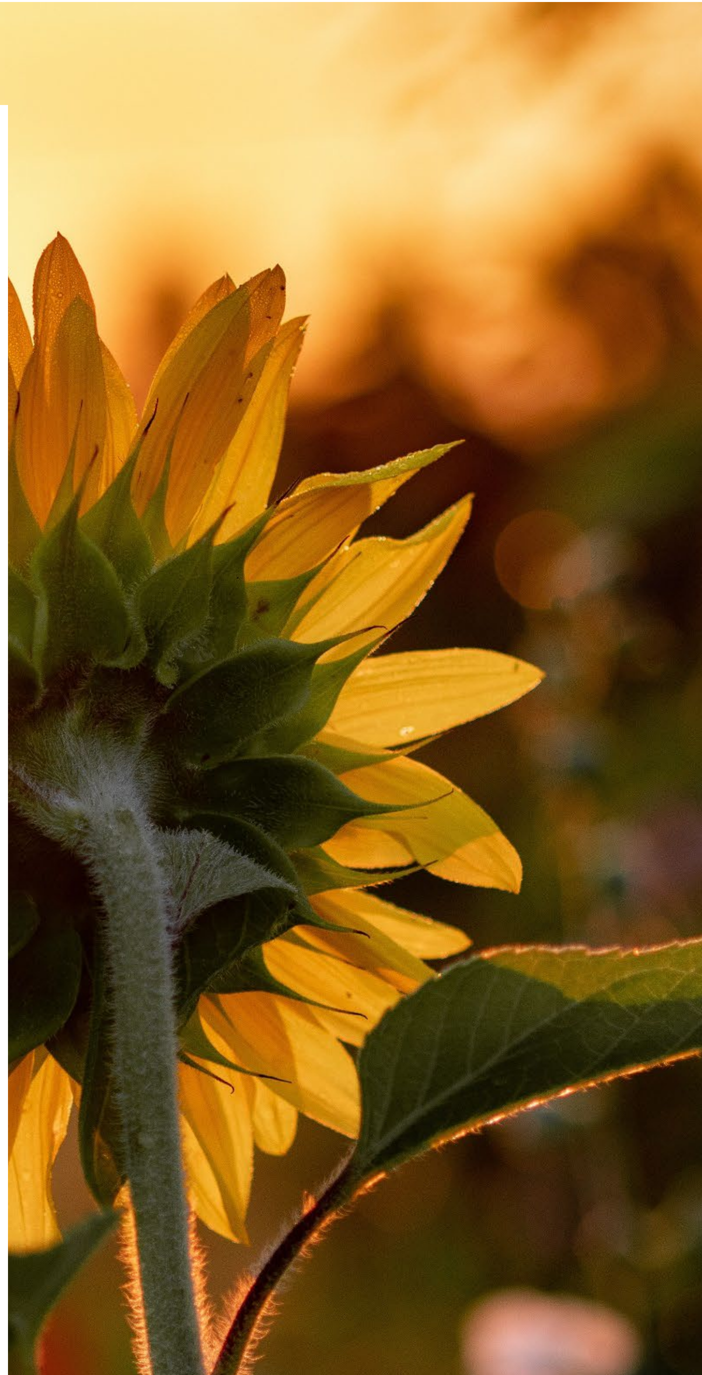
North Central Kansas

Regional Food System Assessment

Clay County
Cloud County
Dickinson County
Ellsworth County
Jewell County
Lincoln County
Marshall County
Mitchell County
Ottawa County
Republic County
Saline County
Washington County



2017 - 2018

Report prepared by
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This report was prepared by Kolia Souza, independent consultant, on behalf of the North Central Kansas Food Council under contractual agreement with North Central Regional Planning Commission. Language used throughout this report was borrowed directly from LaClair Consulting Services.

Contents

Executive Summary

Healthy and robust community food systems help to support and sustain healthy communities and strong local economies. The types and amounts of food that are available within a community, and the ways in which that food is presented and made available to members of the community population can exert profound influence on eating behaviors of community members and, in turn, community health outcomes. Food, and the many processes involved in producing it and eventually bringing it to a consumers' table, also generate significant economic activity and jobs within the community.

One of the key steps to understanding a community food systems' current strengths and gaps is to conduct a comprehensive assessment of the food system. This report summarizes the results of an assessment of the North Central Kansas regional food system. It brings together data and information from numerous secondary data sources to create a description of the current food system in the region. Highlights of assessment findings include:

Demographics. The North Central Kansas region includes the counties of Clay, Cloud, Dickinson, Ellsworth, Jewell, Lincoln, Marshall, Mitchell, Ottawa, Republic, Saline, and Washington. The total population for region is approximately 136,622 and the retiree age subpopulation is significantly higher compared to that of Kansas. Poverty rates are lower than the state average, both overall and among children.

Farming and Food Production. In 2012, there were 7,049 farms operating in the region, on about 4.95 million acres of land. Farming in the region is dominated by the production of grain crops, hay and beef cattle. In 2012, the average age of regional farm operators was 57 years. Average farm incomes in the region were generous in 2012 as compared to the state, with 31.7 percent of regional farms reporting net operating losses in 2012. Nearly one-third (31.8 percent) of principal farm operators in the region reported that their principal occupation was something other than farming, and more than one-quarter (28.4 percent) worked 200 days or more off the farm. Although farming in the region is predominantly commodity crops and livestock, there are a small number of farms growing fruits and selling their farm products directly to local consumers. In 2012, the region reported having 32 orchards and approximately 69 farms harvesting fruit or vegetables. Direct sales to individuals were $324,000 in 2012.

Food Processing and Distribution Infrastructure. There are currently 11 meat processors operating in Washington County. There is also a distributor (by primary service) and three wholesale suppliers located in Saline County. There is no manufacturing. There is a community kitchen facility located within Saline County; however, additional facilities may be located throughout each of the counties in churches and other community-based organizations.

The Retail Food Environment. Many rural areas of Kansas are struggling to retain their local grocery stores. In the North Central Kansas region, there were 27 grocery stores in operation in 2017. In addition to these stores, grocery items are also sold by a meat lockers and dollar and convenience stores. There was a total of 14 farmers' markets in operation. According to 2016 data, the county is also served by 242 eating and drinking establishments, one of which is a fast food venue.

Access to Healthy Foods. Across the nation, Americans' dietary intakes are poorly aligned with current dietary guidelines. Kansans are no exception. The availability of fruit and vegetable consumption data in the region is inconsistent. However, three counties reported that between 21 and 29 percent of adults were consuming fewer than one serving of vegetables per day and between 43 and 52 percent of adults were consuming fewer than one serving of fruits per day. Consumer expenditure data suggest that about 37 percent of all food expenditures by residents in the region is spent on food prepared and consumed away from home.

Consumer Eating Behaviors. In the North Central Kansas region, there are residents that lack ready access to full-service grocery stores that offer healthy food options. In 2015, there were six census tracts identified within region that met the definition of a food desert, meaning that a substantial portion of the tract's population was low income and lived more than one mile from a grocery store if in an urban area, or more than 10 miles from a store if in a rural area. Nearly 11,000 people (8 percent of the regional population) were low-income and had limited access to a grocery store. In addition to access challenges created by distance from a grocery store, there are residents that lack access to enough healthy food because they cannot afford to buy it. In 2016, an estimated 12.7 percent of residents (17,470 individuals) struggled just to get enough food, a condition referred to as 'food insecurity.' About one in five (19.5 percent) children lived in households that were food insecure. Additionally, between 41 and 58 percent of K-12 students within each county qualify for free or reduced-price school meals, and 10,785 individuals in the region receive food assistance through the SNAP program each month.

Food Waste. National research suggests that as much as 40 percent of all food grown in the United States is wasted, with a substantial share of that attributed to household/consumer waste. Although local-level measurements of food waste were not available, extending national per capita waste estimates to local population numbers suggest that annual food waste in the region might be in the neighborhood of 39.6 million pounds, with a value of $50.7 million.

Economic Impact. Agriculture and food represent major sectors of the economy, nationally and at the local level. Consumers in North Central Kansas region spend about $358.9 million annually on food purchases. Economic estimates from the Kansas Department of Agriculture indicate that agriculture and food-sector businesses in the county employ about 17,915 people and contribute $4.2 billion to the local economy. Farm product sales in the region totaled approximately $1.5 billion in 2012. In addition to farm product sales, economic activity is also generated by income received from government farm payments and federal food assistance programs and retail food sales.

Conclusion

The information presented in this report highlights many current strengths and gaps in the current food system for the North Central Kansas region. The region has a strong agricultural presence, with access to farmland and adequate water supplies. Although agriculture is predominantly focused on the production of grains, hay and beef, there are a promising, albeit small, number of smaller-scale producers growing and producing foods for direct sale to community residents. The presence of Kansas State University, the state's land grant university, offers food producers and entrepreneurs in the region the opportunity to take advantage of a wealth of available scientific expertise and technical assistance. There is also access to retail grocery and farmers markets within the region.

Despite all of those strengths, however, there are still gaps and opportunities to improve and enhance the local food system. Many farmers are nearing retirement age without younger ones stepping in fill the void, and high land prices and low farm profitability present significant challenges to the small numbers of younger people who would like to become farmers. Local production of dairy products, poultry and eggs, and fruits and vegetables fall significantly short of local consumption volumes. The vast majority of community residents do not eat the recommended amounts of vegetables and fruits. Approximately 17,470 residents in the region are food-insecure (or struggle to get enough food), because they lack the money to buy it. National research suggests that as much of 40 percent of the food grown in the United States is wasted. If this pattern holds true in the region, more than 39.6 million pounds of food is wasted each year.

These are just a few examples of current assets and gaps; readers of this report will likely identify others. While this report does not address or include every possible measure related to the local food system, it has been structured to provide a systems-level description that touches upon each of the major sectors within the food system, using data that are either readily available or could be collected with reasonable effort within the community setting. Because of that breadth of scope, the depth of information on any one subject is necessarily limited to prevent the assessment process and report from becoming totally unmanageable. It is likely that there will be some areas where the information included will generate interest or raise additional questions that are not answered by the brief topical summaries included in the report – those questions may identify areas the North Central Regional Planning Commission or the North Central Kansas Food Council will wish to conduct further exploration in the future.

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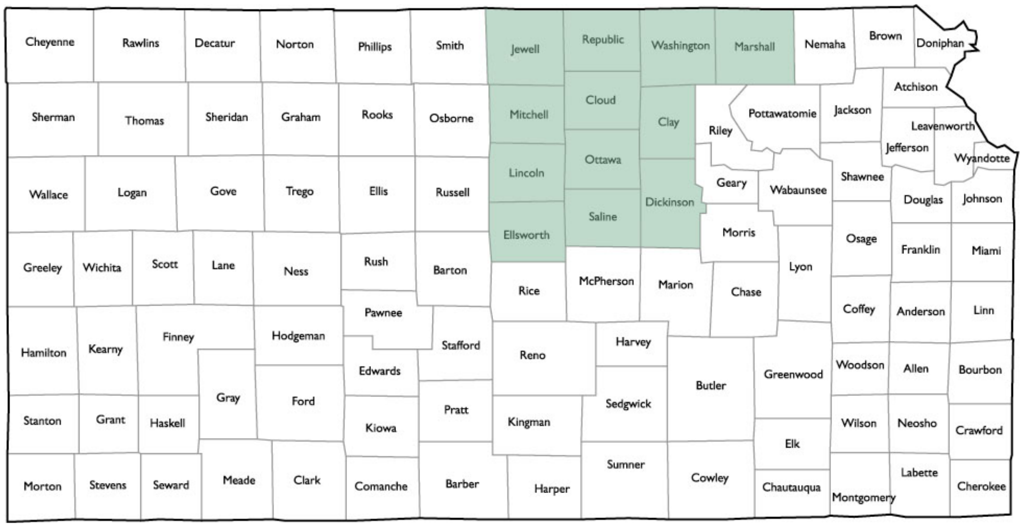
Demographics

The North Central Kansas Food Council (NCKFC) consists of 12 counties. These counties are located in the North Central Regional Planning Commission service area and include Clay, Cloud, Dickinson, Ellsworth, Jewell, Lincoln, Marshall, Mitchell, Ottawa, Republic, Saline, and Washington Counties. According to U.S. Census Bureau American Community Survey 2016 estimates, the largest city in the NCKFC region is Salina, which is located in Saline County and has a population of approximately 47,513.



Population

According to U.S. Census Bureau American Community Survey 2013-17 5-year estimates, a total of 136,622 people lives within the 9,208 square-mile NCKFC land area. Residents of the NCKFC region account for 4.7 percent of the total Kansas population. Population density is 14.8 people per square mile. Between the 2000 and 2010 decennial census enumerations, the NCKFC region population decreased by 2,700 persons, a 1.9 percent decrease in overall population.

Population, Density (Persons per Sq Mile) by Tract, ACS 2012-16

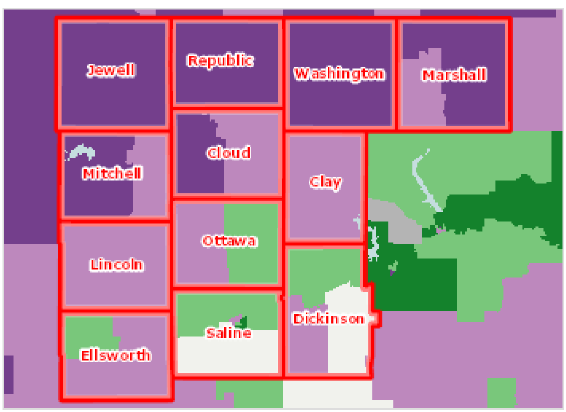
- Over 5,000
- 1,001 - 5,000
- 501 - 1,000
- 51 - 500
- Under 51
- No Data or Data Suppressed

- Report Area

Geographic Area	Total Population, 2017	% Area Population
Clay County	8,203	6.0%
Cloud County	9,191	6.7%
Dickinson County	19,162	14.0%
Ellsworth County	6,331	4.6%
Jewell County	2,963	2.2%
Lincoln County	3,121	2.3%
Marshall County	9,853	7.2%
Mitchell County	6,230	4.6%
Ottawa County	5,957	4.4%
Republic County	4,705	3.4%
Saline County	55,334	40.5%
Washington County	5,572	4.1%
Regional Total	**136,622**	**100%**

Data Source: U.S. Census Bureau, American Community Survey, 2013-2017.
Source geography: Tract.

Geographic Area	Total Population, 2000 Census	Total Population, 2010 Census	Total Population Change, 2000-2010	Percent Population Change, 2000-2010
Clay County	8,822	8,535	(-287)	(-3.25%)
Cloud County	10,268	9,533	(-735)	-7.16%
Dickinson County	19,334	19,754	410	2.12%
Ellsworth County	6,525	6,497	(-28)	-0.43%
Jewell County	3,791	3,077	(-714)	-18.83%
Lincoln County	3,578	3,241	(-337)	-9.42%
Marshall County	10,965	10,117	(-848)	-7.73%
Mitchell County	6,932	6,373	(-559)	-8.06%
Ottawa County	6,163	6,091	(-72)	-1.17%
Republic County	5,838	4,980	(-855)	-14.65%
Saline County	53,597	55,606	2,009	3.75%
Washington County	6,483	5,799	(-684)	-10.55%
Regional Total	**142,296**	**139,603**	**(-2,700)**	**-1.9%**
Kansas	**2,688, 419**	**2,853,118**	**164,699**	**6.13%**
United States	**280,405,781**	**307,745,539**	**27,339,758**	**9.75%**

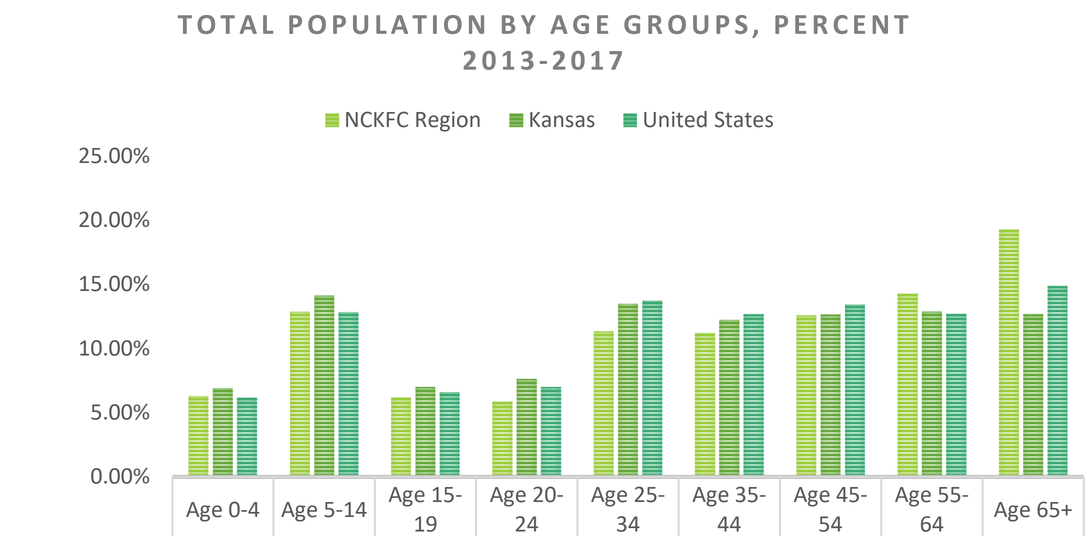


Population Change, Percent by Tract, US Census 2000 - 2010

- Over 10.0% Increase (+)
- 1.0 - 10.0% Increase (+)
- Less Than 1.0% Change (+/-)
- 1.0 - 10.0% Decrease (-)
- Over 10.0% Decrease (-)
- No Population or No Data
- Report Area

Age of the Population

The retiree age population (age 65+) of the NCKFC region is significantly higher than that of Kansas or the United States. Its young adult population (age 20-34) is also lower compared to the state or nationally. Approximately 33.6 percent of residents in the region were 55 years or older as compared to 25.5 percent of the Kansas population. About 17 percent of residents were age 20-34 years as compared to 21.1 percent of all Kansans.



	Age 0-4	Age 5-14	Age 15-19	Age 20-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+
NCKFC Region	6.32%	12.87%	6.21%	5.88%	11.35%	11.23%	12.58%	14.29%	19.27%
Kansas	6.90%	14.12%	7.01%	7.62%	13.46%	12.21%	12.65%	12.87%	12.66%
United States	6.18%	12.82%	6.61%	7.01%	13.72%	12.67%	13.42%	12.69%	14.87%

Data Source: US Census Bureau, American Community Survey, 2013-2017. Source geography: Tract

Households with Children

According to 2013-2017 American Community Survey estimates, nearly one-quarter of all occupied households in the NCKFC region were family households with one or more child(ren) under the age of 18. This is below the statewide proportion of 31.7 percent.

Geographic Area	Total Households	Total Family Households	Families with Children (under age 18)	Families with children (under age 18), percent of total households
Clay County	4,069	2,424	1,075	31.60%
Cloud County	4,637	2,415	1,128	24.33%
Dickinson County	9,173	5,199	2,327	25.37%
Ellsworth County	3,231	1,585	566	17.52%
Jewell County	2,033	831	205	10.08%
Lincoln County	1,853	785	295	15.92%
Marshall County	4,890	2,775	1,065	21.78%
Mitchell County	3,299	1,613	661	20.04%
Ottawa County	2,789	1,684	647	23.20%
Republic County	2,888	1,308	417	14.44%
Saline County	24,350	13,963	6,276	25.77%
Washington County	2,943	1,549	582	19.78%
Regional Total	**66,155**	**36,131**	**15,244**	**23.44%**
Kansas	**1,121,943**	**735,106**	**355,887**	**31.70%**
United States	**135,393,564**	**78,298,703**	**37,171,726**	**27.45%**

Data Source: U.S. Census Bureau, American Community Survey, 2013-2017. Source geography: Tract

Geographic Mobility

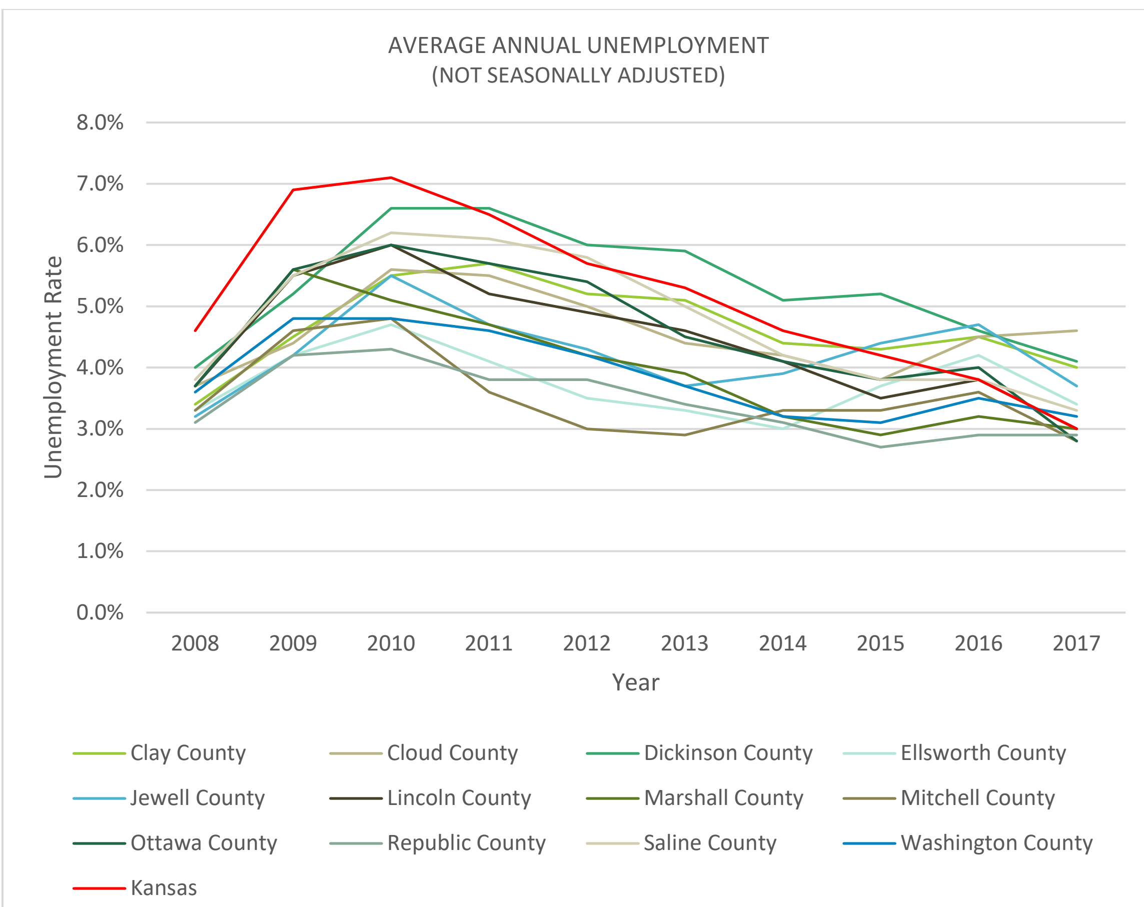
The NCKFC region population is slightly more transient than Kansas as a whole, or the national population. According to the American Community Survey estimates, approximately 0.65 percent of the regional population relocated outside the area between July 2016 and July 2017, compared to 0.28 percent of all Kansans. (Residents who moved to different households within the county are no included in this measure).

Geographic Area	Total Population	Population In-migration	Population In-migration %
Clay County	8,203	(-512)	-1.08%
Cloud County	9,191	(-417)	-1.07%
Dickinson County	19,162	(-834)	-0.53%
Ellsworth County	6,331	(-32)	0.36%
Jewell County	2,963	(-134)	-1.01%
Lincoln County	3,121	(-160)	-0.83%
Marshall County	9,853	(-375)	-0.74%
Mitchell County	6,230	(-148)	-0.58%
Ottawa County	5,957	(-185)	-0.99%
Republic County	4,705	1	1.23%
Saline County	55,334	(-2,544)	-0.99%
Washington County	5,572	(-319)	-1.51%
Regional Total	**136,622**	**(5,659)**	**-0.65%**
Kansas	**2,853,118**	**(40,572)**	**-0.28%**
United States	**321,004,407**	**7,233,626**	**0.35%**

Data Source: U.S. Census Bureau, American Community Survey, 2013-2017. Source geography: Tract

Unemployment

During 2017, overall unemployment rates in the NCKFC were higher than the state unemployment rate of three percent. Increases in overall unemployment rates from 2008 to 2011 were consistent across each of the 12 counties and may reflect the residual effects of the 2008 recession. Unemployment rates consider only working-age adults who are actively seeking employment; those that are not currently in the workforce or have given up trying to find jobs are not reflected in these statistics.



Poverty

Poverty is a condition defined by household income levels that are insufficient to support a modest standard of living. In the United States, the Census Bureau sets annual poverty level thresholds, based upon household size and income levels. These poverty thresholds are used to monitor poverty conditions in the U.S. and to define eligibility for numerous social welfare programs. In 2017, Federal Poverty Levels (FPLs) were determined as show in the table at the right.

Household Size	Income
1	$12,060
2	$16,240
3	$20,420
4	$24,600
5	$28,780
6	$32,960
7	$37,140
8	$41,320

The average overall poverty rate in the NCKFC region was estimated at 10.4 percent of the population during 2017, a rate that is lower than the statewide rate of 12.8 percent. Among children age 0 to 17 years, 15.3 percent of children in the region lived in poor households,
compared to 16.4 percent statewide. The average for median household income in the region was $48,140. The following chart orders the counties by best ranking per category.

Geographic Area	% in Poverty, all ages	Geographic Area	% in Poverty, age 0-17	Geographic Area	Median Income
Mitchell County	6.5%	Lincoln County	11.2%	United States	$57,652
Lincoln County	7.4%	Marshall County	11.3%	Kansas	$55,477
Marshall County	8.9%	Cloud County	11.7%	Clay County	$55,434
Clay County	9.4%	Dickinson County	13.0%	Ottawa County	$51,797
Ottawa County	9.7%	Washington County	13.6%	Marshall County	$50,420
Washington County	9.7%	Ellsworth County	14.4%	Saline County	$49,728
Regional Average	**10.4%**	Clay County	14.6%	Dickinson County	$49,663
Ellsworth County	11.0%	Mitchell County	15.3%	Lincoln County	$48,693
Dickinson County	11.6%	**Regional Average**	**15.3%**	Ellsworth County	$48,550
Republic County	11.7%	Kansas	16.4%	**Regional Average**	**$48,140**
Cloud County	11.9%	Ottawa County	16.8%	Washington County	$47,992
Saline County	12.6%	Saline County	17.0%	Mitchell County	$44,591
Kansas	**12.8%**	Republic County	19.1%	Cloud County	$44,199
Jewell County	14.2%	United States	20.3%	Republic County	$43,489
United States	**14.6%**	Jewell County	**25.7%**	Jewell County	$43,125

Data Source: U.S. Census Bureau, American Community Survey 2013-2017.Source geography: Tract.

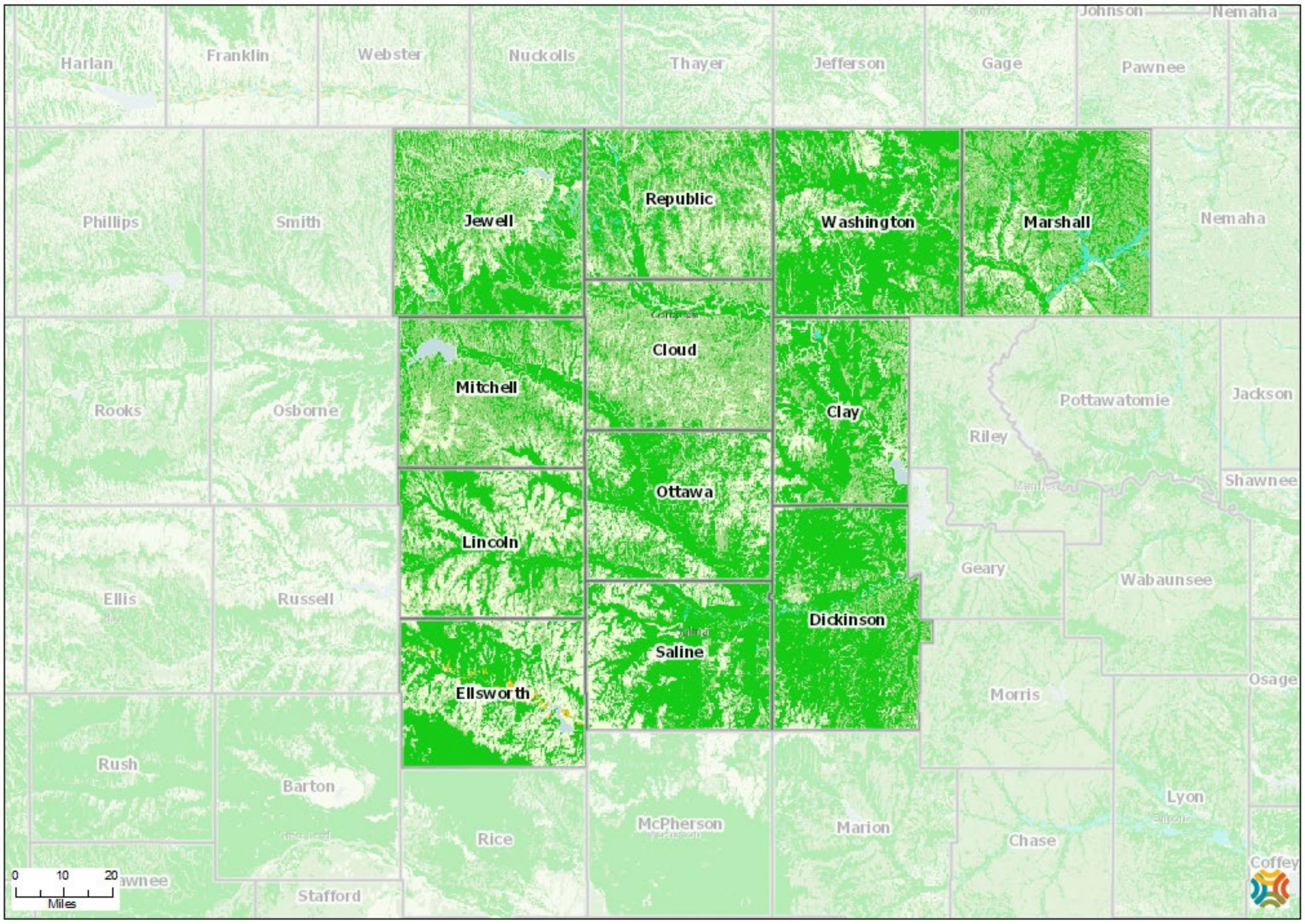
Natural Resources

Agriculture and food production are highly dependent upon having access to sufficient land, high-quality soils, and water to support crop or livestock production. This section examines the availability and use of these natural resources as it relates to food production.

Land Availability and Use

The NCKFC regional boundaries enclose an area approximately equal to 9,208 square miles, or approximately 5.9 million acres. Of that, 4,933,455 acres (83.7 percent) was in use for farming in 2012. The map at on the following page illustrates the locations of prime farmland in the region, regardless of its current use.

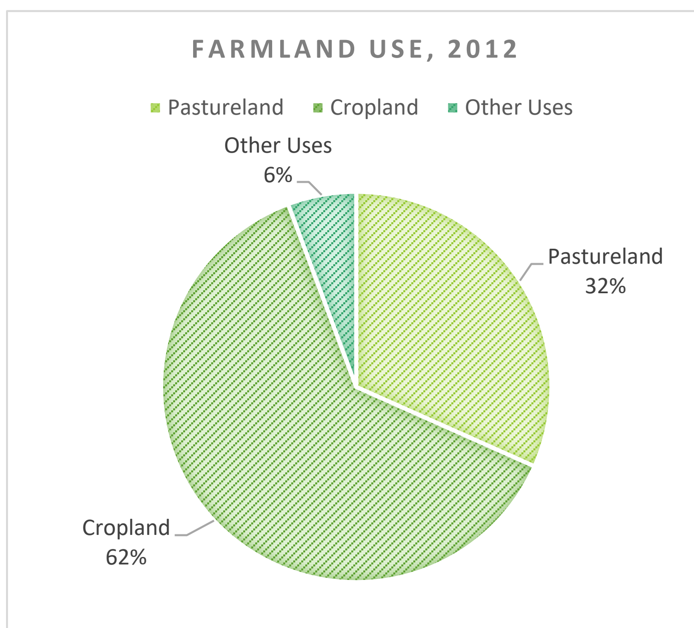
North Central Kansas Farmland Class, 2016



Farmland Class by Map Unit, NRCS 2016

- Prime Farmland
- Prime Farmland if Drained
- Prime Farmland if Irrigated
- Prime Farmland with Limitations
- Farmland of Statewide or Local Importance
- Farmland of Statewide Importance with Limitations
- Farmland of Unique Importance
- Not Prime Farmland
- Not Rated

Map Source: Community Commons

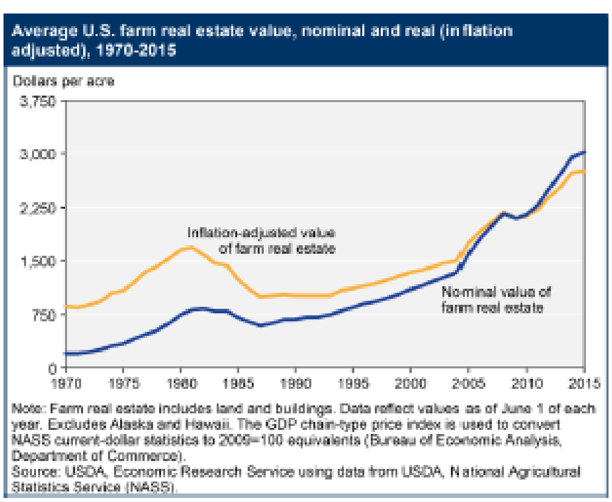


Farmland in the NCKFC region is used primarily for cropland (62 percent) and pastureland (32 percent). The chart at above right show how farmland and croplands in the region were being utilized in 2012. The table on the following page details regional land use.

County Cropland Data, 2012

Geographic Area	Total Cropland Acres	Total Harvested Cropland	# of Farms with Cropland	# of Farms with Harvested Cropland	Idle Cropland or used for cover crops but not harvested or grazed, in acres	Cropland – summer fallow, in acres	Other Pasture and grazing Land that could be used for crops, in acres	Land enrolled in CRP, WRP, or CREP, in acres
Clay County	230,795	209,664	503	415	16,642	1,393	835	17,380
Cloud County	208,841	188,325	384	329	12,681	2,075	3,352	8,138
Dickinson County	335,353	292,261	878	702	310,910	1,823	4,987	34,069
Ellsworth County	182,724	132,524	391	263	26,056	16,238	4,773	26,660
Jewell County	294,769	266,163	403	346	15,613	6,151	2,172	11,794
Lincoln County	204,683	172,141	401	307	16,040	8,375	1,211	12,089
Marshall County	301,711	276,600	729	632	19,942	986	3,209	16,719
Mitchell County	303,529	273,381	393	343	13,518	8,772	1,504	11,162
Ottawa County	238,999	217,525	456	388	12,616	2,576	3,145	13,286
Republic County	258,537	237,799	533	463	11,808	1,625	5,245	8,104
Saline County	236,242	215,740	603	502	13,505	2,291	2,249	12,306
Washington County	298,156	274,030	653	561	16,411	1,454	5,140	19,800
Regional Total	**3,094,339**	**2,756,153**	**6,327**	**5,251**	**485,742**	**53,759**	**37,822**	**191,507**
Kansas	**28,503,265**	**21,043,596**	**52,285**	**41,927**	**2,910,105**	**3,191,238**	**442,258**	**2,426,357**

Data Source: U.S. Census of Agriculture, 2012



Land Values

Access to land is essential for farming operations, and land holdings represent a significant asset on the farm balance sheet. When land values become too high, however, there may be negative impacts on the local food system. When land values are high and farming incomes are low, farm owners may be tempted to sell off land and essentially “cash out”, taking the capital gains from the high land prices. High land prices may also be a barrier for new farmers that lack the capital needed to purchase good farmland. Nationally, farmland values have risen steadily since the mid-1980s. Farmland values vary significantly by location and may be influenced by factors such as the general economy, local farm economies, policies, and development pressures. Within the state of Kansas, there is significant variation in farmland values by region and by county. Values are generally higher for cropland than pastureland, with irrigated croplands bringing higher prices than non-irrigated lands.

Kansas Farmland Values ($/ acre), 2016*

Geographic Area	Non-irrigated Cropland	Irrigated Cropland	Pasture
Clay County	$ 2,913	---	$ 2,097
Cloud County	$ 3,524	---	$ 2,544
Dickinson County	$ 3,330	---	$ 2,397
Ellsworth County	$ 781	---	$ 562
Jewell County	$ 2,354	---	$ 1,695
Lincoln County	$ 2,642	---	$ 1,902
Marshall County	$ 5,130	---	$ 3,692
Mitchell County	$ 2,758	---	$ 1,985
Ottawa County	$ 3,347	---	$ 2,409
Republic County	$ 2,486	---	$ 1,789
Saline County	$ 2,604	---	$ 1,874
Washington County	$ 3,129	---	$ 2,252
Kansas	**$ 2,398**	**$3,400**	**$ 1,726**

NOTE: Missing estimates for irrigated values are due to insufficient observations of irrigated land sales in the previous three years.
**Values shown are for bare land, minimum 40 acres in size. Values are estimated by the Kansas Property Valuations Department.*
Data source: Taylor, 2017c

Estimated Cash Rental Rates ($/acre), 2016

Geographic Area	Non-irrigated Cropland	Irrigated Cropland		Pasture
		Tenant-owned	Landowner-owned	
Clay County	$ 70.50	$ 78.00	$ 104.00	---
Cloud County	$ 61.50	$ 78.00	$ 103.00	---
Dickinson County	$ 51.00	$ 51.00	$ 70.00	---
Ellsworth County	$ 40.00	---	---	---
Jewell County	$ 75.00	$ 81.00	$ 107.00	---
Lincoln County	$ 53.00	---	---	---
Marshall County	$ 103.00	---	---	---
Mitchell County	$ 66.50	$ 72.00	$ 95.00	---
Ottawa County	$ 61.50	---	---	---
Republic County	$ 87.00	$ 85.00	$ 112.00	---
Saline County	$ 61.50	---	---	---
Washington County	$ 80.00	$ 77.00	$ 102.00	---
Kansas (avg.)	**$ 60.94**	**$ 65.33**	**$ 89.50**	---

**Values shown are for bare land, minimum 40 acres in size. Values are estimated by the Kansas Property Valuations Department.*
Data Source: USDA NASS, Census of Agriculture via Taylor, 2017a, 2017b

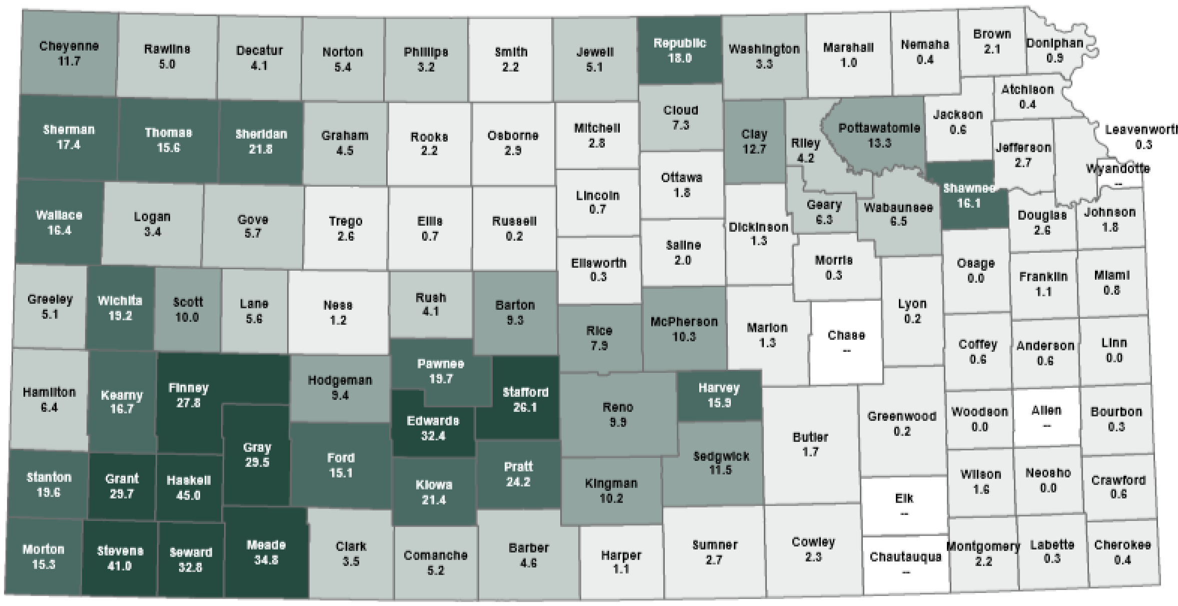
Water

In addition to quality soils, water is another primary resource necessary to support crop and livestock production. In Western Kansas, where rainfall is less abundant and much of the water used in agriculture is obtained from aquifers, declining aquifer levels has become a significant concern. Eastern Kansas counties typically experience higher annual precipitation levels and are less dependent upon irrigation and surface or groundwater reservoirs for agricultural needs.

Irrigated Farmland in the North Central Kansas Region

A small percentage of farms (approximately 10 percent) utilize irrigation in the state. Farm irrigation in the NCKFC region is lower than the state average at 8.1 percent. The table on the following page shows the number of farms in the region which used irrigation in 2012 and the amount of acreage that was irrigated. The counties are rank ordered by irrigation used, highest to lowest.

Percent of Cropland Irrigated in Kansas, by County, 2012



Source: Institute for Policy & Social Research, The Unversity of Kansas; data from U.S. Department of Agriculture, 2012 Census of Agriculture.

Double dash (--) indicates withheld to avoid disclosing data for individual farms.

Percent of Cropland Irrigated — State: 10.1

0.0 - 2.9 | 3.0 - 7.3 | 7.4 - 13.3 | 13.4 - 24.2 | 24.3 - 45.0

Farms and Irrigation Use, 2012

Geographic Area	Total Farms	Farms Using Irrigation	% Farms Using Irrigation	Land in Irrigated Farms (acres)	Irrigated Land (acres)
Republic County	575	116	20.2%	153,091	46,533
Cloud County	461	86	18.7%	136,299	15,234
Clay County	541	78	14.4%	125,030	29,219
Jewell County	453	37	8.2%	79,371	14,983
Mitchell County	415	32	7.7%	10,084	8,399
Lincoln County	431	32	7.4%	3,044	567
Saline County	674	47	7.0%	58,007	4,838
Washington County	732	49	6.7%	85,991	9,721
Ottawa County	525	32	6.1%	77,918	4,221
Dickinson County	1,011	39	3.9%	48,895	4,269
Marshall County	796	19	2.4%	31,056	2,934
Ellsworth County	435	7	1.6%	6,742	574
Regional Totals	7,049	574	8.1%	67,961	11,791
Kansas	**61,773**	**6,205**	**10%**	**13,927,077**	**2,881,292**

Data Source: USDA NASS, Census of Agriculture

Water Use

The table on the following page outlines types of water use in the region. Definitions for water use categories are provided below.

Water Use, by type of Use (million gal/day)

Geographic Area	Domestic Use	Irrigation	Livestock	Industrial	Mining
Clay County	0.59	7.28	0.52	0.00	0.00
Cloud County	0.63	8.64	0.47	0.00	0.00
Dickinson County	1.27	2.38	0.91	0.02	0.06
Ellsworth County	0.63	0.49	0.28	0.01	0.35
Jewell County	0.17	1.07	0.36	0.00	0.00
Lincoln County	0.16	0.51	0.29	0.00	0.00
Marshall County	0.65	0.44	0.32	0.03	0.01
Mitchell County	0.56	0.50	0.25	0.04	0.00
Ottawa County	0.54	3.14	0.60	0.00	0.00
Republic County	0.51	13.29	0.45	0.00	0.01
Saline County	3.42	2.55	0.29	0.09	0.03
Washington County	0.42	2.96	1.19	0.02	0.00

Data Source: U.S. Geological Survey, Water Data

Definitions of water use categories:

- **Municipal/ domestic** – Household use (indoor or outdoor), and municipal water supply use
- **Irrigation** – Water applied by an irrigation system to support crop and pasture growth, or to maintain vegetation on recreational lands such as parks and golf courses
- **Livestock** – Water used for livestock watering, feedlots, dairy operations, and other on-farm needs
- **Industrial** – Water used for fabrication, processing, washing and cooling
- **Mining** – Water used for the extraction of naturally-occurring minerals (such as coal, sand and gravel), liquids (such as crude petroleum) and gases (such as natural gas)

Farming and Food Production

Farms

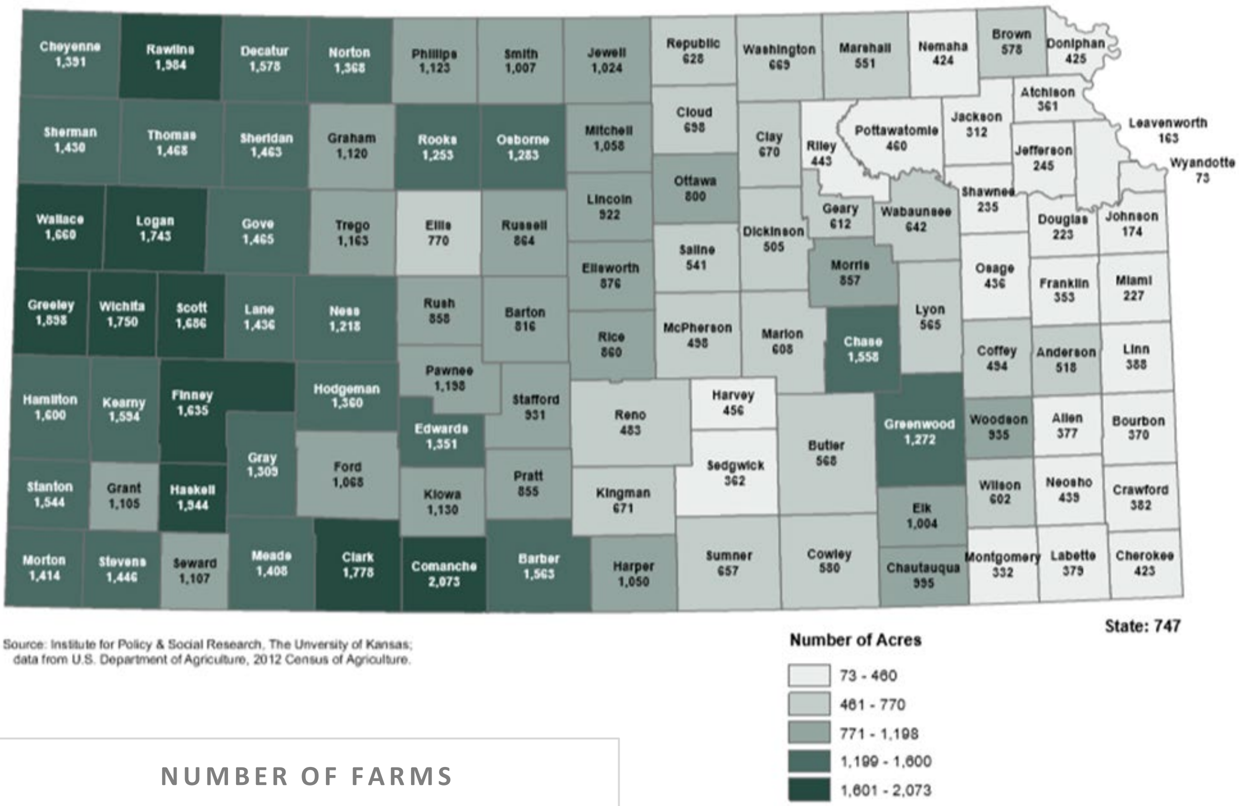
In 2012, there were 7,049 farms in the NCKFC region enumerated in U.S. Census of Agriculture, occupying nearly 5 million acres of land. The average farm size was 745 acres. Average farm sizes for each county are shown on the map on the following page. Both national and state trends have shown reductions in the numbers of farms and increases in the average farm size in recent years, and those statistics have fluctuated throughout the region since 1997.

Farms and Land in Farms, 2012

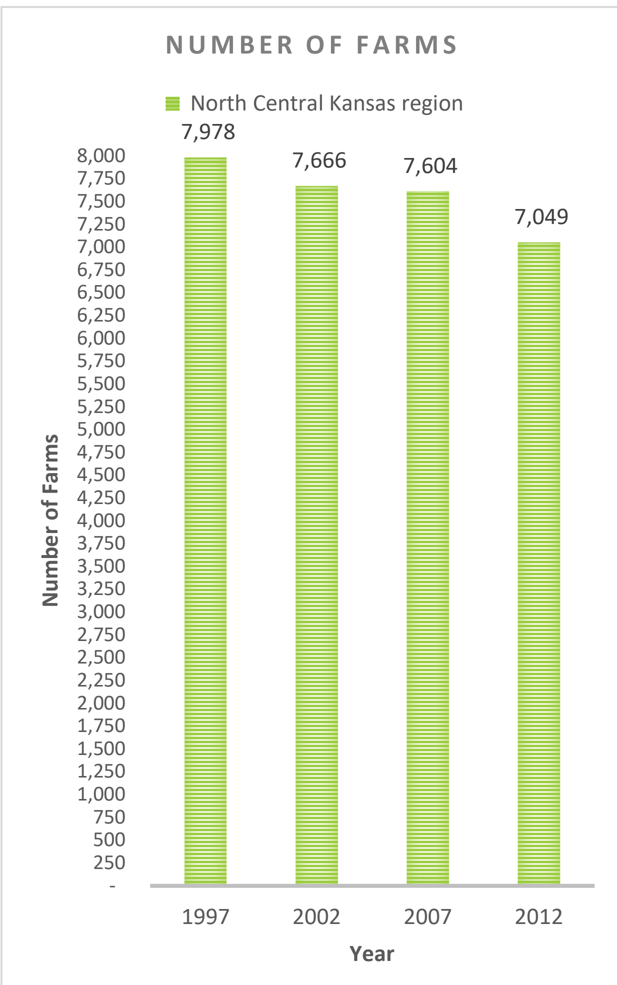
Geographic Area	Total Farms	Land in Farms (acres)	Avg. Farm Size (acres)	Total Cropland (acres)	Harvested Cropland (acres)
Republic County	575	362,520	670	230,795	209,664
Cloud County	461	321,962	698	208,841	188,325
Clay County	541	510,193	505	335,353	292,261
Jewell County	453	381,185	876	182,724	135,524
Mitchell County	415	463,695	1,024	294,769	266,163
Lincoln County	431	397,172	922	204,683	172,141
Saline County	674	438,438	551	301,711	276,600
Washington County	732	438,999	1,058	303,529	273,381
Ottawa County	525	419,823	800	238,999	217,525
Dickinson County	1,011	361,076	628	258,537	237,799
Marshall County	796	364,468	541	236,242	215,740
Ellsworth County	435	490,063	669	298,158	274,030
Regional Totals	**7,049**	**4,949,594**	**702**	**3,041,341**	**2,759,153**

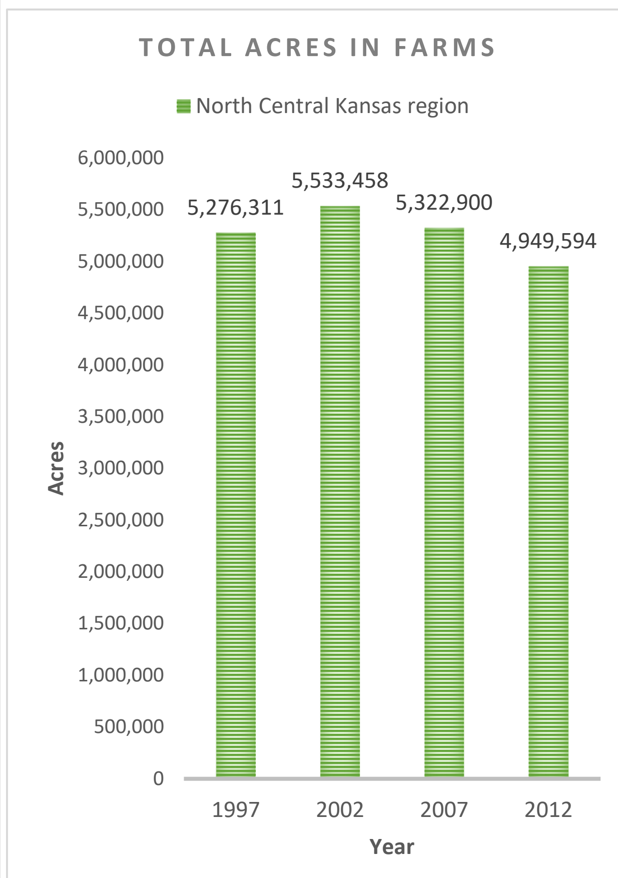
Data Source: USDA NASS, Census of Agriculture

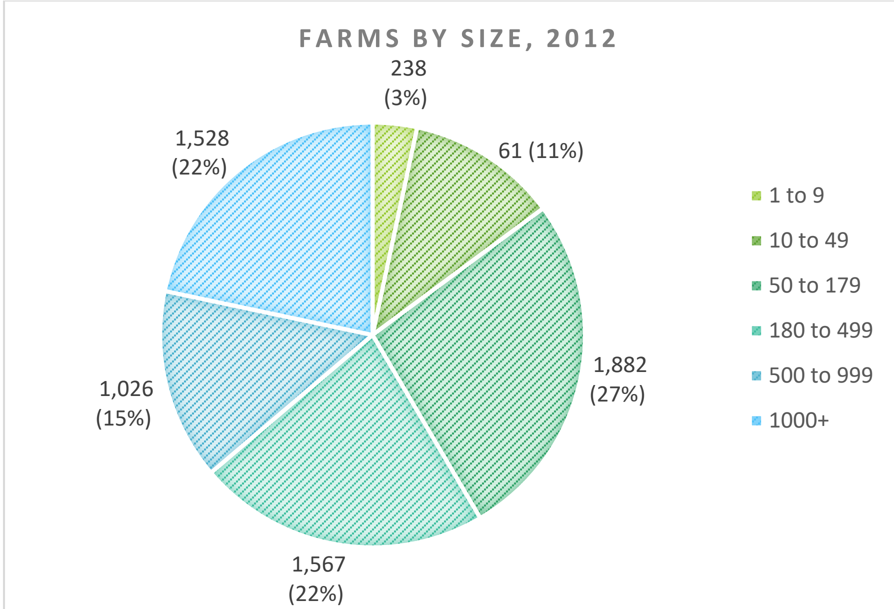
Average Size of Farm in Kansas, by County, 2012



Source: Institute for Policy & Social Research, The University of Kansas; data from U.S. Department of Agriculture, 2012 Census of Agriculture.



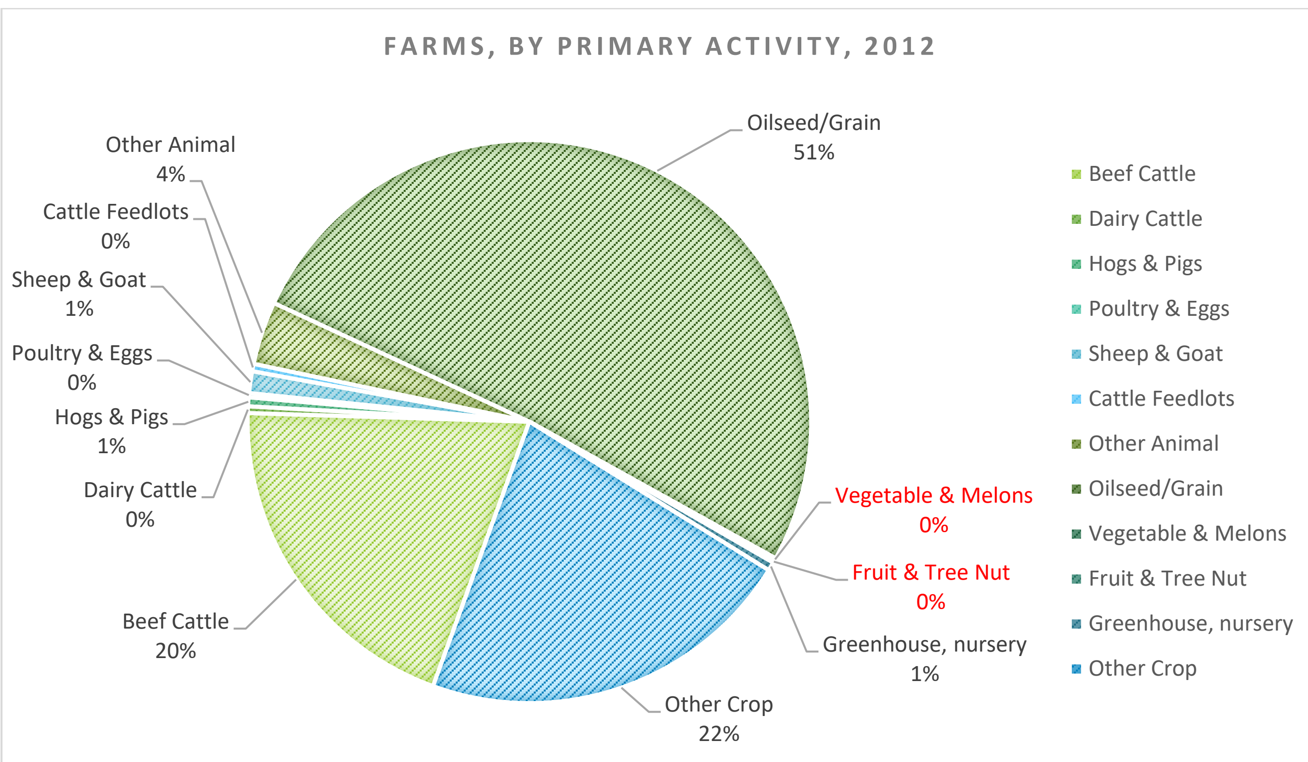




Data Source: USDA NASS, Census of Agriculture

Farm Production

Farming in the NCKFC region is dominated by grain crops, hay and beef cattle production. There were approximately 10 farms that reported fruit and vegetable production each as a primary activity in the region in 2012.



Data Source: U.S. Census of Agriculture, 2012

The charts on the following page lists the top five crop items and livestock inventory for each county by state ranking (Kansas having 105 counties). Individual county reports reference reported quantities within each category.

Top Crop Items by State Ranking, 2012

	Clay County	Cloud County	Dickinson County	Ellsworth County	Jewell County	Lincoln County	Marshall County	Mitchell County	Ottawa County	Republic County	Saline County	Washington County
Soybeans for beans	13	35	23	62	18	51	1	36	33	14	44	7
Corn for grain	52	70	---	---	54	---	9	73	---	18	---	26
Forage-land used for hay and haylage, grass silage, and greenchop	58	---	7	64	---	61	57	---	47	52	35	34
Wheat (all)	63	52	18	60	41	46	72	15	32	68	24	66
Winter wheat for grain	63	52	18	60	41	46	72	15	32	68	24	66
Sorghum for grain	---	46	31	41	14	30	---	16	42	---	52	---

Data Source: U.S. Census of Agriculture, 2012

Top Livestock Inventory Items by State Ranking, 2012

	Clay County	Cloud County	Dickinson County	Ellsworth County	Jewell County	Lincoln County	Marshall County	Mitchell County	Ottawa County	Republic County	Saline County	Washington County
Cattle and calves	71	70	24	88	67	69	76	54	49	63	90	22
Hogs and pigs	19	34	48	49	31	---	33	18	52	---	---	7
Layers	12	54	31	35	---	51	36	---	38	58	29	44
Guineas	1	---	---	---	---	---	---	---	---	---	---	---
Elk	1	---	---	---	---	---	---	---	---	---	---	---
Goats, all	---	19	---	---	---	25	62	---	---	53	31	24
Horses and ponies	---	52	30	84	---	---	88	---	44	90	28	---
Sheep and lambs	---	---	2	14	5	46	---	---	28	(D)	7	---
Quail	---	---	---	---	10	---	---	2	---	---	---	---
Pheasants	---	---	---	---	7	---	---	1	---	---	---	---
Colonies of bees	---	---	---	---	---	6	---	---	---	---	---	1
Chukars	---	---	---	---	---	---	---	1	---	---	---	---

(D) = data suppressed to prevent disclosure of data for individual farms
Data Source: U.S. Census of Agriculture, 2012

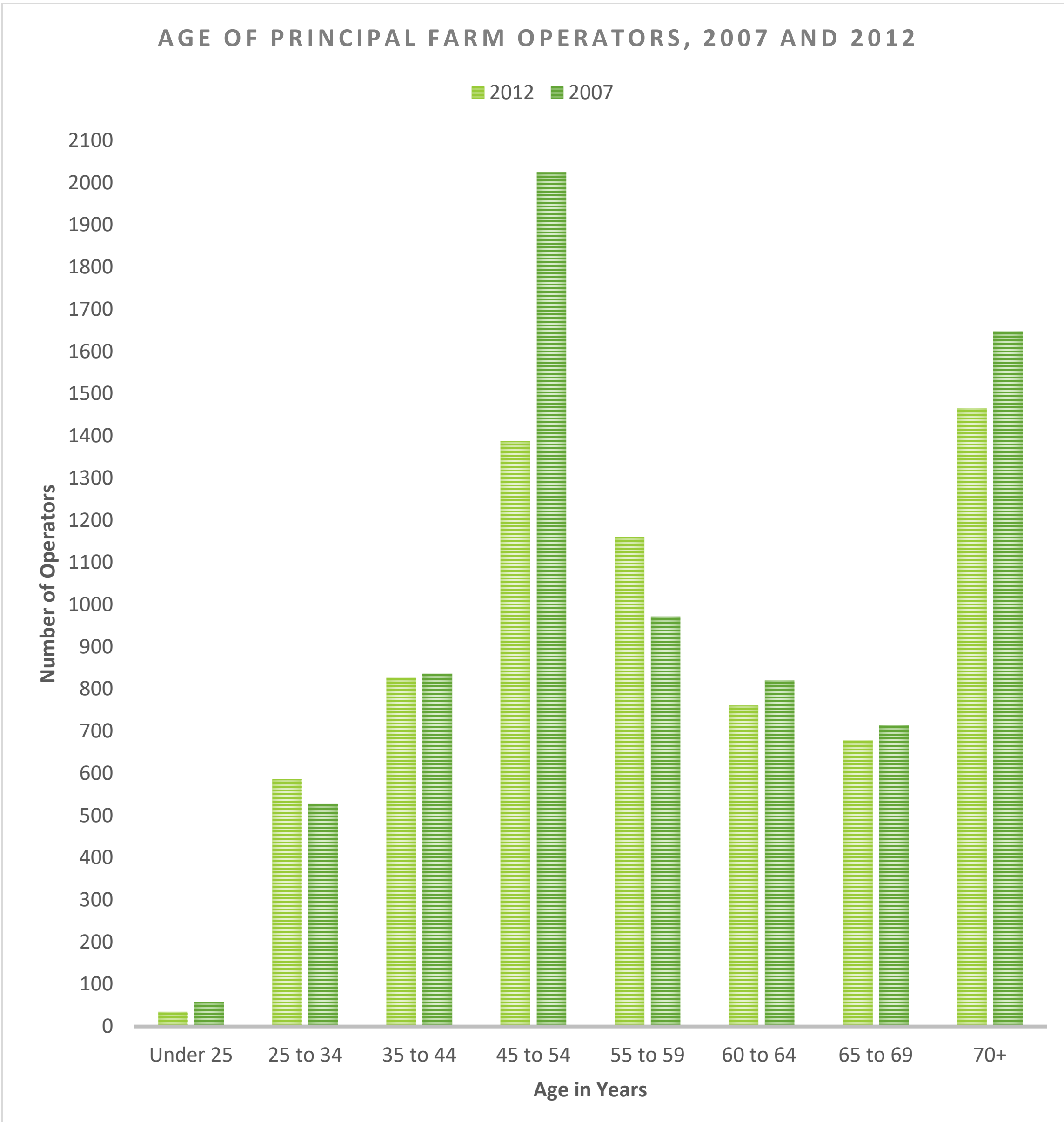
Fruit and Vegetable Production

Commodity crops (corn, soybeans, and wheat) dominate overall crop production in Kansas, and the same is true in NCKFC region. During 2012, a total of 39 farms in the region that reported harvesting vegetables for sale. The number of acres those farms harvested was not fully disclosed. Approximately 32 farms reported having orchards, and fruit and vegetable production accounted for less than one percent of all cropland acres harvested in 2012.

Farm Operators

Age of Farm Operators

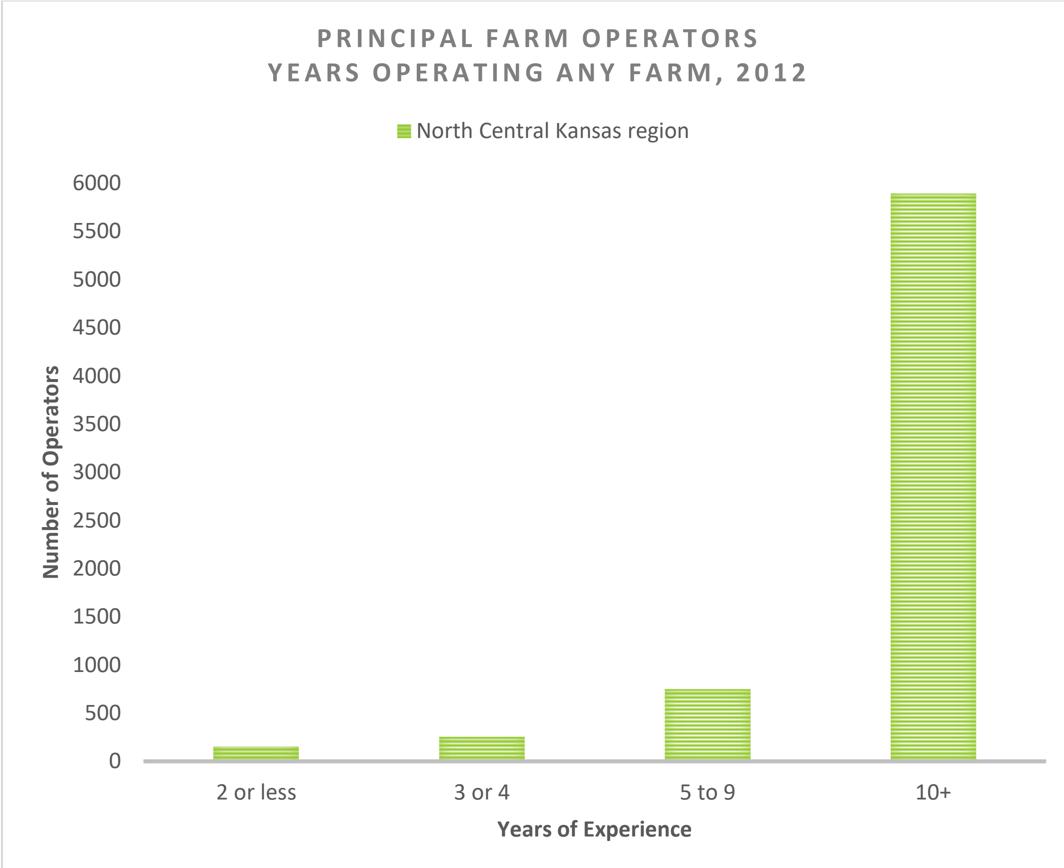
Across Kansas, the average age of farmers has been increasing for many years. The average age of NCKFC region Farm Operators in from 2007 to 2012 has remained at 57 years. The average age of all Kansas principal farm operators in 2012 was 58.2 years.



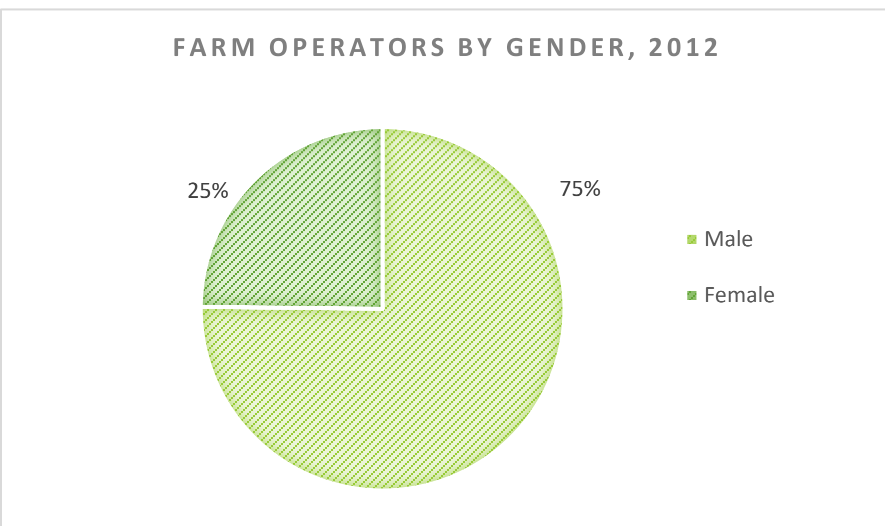
Data Source: U.S. Census of Agriculture, 2012

Farm Operator Experience

Across Kansas, and in the NCKFC region, the vast majority of principal farm operators have 10 or more years of experience as farm operators. The numbers of new farmers entering the occupation are small. This data, coupled with the data on aging of farm operators, raises concern over retirement. There may not be sufficient numbers of new farmers coming on board to sustain farming operations. In 2012, Kansas farmers reported an average of 27.1 years of farm operator experience; regional farmers averaged 27.8 years.



Data Source: U.S. Census of Agriculture, 2012



Data Source: U.S. Census of Agriculture, 2012

Gender of Principal Farm Operators

Across Kansas, and in the NCKFC region, a significant majority of principal farm operators are male. Although 25 percent of all regional farmer operators in 2012 were women, women accounted for only six percent of principal farm operators.

Principal Farm Operators, by Race and Ethnicity

Only a small percentage of Kansas farms have principal operators that are non-white, or of Hispanic/Latino ethnicity. The same is true in the NCKFC region. In 2012, over 10,000 principal farm operators in region self-identified as White and 76 self-identified as Hispanic or Latino. Additionally, 10 operators self-identified as Black, 27 as American Indian/Alaskan Native, and only two as Asian.

Off-farm Employment

The majority of farm operators find it necessary to supplement income from farming operations with other sources of income. In 2012, nearly one-third (31.8 percent) of principal farm operators in the NCKFC region reported that their primary occupation was something other than farming. Approximately 41.4 percent worked at least some days off the farm. Just over one-quarter of principal farm operators (28.4 percent) worked off the farm for 200 days or more during 2012.

Principal Farm Operators Off-farm Employment, by percent, 2012

Geographic Area	Primary Occupation Other than Farming	Worked at Least Some Days Off-farm	Worked Off-farm 200 Days or More
Clay County	253	333	230
Cloud County	247	274	216
Dickinson County	591	685	423
Ellsworth County	223	301	227
Jewell County	153	246	135
Lincoln County	160	230	158
Marshall County	352	457	298
Mitchell County	164	264	178
Ottawa County	263	357	254
Republic County	226	320	232
Saline County	359	462	311
Washington County	349	422	323
Region	**3,340**	**4,438**	**2,985**

Data Source: U.S. Census of Agriculture, 2012

Farm Sales

During 2012, farms in the NCKFC region reported total sales of farm products valued at more than $50 million. Crop sales accounted for about two-thirds of total sales. The average market value of products sold by regional farms in 2012 was $110,403 – a significant increase over previous census-year reports. This increase in value of sales likely represents changes in market values of products as well as changes in production volumes.

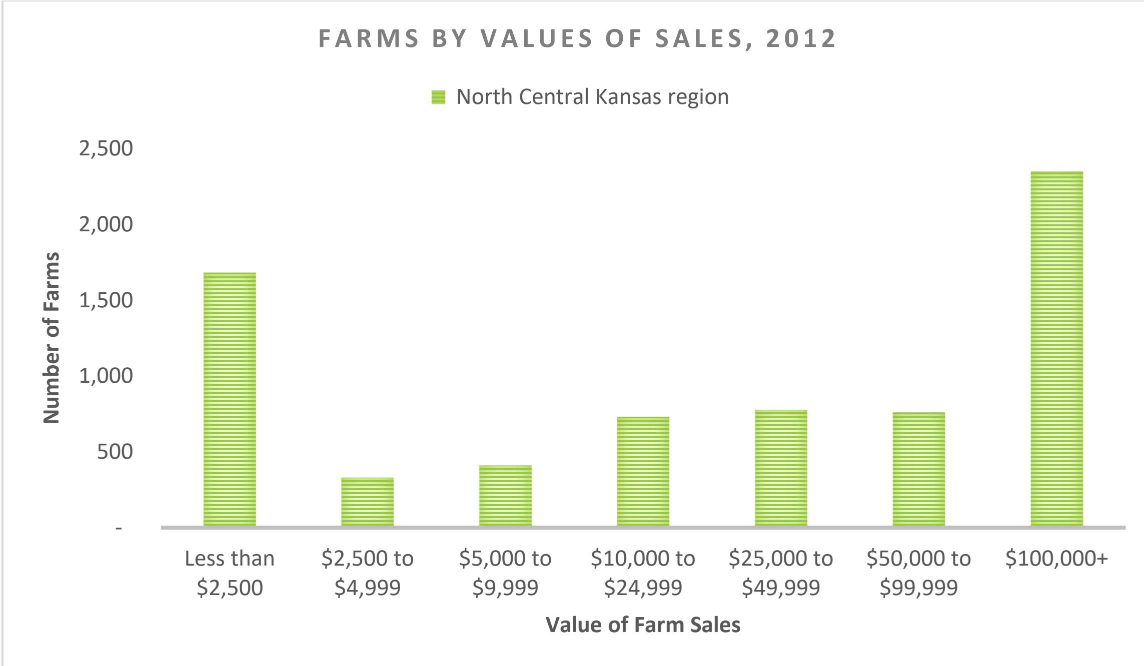
Market Value of Products Sold

Year	Farms	Total Sales	Crop Sales	Livestock Sales	Avg. per Farm
1997	7,978	$ 766,029,000	$ 424,389,000	$ 341,640,000	$ 1,173,446
2002	7,666	$ 685,730,000	$ 303,564,000	$ 382,166,000	$ 1,078,925
2007	7,604	$ 1,146,257,000	$ 617,638,000	$ 514,138,800	$ 1,871,225
2012	7,049	$ 1,453,869,200	$ 940,527,000	$ 513,340,000	$ 2,553,676

Data Source: U.S. Census of Agriculture, 2012

Farms, by value of sales

When grouped by the total value of their sales, it becomes clear that the majority (57.3 percent) of NCKFC region farms operate at either a very small or large scale. Nearly one-quarter (23.9 percent) of farms had sales valued at less than $2,500 in 2012 while one-third (33.4 percent) of farms had sales valued at $100,000 or more.



Data Source: U.S. Census of Agriculture, 2012

Sales through Alternative Market Channels

Although traditional commodity farming dominates the Kansas farm market, a few NCKFC region farms are attempting to market their products through alternative marketing channels. The table below illustrates the number of farms that reported engaging in these activities.

Value of Alternative Market Sales, 2012

Market Approach, 2012	Kansas		North Central Kansas region	
	Farms	$ Value	Farms	$ Value
Direct sales to individuals, for human consumption	2,044	$8,957,000	145	$324,000
Sales directly to retail outlets	406	No data	27	No data
Sales of value-added commodities	1,615	No data	140	No data
Sales through Community-Supported Agriculture program	144	No data	16	No data
Agritourism Services	1,000	$8,271,000	79	$613,000

(D) = data suppressed to prevent disclosure of data for individual farms
Data Source: U.S. Census of Agriculture, 2012

Net Farm Income

Net average incomes for NCKFC region farms in 2012 were generous at $63,402. By comparison, 2012 net farm income for all farms in Kansas averaged $50,903. Nearly one-third (31.7 percent) of regional farms reported net operating losses in 2012 as compared to about 41 percent for the state average.

Farm Income, 2012	North Central Kansas region
Net cash farm income of operations (total)	$446,919,000
Average per farm	$63,402
Percent of farms that reported net gains	68.3%
Average net gain per farm	$106,822
Percent of farms that reported net losses	31.7%
Average net loss per farm	$33,402

Data Source: U.S. Census of Agriculture, 2012

Regional Farms and Food Production

When considering the "local" food system, it is important to consider what food production is occurring in the North Central Kansas region. A review of vendor listings for farmers' markets located in northcentral Kansas shows that vendor/producers regularly sell their products at venues outside of their home counties, and it is equally likely that some consumers travel outside of the county to bordering communities to purchase foods that satisfy their desires and expectations. The table below shows the number of farms in each of several counties within the region that harvested fruits or vegetables in 2012 or sold farm products directly to individual consumers or retail outlets.

Geographic Area	Total Farms	Farms Harvesting *Vegetables	*Vegetables Harvested, by acre	Farms with Orchards	Acres in Orchards	Farms selling direct to individuals	Value of Direct Sales	Farms selling direct to retail outlets	Farms producing value-added products	Farms participating in CSA programs
Clay County	541	2	D	0	0	14	$45,000	7	14	0
Cloud County	461	3	11	0	0	12	$19,000	2	4	2
Dickinson County	1,011	4	0	7	13	34	$48,000	0	19	0
Ellsworth County	435	4	3	3	4	3	$27,000	1	3	0
Jewell County	453	0	0	0	0	4	$20,000	2	17	0
Lincoln County	431	1	D	0	0	8	$10,000	0	9	2
Marshall County	796	0	0	5	4	16	$21,000	2	14	0
Mitchell County	415	0	0	4	4	8	$12,000	2	14	2
Ottawa County	525	6	8	6	24	11	$23,000	2	14	4
Republic County	575	9	D	1	D	3	D	2	5	0
Saline County	674	3	3	5	18	16	$46,000	3	10	6
Washington County	732	7	12	1	D	16	$53,000	4	17	0
Region	7,049	~39	37	32	~67	145	~$324,000	27	140	16

**Vegetable statistics include potatoes and melons*

(D) = Data suppressed to avoid disclosure on information for individual farms

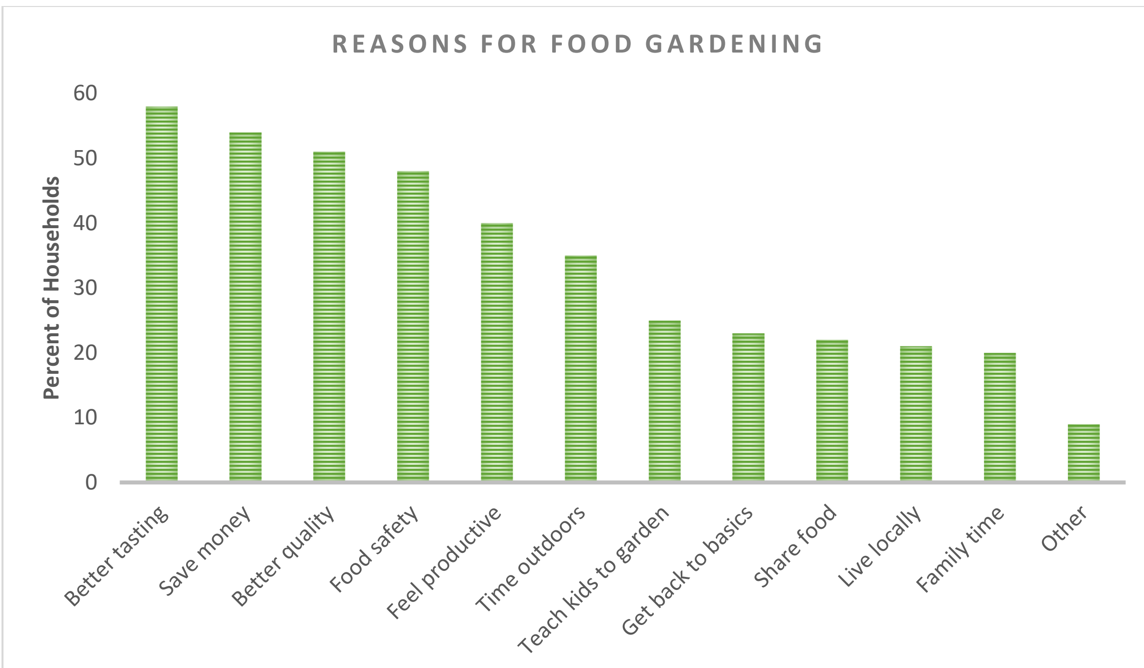
Data Source: U.S. Census of Agriculture, 2012

Other Local Food Production

Home Gardening

Although most communities lack reliable information about the numbers of community residents that grow at least some of their own foods, national studies tell us that interest in home gardening has enjoyed a strong resurgence in recent years. A study published by the National Gardening Association (2014) found that more than one-third (35 percent) of U.S. households had grown food for their own use during 2013. That finding indicates the highest overall participation levels seen in the U.S. in a decade, and an increase of 17 percent over five years. The study found that there had been an increased interest in food gardening among millennials (age 18-34 years old), with a 63 percent increase in participation in food gardening among that group between 2008 and 2013. The report also estimated that more than 2 million U.S. households participated in community gardens in 2013, a 200% increase in five years.

Participants in the same study were asked about the reasons why they participated in food gardening. Their responses may be helpful in understanding what factors are driving the increased interest. Results are shown in the chart below.



Data Source: National Gardening Association. (2014). Garden to Table: A 5-Year Look at Food Gardening in America.

Community Gardens

Community Gardens are also growing in popularity – new gardens are being established in many Kansas Communities. Community Gardens are garden sites that offer growing space to multiple community members. Although rules and policies may vary, garden participants are assigned one or more plots upon which they may grow food plants, herbs or flowers of their choosing. Community Gardens are frequently organized by non-profit organizations or groups of community volunteers. Many gardens offer instruction and educational programming and access to shared tools and equipment. In addition to the obvious benefits of healthy foods and physical activity, community gardens provide social interaction that helps to build community. Because Community Gardens are often established on abandoned lots or other un-space within the community, they may also help to increase the attractiveness of a neighborhood by eliminating eyesores or hazardous conditions.

The chart on the following page lists community gardens in the NCKFC region.

Geographic Area	Community Garden	Location
Clay County	SonShine Community Garden	Clay Center, KS
Cloud County	Concordia Community Garden	Concordia, KS
Dickinson County	Abilene Community Garden	Abilene, KS
	Herington Community Garden	Herington, KS
Ellsworth County	Wilson Community Garden	Wilson, KS
Jewell County	Mankato Community Garden	Mankato, KS
	Formoso Garden Club	Formoso, KS
Lincoln County	The Radish Patch of Lincoln County	Lincoln, KS
Marshall County	---	---
Mitchell County	North Campus Community Garden	Beloit, KS
Ottawa County	Bennington Community Garden	Bennington, KS
	Minneapolis Community Garden	Minneapolis, KS
Republic County	Harvest Community Garden	Belleville, KS
Saline County	Church Community Organic Garden	Salina, KS
Washington County	Linn Community Garden	Linn, KS
	Washington PRIDE Committee Community Garden	Washington, KS

Hunting, Fishing and Food Foraging

In addition to home gardening, households may also supplement their food supply by hunting, fishing or foraging for edible wild plants. Unfortunately, no data are available describing the extent to which these sources are a routine part of the community food supply.

Food System Infrastructure

Most food consumed by humans does not go directly from harvest in the field or livestock operation to a home dinner table. It is far more common to have many intermediate steps in transporting, processing, packaging and distribution before foods reach retail outlet shelves or restaurant kitchens. Once there, most foods undergo additional preparation before being eaten by consumers.

In the conventional food system, most foods are not sold and consumed in the communities where the products originate. Instead, farm products are produced in larger quantities and sold to processors that may be long distances from the farm. Processors, in turn, sell and ship their finished products to distributors and wholesalers, who then sell products to retail stores or restaurants. By the time the food reaches the consumer's plate, it may have traveled thousands of miles and changed hands numerous times.

Image Source: http://charlestonorwig.com/

Food Processing

Meats

The limited number of meat processing facilities in Kansas is frequently cited as a barrier to local meat production by smaller scale or family farms. Under federal law, inspection standards in a state facility must be "equal to" those of federally inspected operations. The main difference between state and federal plants is that, by law, state inspected meats can only be sold within the state. In other words, meat products processed at state plants cannot enter commerce across state lines, which includes online sales, mail orders and other sales methods wherein meats are shipped out of state. Meat products processed at federal plants, on the other hand, may be sold across state lines, on the Internet and via mail order.

Geographic Area	Company	City	Activities
Clay County	Dieck's Inc./Clay Center Locker	Clay Center	Slaughter, processing, retail, red meat
Cloud County	Duis Meat Processing	Concordia	Slaughter, retail, red meat
	Glasco Meat Processing	Glasco	Retail, red meat
Dickinson County	First Choice Meats, Inc.	Herington	Processing, red meat, retail
Ellsworth County	Ellsworth Packing, Inc.	Ellsworth	Retail, red meat
Jewell County	---	---	---
Lincoln County	---	---	---
Marshall County	Welch Brothers Meat Co.	Frankfort	
	Frankfort Meat Processors, Inc.	Frankfort	Slaughter, processing, red meat
	Beattie Locker	Beattie	Processing, red meat, retail
Mitchell County	Heartland Choice Meats, Inc.	Beloit	
Ottawa County	---	---	---
Republic County	---	---	---
Saline County	Smoky River Meats	Salina	Retail, red meat
Washington County	Bob's Locker Plant	Washington	Slaughter, processing, red meat

Manufacturing

No manufacturers were identified from searches of the data sources utilized in producing this report.

Distribution, Warehouses, and Wholesale Suppliers

The Schwan Food Company is a distributor based in the City of Salina. The 105,000 square foot facility serves a buffer between manufacturing and shipping. Schwan's Pizza Plant is also a supplier located in Salina.

Geographic Area	Distributor	City	Sector	Category
Saline County	Stellar Distribution	Salina	Wholesale trade – Nondurable Goods	Groceries, General Line business/ industry
	Hoosier Food Service, Inc.	Salina	Food products - Wholesale	---
	Frito-Lay, Inc.	Salina	Food products - Wholesale	Groceries

Infrastructure to Support Local Food Farmer/Producers

One of the most frequently-cited barriers to increasing sales of locally-grown foods to businesses and institutions within a community is the challenge of aggregating foods produced in small quantities by small-scale producers and adding the processing and packaging that is needed to transform the raw products into forms and quantities that are better-matched to the needs of those potential purchasers. Many smaller-scale farmers lack on-farm capacity for washing and packaging fruits and vegetables, and few have the food safety certifications that may be required by institutional buyers. Institutional purchasers need the convenience of being able to fill all their needs with purchases from a small number of vendors; procuring products from multiple farms is cumbersome and time consuming. Some institutional food purchasers have become heavily reliant upon pre-processed foods like baby carrots or pre-cut apple slices, and no longer have access to the staff and equipment that would be necessary to process and prepare raw foods in-house.

To address this gap between small-scale producers and larger-scale potential purchasers, some form of centralized aggregation, processing, order fulfillment and distribution system may be indicated. Many communities have recognized that the market for locally-produced foods will be limited until this infrastructure gap is adequately addressed. Some communities have undertaken feasibility studies to explore options for creating food hubs to meet the needs. Food hubs fill the gap between small to intermediate-scale local food producers and larger commercial or institutional purchasers by aggregating and packaging farm products and providing a single sales point for purchasers interested in procuring local foods. Many also provide technical assistance to farmers on subjects such as food safety or assessment of market needs, and they may also provide some light processing and packaging.

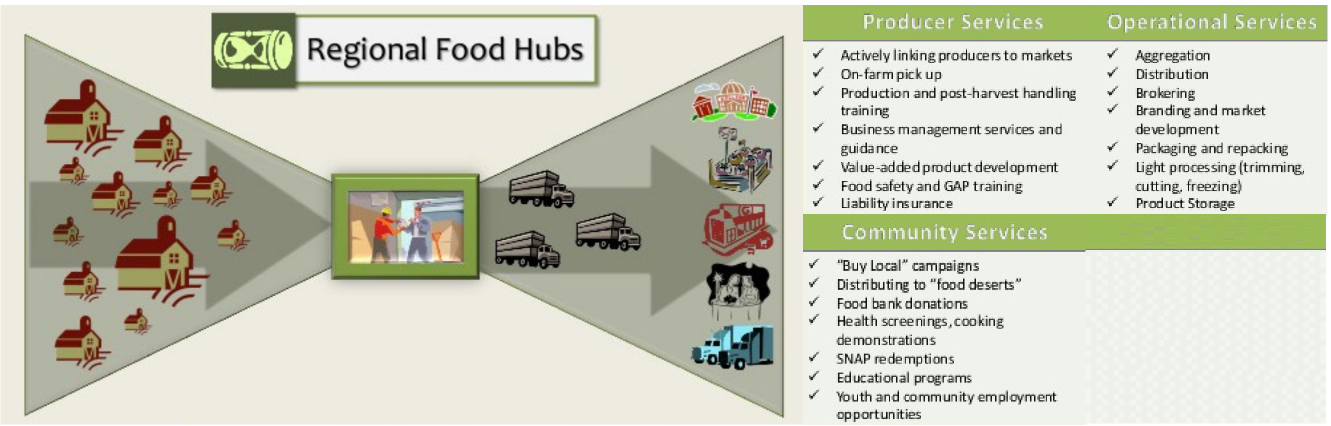


Image Source: Southern SAWG. (2015). Food Hub Lessons: Early Decisions. http://www.slideshare.net

In Kansas, two food hub feasibility studies have been completed in northeastern Kansas. Development of a regional food hub operating under the name Fresh Farm HQ has begun operations. The organization is structured as a member-owned co-op, and currently has ten producer/owners. The food hub serves as an intermediary marketing and distribution broker, coordinating aggregation of foods produced by small-scale farms and providing businesses interested in purchasing locally-grown foods with a centralized purchasing system. Additional services provided by the food hub organization include assistance with crop/stock planning, food safety planning, bulk packaging supply, and technical assistance and training.

A feasibility study for a regional food hub in North Central Kansas was also conducted in 2017.

Support for Value-Added Food Producers

For individuals or businesses wanting to develop and sell value-added food products, a number of support resources are available in the region.

Education and Technical Assistance

Kansas State University Value Added Foods programs provide assistance in developing value-added food products, meat products and bakery products. Their services include product and process development, shelf-life evaluation, nutrition labeling, and chemical and microbiological analysis and evaluation.

K-State is the only school in the United States that offers a four-year Bachelor of Science degree in **Bakery Science and Management**. The Bakery Science research laboratories include a modern pilot-scale bakery, and various analytical labs for testing ingredients, dough, and finished products.

The **American Institute of Baking** (now known as AIB International) in Manhattan as founded in 1919 as a technology and information transfer center for bakers and food processors. The original mission was to "put science to work for the baker", a theme that has expanded yet remains central to their programs, products, and services. The Institute's staff includes experts in the fields of baking production, experimental baking, cereal science, nutrition, food safety and hygiene.

Community/Incubator Kitchens

Would-be entrepreneurs who would like to produce and sell value-added food products are often faced with challenges of how to meet food safety regulations and requirements without investing large sums of capital to acquire equipment and an appropriate kitchen workspace. Community or incubator kitchens, which offer certified kitchen space and commercial-grade food preparation equipment on a rental basis provide small-scale startup businesses with an affordable option for producing their food products.

The Kansas Department of Agriculture (KDA) has developed an Incubator Kitchen Resource Guide to provide critical information about incubator resources throughout the state of Kansas. Although the KDA only lists Kitchen 4 Hire, a shared kitchen facility located in Salina, as the only facility of its kind in the 12-county region, there are likely to be a number of other privately-owned commercial-grade kitchen facilities located in churches, schools and community centers in the region. Some of these may be willing to negotiate with individuals seeking kitchen access to allow leased use of kitchen facilities during otherwise idle time periods.

The Retail Food Environment

The food that is available in our environment and the manner in which it is presented to us exert strong influences on our eating choices. No matter how well-intentioned and knowledgeable a person might be, maintaining healthy eating behaviors and supporting a local food system can be difficult if healthy and local food options are not readily available, accessible, convenient or affordable in the community. When we consider the fact that, at times, an abundance of less healthy or non-local food options is more abundant, easier to find and cheaper to buy, we better understand the challenges individual consumers face when choosing what to buy and eat. Even when consumers are deliberately trying to maintain healthy diets, a barrage of subtle and not-so-subtle cues and messages in the food environment may derail their good intentions. Factors as varied as product placement and pricing, the words used to describe a menu offering, plate sizes, and ambient lighting in the dining environment have all been shown through research to influence eating choices and behaviors (Wansink, 2014).

The term 'food environment' describes the array of food options and environmental influences within a neighborhood or community. The U.S. Centers for Disease Control and Prevention (U.S. Centers for Disease Control and Prevention, 2016) defines the food environment as:

- The physical presence of food that affects a person's diet,
- A person's proximity to food store locations,
- The distribution of food stores, food service, and any physical entity by which food may be obtained, or
- A connected system that allows access to food.

Both the private and public sectors shape our food environment. Businesses seek to locate in neighborhoods where they have the best chances of making a profit. Restaurants and grocery stores remain where they find a reliable customer base. For local government and public agencies, zoning regulations influence where different types of commercial businesses can locate, while procurement and purchasing decisions can influence what foods are available in places like schools and city parks.

The factors that shape our food environment range from common to quite subtle factors:

- Cultural influences, and familiarity with various foods
- Knowledge and food preparation skills
- The physical availability to access food
- Access to cooking and food preparation facilities
- Time constraints
- Where various stores and food outlets are located
- The pricing of healthy or local food offerings
- Product placement on store shelves
- Plate size in restaurants
- The words used to describe a menu offering

Each of these factors, and many more, come into play as consumers select the food that they eat.

Grocery Stores

Traditionally, most families have purchased the majority of their food for home use at community grocery stores. That tradition is changing, however, as more large-scale 'big-box' stores like Walmart and Target devote significant sections of their store floor space to grocery items, and smaller convenience and discount stores also expand their offerings of food items. Even pharmacies are expanding their selection of grocery items.

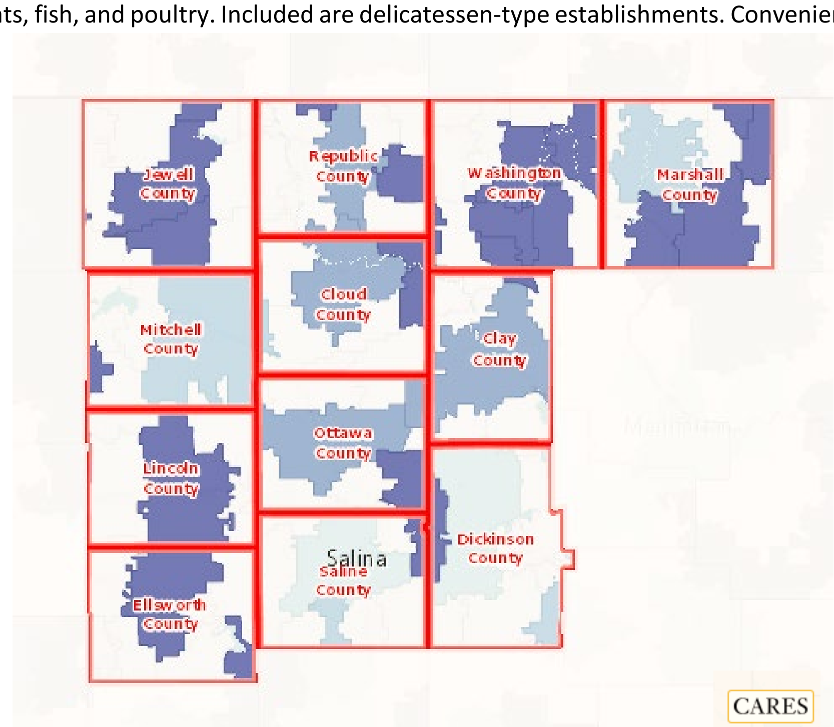
Data from the proprietary InfoUSA market analysis database generated the following counts of retail food businesses operating in the region in 2017:

Geographic Area	Store Type					
	Supercenters	Grocery Stores	Meat Markets	Fruit & Veg Markets	Convenience Stores	Dollar Stores
Clay County	0	2	0	0	0	2
Cloud County	1	1	1	0	4	1
Dickinson County	0	3	1	0	13	3
Ellsworth County	0	2	1	0	6	1
Jewell County	0	2	0	0	1	1
Lincoln County	0	1	0	0	4	1
Marshall County	1	4	1	0	5	2
Mitchell County	0	2	0	0	5	2
Ottawa County	0	1	0	0	3	1
Republic County	0	1	0	0	1	1
Saline County	2	4	2	1	22	3
Washington County	0	4	0	0	5	1
Region	**4**	**27**	**6**	**1**	**69**	**19**

The map below illustrates the number of grocery stores per 100,000 population. Grocery stores are defined as supermarkets and smaller grocery stores primarily engaged in retailing a general line of food, such as canned and frozen foods; fresh fruits and vegetables; and fresh and prepared meats, fish, and poultry. Included are delicatessen-type establishments. Convenience stores and large general merchandise stores that also retail food, such as supercenters and warehouse club stores are excluded. This indicator is relevant because it provides a measure of healthy food access and environmental influences on dietary behaviors.

All Retail Food Outlets,
Rate (Per 100,000 Pop.) by ZCTA, CBP 2016

- Over 50.0
- 30.1 - 50.0
- 20.1 - 30.0
- Under 20.1
- No Retail Food Outlets
- Report Location



**For more discussion of access to grocery stores in the North Central Kansas region, please refer to the Food Access section of this report.*

Farmers' Markets

Farmers' markets offer consumers the opportunity to purchase fresh, locally-grown foods directly from the farmers that produced them. This direct marketing approach is beneficial to both farmers and consumers in many ways. Farmers may retain more of the sales value for their products than they would if products were marketed through conventional food distribution systems, and farmers' markets provide an ideal outlet for products that are only available in small quantities. Consumers gain access to products that are freshly-harvested, and the opportunity to build relationships with the farmers that grow their food. Interest in farmers' markets has grown in recent years, both nationally and across Kansas.

The table below lists the farmers' markets currently in operation in the NCKFC region. The map indicates their locations.

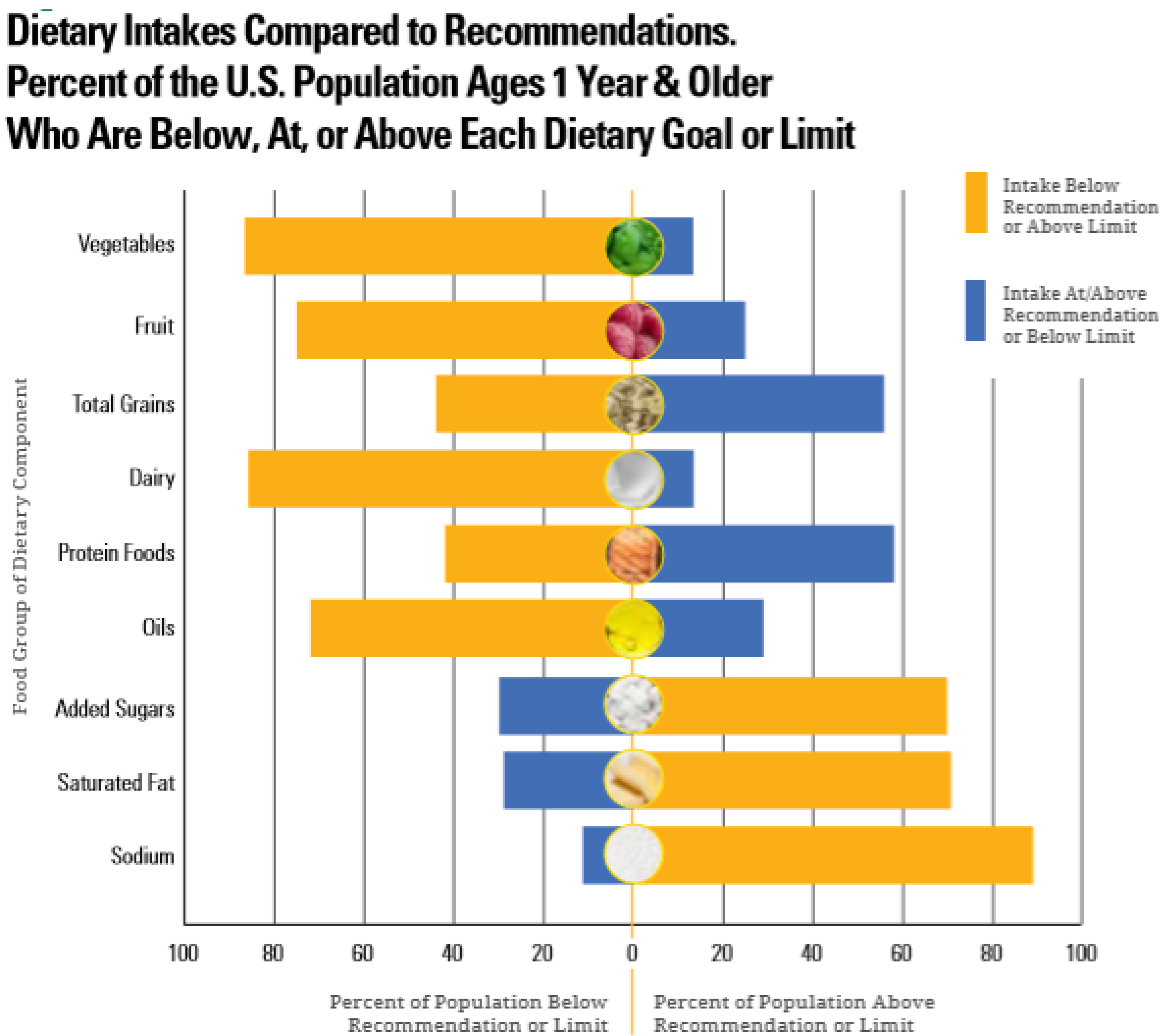
Geographic Area	Farmers' Market	Location
Clay County	Clay Center Farmers' Market	Clay Center, KS
Cloud County	Clyde Farmers' Market	Clyde, KS
	Concordia Farmers' Market	Concordia, KS
Dickinson County	Abilene Farmers' Market	Abilene, KS
Ellsworth County	---	---
Jewell County	---	---
Lincoln County	---	---
Marshall County	Marysville Farmers' Market	Marysville, KS
	Frankfort Farmers' Market	Frankfort, KS
Mitchell County	Solomon Valley Farmers' Market Association	Beloit, KS
Ottawa County	Minneapolis Farmers' Market	Minneapolis, KS
Republic County	Belleville Main Street Farmers' Market	Belleville, KS
Saline County	9th and Grand Farmers' Market	Salina, KS
	Salina Farmers' Market	Salina, KS
	Downtown Farmers' Market	Salina, KS
Washington County	Clifton Farmers' Market	Clifton, KS
	Washington Farmers' Market	Washington, KS

Farmers' Markets Location, Dec. 2017, USDA

Consumer Eating Behaviors and Food Purchases

Eating Behaviors

Across the nation, and in Kansas, studies have repeatedly found that consumers' diets are not well-aligned with current dietary recommendations. According to recent information from the Dietary Guidelines for Americans (U.S. Department of Health and Human Services, and U.S. Department of Agriculture), about three-quarters of Americans consume too little fruits, vegetables, dairy products and oils, and more than half eat more than the recommended amounts of grains and protein foods.



Note: The center (0) line is the goal or limit. For most, those represented by the orange sections of the bars, shifting toward the center line will improve their eating program.
Image Source: U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans, 8th Edition, 2015. http://health.gov/dietaryguidelines/2015/guidelines/

Fruit and Vegetable Consumption

At the state and county levels, information about consumers' fruit and vegetable consumption are monitored as part of the annual Behavioral Risk Factor Surveillance System (BRFSS) survey. State-level results are available for most years; county-level results are available only in years where the survey sample was enlarged sufficiently to produce reliable estimates for most counties in Kansas. The way in which questions about fruit and vegetable intake were asked and reported was changed between 2009 and 2010, which makes comparisons between pre-2010 and later-year results invalid.

BFRSS data for Kansas shows that in 2009, 81.4 percent of adults were consuming fruits and vegetables less than five times per day. In 2015, 22.3 percent of adults were consuming vegetables less than one time per day and 43.7 percent of adults were consuming fruits less than one time per day.

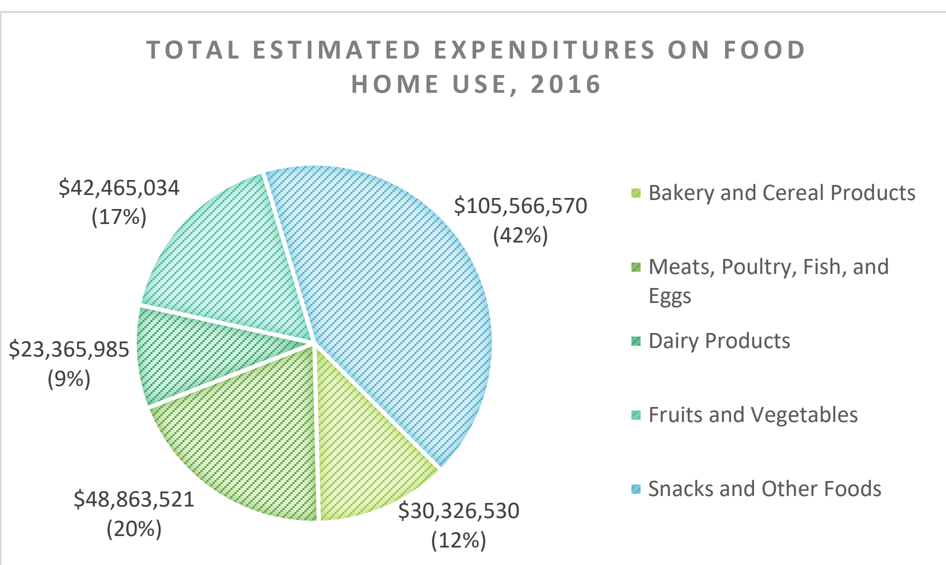
The chart below lists available fruit and vegetable consumption data for the NCKFC region. Although county-level data is not available for many of the counties in the region, the following section provides additional insights into associated purchasing behaviors.

Geographic Area	2009 Data	2015 Data	
	% Adults Consuming Fruits and Vegetables <5 times per day	% Adults Consuming Vegetables <1 time per day	% Adults Consuming Fruits <1 time per day
Clay County	81.7%	No data	No data
Cloud County	81.2%	No data	No data
Dickinson County	84.7%	21.0%	51.7%
Ellsworth County	85.9%	No data	No data
Jewell County	No data	No data	No data
Lincoln County	No data	No data	No data
Marshall County	71.7%	28.8%	46.0%
Mitchell County	79.4%	No data	No data
Ottawa County	No data	No data	No data
Republic County	No data	No data	No data
Saline County	84.1%	22.3%	42.9%
Washington County	63.9%	No data	No data

Food Expenditures

Data from the national Consumer Expenditure Survey provide regional estimates of consumer spending patterns for an array of goods and services. A proprietary company, Synergos Technologies, has combined those regional estimates with local-level demographic data to produce statistical estimates of consumer spending patterns at the county level.

In 2016, residents in the NCKFC region spend an estimated $358,915,648 annually on all food purchases. Of total food purchases, approximately $135,499,932 is spent on foods prepared away from home as compared to $223,415,715 spent on foods prepared at home. As illustrated in the chart below, the majority (42 percent) of food purchased for home use is on snacks and other foods and only 17 percent is spent on fruits and vegetables. Given this data, fruit and vegetable purchases are calculated at an average of 85 cents per person, per day.



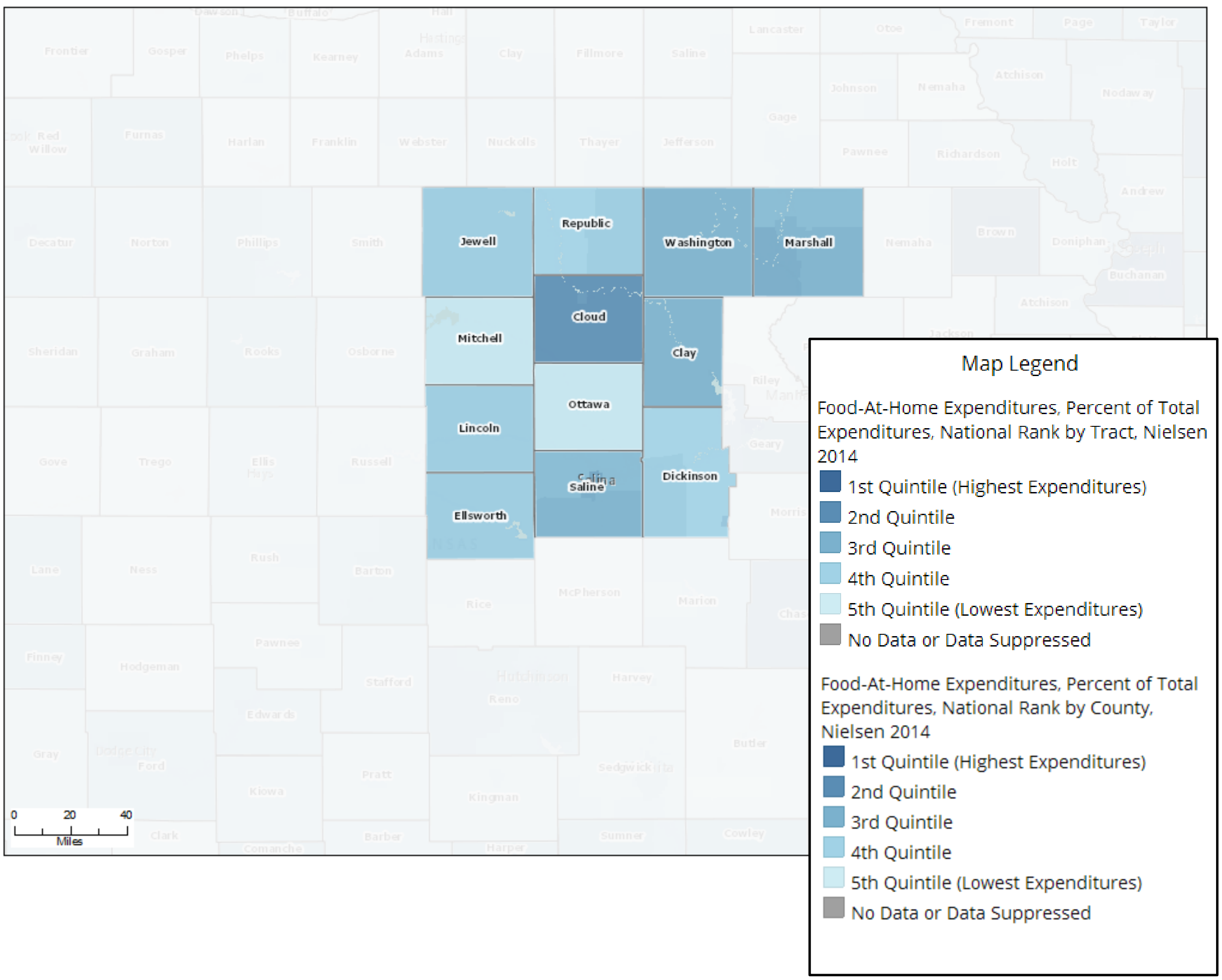
Data Source: Synergos Technologies, Inc. forecasts Business Decision data system Estimates derived from the Consumer Expenditure Survey, Bureau of Labor Statistics, 2012

North Central Kansas region population, 2016	**136,248**
Total county food spending	$358,915,648
Total annual food spending per capita	$2,634.28
Total daily food spending per capita	$7.22
Total spending on fruits and vegetables (at home)	$42,465,034
Total annual fruit and vegetable spending per capita	$311.67
Daily per capita spending on fruits and vegetables	$0.87

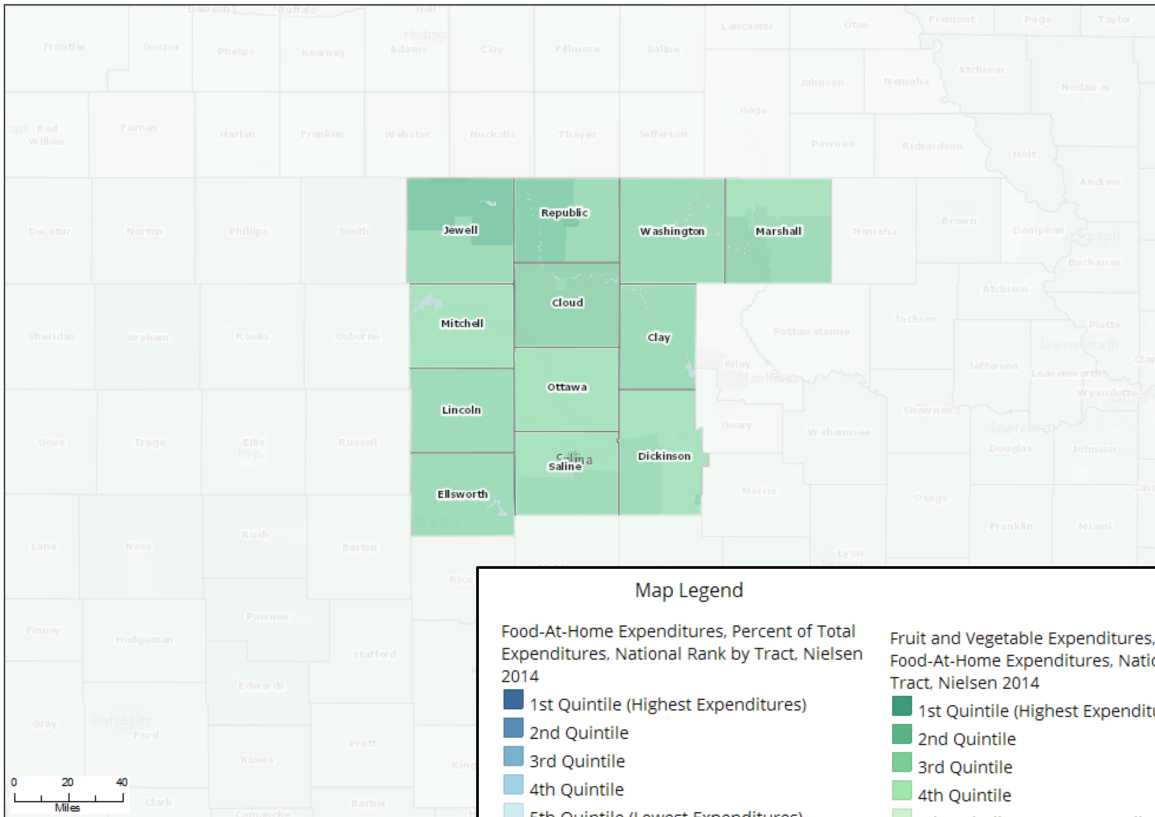
Data Source: Synergos Technologies, Inc. forecasts Business Decision data system
Estimates derived from the Consumer Expenditure Survey, Bureau of Labor Statistics, 2012

The Community Commons data system has acquired proprietary data on household food expenditures and compiled that information into rankings that compare food expenditures at the census tract level. Data are available for total expenditures for foods prepared at home; fruit and vegetable expenditures as a percent of total food-at-home expenditures, and soft drink consumption per household. Results for all census tracts in the 12-county region are displayed in the three maps that follow.

Food at Home Expenditures, as Percent of Total Expenditures, 2014



Fruit and Vegetable Expenditures, as Percent of Food-at-Home Expenditures, National Rank by Tract



Map Legend

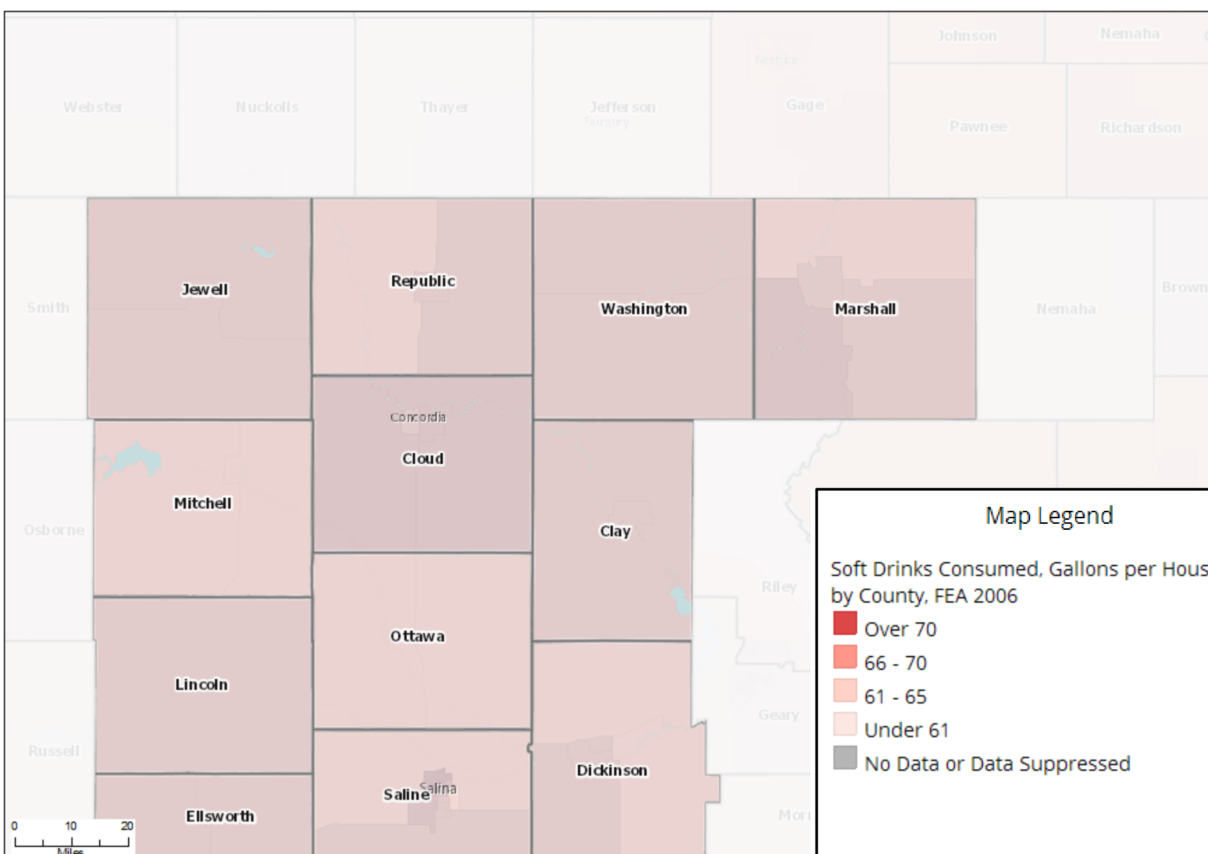
Food-At-Home Expenditures, Percent of Total Expenditures, National Rank by Tract, Nielsen 2014

- 1st Quintile (Highest Expenditures)
- 2nd Quintile
- 3rd Quintile
- 4th Quintile
- 5th Quintile (Lowest Expenditures)
- No Data or Data Suppressed

Fruit and Vegetable Expenditures, Percent of Food-At-Home Expenditures, National Rank by Tract, Nielsen 2014

- 1st Quintile (Highest Expenditures)
- 2nd Quintile
- 3rd Quintile
- 4th Quintile
- 5th Quintile (Lowest Expenditures)
- No Data or Data Suppressed

soft Drink Consumption, Gallons per Household by County, 2006

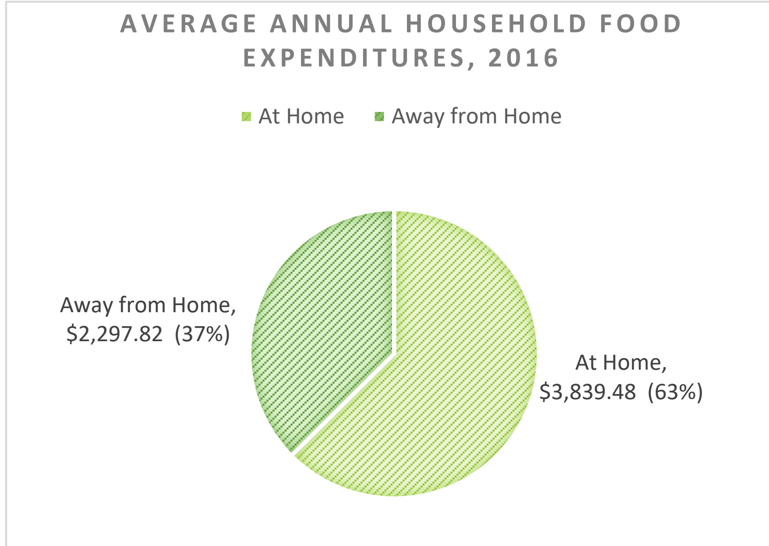


Map Legend

Soft Drinks Consumed, Gallons per Household by County, FEA 2006

- Over 70
- 66 - 70
- 61 - 65
- Under 61
- No Data or Data Suppressed

Dining Away from Home



Restaurants comprise another important component in most community food systems. The share of total food dollars that U.S. households spend on food prepared away from home has risen steadily since the 1970s. A number of factors have contributed to this trend, including more women employed outside of the home, higher household incomes, and more affordable and convenient fast food outlets (USDA ERS, 2016). While foods prepared away from home are not necessarily less healthy than home-cooked meals, research conducted by USDA has found that meals and snacks based on food prepared away from home contained more calories per eating occasion than those based on at-home food. Away-from-home food was also higher in nutrients that Americans overconsume (such as fat and saturated fat) and lower in nutrients that Americans under-consume (calcium, fiber, and iron). (USDA ERS, 2016)

Residents of the NCKFC region have limited choices and options when they choose to eat foods prepared away from home, and data suggest that they may spend more time eating at home as a result. Business listings from the proprietary InfoUSA database indicate that there was a total of 242 eating and drinking establishments operating in the region in 2016. Results from the National Consumer Expenditure Survey estimate that regional residents spend approximately 37 percent of their food budgets on food prepared away from home ($2,297.82/household/year) for a total of $135,499,932 in annual spending (Synergos Technologies, Inc.).

Fast Food Restaurants

Just as a lack of access to healthy food options may influence individual's eating behaviors, an over-abundance of less healthy food options may also negatively influence eating choices. Menu offerings at fast food restaurants are frequently filled with unhealthy choices that are high in calories, fats and salt levels. (*Fast food restaurants are defined as limited-service food establishments where patrons generally order or select items and pay before eating*.) Environments in which there are high concentrations of fast food restaurants may tempt consumers toward unhealthy food choices, especially if access to healthier food options is limited or more difficult.

In 2016, there were 90 fast-food outlets located within the borders of the NCKFC region. On a per person basis, the density of fast food outlets in the region is lower than the Kansas and U.S. averages.

Fast Food Restaurants, 2016

Geographic Area	Total Population	Number of Establishments	Establishments, rate per 100,000 population
Region	136,622	90	65.88
Kansas	2,853,118	2,036	71.36
United States	312,846,570	233,392	74.6

Data Source: U.S. Census Bureau, County Business Patterns
Additional data analysis by CARES, 2016

Comparison of Agricultural Production to Consumer Spending

For most Kansans, very little of the food that they consume has been produced locally. The vast majority of food consumed by residents in the NCKFC region is produced outside of the county. At a regional level, the quantities of beef and pork produced exceed consumption by community residents. Reported quantities of dairy products, fruit and vegetables, and poultry and eggs being produced locally are less than the amounts being consumed by residents of the region. Less than one percent of total sales by farms in the region were direct sales to individuals.

North Central Kansas region

Consumer Expenditures on Food, 2016					
Households	Poultry/ Eggs	Pork	Beef	Fruits & Vegetables	Milk/Dairy
59,906	$12,462,414	$10,470,704	$15,535,338	$42,964,030	$107,381,622

Farm Products Sold, 2012							
Total Farm Product Sales	Poultry/Eggs	Hogs & Pigs	Cattle & Calves	Fruit, Berries & Nuts	Vegetables	Milk/Dairy	Direct Sales to Individuals
$1,561,968,000	$136,000+	$39,016,000+	$344,257,000+	$93,000+	$98,000+	$18,762,000+	$456,000

+ = Actual Sales Totals are higher than reflected here, due to suppressed data at county level

Source: Consumer expenditure estimates based upon regional expenditure patterns from Consumer Expenditure Survey and local population figures. Farm sales from 2012 U.S. Census of Agriculture.

Nutrition-related Health Conditions

Overweight and Obesity (Adult)

Maintaining a healthy weight is an important factor in maintaining overall health. Body weight is closely associated with two primary factors --- nutrition and physical activity. Excess body weight, which occurs when caloric intake exceeds the number of calories expended, places individuals at increased risk for many health issues, including heart disease, diabetes, some forms of cancers, and joint problems and physical disability. Obesity has become a widespread problem in the United States, with rates steadily increasing over the last several decades.

Rates of overweight and obesity in the population are routinely measured as part of the national Behavioral Risk Factor Surveillance System coordinated by the U.S. Centers for Disease Control and Prevention (CDC) and state health agencies. In Kansas, the Kansas Department of Health and Environment periodically includes an expanded sample size to make it possible to produce county-level results.

For the measures of overweight and obesity, survey respondents are asked to self-report their height and weight. In 2015, data was only available for three of the 12 counties in the NCKFC region. The results are listed in the table below.

Rates of Overweight and Obesity, 2015

Geographic Area	% of Adults who are Overweight (BMI between 25.0 and 30.)	% of Adults who are Obese (BMI >30)	% of Adults who are Overweight or Obese
Dickinson County	34.5%	27.0%	61.5%
Marshall County	38.1%	30.0%	68.1%
Saline County	36.8%	37.5%	74.3%
Kansas	**33.8%**	**34.2%**	**68%**

Data Source: Kansas Department of Health and Environment, Kansas Behavioral Risk Factor Surveillance Survey

Other Diet-related Health Conditions

The Behavioral Risk Factor Surveillance Survey also asks survey participants whether or not they have ever been told by a doctor or other health professional that they have any of several health conditions. Partial data was available for three of the 12 counties in the NCKFC region.

Geographic Area	% of Adults Diagnosed with Diabetes	% of Adults Tested and Diagnosed with High Cholesterol	% of Adults Diagnosed with Hypertension	% of Adults who had Angina or Coronary Heart Disease
Dickinson County	7.6%	33.5%	31.1%	No data
Marshall County	13.7%	41.7%	37.8%	No data
Saline County	8.6%	39.8%	32.9%	2.7%
Kansas	**9.7%**	**37.4%**	**31.6%**	**3.8%**

Data Source: Kansas Department of Health and Environment, Kansas Behavioral Risk Factor Surveillance Survey, 2015

Access to Healthy Foods

Access to healthy food options is essential to healthy eating habits which are, in turn, essential to good health. When we talk about access to healthy food options, there are two considerations. First, a consumer must be able to physically get to places where healthy foods are available for purchase. Second, the consumer must be able to afford to buy the healthier food options or must be able to obtain assistance that enables her/him to do so. These are minimum requirements for food access. In addition, it is desirable that community residents have access to foods that are culturally appropriate and are able to access food through socially acceptable means that respect and preserve individuals' dignity.

Physical Access

Physical access to healthy food options is commonly measured by considering two factors - the distance that the consumer must travel to the nearest retail grocery store and the consumer's access to reliable transportation to travel to that closest store. In urban areas, a distance of one mile or less to the nearest grocery store is commonly considered to be adequate; in rural areas a distance of 10 miles or less is commonly considered adequate. The proportion of low-income household in an area is often used as a proxy indicator of less access to reliable transportation. Geographic areas in which a substantial portion of the population is low income (a poverty rate of 20 percent or higher), and one-third or more of households live further than one mile (in urban areas) or ten miles (in rural areas) from the closest full-service grocery stores are designated as '*food deserts*' to denote challenges with getting to a grocery store that offers a variety of healthy food options.

Population with Limited Food Access

Based upon data from 2015, analysis by the U.S. Department of Agriculture found that six census tracts located within the NCKFC region met the definition of a food desert (low income and low access at a distance of one mile in urban areas or 10 miles in rural area). Two tracts were located in Cloud County; one tract was located in Jewell County; and three tracts were located in Saline County. The total population residing in those census tracts was 21,355 (15.6% percent of the regional population).

Looking at the access question in a slightly different way, the table on the following orders the counties by number and percent of residents in the region that were both low-income (a family income equal to or less than 200 percent of the Federal Poverty Level) and had low access to a supermarket or large grocery store.

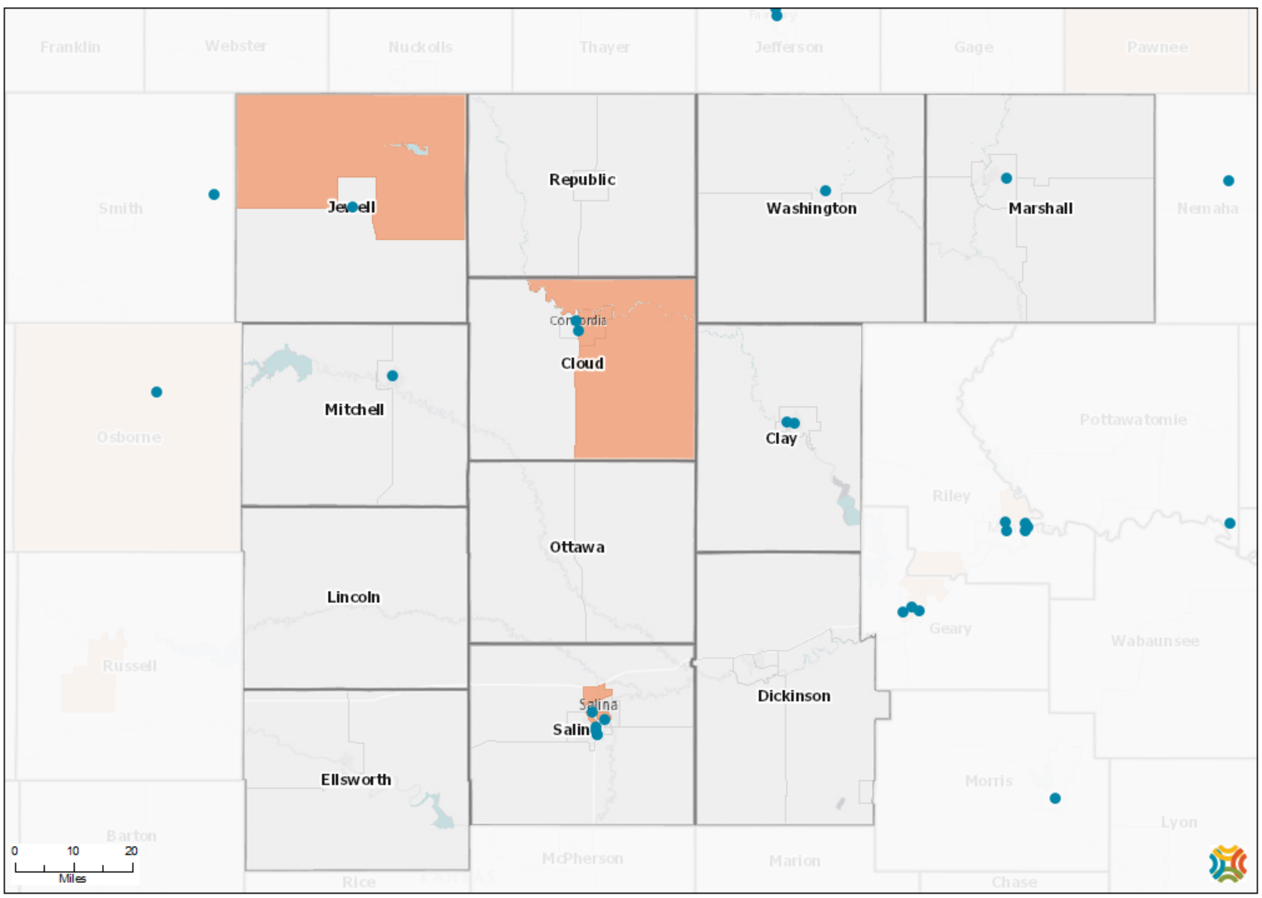
Locations of retail grocery stores in 2017 are also shown on the food desert map that follows.

Food Access: Low Income and Low Food Access (2017)

Geographic Area	Total Population (2017)	Low-Income Population (200%+ FPL)	Low-Income Population with Low Food Access	Percent of Low-Income Population with Low Food Access
Dickinson County	19,162	6,445	900	13.96%
Marshall County	9,853	2,997	592	19.75%
Saline County	55,334	17,321	3,635	20.99%
Region	**136,622**	**43,368**	**10,946**	**25.24%**
Jewell County	2,963	1,168	298	25.51%
Ottawa County	5,957	1,694	438	25.86%
Republic County	4,705	1,561	438	28.06%
Mitchell County	6,230	2,110	601	28.48%
Kansas	**2,903,820**	**874,995**	**253,257**	**28.94%**
Clay County	8,203	2,266	751	33.14%
Ellsworth County	6,331	1,749	644	36.82%
Cloud County	9,191	3,444	1,291	37.49%
Lincoln County	3,121	886	388	43.79%
Washington County	5,572	1,727	970	56.17%

Data Source: Community Commons

Original data source: U.S. Department of Agriculture, Economic Research Service, USDA – Food Research Atlas, 2015



Map Legend

Major Supermarkets, USDA Dec. 2017

Food Desert Census Tracts, 1 Mi. / 10 Mi. by Tract, FARA 2015

Food Desert

Not a Food Desert

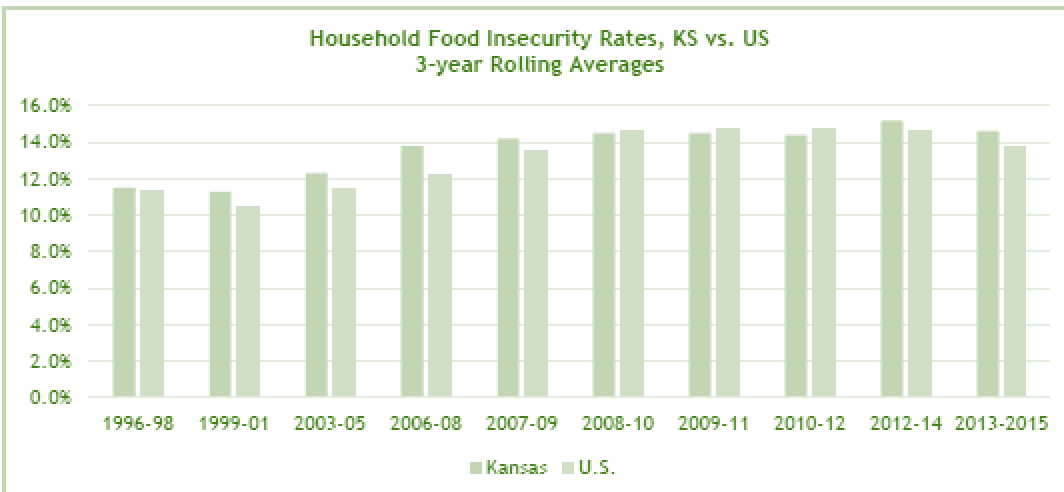
No Data

Community Commons, 3/24/2018

Affordability of Healthy Food Options

Affordability is the second component of access to healthy foods. It does little good to have an abundant supply of healthy food options if consumers in the community lack the financial means with which to purchase the food. The term '*food insecurity*' is commonly used in the United States to describe the lack of consistent access to enough food to maintain a healthy lifestyle, because of a lack of resources. Households that express anxiety or uncertainty about their ability to consistently obtain enough food are termed '*food-insecure*'. Rates of household food insecurity are measured annually at the national and state level as a component of the Current Population Survey administered by the U.S. Census Bureau.

At the National level, rates of household food insecurity increased sharply with the onset of the economic recession and have remained elevated since that time. Only since 2012 have the national rates of food insecurity begun to decrease slightly. In Kansas, rates of food insecurity exceeded national rates prior to the onset of the 2008 recession and increased further with the recession's onset. Although national food insecurity rates appear to have decreased slightly in recent years, rates in Kansas have been slower to begin decreasing.



Data Source: USDA ERS analysis of annual CPS Food Security Surveys

Statistical estimates of county-level food insecurity rates have been produced by the national food assistance organization Feeding America. The most recent estimates, from 2016, show that approximately 12.7 percent of residents in the NCKFC region (17,470 individuals) were food-insecure. About one in five children (19.5 percent, or 6,290 children) in the region lived in households which were food-insecure. With an average regional meal cost of $2.98, the total annual food budget shortfall in the region is estimated at $8,746,000.

Although risk for food-insecurity is highest among lower-income households, food insecurity is not always limited to the very poor. Many working families with incomes above the poverty level still struggle to meet basic needs such as food, housing, medical care, transportation and childcare on their earnings. The Feeding America estimates suggest that one-third of food-insecure households in the region had income levels high enough that they would not be eligible for any of the food assistance programs sponsored by the Federal Government. Similarly, just under one-third (31 percent) of food-insecure children in the region live in families where the household income would be too high for them to be eligible for free or reduced-price school meals or for assistance through the Supplemental Nutrition Program for Women, Infants and Children (WIC) program. For these families, when help is needed, it must come from privately-funded assistance programs like Harvesters, or other food assistance or emergency meal programs in the community.

Food Insecurity: Snapshot (2016)

Overall and Child Food Insecurity Rate, 2016

Geographic Area	Food Insecure Individuals, Total	Overall Food Insecurity Rate
Ottawa County	660	11.0%
Lincoln County	360	11.6%
Marshall County	1,160	11.6%
Washington County	660	11.7%
Ellsworth County	760	11.9%
Clay County	1,000	12.0%
Republic County	570	12.0%
Mitchell County	790	12.6%
Regional Average	**17,470**	**12.7%**
Kansas	**375,360**	**12.9%**
Saline County	7,320	13.2%
Cloud County	1,250	13.5%
Dickinson County	2,530	13.6%
Jewell County	410	13.7%

Geographic Area	Food Insecure Children, Total	Child Food Insecurity Rate
Ellsworth County	210	17.4%
Marshall County	410	17.6%
Kansas	**131,130**	**18.3%**
Ottawa County	270	18.9%
Lincoln County	140	19.3%
Washington County	250	19.3%
Mitchell County	270	19.4%
Dickinson County	910	19.5%
Regional Average	**6,290**	**19.5%**
Saline County	2,670	19.8%
Clay County	410	19.9%
Republic County	190	20.0%
Cloud County	420	20.3%
Jewell County	140	23.4%

Data Source: Feeding America, Map the Meal Gap, 2016

*Assistance eligibility is determined based on household income of the food insecure households relative to the maximum income-to-poverty ratio for assistance programs (SNAP, WIC, school meals, CSFP and TEFAP).

Food Program Assistance Eligibility, 2016

Geographic Area	Food-Insecure Population, Total	% of Food-Insecure Population Ineligible for Assistance
Jewell County	410	15.0%
Cloud County	1,250	20.0%
Republic County	570	26.0%
Lincoln County	360	27.0%
Marshall County	1,160	28.0%
Dickinson County	2,530	32.0%
Regional Average	**17,470**	**33.0%**
Mitchell County	790	34.0%
Saline County	7,320	35.0%
Kansas	**375,360**	**36.6%**
Ottawa County	660	39.0%
Washington County	660	39.0%
Ellsworth County	760	41.0%
Clay County	1,000	42.0%

Geographic Area	Food-Insecure Children, Total	% of Food-Insecure Children Ineligible for Assistance
Jewell County	140	2%
Cloud County	420	9%
Republic County	190	11%
Lincoln County	140	21%
Mitchell County	270	26%
Ellsworth County	210	30%
Washington County	250	33%
Regional Average	**6,290**	**31%**
Dickinson County	910	33%
Saline County	2,670	34%
Kansas	**131,130**	**34%**
Clay County	410	35%
Marshall County	410	38%
Ottawa County	270	41%

Data Source: Feeding America, Map the Meal Gap, 2016

Food Assistance Programs

In the United States, and in Kansas, a patchwork quilt of public- and private-sector programs and agencies provide food assistance to low-income families in need. Aid is provided through a variety of mechanisms, including prepared meals at schools, distribution of foods for home preparation, and vouchers or electronic benefits that may be used to purchase grocery items. These programs play a vital role in preventing food insecurity from progressing to full-blown hunger and malnutrition.

Children Eligible for Free/Reduced Price School Meals

For many low-income families, school meals provide an important source of food for children. In addition to lunches, many schools also offer breakfasts and some offer after-school snack or supper programs. Children from households where earnings are less than 130 percent of the Federal Poverty Level are eligible to receive free meals; those from households where income is between 130 and 185 percent of the poverty level qualify to purchase meals at reduced prices. In NCKFC region public schools, free or reduced-price school meal eligibility rates among K-12 students enrolled for the 2017-2018 range from 41 to 58 percent. Ellsworth County had the lowest rate of qualified students at 40.59 percent while Jewell County had the highest rate at 57.83 percent. In comparison, 48.5 percent of all Kansas K-12 students were eligible for free or reduced-price school meals during the same timeframe (Kansas Action for Children, n.d.).

Summer Meals for School-aged Children

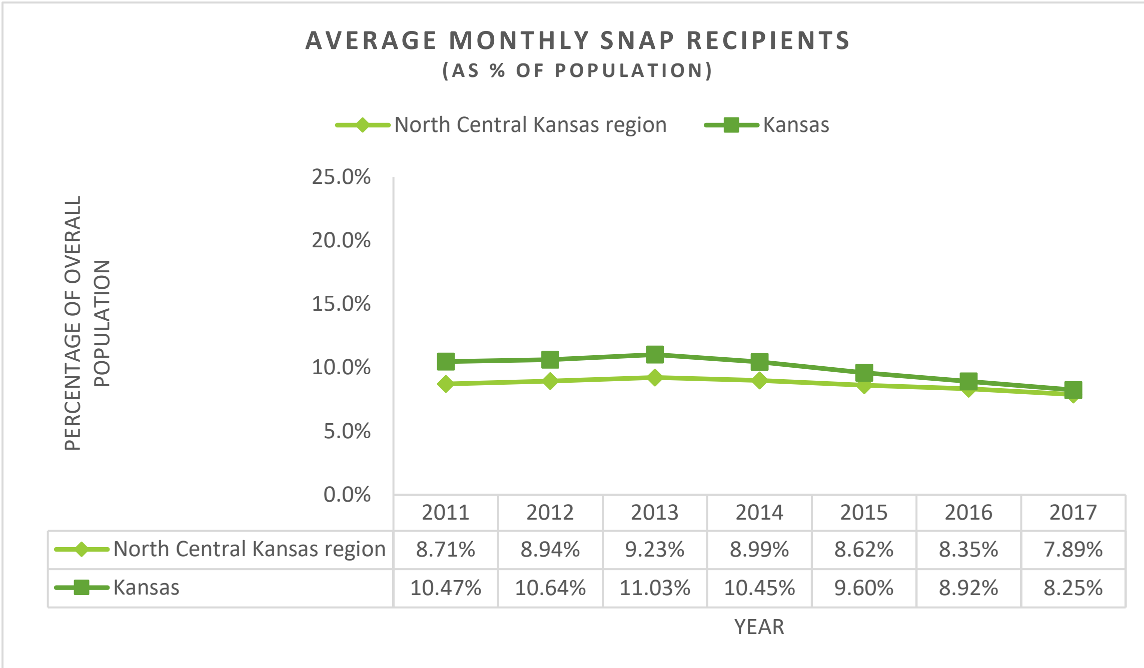
For families that rely upon free or reduced-price school meals to help feed their children, summer recess periods may create additional food hardship. The federally-sponsored Summer Food Service Program is designed to help fill that need. Under this program, all children aged 18 years and younger may receive free meals (usually lunches) at participating community sites located in areas where at least half of children qualify for free or reduced-price meals during the school year. The chart below lists summer feeding program sites in the NCKFC region during the summer of 2017.

Geographic Area	Number of Sites	Site Location(s)	Total Food Insecure Children in County (2016)
Clay County	2	Clay Center, KS	410
Cloud County	1	Clyde, KS	420
Dickinson County	3	Abilene, KS	910
	1	Solomon, KS	
Ellsworth County	1	Lorraine, KS	210
	1	Hollyrod, KS	
	3	Wilson, KS	
Jewell County	---	---	140
Lincoln County	2	Lincoln, KS	140
	1	Beverly, KS	
	1	Sylvan Grove, KS	
Marshall County	1	Frankfort, KS	410
	1	Marysville, KS	
	1	Waterville, KS	
Mitchell County	---	---	270
Ottawa County	---	---	270
Republic County	1	Belleville, KS	190
Saline County	11	Salina, KS	2,670
Washington County	1	Clifton, KS	250

Data Sources: Kansas Department of Education, 2017; Feeding America, Map the Meal Gap, 2016

Supplemental Nutrition Assistance Program (SNAP)

The SNAP program, formerly referred to as 'food stamps', is a federally-funded program that provides qualifying low-income families with monthly benefits in the form of a debit card that can be used to purchase foods for home use. Benefits may also be used to purchase seeds or plants to be used for growing food at home. Households must have incomes below 130 percent of the Federal Poverty level (approximately $31,500 for a family of four) and meet other eligibility guidelines to qualify for benefits.



Most college students are not eligible to receive assistance through the SNAP program, even though their incomes may be low enough to meet the eligibility guidelines. According to the USDA Food and Nutrition Service, able-bodied students age 18 through 49 who are enrolled in college or other institutions of higher learning at least half time must meet the following conditions to qualify for assistance:

- Taking care of a dependent child
- Working at least 20 hours per week, or
- Are participating in any of several specified work training programs (USDA 2015).

Many households that would be eligible to receive snap benefits do not apply and participate in the program. There are many reasons, including stigma of participation, burdensome paperwork associated with application, and a lack of understanding of eligibility requirements. Participation rates vary considerably between states, ranging from 51 to 100 percent in 2013. Compared to other states, SNAP participation rates (the number of participants divided by the number of eligible) in Kansas have historically been low. The U.S. Department of Agriculture estimated that in 2013, the SNAP participation rate in Kansas was 71 percent, ranking Kansas 40th among the states (Cunnyham, 2016).

During state fiscal year 2017 (July 2016 to June 2017), an average of 10,785 residents in the NCKFC region received SNAP benefits each month. The number of SNAP participants in the region has declined since reaching a high in Fiscal Year 2013 – these declines are similar to what has happened across Kansas in the same time period. Average monthly benefits were approximately $107.30 per participant during fiscal year 2017; the SNAP program provided a total of $13,886,947 in food purchasing dollars to low-income families in the region during 2017.

SNAP benefits may only be redeemed at retail locations that have been approved by the USDA as SNAP retail vendors. As of December 2017, there were 126 SNAP retailers operating in the region. In addition to grocery stores, participating SNAP retailers included dollar stores, convenience stores, and meat lockers.

The Special Supplemental Nutrition Program for women, Infants and Children (WIC)

The Special Supplemental Nutrition Program for Women, Infants, and Children– better known as the WIC Program– is a federally-funded program that serves to safeguard the health of low-income (household incomes up to 185 percent of the Federal Poverty Level) women, infants, and children up to age 5 who are at nutritional risk by providing nutritious foods to supplement their diets, information on healthy eating, and referrals to health care. Program participants are given monthly coupons or vouchers that may be redeemed at participating retail locations for specified foods. The program serves low-income pregnant, post-partum, and breastfeeding mothers as well as infants and children age 0 through 4 years. Foods that may be purchased with WIC vouchers include milk, juice, cereals, cheese, eggs, fruits and vegetables (fresh, canned or frozen), whole-grain bread, canned fish, beans, peanut butter, baby foods, and baby formula.

Approximately 2,448 women and children in the NCKFC region participated in the WIC program each month during 2017 (Kansas Health Matters, 2017). The average monthly number of participants in the WIC program in the region has decreased in recent years; this trend is similar to those at the state and national levels. There are 30 retail grocery vendors, in the region where WIC participants may use their vouchers to obtain food.

The Emergency Food Assistance Program

The Emergency Food Assistance Program (TEFAP) is a Federally-sponsored program that provides free foods to low-income households. TEFAP food is shipped five to six times per year to participating organizations for distribution. Participant organizations determine when and how often food is distributed. The foods may include canned vegetables, fruit, juice, meat, cereal, peanut butter, nonfat dry milk, and pasta. Each shipment provides a minimum of four and a maximum of 10 foods per household.

Persons who work but have low income, as well as those who do not work, are eligible for this program. Individuals seeking assistance from the TEFAP program must apply in their home county, provide proof of their amount of income and household size (if asked), and must sign a form stating that they qualify for the program. Participants may pick up food at only one location in their community.

There are currently three TEFAP distribution locations in the region.

TEFAP Distribution Locations in the North Central Kansas region

Geographic Area	City	Location
Clay County	Clay Center	Elks Lodge
	Longford	Longford Bethel United Methodist Church
	Wakefield	Neighbors N Need
Cloud County	Concordia	First United Methodist Church
Dickinson County	Abilene	Abilene Area Food & Clothing Center
	Herington	First Christian Church
	Solomon	Solomon Housing Authority
Ellsworth County	Ellsworth	Assembly of God of Ellsworth
	Wilson	Wilson Senior Center
Jewell County	Esbon	City of Esbon
	Formoso	Formosa Pride
	Jewell	Jewell Ministerial Union
	Mankato	Mankato Ministerial Alliance
Lincoln County	Sylvan Grove	Sylvan Senior Center
	LaCygne	LaCygne United Methodist Church
Marshall County	Marysville	Marshall County Agency on Aging
Mitchell County	Hunter	Grace Chapel Methodist Church
	Cawker City	Knights of Columbus - Cawker City
Ottawa County	Ada	Ada Senior Citizens
	Tescott	American Legion Auxiliary
	Delphos	First Presbyterian Church - Delphos
	Minneapolis	Minneapolis Student Council
Republic County	Bennington	United Church of Bennington
Saline County	Belleville	Republic Co Ministerial Alliance
Washington County	Salina	Sunrise Presbyterian Church

Senior Farmers' Market Nutrition Program

The Senior Farmers' Market Nutrition Program offers low-income seniors in participating locations checks or vouchers that can be used to purchase locally-grown fresh fruits and vegetables, honey, or herbs at participating farmers' markets or farm stands. Seniors are eligible to receive checks if their individual income is less than $1,800/month and their age is 60 years or older. Seniors participating in the Commodity Supplemental Food Program (CSFP) or The Emergency Food Assistance Program (TEFAP) automatically qualify for the Kansas Senior Farmers Market Nutrition Program. During the 2016 summer season, each participating senior in Kansas received a book of checks that could be redeemed for up to $30 in purchases.

Private-sector Food Assistance

Food-insecure households that are not qualify for Federally-sponsored food assistance programs such as SNAP or free school meals (because their incomes are too high, or they do not meet other eligibility criteria) must rely upon private-sector charitable organizations for help. In addition, many low-income families who do receive government food assistance find that the benefits are not sufficient to meet all of their food needs and seek to supplement those benefits with aid from charitable organizations.

Federal and state policy changes in recent years have tightened eligibility requirements and reduced benefits for many government-sponsored food assistance programs, resulting in increased numbers of people seeking charitable help to meet their food needs.

In addition to agencies that provide food assistance or meals on-site, a number of community organizations partner with Harvesters Community Food Network to host monthly food distributions through mobile food pantry operations.

Food Waste, Recycling and Recovery

Food waste is a significant problem in the United States. USDA estimates that nearly one-third (31 percent) of the available food supply at the retail and consumer levels went to waste in 2010. This equates to 133 billion pounds of wasted food and does not include on-farm losses or losses between the farm and the retailer (Buzby, 2014). The U.S. Environmental Protection Agency (EPA) estimated that food waste accounted for 21 percent of municipal solid waste in 2011, with nearly all (97 percent) of that waste going to landfills or incinerators.

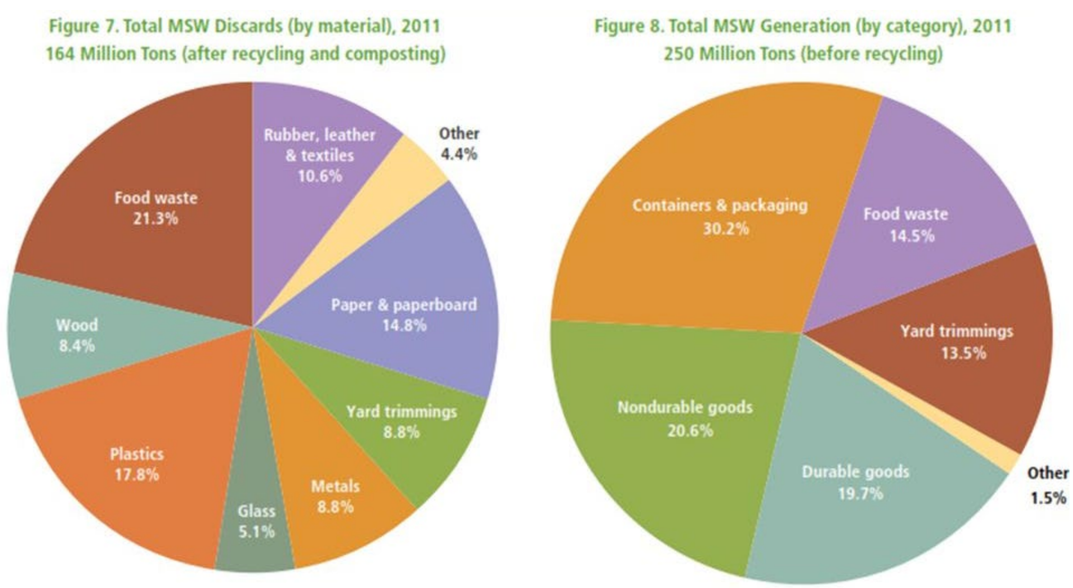


Image Source: adapted from Environmental Protection Agency, 2012

Food waste represents significant loss of money and other resources invested in food production (land, water, labor, energy and agricultural chemicals) to produce food that does not end up feeding people. Food waste occurs at all steps along the food production cycle, from farm to table. Some of the common causes of food waste are:

Common Food Waste Causes

Farm Level

- Damage by insects, rodents, birds, or unfavorable weather conditions
- Edible crops left unharvested due to diminishing returns for additional production
- Overplanting due to difficulty estimating customer demand

Farm-to-Retail Level

- Rejection due to food safety standards or regulation
- Out-grading of blemished or imperfect foods
- Spillage and damage, improper storage
- Byproducts from food processing

Retail Level

- Dented cans, damaged packaging
- Unpurchased seasonal food items
- Spillage, breakage, bruising, inadequate storage, equipment malfunctions
- Culling of blemished or imperfect foods to meet consumer demand
- Overstocking or overpreparing

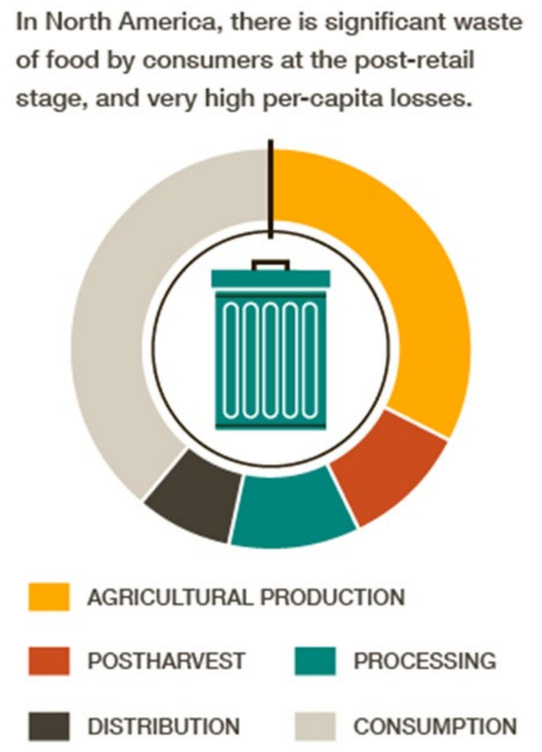
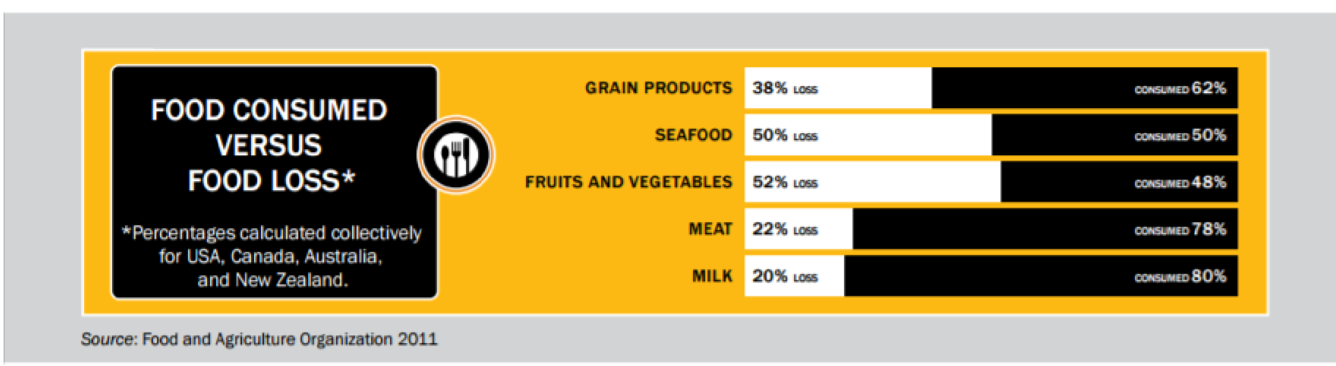


Image Source: https://ccafs.cgiar.org/bigfacts/#region=North-America

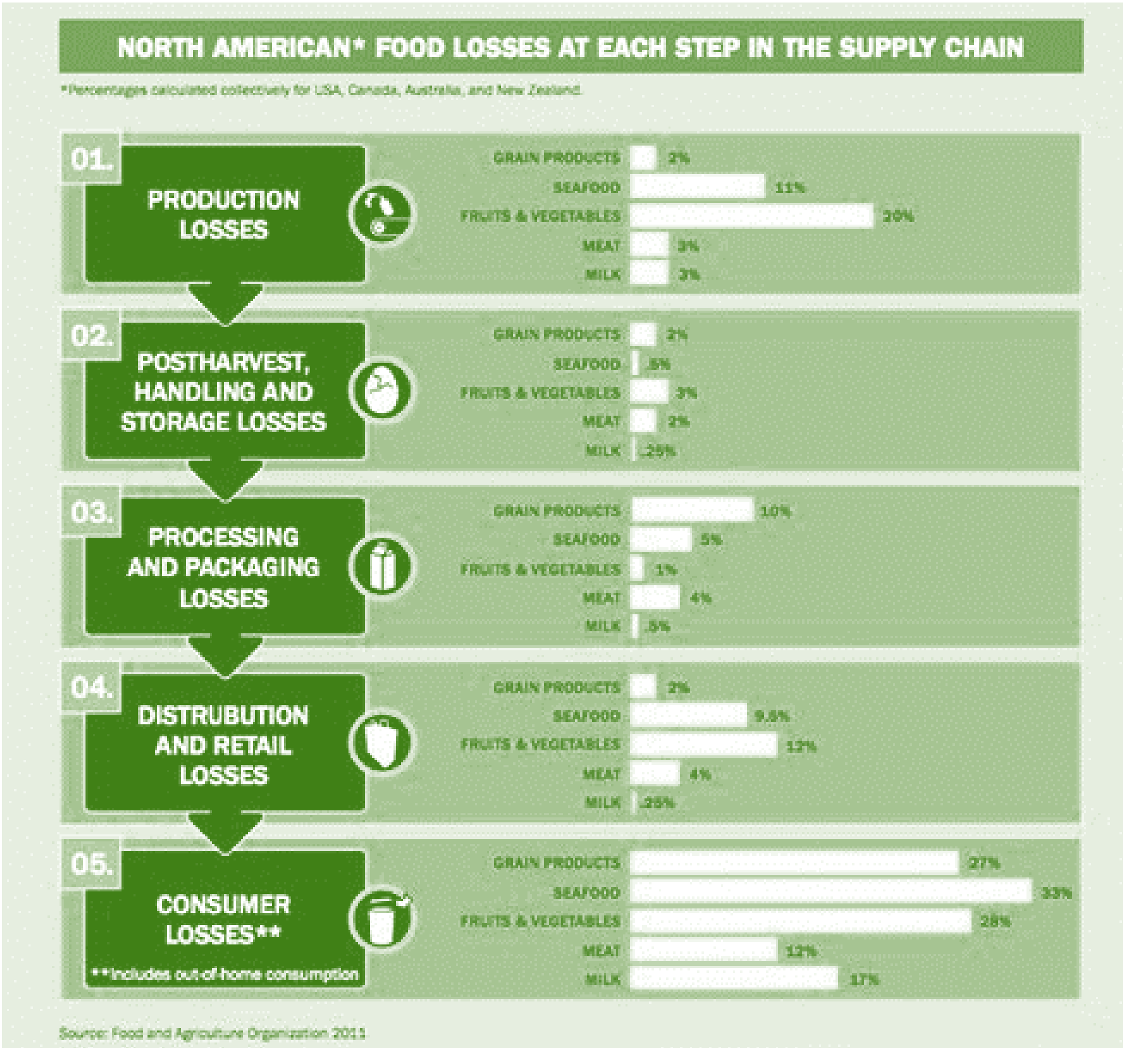
Consumer Level

- Spillage, breakage, inadequate storage
- Confusion about "use-by", and "best before" dates resulting in food being discarded when still safe to eat
- Consumer demand for high cosmetic standards
- Lack of knowledge about preparation, appropriate portion sizes
- Consumer tastes, attitudes and preferences leading to plate waste

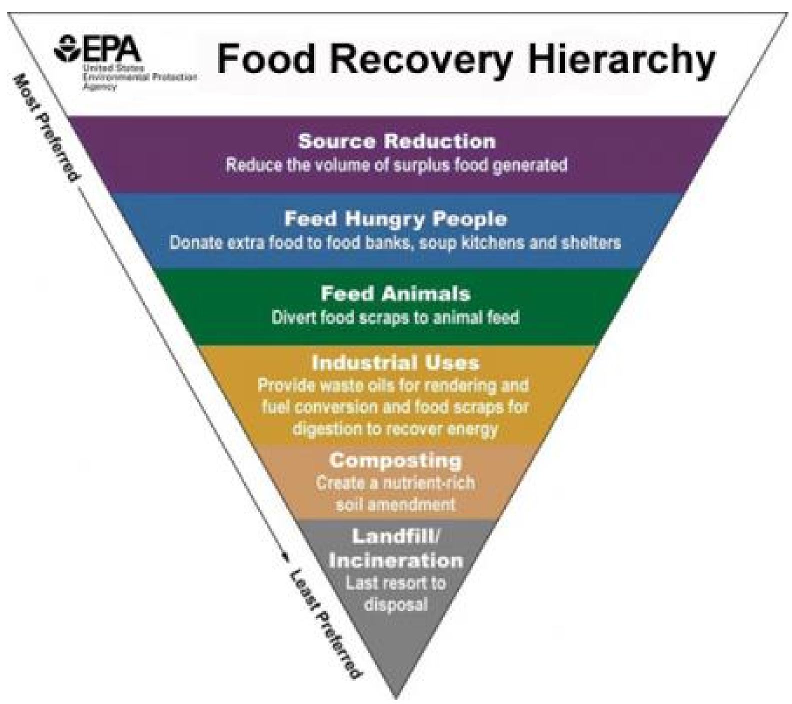
Fruits and vegetables account for a large share of food loss, with more than half of what is grown being lost to waste. Milk and meat products have the lowest loss ratios (Gunders, August 2012).



Although food loss occurs at all steps in the food production chain, consumer waste accounts for the largest share. According to a report issued by the Natural Resources Defense Council, Americans throw away about 25 percent of the food that they buy. The estimated annual cost of food waste for a family of four is between $1,350 and $2,275 (Gunders, August 2012).



Reducing food waste offers many benefits to a community and its residents, including financial savings, preservation of natural resources, reduced demand on waste management systems and landfills, and increased amounts of potentially wasted food diverted to feed individuals at risk for hunger. When foods or food by-products are not safe or appropriate for human consumption, they may still be usable as animal feed. Composting of food scraps and spoiled foods recovers some value from the waste stream by producing a rich soil amendment that can be used in gardens to reduce the need for chemical fertilizers. The EPA has developed a Food Recovery Hierarchy that assigns preferential order to various strategies for reducing food waste (right).



Local Estimates of Food Waste

Community-level data on food waste are not generally available. It is, however, still possible to derive an estimate of local food waste by assuming that the local patterns are similar to those at the national level. Multiplying county population numbers by national per capita food waste estimates suggest that nearly 40 million pounds of food would be wasted annually in the NCKFC region, with an estimated value of $50.7 million, as shown in the table below.

Estimated level of consumer-level food waste in the United States and in the North Central Kansas region			
	Pounds (annually)	**Pounds (daily)**	**Value (annually)**
Per-person basis (national)*	290	0.8	$371
North Central KS region estimate**	39,620,380	109,297.6	$50,686,762

**National figures drawn from USDA, Economic Research Service, 2010 ERS Loss-Adjusted Food Availability*

***County population estimate based upon 2013-2017 American Community Survey*

Economic Impact of the Food System

Food and food production are big business in Kansas having significant impact on the Kansas economy, both at the state and local levels. According to the Kansas Department of Agriculture, the agricultural, food and food processing business sectors in the NCKFC region employ nearly 18,000 people and contribute an estimated $4.15 billion to the regional economy each year.

There are a number of measures that determine the importance of various economic data. These measures include direct, indirect, and induces effects; value added; gross regional product (GRP); and output.

- **Direct effects** capture the contribution from agricultural and food products.
- **Indirect effects** capture the economic benefit from farms and agricultural businesses purchasing inputs from supporting industries within the state.
- **Induced effects** capture the benefits created when employees of farms, agricultural businesses, and the supporting industries spend their wages on goods and services within the state.
- **Value added** is the summation of labor income, indirect business taxes, and other property income.
- **GRP** is the summation of final demand of households, government expenditures, capital, and exports **minus** imports and institutional sales.
- **Output** is the summation of intermediate inputs and value added.

Based on the most recent IMPLAN data available (2016) adjusted for 2018, there were more than 20 agriculture, food, and food processing sectors in the region supporting 11,411 jobs with a total direct output of $3.3 billion. Including indirect and induced effects, total jobs supported rises to 17,915. Altogether, these sectors provide approximately $4.2 billion to the regional economy. Another important metric used to calculate importance of sectors in an economy is their value added as a percentage of GRP. Total value added by the sectors was approximately $1.2 billion (Kansas Department of Agriculture, 2018).

Agriculture, Food, and Food Processing Sector Contribution in the North Central Kansas Region (2018)

Impact Type	Total Regional Employment	Total Regional Value Added	Total Regional Output
Direct Effect	11,411.8	$764,824,955	$3,324,694,094
Indirect Effect	3,959.0	$287,055,863	$543,237,184
Induced Effect	2,517.8	$171,536,790	$307,728,953
Total Effect	17,915.4	$1,201,233,809	$4,148,660,231

Data Source: Kansas Department of Agriculture, Kansas Agriculture's Economic Impact, 2018

Data illustrating various economic measures related to the NCKFC food system are included in this section.

Farm Sales

During 2012, NCKFC regional farms reported total sales of farm products valued at approximately $1.45 billion. Crops accounted for 65 percent of total sales. The per-farm average market value of farm products sold by regional farms was $206,252 in 2012.

Market Value of Products Sold, 2012

Geographic Area	Farms, 2012	Total Sales	Crop Sales	Livestock Sales	Average per farm
Clay County	541	$115,868,000	$ 80,502,000	$ 35,366,000	$ 214,174
Cloud County	461	$ 80,042,000	$ 67,590,000	$ 12,453,000	$ 173,628
Dickinson County	1,011	$ 157,051,000	$ 82,393,000	$ 74,658,000	$ 155,342
Ellsworth County	435	$ 51,634,000	$ 34,476,000	$ 17,158,000	$ 118,699
Jewell County	453	$ 136,479,000	$ 105,290,000	$ 31,188,000	$ 301,277
Lincoln County	431	$ 63,510,000	$ 43,230,000	$ 20,280,000	$ 147,355
Marshall County	796	$ 127,917,000	$ 104,099,000	$ 23,817,000	$ 160,699
Mitchell County	415	$ 153,497,000	$ 87,948,000	$ 65,549,000	$ 369,873
Ottawa County	525	$ 99,031,000	$ 60,033,000	$ 38,988,000	$ 188,630
Republic County	575	$ 197,267,000	$ 115,977,000	$ 81,289,000	$ 343,072
Saline County	674	$ 84,424,000	$ 59,490,000	$ 24,934,000	$ 125,259
Washington County	732	$ 187,149,000	$ 99,499,000	$ 87,650,000	$ 255,668
Regional Total	**7,049**	**$ 1,453,869,000**	**$ 940,527,000**	**$ 513,330,000**	**$206,252**

Data Source: U.S. Census of Agriculture

Government Farm Payments

In addition to income from the sale of farm products, many farms receive payments from various federal government programs. In 2012, 5,372 NCKFC regional farms reported receiving federal government payments that totaled $50,445,000.

Consumer Expenditures on Food

Everyone must eat, and most households purchase the majority of their food. Food purchases represent a significant contribution to the local economy. Residents in the NCKFC region spend an estimated $358.9 million annually on food.

Annual Consumer Spending on Food, 2016

Geographic Area	Total Spending	Spending on Food at Home	Spending on Food Away from Home
Clay County	$ 22,271,318	$ 13,955,322	$ 8,315,998
Cloud County	$ 22,606,504	$ 14,122,799	$ 1,430,469
Dickinson County	$ 51,187,744	$ 31,901,929	$19,285,804
Ellsworth County	$ 15,160,936	$ 9,448,719	$ 5,712,218
Jewell County	$ 8,339,048	$ 5,286,034	$ 3,053,019
Lincoln County	$ 8,068,961	$ 5,016,741	$ 3,052,211
Marshall County	$ 27,483,431	$ 17,570,927	$ 9,912,509
Mitchell County	$ 16,517,452	$ 10,259,788	$ 6,257,677
Ottawa County	$ 15,842,506	$ 9,617,223	$ 6,225,279
Republic County	$ 13,179,434	$ 8,399,786	$ 4,779,648
Saline County	$ 143,195,556	$ 88,292,477	$ 54,903,066
Washington County	$ 15,062,758	$ 9,543,970	$ 5,518,793
Regional Total	**$ 358,915,648**	**$ 223,415,715**	**$ 128,446,691**

Data Source: Business Decision system, estimates derived from the Consumer Expenditure Survey, Bureau of Labor Statistics, 2012

Government Food Assistance Programs

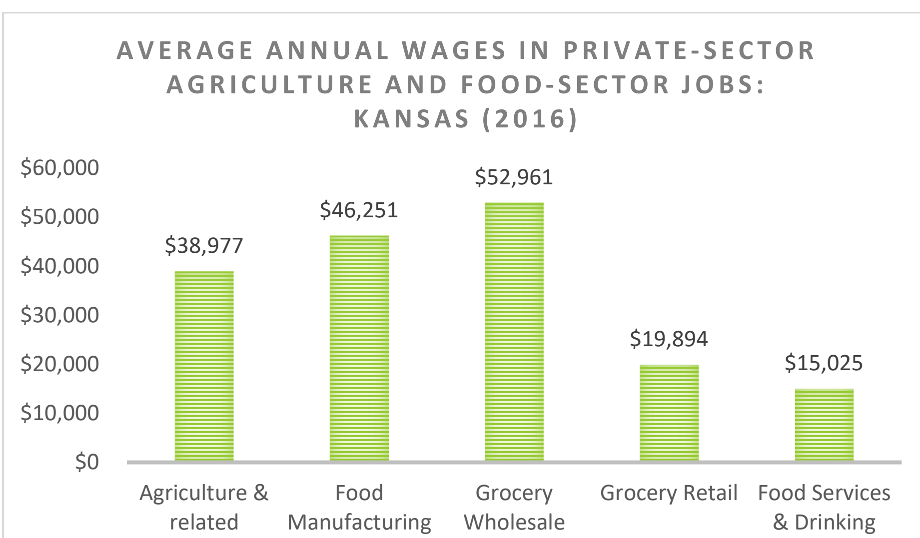
Government-sponsored food assistance programs also provide a significant infusion of dollars into the local economy. Through either direct reimbursement for the cost of meals served (as in school meals) or providing consumers with additional money to spend on food purchases (SNAP and WIC benefits), those dollars support jobs and increase retail sales within the community. As those dollars circulate through the local community, they generate additional economic benefit. USDA economists estimate that each $5 in SNAP benefits infused into a community generates approximately $9 in economic activity.

Geographic Area	SNAP Benefits Disbursed ($), 2017	SNAP Benefits Disbursed ($), 2016	SNAP Redemptions at Authorized Stores, 2012	WIC Redemptions, 2012
Clay County	$ 615,893	$ 646,934	$ 57,547	No data
Cloud County	$ 877,589	$ 949,539	$ 120,830	No data
Dickinson County	$ 1,725,707	$ 1,861,911	$ 72,107	No data
Ellsworth County	$ 332,160	$ 332,503	$ 36,711	No data
Jewell County	$ 177,414	$ 208,109	No data	No data
Lincoln County	$ 240,862	$ 292,186	No data	No data
Marshall County	$ 796,768	$ 852,270	$ 101,262	No data
Mitchell County	$ 318,622	$ 405,907	$ 37,544	No data
Ottawa County	$ 428,600	$ 490,709	$ 38,268	No data
Republic County	$ 255,836	$ 282,291	$ 43,658	No data
Saline County	$ 7,852,749	$ 8,278,558	$ 217,063	No data
Washington County	$ 264,747	$ 277,008	$ 15,090	No data
Regional Total	**$ 13,886,947**	**$ 14,877,925**	**$ 740,081**	---

Data Source: SNAP benefit disbursement from Kansas Department of Children and Families, Annual County Pocket Reports
SNAP redemption data derived from USDA FNS data tables

Food-sector Employment

Food production, and food-related businesses also create jobs which employ community members and infuse money into the local economy. Data from the U.S. Bureau of Labor Statistics provide detailed information about the types of businesses operating in a location, the number of individuals employed by those businesses, and their earnings. As illustrated in the graph and tables below, average worker earnings in food-sector jobs vary significantly by the type of work. In Kansas, jobs in food manufacturing and grocery wholesale pay significantly better than jobs in jobs in grocery retail or food service businesses.



Data Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Equity Issues in the Food System

Health equity issues have received much attention from public health practitioners and philanthropic organizations in recent years. When closely scrutinized, health outcomes measures identify many situations where some segments of the population suffer poorer health outcomes related to issues of social disadvantage or inequity. Similarly, inequities can be identified in the food system, many of which may contribute to disparities in health outcomes. Aspects of the food system where equity issues are frequently identified are outlined briefly in this section. More detail on many of these issues is available in the main body of this report.

Farming and Food Production

- Access to land, capital and financing, especially for young or minority farmers
- Access to water rights
- Farmworker compensation and working conditions, particularly for field hands and immigrant workers

Food System Infrastructure

- Hazardous conditions in meat processing facilities, often employing immigrant or minority workers

Food Retail (processing, manufacturing, distribution)

- Low wages in retail grocery stores
- Low wages in food and beverage operations

Consumer Access to Healthy Food Options

- Underserved locations, food deserts – in urban areas, usually low-income areas. Rural residents may also be underserved and have challenges accessing healthy food options
- Pricing differentials, higher prices often in underserved communities
- Food insecurity (families that cannot afford to buy enough food, high-quality food) – rates of food insecurity are markedly higher for minority households, single parent households, disabled individuals
- Stigma, loss of dignity for individuals who participate in food assistance programs

These equity issues, and others not included in this list, will not apply equally to every community. Community-level issues will likely vary with the types of agriculture and food production in practice in the location, the types of food processing businesses in the area, and socio-demographic characteristics of the population such as racial/ethnic diversity, poverty rates, and educational attainment. In Kansas, the issues of safe working conditions and fair wages for fieldworkers are less salient because the vast majority of crop production is commodity crops that require less hands-on labor. In some parts of Kansas, however, working conditions and safety concerns at meat packing facilities are cause for concern. Many communities in Kansas have locations where residents lack physical access to retail stores that offer healthy foods, and all Kansas counties have community members who cannot afford to buy enough food to feed themselves and their families. The data included in this report describe some of the more widespread food equity issues in Kansas, including lack of access to grocery retail outlets, food insecurity, and low wages in some sectors of the food system.

Community-based Data Collection: Online Surveys and Focus Groups

Online Survey Process

During the months of June and July 2018, the North Central Kansas Food Council launched a survey within the 12-county region to collect additional data directly from a broad cross-section of local community members. A survey questionnaire was designed by the contracted consultant, working in collaboration with representatives of the Council. When the questions had been finalized, survey questionnaires were developed in both paper and electronic (online) formats.

The survey was open for approximately 10 weeks. Survey promotion took place through face-to-face platforms and online. North Central Regional Planning Commission utilized an intern to distribute paper surveys at county fairs and to local businesses and organizations in collaboration with key community partners such as K-State Research and Extension. North Central Kansas Food Council members also assisted with survey distribution in their respective communities. The link to the online survey was featured on the North Central Regional Planning Commission website where community members could easily access it. North Central Regional Planning Commission staff and a Council member entered data from paper surveys by hand. Data from surveys completed on paper forms were entered into the online survey system prior to analysis.

A total of 4,449 individuals from the 12-county region participated in the North Central Kansas Food Council Community Food Survey. The survey featured 20 questions across a range of topics. Of the total respondents, the following table highlights survey participation in the 12-county region.

	Top 3 Counties	Bottom 3 Counties
By Portion of Survey Reponses	Saline County (50.72%)	Clay County (2%)
	Mitchell County (7.33%)	Ottawa County (3.13%)
	Dickinson County (6.2%)	Lincoln County (3.65%)
By Population Ratio (18+ years)	Clay County (2%)	Clay County (2%)
	Ottawa County (3.13%)	Ottawa County (3.13%)
	Lincoln County (3.65%)	Lincoln County (3.65%)

Because the survey employed a non-random, convenience sampling approach, the results of the survey may not be representative of the county population as a whole. One way to increase likely representativeness of a convenience sample is to obtain a larger group of survey responses. Comparison of the demographic characteristics of survey respondents to the regional population suggest that the survey results may be somewhat under-representative of males and adults between 18 and 24 years of age as well as between 45 and 54 years of age.

Nevertheless, the results represent an important cross-section of community member perspectives and voices and contribute to an overall understanding of the food environment and community member needs in the region. Survey participants have provided many comments which provide valuable insights regarding their satisfaction with the current regional food environment and where they would like to see changes.

The following are highlights from the online survey. Note, however, that this does not include all question responses.

Online Survey Summary for the NCKFC Region

Demographics

- Respondent age: <25 years (5.8%); 25-44 years (35.5%); 45-64 years (35.1%); 65+ years (23.6%)
- Respondent sex: female (74%); male (26%)
- Respondent household sizes: 1-2 (55.4%); 3-4 (29.3%); 5 or more (15.3%).
- Approximately 78.6% of respondents live in a town as opposed to outside of city limits.
- Approximately 55.6% of respondents grew up in a different county.

Food Access

- Approximately 57.7% of respondents live less than 2 miles from a grocery store; approximately 73.4% live less than 5 miles away from a grocery store.
- Approximately 48.9% of respondents cited no issues accessing food.
    - Approximately 35% of respondents cited affordability as an issue.
    - Approximately 22.9% of respondents cited lack of fresh food selection as an issue.
- Approximately 84.5% of respondents cited they do not use public benefits or other strategies to acquire food.
    - Approx. 11% of respondents indicated SNAP or WIC utilization.
- When asked what preferred food access channels would be, the top five responses were:
    - **one large supermarket** (56.5%);
    - **several small corner store**s (53.7%);
    - **community gardens that sell fruits and vegetables** (14.5%); and
    - **Dollar Store with fresh fruits, vegetables, and proteins** (36.7%) or

- **my own garden growing my own food** (33.1%).
- Approximately 42.9% of respondents would be interested in subscribing to a delivery service for food grown or produced regionally.

Dietary Habits

- Only 1.5% and 3.6% of survey respondents eat the recommended 5 servings of fruits and vegetables, respectively, per day.
  - Approximately 49.9% or respondents eat 1 or fewer servings of fruit daily.
  - Approximately 33.7% of respondents eat 1 or fewer servings of vegetables daily.

Shopping Behaviors & Preferences

- Nearly half (45.5%) of survey respondents spend less than $300 on groceries per month.
- When asked where groceries are purchased, the top three responses were: **supermarkets** (71.3%); **supercenters** (64.9%); and **independent, locally-owned grocery store**s (41.7%).
  - Aldi's was the most popular write-in
  - There were also several write-ins for growing and raising one's own food
- Approximately 95.8% of respondents spend the majority of their grocery dollars at either a **supermarket** (47.3%), **superstore** (26%), or **independent, locally-owned grocery store** (22.5%).
- When asked about the most important considerations for purchasing food, the top four were:
  - **freshness** (85.2%);
  - **affordability** (80.4%);
  - **variety** (52.7%); and
  - **healthy selection** (41.7%).

Local Foods Economy

- Approximately 81.5% of survey respondents do not grow, raise, or produce food or food-based products for public sale.
  - Approximately 14.5% of respondents produce vegetables.
- Survey respondents agree or strongly agree that they would be more likely to purchase regionally grown or produced foods if…
  - They knew it was healthy for them (88.9%)
  - They knew it would benefit the local economy (92.3%)
  - They knew it was better for the environment (88.8%)
  - There was a wider variety of to choose from (91.4%)
  - They knew who grew it (77.8%)
  - They knew where they could purchase it (90.9%)

Communications

- When asked what the preferred communications channels for learning about local foods are, the top four responses were:
  - **word of mouth** (63.9%);
  - **Facebook** (47.3%);
  - **flyers or bulletins** (45.4%); and
  - **newspaper** (39.5%).
  - Online was a popular write-in

Online Survey Summary sans Saline County

Saline County residents accounted for half of all survey responses. Such a response rate skews overall results. The table below highlights survey participation with Saline County data removed.

	Top 3 Counties	Bottom 3 Counties
By Portion of Survey Reponses	Mitchell County (14.9%)	Clay County (4.1%)
	Dickinson County (12.6%)	Ottawa County (6.4%)
	Jewell County (11.6%)	Lincoln County (7.4%)
By Population Ratio (18+ years)	Jewell County (10.7%)	Clay County (1.4%)
	Lincoln County (6.8%)	Ottawa County (1.6%)
	Mitchell County (6.7%)	Lincoln County (2.3%)

The following is a summary of the online survey results with Saline County data removed.

Demographics

- Respondent age: <25 years (4.6%); 25-44 years (32.6%); 45-64 years (35.5%); 65+ years (27.3%)
- Respondent sex: female (74.8%); male (25.2%)
- Respondent household sizes: 1-2 (57.27%); 3-4 (29.41%); 5 or more (13.3%).
- Approximately 66.7% of respondents live in a town as opposed to outside of city limits.
- Approximately 52% of respondents grew up in a different county.

Food Access

- Approximately 48.6% of respondents live less than 2 miles from a grocery store; approximately 57.79% live less than 5 miles away from a grocery store.
- Approximately 30% of respondents live 10 or miles away from a grocery store.
- Approximately 43.9% of respondents cited no issues accessing food.
    - Approximately 34.7% of respondents cited affordability as an issue.
    - Approximately 34.6% of respondents cited lack of fresh food selection as an issue.
    - Popular write-ins also referred to poor quality of food and limited store hours.
- Approximately 88.8% of survey responses cited they do not use public benefits or other strategies to acquire food.
    - Approximately 6.5% of respondents indicated SNAP or WIC utilization.
- When asked what preferred food access channels would be, the top four responses were:
    - **one large supermarket** (54.9%);
    - **several small corner stores** (41.3%);
    - **community gardens that sell fruits and vegetables** (66.6%); or
    - **my own garden growing my own food** (35.1%).
- Approximately 45.4% of respondents would be interested in subscribing to a delivery service for food grown or produced regionally.

Dietary Habits

- Only 1.6% and 3.1% of survey respondents eat the recommended 5 servings of fruits and vegetables, respectively, per day.
    - Approximately 52.6% or respondents eat 1 or fewer servings of fruit daily.
    - Approximately 32.6% of respondents eat 1 or fewer servings of vegetables daily.

Shopping Behaviors & Preferences

- Nearly half (46.6%) of survey respondents spend less than $300 on groceries per month.
- When asked where groceries are purchased, the top three responses were: **independent, locally-owned grocery stores** (74.2%); **supercenters** (66.7%); and **supermarkets** (48%).
    - There were also several write-ins for growing and raising one's own food
- Approximately 95.3% of respondents spend the majority of their grocery dollars at either an **independent, locally-owned grocery store** (43.7%); **supercenter** (31.2%); or **supermarket** (20.5%).
- When asked about the most important considerations for purchasing food, the top four were:
    - **freshness** (87.4%);
    - **affordability** (80.8%);

    - **variety** (55.6%); and
    - **healthy selection** (38.5%).

Local Foods Economy

- Approximately 77.3% of survey respondents do not grow, raise, or produce food or food-based products for public sale.
    - Approximately 17.6% of respondents produce vegetables.
- Survey respondents agree or strongly agree that they would be more likely to purchase regionally grown or produced foods if…
    - They knew it was healthy for them (89%)
    - They knew it would benefit the local economy (93.5%)
    - They knew it was better for the environment (87.8%)
    - There was a wider variety of to choose from (91.8%)
    - They knew who grew it (79.3%)
    - They knew where they could purchase it (91.5%)

Communications

- When asked what the preferred communications channels for learning about local foods are, the top four responses were:
    - **word of mouth** (65.8%);
    - **Facebook** (53%);
    - **flyers or bulletins** (47.6%); and
    - **newspaper** (45.6%).
    - Write-ins included: classes or presentations, information distributed by local organizations (i.e., public schools, health department, hospital) and the grocery store

Focus Group Process

To complement information gleaned from secondary data sources and the community survey, key community stakeholders within each of the 12 counties comprising the North Central Kansas Food Council were sought to participate in a focus group. Focus groups were organized by North Central Regional Planning Commission in collaboration with North Central Kansas Food Council members, and personal invitations were made. In at least one case, the focus group was advertised in the local newspaper. Participants were provided with a packet of information for review at least one week prior to the focus group. The packet included a copy of the full community survey results for their county; a summary of secondary data collected; and a one-page, double-sided information sheet of secondary data and community survey highlights.

Focus groups were facilitated by two consultants and lasted two hours. Participants were provided with the one-page information sheet of county data highlights, an agenda that included two additional questions for which to provide a written response, and name tents on which to not only indicate their name and food sector represented but also provide written responses to questions that would be asked during the focus group. In many cases, food and refreshments were provided as well. The objectives of the focus groups were to:

- ground-truth the survey data;
- create linkage between the local food system and the survey;
- enrich and deepen the assessment process and corresponding data collected; and
- engage community members.

Focus groups took place from August to November 2018 with a total of 112 participants across all 12 counties. Each focus group began with an overview of the food assessment process by North Central Planning Commission staff and discussion ground rules followed by a “warm-up” exercise where participants were asked what came to mind when thinking about their “local or regional food system.”

The focus group was conducted in three parts that focused on reactions to the community survey; the local food economy; and conclusions drawn. The following is a brief summary of focus group responses from participants.

Part 1: Survey Reactions

Reactions to survey data varied from county to county. Overall, however, focus group participants were surprised by the low-income rates in their county, low rates of fruit and vegetable consumption, and the amount of estimated food waste in the county. Focus participants were unsure as to how representative the data collected was of the entire county, that certain towns within the county may have had stronger representation. Several participants also felt that the survey results suggested that key sectors of the population had not been reached, including low-income and young families.

Part 2: Economic Data

Nearly all focus group participants did not feel that survey respondents' preferences regarding regional food systems development was representative. Many felt that the responses reflected attitudes and not behaviors. In terms of supply chain awareness, the focus groups' perception of both their own and the community's knowledge was widespread. However, overall, participants felt that community member knowledge regarding production, processing, distribution, and marketing were generally low.

Focus group participants agreed that consumers' primary concern is affordability and convenience, especially for those families who are low-income and in "survival mode" or those who are on fixed incomes. Furthermore, cultural upbringing may influence food preparation practices, including instant gratification. For this reason, home delivery service of pre-packaged meals provided by businesses like Hello Fresh and Blue Apron are an emerging trend. Consumers like to have a variety of foods readily available to them as well; however, offerings for novel food items may inconsistent and carrying such items can be a burden on small food retailers. Commodity crop production in Kansas also overshadows specialty crop production. Locally based farmers would need to know what consumer preferences are to determine whether there is a market that would offset the costs associated with specialty crop production.

Part 3: Conclusions

After rigorous discussion about their local food systems, participants felt that there was much work to be done and behavior changes are needed. However, there are disparities between what consumers desire and what is currently possible within the food system. It is acknowledged that influencing behavior change is incredibly challenging, and individuals must first be willing to make those changes. These changes can be facilitated by "meeting people where they are at", making the healthy choice the easy choice, and involving more community stakeholders to gain the buy-in needed to facilitate changes.

When focus group participants were asked what they would like to change about their local food system, there were 97 total responses. These responses were aggregated for analysis, and seven themes emerged:

- **Create major and minor infrastructure for food system development and promotion.** Food system infrastructure is critical for operations that build the local food economy. Infrastructure may include major developments such as processing and aggregation facilities or minor developments such as community gardens and local grocery store delivery mechanisms.
- **Build a local food economy.** Keeping consumer dollars local contributes to the local tax base and stimulates communitywide development. Building the local food economy may include increasing the affordability of fresh foods by creating markets, increasing buying power at both the consumer and producer levels, and promoting "buy local" initiatives.
- **Policy strategies.** Food systems infrastructure is critical to building a local food economy, but decisions resulting in regulations or incentivization at the government level – whether local, state, or federal – can inhibit or facilitate action. This may include institutional purchasing, food sales tax, and community planning. These are just a few examples.
- **Consumer education.** Informing consumers of their options is an initial step toward making better decisions and eventual behavior change. This may include nutrition education, meal preparation, and financial literacy.

- **Stakeholder engagement and relationships.** Decision making is influenced by the interactions between and among community stakeholders. Cooperative purchasing, consumer – producer connections, and partnership with the food policy council are examples of stakeholder engagement and relationship strategies.
- **Strategic communications.** Communications targeted to specific stakeholder groups to influence action facilitate decision making for behavior change and buy-in. Marketing campaigns to raise awareness and developing stakeholder relationships require communications strategies.
- **Improve individual and organizational food system practices.** Behavior change ultimately leads to a change in practices, whether that is manifested in a shift in consumer perceptions and actions or emerges programmatically, for example. Changing production methods and some community development decisions may also evidence changes in practice.

Focus group responses may be categorized within multiple themes. These responses are included in the appendix. Of the 97 focus group participants responses…

- 29 responses were categorized into **create major and minor infrastructure for food system development and promotion** (29.9%)
- 18 responses were categorized into **build a local food economy** (18.6%)
- 19 responses were categorized into **policy strategy** (19.6%)
- 20 responses were categorized to **consumer education** (20.6%)
- 11 responses were categorized to **stakeholder engagement and relationships** (11.3%)
- 15 responses were categorized to **strategic communications** (15.5%)
- 34 responses were categorized to **improve individual and organizational food system practices** (35.1%)

Although focus group responses were categorized into emergent theme, a systems-based approach posits that each category is connected to one another. For example, local food systems infrastructure may be critical to the development of a local foods economy but may not be possible without policy. Policy development requires stakeholder engagement and relationships and strategic communications. Furthermore, these actions may require education and change in practices. Priority setting for food systems development planning at the county-level should consider the policy, systems, and environmental change recommendations emerging from these focus groups and the greater local communities.

Conclusions

The information presented in this report highlights many current strengths and gaps in the current food system for the North Central Kansas region. The region has a strong agricultural presence, with access to farmland and adequate water supplies. Although agriculture is predominantly focused on the production of grains, hay and beef, there are a promising, albeit small, number of smaller-scale producers growing and producing foods for direct sale to community residents. The presence of Kansas State University, the state's land grant university, offers food producers and entrepreneurs in the region the opportunity to take advantage of a wealth of available scientific expertise and technical assistance. There is also access to retail grocery and farmers markets within the region.

Despite all of those strengths, however, there are still gaps and opportunities to improve and enhance the local food system. Many farmers are nearing retirement age without younger ones stepping in fill the void, and high land prices and low farm profitability present significant challenges to the small numbers of younger people who would like to become farmers. Local production of dairy products, poultry and eggs, and fruits and vegetables fall significantly short of local consumption volumes. The vast majority of community residents do not eat the recommended amounts of vegetables and fruits. Approximately 17,470 residents in the region are food-insecure (or struggle to get enough food), because they lack the money to buy it. National research suggests that as much of 40 percent of the food grown in the United States is wasted. If this pattern holds true in the region, more than 39.6 million pounds of food is wasted each year.

These are just a few examples of current assets and gaps; readers of this report will likely identify others. While this report does not address or include every possible measure related to the local food system, it has been structured to provide a systems-level description that touches upon each of the major sectors within the food system, using data that are either readily available or could be collected with reasonable effort within the community setting. Because of that breadth of scope, the depth of information on any one subject is necessarily limited to prevent the assessment process and report from becoming totally unmanageable. It is likely that there will be some areas where the information included will generate interest or raise additional questions that are not answered by the brief topical summaries included in the report – those questions may identify areas the North Central Regional Planning Commission or the North Central Kansas Food Council will wish to conduct further exploration in the future.

Appendix

	What would you change about your local food system? **Focus Group Participant Responses**	Create major and minor infrastructure for food system development & promotion	Build local economic wealth (create demand, buy local)	Consumer education	Stakeholder engagement and relationships	Policy strategy	Strategic communications	Improve food system practices – individual and organization
1	Create facility to process crops both commodities and other	x						
2	Restaurants process and sell local food	x	x					
3	Federally inspected meat processing plant	x						
4	More education of general public about consumption of healthy food, create more consumer requests for health food, create pressure on restaurants providing health choices			x		x		
5	More hoop houses for extending seasons	x						
6	Innovative ways to grow and have access to grow your own	x						x
7	A cooperative effort around production				x			x
8	Community supported agriculture programs	x	x					x
9	Remove food sales tax					x		
10	Institutional purchase of local foods		x			x		
11	Tax break for local businesses purchasing local (itemized deduction)					x		
12	Eliminate sales tax on food					x		
13	Bus transportation for food access to farmers markets	x						
14	Free advertising about improving health and quality of life						x	
15	Better models for healthy food for SNAP/WIC clients							x
16	Address mixed messages with those programs vs. nutritional education						x	
17	Increase early education on healthy food/nutrition; make it standard across the board			x				
18	Increase education of seniors on nutrition/ meet folks where they are at			x				
19	Increase 'cook from scratch' in schools			x				
20	Community gardens in schools	x						x
21	High quality, nutritional food prep knowledge (chefs!)			x				x
22	Get rid of food sales tax w/o impacting other income					x		
23	Fewer middle aisles @grocery (high processed, low nutrition foods)	x						x
24	Create less processed food!	x						x
25	Get rid of Dollar General		x					x
26	Tax unhealthy foods Fresh F/V distribution system					x		
27	More Svaty's produce		x					
28	Affordable farmers market		x					
29	Rewrite dietary policy					x		
30	Education to prepare; make it mandatory, get people excited, partner with council			x	x	x		x
31	Eliminate regulations and policy barriers; what is keeping it out of the grocery store?					x		
32	Time investment/engagement; Is there sustainability of commitment; need to have small victories and identify where local impact is made							x
33	Live on the farm/grow our own	x						
34	Capture shop locally (x2)		xx				xx	
35	Convince/raise awareness of local economy			x			x	
36	Buy big mobile food truck	x						
37	Change eating habits/lifestyle change							x
38	Fix some of base (poverty)							x
39	Understand what is healthy; make economically viable		x	x				
40	Those that are WIC or food stamp eligible would apply							x
41	Make buying from each other a requirement → institutional purchasing					x		

	What would you change about your local food system? **Focus Group Participant Responses**	Create major and minor infrastructure for food system development & promotion	Build local food economy (create demand, buy local)	Consumer education	Stakeholder engagement and relationships	Policy strategy	Strategic communications	Improve food system practices – individual and organization
42	Create central location like a hub or co-op	x						
43	Create an educational center for nutrition and a community kitchen (connect with hub/coop)	x		x				
44	Central place for incubator (include with community kitchen); find different entry point	x						
45	Affordability		x					
46	Accessibility	x						x
47	On-line local delivery (initiated by local grocery stores)	x						
48	Infrastructure for delivery for institutional purchasing	x				x		
49	Donation system for expiring dated food; create food waste policy					x		x
50	Affordability		x					
51	Environment; recycling access; recycle grocer bags							x
52	State legislation					x		
53	100% buy local		x				x	
54	Availability	x						
55	Convenience/ meal prep/planning			x				x
56	Cooperative/CSA/group buying/consumer buying power		x		x			
57	Delivery service	x						x
58	More growing your own							x
59	Education on food production to raise awareness; creative local production alternatives	x		x			x	
60	Seasonality/regionally/ Kansas cuisine							x
61	Make lifestyle change							x
62	Organized collection of production				x			
63	Need a local meat processor	x						
64	Farm bill supportive of local healthy food and producers					x		
65	Everyone would have education and awareness of health – food connection			x			x	
66	Facilitate producers getting in touch with consumers				x		x	
67	Change mentality and perception of shopping local and buying fresh				x		x	x
68	Increase knowledge to result in self sufficiency			x				x
69	Educate to increase health awareness and personal responsibility to your health; start at a young age and stay consistent			x			x	
70	Local markets and access in small communities	x	x					x
71	Make more affordable as in increase ability to purchase		x					
72	Educate about cost vs. value			x				
73	Educate about affordability			x				
74	Increase access regardless of income	x						x
75	Keep more dollars here		x					
76	Perception of we can't buy from you (as in schools)					x		
77	Change the Sysco's of the world from discouraging local producer purchases					x		
78	Make food and health a value!!							x
79	Unify producers				x			
80	Connect consumers of food system; educate on affordability			x				x
81	Connect producers with markets to make it more profitable		x					
82	Make more affordable		x					
83	Placement of markets centralized	x						
84	With community planning create repetition with more community gardens and greenscapes	x				x		
85	Educate on seasonal markets			x				
86	Help with financial literacy			x				
87	Long term planning to get new customers to healthy food						x	x
88	Flow of people and food markets designed into community plan	x				x		
89	Have entertainers at farmers markets, make it an event						x	
90	Develop relationship between customer and producer				x		x	
91	Include more people; give them a stake; If more people worked in food sector, this might raise awareness of issues				x			x

	What would you change about your local food system? Focus Group Participant Responses	Create major and minor infrastructure for food system development & promotion	Build local food economy (create demand, buy local)	Consumer education	Stakeholder engagement and relationships	Policy strategy	Strategic communications	Improve food system practices – individual and organization
93	Internship programs with local farms and food stores							x
94	Develop relationship between customer and producer				x		x	
95	Include more people; give them a stake; If more people worked in food sector, this might raise awareness of issues				x			x
96	Increase: o Culinary diversity o Sustainable family farms o Understanding of market power of those in supply chain o Accessibility – what barriers have we created that we can remove? (ease of access)	x		x				x
97	CSA delivery	x						
	TOTAL responses	**29**	**18**	**20**	**11**	**19**	**15**	**34**

References

Buzby, J. C. (2014). *The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States.* U.S. Department of Agriculture, Economic Research Service.

Cunnyham, K. E. (2016). *Reaching Those in Need: Estimates of State Supplemental Nutrition Assistance Program Participation Rates in 2013.* U.S. Department of Agriculture, Food and Nutrition Service.

Kansas Department of Agriculture. (2018 June 11). Kansas agriculture. Retrieved from https://www.agriculture.ks.gov/about-kda/kansas-agriculture

Kansas Department of Health and Environment, K. W. (2015). *KDHE, KS WIC Program*. Retrieved from KS WIC Program, Information for Families: http://www.kansaswic.org/families/

Kansas Health Matters. (2015). Retrieved from Kansas Health Matters: http://www.kansashealthmatters.org/

National Gardening Association. (2014). *Garden to Table: A 5-year Look at Food Gardening in America.* Special Report. Retrieved from http://garden.org/learn/articles/view/3819/

Synergos Technologies, Inc. (n.d.). Business Decision Database; Retail Goods and Services Expenditures.

Taylor, M. (2017a). *2017 Kansas County-Level Cash Rents for Irrigated Cropland.* Kansas State University, Department of Agricultural Economics.

Taylor, M. (2017b). *2017 Kansas County-Level Cash Rents for Non-Irrigated Cropland.* Kansas State University, Department of Agricultural Economics.

Taylor, M. (2017c). *2017 Kansas County-Level Land Values for Cropland and Pasture.* Kansas State University, Department of Agricultural Economics.

U.S. Centers for Disease Control and Prevention. (2011). *Census Tract Level State Maps of the Modified Retail Food Environment Index (mRFEI).* Retrieved from ftp://ftp.cdc.gov/pub/Publications/dnpao/census-tract-level-state-maps-mrfei_TAG508.pdf 86

U.S. Centers for Disease Control and Prevention. (2017, December). *Healthy Places: General Food Environment Resources*. Retrieved from http://www.cdc.gov/healthyplaces/healthtopics/healthyfood/general.htm

USDA Economic Research Service. (2017, December). *Food Consumption and Demand: Food Away from Home*. Retrieved from http://www.ers.usda.gov/topics/food-choices-health/food-consumption-demand/food-away-from-home.aspx

USDA National Agricultural Statistics Service, Kansas Field Office. (2012). *Agricultural Land Values and Cash Rents.* Retrieved from www.nass.usda.gov/KS

Wansink, B. (2014). *Slim by Design: Mindless Eating Solutions for Everyday Life.* New York: Harper Collins Publishing.

Data Sources

Business Decision database - **http://civictechnologies.com/businessdecision/**

Community Commons - **http://www.communitycommons.org/**

Feeding America, Map the Meal Gap - **http://map.feedingamerica.org/**

Kansas Action for Children, via Kids Count - **http://datacenter.kidscount.org/data#USA/2/16/17,18,19,20,22,21,2720/char/0**

Kansas Department of Agriculture, Food Safety Inspections database - **http://agriculture.ks.gov/divisions-programs/food-safety-lodging/inspection-results**

Kansas Department of Children and Families, Public Assistance Reports - **http://www.dcf.ks.gov/services/ees/Pages/EESreports.aspx**

Kansas Department of Children and Families, Annual County Packet Reports - **http://www.dcf.ks.gov/services/ees/Pages/EESreports.aspx**

Kansas Department of Health and Environment, Behavioral Risk Factor Survey - **http://www.kdheks.gov/brfss/**

Kansas Health Matters – **http://www.kansashealthmatters.org**

Kansas State Department of Education, Data and Reports - **http://www.ksde.org/Data-Reports**

Kansas Statistical Abstract, 2017 - **http://www.ipsr.ku.edu/ksdata/ksah/**

InfoGroup USA, ReferenceUSA database, accessed through Public Library Subscription - http://resource.referenceusa.com/

U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics - **http://www.bls.gov/bls/proghome.htm#unemployment**

U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages - **http://www.bls.gov/cew/**

U.S. Census Bureau, American Community Survey - **https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml 87**

U.S. Department of Agriculture, Census of Agriculture - **https://www.agcensus.usda.gov/**

U.S. Department of Agriculture Economic Research Service, Food Environment Atlas - **http://www.ers.usda.gov/data-products/food-environment-atlas.aspx**

U.S. Department of Agriculture, National Agricultural Statistics Service, Kansas Land Values and Cash Rents - **https://www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Economics_and_Misc/ARMS/index.php**

U.S. Department of Agriculture, National Agricultural Statistics Service, Cropland Maps - **http://nassgeodata.gmu.edu/CropScape/**

U.S. Environmental Protection Agency, Sustainable Management of Food - **https://www.epa.gov/sustainable-management-food**

U.S. Geologic Survey, County-level water use - **http://water.usgs.gov/watuse/data/2015/**