



Food Security & Food Access in Sioux Falls, SD

MAY 2022

AUGUSTANA RESEARCH INSTITUTE FOR SIOUX FALLS THRIVE

AUGUSTANA RESEARCH INSTITUTE

AUGUSTANA UNIVERSITY
SIOUX FALLS, SOUTH DAKOTA

Suzanne Smith, PhD
Tsegab Arega
Daniel Bishop
Ngawang Chime
Dawa Dolma
Lauren Teller

May 17, 2022

This report was commissioned by Sioux Falls Thrive.

Executive Summary

This report is an update to the 2018 “Food Security & Food Systems in Sioux Falls, SD” report by the Augustana Research Institute for Sioux Falls Thrive. It presents the results of updated demographic analysis and identifies Census tracts in Sioux Falls that meet the criteria for low-income, low-access areas, commonly referred to as food deserts. It also presents results from a food availability and price survey of 151 retail stores conducted from March 27 through May 7, 2022.

Global and Regional Context

This report comes in the wake of global and regional events that have significantly impacted food insecurity and availability, including the COVID-19 pandemic, armed conflict in Ukraine, an outbreak of avian influenza, and recalls of infant formula. Locally, before the pandemic, an estimated 9% of people in Minnehaha County and 5.9% in Lincoln County were food insecure. Feeding America estimates that, during the pandemic, those rates increased to 11% and 7.5%, respectively.

Low-income, Low-access Areas: Food Deserts

This report identifies food deserts in Sioux Falls. Low-income, low-access areas, commonly referred to as food deserts, are geographic areas where a significant number of people have low incomes (relative to the surrounding community) and low access (in terms of distance and vehicle access) to supermarkets.

Using a 1-mile criterion for low access, a significant portion of the northwest area of Sioux Falls is a low-income, low-access area, i.e., a food desert. In total, an estimated 24,603 people in Sioux Falls live in food desert Census tracts. Nearly all residents in these neighborhoods—an estimated 21,808 people—live a mile or more from the nearest supermarket.

Limited Food Availability

By definition, food deserts have fewer supermarkets, and this report reveals the consequences: although prices are roughly comparable at stores in food desert areas to those in other areas, the availability of food items is limited. In particular, food desert areas have limited availability of fruits and vegetables, both fresh and frozen. Canned and dry foods, as well as dairy, eggs, and meat, were similarly available across food desert areas and other parts of the city.

Disparate Impact

Not all Sioux Falls residents are equally likely to live in a food desert. By definition, households in food deserts have lower incomes, on average, than households in other parts of the city. In other words, lower income households are more likely to live in food deserts.

Additionally, food desert areas in Sioux Falls are home to a disproportionate number of people of color. Compared to the rest of the city, and especially to outlying areas to the south and east, food desert areas have a smaller proportion of White, non-Hispanic residents and more Hispanic or Latino, Black, and Native American residents.

Contents

Executive Summary.....	2
1 Introduction	4
2 Food Security	4
2.1 The Prevalence of Food Insecurity.....	5
2.2 COVID-19 and Food Security.....	5
2.3 Unequal Risk of Food Insecurity	6
3 Food Access.....	9
3.1 Low-income, Low-access Areas and Food Deserts	9
3.2 Data Sources and Definitions.....	10
3.3 Methods.....	13
3.3.1 Mapping Food Deserts and Demographic Data.....	13
3.3.2 Survey of Food Availability and Prices	14
4 Findings	17
4.1 Food Desert and Demographic Maps	18
4.2 Food Access Survey Results: Availability.....	23
4.3 Food Access Survey Results: Affordability	33
5 Discussion and Conclusions	37
6 Appendix	38

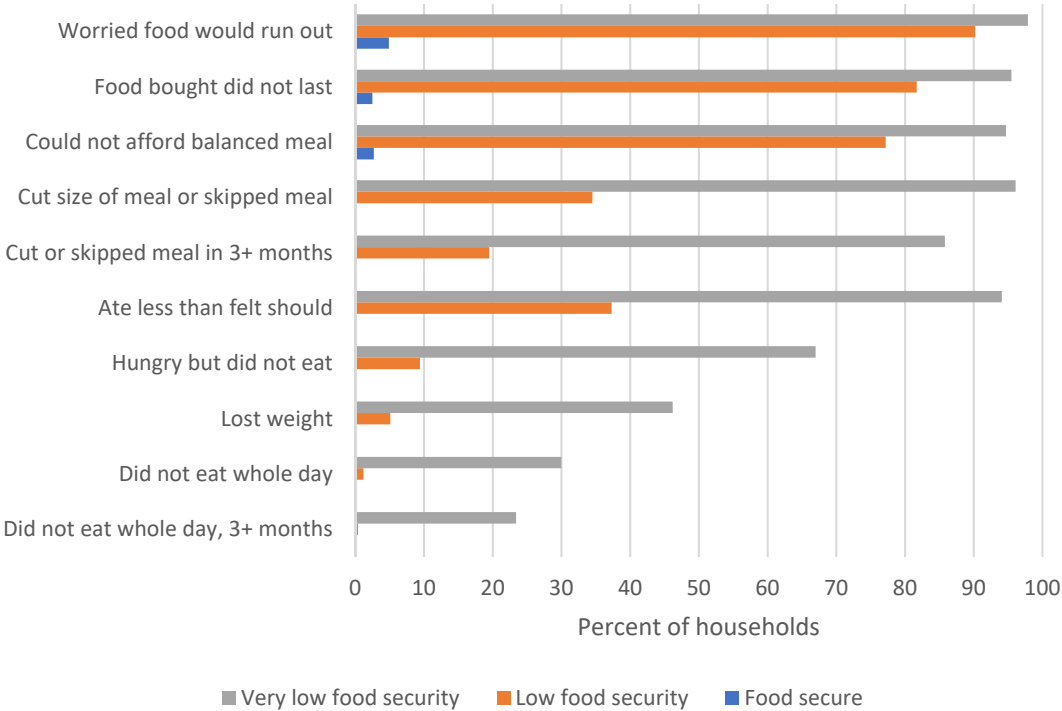
1 Introduction

This report updates the December 2018 report “Food Security & Food Systems in Sioux Falls, SD” which documented retail and charitable food assets available in the Sioux Falls community—particularly those serving school-age children and their families. The 2018 report drew on a series of focus groups to describe the ways in which Sioux Falls residents experience food insecurity. The current report focuses more directly on the availability of specific food types at retail stores and price variation across neighborhoods.

2 Food Security

The USDA, following recommendations from the Committee on National Statistics (CNSTAT) of the National Academies, defines food security as “a household-level economic and social condition of limited or uncertain access to adequate food.” Households with low food security may experience a range of conditions, from worry about having enough food to altering the types or quantity of food consumed. The chart below shows the prevalence of different food-related concerns among households that have very low food security, low food security, or are food secure.

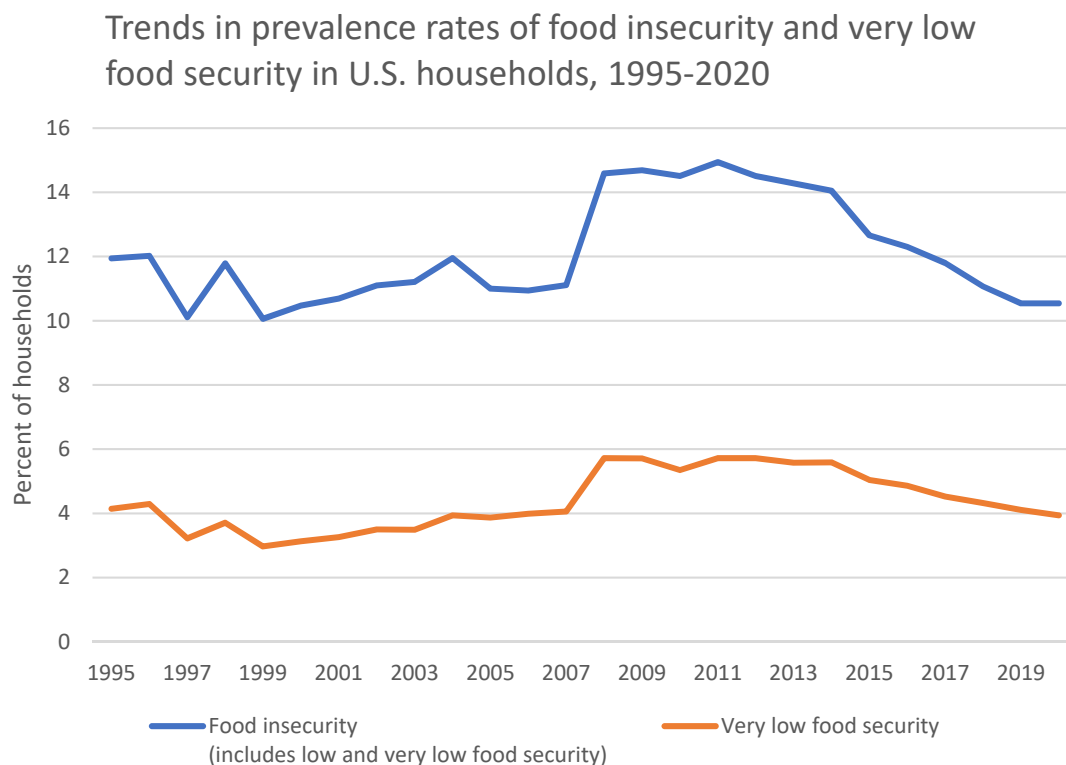
Percentage of households reporting indicators of adult food insecurity, by food security status, 2020



Source: USDA, Economic Research Service, using data from the December 2020 Current Population Survey Food Security Supplement, U.S. Census Bureau

2.1 The Prevalence of Food Insecurity

In 2020, an estimated 10.5% (13.8 million) of U.S. households were food insecure at some point during the year. Though the rate of food insecurity was relatively unchanged from 2019 to 2020, it remained low compared to earlier in the decade. During the 2008 recession, food insecurity rose sharply, then began a steady decline through 2020, the most recent data available.¹



Note: Prevalence rates for 1996 and 1997 were adjusted for the estimated effects of differences in data collection screening protocols used in those years.

Source: USDA, Economic Research Services, using data from the Current Population Survey Food Security Supplement, U.S. Census Bureau

2.2 COVID-19 and Food Security

Since 2020, major global events including the COVID-19 pandemic and armed conflict in Ukraine have undoubtedly affect food security. During the pandemic, the U.S. Census Bureau began fielding the Household Pulse Survey to rapidly collect data and understand pandemic effects. Results from early in the pandemic suggest food insecurity doubled overall and tripled among households with children.²

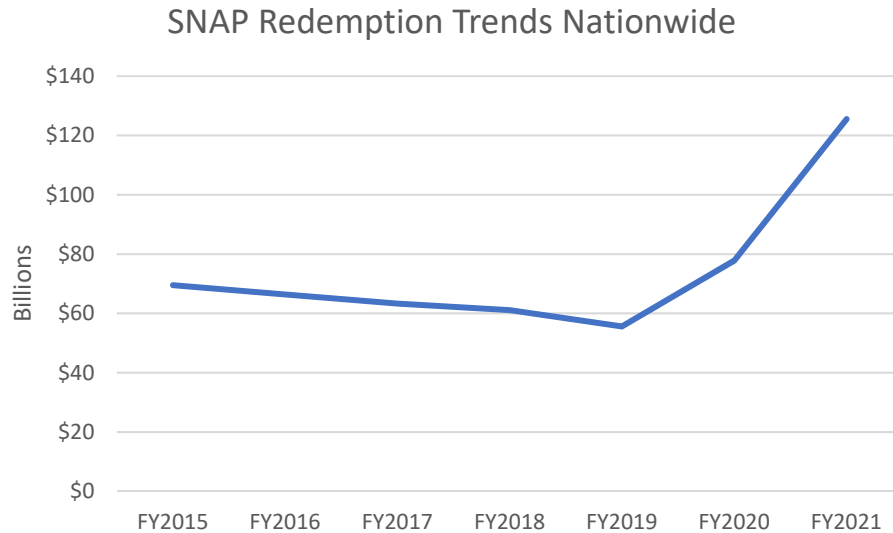
¹ Alisha Coleman-Jensen, Matthew P. Rabbitt, Christian A. Gregory, and Anita Singh. 2021. Household Food Security in the United States in 2020, ERR-298, U.S. Department of Agriculture, Economic Research Service.

² Schanzenbach, D. W., & A. Pitts. (2020). How much has food insecurity risen? Evidence from the Census Household Pulse Survey. Institute for Policy Research Rapid Research Report.

<https://www.ipr.northwestern.edu/documents/reports/ipr-rapid-researchreports-pulse-hh-data-10-june-2020.pdf>

Feeding American estimates that food security improved slightly in 2021, but remains elevated. They further estimate that those most impacted by the pandemic were already food insecure or at risk of food insecurity, noting significant racial disparities in who experiences food insecurity.³

The potential impact of the pandemic was ameliorated in part by expanded food assistance, including SNAP Emergency Allotment and Pandemic EBT benefits issues in response to COVID-19. Nationally, SNAP redemptions increased dramatically in FY2020 and FY2021, from around \$60 billion in FY2019 to approximately \$125 billion in FY2021.



Note: Figure includes SNAP Emergency Allotment and Pandemic EBT benefits.

Source: SNAP Fiscal Years 2015 - 2021 Year End Summaries (online at www.fns.usda.gov/snap/retailer/data)

Locally, before the pandemic, an estimated 9% of people in Minnehaha County and 5.9% in Lincoln County were food insecure. Feeding America estimates that those rates increased to 11% and 7.5%, respectively, during the pandemic.⁴

2.3 Unequal Risk of Food Insecurity

National survey data finds that food insecurity varies by household type. It is most prevalent among

- households with children (14.8%),
- households with young children under age 6 (15.3%),
- households with children headed by a single woman (27.7%) or single man (16.3%),
- households with Black, non-Hispanic (21.7%) or Hispanic (17.2%) head of household, and

³ Feeding America. March 2021. “The Impact of the Coronavirus on Food Insecurity in 2020 & 2021.” <https://www.feedingamerica.org/research/coronavirus-hunger-research>

⁴ Feeding America, *Map the Meal Gap: Food Insecurity in the United States Before COVID-19 (2019)*, online at <https://map.feedingamerica.org/>; Feeding America, *The Impact of the Coronavirus on Local Food Insecurity in 2020 & 2021 (March 2021)*, online at <https://www.feedingamerica.org/research/coronavirus-hunger-research>

- households with incomes below 185% of the poverty threshold⁵ (28.6%).⁶

In Sioux Falls, as nationally, households with children are more likely to experience food insecurity. Feeding America estimates that, prior to the pandemic, the food insecurity rate among children in Minnehaha County was 13.8%; in Lincoln County the child food insecurity rate was an estimated 9.4%. According to Feeding America's projections, during the pandemic, child food insecurity rose to 17.3% in Minnehaha County and 12.2% in Lincoln County.⁷

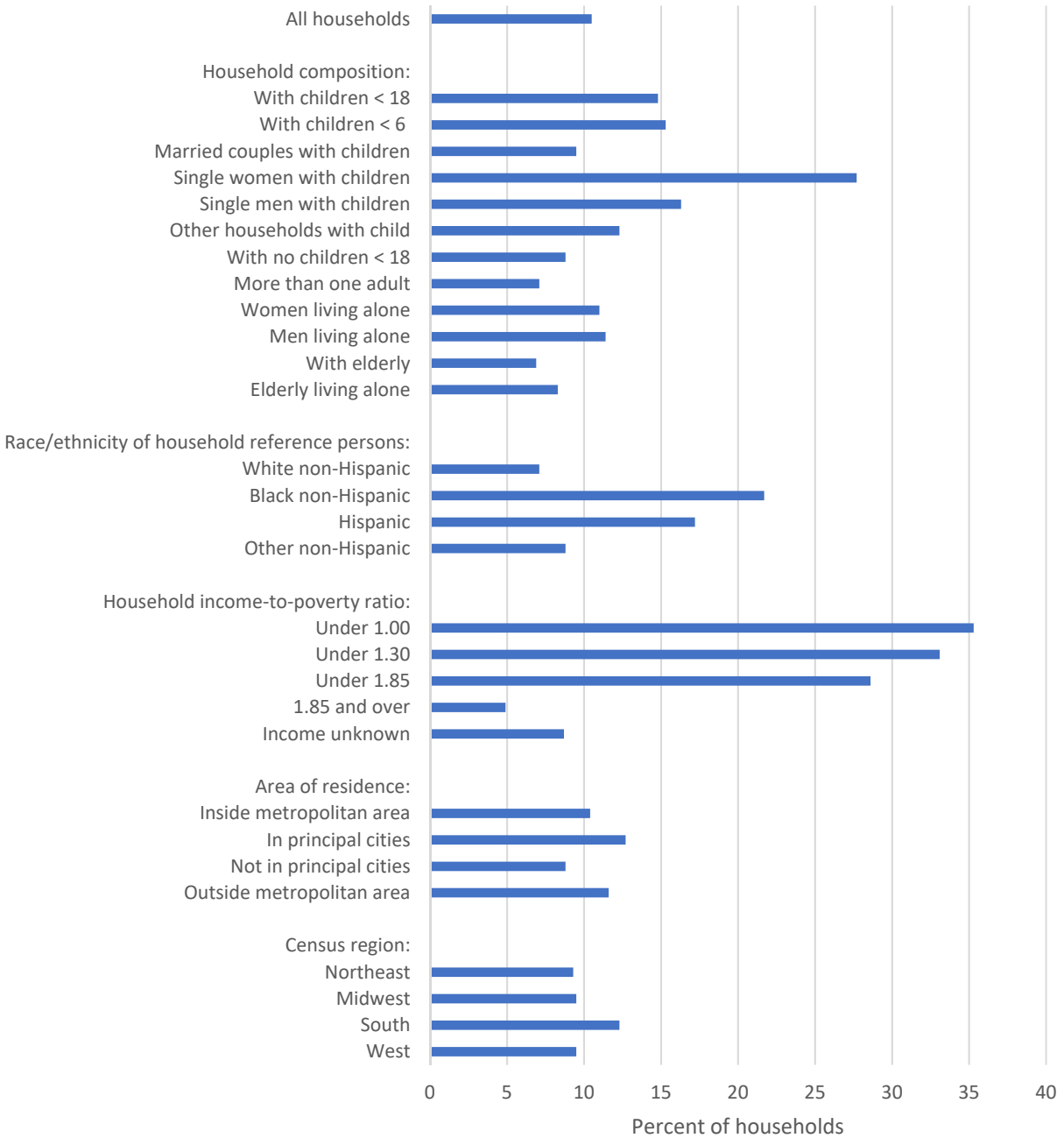
The chart on the following page shows the prevalence of food security among households according to different household characteristics, including household composition, race and ethnicity, income level, urban or rural residence, and region of the United States.

⁵ In 2020, the federal poverty line was \$26,246 for a family of four.

⁶ Alisha Coleman-Jensen, Matthew P. Rabbitt, Christian A. Gregory, and Anita Singh. 2021. Household Food Security in the United States in 2020, ERR-298, U.S. Department of Agriculture, Economic Research Service.

⁷ Feeding America, *Map the Meal Gap: Food Insecurity in the United States Before COVID-19* (2019), online at <https://map.feedingamerica.org/>; Feeding America, *The Impact of the Coronavirus on Local Food Insecurity in 2020 & 2021* (March 2021), online at <https://www.feedingamerica.org/research/coronavirus-hunger-research>

Prevalence of food insecurity by selected household characteristics, 2020



Source: USDA, Economic Research Service, using data from the December 2020 Current Population Survey Food Security Supplement, U.S. Census Bureau

3 Food Access

Food insecurity may result from a variety of social and economic circumstances that limit access to food. This report uses more recent data to update the low-income, low-access areas identified in 2018, and it adds detail about the food types available and the price levels across neighborhoods in Sioux Falls.

3.1 Low-income, Low-access Areas and Food Deserts

Low-income, low-access areas, commonly referred to as food deserts, are geographic areas where a significant number of people have low incomes (relative to the surrounding community) and low access (in terms of distance and vehicle access) to supermarkets.⁸ Specifically, these terms are defined as follows:

Low-income area	A Census tract where either the poverty rate is greater than or equal to 20% <i>or</i> the median family income is less than or equal to 80% of the Sioux Falls MSA median family income
Low-access area	A Census tract where any one of the following criteria is met: <ul style="list-style-type: none">• At least 500 people live at least 1 mile (or a half mile) from a supermarket, <i>or</i>• At least 33% of people live at least 1 mile (or a half mile) from a supermarket, <i>or</i>• At least 100 households with no vehicle live a half-mile or more from a supermarket

As is apparent in the definition of low-access area, accessibility can be measured at various distances: mostly commonly in urban areas, either 1 mile or a half mile is used. Throughout this report, unless otherwise specified, the 1-mile criterion is used. This report also adopts the term “food desert” to refer to low-income, low-access areas. Unless otherwise specified, “food desert” in this report uses the 1-mile criterion and does not include areas that meet the vehicle access criterion only and not the general 1-mile criterion.

⁸ As the 2018 report revealed, income and distance are not the only impediments to food access that Sioux Falls residents experience. This update does not address, for example, the importance of access to cooking facilities or time to gather and prepare ingredients, and it only briefly considers access to charitable food sources. Nor does this update delve into the root causes behind unequal access to food.

3.2 Data Sources and Definitions

Demographic information used in this report comes primarily from the 2020 American Community Survey (ACS) 5-year estimates. The ACS is an annual survey conducted by the U.S. Census Bureau. Unlike the decennial census, the ACS is a sample survey. Only a small proportion (around 3%) of households are surveyed each year. Five-year estimates combine data from multiple years in order to reduce the margin of error and provide more reliable estimates. The 2020 5-year estimates draw on data collected from 2016 through 2020. Dollar values are adjusted for inflation and presented in 2020 dollars. Specific fields derived from ACS data are described below.

Poverty rate	% below poverty level of population for whom poverty status is determined Source: 2020 American Community Survey 5-year estimates (Table S1701)
Median family income	Median income for families (households with 2+ related people). Source: 2020 American Community Survey 5-year estimates (Table B19113)
SNAP recipients	% of households receiving Food Stamps/SNAP in the past 12 months Source: 2020 American Community Survey 5-year estimates (Table B22003)
Renters	% of population in renter-occupied housing units (as % of total population in occupied housing units) Source: 2020 American Community Survey 5-year estimates (Table B25026)
No vehicle	% of households with no vehicle available Source: 2020 American Community Survey 5-year estimates (Table B08201)
% HH with Children	% of households with one or more residents under the age of 18 (may include related or unrelated children) Source: 2020 American Community Survey 5-year estimates (Table B11005)
% Pop Under 18	% of the household population that is under the age of 19 (population in households only; excludes people living in group quarters) Source: 2020 American Community Survey 5-year estimates (Table B09001)
% White	% of total population who are White alone, not Hispanic or Latino Source: 2020 American Community Survey 5-year estimates (Table B01001H)
% Hispanic/Latino	% of total population who are Hispanic or Latino (of any race) Source: 2020 American Community Survey 5-year estimates (Table B01001I)
% Black	% of total population who are Black alone Source: 2020 American Community Survey 5-year estimates (Table B01001B)
% Native American	% of total population who are American Indian or Alaska Native alone Source: 2020 American Community Survey 5-year estimates (Table B01001C)

Much of the data in this report is analyzed and mapped by Census tract. Census tracts are small areas used by the Census Bureau to provide a stable set of geographic units for presenting statistical data. Tracts generally have a population of around 4,000 people, but both the population size and geographic size of tracts varies. Census tract boundaries shown on maps in this report are 2020 tract boundaries adopted by the U.S. Census Bureau and provided in cartographic boundary files.

Additional local geographic and infrastructure information comes from the City of Sioux Falls GIS and Civic Analytics Department. This includes bus routes and bus stops, residential parcel information, and elementary attendance area boundaries, as described in the following table.

Bus routes	Sioux Area Metro bus routes and stops Source: City of Sioux Falls GIS
Residential parcels	Parcels identified as residential (includes single-family, two-family, multifamily, and manufactured housing) and the number of units per parcel Source: City of Sioux Falls GIS
Elementary Attendance Areas	Sioux Falls School District elementary attendance areas Source: City of Sioux Falls GIS

Eligibility rates for free and reduced-price meals come from the South Dakota Department of Education’s Fall 2021 enrollment report for the Sioux Falls School District. This reports meal status as of October 31, 2021.

% Free or Reduced Price Meals	Percent of elementary students who are eligible for free or reduced-price meals (some schools are noted in the data file as having “more than 90%” of students eligible; they have been recorded as 90%) Source: South Dakota Department of Education 2021 Fall Enrollment
--------------------------------------	---

Food retailer information comes from the U.S. Department of Agriculture’s SNAP retailer database, accessed in January 2022. The SNAP retailer database is a catalog of retail stores that accept SNAP/EBT; it provides store name and address. Augustana Research Institute analysts reviewed the list, removing stores that closed during the study period and adding additional retailers that were identified by survey teams and by comparing the SNAP retailer list with the City of Sioux Falls GIS address file and food inspection records. Certain retail outlets were removed from maps because they offer delivery only and therefore do not have a mappable location (e.g., Schwan’s) or because, although they accept SNAP, they primarily offer prepared meals, not groceries (i.e., Papa Murphy’s).

Analysts also categorized stores by store type based on local knowledge. Store type used in this report may not align exactly with retailer categories used by the USDA in SNAP redemption reporting. Store type categories used in this report are defined and described in the table below.

Supermarkets	<p>Large supermarkets and superstores, including Hy-Vee, Fareway, Target, Wal-Mart, Sam’s Club, Costco, Sunshine, Aldi, Franklin Food Market, the Sioux Falls Food Co-op, and Pomegranate Market. Excludes the Hy-Vee formerly located at 10th Street and Kiwanis Avenue, which closed during the study period.</p> <p>Source: Authorized SNAP Retailers (USDA Open GIS)</p>
Grocery stores	<p>Smaller or specialty grocery stores. Excludes dollar stores, drug stores, gas stations, and similar SNAP retailers that are not primarily grocery retailers. Excludes Andy’s Affiliated Foods, which closed during the study period. Includes the addition of Thanh Mai, Look’s Marketplace, and Neighborhood Market, which were not on the initial SNAP database list but were identified by surveyors.</p> <p>Source: Authorized SNAP Retailers (USDA Open GIS)</p>
Gas stations / Convenience stores	<p>Small retail stores that sell snacks, beverages, and some staple groceries. Primarily gas stations, but also includes convenience stores without fuel pumps, such as Munchies.</p> <p>Source: Authorized SNAP Retailers (USDA Open GIS)</p>
Dollar stores	<p>Retail stores with a variety of inexpensive items, including food items: for example, Dollar Tree, Family Dollar, and Dollar General.</p> <p>Source: Authorized SNAP Retailers (USDA Open GIS)</p>
Drug stores	<p>A retail store, typically with a pharmacy, that sells drugs, medicines, cosmetics, and related items as well as a selection of food items: for example, Lewis Drug.</p> <p>Source: Authorized SNAP Retailers (USDA Open GIS)</p>

Information about food distributions—pantries, giveaways, and meals—was compiled from the Helpline Center’s online database, Sioux Falls Hunger’s website (siouxfallshunger.com), and Feeding South Dakota’s mobile food pantry schedule.

Food distribution: Pantries and giveaways	<p>Pantries and giveaways provide groceries to prepare at home. In Sioux Falls, examples of pantries and giveaways include Feeding South Dakota’s mobile food pantry, Food To You Mobile Food Pantry, the Faith Temple Food Giveaway, the Salvation Army’s emergency food pantry, and sever small pantries hosted by churches and nonprofit organizations.</p>
Food distribution: Meals	<p>Meals are prepared meals, served on-site or (especially during the pandemic) offered to-go.</p>

3.3 Methods

The data sources described above were used to identify and map food deserts in Sioux Falls, SD. Demographic data was also mapped and compared to food desert locations.

Additionally, original data was collected through an observation survey of food availability and pricing at retail food stores across the city.

Both the mapping process and the survey are described in this section.

3.3.1 Mapping Food Deserts and Demographic Data

Food desert Census tracts were identified based on the low-income, low-access criteria outlined in the table below. Although low access was measured at a half mile, 1 mile, and using the alternative vehicle criterion, this report focuses on food deserts defined by low access at 1 mile. Distance is calculated as a straight-line radius, not travel distance, and it is calculated only from supermarkets (using the definition given above), not grocery stores or other food retailers.

The population living within a given distance of supermarkets was estimated based on the total population of a Census tract and the geographical distribution of residential parcels. Within each tract, residential parcels were categorized as falling within or outside of a 1-mile (or half mile) buffer around supermarkets. Then, the sum total of housing units across residential parcels was used to calculate the ratio of units inside and outside the 1-mile (or half mile) buffer. That ratio was applied to ACS household estimates and household population estimates in order to derive estimates of the low access population (i.e., estimated population in households that is more than 1 mile (or a half mile) from a supermarket), low access percentage (i.e., estimated percentage of households that is more than 1 mile (or a half mile) from a supermarket), and low access vehicle households (estimated number of households with no vehicle and more than a half-mile from a supermarket). These estimates were used to test whether each tract meets the criteria for a low access tract.

This parcel-based approach to distributing population is intended to account for variable population density. It addresses the fact that the population is not evenly distributed across the land area of a Census tract. However, it does not account for variations in household size or uneven distribution of demographic characteristics (particularly income levels and vehicle access) across households within a given tract.

The table below summarizes the definitions of low-income, low-access areas used to identify food deserts.

Low income areas	A census tract where either (1) the poverty rate is equal to or greater than 20%, <i>or</i> (2) the median family income is 80% or less of the Sioux Falls MSA median family income. In 2020, Sioux Falls MSA median was \$84,874, and the 80% threshold was \$67,899.20.
Low access area (0.5 miles)	At least 500 people <i>or</i> at least 33% of the population live a half-mile or more from a supermarket. Note: Populations are assumed to be equally distributed across housing units on residential parcels
Low access area (1 mile)	At least 500 people <i>or</i> at least 33% of the population live 1 mile or more from a supermarket. Source: Populations are assumed to be equally distributed across housing units on residential parcels
Low access area (vehicle)	At least 100 households with no vehicle live a half-mile or more from a supermarket Source: No-vehicle households are assumed to be equally distributed across housing units on residential parcels

3.3.2 Survey of Food Availability and Prices

Survey data collection was conducted from March 27 through May 7, 2022.

Surveyors visited Sioux Falls retail food stores and used a standard form to record the availability of different food categories as well as the price of a four-item basket. The list of stores visited was based on the SNAP retailers list described above; it includes supermarkets, grocery stores, dollar stores, drug stores, convenience stores and gas stations. Surveyors were instructed to add stores to the list if they identified stores that were not on the SNAP list, and any updates were recorded and made to the master store list used throughout this report.

In total, surveyors visited 158 of 160 stores identified in Sioux Falls. Two stores were not visited because they were not open during posted hours. Additionally, seven stores refused or asked surveyors to leave, so information was not collected. In total, data was collected for 151 of 160 stores (94%).

Stores Visited by Store Type

Store Type	Surveyed	Refused	Not Available	Total
Dollar Store	13	1		14
Drug Store	13			13
Gas Station / Convenience Store	71	2		73
Grocery Store	31	4	2	37
Supermarket	23			23
Total	151	7	2	160

The survey collected information about the availability of 19 food types. The list of food types, summarized in the table below, was arrived at in consultation with Sioux Falls Thrive’s Food Security Action Team. It is intended to be general and flexible while providing useful information about the availability of food groups aligned with current dietary recommendations.

Fresh fruits and vegetables	
Fresh fruit	Fresh fruit such as apples, bananas, grapes, melons, etc. Includes whole fruits and cut fruits sold fresh (not canned, dried, or otherwise preserved)
Leafy greens	Leafy green vegetables such as lettuce, cabbage, spinach, etc. sold fresh
Red vegetables	Red or orange vegetables such as carrots, tomatoes, peppers, sweet potatoes, etc. sold fresh
Fresh meat, eggs, and dairy	
Milk	Cow or other animal milks (e.g., goat) or plant milks (e.g., soy, almond, oat) sold fresh and refrigerated or as shelf-stable liquids (does not include dried milk powder)
Other dairy	Other dairy (derived from animal or plant milk) products sold fresh or refrigerated, such as yogurt, cheese, soy yogurt, etc.
Eggs	Whole chicken eggs, duck eggs, etc.
Fresh meat	Refrigerated meat such as chicken thighs, ground beef, deli meat, etc. Excludes canned meat, dried meat, and jerky.
Frozen foods	
Frozen fruit	Frozen fruit such as berries, sliced peaches, etc.
Frozen vegetables	Frozen vegetables such as green beans, peas, French fries, etc.
Frozen meat	Frozen meat such as chicken thighs, ground beef, hot dogs, etc.
Frozen dinners	Frozen dinners such as Banquet meals, pot pies, pizzas, etc.
Canned foods	
Canned fruit	Canned fruit such as peaches, pears, fruit cocktail, apple sauce, etc. May be sold in cans, jars, or pouches.
Canned vegetables	Canned vegetables such as green beans, mushrooms, tomato sauce, etc.
Canned meat	Canned meat such as tuna, Spam, chicken, etc.
Soup	Canned or dry soups such as chicken noodle, chili, vegetable soup, ramen, etc.
Dry goods	
Whole grains	Whole grain products such as whole grain bread, brown rice, popcorn, corn tortillas, etc.
Refined grains	Refined grain products such as spaghetti, white rice, flour, white bread, etc.
Beans	Beans and legumes (canned or dry) such as pinto beans, baked beans, peanut butter, etc.
Infant formula	Infant formula (any variety)

Because the survey focused on the availability of groceries to prepare at home, components of prepared meals were not counted (with the exception of frozen dinners and soups). For example, a refrigerated meal composed of chicken, broccoli, and rice was not counted as available meat, vegetable, or grain. Likewise, a ready-to-eat, single-serving salad made up of lettuce, berries, an egg, and chicken was not counted as available leafy greens, fresh fruit, eggs, or fresh meat.

The survey also collected price information using a standardized four-item basket composed of the following items:

Eggs	1 dozen chicken eggs
Milk	1 gallon of 2% milk
Bread	1 loaf of bread
Peanut butter	16 ounce jar of peanut butter

Prices were recorded for available items only and alternatives were not substituted (i.e., soymilk for milk or tortillas for bread). Surveyors were instructed to look for the lowest non-sale price for each item. When an item was available but not in the specified quantity, the price was converted. For example, if a store only sold eggs by the half dozen, the price was doubled to arrive at the price for a dozen eggs. When an item was typically available but out of stock, surveyors were instructed to record the posted price and mark the item as available.

A Note on Food and Culture

The food availability and price survey instrument was designed to accommodate a range of food types when recording availability, but it necessarily used strict definitions to ensure comparability when it came to price. The four items in the price basket were chosen with the expectation that they would be fairly universally available at retail food stores. However, in the field, surveyors noted that although eggs, milk, bread, and peanut butter were widely available at gas stations and dollar stores, they were not always available at smaller, ethnic grocery stores—not because of limited offerings, per se, but because food cultures differ. For example, cow milk was typically not available from Asian grocers (though plant milks were), and African grocers tended to sell traditional African breads such as injera but not loaves of sandwich bread.

A price index was calculated from the basket prices. The price index measures how much prices diverge from the average. For each store, it is calculated by taking the price of an item at a given store divided by the average price for that item across all stores, then averaging the ratio across all four food items in the basket. Unavailable food items were excluded from the calculation on a store-by-store basis. A price index of 1.0 indicates prices are equal to the average price. A price index higher than 1.0 indicates above-average prices, and a price index below 1.0 indicates below-average prices.

During the two-and-a-half-month survey period, the United States experienced a higher than typical rate of inflation, connected to a confluence of factors, including the COVID-19 pandemic, ongoing drought, and war in Ukraine. Locally, an outbreak of avian influenza depleted egg supplies at the same time as the Easter holidays increased demand for eggs, driving up egg prices in particular.⁹ To account for rapid changes in prices over the course of the survey period, surveyors returned to a sample of the first stores that were revisited and collected new price information. Those updated prices were used in all analyses.

⁹ A nationwide shortage of infant formula also occurred during the survey period. However, survey results should not be affected. Surveyors were instructed to record infant formula as available if it was typically stocked by a store, even if it was temporarily out of stock on the day the store was visited. No price information was collected for infant formula.

The table below demonstrates the effect of rising prices, comparing the originally collected prices to the prices recorded on revisits.

Average Prices and Price Changes during Survey Period

	Eggs (1 dozen) (n=11)	Milk 2% (1 gallon) (n=12)	Bread (1 loaf) (n=12)	Peanut butter (16 oz) (n=13)
First price	\$2.33	\$4.81	\$3.28	\$3.92
Revisit price	\$3.49	\$5.22	\$3.35	\$3.84
Price change	\$0.98	\$0.38	\$0.06	-\$0.08

A copy of the grocery survey instrument is included in the appendix to this report.

4 Findings

This report finds that, using a the 1-mile criterion for low access, a significant portion of the northwest area of Sioux Falls is a low-income, low-access area, i.e., a food desert. In total, an estimated 24,603 people in Sioux Falls live in food desert tracts. Nearly all residents in these neighborhoods—an estimated 21,808 people—live a mile or more from the nearest supermarket.

This report focuses on the Census tracts in Sioux Falls that meet the low access criteria at 1 mile from supermarkets. Using the alternative half-mile criteria, an estimated 61,798 residents live in food desert tracts, and an estimated 38,002 people live more than a half mile from a supermarket. About 10,033 people in half-mile food desert areas have incomes below poverty, a food desert area poverty rate of about 17.3% (compared to 10.1% citywide). People with incomes below poverty are disproportionately likely to live in food deserts: an estimated 56.9% of people with incomes below poverty living in half-mile food desert areas (compared to 34.2% of the city population overall).¹⁰

The following maps show the location of low-income, low-access food desert areas and the distribution of selected demographic characteristics across the city.

The food desert and demographic maps are followed by a summary of findings from the food availability and price survey, including comparisons of availability and prices by store type and location within or outside of the food desert areas. Maps show food availability, mapping the availability of the 19 food types that were surveyed. Whereas low-access areas are determined based on proximity to supermarkets only, these food availability maps show the availability of foods across supermarkets, grocery stores, gas stations and convenience stores, dollar stores, and drug stores. Affordability maps show the average price for the four items surveyed across the city.

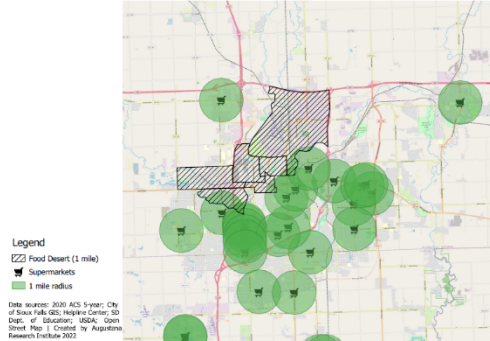
¹⁰ Half-mile food desert population estimates are provided for comparison to the 2018 food security report. However, caution should be exercised in drawing strong conclusions from the comparisons for several reasons. First, the comparisons are based on data that include one year of overlap (2012-2016 and 2016-2020 five-year estimates). Additionally, the 2016-2020 American Community Survey was adapted due to evolving methodology, population growth, and low response during the COVID-19 pandemic. As a result, data may not be directly comparable to previous survey iterations. This report’s method for identifying food deserts is also slightly different than that used in 2018, geographically distributing population across residential parcels rather than evenly across a tract’s land area.

Thumbnail images of maps are shown throughout this section to accompany the description of findings. Full-scale maps are included in the appendix to this report.

4.1 Food Desert and Demographic Maps

Map 1: Supermarkets and Food Deserts in Sioux Falls

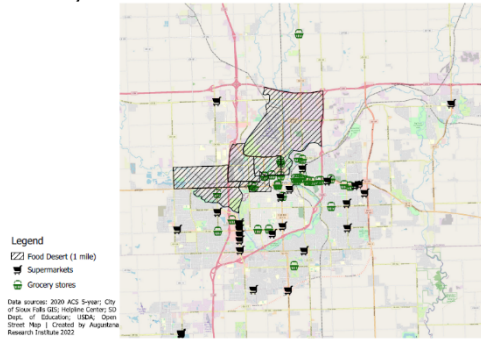
Supermarkets and Food Deserts in Sioux Falls



Low-income, low-access areas—i.e., food deserts—are located in the northwest part of Sioux Falls. This map shows a 1-mile radius around supermarkets, demonstrating the lack of coverage in this part of the city.

Map 2: Grocery Stores and Food Deserts in Sioux Falls

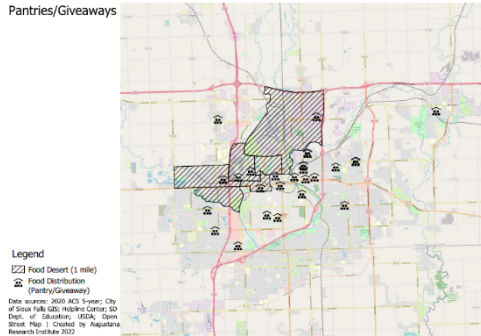
Grocery Stores and Food Deserts in Sioux Falls



Grocery stores are smaller than supermarkets. Many of the grocery stores in Sioux Falls are ethnic grocery stores that specialize in foods from a particular region or culture (e.g., Nepal, Ethiopia, or the Philippines). Several grocery stores are located in or near food desert areas.

Map 3: Food Distribution and Food Deserts in Sioux Falls: Pantries and Giveaways

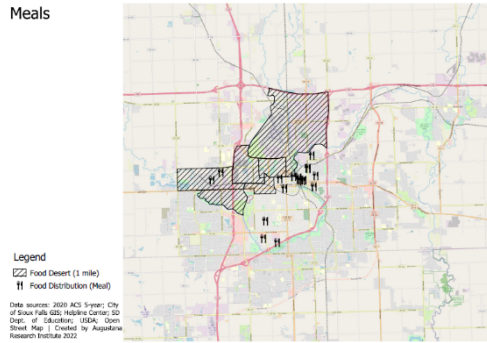
Food Distribution and Food Deserts in Sioux Falls Pantries/Giveaways



Pantries and giveaways are available across the city, but somewhat clustered near the core. A few pantries and giveaways are located within food desert areas.

Map 4: Food Distribution and Food Deserts in Sioux Falls: Meals

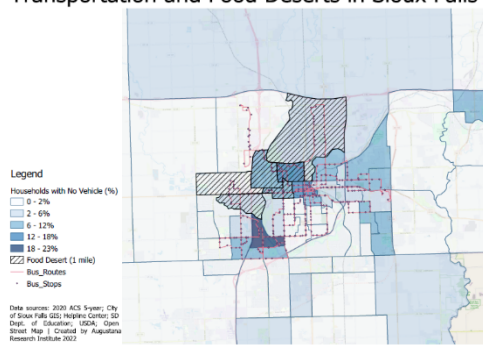
Food Distribution and Food Deserts in Sioux Falls
Meals



Compared to pantries and giveaways, meal distributions are more concentrated near the center of the city, with just a few on the south and west sides. The Banquet West is one example of a meal distribution in a food desert area.

Map 5: Transportation and Food Deserts in Sioux Falls

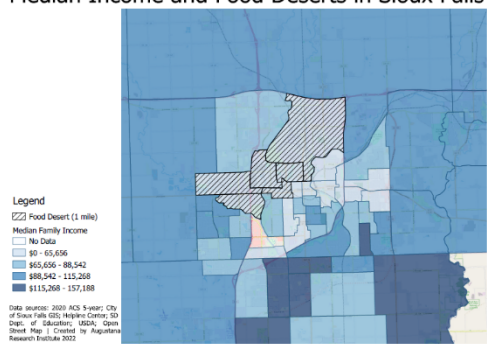
Transportation and Food Deserts in Sioux Falls



The Census tract with the lowest rate of vehicle access is located in the southwest part of the city, an area with abundant access to supermarkets. Throughout food desert areas, most households have access to at least one vehicle. Vehicle access is somewhat more limited in the food desert areas nearer the center of the city.

Map 6: Median Income and Food Deserts in Sioux Falls

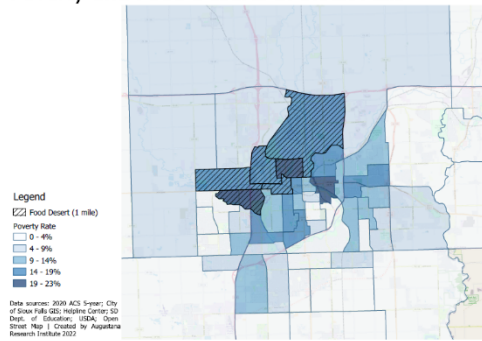
Median Income and Food Deserts in Sioux Falls



By definition, food desert areas are both low-access and low-income. Accordingly, the median household income in food desert areas is relatively low compared to other parts of the city. Though distance is less of a barrier in other parts of the city, low income may be a barrier to food access across the city's northern neighborhoods and southwestern area.

Map 7: Poverty and Food Deserts in Sioux Falls

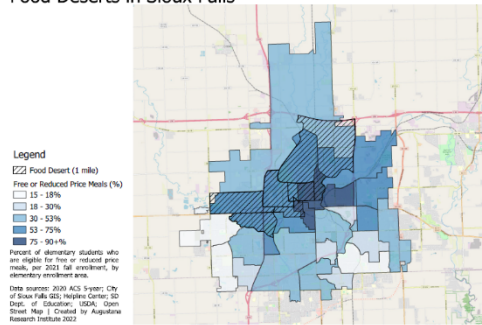
Poverty and Food Deserts in Sioux Falls



There is significant overlap between the city's highest poverty Census tracts and food desert areas.

Map 8: Elementary Free or Reduced Price Meals and Food Deserts in Sioux Falls

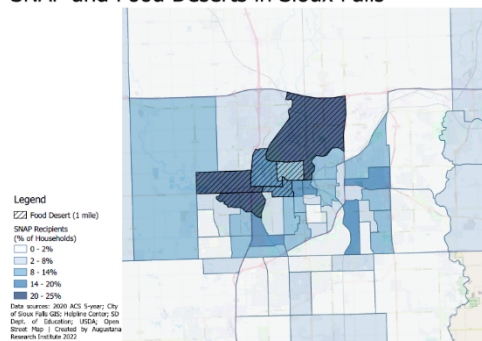
Elementary Free or Reduced Price Meals and Food Deserts in Sioux Falls



Free or reduced price meal eligibility is an alternative measure of neighborhood income levels. Consistent with median household income and poverty rates, free or reduced meals eligibility is higher in the elementary school attendance areas within food desert areas as well as concentrated near the center of the city.

Map 9: SNAP and Food Deserts in Sioux Falls

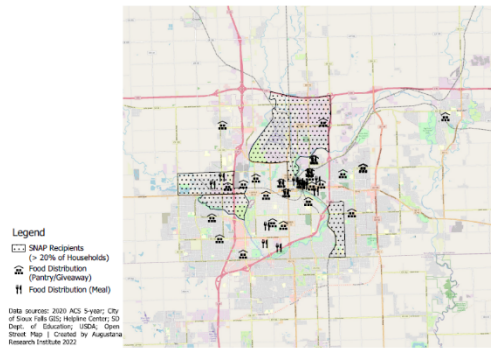
SNAP and Food Deserts in Sioux Falls



This map shows the percentage of households in each Census tract who received SNAP benefits. There is significant overlap between food desert areas and the areas with the highest proportion of households receiving SNAP.

Map 10: Food Distributions and SNAP in Sioux Falls

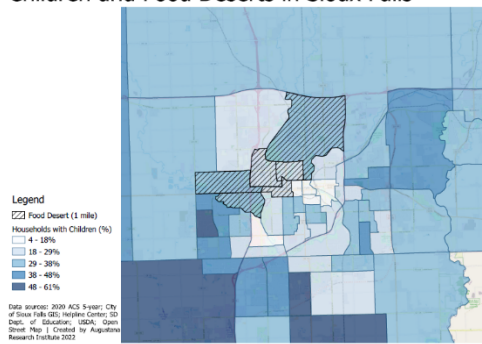
Food Distributions and SNAP in Sioux Falls



Thrive’s Food Security Action Team has been working toward a goal of bringing food distributions to neighborhoods where more than 20% of households receive SNAP. This map shows Census tracts where more than 20% of households receive SNAP along with the location of food distributions (pantry/giveaway and meals).

Map 11: Children and Food Deserts in Sioux Falls

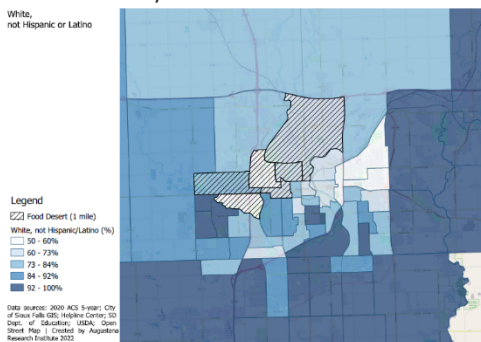
Children and Food Deserts in Sioux Falls



Households with children make up a relatively larger proportion of households on the south side of the city. Within food desert areas, the Census tracts nearer the center of the city have a smaller proportion of households with children compared to tracts to the west and north.

Map 12: Race and Ethnicity and Food Deserts in Sioux Falls: White, not Hispanic or Latino

Race and Ethnicity and Food Deserts in Sioux Falls



Compared to the rest of the city, and especially to outlying areas to the south and east, food desert areas have a smaller proportion of White, non-Hispanic residents. In other words, food desert areas are disproportionately home to people of color.

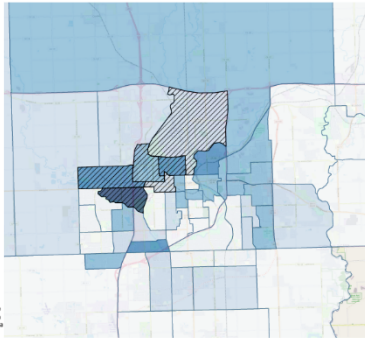
Map 13: Race and Ethnicity and Food Deserts in Sioux Falls: Hispanic or Latino (any race)

Race and Ethnicity and Food Deserts in Sioux Falls

Hispanic or Latino
(any race)

Legend
 Food Desert (1 mile)
 Hispanic/Latino (%)
 0 - 2%
 2 - 5%
 5 - 9%
 9 - 18%
 18 - 21%

Data sources: 2010 ACS 5-year; City of Sioux Falls GIS; Hispanic Center; SD Dept. of Education; USDA; Open Street Map | Created by Appalachia Research Institute 2022



The Hispanic/Latino population in Sioux Falls is concentrated in northwest neighborhoods, and disproportionately represented among food desert residents.

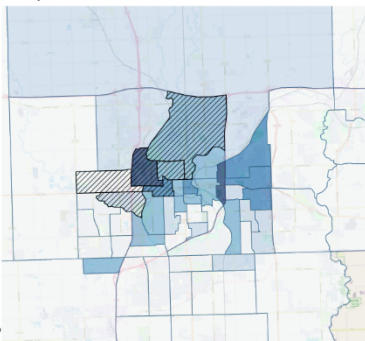
Map 14: Race and Ethnicity and Food Deserts in Sioux Falls: Black or African American

Race and Ethnicity and Food Deserts in Sioux Falls

Black or
African American

Legend
 Food Desert (1 mile)
 Black (%)
 0 - 2%
 2 - 7%
 7 - 14%
 14 - 22%
 22 - 28%

Data sources: 2010 ACS 5-year; City of Sioux Falls GIS; Hispanic Center; SD Dept. of Education; USDA; Open Street Map | Created by Appalachia Research Institute 2022



Black residents in Sioux Falls make up a larger share of the population in northern and northeastern neighborhoods. Although northeastern neighborhoods enjoy abundant access to supermarkets, northern neighborhoods to the west with a higher share of Black residents are located within food desert areas.

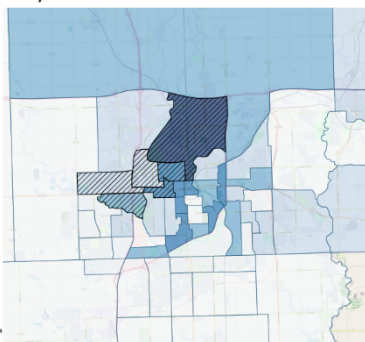
Map 15: Race and Ethnicity and Food Deserts in Sioux Falls: American Indian or Alaska Native

Race and Ethnicity and Food Deserts in Sioux Falls

American Indian or
Alaska Native

Legend
 Food Desert (1 mile)
 Native American (%)
 0 - 0.5%
 0.5 - 1.8%
 1.8 - 3.6%
 3.6 - 5.7%
 5.7 - 13.9%

Data sources: 2010 ACS 5-year; City of Sioux Falls GIS; Hispanic Center; SD Dept. of Education; USDA; Open Street Map | Created by Appalachia Research Institute 2022



Native Americans in Sioux Falls, like other people of color, are disproportionately represented among food desert residents. It should be noted that race and ethnicity data are based on the total population, including people in group quarters and institutions such as jails or prisons, where Native American people make up a disproportionate share of the population.

4.2 Food Access Survey Results: Availability

The results of the survey of food availability are shown below, by food type and store type. Each cell shows the percentage of stores with that food type available. For example, 59% of gas station/convenience stores have fresh fruit available, but only 21% of them have fresh leafy green vegetables available.

Overall, supermarkets have the widest availability across all food types. All of the supermarkets surveyed had all of the food types available, with the exception of infant formula.

Across all store types, canned foods and dry goods were also widely available. The majority of stores of all types carried each of the canned foods and dry foods that surveyors inventoried (again, with the exception of infant formula).

Milk, dairy, eggs, and fresh meat were also widely available across store types, although slightly less common at smaller grocery stores. However, nearly all drug stores, gas stations, and convenience stores carried milk and other dairy, and many dollar stores did, too.

Although frozen meat and frozen dinners were widely available across store types, frozen fruit and frozen vegetables had limited availability, especially from gas stations and convenience stores where they were found at only 1% and 4% of stores, respectively.

The food types with the most limited availability were fresh fruits and vegetables. None of the dollar stores or drug stores had fresh fruit, leafy greens, or red or orange vegetables available. Only about one-third of smaller grocery stores carried these items. Although over half of gas stations and convenience stores had fresh fruit available, only 21% had leafy greens and just 3% had fresh red or orange vegetables available.

In general, the survey results suggest that supermarkets make one-stop shopping possible, carrying all of the food types surveyed. Shoppers could likely find food from all major food groups by sticking to smaller stores, especially if they made multiple stops, but they would be hard pressed to find a variety of fresh fruits and vegetables without traveling to a supermarket.

Food Type Availability by Store Type (% of Stores with Food Available)

	Dollar Store n=13	Drug Store n=13	Gas Station or C-Store n=71	Grocery Store n=31	Super-Market n=23	All Store Types n=151
Fresh fruit	0%	0%	59%	35%	100%	50%
Leafy greens	0%	0%	21%	35%	100%	32%
Red vegetables	0%	0%	3%	35%	100%	24%
Milk	62%	100%	92%	42%	100%	81%
Other dairy	92%	100%	89%	77%	100%	89%
Eggs	85%	69%	69%	32%	100%	68%
Fresh meat	69%	62%	66%	55%	100%	69%
Frozen fruit	54%	38%	1%	32%	100%	30%
Frozen vegetables	85%	85%	4%	55%	100%	43%
Frozen meat	92%	100%	55%	77%	100%	74%
Frozen dinners	100%	100%	82%	45%	100%	80%
Canned fruit	92%	85%	63%	68%	100%	74%
Canned vegetables	100%	100%	89%	90%	100%	93%
Canned meat	100%	100%	85%	81%	100%	89%
Soup	92%	100%	89%	55%	100%	85%
Whole grains	69%	85%	65%	81%	100%	75%
Refined grains	100%	100%	87%	97%	100%	93%
Beans	100%	100%	75%	94%	100%	87%
Infant formula	38%	77%	1%	45%	87%	33%

Of the 160 stores in Sioux Falls, 37 are in food deserts and 123 are outside. Surveyors collected information from 34 of the 37 stores in food deserts and 117 of the 123 stores outside of food deserts. Because supermarkets have the widest availability of food types, and because supermarkets are by definition located outside of food desert areas, it is not surprising that food desert areas have less availability of several food types—especially fresh and frozen fruits and vegetables. Canned and dry foods, as well as dairy, eggs, and meat, were similarly available across food desert areas and other parts of the city.

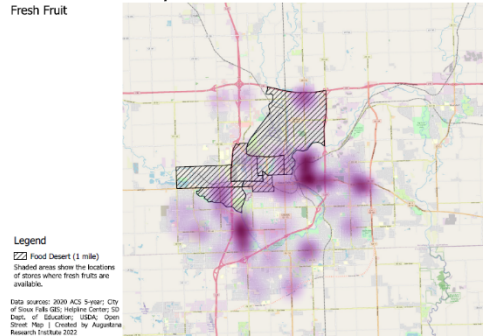
Food Type Availability by Store Location (% of Stores with Food Available)

	Food desert (n=34)	Other areas (n=117)
Fresh fruit	38%	54%
Leafy greens	24%	35%
Red vegetables	9%	28%
Milk	74%	83%
Other dairy	82%	91%
Eggs	65%	68%
Fresh meat	53%	74%
Frozen fruit	6%	38%
Frozen vegetables	12%	52%
Frozen meat	62%	77%
Frozen dinners	74%	82%
Canned fruit	71%	75%
Canned vegetables	94%	92%
Canned meat	82%	91%
Soup	85%	85%
Whole grains	74%	76%
Refined grains	88%	95%
Beans	82%	88%
Infant formula	9%	40%

The maps that follow show the approximate location of stores where each food item in the survey is available. Full-scale maps are provided in the appendix to this report.

Map 16: Food Availability in Sioux Falls: Fresh Fruit

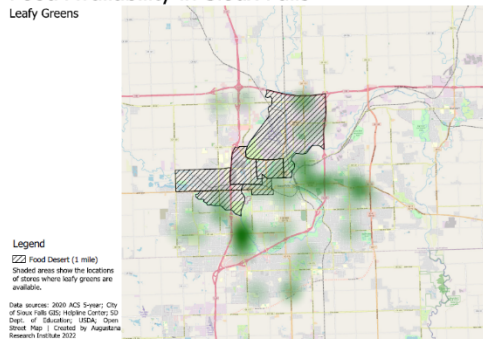
Food Availability in Sioux Falls
Fresh Fruit



Of all fresh produce items, fruit was most widely available. Many gas stations and convenience stores carry some fresh fruit, though the selection may be limited.

Map 17: Food Availability in Sioux Falls: Leafy Greens

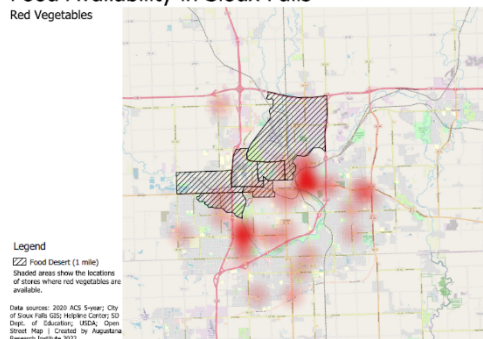
Food Availability in Sioux Falls
Leafy Greens



Fresh leafy greens were found at all supermarkets but only at about 21% of gas stations and convenience stores and 35% of smaller grocery stores. Overall, only about one-fourth (24%) of stores in food desert areas had leafy green vegetables available.

Map 18: Food Availability in Sioux Falls: Red or Orange Vegetables

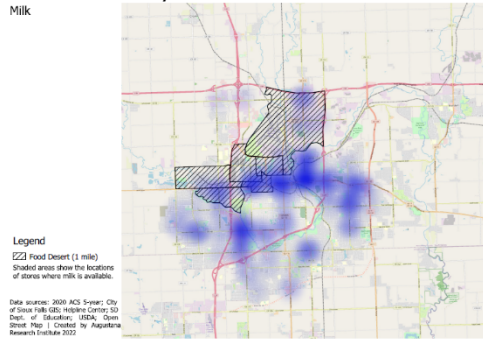
Food Availability in Sioux Falls
Red Vegetables



Of all fresh produce categories, red or orange vegetables had the most limited availability. They were found at less than 10% of stores in food desert areas. Across the city, only 3% of gas stations and convenience stores carried fresh red or orange vegetables, and no dollar stores or drug stores had them available.

Map 19: Food Availability in Sioux Falls: Milk

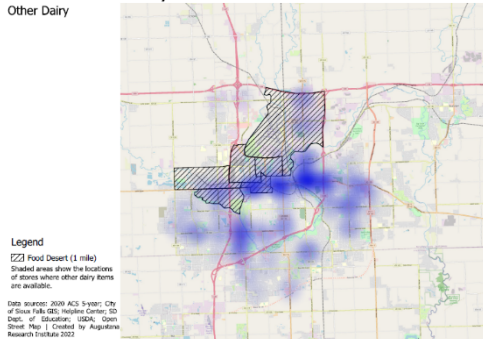
Food Availability in Sioux Falls
Milk



Milk was widely available from drug stores, gas stations and convenience stores, and supermarkets. About three-fifths (62%) of dollar stores had milk available, as did about two-fifths (42%) of grocery stores. About three-fourths (74%) of stores in food desert areas had milk available.

Map 20: Food Availability in Sioux Falls: Other Dairy

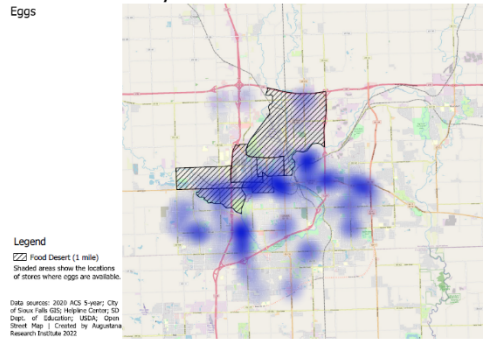
Food Availability in Sioux Falls
Other Dairy



Other dairy items, such as cheese and yogurt, were widely available across all store types. Over 80% of stores in food desert areas carried these items.

Map 21: Food Availability in Sioux Falls: Eggs

Food Availability in Sioux Falls
Eggs

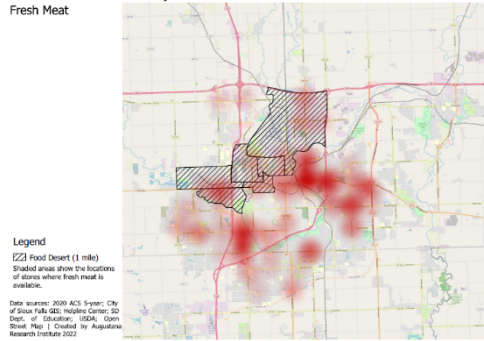


Eggs were available at about two-thirds (68%) of stores across the city, with similar proportions of stores inside and outside of food deserts carrying eggs. They were frequently found at all store types except smaller grocery stores, of which only 32% carried eggs.

Map 22: Food Availability in Sioux Falls: Fresh Meat

Food Availability in Sioux Falls

Fresh Meat

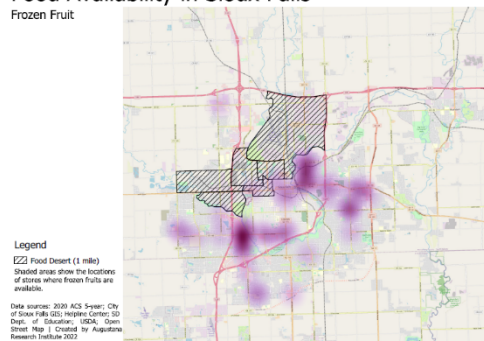


Fresh meat was found at the majority of stores across all store types, although it was least commonly available at smaller groceries (55%). Fresh meat was found at fewer stores in food deserts (53%) compared to other areas (74%).

Map 23: Food Availability in Sioux Falls: Frozen Fruit

Food Availability in Sioux Falls

Frozen Fruit

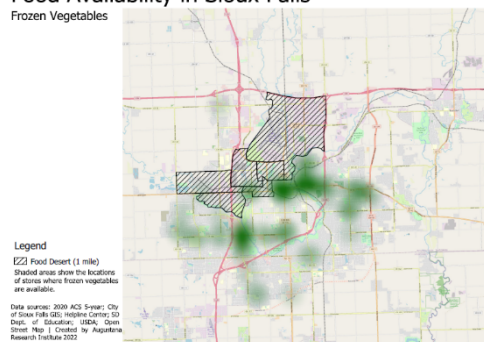


Frozen fruit was available at all supermarkets, about half (54%) of dollar stores, and about one-third of drug stores (38%) and grocery stores (32%). However, frozen fruit was found at only 1% of gas stations and convenience stores. In food desert areas, only 6% of stores carried frozen fruit, compared to 38% of stores in the rest of Sioux Falls.

Map 24: Food Availability in Sioux Falls: Frozen Vegetables

Food Availability in Sioux Falls

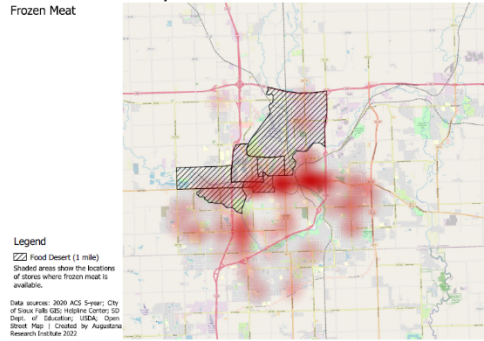
Frozen Vegetables



Frozen vegetables were more widely available than frozen fruit, found at the majority of all stores across all store types, with the exception of gas stations and convenience stores. Only 4% of gas stations and convenience stores had frozen vegetables available. In food desert areas, only 12% of stores carried frozen vegetables, compared to 52% of stores in the rest of the city.

Map 25: Food Availability in Sioux Falls: Frozen Meat

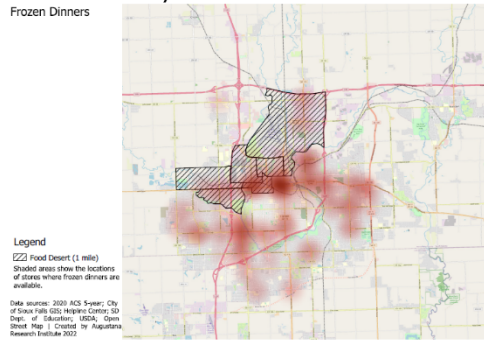
Food Availability in Sioux Falls
Frozen Meat



Frozen meat was available at a majority stores of all types, including at 62% of stores in food desert areas and 77% of stores in the rest of the city.

Map 26: Food Availability in Sioux Falls: Frozen Dinners

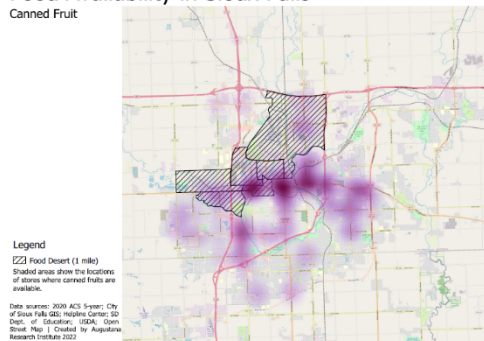
Food Availability in Sioux Falls
Frozen Dinners



Of all frozen foods, frozen dinners such as pot pies and pizzas were mostly widely available. Across the city, 80% of stores had frozen dinners available, including 74% of stores in food desert areas.

Map 27: Food Availability in Sioux Falls: Canned Fruit

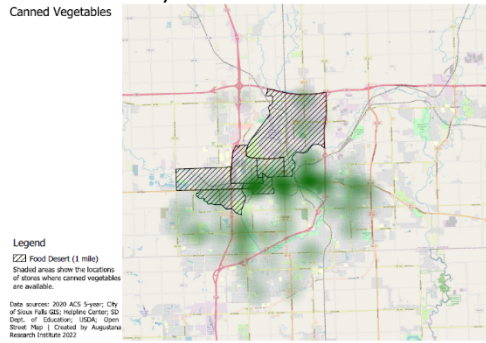
Food Availability in Sioux Falls
Canned Fruit



Canned fruit was widely available throughout the city, including at 71% of stores in food desert areas and 75% of stores in other areas.

Map 28: Food Availability in Sioux Falls: Canned Vegetables

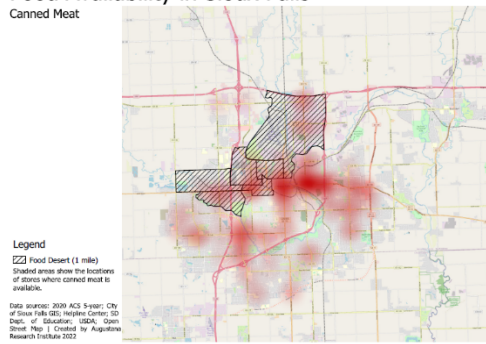
Food Availability in Sioux Falls
Canned Vegetables



Of all foods surveyed, canned vegetables were most widely available. Overall, 93% of stores had canned vegetables available, including 94% of stores in food desert areas and 92% of stores in other areas.

Map 29: Food Availability in Sioux Falls: Canned Meat

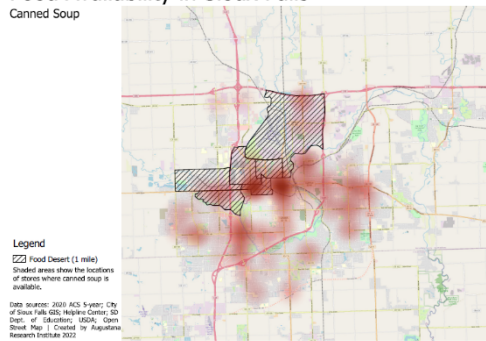
Food Availability in Sioux Falls
Canned Meat



Canned meat was widely available across store types and areas. Canned meat could be found at 82% of stores in food desert areas and 91% of stores in other areas.

Map 30: Food Availability in Sioux Falls: Soup

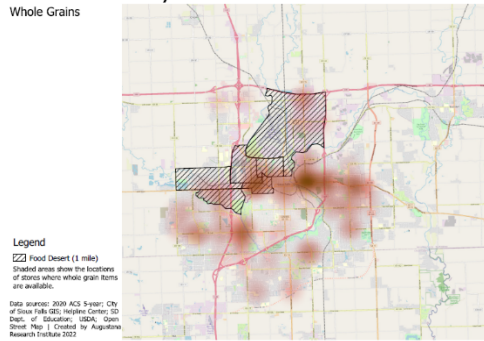
Food Availability in Sioux Falls
Canned Soup



Canned soup was widely available across store types and areas, available at 85% of stores overall.

Map 31: Food Availability in Sioux Falls: Whole Grains

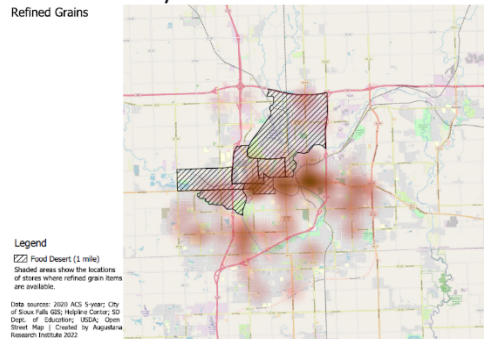
Food Availability in Sioux Falls
Whole Grains



Whole grain items were available at all supermarkets and over 80% of smaller grocery stores and drug stores. About two-thirds of dollar stores (69%) and gas stations and convenience stores (65%) also had whole grain products available. In both food desert areas and other parts of the city, about three-fourths of stores had whole grain products available.

Map 32: Food Availability in Sioux Falls: Refined Grains

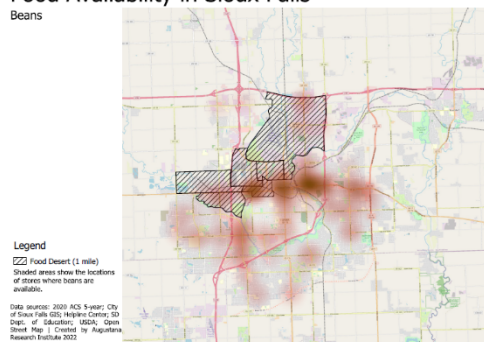
Food Availability in Sioux Falls
Refined Grains



Refined grains such as white bread and white rice were even more widely available than whole grains. Overall, 93% of stores carried refined grain items, including 88% of stores in food desert areas and 95% of stores in other areas.

Map 33: Food Availability in Sioux Falls: Beans or Legumes

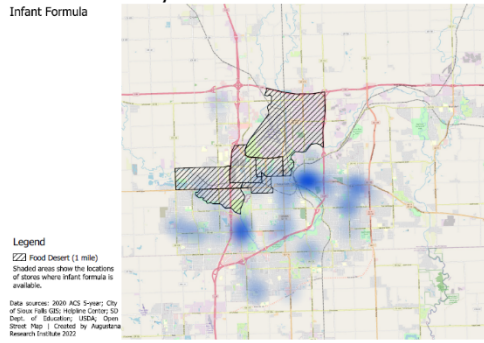
Food Availability in Sioux Falls
Beans



Beans and legumes were available at all supermarkets, dollar stores, and drug stores. They were also found at nearly all (94%) smaller grocery stores and 75% of gas stations and convenience stores. Most stores in food deserts areas (82%) and other areas (88%) carried beans and legumes.

Map 34: Food Availability in Sioux Falls: Infant Formula

Food Availability in Sioux Falls
Infant Formula



Infant formula was available at one-third of stores overall, including 87% of supermarkets and 77% of drug stores. However, only 1% of gas stations and convenience stores carried infant formula. In food desert areas, just 9% of stores had infant formula available, compared to 40% of stores in other parts of the city.

4.3 Food Access Survey Results: Affordability

Although dollar stores and drug stores have more limited availability of food items, for those foods that they carry, they tend to be about as affordable as supermarkets. Gas stations and convenience stores as well as smaller grocery stores tend to be somewhat more expensive, at least across the items in the limited basket of goods considered for this survey.

Average Price by Store Type

Store Type	Eggs (1 dozen) (n=99)	Milk 2% (1 gallon) (n=119)	Bread (1 loaf) (n=110)	Peanut butter (16 oz) (n=119)
Dollar Store (n=13)	\$2.56 n=11	\$4.03 n=8	\$1.90 n=10	\$2.10 n=10
Drug Store (n=13)	\$3.83 n=10	\$4.09 n=13	\$2.85 n=12	\$3.01 n=12
Gas Station / Convenience Store (n=71)	\$3.26 n=47	\$5.36 n=68	\$3.68 n=56	\$4.43 n=56
Grocery Store (n=31)	\$3.85 n=8	\$4.85 n=7	\$5.23 n=9	\$5.34 n=9
Supermarket (n=23)	\$2.99 n=23	\$3.97 n=23	\$1.78 n=23	\$2.45 n=23
Overall Average (n=151)	\$3.22	\$4.83	\$3.16	\$3.74

The price index is a composite measure of price across the four items in the survey basket. It confirms the impression that dollar stores have below average prices for the items they carry, whereas smaller grocery stores and gas stations and convenience stores have higher than average prices for the items surveyed. The average price index across drug stores suggests prices near the citywide average. Supermarkets have below average prices, relative to all retail food stores.

Average Price Index by Store Type

Store Type	Price Index
Dollar Store (n=12)	0.68
Drug Store (n=13)	0.93
Gas Station / Convenience Store (n=71)	1.12
Grocery Store (n=17)	1.29
Supermarket (n=23)	0.74

When it comes to location, stores in food desert areas had prices roughly comparable to prices in other areas. On average, milk, bread, and peanut butter were slightly more expensive at stores in food desert areas, but the difference was smaller than differences observed by store type.

Average Price by Store Location

	Eggs (1 dozen) n=99	Milk 2% (1 gallon) n=119	Bread (1 loaf) n=110	Peanut butter (16 oz) n=119
Food Desert (n=34)	\$3.09 n=20	\$5.19 n=27	\$3.64 n=23	\$4.07 n=26
Other Area (n=117)	\$3.26 n=79	\$4.73 n=92	\$3.03 n=87	\$3.65 n=93

A comparison of price index by location confirms this impression, showing that the average prices in food desert areas are only slightly above the citywide average.

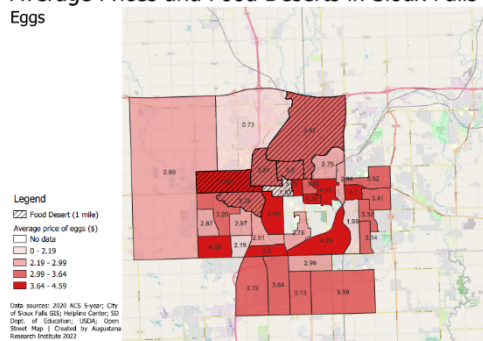
Average Price Index by Store Location

	Price Index
Food Desert (n=29)	1.07
Other Area (n=107)	1.00

The following maps show average prices among stores in each Census tract.

Map 35: Average Prices and Food Deserts in Sioux Falls: Eggs

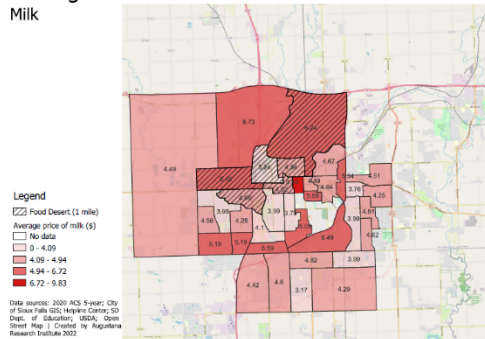
**Average Prices and Food Deserts in Sioux Falls
Eggs**



Eggs tended to be most expensive at drug stores (average \$3.83) and smaller grocery stores (average \$3.85) and least expensive at dollar stores (average \$2.56). The price difference between stores in food deserts and other areas was smaller than the difference among store types.

Map 36: Average Prices and Food Deserts in Sioux Falls: Milk

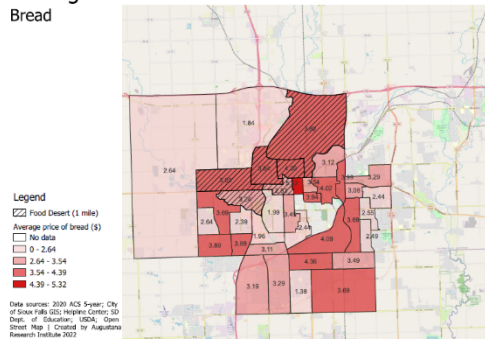
Average Prices and Food Deserts in Sioux Falls
Milk



On average, a gallon of milk was most expensive at gas stations and convenience stores (average \$5.36) and least expensive at supermarkets (average \$3.97). Several gas stations only carried milk in half-gallon quantities or less. Milk tended to be slightly more expensive in food desert areas (average \$5.19) than other areas (average \$4.73).

Map 37: Average Prices and Food Deserts in Sioux Falls: Bread

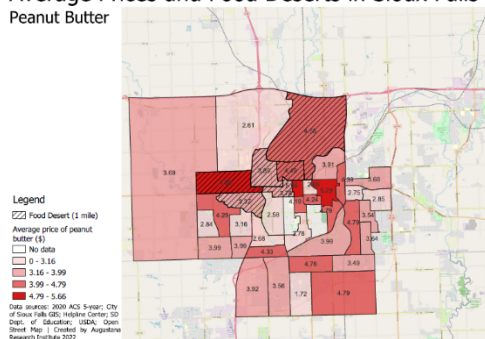
Average Prices and Food Deserts in Sioux Falls
Bread



Supermarkets and dollar stores tended to have the lowest prices for a loaf of sandwich bread (average \$1.78 and \$1.90, respectively). Smaller grocery stores were most expensive (\$5.23 average), though few had loaves of sandwich bread, instead carrying injera, tortillas, or other breads not used for price comparison.

Map 38: Average Prices and Food Deserts in Sioux Falls: Peanut Butter

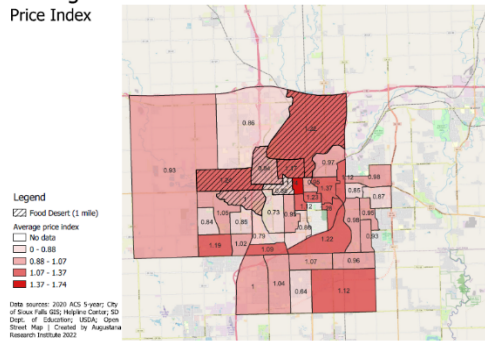
Average Prices and Food Deserts in Sioux Falls
Peanut Butter



Peanut butter was least expensive at dollar stores (average \$2.10) and most expensive at smaller grocery stores (average \$5.34). On average, peanut butter was somewhat more expensive in food desert areas (average \$4.07) than other areas (\$3.65).

Map 39: Average Prices and Food Deserts in Sioux Falls: Price Index

Average Prices and Food Deserts in Sioux Falls
Price Index



The price index varied more by store type than food desert area, with the lowest index among dollar stores and supermarkets and the highest among gas stations and convenience stores as well as smaller grocery stores. Overall, prices in food desert areas were slightly but not markedly higher than in other areas of the city.

5 Discussion and Conclusions

In general, food desert Census tracts have less availability of food, particularly fresh or frozen fruits and vegetables, but the food items that are available are not necessarily more expensive than in other areas. The most limited items outside of supermarkets—and consequently in food deserts—are fresh produce, infant formula, and fresh and frozen vegetables.

Familiarity or unfamiliarity with different food items could limit options for people trying to shop close to home in areas without supermarkets. Smaller ethnic grocery stores have a variety of food items available, but not always the types commonly found in U.S. supermarkets (e.g., injera instead of sandwich bread). For people seeking these items, they may have to travel to a smaller grocery store that carries those items; for people unfamiliar with these items, they might overlook smaller grocery stores nearby that could provide food.

It should be noted that this report did not directly investigate food consumption patterns or individual behavior in general. Further research would be necessary in order to determine whether or to what degree limited availability leads people living in food desert areas in Sioux Falls purchase or consume less fresh produce or fresh and frozen vegetables.

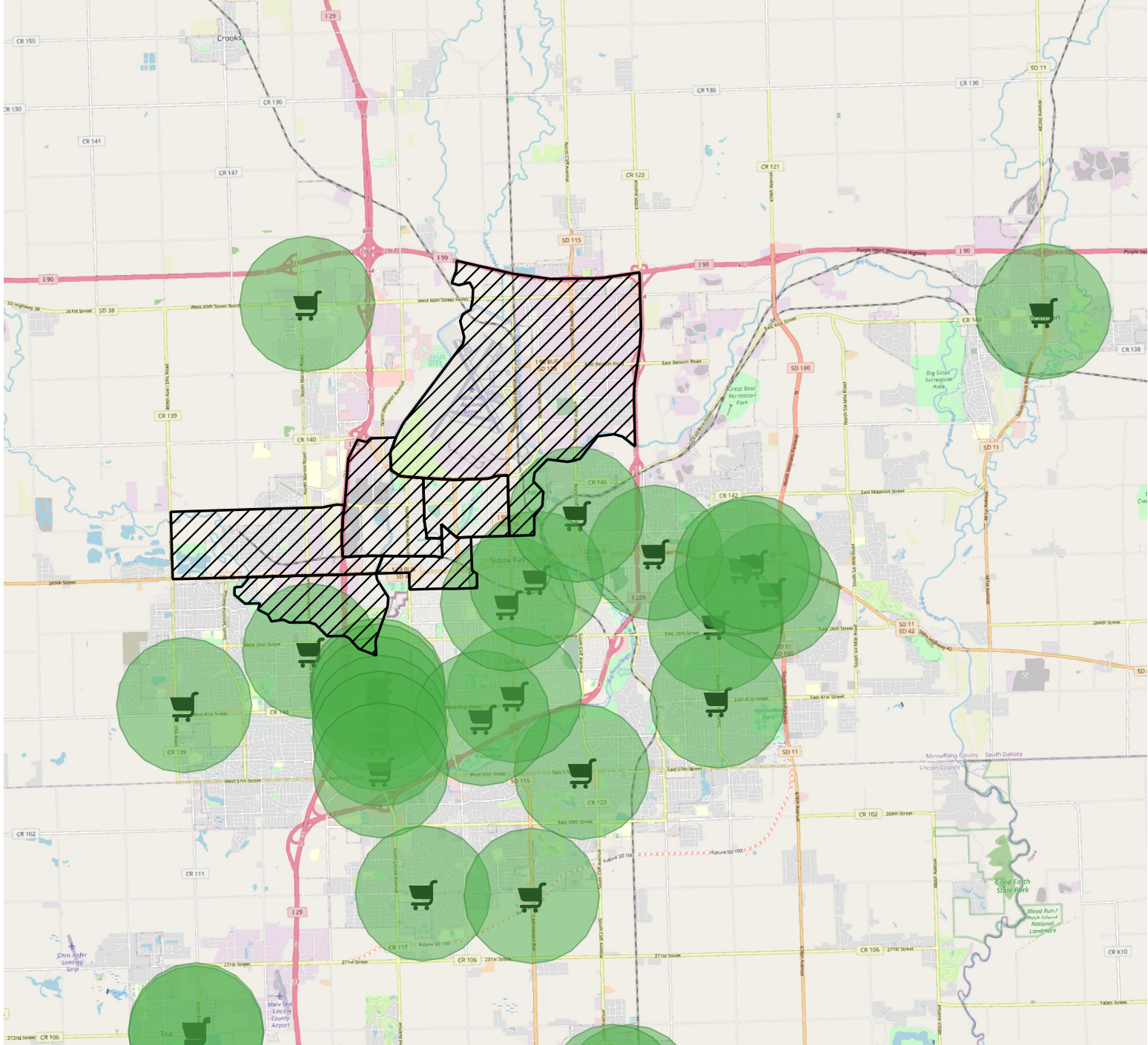
Residents of food desert areas may choose to travel farther in order to shop at supermarkets with wider availability. Indeed, national evidence from SNAP reimbursements suggests that low-income shoppers purchase most of their food at supermarkets: Although convenience stores represent about 44% of total SNAP authorized firms, over 79% of all SNAP benefits are redeemed at supermarkets or super stores (which together make up just 15% of authorized firms). Convenience stores redeem only about 5% of SNAP benefits. Smaller grocery stores (categorized by USDA as small, medium, or large grocery stores) make up nearly 9% of authorized firms and redeem about 4% of SNAP benefits.¹¹

Other limitations of the present study include the fact that the survey did not consider other food sources, such as prepared food from fast food restaurants or gas stations and convenience stores. Nor did it address the number of varieties of foods within each of the 19 surveyed categories. For example, a store that carries one variety of whole apples near the cash register was categorized as having fresh fruit available, the same as a supermarket with multiple varieties of apples plus myriad other fruits.




¹¹ SNAP Fiscal Year 2021 Year End Summary (online at www.fns.usda.gov/snap/retailer/data)

6 Appendix

Supermarkets and Food Deserts in Sioux Falls

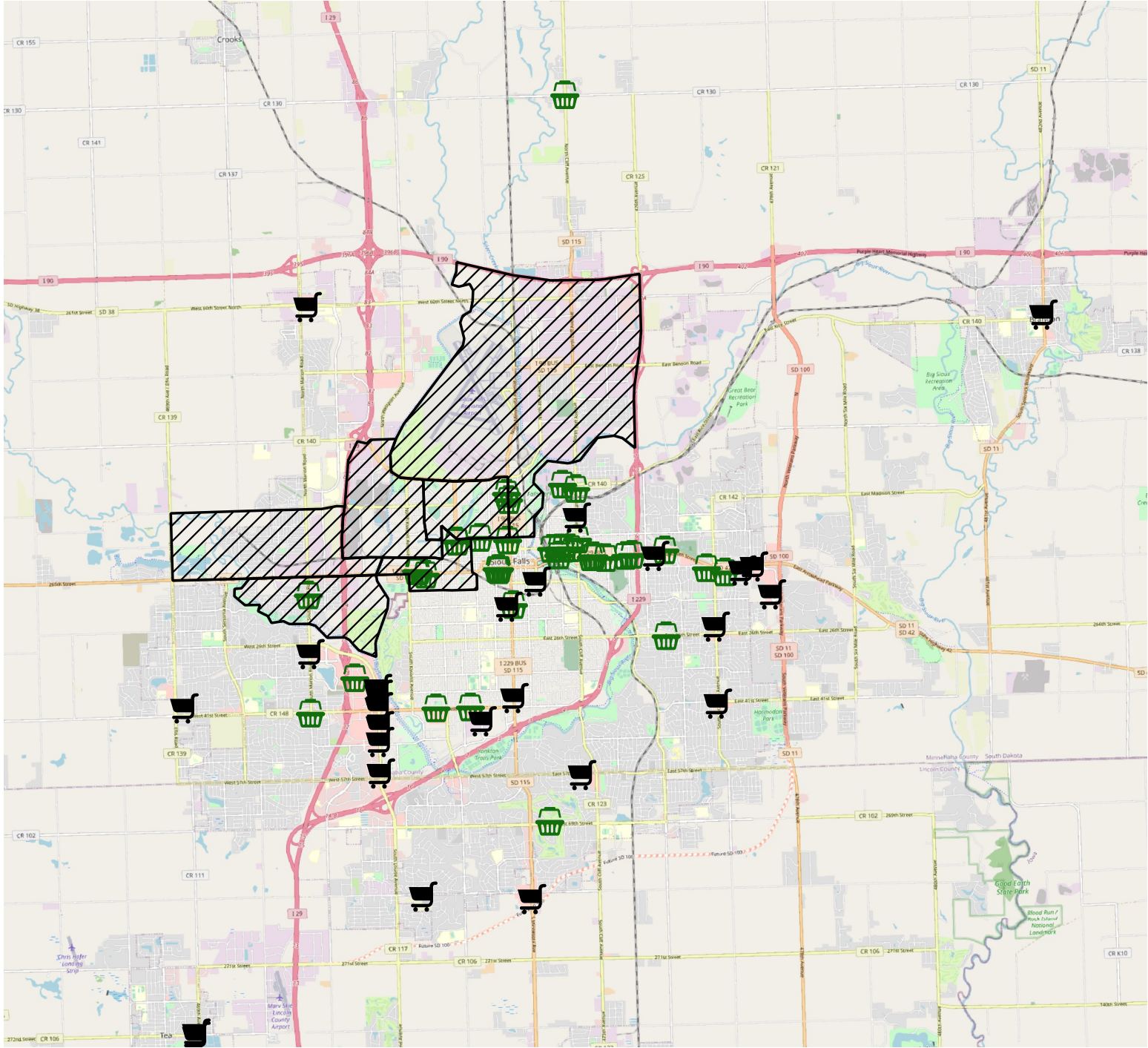


Legend



-  Food Desert (1 mile)
-  Supermarkets
-  1 mile radius

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

Grocery Stores and Food Deserts in Sioux Falls



Legend



-  Food Desert (1 mile)
-  Supermarkets
-  Grocery stores

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

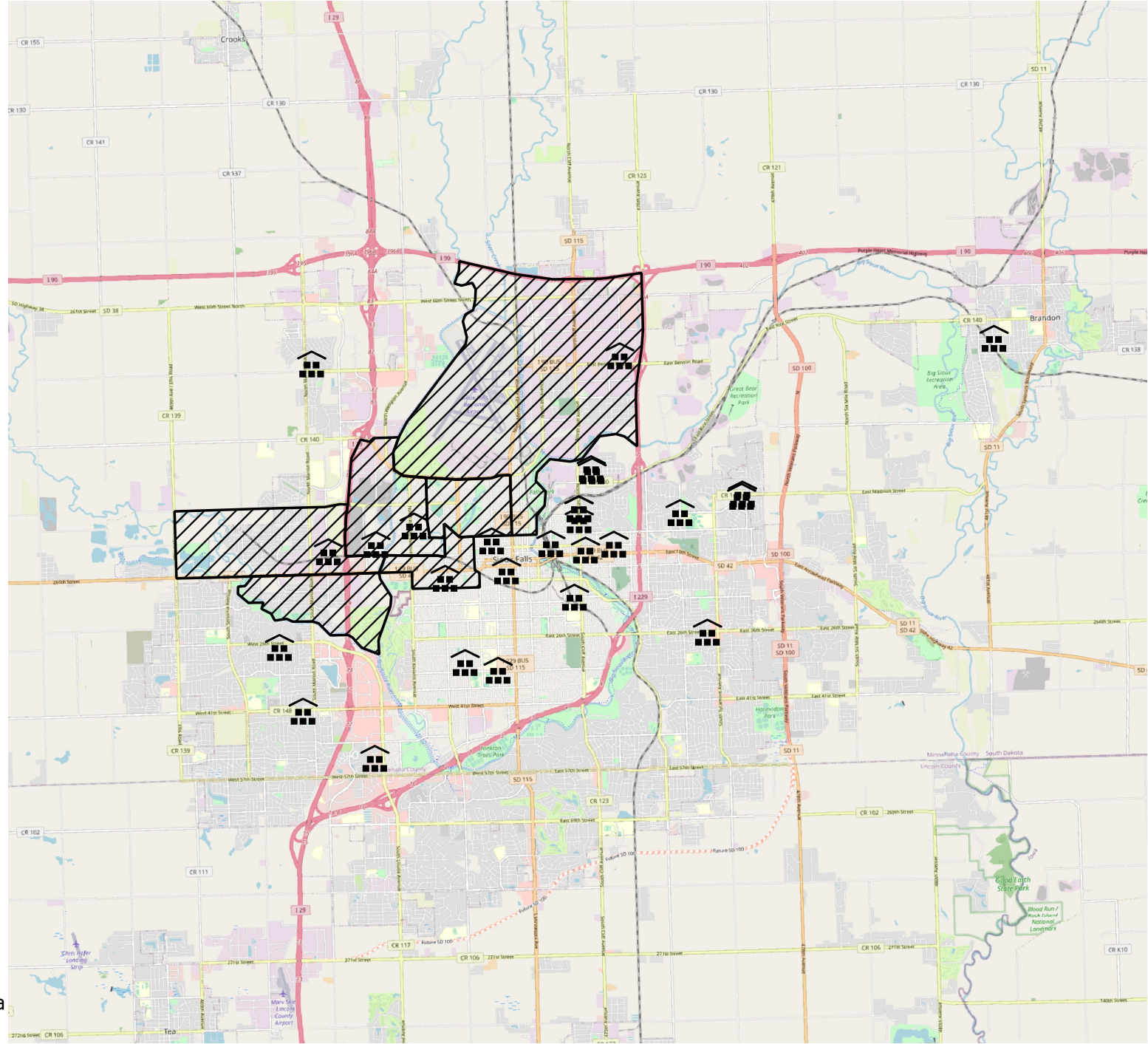
Food Distribution and Food Deserts in Sioux Falls

Pantries/Giveaways

Legend

-  Food Desert (1 mile)
-  Food Distribution (Pantry/Giveaway)



Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



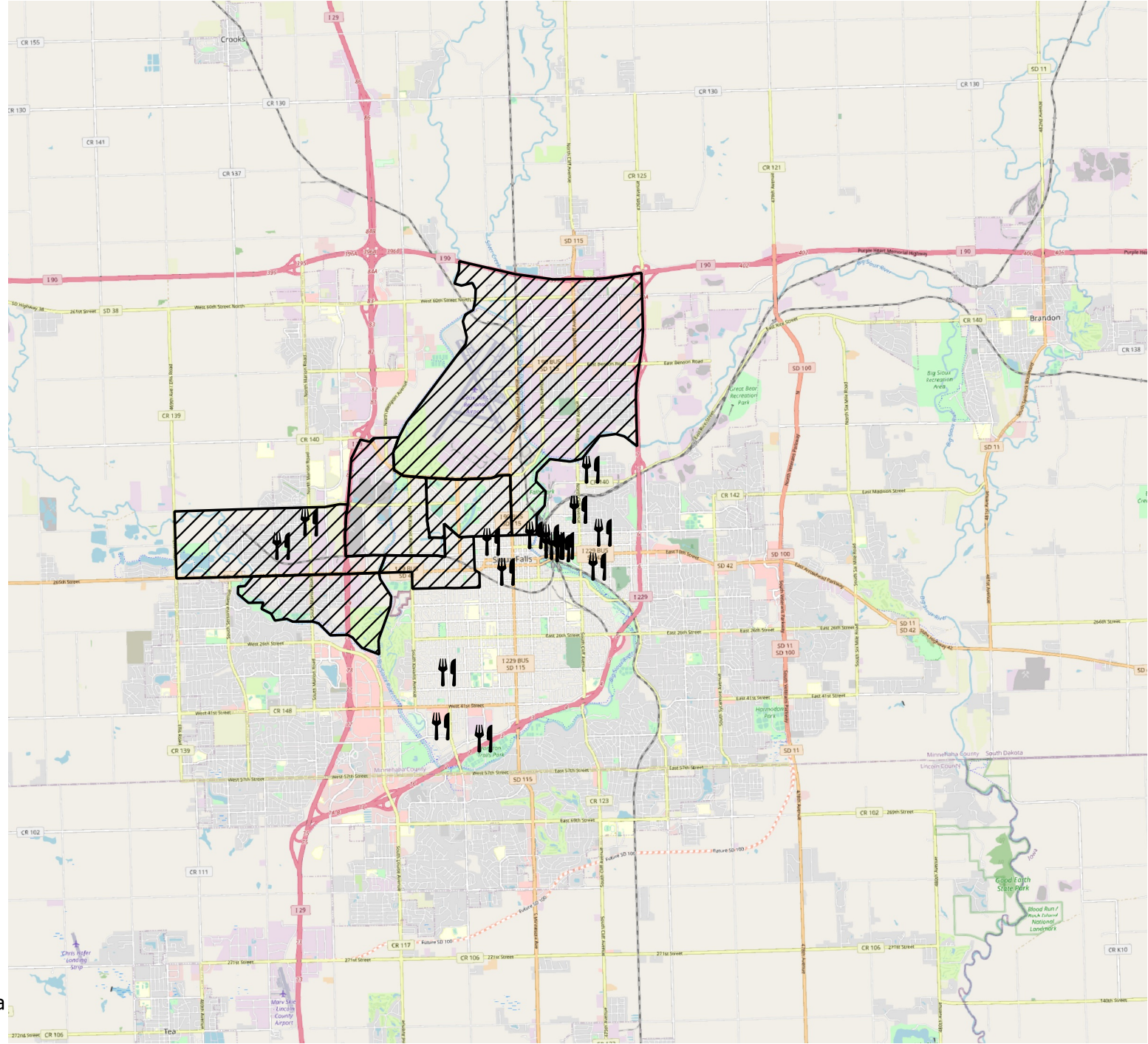
Food Distribution and Food Deserts in Sioux Falls

Meals

Legend

-  Food Desert (1 mile)
-  Food Distribution (Meal)

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Transportation and Food Deserts in Sioux Falls

Legend

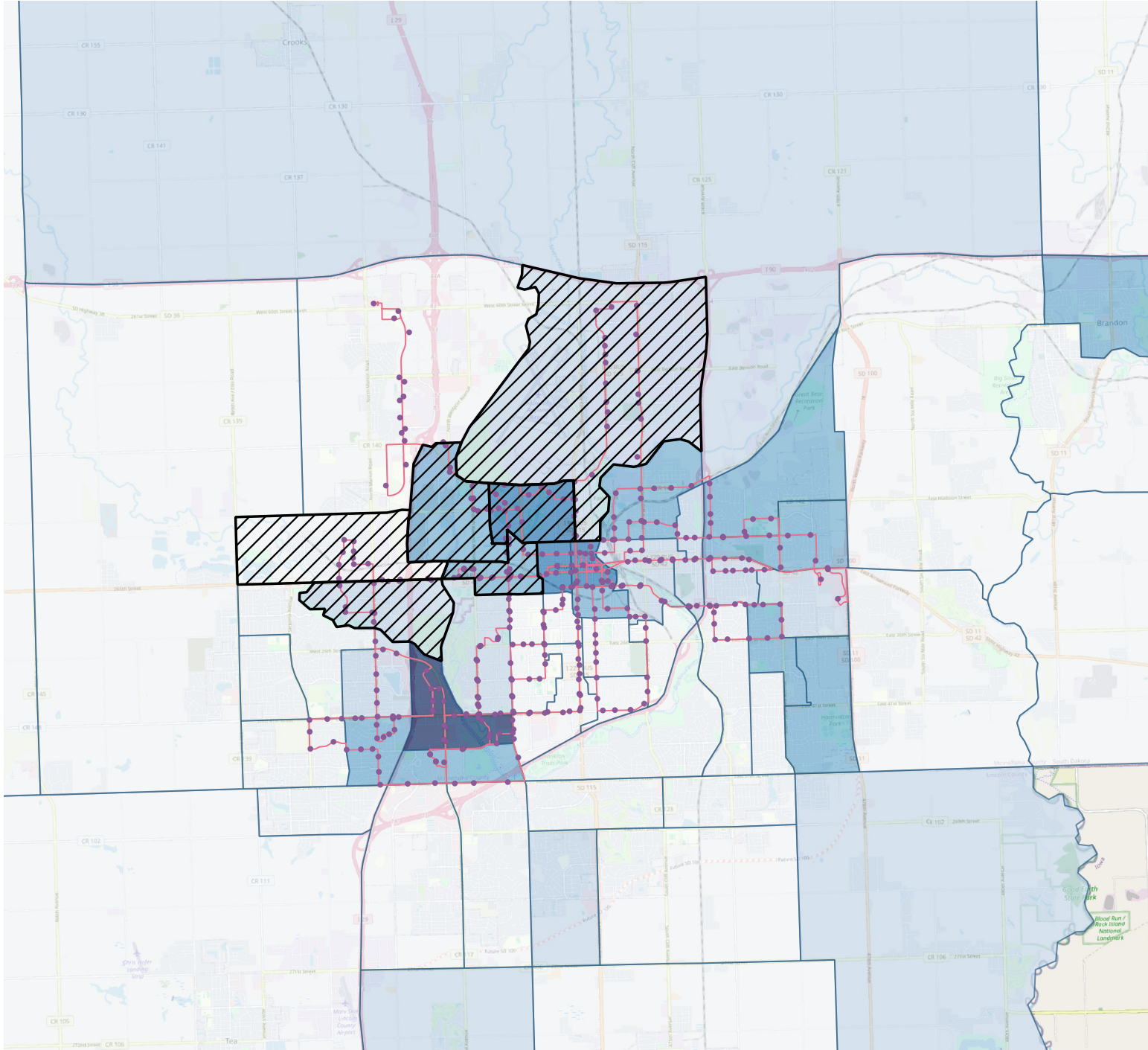
Households with No Vehicle (%)

- 0 - 2%
- 2 - 6%
- 6 - 12%
- 12 - 18%
- 18 - 23%

Food Desert (1 mile)







- Bus_Routes
- Bus_Stops

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

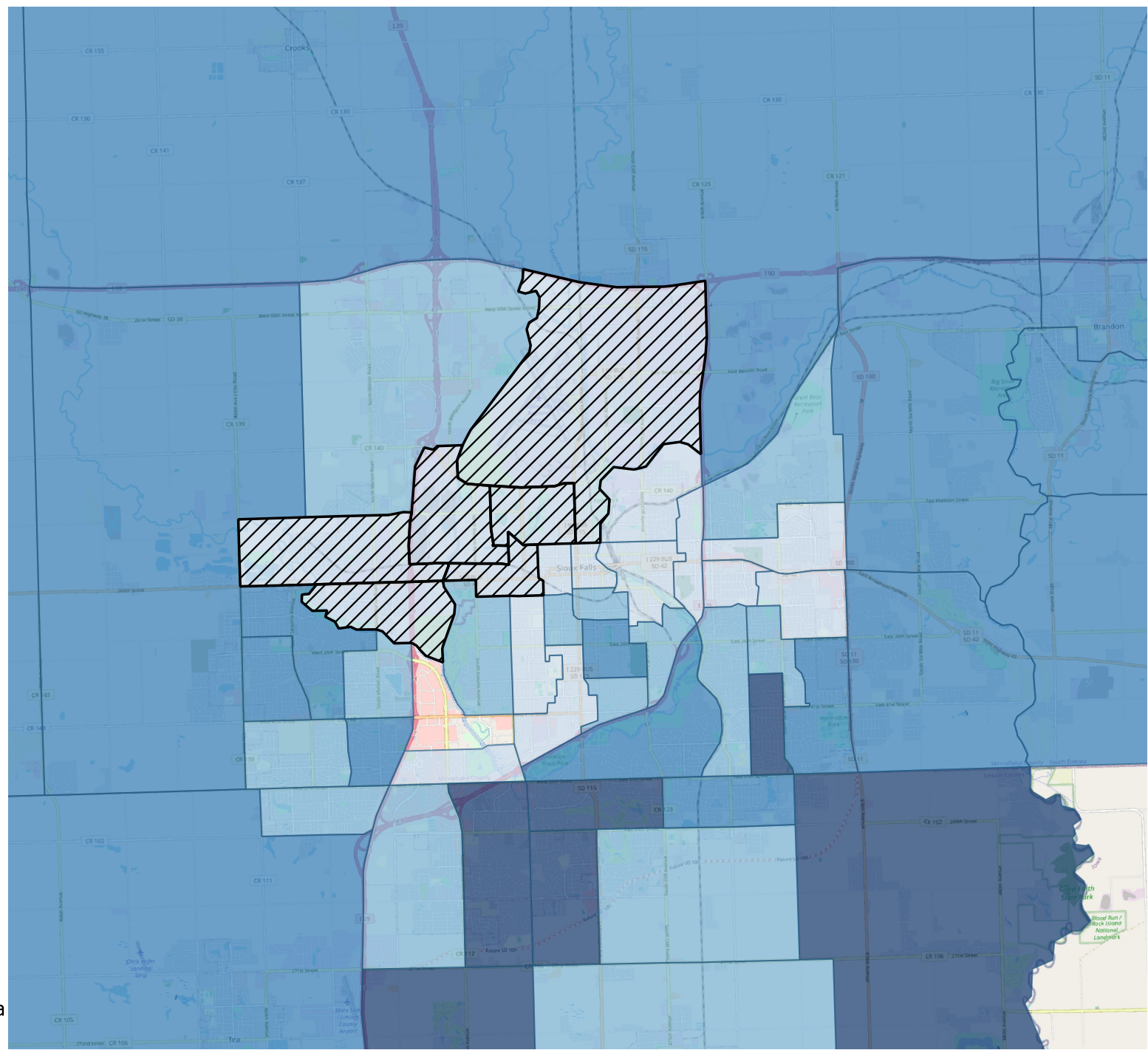


Median Income and Food Deserts in Sioux Falls

Legend







-  Food Desert (1 mile)
- Median Family Income
 -  No Data
 -  \$0 - 65,656
 -  \$65,656 - 88,542
 -  \$88,542 - 115,268
 -  \$115,268 - 157,188

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

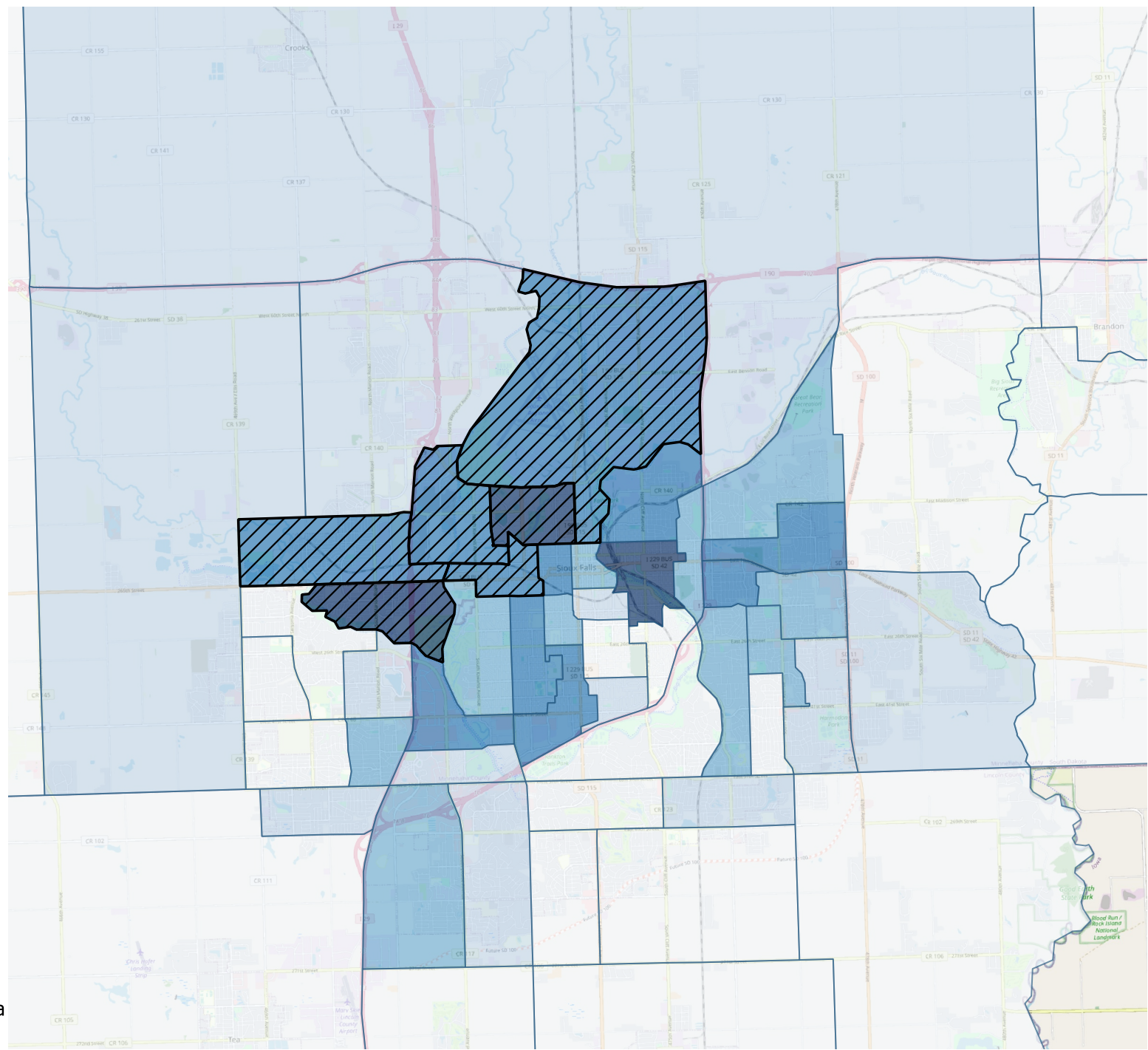


Poverty and Food Deserts in Sioux Falls

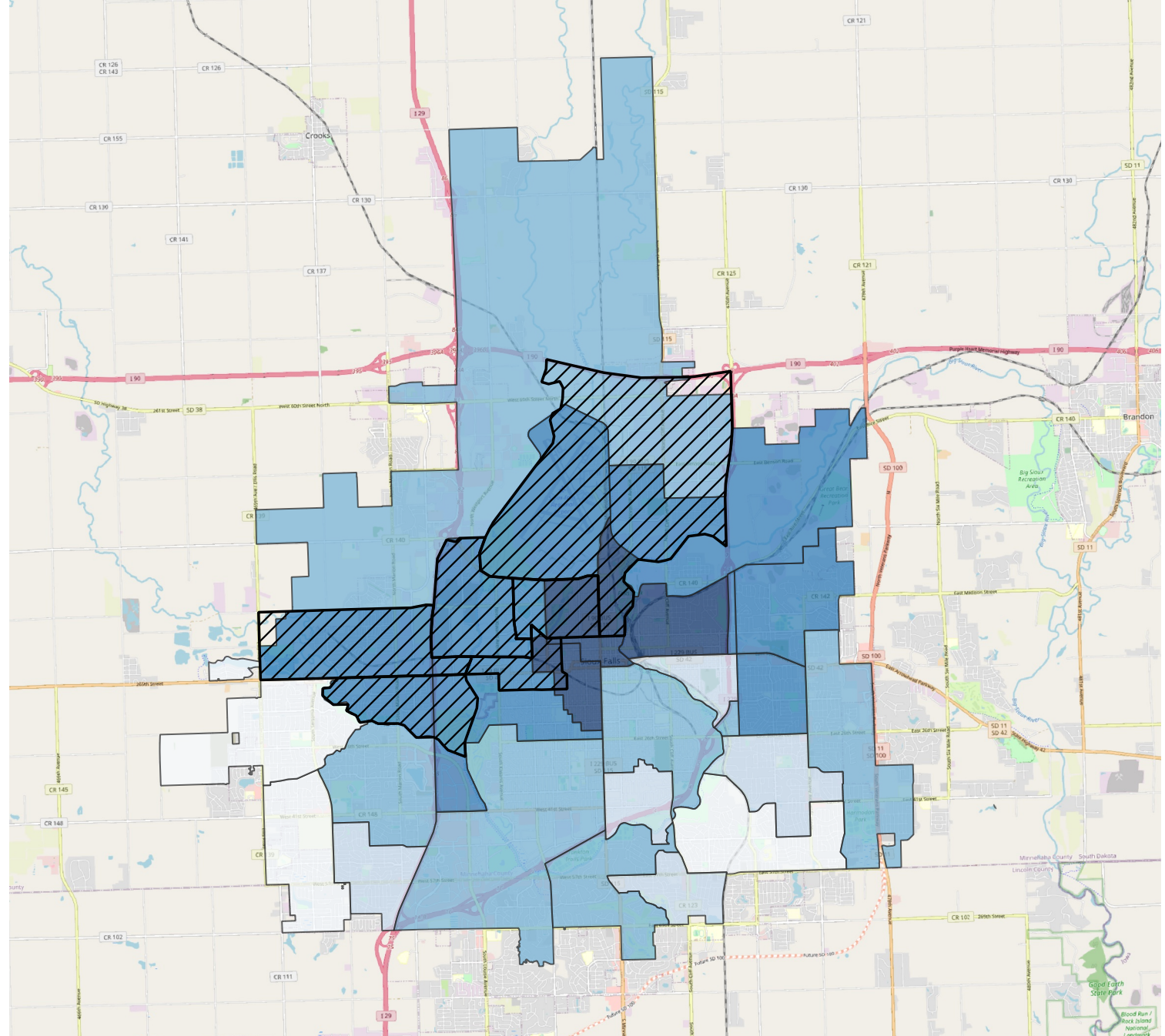
Legend

-  Food Desert (1 mile)
- Poverty Rate**
-  0 - 4%
-  4 - 9%
-  9 - 14%
-  14 - 19%
-  19 - 23%

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Elementary Free or Reduced Price Meals and Food Deserts in Sioux Falls



Legend

- Food Desert (1 mile)
- Free or Reduced Price Meals (%)
- 15 - 18%
 - 18 - 30%
 - 30 - 53%
 - 53 - 75%
 - 75 - 90+%

Percent of elementary students who are eligible for free or reduced price meals, per 2021 fall enrollment, by elementary enrollment area.






Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

SNAP and Food Deserts in Sioux Falls

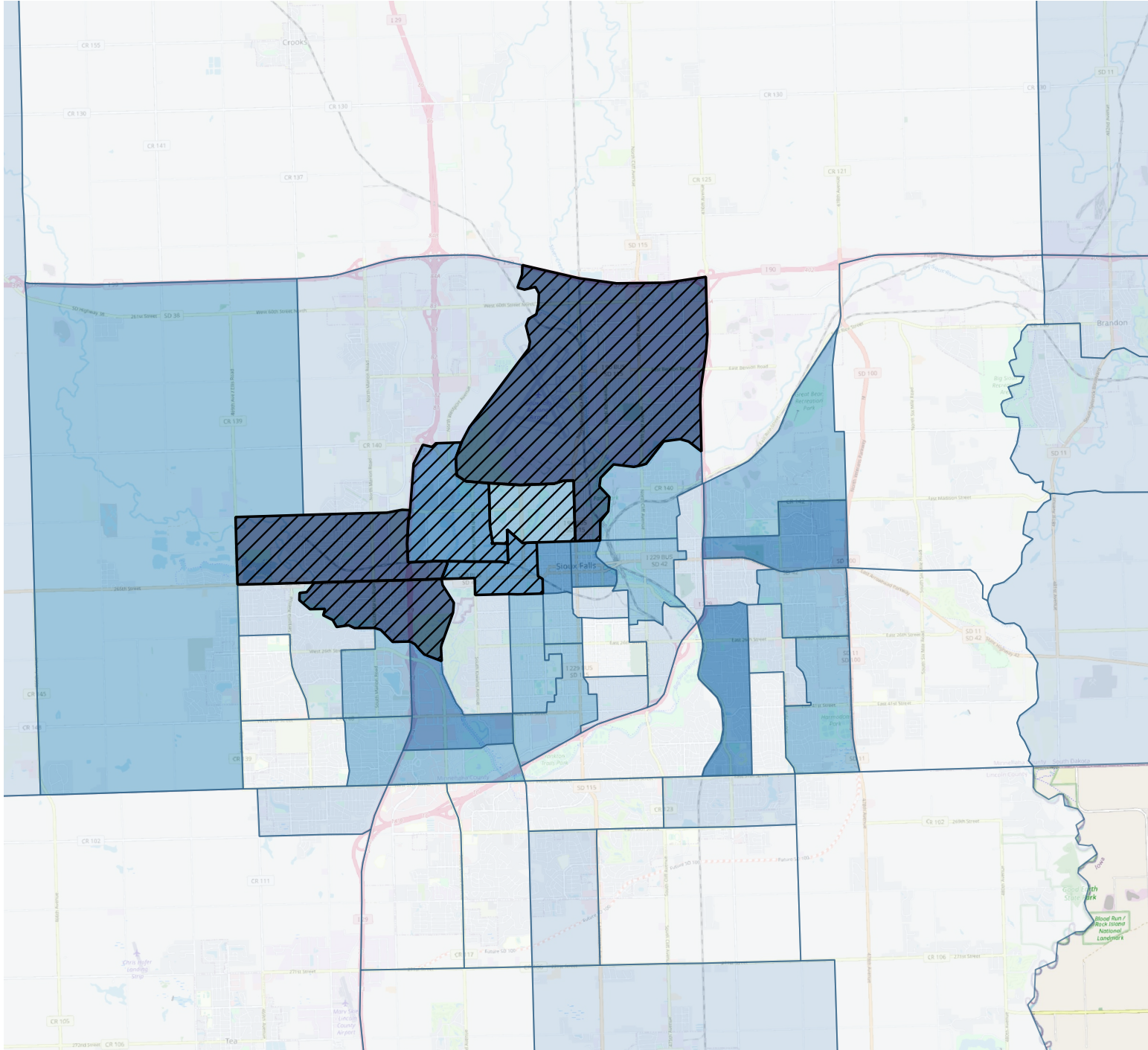
Legend

 Food Desert (1 mile)

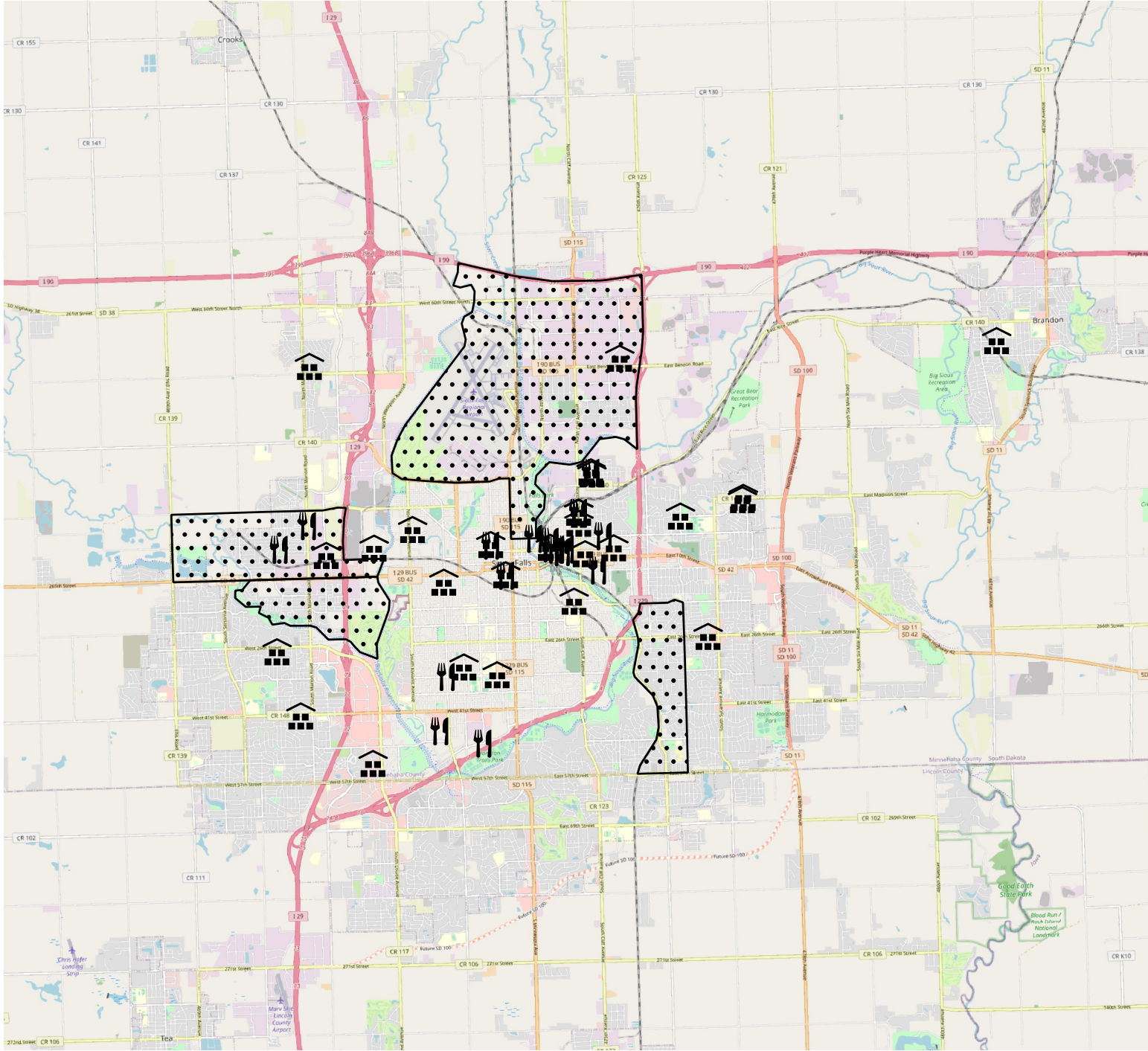
SNAP Recipients
(% of Households)

-  0 - 2%
-  2 - 8%
-  8 - 14%
-  14 - 20%
-  20 - 25%




Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Food Distributions and SNAP in Sioux Falls









Legend

-  SNAP Recipients (> 20% of Households)
-  Food Distribution (Pantry/Giveaway)
-  Food Distribution (Meal)

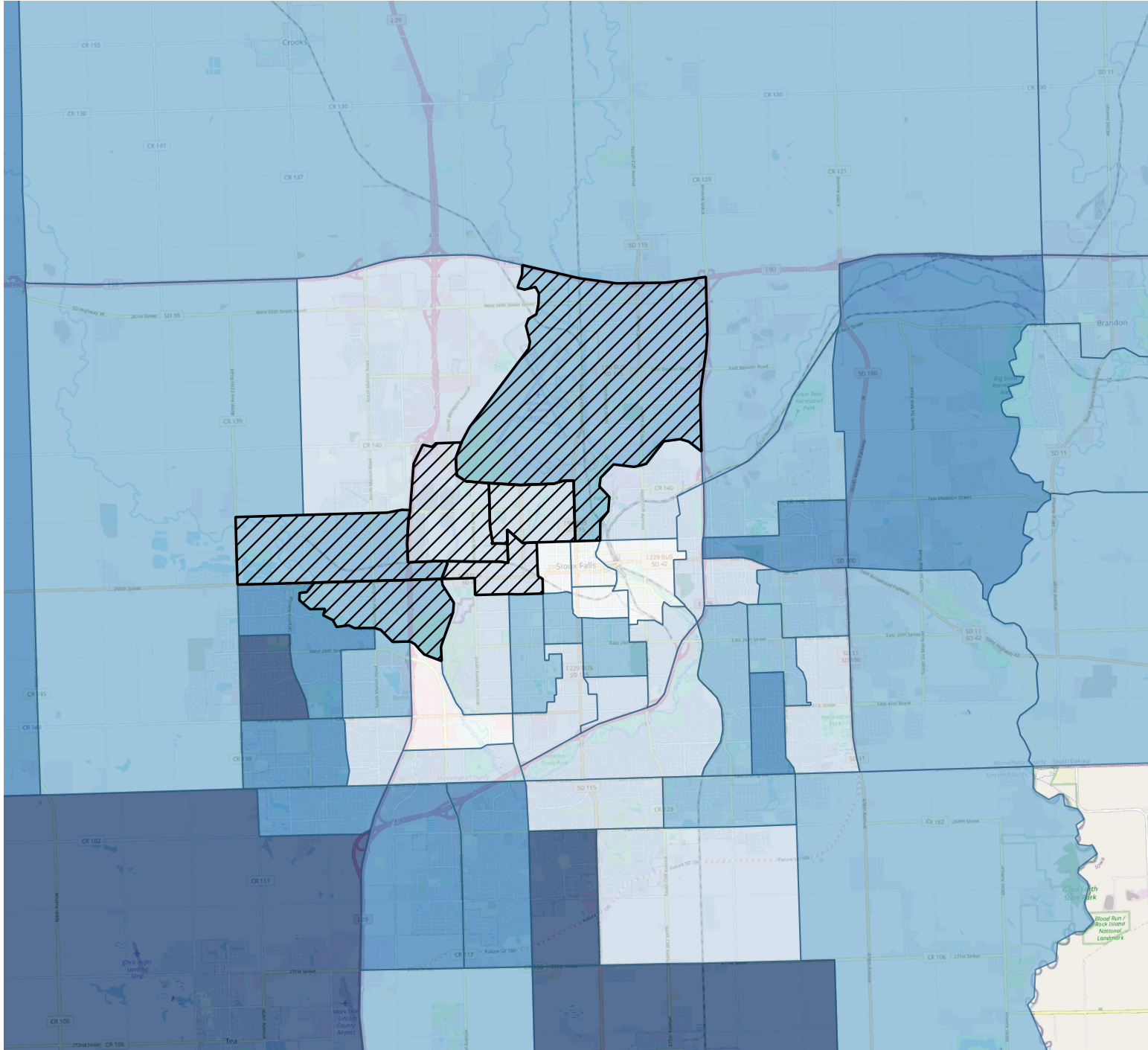
Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

Children and Food Deserts in Sioux Falls

Legend

-  Food Desert (1 mile)
- Households with Children (%)
 -  4 - 18%
 -  18 - 29%
 -  29 - 38%
 -  38 - 48%
 -  48 - 61%







Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



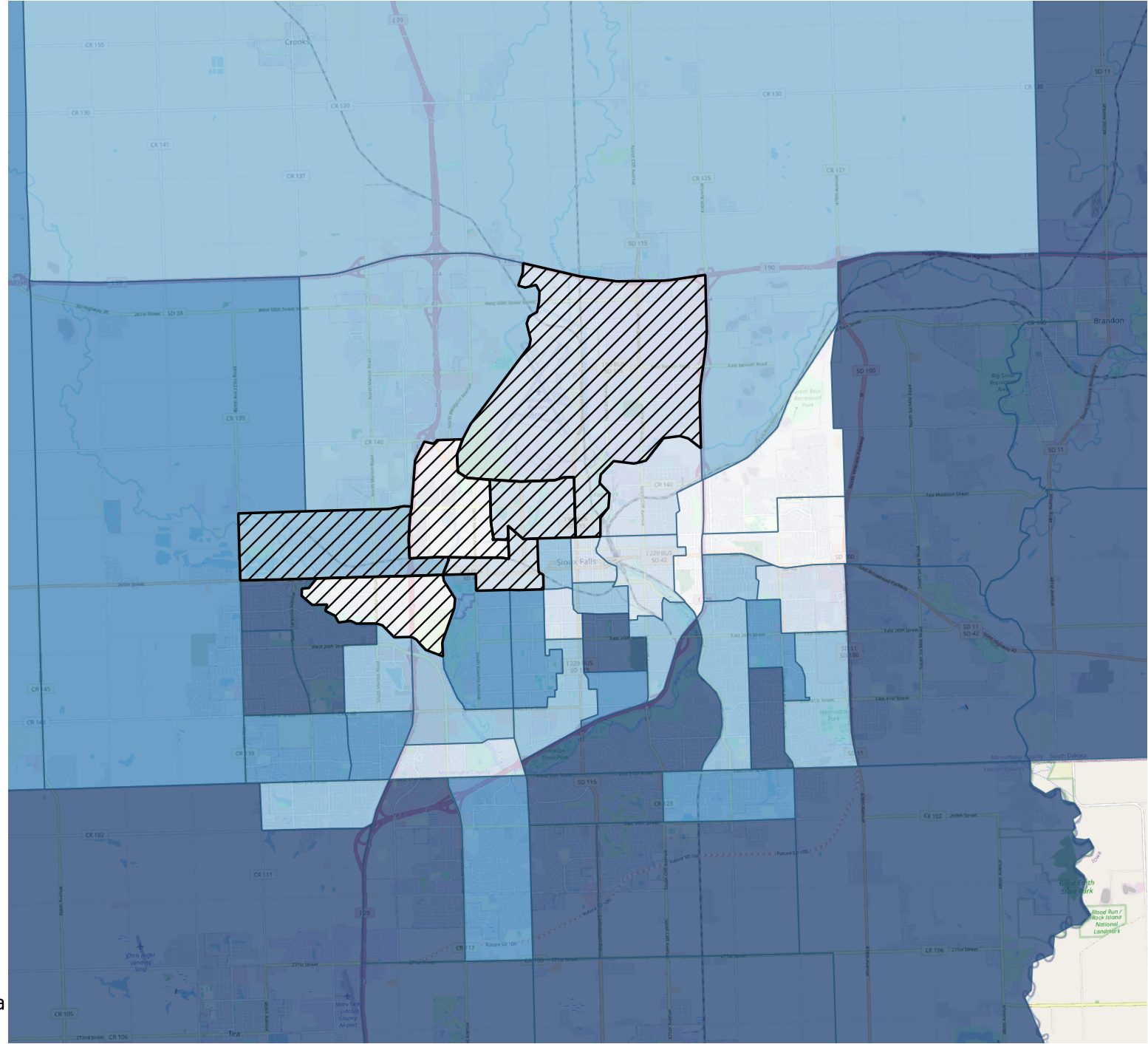
Race and Ethnicity and Food Deserts in Sioux Falls

White,
not Hispanic or Latino

Legend

-  Food Desert (1 mile)
- White, not Hispanic/Latino (%)
 -  50 - 60%
 -  60 - 73%
 -  73 - 84%
 -  84 - 92%
 -  92 - 100%







Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



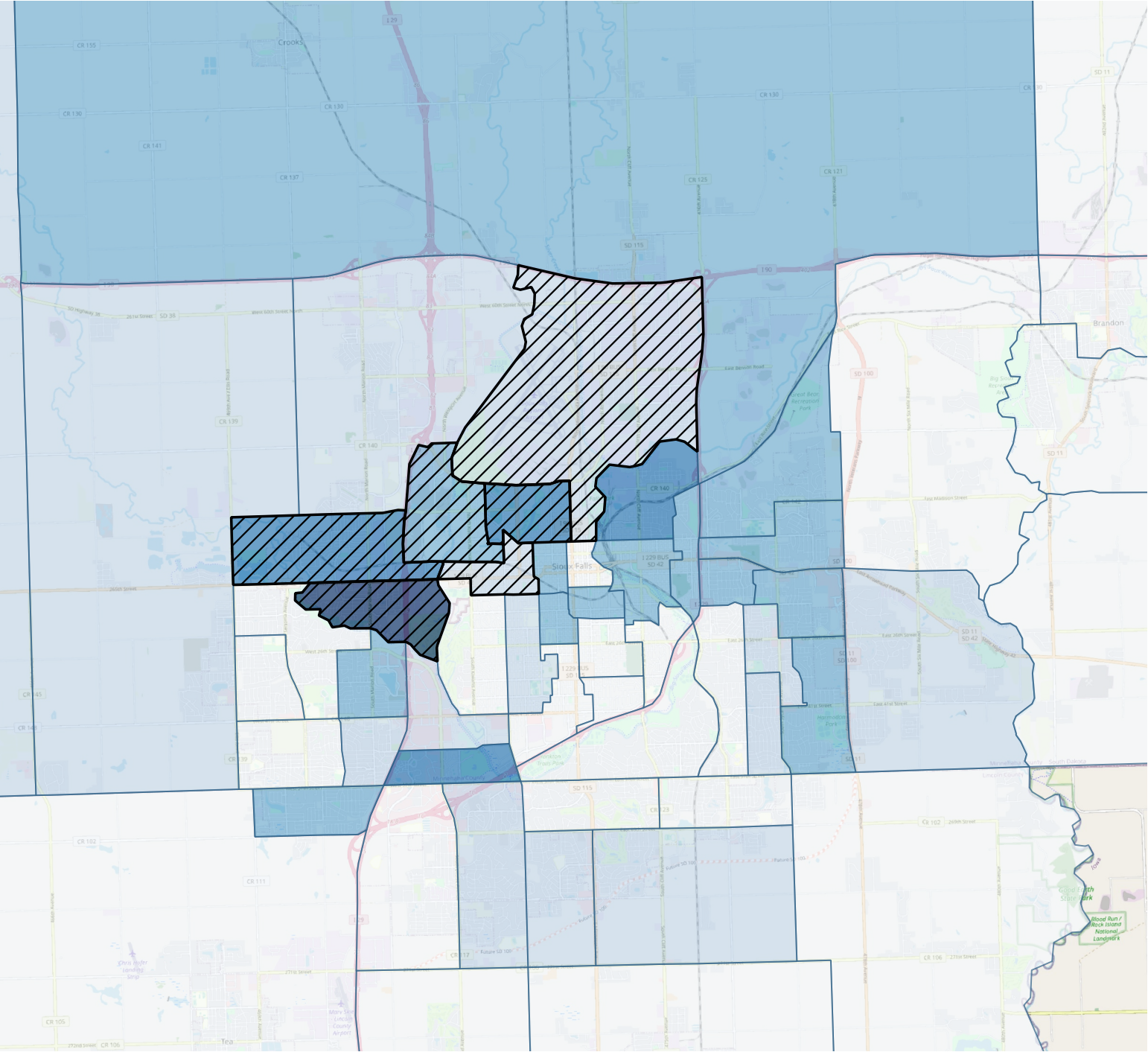
Race and Ethnicity and Food Deserts in Sioux Falls

Hispanic or Latino
(any race)

Legend

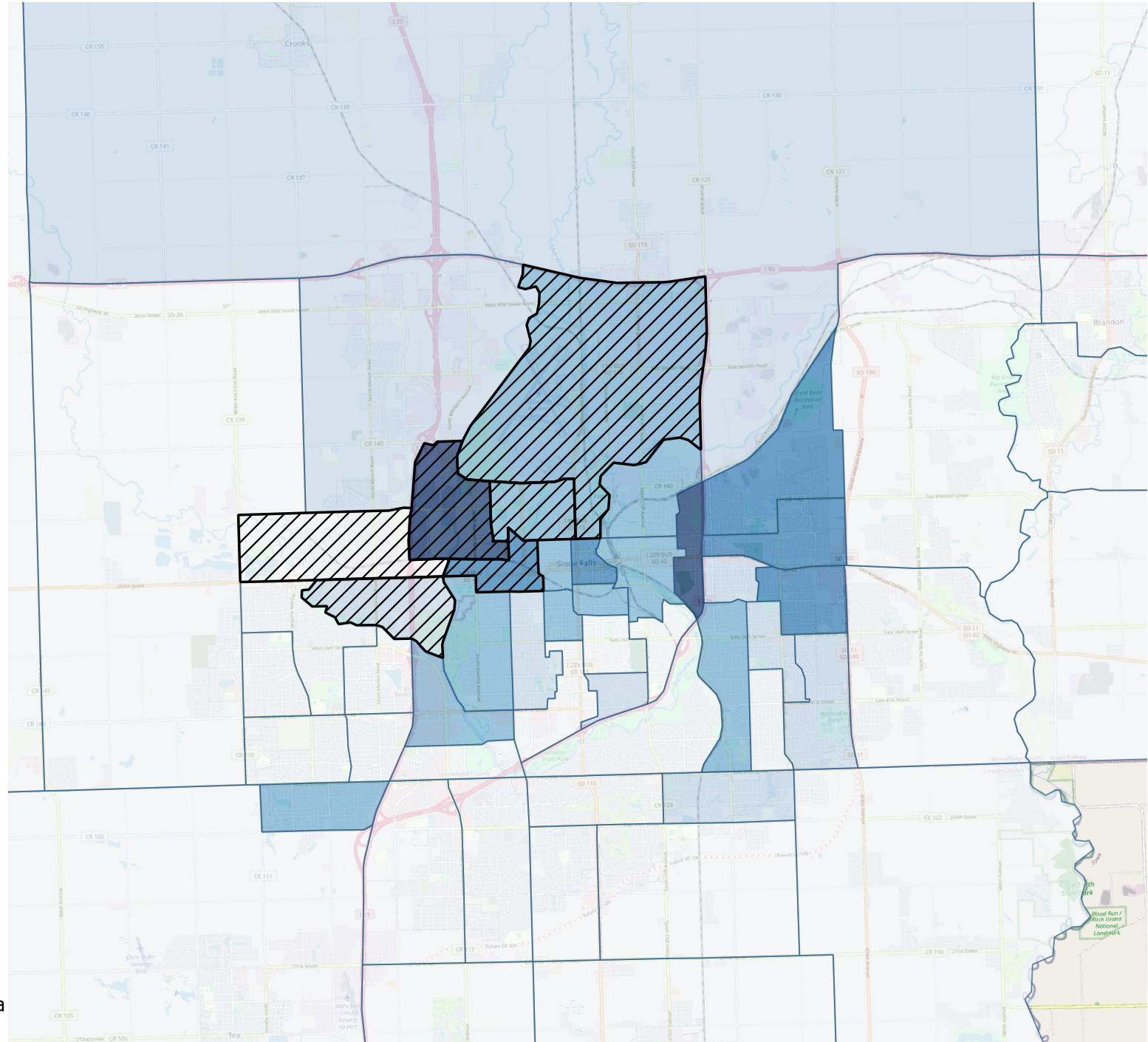
-  Food Desert (1 mile)
- Hispanic/Latino (%)
 -  0 - 2%
 -  2 - 5%
 -  5 - 9%
 -  9 - 18%
 -  18 - 31%

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Race and Ethnicity and Food Deserts in Sioux Falls


Black or African American





Legend


 Food Desert (1 mile)


Black (%)

 0 - 2%

 2 - 7%

 7 - 14%

 14 - 22%







 22 - 28%

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

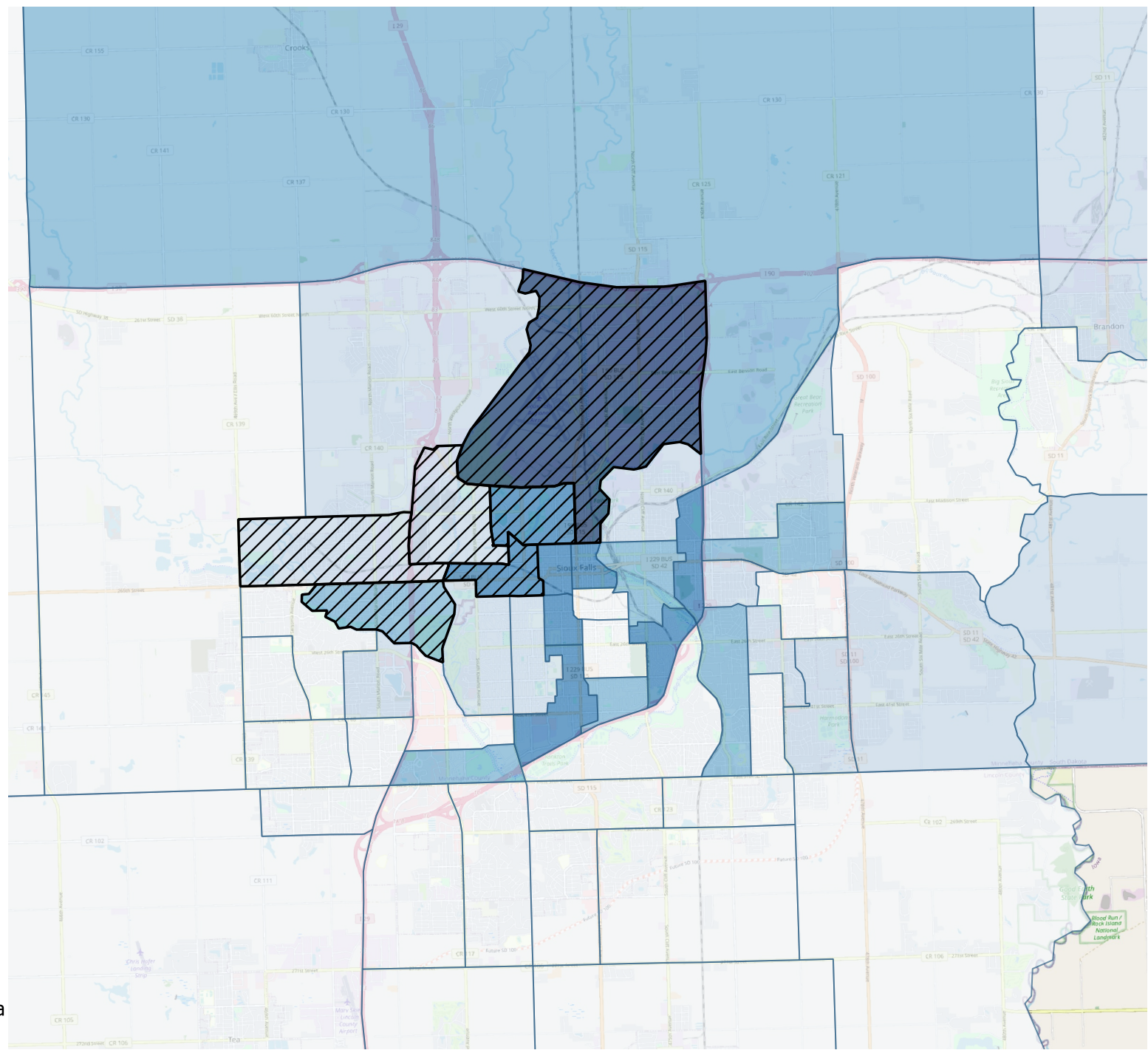
Race and Ethnicity and Food Deserts in Sioux Falls

American Indian or Alaska Native

Legend

-  Food Desert (1 mile)
- Native American (%)**
-  0 - 0.5%
-  0.5 - 1.8%
-  1.8 - 3.6%
-  3.6 - 5.7%
-  5.7 - 13.9%


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



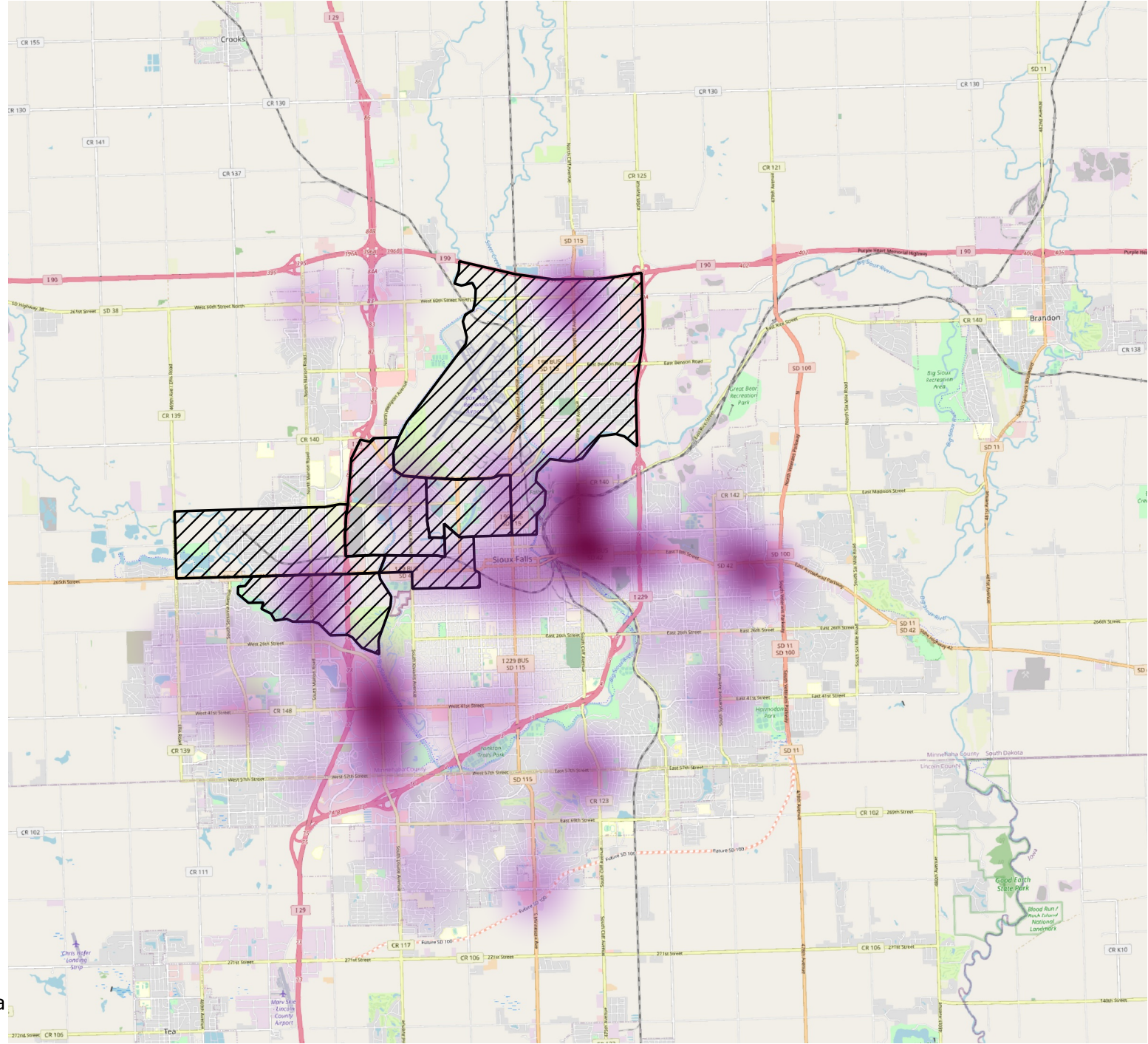
Food Availability in Sioux Falls

Fresh Fruit

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where fresh fruits are available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



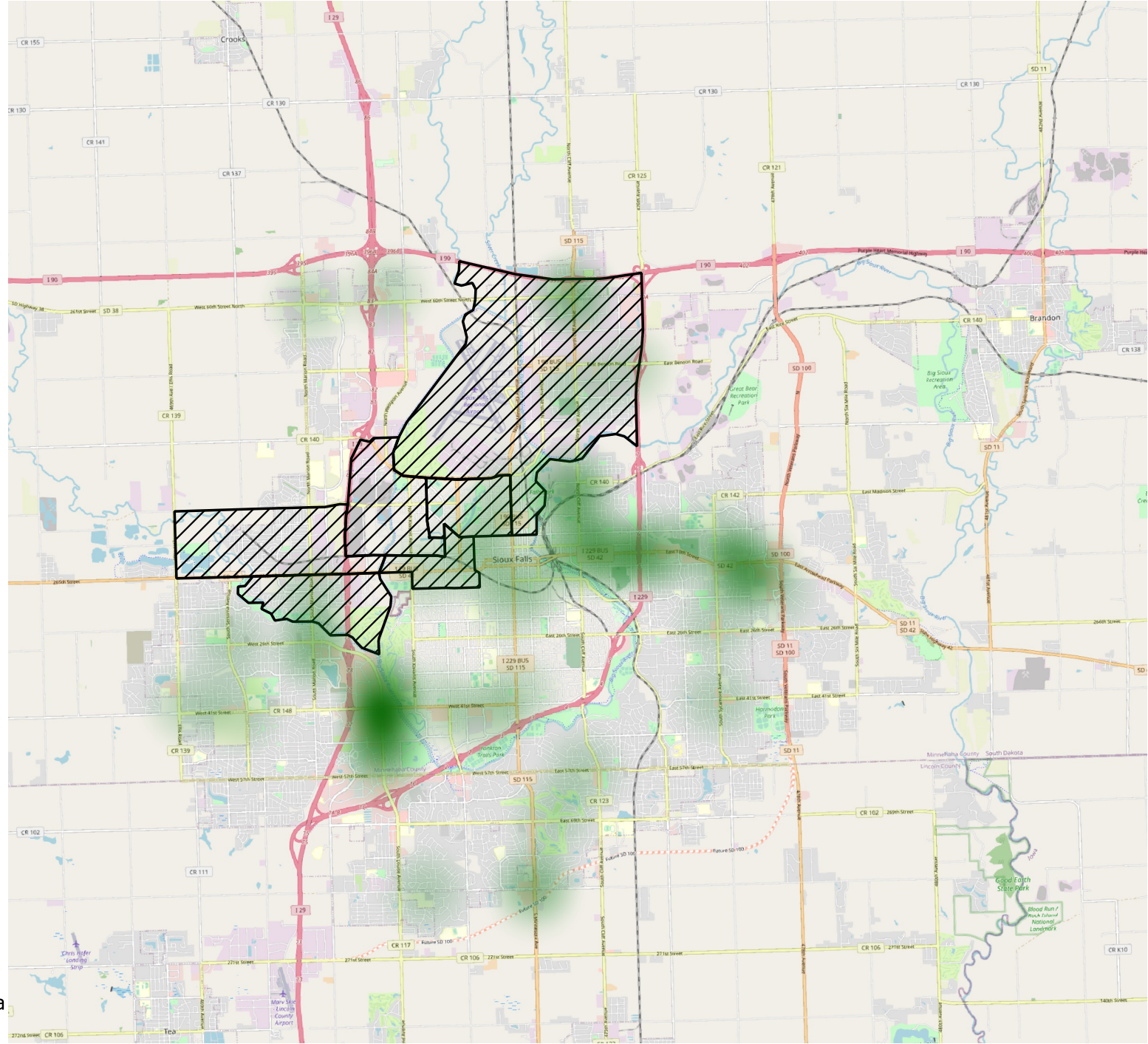
Food Availability in Sioux Falls

Leafy Greens

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where leafy greens are available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Food Availability in Sioux Falls

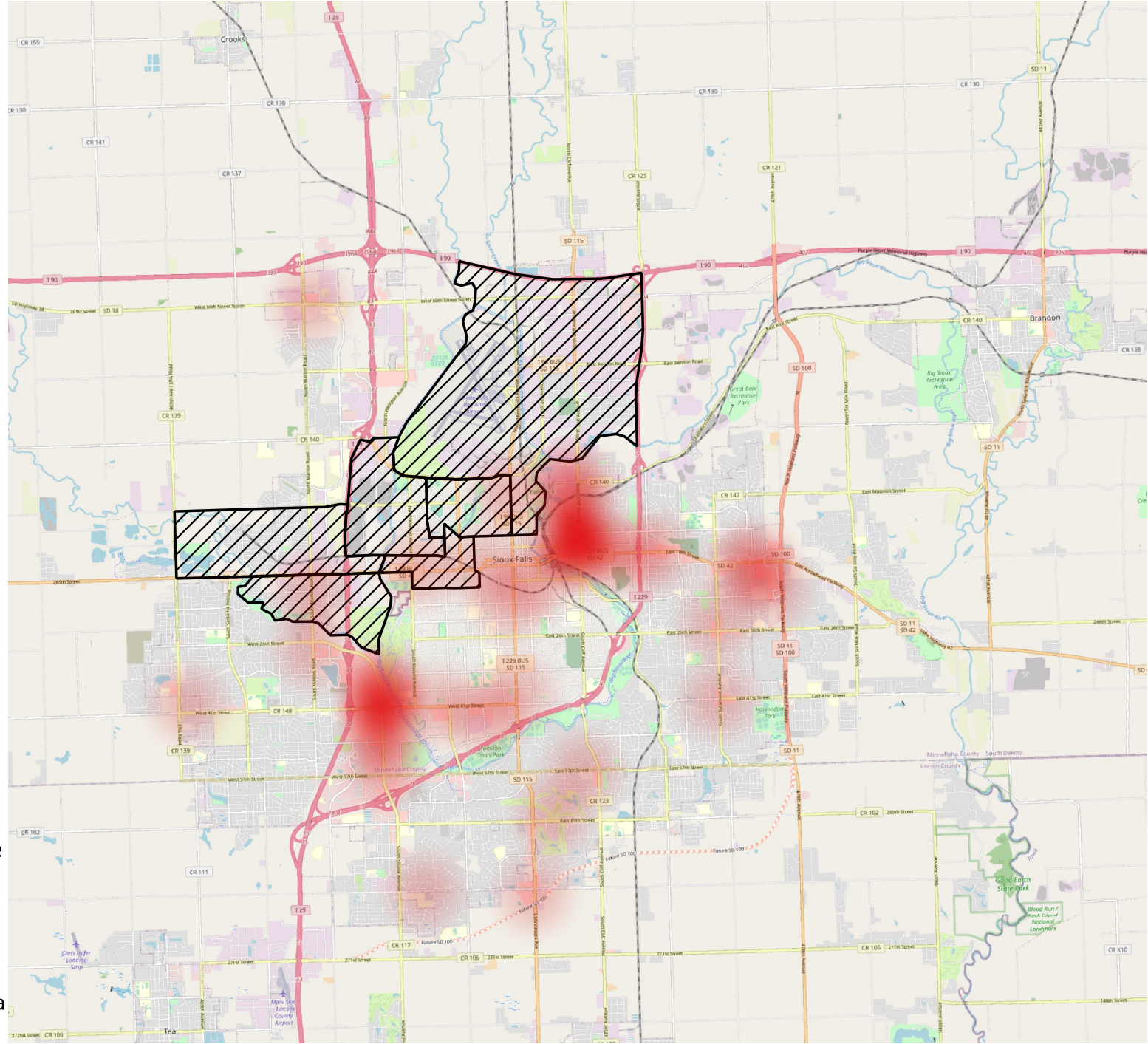
Red Vegetables

Legend

 Food Desert (1 mile)

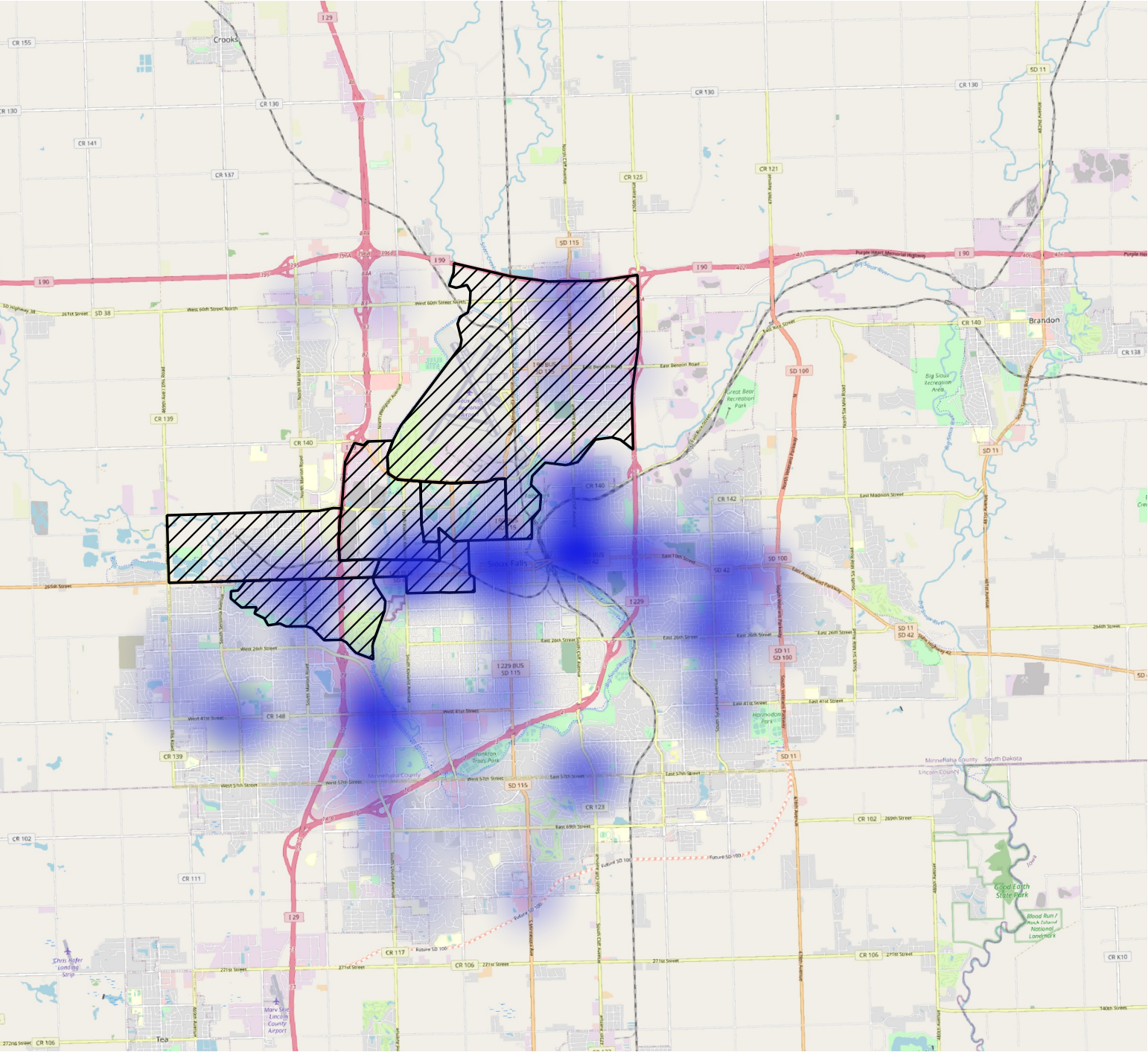
Shaded areas show the locations of stores where red vegetables are available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022




Food Availability in Sioux Falls

Milk



Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where milk is available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

Food Availability in Sioux Falls

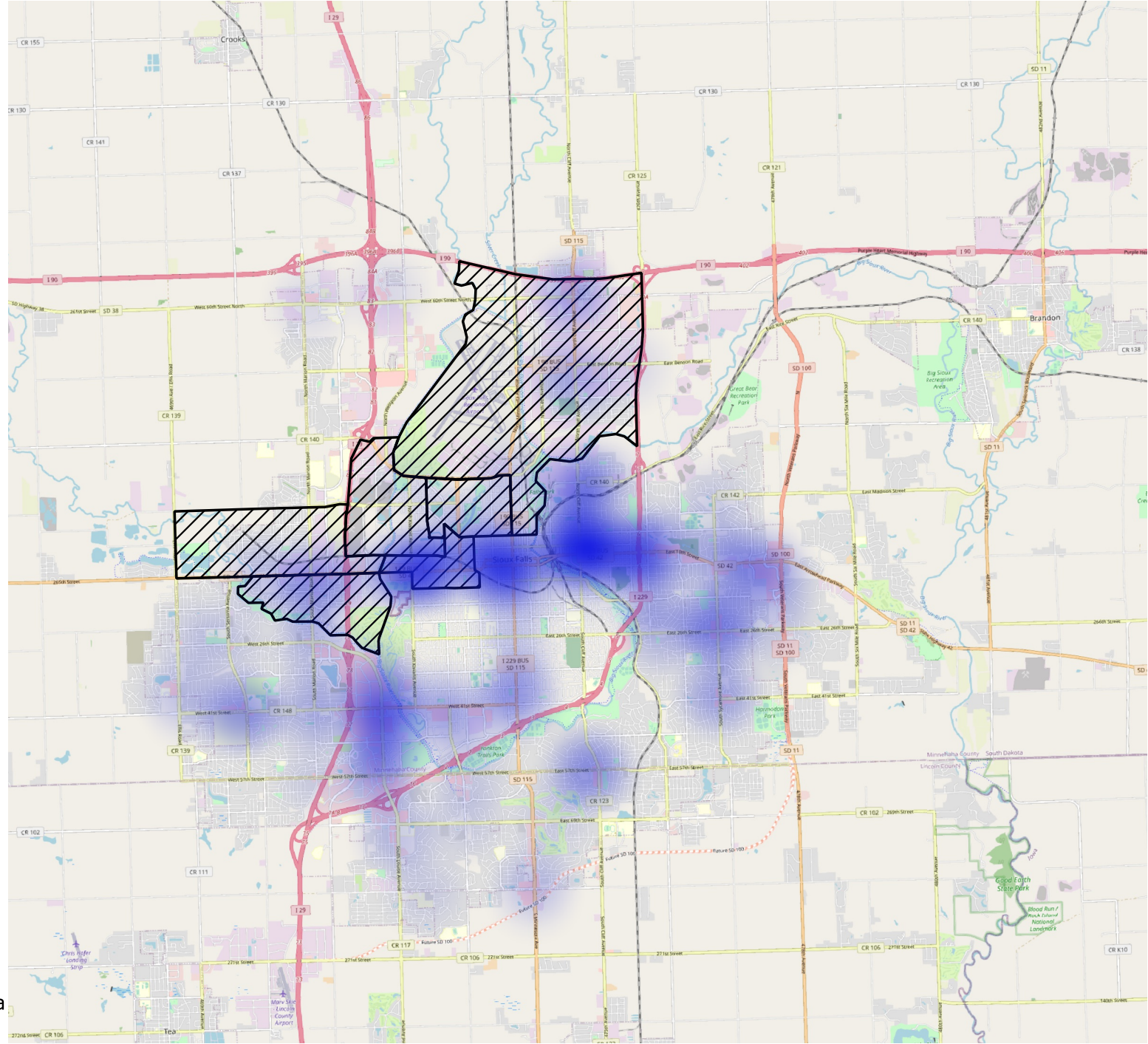
Other Dairy

Legend

 Food Desert (1 mile)

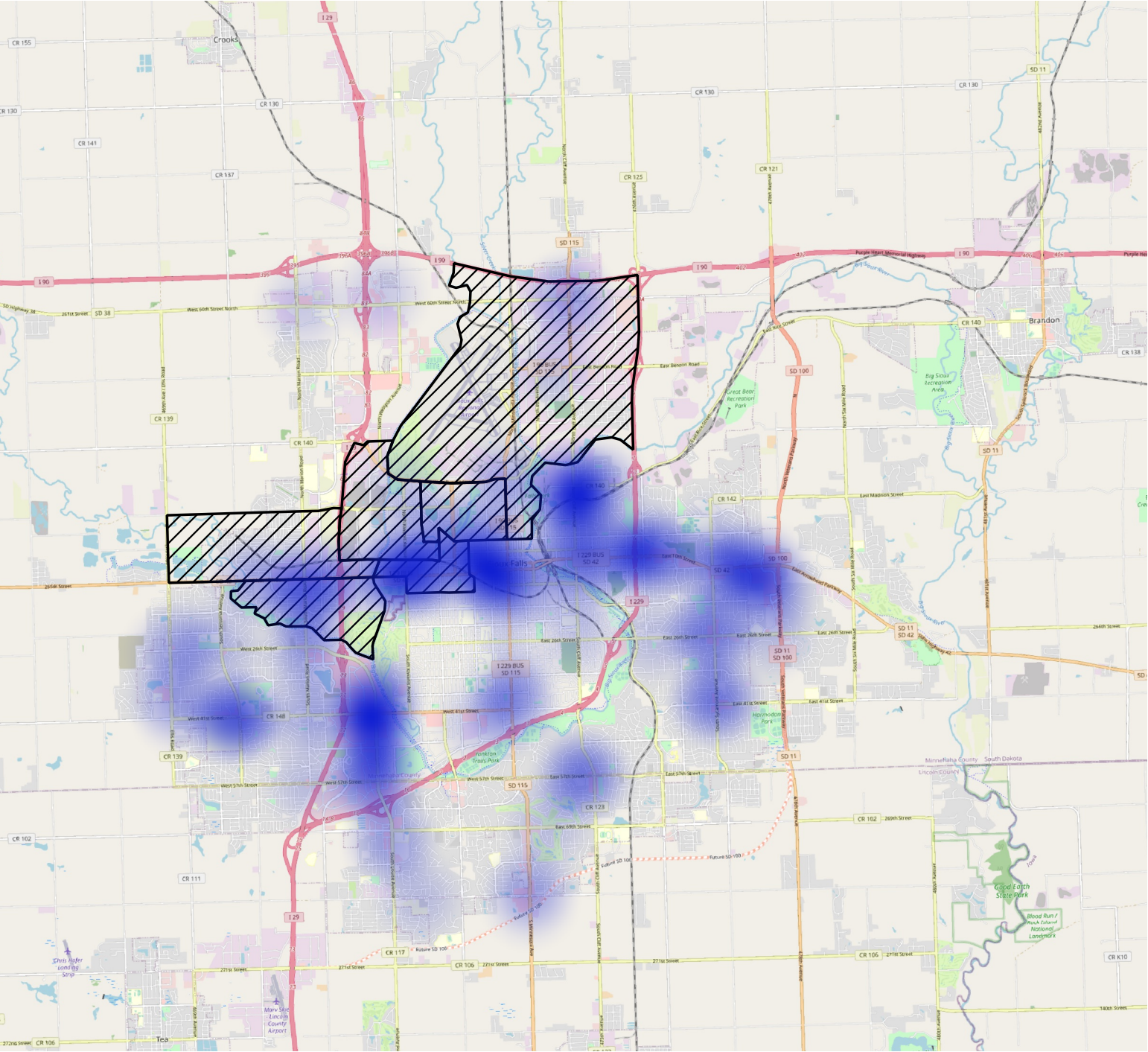
Shaded areas show the locations of stores where other dairy items are available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022




Food Availability in Sioux Falls

Eggs



Legend


-  Food Desert (1 mile)
- Shaded areas show the locations of stores where eggs are available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

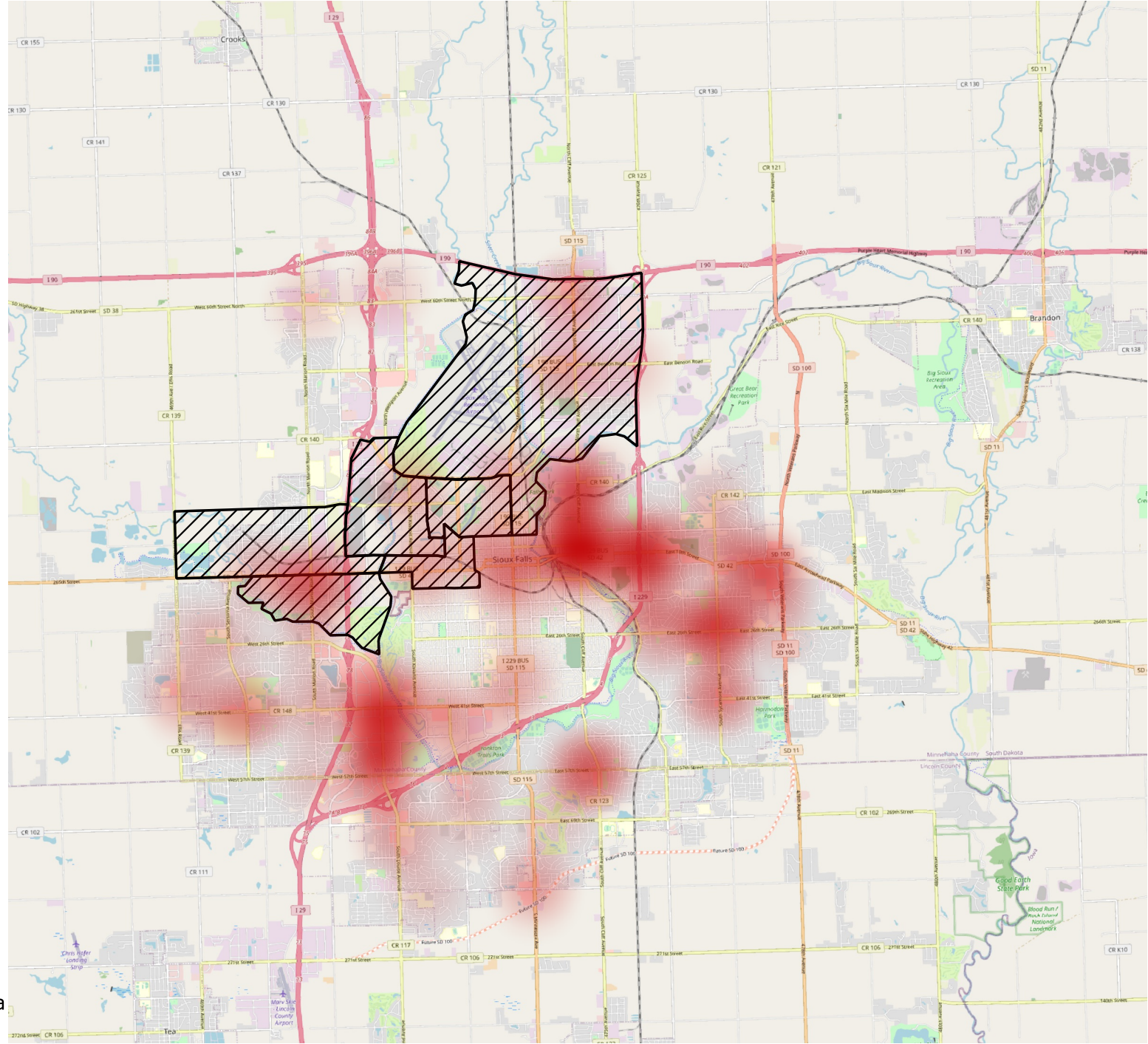
Food Availability in Sioux Falls

Fresh Meat

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where fresh meat is available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



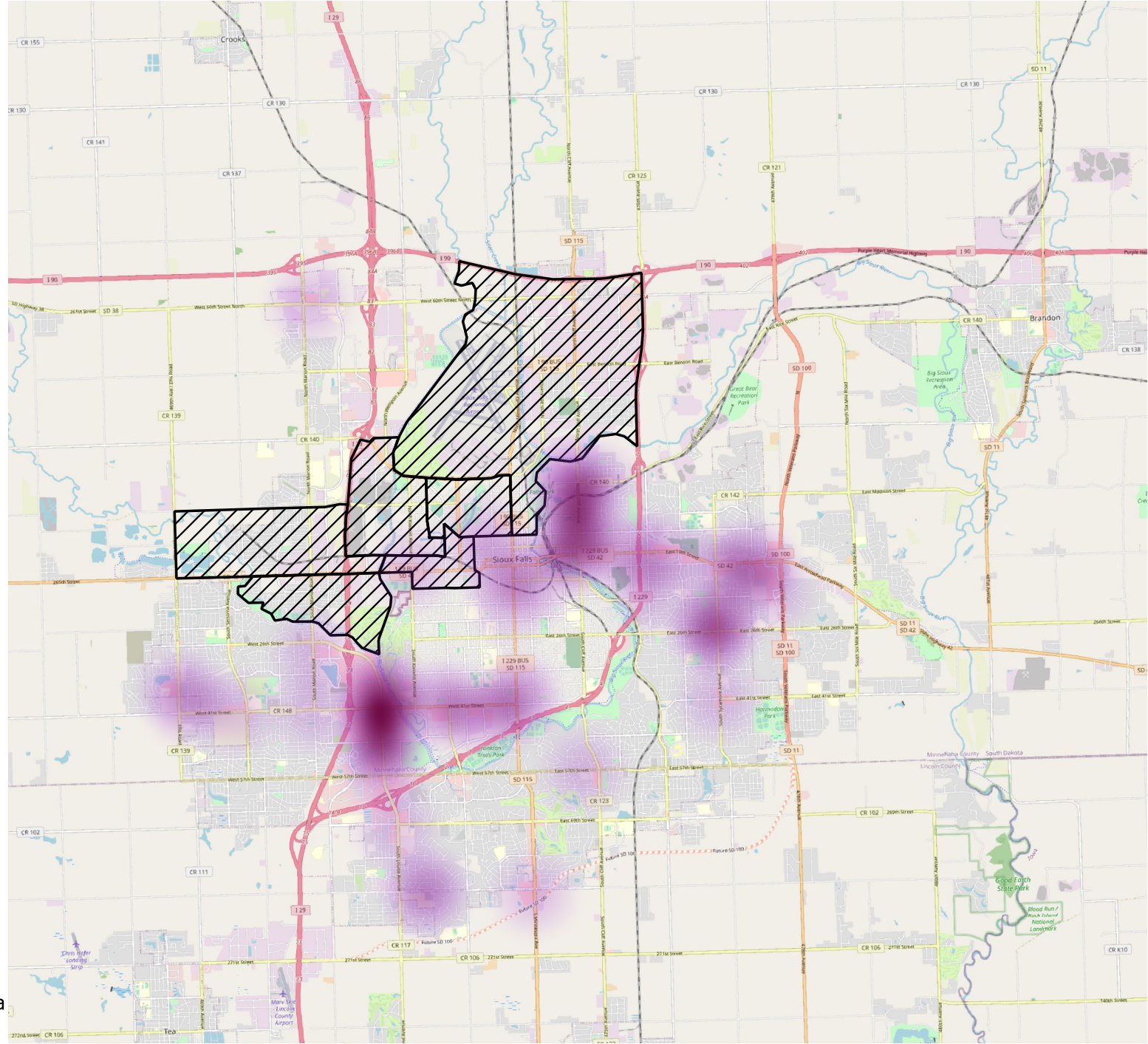
Food Availability in Sioux Falls

Frozen Fruit

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where frozen fruits are available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



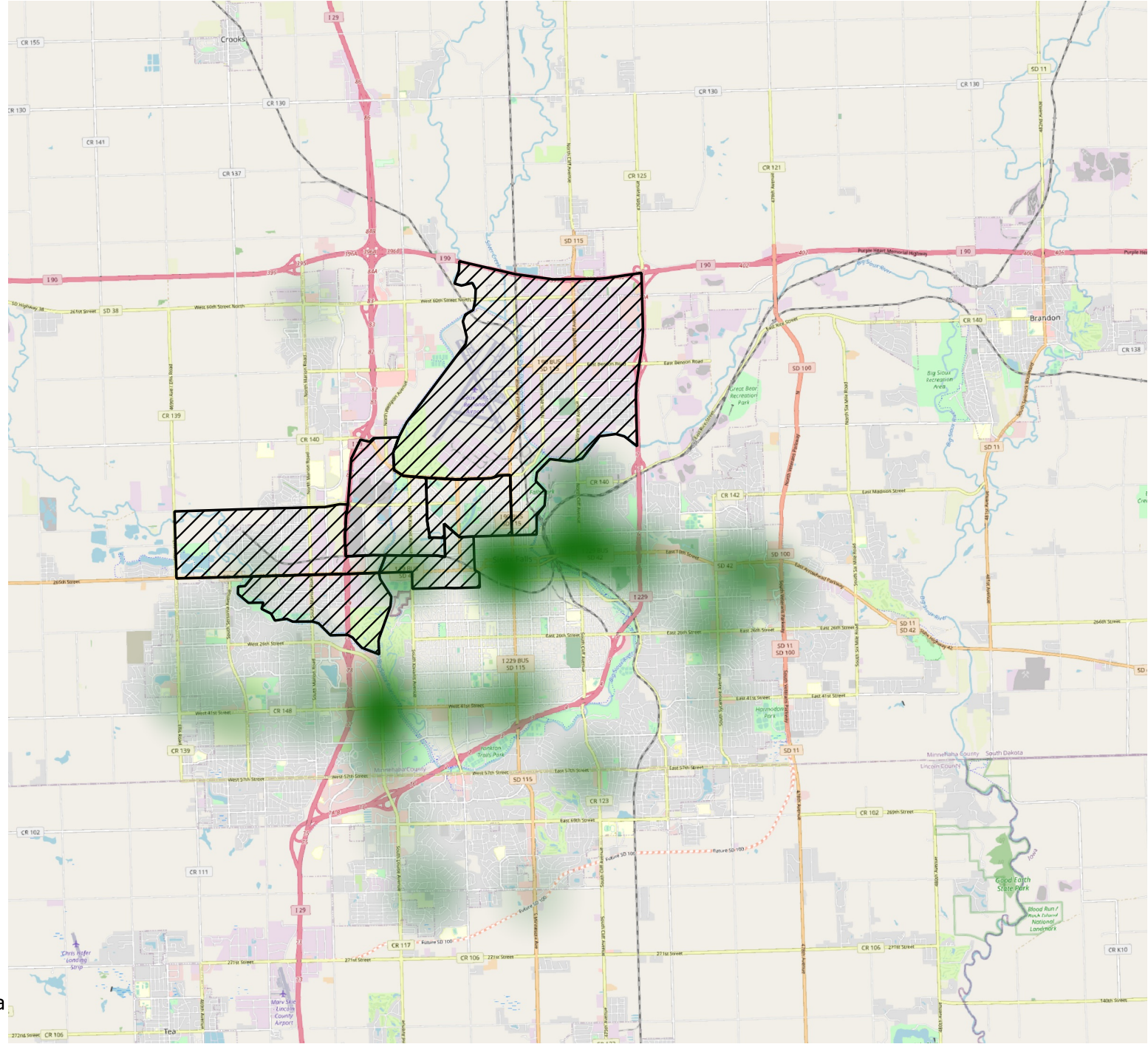
Food Availability in Sioux Falls

Frozen Vegetables

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where frozen vegetables are available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



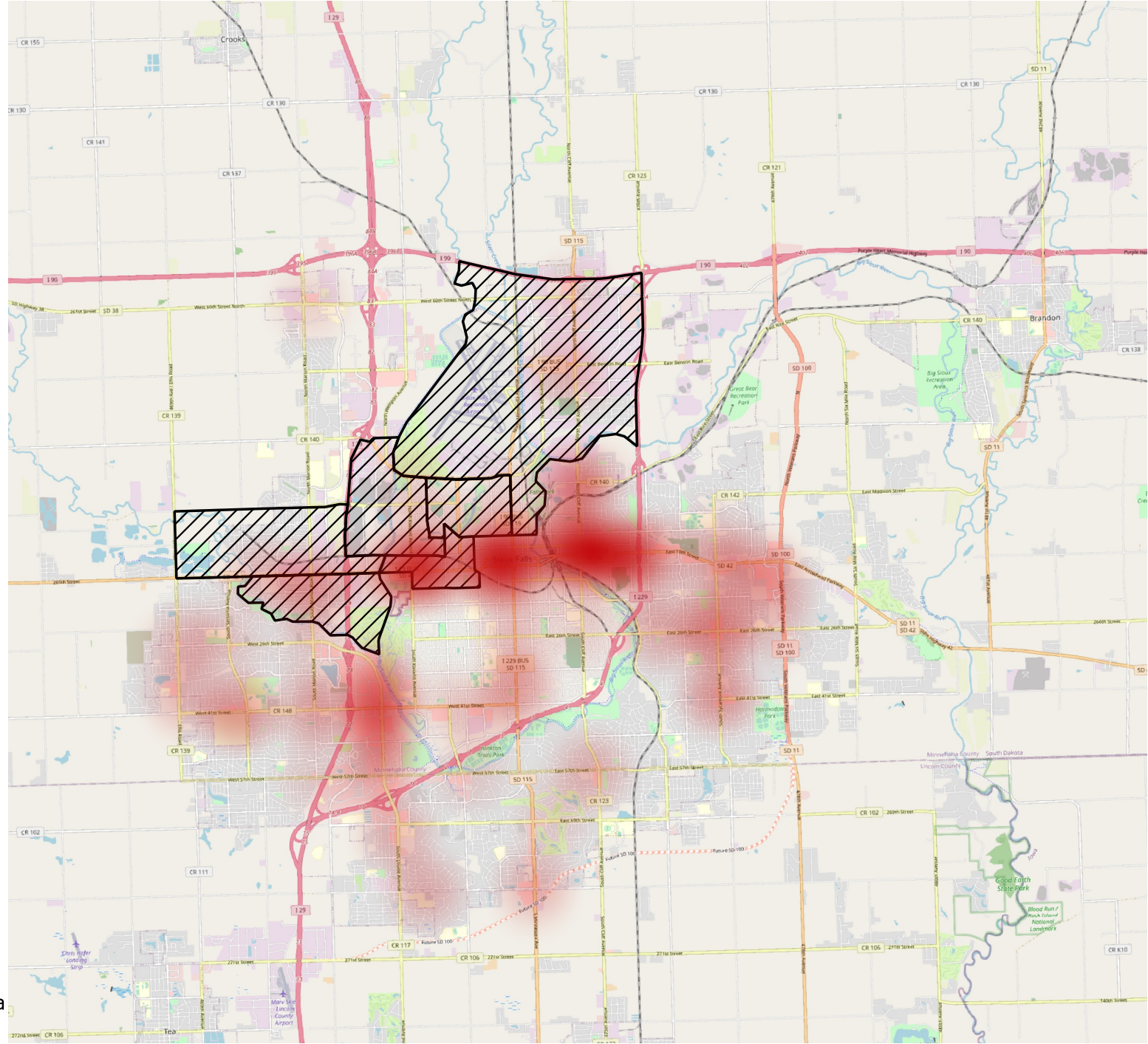
Food Availability in Sioux Falls

Frozen Meat

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where frozen meat is available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



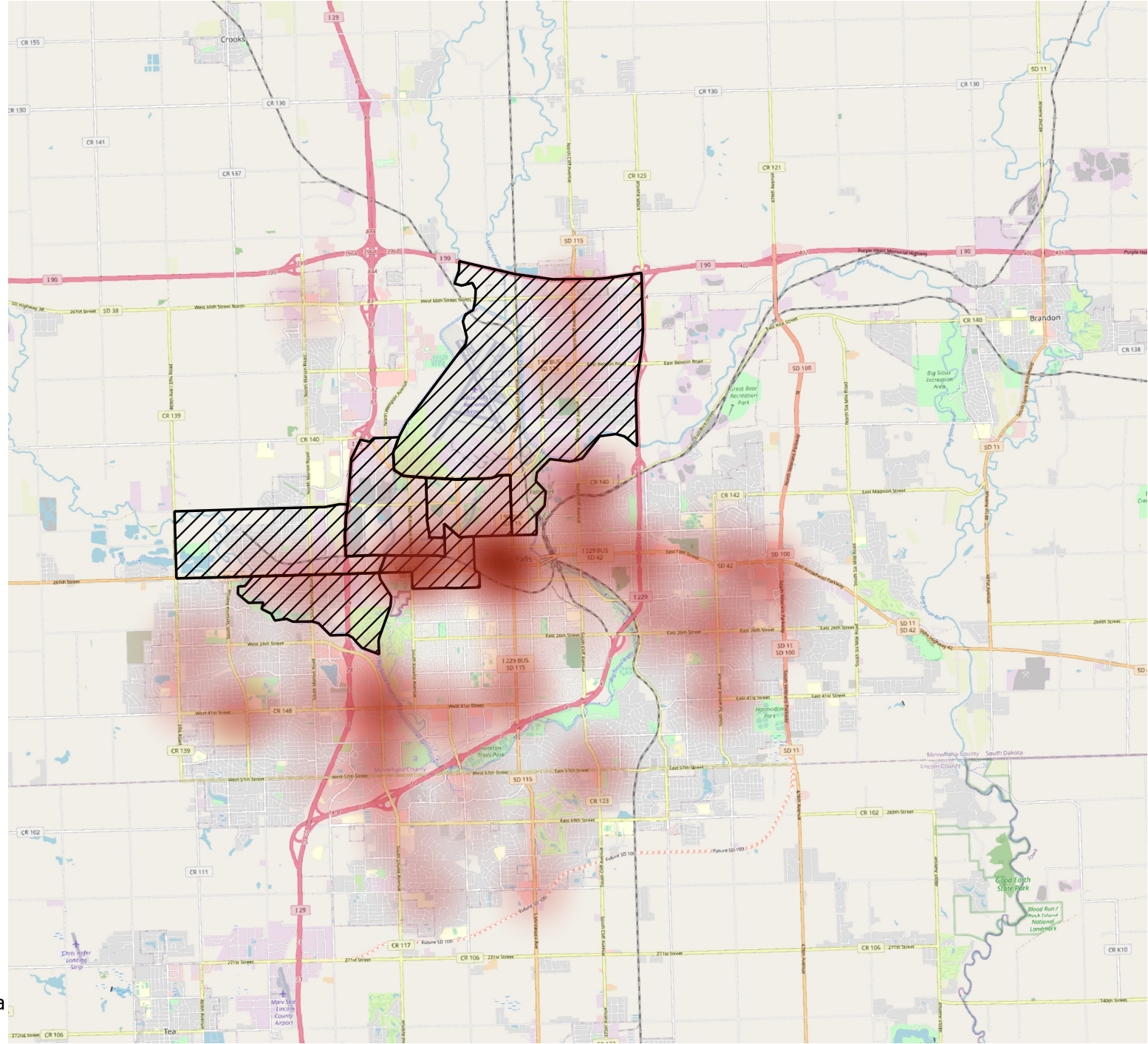
Food Availability in Sioux Falls

Frozen Dinners

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where frozen dinners are available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



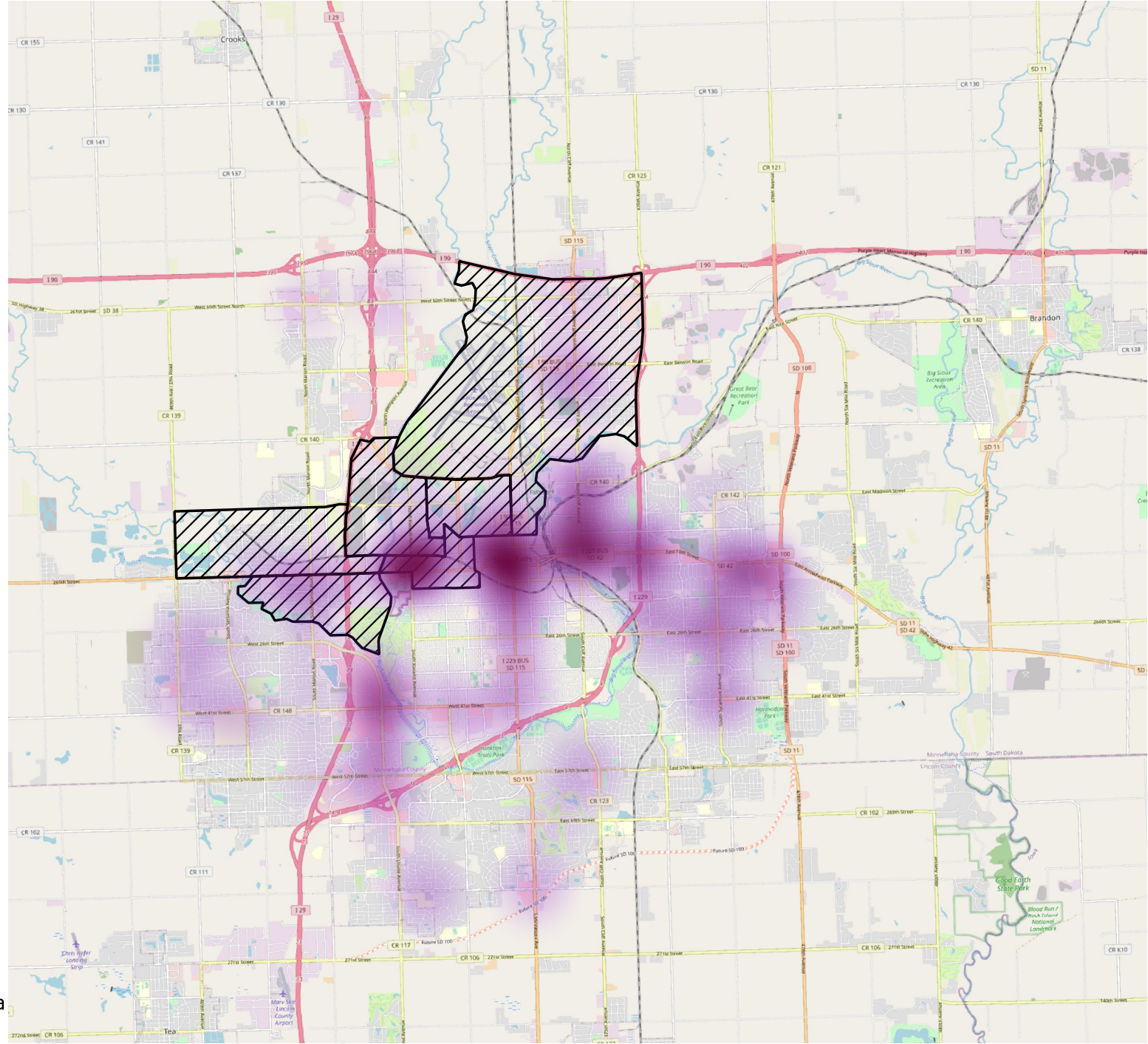
Food Availability in Sioux Falls

Canned Fruit

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where canned fruits are available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Food Availability in Sioux Falls

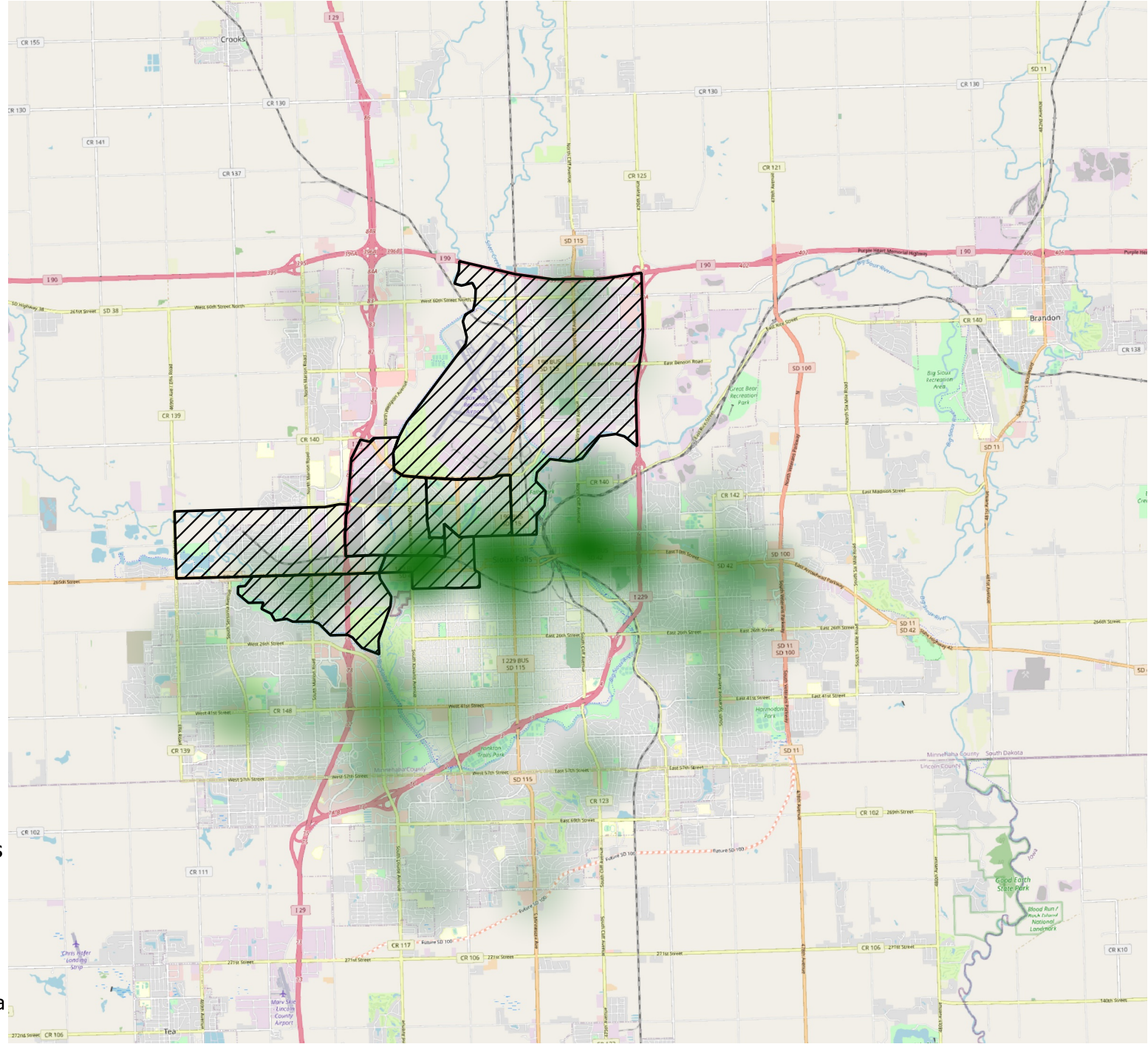
Canned Vegetables

Legend

 Food Desert (1 mile)

Shaded areas show the locations of stores where canned vegetables are available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



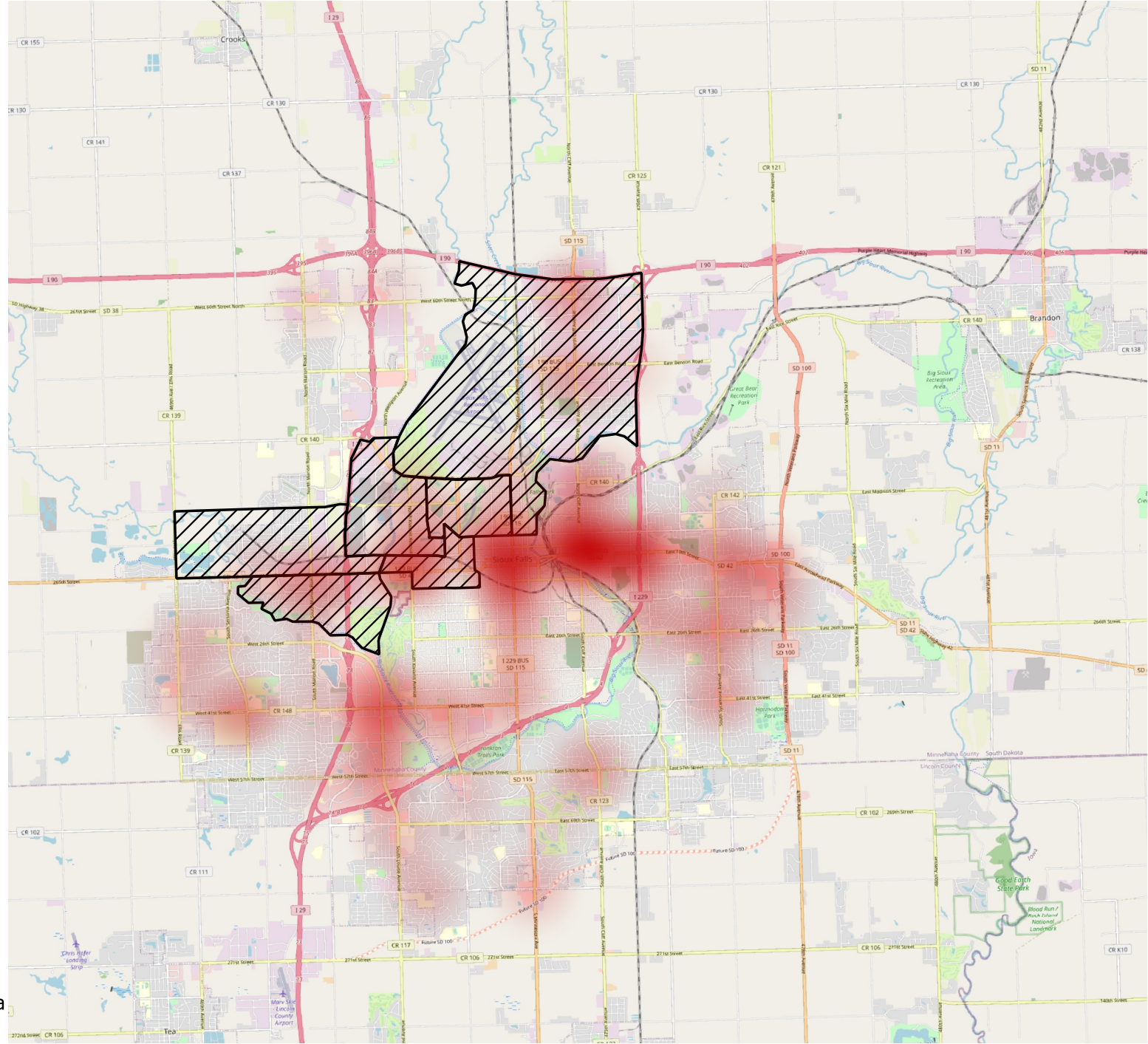
Food Availability in Sioux Falls

Canned Meat

Legend

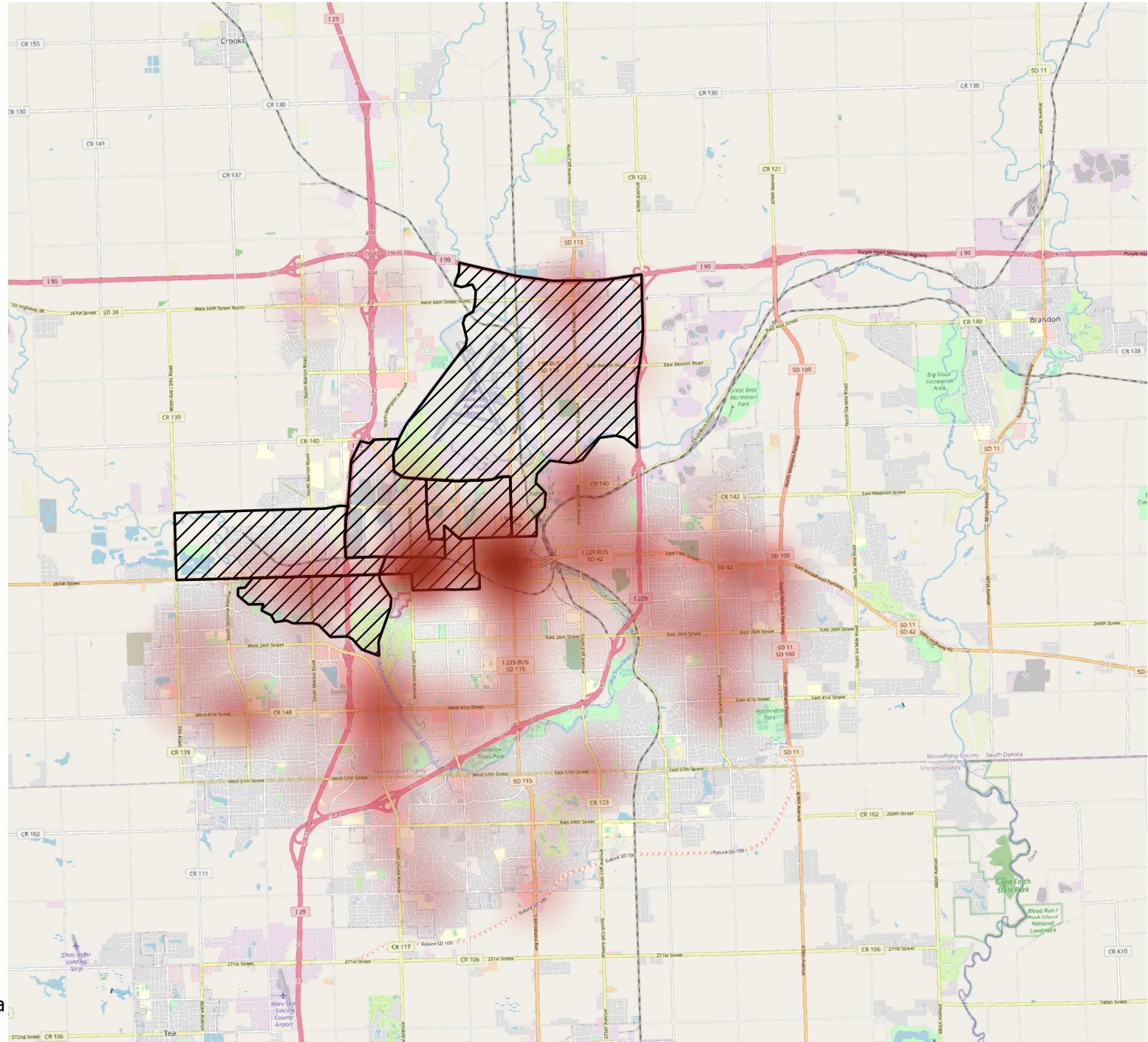
-  Food Desert (1 mile)
- Shaded areas show the locations of stores where canned meat is available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Food Availability in Sioux Falls

Canned Soup



Legend

 Food Desert (1 mile)


Shaded areas show the locations of stores where canned soup is available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

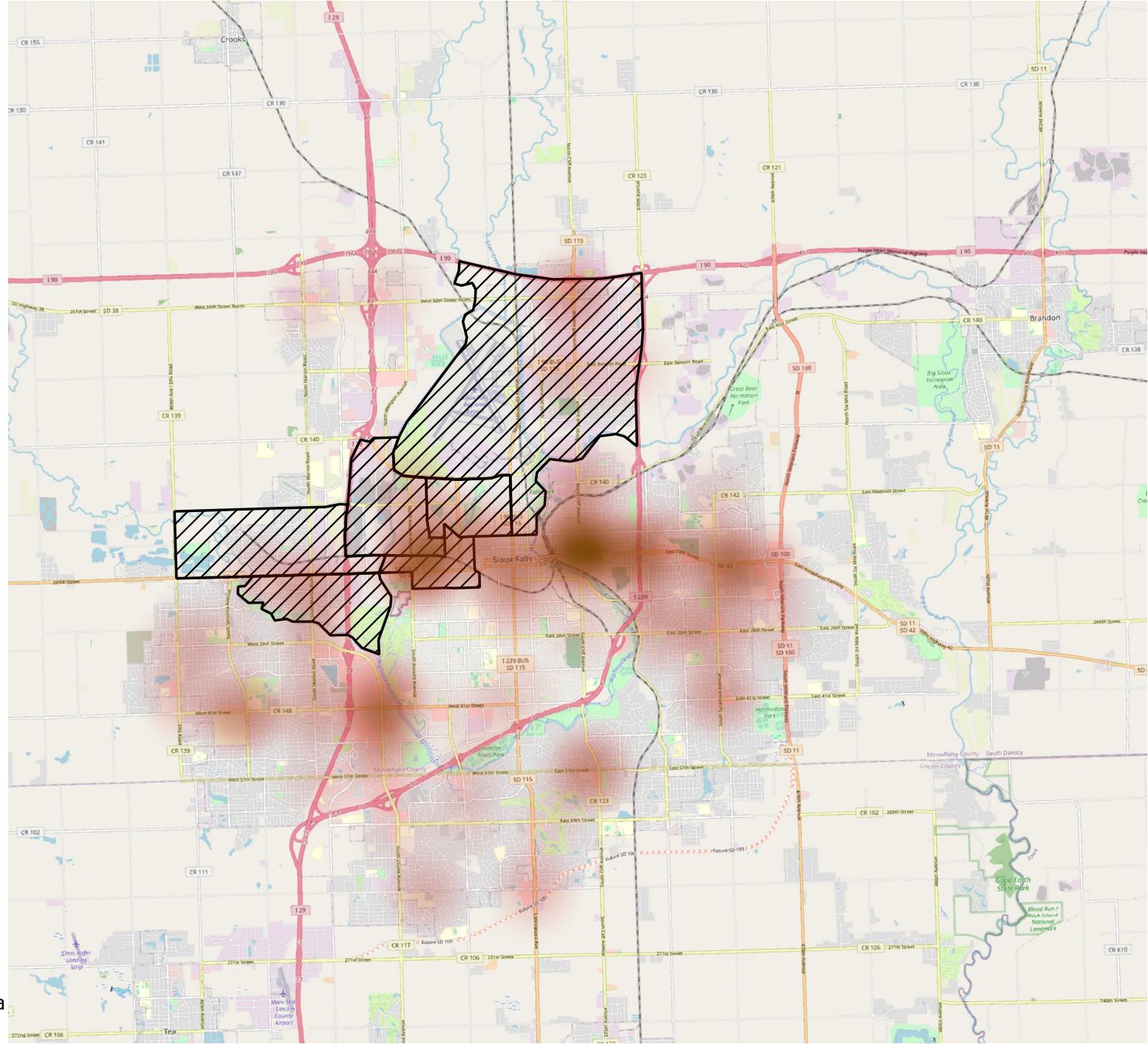
Food Availability in Sioux Falls

Whole Grains

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where whole grain items are available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



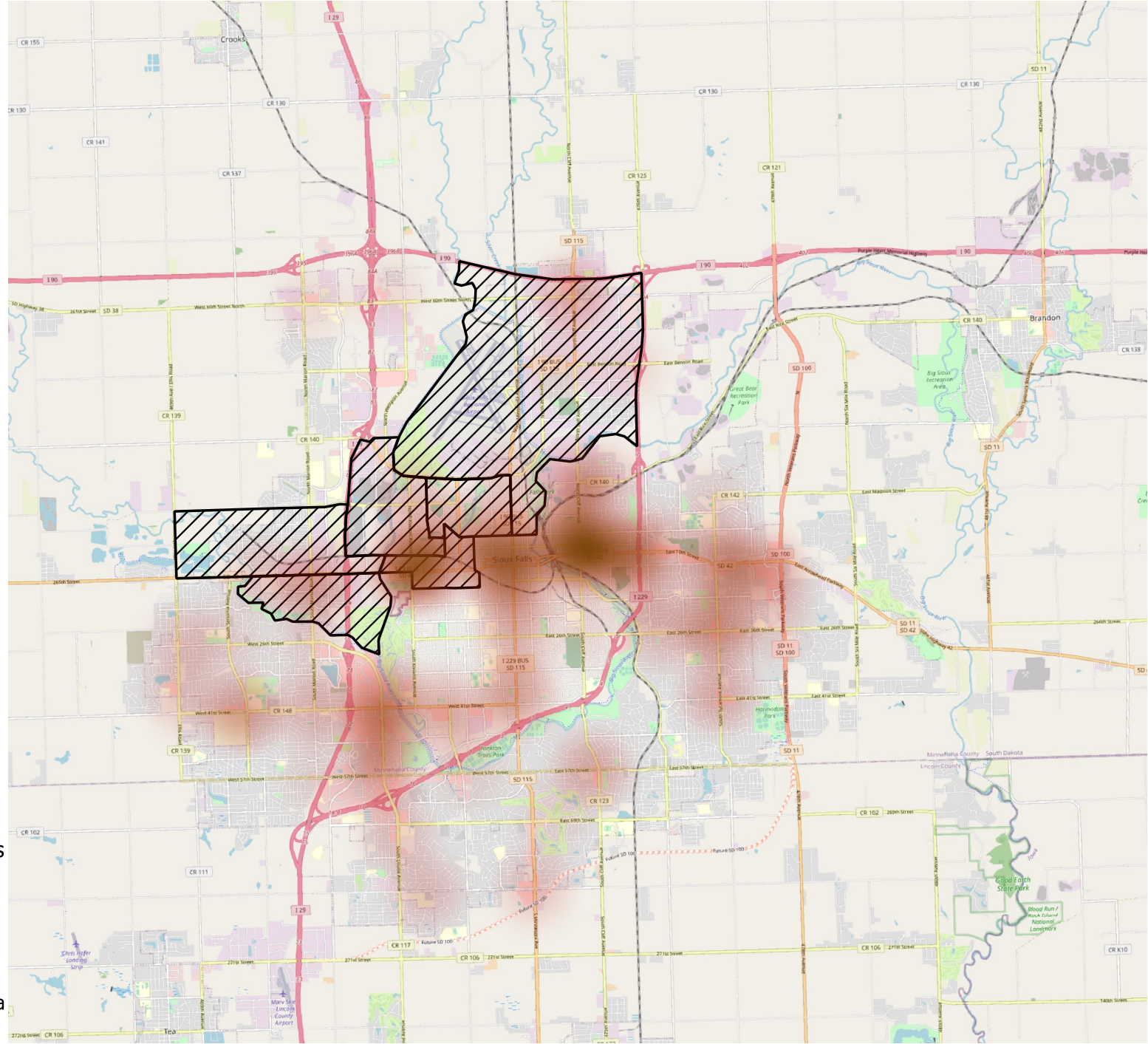
Food Availability in Sioux Falls

Refined Grains

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where refined grain items are available.

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Food Availability in Sioux Falls

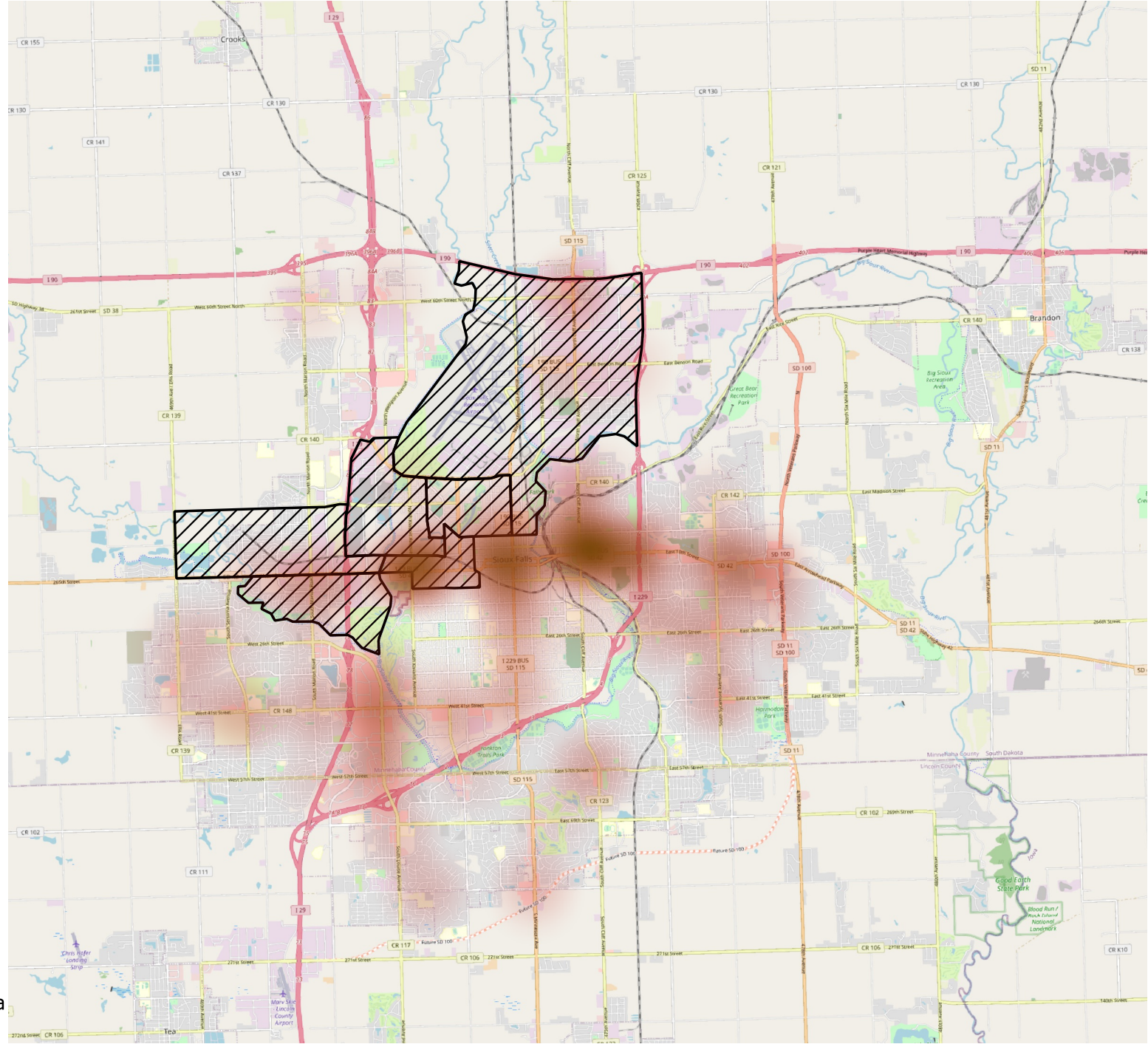
Beans

Legend

 Food Desert (1 mile)

Shaded areas show the locations of stores where beans are available.


Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



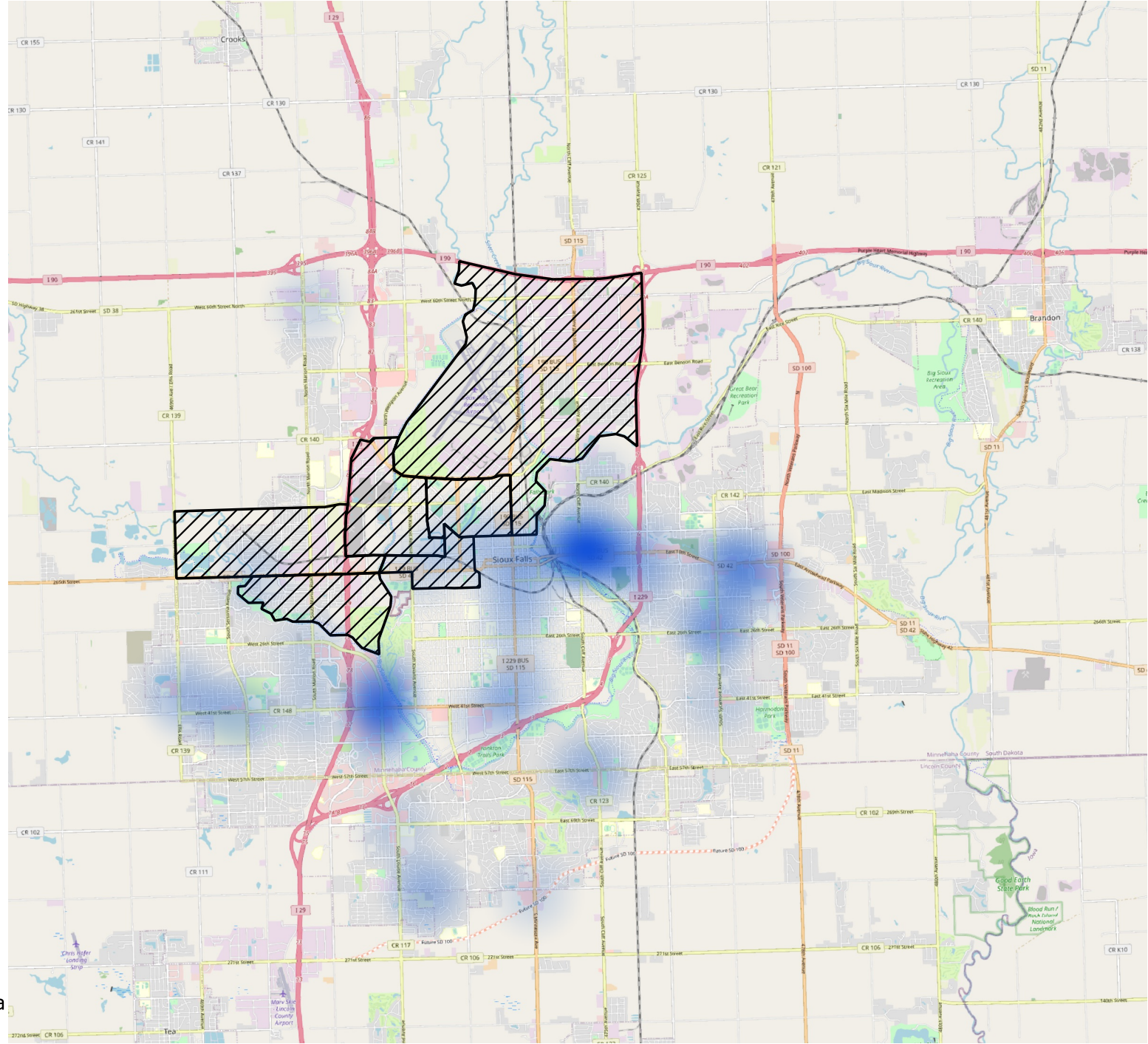
Food Availability in Sioux Falls

Infant Formula

Legend

-  Food Desert (1 mile)
- Shaded areas show the locations of stores where infant formula is available.







Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



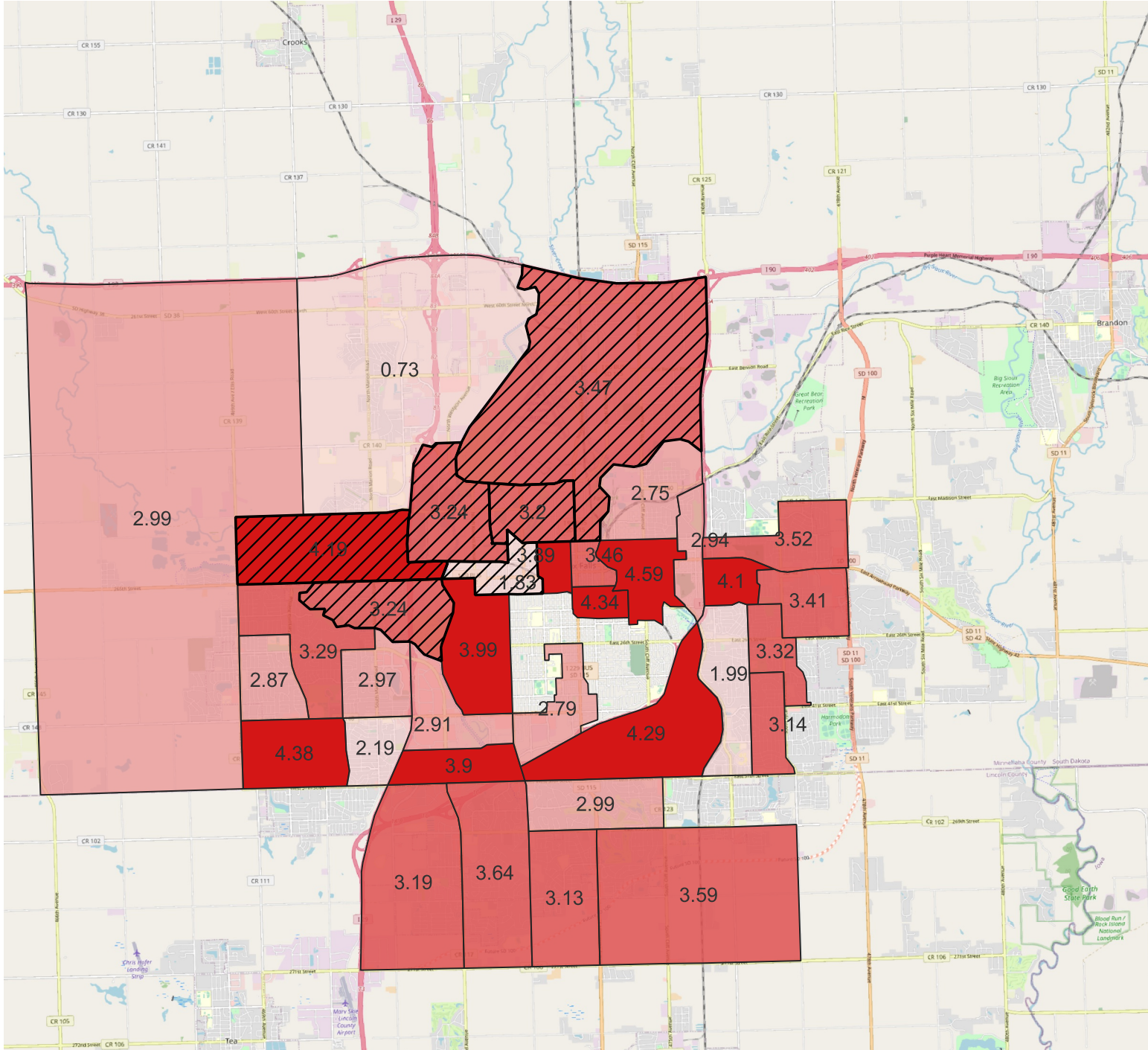
Average Prices and Food Deserts in Sioux Falls

Eggs

Legend

-  Food Desert (1 mile)
- Average price of eggs (\$)
-  No data
-  0 - 2.19
-  2.19 - 2.99
-  2.99 - 3.64
-  3.64 - 4.59







Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



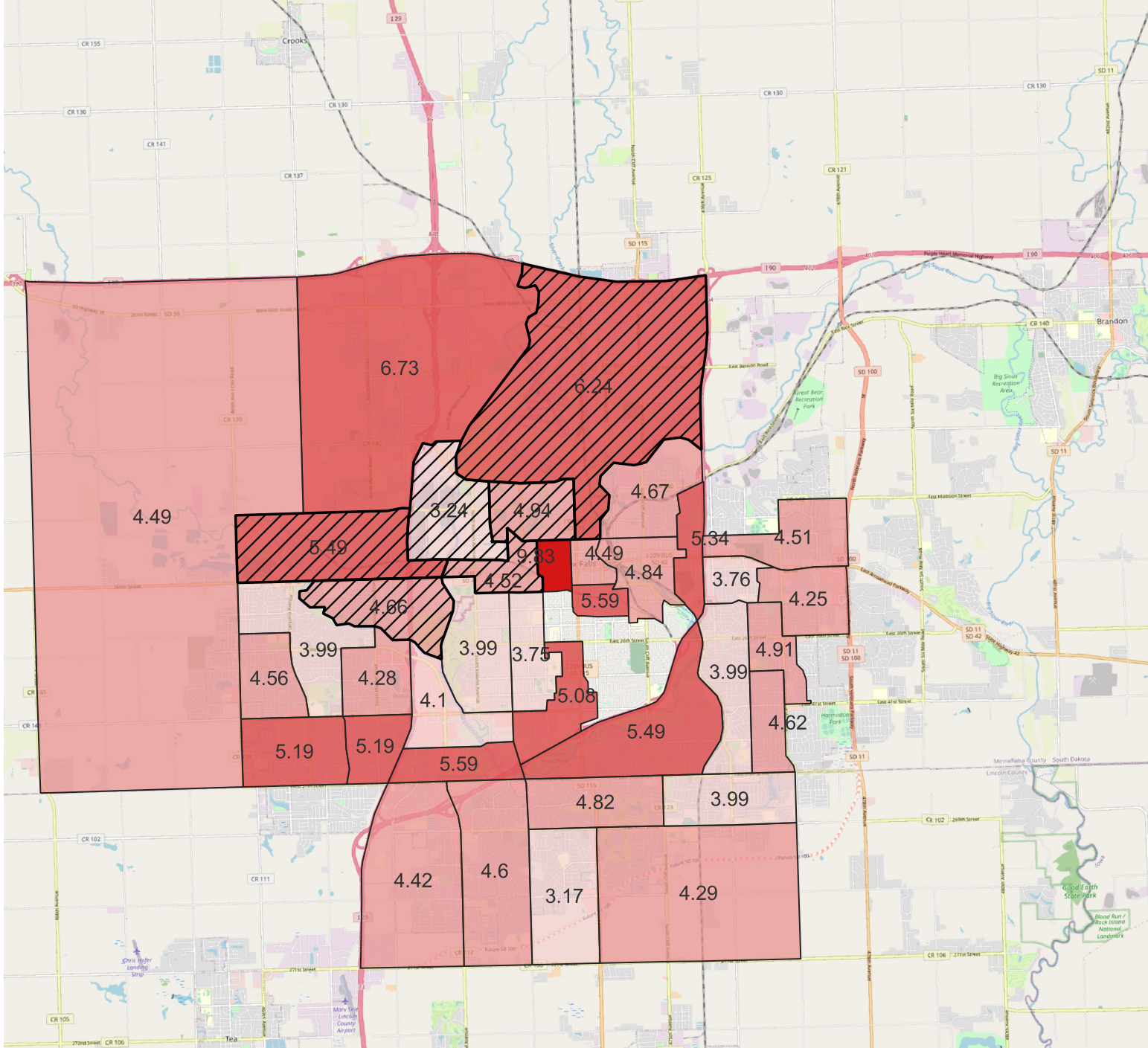
Average Prices and Food Deserts in Sioux Falls

Milk

Legend

-  Food Desert (1 mile)
- Average price of milk (\$)
-  No data
-  0 - 4.09
-  4.09 - 4.94
-  4.94 - 6.72
-  6.72 - 9.83







Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



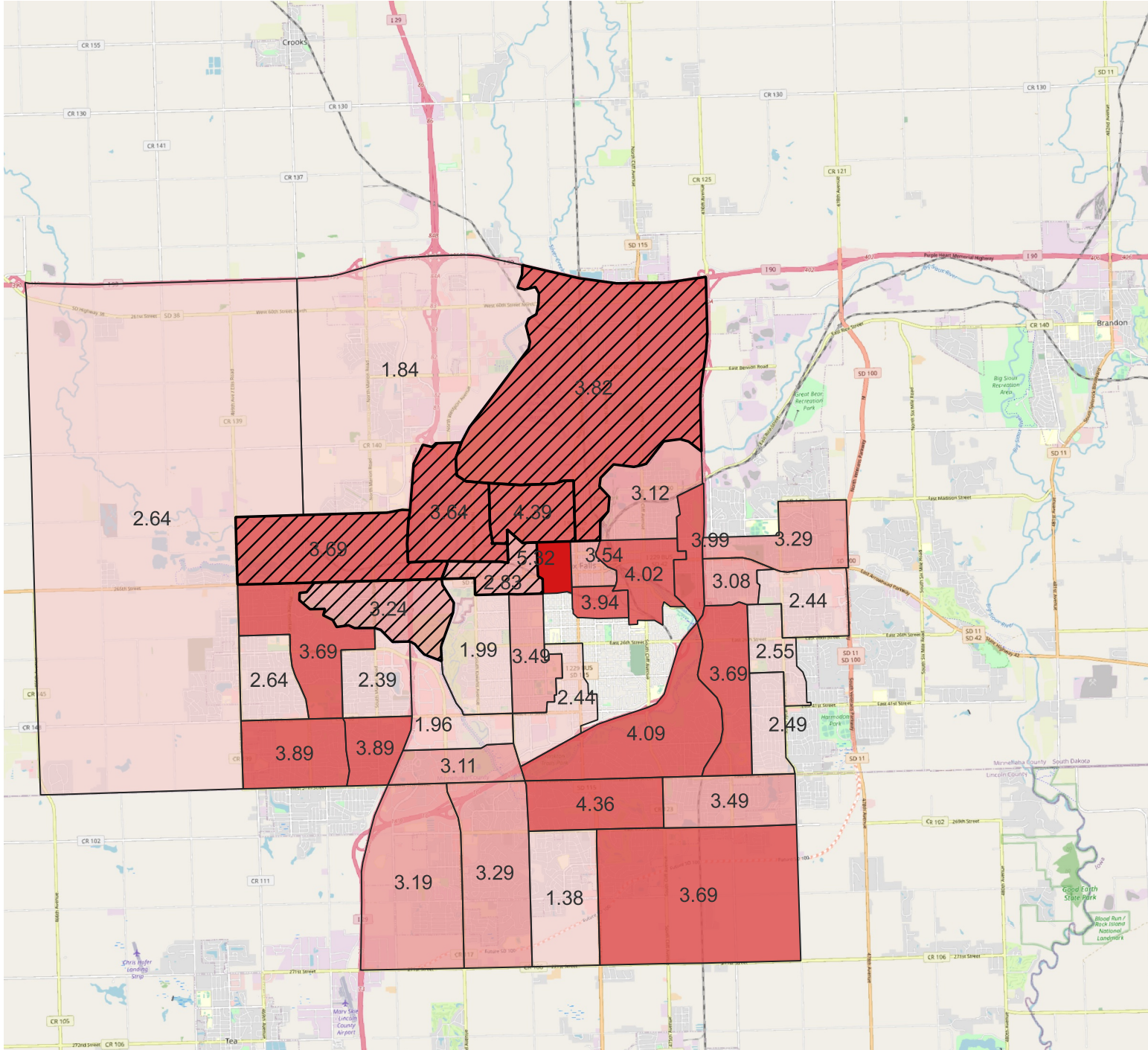
Average Prices and Food Deserts in Sioux Falls

Bread

Legend

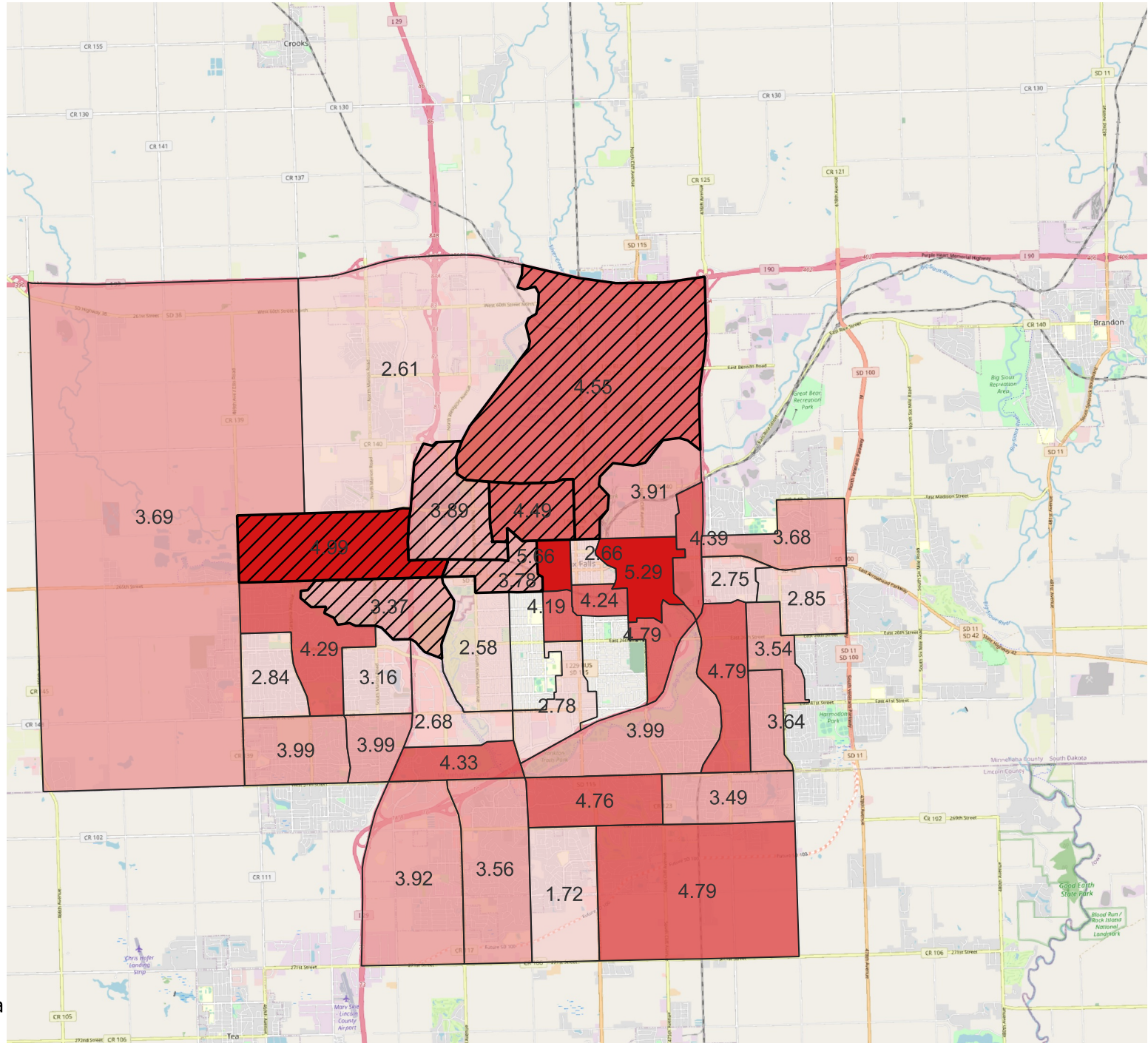
-  Food Desert (1 mile)
- Average price of bread (\$)
-  No data
-  0 - 2.64
-  2.64 - 3.54
-  3.54 - 4.39
-  4.39 - 5.32

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Average Prices and Food Deserts in Sioux Falls

Peanut Butter



Legend







- Food Desert (1 mile)
- Average price of peanut butter (\$)
- No data
- 0 - 3.16
- 3.16 - 3.99
- 3.99 - 4.79
- 4.79 - 5.66

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022

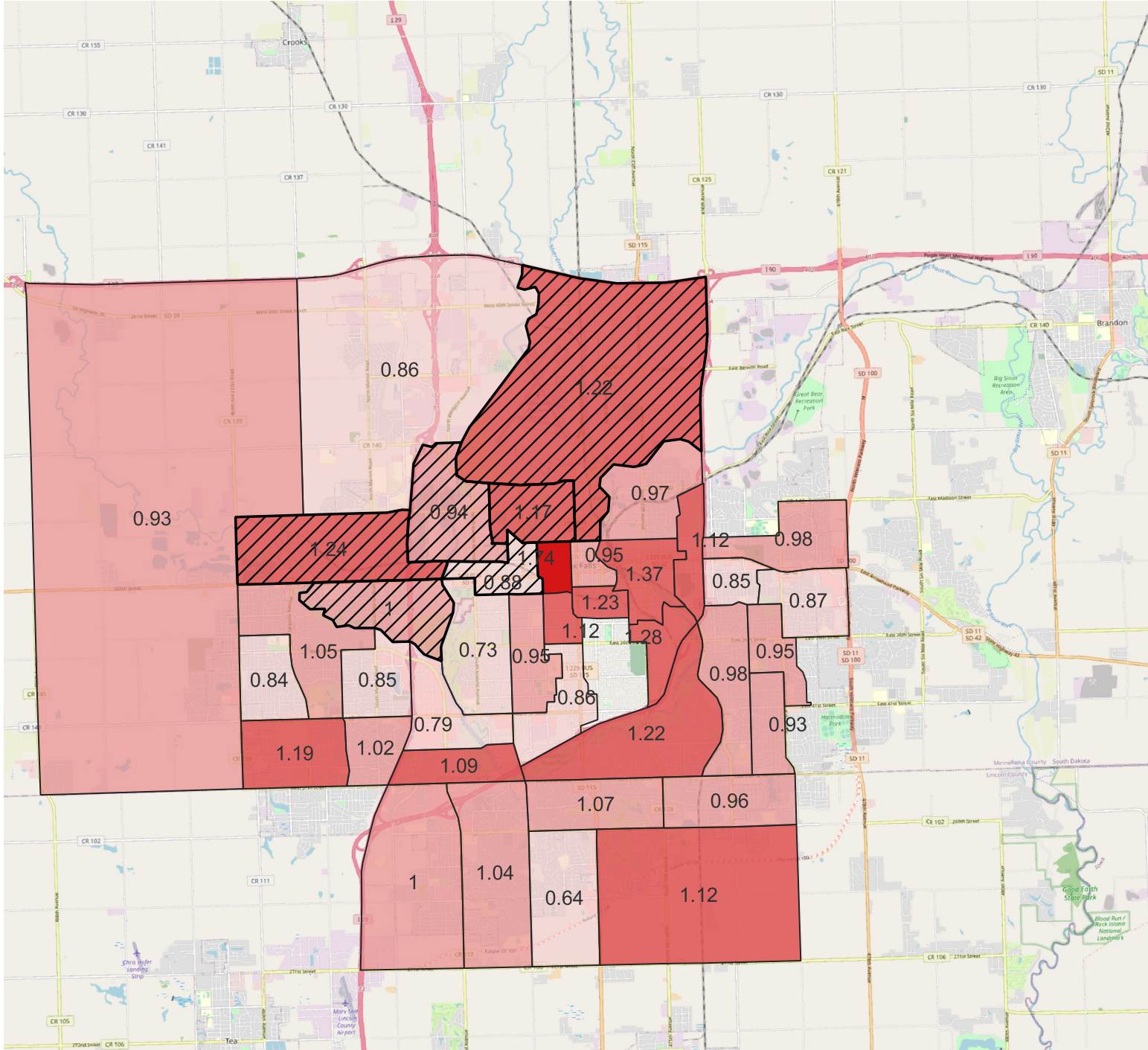
Average Prices and Food Deserts in Sioux Falls

Price Index

Legend

-  Food Desert (1 mile)
- Average price index
-  No data
-  0 - 0.88
-  0.88 - 1.07
-  1.07 - 1.37
-  1.37 - 1.74

Data sources: 2020 ACS 5-year; City of Sioux Falls GIS; Helpline Center; SD Dept. of Education; USDA; Open Street Map | Created by Augustana Research Institute 2022



Grocery Inventory

Surveyor's Name

Store Name

Date Visited

Date

Address

Street Address

City

State

Fresh Produce

	Available	NOT Available
Fruit (fresh) <i>apples, bananas, grapes, melons, etc.</i>	<input type="radio"/>	<input type="radio"/>
Leafy green vegetables <i>lettuce, cabbage, spinach, etc.</i>	<input type="radio"/>	<input type="radio"/>
Red or orange vegetables <i>carrots, tomatoes, peppers, sweet potato, etc.</i>	<input type="radio"/>	<input type="radio"/>

Refrigerated Dairy & Meat

	Available	NOT Available
Milk (fresh) <i>1% milk, soy milk, almond milk, etc.</i>	<input type="radio"/>	<input type="radio"/>
Other dairy products (fresh) <i>yogurt, cheese, soy yogurt, etc.</i>	<input type="radio"/>	<input type="radio"/>
Eggs (fresh) <i>whole chicken eggs, duck eggs, etc.</i>	<input type="radio"/>	<input type="radio"/>
Meat (fresh) <i>chicken thighs, ground beef, deli meat, etc.</i>	<input type="radio"/>	<input type="radio"/>

Frozen

	Available	NOT Available
Fruit (frozen) <i>berries, sliced peaches, etc.</i>	<input type="radio"/>	<input type="radio"/>
Vegetables (frozen) <i>green beans, peas, french fries, etc.</i>	<input type="radio"/>	<input type="radio"/>
Meat (frozen) <i>chicken thighs, ground beef, hot dogs, etc.</i>	<input type="radio"/>	<input type="radio"/>
Frozen dinners <i>Banquet meals, pot pies, pizza, etc.</i>	<input type="radio"/>	<input type="radio"/>

Dry Goods

	Available	NOT Available
Fruit (canned) <i>peaches, pears, fruit cocktail, etc.</i>	<input type="radio"/>	<input type="radio"/>
Vegetables (canned) <i>green beans, mushrooms, tomato sauce, etc.</i>	<input type="radio"/>	<input type="radio"/>
Meat (canned) <i>tuna, Spam, chicken, etc.</i>	<input type="radio"/>	<input type="radio"/>
Soup <i>chicken noodle, chili, vegetable soup, etc.</i>	<input type="radio"/>	<input type="radio"/>
Whole grain products <i>whole grain bread, brown rice, popcorn, etc.</i>	<input type="radio"/>	<input type="radio"/>
Refined grain products <i>spaghetti, white rice, flour, white bread, etc.</i>	<input type="radio"/>	<input type="radio"/>

Beans and legumes (canned or dry) <i>pinto beans, baked beans, peanut butter, etc.</i>	<input type="radio"/>	<input type="radio"/>
Infant formula	<input type="radio"/>	<input type="radio"/>

Prices (cheapest available at regular - not sales - price)

	Price (\$)	Price Per (if not default)
Eggs (1 dozen)		
Milk (2%, 1 gallon)		
Bread (1 loaf)		
Peanut butter (16 oz)		

Notes

Type here...

Submit