistic towards traditional crop ag to a symbiotic and necessary part of the future of Nebraska's food system. Looking at seasonality and the desirability of food crops in grocery stores, schools, hospitals and more can show the need for these crops, and also help farmers maximize their profits.

c. Support for Commercial Level Scaling of Business. Finally, formal support is needed for alternative crop farmers to help scale their production from 'hobby-level,' farmer's market sales to true commercial production. Liz Ruskamp spoke with us about her brother, a new farmer from North Bend, and his struggles with breaking into the farming industry. He pursued novelty farming, but ultimately realized there were limits to the accessibility of hobby farming that can make it extremely difficult to grow beyond a certain level of production in a single generation of farming. Farmer's markets in the area are confined to seasonal operation, and can be very time consuming relative to sales, which takes time away from other aspects of operational growth opportunities. Additionally, past a certain size, non-traditional ag runs into the same equipment and land cost issues as traditional agriculture, although these businesses can fare slightly better due to being established and semi-stable financially. SENDD should procure resources and funding if possible to support these farmers in the transition to commercial production.

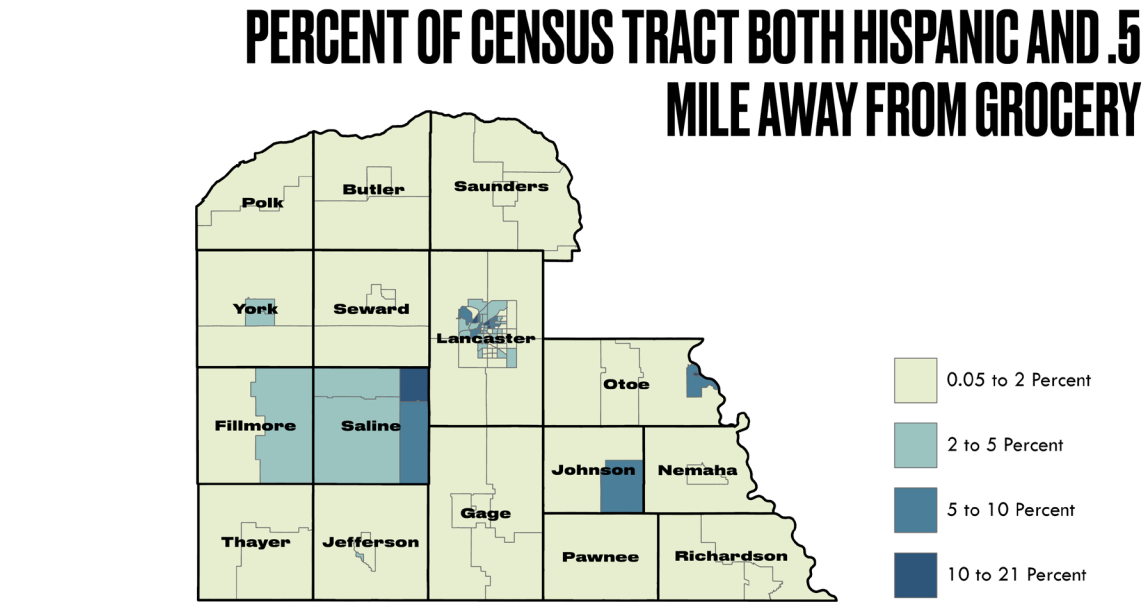
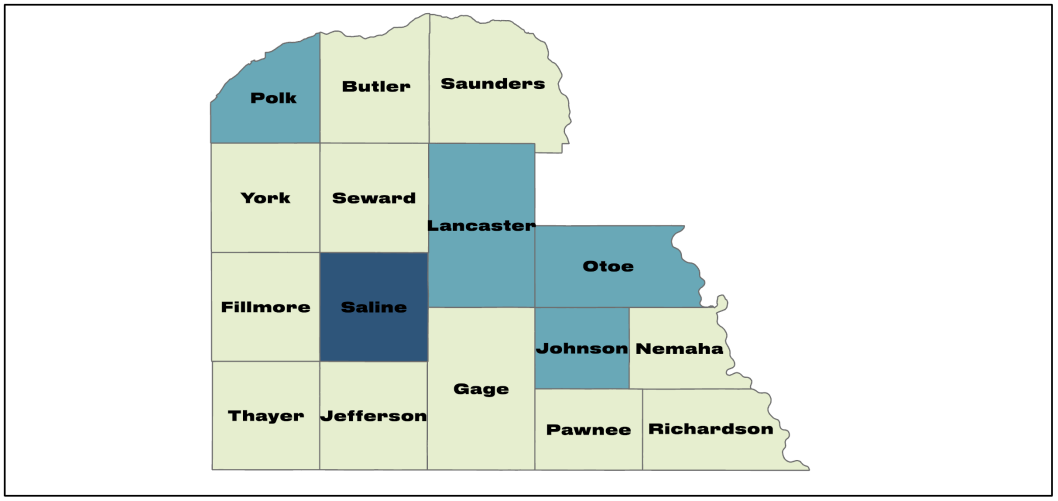


Figure 28: Hispanic Population Over .5 Miles away from the Grocery Store



Source: ACS 5-Year Estimates, 2018 - Created by MC Raterman

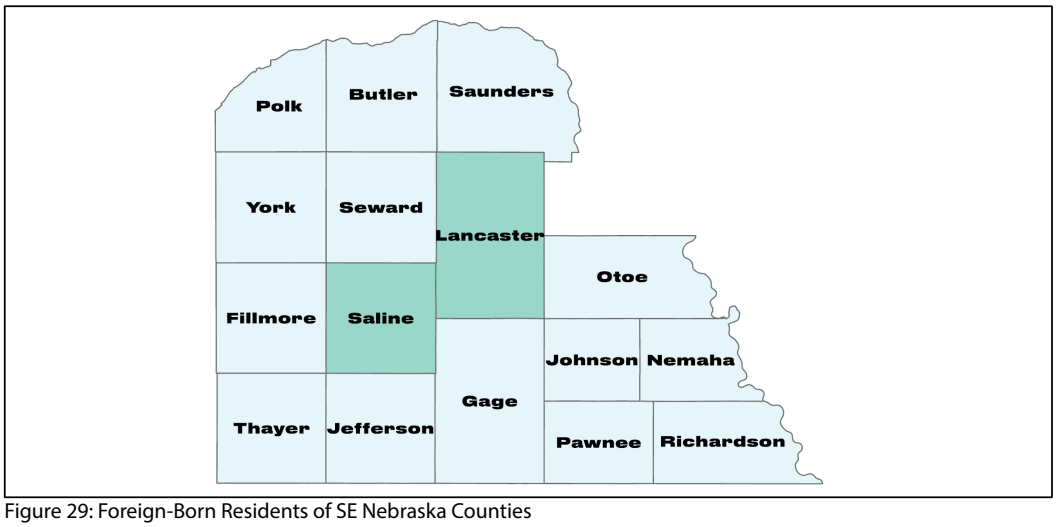


Figure 29: Foreign-Born Residents of SE Nebraska Counties

Importance of Local Grocers

Local grocery stores can be a critical link to food access within many small communities. However, once a local grocery goes, the entire community suffers. Residents may be unaware of the negative effects when local businesses close, such as a decrease in property values, and a loss of stimulation to the local economy (Parker 2020). Many small communities rely on local grocery stores to supply fresh, healthy options without traveling long distances to big-box stores. With the recent surge of chain convenience stores, many local grocers are seeing their clientele shift to purchasing products from these chains rather than shopping locally. Additionally, local grocers are having a harder time attracting younger residents to shop in their stores, since this demographic typically does not mind driving longer to access more options (Parker 2020). According to Beacom (2021), the number of local food retailers in Nebraska was estimated to be 1,600 twenty years ago, and over 1,100 have closed to this day, largely impacting smaller communities. In chapter 4, proportionally high levels of poverty, low access to groceries, and low access to a vehicle were demonstrated in tracts within Johnson, Pawnee, Otoe, and Richardson counties; this indicates the relevance of and need for local and affordable groceries in the region. Therefore, not only does the closing of local food retailers negatively impact small communities–as the work of Beacom suggests–but returning an outlet of local and affordable foods could reverse these negative impacts within the Southeast Nebraska Region.

Below are potential solutions in sustaining local grocers in small communities:

- Converting local grocery stores into a food cooperative or a nonprofit to apply for grants.

* Cooperatives tend to strengthen the residents as a whole since they are working together and pooling resources to keep a staple part of their community afloat. Cooperative grocers also have the flexibility and independence to operate their businesses to fit the needs of their community. For small town grocers, a cooperative grocery store can boost the local economy by providing jobs and services that would not need to be outsourced to other towns. In terms of becoming a nonprofit, local grocery stores will have a larger pool of funding opportunities to choose from in the case of financial hardship. Generally, small town grocery stores operate on thin margins and having alternative sources can serve as a safeguard in an emergency (Parker 2020).

- Policy-level solutions:

* Require institutions in state or local governments to source a portion of food sold within its jurisdiction to come from local farms (Beacom 2021).

* Enabling cottage foods to be sold in local grocery stores, convenience stores, gas stations, as this should contribute to greater food access in the SENDD region.

- Establish regional food hubs.

* Local farmers bring their produce to a centralized location for local grocers and other buyers can access the produce rather than outsourcing to different locations. This would create a more efficient way of delivering fresh foods to retailers (Parker 2020). The United States Department of Agriculture (2012) defines a food hub as "a business or organization that actively manages the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand" (4). Additionally, USDA also has a guide for regions working on developing and expanding food hubs (http://dx.doi.org/10.9752/MS046.04-2012).

- Establish multiple services and initiatives in one building.

* There are various examples of local grocery stores incorporating a café, deli market, or breakfast bar to provide more services that are not too detached from their current services. In conjunction with offering multiple services, local grocers have also set up events to attract shoppers into their stores, such as punch cards for free merchandise, raffles for

free groceries, and themed days of the week to highlight certain goods they sell.

* Cottage food law expansion into commercial establishments like grocery stores and gas stations would further enhance food access in the SE Nebraska region. Would be fair to recommend a push for cottage foods for commercial sale as production and distribution of cottage foods already enables at-home sales for producers and online orders for the consumer. This would further help small producers expand and increase methods of distribution if commercial sales can become a reality. Expansion of this could further lead to dairy, meat, and produce expansion for small producers especially since laws like LB 324 (Herdshare Agreement) and NE Revised Statute 2-3969 (Raw Dairy sales on farm) are enabling farmers to sell their own meat and dairy straight to the consumer, but like LB 304 (Cottage Food Law) they have their limits.

Accommodating Shifts in Agriculture to Continue Local Traditions

Traditional crop agriculture is the backbone of Nebraska's economy, and the Southeast region is no different. These agricultural ventures have a long and rich history within the state, but unfortunately it is becoming more and more difficult for the next generation to break into the industry. The average age of a farmer in the district is 57 (USDA, 2017), which means that a transition of ownership to a new generation needs to happen in the next ten to twenty years. With rising costs to entry and maintenance of a farm operation, SENDD needs to help facilitate a framework of support for the next generation otherwise the region risks losing the cultural heritage of small, local-level production.

1. The first part of this framework needs to be advocacy. Where possible, funding mechanisms need to be adjusted to account for economic inflation and the rising costs of farm operation. Neither conventional bank loans nor government loan programs or subsidies combined come close to covering the start-up costs for new traditional crop farms, unless the farmer has a robust existing support structure and/or comes from an existing generational farm family. There is a mismatch between existing family-operated farmers and the new generation of farmers, where not all, or even necessarily a majority, of young people interested in farming come from existing farming families. Many come from other ag-related businesses, but it is very difficult for them to break into the industry. As mentioned in our recommendation on Funding Micro-Farming, many funding programs, like the USDA Beginning Farmer program, have stipulations that make it even more difficult for new farm ventures to secure funding, so advocating for flexibility with guidelines is vital to the region's continued agricultural success.

2. For many non-generation farm families, one of the only viable ways to break into the industry and secure government funding is by finding a mentor that is an established farmer in the area. Eddie Ruskamp, a farmer from North Bend, was able to start a crop farming business through an informal mentorship relationship like this. Ruskamp struck a deal with an established farmer where he essentially works as a farm hand, farming the land this farmer owns, but over time as Ruskamp purchases his own land, can farm it using the farmer's already purchased equipment. With this, he can slowly grow a base of land and capital from years of smaller, successful harvests, growing his business incrementally, until he is able to purchase more land and eventually, his own equipment (Ruskmap, 2022). SENDD can help new farmers by being a facilitator for these relationships, and simply by calling attention to their efficacy.

3. SENDD can also help expand these informal mentorship relationships into more formal networks of knowledge and mutual aid. Networking opportunities like these can bring in new people to the area looking for a chance to break into the agricultural industry, further stimulating the economy of

the area. For Ruskamp, this mentorship relationship was only found by cold-calling every local farmer in the area until he called one willing to take him on as a worker, but this is not possible for many people, especially those newer to the area or without long-established connections to local farmers. Creating more opportunities for the sharing of knowledge benefits farmers, both new and old. We recommend establishing these informal networks, then connecting them to funding through a non-profit NGO, rather than using government aid to directly fund the network. Farmers can be distrustful of government intervention, so keeping the business privately-owned, even if it receives federal funding, can help farmers feel more comfortable joining and sharing information. A local example of one of these organizations is Farm-a-Field, which connects non-typical investors and established farming knowledge to new farmers in a similar manner to the process Ruskamp went through (Farmafield, 2022).

Leveraging Technology, Aggregation of Data, and Resources

There is a wellspring of data and research that has been done by countless organizations to better understand food systems and programs for suppliers in Nebraska. This research exists in journal articles, tables, and datasets that require significant time spent to find relevant information and glean usefulness from it.

1. At least two online solutions exist today which are aimed at connecting food producers to consumers: the Nebraska Department of Agriculture's Farmers Market and Produce Vendor Search and the University of Nebraska Extension database software MarketMaker (Nebraska Extension 2022). These are redundant solutions which risk confusing consumers and should be merged, retiring one tool after all relevant information has been ported over to the permanent solution.

2. Continue to invest in the MarketMaker database software to ensure its usefulness for consumers and food producers (Nebraska Extension, n.d.). Its key value-add is the ability to connect with others across the production and distribution chain. Given that logistics management and food procurement are barriers to Farm to Schools adoption, continued investment in technologies to connect stakeholders in the food system will further secure the success of the program and benefit other industries, such as restaurants, wholesales, and hospital systems.

3. Partner to promote the Census of Agriculture & Census Special Studies. The Census of Agriculture is taken once every five years and includes valuable data about Nebraska farms, but it is not comprehensive for the needs of the community. Data collected about produce grown by farmers is limited for those who grow fruits and nuts as well as vegetables. Many food items which are grown in the region are not accounted for in the census, and the amount of acres harvested for many of the food items is unknown. Additionally, there is no clear accounting of whether the produce grown is for direct-to-consumer sales, wholesale, or commodity sales. Partnership with the National Agricultural Statistics Service (NASS) and conducting in-depth outreach to farmers, ranchers, and their communities to explain the importance of census participation will produce more meaningful census results which can be used to track the success of the various initiatives underway to improve the food system (National Agricultural Statistics Service, USDA, n.d.).

4. Work with other public entities in the agricultural and economic sectors to determine an appropriate chain of command that is clear and understandable to the public. In the stakeholder meetings for this project, it was mentioned that SENDD does not want to be the first line of questioning for a new farmer, but will instead push them to a local city or county economic development staff. Regardless of the order of operations, the website and information gathering process for SENDD, UNL

Extension, local agencies, and whoever else may be involved in helping a farm get funding needs to be clear, legible, and consistent in its information. Potential businesses are too often falling between the cracks of the current system. A clear workflow for all interested parties needs to be established and followed. Additionally, even if SENDD is not directly helping a new business, we recommend a website section with easy to understand links to the correct locations to be seeking help.

5. Understand available programming and their administrative needs. According to an interview with Vanessa Wielenga, R.D., Associate Extension Educator on Food Access and State Healthy Food Access Initiatives, programs prioritizing healthy foods and food access need administrators and funding to exist. They are typically operated with 'pass through' funding where an entity applies for grants or seeks private funding for a program and then serves as the administrator for dispersing the funds. For example, Vanessa is working with the 'Double up Bucks' program, between 2017 to now, that program has had approximately 15 different funding sources. The longest commitment has been three years, but typically they are only committed to funding the program for one year. Funding can come from federal or state government acts, non profit organizations, or private donors. Program administrators have rigorous data collection and management reporting processes to prove the funding has been spent appropriately. An audit of desired programs for their administrative needs should be done so that appropriate funding and staffing can be found. Where maintaining funding is not possible, this audit could also look into ways to merge programs together to maximize benefit for the farmer, producer and consumers of Southeast Nebraska.

6. Farmers and producers should strongly consider another push for some type of Agricultural Equipment Right-To-Repair Act that will enable them to fix their equipment's technical and mechanical issues, to further assist in avoiding a loss of harvest. Technology has advanced for tractors and farm equipment, and the problems farmers are dealing with stem from a computer loaded with troubleshooting software that connects to a port inside the tractor to identify and resolve the problem. Only manufacturers and authorized dealers are allowed that tool, and they are charging hundreds of dollars in fees to use it. For farmers in an increasingly compressed industry, not being able to fix the equipment they paid for will affect the way farmers in SE Nebraska are able to fix their equipment without all this hassle and potential financial burden. If they can't use their tractors for harvest, what they can produce for local consumption would be utterly ruined.

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FOOD SYSTEMS PLANNING
FOR SOUTHEAST NEBRASKA
ALL WELCOME
TUESDAY, NOVEMBER 22, 2022
1:45-3:00 PM CT
ARCH 315
CRPL-840 students will present research examining issues affecting food supply and consumer demand and access to nutritious and culturally relevant food in Southeast Nebraska.
Also available on Zoom at:
https://unl.zoom.us/j/91806110440
Scan me!
COLLEGE OF ARCHITECTURE
SENDD
Southeast Nebraska Development District
Snacks and refreshments will be provided !!