

**FOOD AVAILABILITY IN RURAL KANSAS: COPING STRATEGIES FOR PEOPLE
LIVING IN LOW ACCESS FOOD AREAS**

By

PATRICK S. RISSLER

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Major Professor
Gerad Middendorf

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Abstract

In the last 70 years, there has been a decline in population of rural Kansas. For example Gove, KS, the county seat of Gove County has seen a population decline of 355% from 284 in 1940 to 80 residents in the 2010 US Census (US Census). Along with general population decline in rural areas, is decline the overall number of farms, while the average farm size has increased (Kansas Dept. of Agriculture). The decline of the population of rural communities has caused the erosion of basic infrastructure, leaving many communities lacking access to basic services. One of the crucial components of the rural infrastructure is the rural grocery store.

Since 2007, in Kansas communities with populations under 2,500 people, 82 grocery stores have closed. On average, rural Kansans now drive over 10 miles each direction to obtain their groceries. Proctor (2013) describes how the loss of a grocery store can affect a community: “Rural grocery stores are part of the economic engine that sustains rural communities,” “they are a significant source of local taxes, powering the creation and maintenance of civic services and amenities. They provide essential, stable jobs – butchers, cashiers, managers, and stockers – at a time when we are desperate for employment opportunities.”

The objectives of this study are to describe the food desert conditions of three rural communities in Kansas, to understand the trends regarding rural grocery stores, and to better understand the issues of access to healthy foods faced by people living in these areas.

Table of Contents

List of Maps	v
List of Tables	vi
Acknowledgement	vii
Dedication	viii
Chapter 1 - Introduction.....	1
Chapter 2 – Research Design.....	7
Chapter 3 – Analysis.....	11
3.1 Gove City.....	17
3.2 Westmoreland.....	26
3.3 Mound City.....	33
Chapter 4 – Conclusions	43
References.....	46
Appendix A – Survey Instrument	48
Appendix B - Maps.....	56

List of Maps

Map 3.1 Kansas Grocery Stores.....	13 & 56
Map 3.2 Study Sites for Research	Error! Bookmark not defined. 15 & 57
Map 3.3 USDA Food Deserts of Kansas	16
Map 3.4 Gove County & Surrounding Areas	18 & 58
Map 3.5 USDA map of Gove County	19
Map 3.6 Pottawatomie County & Surrounding Area Grocery Stores	26 & 59
Map 3.7 USDA map of Pottawatomie County	27
Map 3.8 Linn County & Surrounding Area Grocery Stores	33 & 60
Map 3.9 USDA Map of Linn County	34

List of Tables

Table 3.1 Gove City question 1	22
Table 3.2 Gove City question 2	22
Table 3.3 Gove City question 3	23
Table 3.4 Gove City question 4	23
Table 3.5 Gove City question 5	23
Table 3.6 Westmoreland question 1.....	29
Table 3.7 Westmoreland question 2.....	29
Table 3.8 Westmoreland question 3.....	30
Table 3.9 Westmoreland question 4.....	30
Table 3.10 Westmoreland question 5.....	30
Table 3.11 Mound City question 1	37
Table 3.12 Mound City question 2	38
Table 3.13 Mound City question 3	39
Table 3.14 Mound City question 4	39
Table 3.15 Mound City question 5	40

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Dedication

I dedicate this research project to my daughters, Gesung & Youngha, I promise that I will finish school before you start college.

Chapter 1 - Introduction

In the last 100 years, rural Kansas has seen a decline in population along with the erosion of basic infrastructure, leaving many communities lacking access to basic services. A crucial component of rural infrastructure is the rural grocery store. Since 2007, in Kansas communities with populations under 2,500 people, 82 grocery stores have closed. On average, rural Kansans now drive over 10 miles each direction to obtain their groceries. Proctor (2013) describes how the loss of a grocery store can affect a community: “Rural grocery stores are part of the economic engine that sustains rural communities,” “they are a significant source of local taxes, powering the creation and maintenance of civic services and amenities. They provide essential, stable jobs – butchers, cashiers, managers, and stockers – at a time when we are desperate for employment opportunities.” His research has shown that many rural areas lacking full-service groceries are also “facing a crisis of access to healthy foods,” such as fresh produce.

Thus, in many parts of rural Kansas we see a troubling paradox: in general, the average crop yields for winter wheat, corn, soybeans, and other row crops have placed Kansas in the top tier of grain producers in the United States (USDA Crops, 2012); yet, at the same time, these “bread basket” regions have also been defined by the USDA and others as food deserts. The 2008 Food, Energy, and Conservation Act defines a Food Desert as an area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods and communities (Ver Ploeg 2009). According to the USDA’s map of food deserts, 31 of the 105 counties in Kansas have food desert conditions.¹

¹ <http://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx>

In short, in a sea of agricultural production, many rural communities lack access to healthy foods.

While there has been some food desert research in urban areas of Kansas (Cultivate Kansas City; Miller 2012), less such work has focused on rural areas of Kansas, specifically on the intersection of food desert status and the decline of the rural grocery store. Accordingly, the objectives of this study are to describe the food desert conditions in rural Kansas, to understand the trends regarding rural grocery stores, and to better understand the issues of access to healthy foods faced by people living in these areas.

Research Questions

In light of the above, this research poses the following questions.

1. What are the salient dimensions and characteristics of rural food deserts in Kansas?

In addressing this question I use the available literature and data to develop a portrait of food desert conditions in rural Kansas.

2. How are rural grocery stores distributed spatially in Kansas, and what are the salient trends regarding these stores? Here I use the available grocery store data to map the distribution of grocery stores in Kansas.

3. In rural communities that are in a food desert, (a) what coping strategies do people use in order to access groceries? And, more specifically, (b) what strategies do people use to access healthy foods, and (c) what meanings do people attach to the loss of rural grocery stores? These questions will be pursued in three selected communities.

Background

Kansas has been classified historically as an agricultural state; the two major industries in the state are manufacture of farm/transportation equipment and agricultural. Kansas is the third largest agricultural producer following Montana and Texas, in terms of acres, and its major crops are wheat, grain sorghum, corn, hay, soybeans, and sunflowers. The majority of this grain is shipped to processing plants in other regions. The largest single agricultural industry in the state is the beef cattle industry. Two additional industries include meat packing/dairy production and petroleum/coal mining. In southwestern Kansas the feedlot and slaughterhouse industry has expanded, and salt mining, another important industry for the state, takes place in western Kansas.

Food deserts

Food deserts are defined by the USDA as

Urban neighborhoods and rural towns without ready access to fresh, healthy, and affordable food. Instead of supermarkets and grocery stores, these communities may have no food access or are served only by fast food restaurants and convenience stores that offer few healthy, affordable food options. The lack of access contributes to a poor diet and can lead to higher levels of obesity and other diet-related diseases, such as diabetes and heart disease (USDA, 2014).

According to the Food, Energy, and Conservation Act of 2008: a food desert is an

area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods and communities (Ver Ploeg 2009).

McEntee and Agyeman (McEntee, 2009) state that there are three key factors in defining a food desert area: economic access, information access, and location or geographic access.

GIS mapping of food deserts

Literature that describes the use of Geographical Information Systems (GIS) in the mapping of rural food deserts is limited. In one study on Vermont (McEntee, 2009), the authors describe the various approaches to identifying and collecting data on food deserts. In this research the authors created a matrix of three factors that affect access to healthy foods: economic, geographic, and informational. During the conduct of this research I found each of these factors to be relevant to some extent. I will address this further below.

According to Morton et al. (2005), regions that can be considered rural food deserts are areas where the supply of food is not evenly concentrated. Their findings showed that the residents of communities where there is a shortage of food outlets have a lower level of food insecurity with the aid from civic structures that have been developed in those regions over decades of community awareness and action.

Rural grocery stores

The ability to obtain healthy food and supply it to households depends greatly on the “spatial access of a household to the food environment: that is, the number, type, size, and distance of food stores to the neighborhoods where people reside” (Sharkey, 2008). This helps to describe the need and usage of geographic tools to locate food deserts and communities within them. Sharkey examined eleven different counties in Texas, both rural and urban, that were in food desert conditions. He argues that “greater attention must be directed toward the availability and utilization of food resources in rural areas” (Sharkey). This study tied in ground-truthing

with the usage of GIS/GPS applications for food stores in the research area to create population density maps of the study area and locate these food stores within the study area.

Food stores, which retail a general line of food products, include supermarkets, full-line grocery stores, convenience stores or food marts (without gasoline pumps), discount stores, beverage stores (with some perishable and nonperishable food items), pharmacies and drug stores (with some perishable and nonperishable food items), and specialty food stores (e.g., meat markets, fish and seafood markets, fruit and vegetable markets, and markets with bakeries not for immediate consumption) that are fixed and not mobile.

Pinkertin et al. (1995) examined in-shopping and out-shopping patterns in two rural communities located in northwestern Missouri. They state that with the improvements to transportation and communication, the population living in rural communities is not limited to shopping in their local community grocery stores. Each of the communities studied had larger communities between 25 and 35 miles away, which drew the consumers away from the local grocery stores and services. One of the concepts used in this study is Reilly's law of retail gravitation, which helps to define actions of local residents and their shopping habits (Pinkerton et al., 1995). Reilly's law of retail gravitation describes trade area boundaries around competing cities using the distance between each city and their respective city populations. He realized that the larger city would have more amenities that would draw consumers to shop in the city. Reilly proposed that two cities of similar size would have a breaking point, or a middle point that is the cut-off line for distances to travel for services and goods (IBID).

Food deserts in Kansas

While some food desert research has focused on urban areas in Kansas (Cultivate Kansas City 2014; Miller 2012), less such research has focused on rural Kansas, specifically on food deserts and the decline of the rural grocery store. There is a problem of economic predatory practices between chain grocery stores and locally owned grocery stores. Since 2007, in Kansas communities with populations under 2,500, 82 grocery stores have closed. On average, rural Kansans now drive over 10 miles each direction to obtain their groceries (Ford 2009; Procter 2010).

In a study of food deserts in rural Ohio, Mulunga et al. (2012) focus on three factors. *Physical accessibility* measures food accessibility by estimating vehicle travel time, walking travel distance, and public transportation accessibility. In other words, physical accessibility identifies households that are able to efficiently and easily access a food outlet via private and/or public transportation. Second, since household demand for food is a function of income and price, *economic accessibility* measures food accessibility by estimating median income and poverty rates and calculating the level of local competition between supermarkets, which determines local price levels. Finally, the *healthful accessibility* aspect measures food accessibility by identifying households faced with nutritional challenges compounded by high concentrations of nearby fast food alternatives on the one hand, and less nutritional food alternatives at the store on the other.

From Mulunga we read about the three different dimensions of food security-- physical, economic, and healthful. While three are all crucial for food security, in this research I focus primarily on physical accessibility and its role in community food security.

Chapter 2 - Research Design

This chapter addresses the research design and implementation, including mapping, data, community research, and surveys/ interviews.

2.1 Mapping

Kansas consists of 105 counties, with 628 cities and towns. I divided the cities into three categories for this research. The categories are small (< 1000 people), medium (>1000 to <2500), and large cities (>2500)².

A second type of data that will be used is grocery store classification. Powell et al. (2011) present the following food outlet classifications:

Specialty food stores: bakeries, meat or fish stores, fruit or vegetable stores, candy or nut stores and coffee and tea stores.

Convenience stores: non-specialty food stores with two or fewer cash registers, no fresh meat and fewer than ten varieties of fresh fruits and vegetables.

Supermarkets: stores with a minimum of four cash registers, fresh meat, at least twenty varieties of fresh fruits or vegetables and at least two of the following features: butcher, deli or bakery.

Grocery stores: food stores that were not a specialty food store, convenience store, or supermarket (p. 1125).

With these classifications in mind, I created three designations for this research. I disqualified stores that offer some small groceries, stores such as Dollar General and Casey's. In

² The state of Kansas has a pre-existing third classification system to determine any incorporated community. It is broken into a three class system. According to Kansas Statutes 12-15 the three classes are Cities in the First Class (Cities and Municipalities), Cities in the Second Class (cities with a population between 5,000 and 25,000 people), and Cities in the Third Class (any city or township that is incorporated with a population under 5,000 people). The classification is linked to the latest census count (K.S.A.).

conjunction with the Rural Grocery Initiative (RGI), the first designation is the locally-owned RGI partner stores³. I used the 2012 list of partner stores, which listed 215 grocery stores for the state of Kansas. The second designation I created is that of the chain grocery store (CGS), which includes Dillon's, Hy-Vee, IGA, and Wal-Mart. I gathered the locations of these stores (in Kansas) from their websites and from inquiries at the stores themselves. The third designation is non-aligned grocery stores, meaning that they are neither part of the RGI nor under the umbrella of chain grocery stores. The majority of grocery stores that fall within this group are located in cities that have a population between 2500 and 7000 people.

After I compiled a spreadsheet of store designations and parent companies, I then geo-located their addresses by latitude and longitude using Google Maps, and Google Street View enabled me to verify each store's existence. I pin-pointed each store's location on the map and then set a 10-mile radius buffer zone around each store because the literature on rural food deserts and the definition of a food desert from the USDA indicate that in rural communities, people travel ten miles on average to grocery shop.

Using this map, I could identify towns and cities that did not have an indicated grocery store within the ten-mile buffer zone. I then used Yellow Pages to confirm the absence or presence of grocery stores in each of these communities and, if I found a store not affiliated with either RGI or a chain grocery store, followed the same steps of creating a spreadsheet for these independent stores. This allowed for the comparison and analysis of the data against the USDA's map of food deserts in Kansas.

³ RGI Partner stores are the stores in communities with a population under 2500 people that have partnered with Kansas State University's Rural Grocery Initiative.

2.2 Data

This study has two levels of data. The first level relates to food deserts and food insecurity in general and in Kansas and comes from two sources: the USDA Food Desert Atlas⁴ and the Kansas Hunger Atlas.⁵ The second level of data is obtained from interviews with members of each community in the study. Both levels enable this study to examine relationships between community members and grocery stores, specifically the coping strategies of how community members in food deserts obtain food.

2.3 Community Research

There are three case-study communities in this project, chosen according to three criteria. The first of these is that each of the communities is in a food desert, as determined by their location in USDA's Food Atlas, the grocery store map that was created for the project, and the contradiction between the two maps. The second selection criterion is geographical location in the state of Kansas—the three chosen communities were located in the western, central, and eastern parts of the state, respectively. The third criterion is the type of industry prevalent in the county. The selected communities range from agriculture, semi-agriculture, and industry.

2.4 Surveys/ Interviews

I conducted a total of 21 interviews, with seven interviewees from each community in the study. Besides the owner of Gove City's grocery store, I changed the names and pseudonyms for each interviewee. "The grocery stores were chosen as the location for the interviews.

Interviewees were approached upon either entering or exiting the store, and asked if they would

⁴ <http://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx>

⁵ <http://www.kacap.org/Resources/2012HungerAtlas/>

agree to an interview. The intent of this approach is not to obtain a random sample of grocery store patrons, however it was possible, at least in two of the three locations, to interview the majority of the store patrons on that day. The survey was created from two sources, the first half of the instrument was adapted from Cultivate KC's survey, while the second half I used USDA's short survey on food security. The interviews were semi-structured⁶ with a list of questions to be asked of each interviewee. The last question was an open-ended question, designed to give the respondents an opportunity to give a short narrative of their own experiences with coping with food insecurity.

⁶ Semi-structured interviews are conducted with a fairly open framework, which allow for focused, conversational, two-way communication. They can be used both to give and receive information (The Community's Toolbox).

Chapter 3 - Analysis

This chapter examines the three research questions within the context of each community studied. The three research questions are as follows:

- 1: What are the salient dimensions and characteristics of rural food deserts in Kansas? In addressing this question I use the available literature and data to develop a portrait of food desert conditions in rural Kansas.
- 2: How are rural grocery stores distributed spatially in Kansas, and what are the salient trends regarding these stores? Here I use the available grocery store data to map the distribution of grocery stores in Kansas.
- 3: In rural communities that are in a food desert, (a) what coping strategies do people use in order to access groceries? And, more specifically, (b) what strategies do people use to access healthy foods, and (c) what meanings do people attach to the loss of rural grocery stores? These questions are pursued in three selected counties: Gove County, Pottawatomie County, and Linn County.

What are the salient dimensions and characteristics of rural food deserts in Kansas?

My aim with this question is to develop a portrait of food desert conditions in rural Kansas. According to USDA's *Food Desert Map*, 33 out of 105 Kansas counties (or about 31%) meet USDA's definition of food desert conditions (USDA, Food Desert Map). Out of the 627

incorporated cities,⁷ 250 have grocery stores. In Kansas there are 501 grocery stores and 63 superstores for a total of 564 food stores in the state. Of these 564 food stores, 213 are located in communities with populations under 2,500 (Hunger Atlas, 2012).

The three counties in this study follow the same patterns of food store availability as the rest of the state. Gove County, with a population of 2,695, has only 3 grocery stores (1 grocery store per 898 residents). Pottawatomie County, with a population of 21,604, has 7 grocery stores (1 grocery store per 3,086 residents). Linn County, with a population of 9,656, has 4 grocery stores (1 grocery store 2,414 residents).

County	Population	Grocery stores
Gove County	2695	3
Pottawatomie	21604	7
Linn	9656	4

Mulunga et al. (2012) argue that there are three factors that play a part in rural food deserts and healthy food access. The first factor, physical accessibility, is of particular relevance to this study and includes three attributes: estimation of vehicle travel time, pedestrian travel time, and accessibility of public/private transportation. In the majority of rural Kansas communities, public transportation does not exist. That leaves residents of these communities without their own transportation dependent on neighbors or relatives to assist them in obtaining healthy groceries.

⁷ An incorporated city is a legal entity that has received a charter from the State.

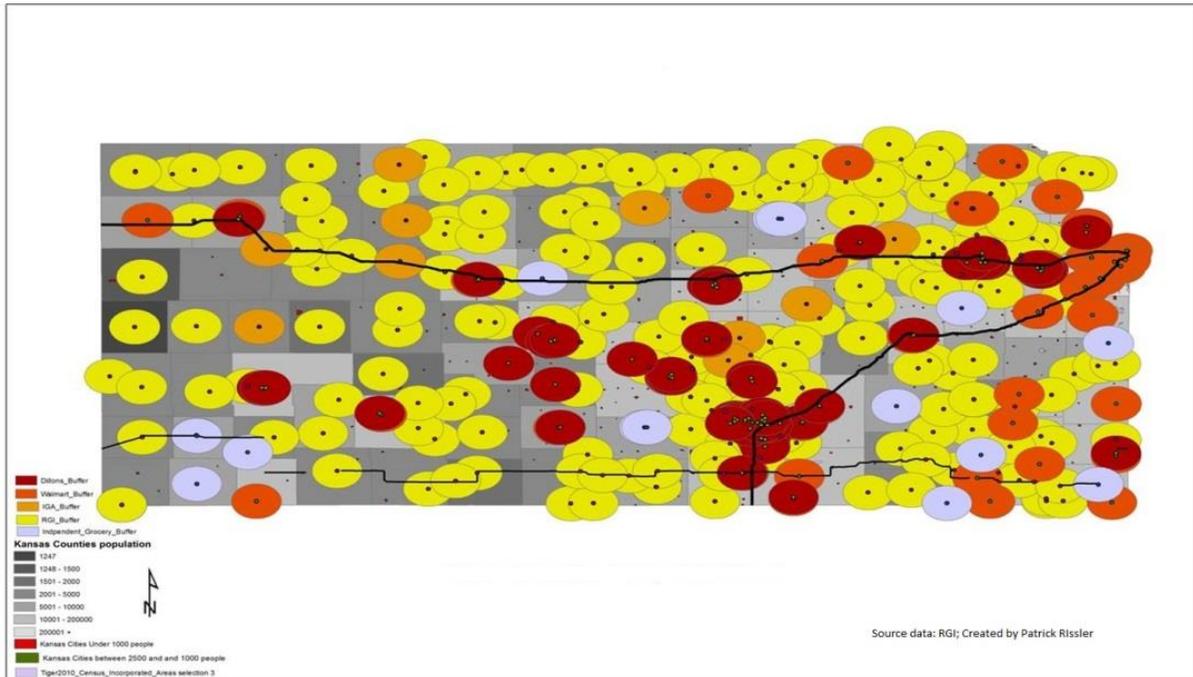
The ability to obtain healthy food and supply it to households depends greatly on “spatial access of a household to the food environment: that is, the number, type, size, and distance of food stores to the neighborhoods where people reside” (Sharkey, 2008). In rural areas of Kansas there is a negative spatial distribution⁸ between grocery stores and residents of rural counties.

How are rural grocery stores distributed spatially in Kansas, and what are the salient trends regarding these stores?

Patterns of community development in Kansas have followed the historical trend noted in Pinkerton et al. (1995), whereby population centers emerged to support the surrounding farming communities. Each population center followed Reilly’s law of retail gravitation: the competition between markets was limited by the distance traveled and the availability of modern modes of transportation (Pinkerton et al; 1995). The interstate system, which was initiated during the Eisenhower administration, figured prominently in the transformation of rural areas in the US. Presently there are six major traffic arteries for transportation in Kansas. Of these routes, two are interstate highways and four are US highways.

⁸ Negative spatial distribution- I am using this term to show the areas of Kansas where there are not any grocery stores according to the map of grocery stores.

Map 3.1 Grocery Stores in Kansas:

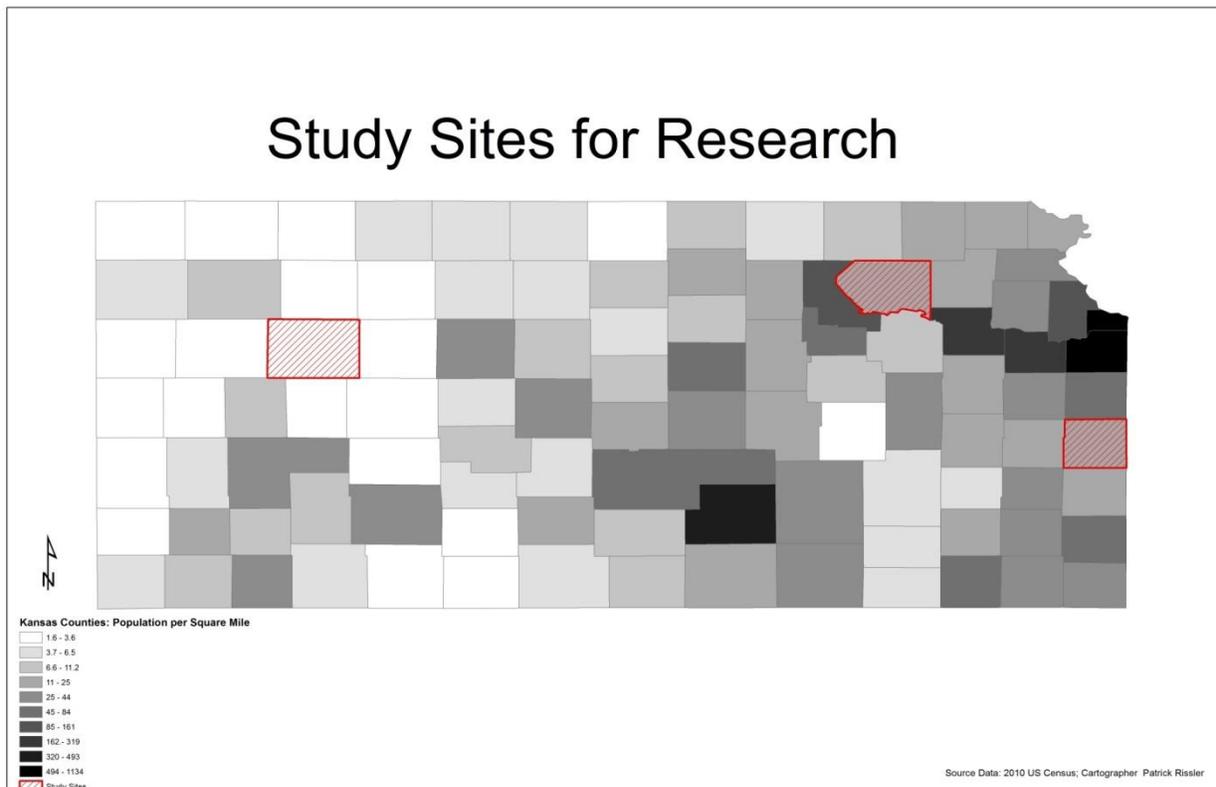


As evident in Map 3.1, spatial distribution of grocery stores in Kansas follows the major arteries of traffic through the state: east-west and north-south. The east-west routes include US36, I70, and US160, respectively, from north to south. The north-south routes include US69, I35, and US81, respectively, from east to west. Each of the communities selected for this study are detached from the major arteries of traffic and therefore do not benefit from incidental visitors who are on their way somewhere else; rather, deliberate travel is required.

In rural communities that are in a food desert, (a) what coping strategies do people use in order to access groceries? And, more specifically, (b) what strategies do people use to access healthy

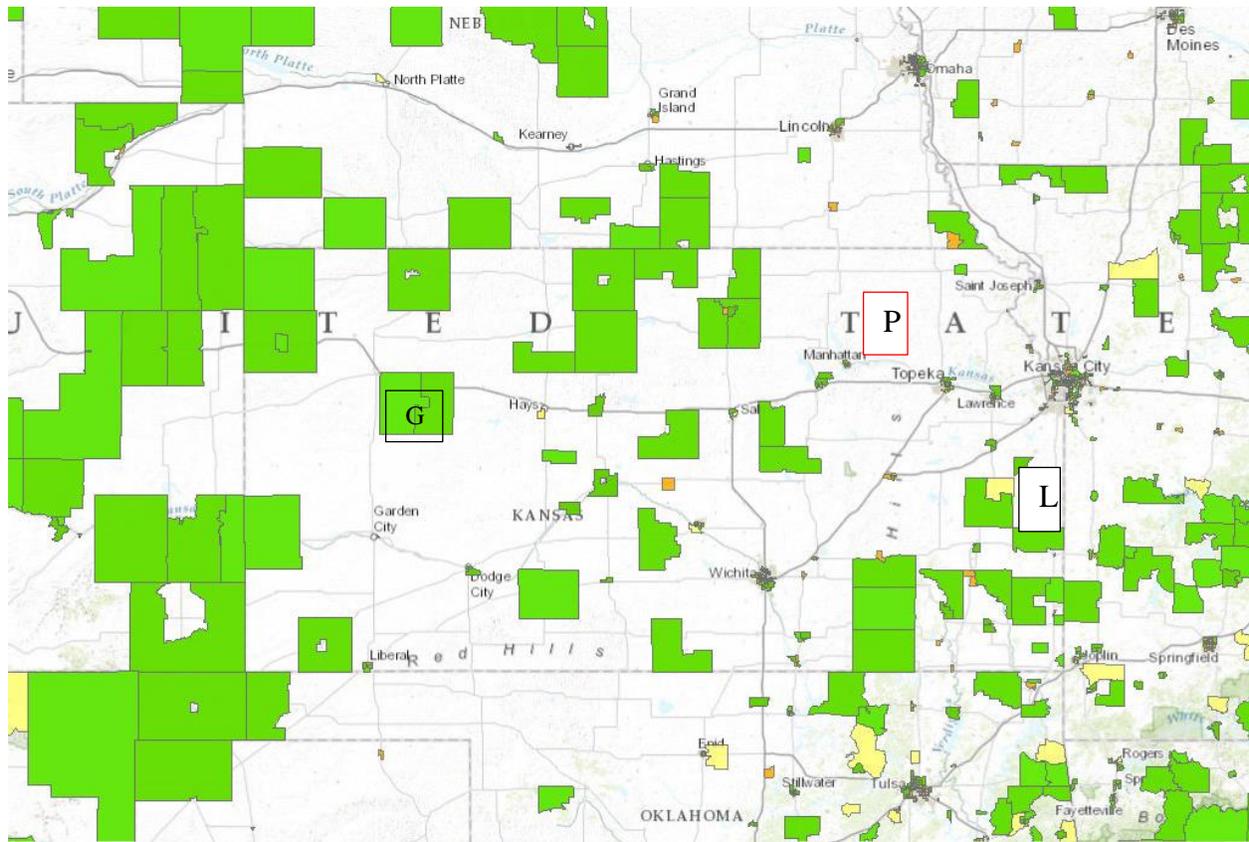
foods, and (c) what meanings do people attach to the loss of rural grocery stores? These questions will be pursued in the three selected communities, described below.

Map 3.2 Study Sites for Research



Map 3.2 shows the three counties for the study, outlined in red with hatch marking. The different shades of gray show the population density from lightest (low density) to darkest (high density).

Map 3.3 USDA Map of Kansas Food Deserts



Map 3.3 USDA designated Food Deserts of Kansas (USDA Map, 2014)

- LILA at 1 and 10
- LILA at 1 and 20
- LILA using Vehicle Access
- LILA at 1/2 and 10

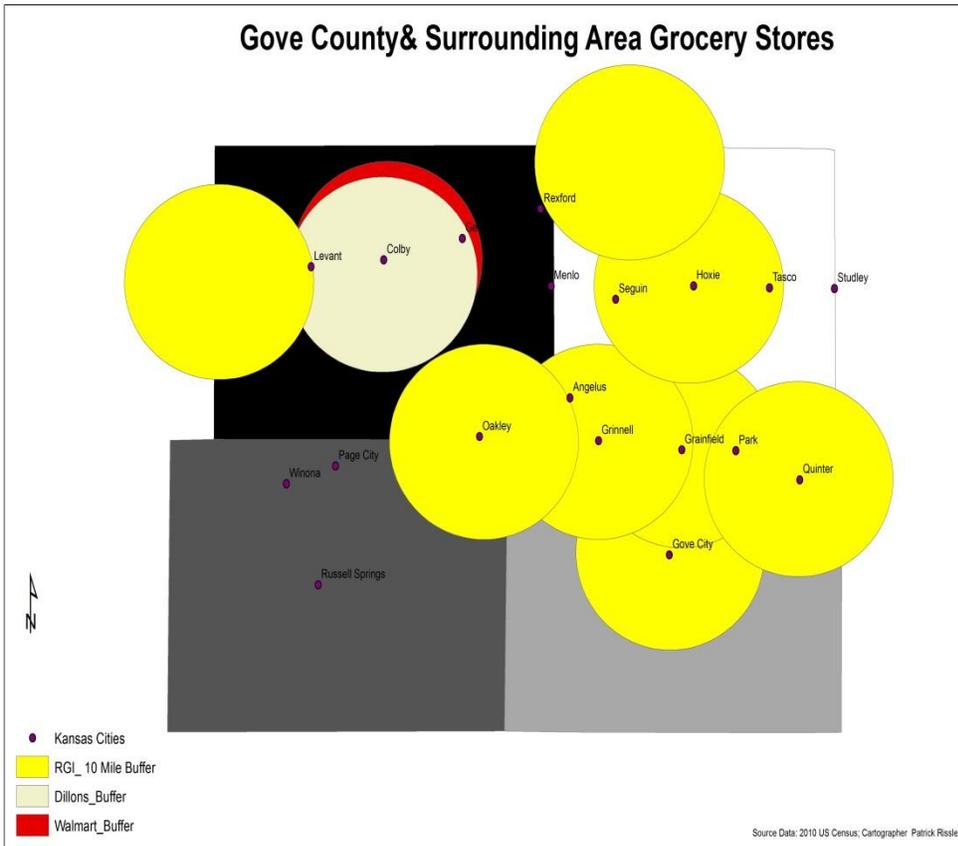
Map 3.3 shows the state of Kansas and its surrounding states with census blocks that are considered food deserts. The USDA identifies four Low Income Low Access (LILA) categories. In each category the first number is for urban areas where the second number is for rural areas. An example of this can be seen with Gove County, according to USDA the county has a LILA of

1 mile for urban areas and 10 miles for rural communities. I have imposed the three study sites on this map: G means Gove County, P is for Pottawatiome County, and L is for Linn County.

3.1 Gove City, Gove County

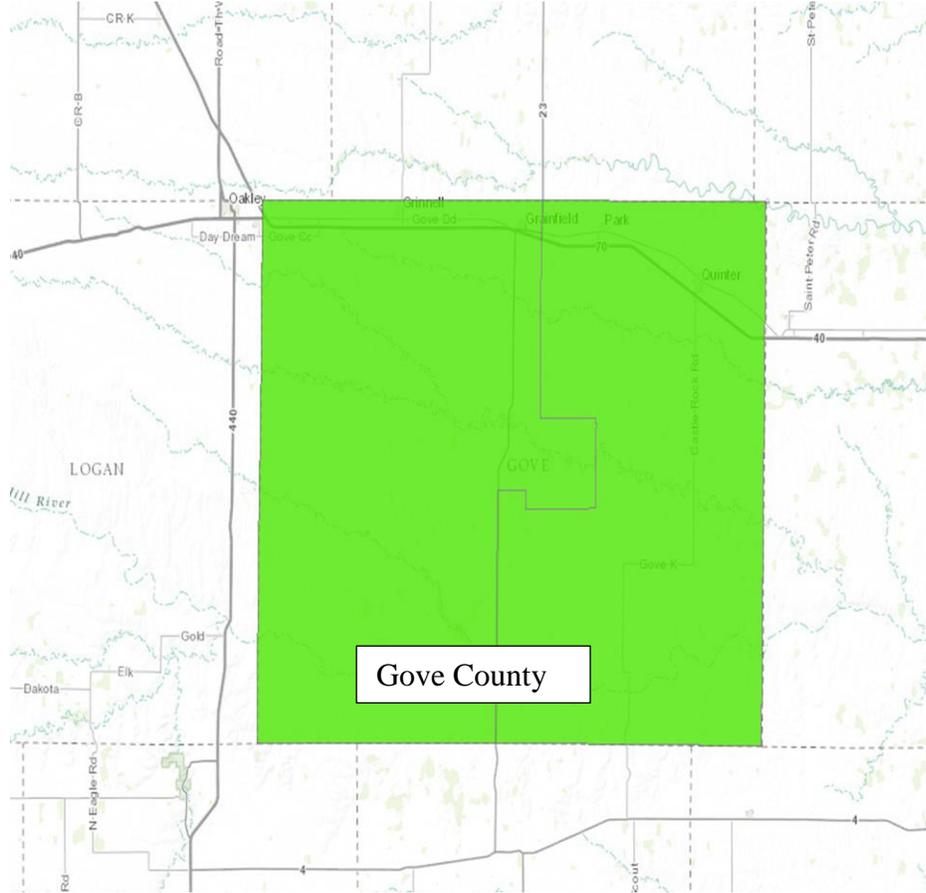
Gove County is located in northwestern Kansas. According to the 2010 Census, the county population was 2,695. Gove County is 97.95% White, and the median income is \$33,510. The main industry for the county is ranching/farming. Gove City is the county seat of Gove County. According to the 2010 Census its population is 80 residents. Besides the county government offices the main industry for the community is farming.

Map 3.4 Gove County and Surrounding Areas



Map 3.4 shows Gove County and its surrounding counties. Gove City is in the lower right corner.

Map 3.5 USDA's Map of Gove County and Surrounding Area



Map 3.5 is from USDA's Food Access Research Atlas. It shows that the whole of Gove County is located in a food desert while the surrounding communities are not in a food desert.

As shown by the two different maps there are discrepancies between what is claimed by USDA as a food desert and what is shown by the map created from data of existing grocery stores in the region. This is one example for the need of a more in-depth search for rural communities that are labeled as food deserts by the Economic Research Service (ERS).

Gove City's grocery store is owned by a brother/sister team. They bought the store from the city in November of 2013 and changed it from a COOP grocery to an independent grocery store. The present grocery store is divided into two sections; one part of the store is the office for the brother's well service and small hardware store, leaving 3 aisles and coolers around the outside walls for the grocery store. The owner tries to keep basic staple goods for the community. When I looked in the cooler, the inventory included 9 gallons of milk, 6 half-gallons of milk, 6 dozen eggs, 10 one-pound tubes of ground beef, 2 roasting chickens, 2 heads of lettuce, cucumbers, and 3 green peppers. Susan, the sister, stated that when she orders inventory she tries to order in quantities of 12; if she has to buy 24 she will pass on ordering it. She has started stocking sandwiches and quick lunches for people who work in the area and need a fast lunch. She has also started carrying cake mixes, macaroni and cheese, and chips.

Prior to taking ownership, Susan was an administrative assistant for Wheatland High School. She grew up in Gove City and decided to come back to help the community when the grocery store was closing last year. She thought that with her experience of ordering the food supplies for Wheatland HS, she could take over the Gove City grocery store. To help her overcome the difficulties of ordering and having food delivered to the community grocery store, she talked to the food vendors that deliver to the high school and worked out a plan for them to deliver supplies to the grocery store at the same time. She stated that if the store takes between \$600 and \$700 in total sales per day, they are within their budget.

During a 6-hour period on a Saturday I observed 25 people shop at the grocery store. I talked to 9 people and completed 7 interviews. From what I observed, the grocery store is the

center of the community of Gove City. Every person that I talked to stated that they shop at the local grocery store to support the effort. One older woman that I observed made 4 separate trips to the grocery store; each time she purchased one or two items and then walked back to her house. Other members of the community also made multiple trips to store. I observed that the owner walked out with the customers, talking to them as they walked back to their cars. From interviews with the residents I learned that in addition to shopping for quick staples at Gove City's grocery store, they travel to Oakley, Colby, Hays, or Garden City to obtain groceries. The one-way distance to these communities ranges from 33 miles to 88 miles. As one resident commented, "It's a way of life, living here you know that you have to plan for your trips to the city, if you forgot something then you have to wait till the next trip."

Out of the 7 interviews, 5 were with women and 2 with men. The median age of the respondents for Gove City was 62, with one preferring not to provide age. On the question of estimated annual household income, 4 respondents answered and 3 decided not to respond. The highest level of education for the respondents was an Associate's degree. The occupation for the population was a mix of farming, ranching, and caring for the home.

The responses to the structured portion of the instrument are summarized in the tables that follow.

Table 3.1

Question 1: How do you plan and purchase food for meals?

	Never	Rarely	Sometimes	Frequently	Always
a. I plan meals ahead of time.			4	1	1
b. I compare prices before I buy food.				3	3
c. I shop with a grocery list.				2	3
d. I make food choices based on my health.		2	1	2	1

Table 3.2

Question 2: How often do you typically purchase or receive food from the following locations?

	Never	Rarely	Sometimes	Frequently	Always
a. Large grocery store			6		
b. Small neighborhood store				4	3
c. Multipurpose store, e.g., Walmart			6		
d. Convenience store, e.g., Casey's	2	4			
e. Restaurant	1	2	2	1	
f. Fast food	2	4			
g. Food pantry	6				
h. Farmer's market	4	1		1	
i. Home garden	2	2		1	1

Table 3.3

Question 3: How do you typically get to places to buy food?

	Never	Rarely	Sometimes	Frequently	Always
a. Drive your own car					7
b. Someone else takes you	2	3	1		
c. Bicycle	6				
d. Walk	4	1	1		

Table 3.4

Question 4: How often do you buy food for your house?

a. More than once a week	1
b. Once a week	5
c. Once every two weeks	1
d. Once a month	2 (out of town)

Table 3.5

Question 5: How long do you typically have to travel to buy fresh food?

a. Less than 5 minutes	2
b. 5 to 10 minutes	
c. 11 to 20 minutes	2
d. 21 to 30 minutes	1
e. More than 30 minutes	7 (out of town)

The data from the first 5 questions shows that the interviewees all drive their own vehicles and travel over 30 miles at least once a month to a larger community to obtain groceries while they use the local store to obtain staples.

Question 6: If you work in a larger community, do you use the food outlets in that community to obtain your groceries?

While none of the respondents work outside of the community, one person I talked to was a construction worker, who was working on the gas pipeline. He was from Colorado and for the last 20 years worked traveling from jobsite to jobsite throughout Colorado, Kansas, Nebraska, and Oklahoma. After I told him about my research, he commented that he has noticed the loss of grocery stores in smaller communities over time.

The responses to the section of the survey related to food security, pulled from USDA's 6-question interview, follow.

Two respondents stated that sometimes they did not have money to buy more food after the food that they bought ran out and that they could not afford to eat balanced meals. The other 5 respondents stated that these two statements were not true to their situations. For the questions covering the skipping of meals (#s 9-12), all of the respondents answered that they had not had to skip meals.

One of the residents, a rancher and wheat farmer, stated that he supports the local store for staples, but his wife drives to Oakley to shop at Dillon's (34 miles from Gove City) or drives to Garden City (88 miles from Gove City) to shop at Wal-Mart and Sam's Club for long term groceries.

One resident stated that she was undergoing radiation treatment and had a special diet that limited what she could eat. She was limited to chicken and pork and could not eat beef. For fruits she could eat strawberries, cantaloupe, watermelon, and apples but could not eat citrus fruits. She obtains meats from the meat locker in Quinter (25 miles from Gove City) or butchers their own chickens. They obtain other vegetables and fresh fruits when they go to Colby for her treatments.

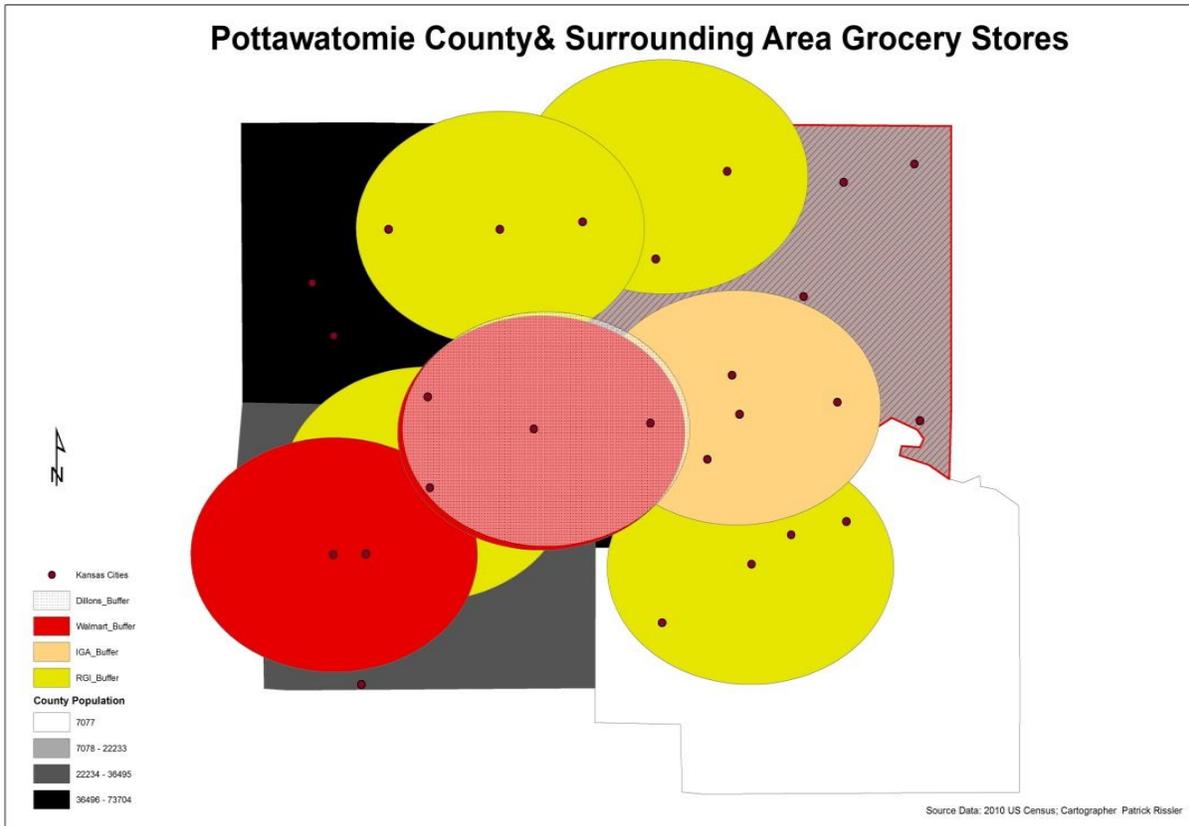
A mother/daughter pair both said that they eat organic vegetables when they have their own home-grown produce but they cannot afford to shop and obtain organic foods from grocery stores that specialize in organic foods. When I asked the mother how she copes and handles food security she said she prays and plants her own garden.

Another resident, who is 75 years of age and is the 4th generation living in Gove City, stated that she cans fruits and vegetables during the growing season to help the family during fall and winter. She told me that her parents owned the general store in the 1950-1960's. In their store they would sell locally grown fruits and vegetables, eggs, and flour, and would also consolidate Sears catalog orders for the residents of the community.

In summary, while the residents of Gove City have to drive about 30 miles to obtain healthy foods (fresh fruits and vegetables) from full-service grocery stores, they don't feel that they experience food insecurity. The general sentiment among interviewees was that the distance to larger grocery stores is what one has to live with to live and work in the area.

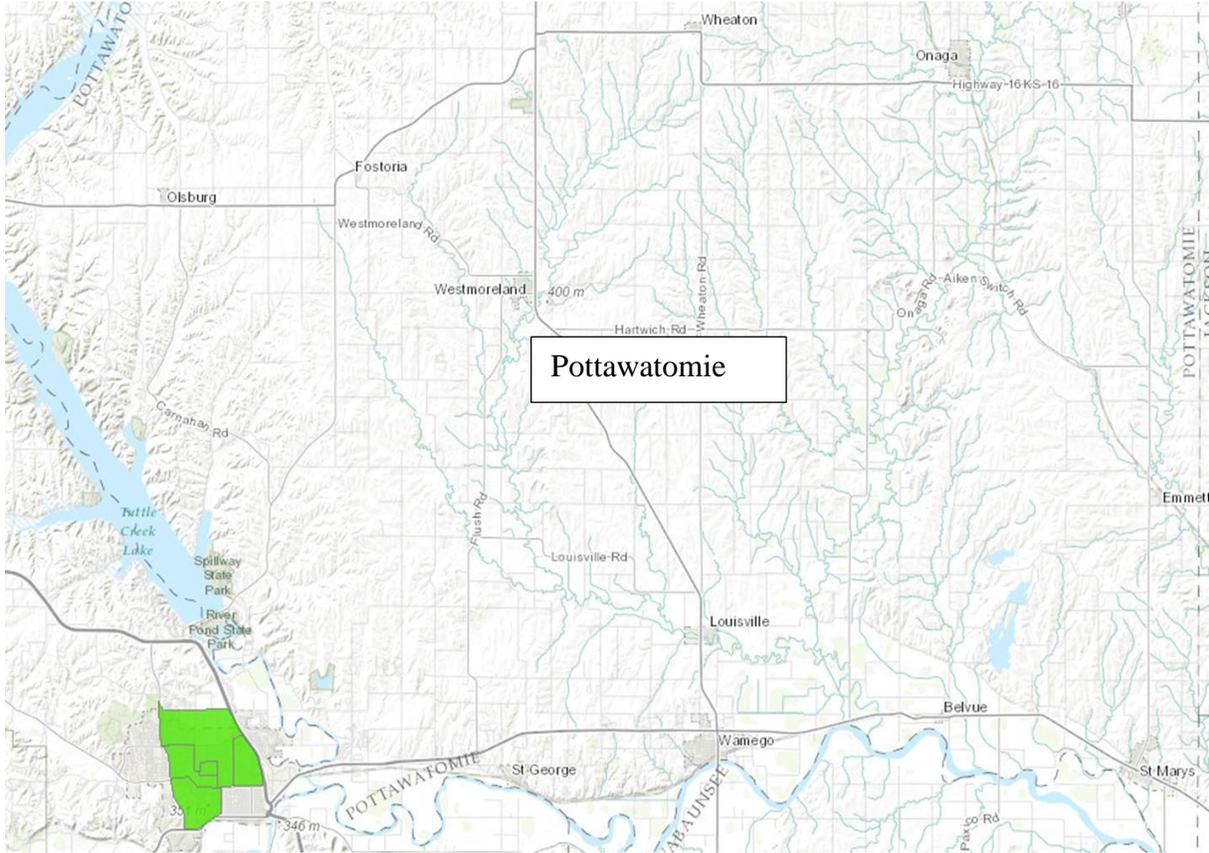
3.2 Westmoreland, Pottawatomie County

Map 3.6 Map of Pottawatomie County and Surrounding Areas



Map 3.6 shows Pottawatomie County and its surrounding area. Pottawatomie County is located in the upper right hand corner of the map. This map shows that the northeastern/eastern side of Pottawatomie County is in a food desert.

Map 3.7 USDA's Map of Pottawatomie County and Surrounding Area



Map 3.7 is from USDA's Food Access Research Atlas. This map shows that the only area in this region that is a food desert is located in Manhattan and does not designate Pottawatomie County as a food desert.

As shown by the two different maps there are discrepancies between what is claimed by USDA as a food desert and what is shown by the map created from data of existing grocery stores in the region. According to ERS's map there are no food deserts in Pottawatomie County, but according to the created map of existing grocery stores in the county, the northeastern and eastern side of the county is living in a food desert.

Pottawatomie County is located in the Flint Hills of east-central Kansas. According to the 2010 Census, the population is 96.3% White. The median income for the county is \$40,176. Pottawatomie County is part of the Manhattan-Junction City metropolitan statistical area. Its main industries are agriculture, manufacturing, and service. Westmoreland is the county seat, with a population of 778. The grocery store located there is called Westy Country Mart. The group of respondents in Westmoreland was comprised of 6 women and 1 male, all White. The median age for the respondents was 45 years. One interviewee's family was in farming, while the rest of the interviewees worked in a service industry in Westmoreland, Wamego, or Manhattan. Wamego and Manhattan are larger communities in the region, at a distance of 16 and 27 miles, respectively.

To assist with the community's food accessibility problem, the United Methodist (UM) church has provided two food programs. The first is a food pantry that opens the third Friday of each month. The second is affiliated with the Harvester's Food Bank located in Kansas City. On the first Friday of each month one of the food distribution trucks from Harvester's arrives in the parking lot of Westmoreland's UM church. Harvester's started using the parking lot in 2010 to help serve the community and surrounding area. In 2012, Westmoreland's UM church joined with Wamego's Community Health Ministry to help bolster the accessibility of health foods in the community. In 2013 Harvester's served 1,085 families, while the food bank served 192 families in the first 9 months.

The responses to the structured portion of the instrument are summarized in the tables that follow.

Table 3.6

Question 1: How do you plan and purchase food for meals?

	Never	Rarely	Sometimes	Frequently	Always
a. I plan meals ahead of time.		3	1	2	1
b. I compare prices before I buy food.			2	2	3
c. I shop with a grocery list.		1	1	3	2
d. I make food choices based on my health.	2		2	2	1

Table 3.7

Question 2: How often do you typically purchase or receive food from the following locations?

	Never	Rarely	Sometimes	Frequently	Always
a. Large grocery store		1	3	2	1
b. Small neighborhood store	1			4	2
c. Multipurpose store, e.g., Walmart			1	3	3
d. Convenience store, e.g., Casey's	1	3	2	1	
e. Restaurant	3		3	1	
f. Fast food		2	2	3	
g. Food pantry	1	1	1	4	
h. Farmer's market	2	2	1	2	
i. Home garden	3	1		2	

Table 3.8

Question 3: How do you typically get to places to buy food?

	Never	Rarely	Sometimes	Frequently	Always
a. Drive your own car	1		1	1	4
b. Someone else takes you	1		4		2
c. Bicycle	3		4		
d. Walk	5	2			

Table 3.9

Question 4: How often do you buy food for your house?

a. More than once a week	2
b. Once a week	4
c. Once every two weeks	1
d. Once a month	

Table 3.10

Question 5: How long do you typically have to travel to buy fresh food?

a. Less than 5 minutes	2
b. 5 to 10 minutes	3
c. 11 to 20 minutes	1
d. 21 to 30 minutes	1
e. More than 30 minutes	7 (out of town)

The responses to the section of the survey related to food security, pulled from USDA's 6-question interview, follow.

Four of seven respondents stated that sometimes they did not have money to buy more food after the food that they bought ran out and that they could not afford to eat balanced meals. The other 3 respondents stated that these two statements were not true to their situations. For the questions covering the skipping of meals (#s 9-12), two residents stated that it was true that the adults in the household skipped meals in the last 12 months because there was not enough money for food.

One of the residents I talked to was Will. He commutes to Wamego to work at a construction company. He stated that he does not like shopping at Westy Country Market for two reasons, the first being that the vegetables are not fresh. The second reason is that once when he was shopping at Wal-Mart in Manhattan, he observed the owners of Westy's shopping for groceries that he had noticed were then being stocked in the community grocery store. He now obtains his groceries from the grocery store in Wamego or Wal-Mart in Manhattan.

Another resident that I interviewed stated that while she works full time at a daycare center, she has to supplement her family's healthy food with food from the pantry and Harvester's truck when they are open. She told me that while both her and her husband work, they both only have a high school education so can usually find only minimum wage jobs. The assistance that they receive acts like a cushion on the weeks that they don't have a pay check to go to the grocery store and buy food.

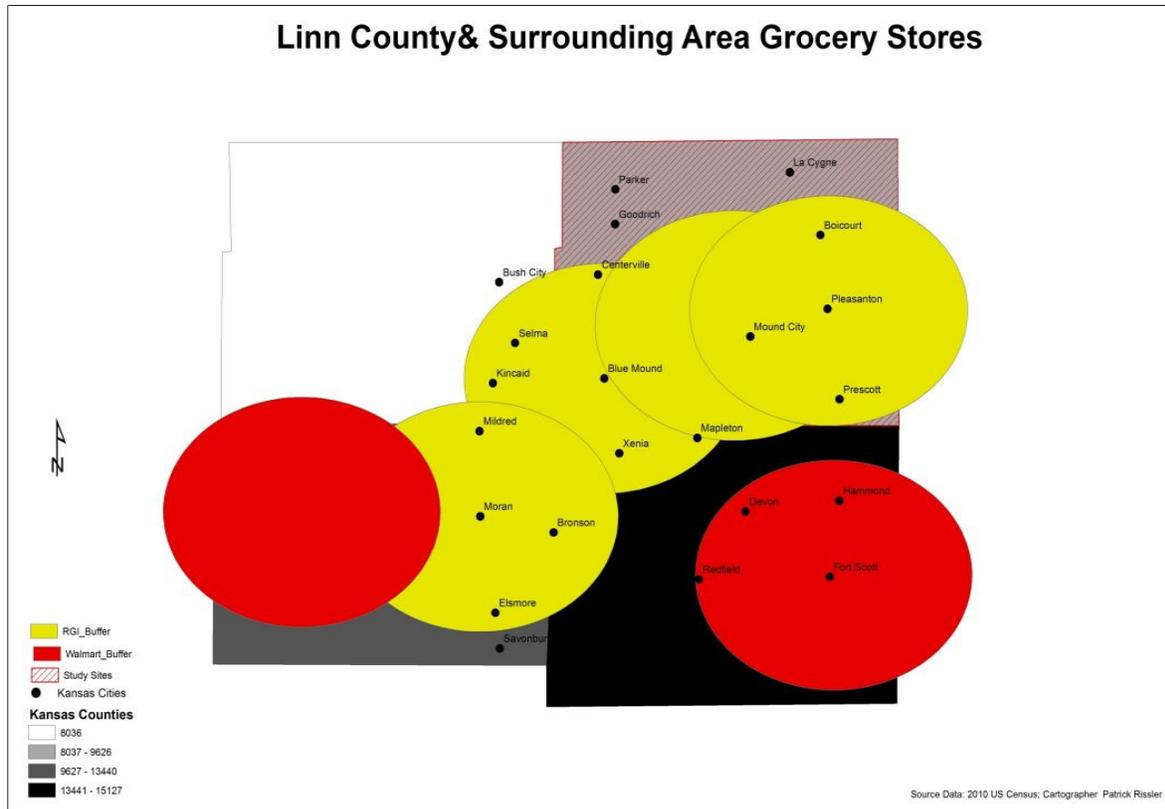
The last resident I interviewed in Westmoreland stated that she worked in Manhattan, so she would plan her shopping trips around her work schedule. She said that she tried to help her

older neighbor who was a shut-in. She gets her neighbor's shopping list and shops for her neighbor at the same time that she shops for herself. She uses the local grocery store only if she is in need of milk, eggs, or something quick that she had forgotten to buy when she was in Manhattan. When I asked her about the usage of the community services such as the food pantry or Harvester's she told me that while she did not use them she was glad that there were services like that in the community because she knows people who need the help, but are too proud to ask their friends for assistance.

After interviewing the residents in Westmoreland, I found that they frequented grocery stores in either Wamego (16 miles) or Manhattan (27 miles) from Westmoreland. While they took advantage of the local grocery store for small items, they did not rely on the local grocery store for the majority of their groceries. In general, the interviewees in Westmoreland indicate greater food insecurity than the other two communities. Each resident I interviewed either knew someone who uses the local food pantry and/or Harvester's food truck or they directly benefited from those services themselves.

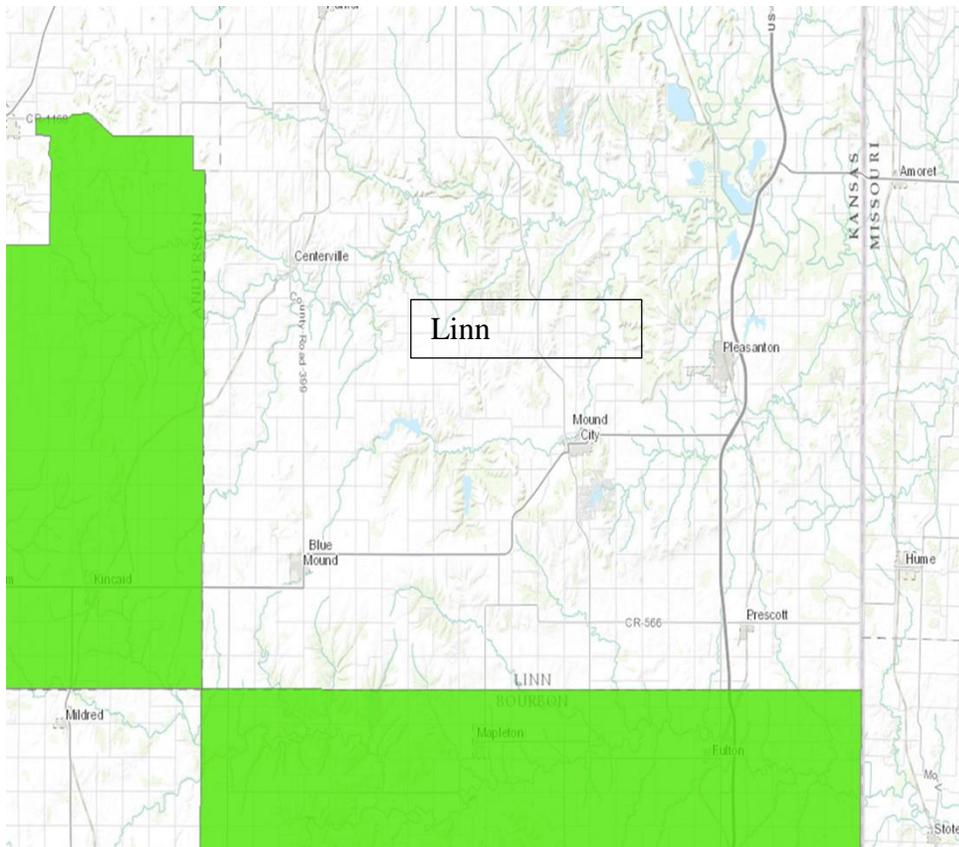
3.3 Mound City, Linn County

Map 3.8 Map of Linn County and Surrounding Areas



Map 3.8 shows Linn County and the surrounding counties. Linn County is the northeastern county on the map, located on the Kansas-Missouri border. This map shows that the north to northwestern sides of Linn County are in a food desert.

Map 3.9 USDA's Map of Linn County and Surrounding Area



Map 3.9 is from USDA's Food Access Research Atlas. This map shows that the surrounding counties of Anderson and Bourbon are food deserts while Linn County is not in a food desert.

As shown by the two different maps there are discrepancies between what is claimed by USDA as a food desert and what is shown by the map created from data of existing grocery stores in the region. According to ERS's map there are no food deserts in Linn County, but according to the created map of existing grocery stores in the county, the north to northwestern side of the county is living in a food desert.

Linn County is located in the eastern part of the state, along the US 69 highway corridor. It is part of the Johnson-Douglas County Metropolitan region. According to the 2010 Census, 97.5% of the population is White. The median income is \$35,906. Mound City is the county seat of Linn County. While Mound City is a small rural community, it is not a rural food desert. There is a full service grocery store located on Main Street. I spent 5 hours observing the grocery store and the farmers market located in Mound City. During this time 70 cars arrived at the store and two residents walked to the store to shop.

When I tried to talk to the manager of the grocery store he said that they were too busy and could not talk to me. I observed that there was one person working in the meat department, one person restocking the produce, and three people working at the cash registers. There was a good selection of fruits, but some of the grapefruit and oranges were getting soft, and the bananas were turning brown.

Linn County offers a public transportation service to all county residents. The Linn County General Public Transportation system covers all of Linn County. The area covers 598.67 square miles, which includes seven cities and several unincorporated rural communities. This service offers rides to communities outside of Linn County along the US 69 corridor. According to the website the services that public transportation can be used for include, “Medical facilities, dialysis treatment center, physicians’ offices, dentist offices, Social Rehabilitation Services (SRS), post office, bank, shopping locations, grocery stores and pharmacies” (Linn County Transportation). Users must call to schedule a pick-up time. The service operates Monday

through Friday, except federal holidays. Following is a schedule of communities it services (each fee is for a roundtrip):

- Rides within Linn County - Free
- Adjoining Counties - \$15.00
- Pittsburg, Chanute, Overland Park, Olathe area - \$20.00
- Ottawa - \$25.00
- Kansas City - \$30.00
- Leavenworth - \$35.00
- Topeka \$40.00

Out of the 7 interviewees, 4 were women, and 3 were men. Six were white non-hispanic and one was African American. The median age of the respondents was 49. To the question of estimated annual household income, 6 respondents answered and 1 decided not to respond. The highest level of education for the respondents was a Bachelor's degree. The occupation for the population was a mix of farming, industrial, and staying at home.

The responses to the structured portion of the instrument are summarized in the tables that follow.

Table 3.11

Question 1: How do you plan and purchase food for meals?

	Never	Rarely	Sometimes	Frequently	Always
a. I plan meals ahead of time.		1	2	2	2
b. I compare prices before I buy food.				5	2
c. I shop with a grocery list.			5	2	
d. I make food choices based on my health		4		3	

Table 3.12

Question 2: How often do you typically purchase or receive food from the following locations?

	Never	Rarely	Sometimes	Frequently	Always
a. Large grocery store		4	2	1	
b. Small neighborhood store			1	6	
c. Multipurpose store, e.g., Walmart		3	4		
d. Convenience store, e.g., Casey's		6	1		
e. Restaurant	1	4	1	1	
f. Fast food	1	4	2		
g. Food pantry	5	2			
h. Farmer's market	2	3	1	1	
i. Home garden	5		1	1	

Table 3.13

Question 3: How do you typically get to places to buy food?

	Never	Rarely	Sometimes	Frequently	Always
a. Drive your own car	1				6
b. Someone else takes you		3	1	3	
c. Bicycle	5	1	1		
d. Walk	5	2			
e. Other	Public Transportation				

Table 3.14

Question 4: How often do you buy food for your house?

a. More than once a week	
b. Once a week	7
c. Once every two weeks	
d. Once a month	3 (out of town)

Table 3.15

Question 5: How long do you typically have to travel to buy fresh food?

a. Less than 5 minutes	2
b. 5 to 10 minutes	
c. 11 to 20 minutes	2
d. 21 to 30 minutes	1
e. More than 30 minutes	7 (out of town)

The respondents stated that outside of driving to Ft. Scott, 28 miles, one resident drove between 11 and 20 minutes to obtain groceries, 3 residents drove between 5 and 10 miles, and 3 drove less than 5 miles to obtain groceries. Two residents stated that sometimes they used the grocery stores in the communities where they worked outside of Mound City, while one stated that they rarely frequented the other community grocery stores. Four residents said that this question did not apply to them.

The responses to the section of the survey related to food security, pulled from USDA's 6-question interview, follow.

Five respondents stated that sometimes they did not have money to buy more food after the food that they bought ran out and that they could not afford to eat balanced meals. The other 2 respondents stated that these two statements were not true to their situations. For the questions covering the skipping of meals (#s9-12), 3 residents stated that it was true that the adults in the household skipped meals in the last 12 months because there was not enough money for food.

I talked to Bob who was the founder of the farmers market for Mound City. He stated that he has run the farmers market for the last 5 years. This will be the last year for a farmers market in Mound City, he stated, because this year there are only two vendors who attend it on a regular basis; the rest of the vendors have moved to Iola, a larger community in Anderson county. He stated that this year he lost his lettuce crop so he could not provide any lettuce to the members of the community. His plan is to go to Butler, Missouri, next year and set up his stand in their farmers market (35 miles to the east on Highway 52).

Another resident that I interviewed told me that her trouble obtaining groceries was that she did not own a vehicle. She had to rely on her friends to assist her and drive her to the grocery store or use the general transportation that is offered by the county. So with this she has to plan her shopping trips with medical appointments or trips to the hair dresser. She stated that she feels like a burden if she has to ask her friends for help too much.

I observed Leroy walking down Main Street towards the grocery store, and when he reached the grocery store I decided to interview him. Leroy is an African American in his late 50's. He has lived in the community since 1989 when he began work at La Cygne power plant. He stated that while he has a vehicle he likes to walk to the store on Saturdays for exercise and to talk to people he sees.

The interview responses in Mound City differed from those in the previous communities because of Mound City's proximity to Kansas City, Lawrence, and Topeka. Mound City has a full service grocery store. While some of the fresh fruits and vegetables were not fresh when I visited the store, the store allows access of healthy foods to the community. The residents travel to larger communities, such as Fort Scott (30 miles to the southeast) or the Kansas City area (60

miles to the northeast). Linn County has a public transportation service that helps the citizens to access health foods and medical care when needed.

Chapter 4: Conclusions

The USDA's *Food Desert Map* for small rural communities can be misleading, as in the cases of Gove, Pottawatomie, and Linn Counties. For example, in the case of Pottawatomie County, the only area that is determined to be a food desert is located near the border of Manhattan, Kansas which has a Dillon's Grocery store. There needs to be a better tool to be able to identify the smaller (population) counties. There should be a clearer definition for a food desert in rural communities, instead of a mileage criterion (10 miles in rural areas). A driving time radius could be a better indicator for communities and people living in rural communities. This would be a better way to indicate regions and areas depending on road surfaces and types that the community members have to traverse to obtain healthy foods.

This study's three communities, face distinct food security/access problems, and have developed varied coping strategies to deal with these food access issues. While the residents of Gove City live in a food desert, some suggested that it is the lifestyle that they have chosen, and understand that it is part and parcel of living in smaller communities. By contrast, because of its proximity to Manhattan and Wamego, Westmoreland residents are not as limited in their food access choices as those living in Gove City. One coping strategy used in Westmoreland was that of public assistance from the food bank offered by the local church and the food truck from Harvester's. The residents of Mound City use the public transportation provided by the county to help overcome the need for transportation. The closest food bank for the residents of Mound City is in Prescott, Kansas (6 miles away).

I found that each community has its own coping strategies and mechanisms that allow it to survive. The relationship between the community and its grocery store is different in each community studied. In Gove City, it appears that residents are willing to support the community-based store. In Westmoreland, because of the proximity to a retail hub, people are more likely to combine grocery shopping with other trips to the city. The residents of Mound City were observed to use their grocery store as a place to congregate and socialize. No matter the relationship, the survival of the community and its grocery store depends to an extent on this symbiotic relationship. This research has shown that there is a need for more in-depth research across the state to develop a better understanding of the regional variation in food access and coping strategies.

A number of key points can be drawn from this research. The first of these is relevant to the USDA's mapping of food insecurity and food deserts. The problem as stated in this research comes in the difference between macro level and micro levels of designation for food insecurity. While the classifications are adequate between urban and rural areas, it would be useful to have mapping abilities that provide a finer resolution in rural areas. This study suggests that a more micro analysis is necessary to develop a better understanding of food access and insecurity issues in specific rural locales.

A second key point that comes out of the research is relevant to extension agents and rural community development practitioners. Rural development practitioners need the capacity to be able to work with rural communities towards overcoming food security challenges. Thus, one effort that might be pursued are capacity building programs targeted to Extension Agents and

other community development educators. These programs could help to (a) build skills in identifying and mapping rural food deserts, and (b) engage with community leaders to develop place-appropriate strategies to help communities address food access issues.

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Appendix A - Survey Instrument

Coping strategies for people living in low access food areas or rural food deserts.

Researchers at Kansas State University are conducting this study about coping strategies used in rural

practices, food security, food access, and basic demographics. Completing the survey will take approximately 20 to 30 minutes.

Any recorded interviews and surveys will be kept in a locked file cabinet, in a locked office at Kansas State University. The consent forms will be kept in a separate file cabinet. In this way, the identity of respondents will not be connected to completed surveys.

TERMS OF PARTICIPATION: I understand this project is research, and that my participation is completely voluntary. I also understand that if I decide to participate in this study, I may withdraw my consent at any time, and stop participating at any time without explanation, penalty, loss of benefits, or academic standing to which I may otherwise be entitled.

Completion of this research survey is voluntary. If you have any questions regarding this study, please contact Dr. Gerad Middendorf, 202A Waters Hall, KSU, Manhattan, Kansas 66506. If you have questions about your rights as a research volunteer, you may contact Rick Scheidt, Chair, Committee on Research Involving Human Subjects, 203 Fairchild Hall, Kansas State University, Manhattan, KS 66506, (785) 532-3224.

Thank you for your time and participation.

I have read the above, and I understand the terms of participation. Continuing with the survey indicates my agreement to these terms.

I. Food Purchasing Practices

1 How do you plan and purchase food for meals?

	Never	Rarely	Sometimes	Frequently	Always
a. I plan meals ahead of time.	1	2	3	4	5
b. I compare prices before I buy food.	1	2	3	4	5
c. I shop with a grocery list.	1	2	3	4	5
d. I make food choices based on my health.	1	2	3	4	5
e. Other					

2 How often do you typically purchase or receive food from the following locations?

	Never	Rarely	Sometimes	Frequently	Always
a. Large grocery store	1	2	3	4	5
b. Small neighborhood store	1	2	3	4	5
c. Multipurpose store, e.g., Walmart	1	2	3	4	5
d. Convenience store, e.g., Casey's	1	2	3	4	5

e. Restaurant	1	2	3	4	5
f. Fast food	1	2	3	4	5
g. Food pantry	1	2	3	4	5
h. Farmer's market	1	2	3	4	5
i. Home garden	1	2	3	4	5

3 How do you typically get to places to buy food?

	Never	Rarely	Sometimes	Frequently	Always
a. Drive your own car.	1	2	3	4	5
b. Someone else takes you	1	2	3	4	5
c. Bicycle	1	2	3	4	5
d. Walk	1	2	3	4	5
e. Other	<hr/>				

4 How often you buy food for your house?

- a. More than once a week []
- b. Once a week []
- c. Once every two weeks []
- d. Once a month []

5 How long do you typically have to travel to buy fresh food?

- a. Less than 5 minutes []

- b. 5 to 10 minutes
- c. 11 to 20 minutes
- d. 21 to 30 minutes
- e. More than 30 minutes

6 **If you work in a larger community do you use the food outlets in that community to obtain your groceries?** Never Rarely Sometimes Frequently Always

II. Food Security

After the statements below, please respond with the options that most closely reflect what you believe to be true.

7 **“The food that (I/we) bought just didn’t last, and (I/we) didn’t have money to get more.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?**

- Often true
- Sometimes true
- Never true
- DK or Refused

8 **“(I/we) couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for (you/your household) in the last 12 months?**

- Often true
- Sometimes true
- Never true

DK or Refused

9 In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

Yes

No (Skip 12)

DK (Skip 12)

10 How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK

11 In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

Yes

No

DK

12 In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?

Yes

No

DK

13 Do you face any major challenges getting enough food for your household? If so, please describe them.

14 How do you ensure that your household has regular access to healthy foods? Do you feel that the foods you are able to get are healthy? What are some of the things you do to ensure that your household gets enough healthy foods? What does healthy foods mean to you? Types of food? Please explain.

15 Have there been times when you felt there just wasn't enough food in your household? If so, please describe the circumstances. What did you do in this case?

III. Demographics

Information about you (your name will not be linked to your responses)

16 **How many people live in your** _____
household?

How many dependent children live in your household? _____

17 **What is the estimated annual** <18,000 []
household income?
18,001 - 25,000 []
25,001- 35,000 []

35,001- 45,000 []

45,001+ []

Prefer not to respond []

18 **How many generations has your family lived in the community?** _____

19 **I am a: Woman or Man** _____

20 **What is your age?** _____
--Prefer not to respond _____

21 **What is the highest level of school you have completed (e.g., high school, Associate's degree, Bachelor's degree, etc.)?** _____

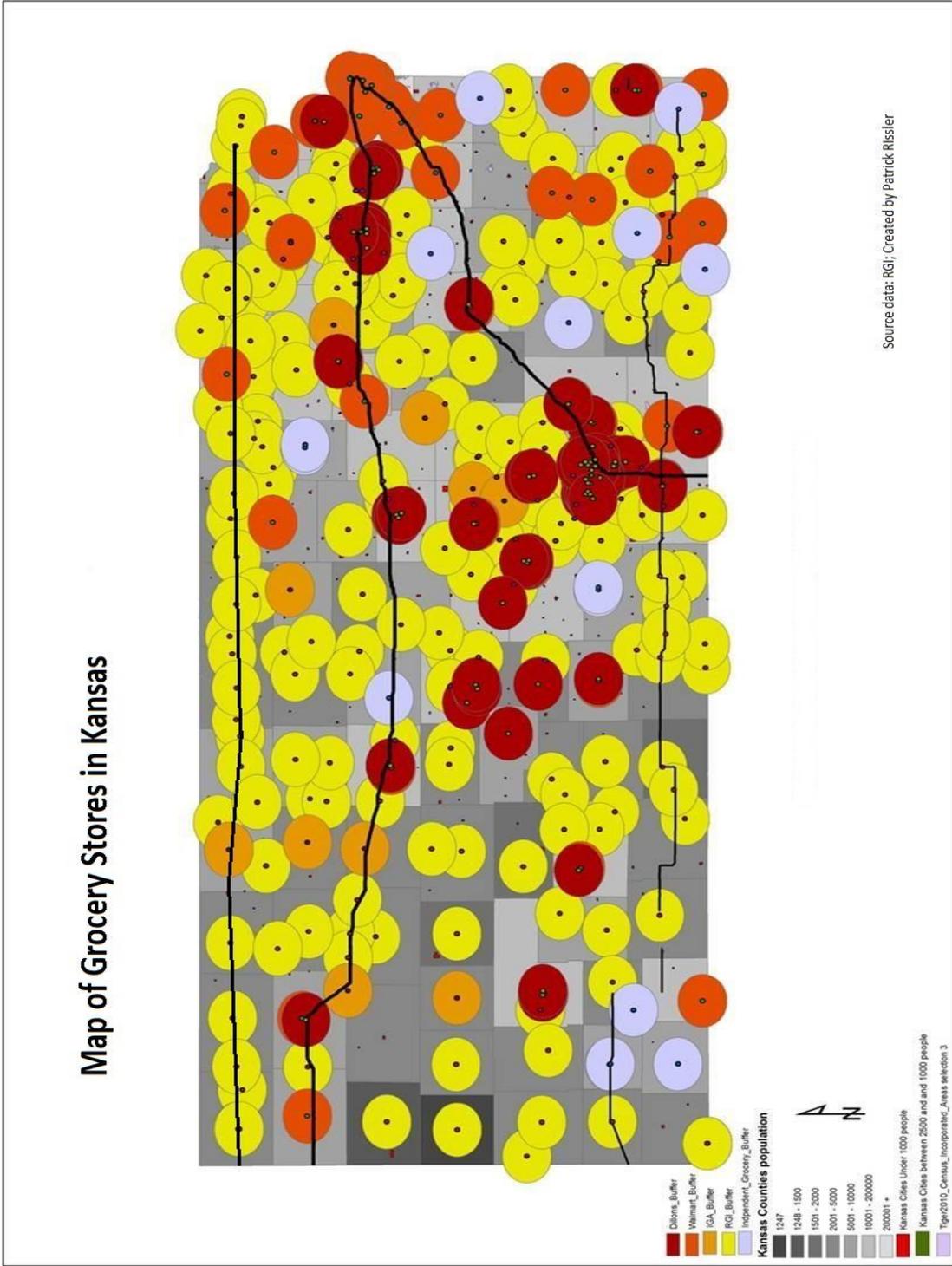
22 **Are you currently employed?** Yes No

23 **What is your occupation? ?** _____

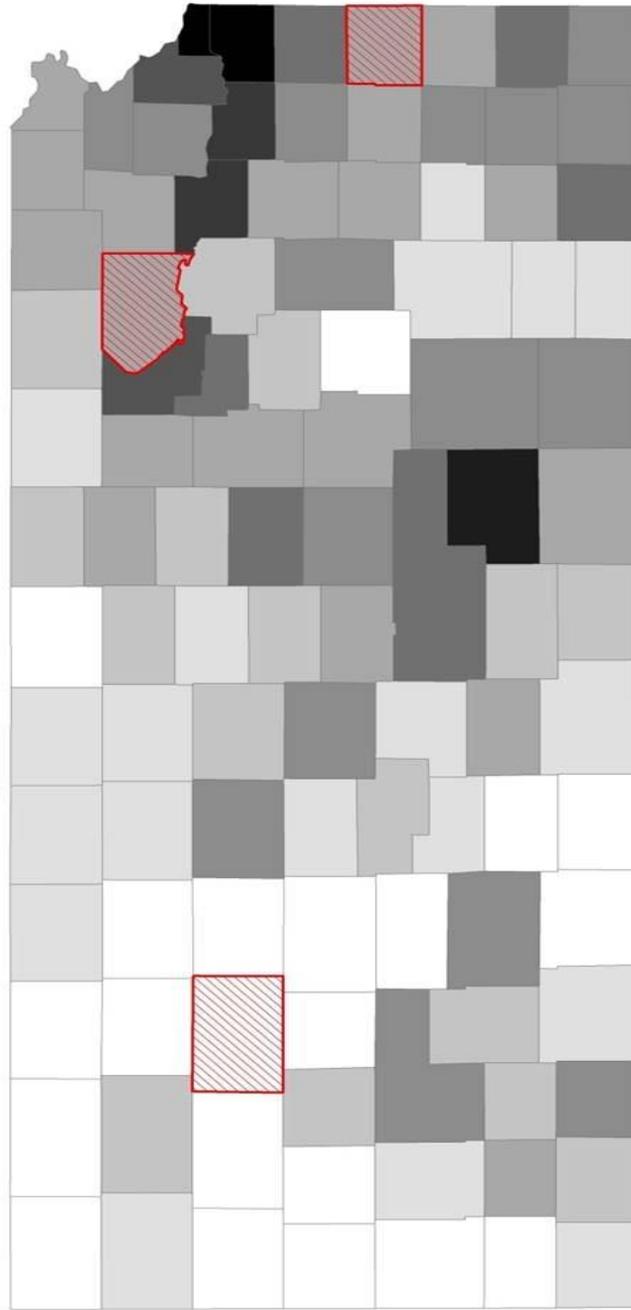
24 **Is there anything that you would like to add about challenges you have faced related to food that we have not asked?**

25 **Who else might we talk to about these issues, who might have a different experience or viewpoint than yourself?**

Appendix B – Maps



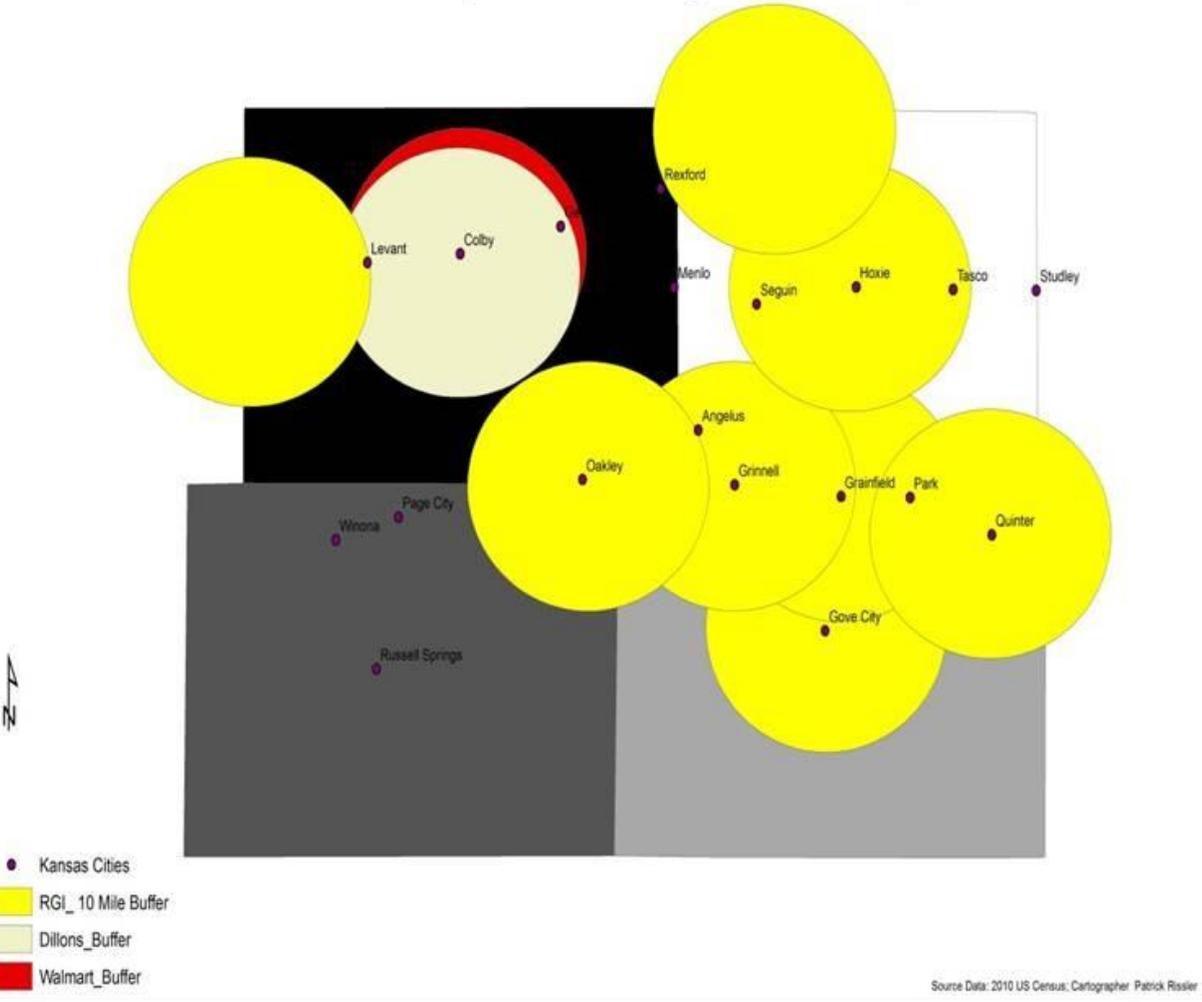
Study Sites for Research



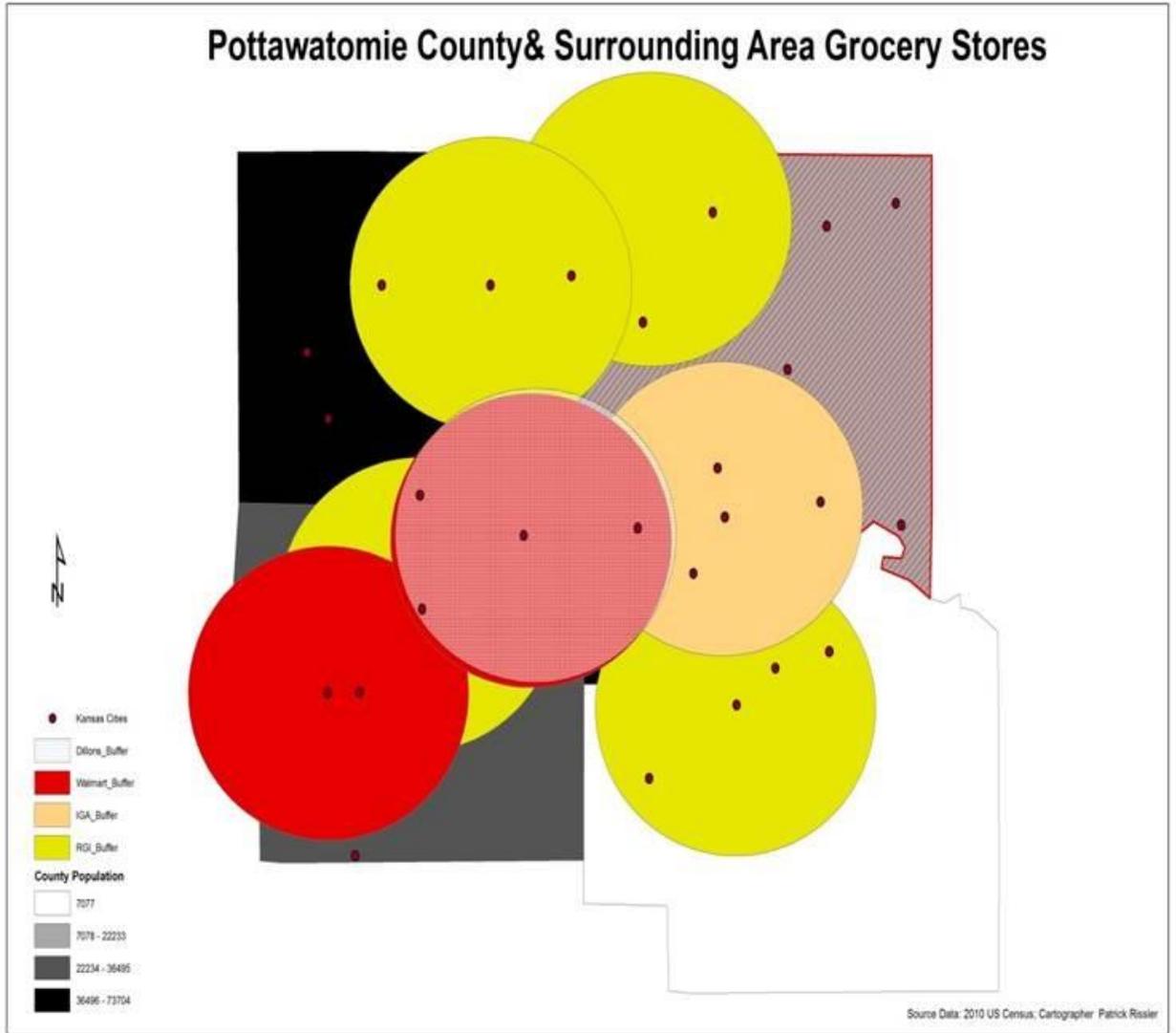
Kansas Counties: Population per Square Mile



Gove County & Surrounding Area Grocery Stores



Pottawatomie County & Surrounding Area Grocery Stores



Linn County & Surrounding Area Grocery Stores

