2015 Food Access Assessment in Johnson County, Kansas

This brief is a summary of results from the Healthy Communities Grant subcontract to study and identify local community profiles associated with limited food access in Johnson County, KS. The University of Kansas Medical Center and the University of Kansas-Lawrence collaborated to conduct this study.

Executive Summary

It is challenging to identify communities that have limited access to healthy food in highly populated counties and in counties where there are under-resourced areas surrounded by more affluent and resource-rich neighborhoods. To address this challenge and to find food deserts within Johnson County, Kansas, a multi-level effort that synthesized a wide array of data using Geographic Information System (GIS) mapping resulted in visual profiles to aid in the detection of local food access needs. Now that identification of food deserts is complete, a locally-driven, targeted community engagement process can proceed.

Rationale and Design

The Kansas Health Foundation’s (KHF) Healthy Communities Initiative funded 20 communities across Kansas, including Johnson County to “promote policy, systems and environmental changes that support healthy eating and active living.”

The research team was subcontracted to provide guidance and consultancy and to conduct the following:

1. Acquire and organize secondary data from four sources including the Automated Information Mapping Systems (AIMS) Department, Mid-America Regional Data and Economy division, Environmental Systems Research Institute’s (ESRI) Community Analyst data and Google Maps.
2. Create and analyze secondary data using GIS maps to overlay selected datasets (e.g., poverty rates, grocery stores/farmers markets, public transportation).
3. Produce GIS maps that can facilitate the activation of local community partnerships and the Johnson County Food Policy Council (JCFPC).

Materials and Methods: Geographic Information Systems (GIS) Mapping

The team conducted an initial assessment of available secondary data sources relevant to accessibility of healthy foods, specifically to fresh fruits and vegetables. The data sources used include the 19 individual maps listed in Table 1 (also see Appendix A). Multiple data sets were filtered and mapped to include only Johnson County, Kansas information. These data come from the following sources: Automated Information Mapping Systems (AIMS) Department (Johnson County), Mid-America Regional Council’s Data & Economy division, Environmental Systems Research Institute’s (ESRI) Community Analyst data and Google Maps.

<table>
<thead>
<tr>
<th>Table 1. Individual Profile Maps</th>
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<tr>
<td>Overall population by census tract</td>
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<td>Population density (per square mile)</td>
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<td>Median age</td>
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<td>Population for persons 65 years and older</td>
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<td>Diversity index</td>
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<tr>
<td>Overlay of racial/ethnicity diversity</td>
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<td>Population by gender (2)</td>
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The team conducted a preliminary analysis to determine which of the individual secondary data maps should be combined to identify geographical areas in need of targeted mapping investigation. This process resulted in twenty additional maps (see Appendix B).
Material and Methods: Johnson County Food Policy Council

A parallel activity led by the Johnson County Department of Health and Environment was the development of the Johnson County Food Policy Council (JCFPC) in August, 2015. The JCFPC members offer unique personal perspectives as county citizens and professional experience as most of them work in the local food system (e.g., proprietors, advocates for food access, faith community members, sponsors of food pantries, etc.).

The council has three broad goals:

1. “Create a forum for open discussion and coordination of community-wide efforts to improve the nutritional, environmental, economic and social health of Johnson County.” The GIS maps will assist the JCFPC to prioritize key issues to further investigate within the food desert neighborhoods.
2. “Build the capacity of local food policy bodies to find common ground on policy priorities, generate public support for those policies and educate residents and community leaders on issues in our food system.” The JCFPC’s initial recommendations from their analysis of the food desert GIS Map Tool will be used to provide education to residents and community leaders about the identified catchment areas and solutions that could be proposed and implemented.
3. “Develop strategies to effectively address food access, hunger, obesity, community development, economic development, urban agriculture, food waste, and nutrition education.”

Precisely because food deserts and access to healthy foods may be masked by the overall availability of food across a county, the maps provide an essential tool to help target communities and neighborhoods – many of which represent substantial numbers of citizens – in the effort to improve micro-environmental access and overall, county-level access to healthy food. The secondary data sources are at census tract level, defined as relatively permanent statistical subdivisions within a county, typically with a population size between 1,200-8,000 (optimal size being 4,000). While these data are informative during the initial stage of mapping, further mapping of specific neighborhoods is currently in progress for an increased understanding of those areas. Using the maps produced, the KU team will present the findings to the JCFPC to enable it to set the course for local community engagement and next step efforts.

Key Findings

The review of the individual and combined data maps identified census-track level areas that have poor or no access to food resources located primarily in portions of the cities of Lenexa, Olathe and Shawnee. Maps also consistently demonstrated that communities in the northwest and north central portions of the county, as well along its southern border with Miami County have no or very limited access to any food resources. Review of the maps sequentially revealed a consistent pattern of population density, employment, poverty and/or diversity that characterized these areas in central Johnson County. The larger geographic areas of limited food access, areas such as Stillwell and Spring Hill displayed features consistent with patterns of food access most often associated with rural communities. For example, distance to a suburban/urban area and lack of infrastructure (like public transportation and roads) characterized these areas in Johnson County which pose different environmental challenges to account for in advancing local policy and advocacy for food access.

This phase of the project successfully identified geographically delimited areas of the county for further study. These areas can now be targeted by the JCFPC and approached by the project staff to identify local champions, learn about local concerns and conduct intentional engagement with local business, faith community, school and policy interests that will lead to the promotion of increased access to healthy foods.
Next Steps

The mapping team is building an online web application to host all of the GIS maps developed during this phase of the project. The web application will be interactive, modifiable and accessible to the community, including the Johnson County Department of Health and Environment, community organizations and neighborhood groups. The maps can be updated as new information is available and will provide an ongoing, visual resource to track and evaluate changes instituted as a result of local and county-level actions.

We recommend that the second phase of the healthy food access project focus on working directly with the communities and areas identified by the first phase mapping work. This will include conducting interviews and focus groups in partnership with locally based organizations by combined teams of Johnson County Department of Health and Environment and University of Kansas staff. The purpose of collecting information from citizens who live in these areas is to learn:

1. if there are natural or current citizen “champions” who are working to improve food access with whom to partner;
2. where community members currently buy their groceries;
3. what impact living in these areas has on family income (e.g., transportation costs may be disproportionately higher because they must travel farther for an access point) and their perceived quality of life;
4. what impact living in these areas has on their perceived health status;
5. what community members believe to be the best solutions for change that will improve local/neighborhood food-related conditions.

We will collaborate with community groups, the faith community, neighborhood associations and other organizations within these communities to ensure comprehensive input. Finally, we will produce a cross-sectional “census” of attitudes, common issues, concerns and solutions derived at the local level among all of these targeted communities so that the JCFPC can work towards unanimous, policy-driven solutions where possible.
Appendix A: 19 Individual Secondary Data GIS Maps

Map 1: Overall Population
Census Tracts are small, relatively permanent statistical subdivisions of a county. Census tracts are "designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions".

Map 2: Population Density (per square mile)

Map 3: Median Age

Map 4: Population for Persons 65 Years and Older

Map 5: African American Population

Map 6: Hispanic Population

Map 7: Diversity Index
Diversity Index shows the likelihood that two persons chosen at random from the same area belong to different race or ethnic groups. The index ranges from 0 (no diversity) to 100 (complete diversity). The diversity score for the US is 63%.

Map 8: Overlay of Racial/Ethnicity Diversity

Map 9: Male Population / Map 10: Female Population

Map 11: Average Household Income

Map 12: Poverty Rate

Map 13: Unemployment Rate

Map 14: Crime Rate

Map 15: Farmer Markets, Grocery, and Cultural Food Stores

Map 16: Convenience Stores and Dollar Stores

Map 17: Food Pantries, Community Gardens, and Soup Kitchens

Map 18: Bus Routes and Stops

Map 19: Trails and Bikeways (Grayscale) / Map 20: Trails and Bikeways (Color)
1. Overall Population

Johnson County overall population by census tract. Census Tracts are small, relatively permanent, statistical subdivisions of a county. Census tracts are "geographically homogeneous units as defined by the census tract design." Census tracts average about 4,000 inhabitants. Johnson County is the most populous county in Kansas, with a population of 574,272 in 2014.

2. Population Density (Population per Square Mile)

3. Median Age

4. Age 65+

5. Black African American Population
Johnson County Healthy Food Assessment
Assessment and Mapping of Food Sandbars in Johnson County

1. Overall Population

2. Population Density (Pop per Square Mile)

3. Median Age

median age of JOCO is 36.5. Leawood has the highest average age in Johnson County.

4. Age 65+

5. Black African American Population

6. Hispanic Population
1. Overall Population

2. Population Density (Population per Square Mile)

3. Median Age

4. Age 65+
   Residents of Age 65+ concentrate on living on the northeast corner of Johnson County.

5. Black African American Population

6. Hispanic Population
Johnson County Healthy Food Assessment

5 Black African American Population

Majority of residents are White (87.5%). Black African American population concentrate on East of Shawnee, west of Olathe, and part of Overland Park.

6 Hispanic Population

7 Diversity Index

8 Overlay Race/Ethnicity Diversity

9 Male Population

10 Female Population
The Diversity Index shows the likelihood that two persons chosen at random from the same area belong to different race or ethnic groups. The index ranges from 0 (no diversity) to 100 (complete diversity). The diversity score for the entire United States is 63.3.
Median household income is around $74,761 in 2012. Income inequality is more apparent in Overland Park, Olathe, Shawnee Mission, and Leawood.
13 Unemployment rate

The 2015 unemployment rate in this area is 4.1%. The national unemployment rate is 6.4%. There are 322,320 persons here over the age of 16 in the workforce. The area with highest unemployment rate is on the east side of Leawood.

14 Crime Rate

15 Farmer Markets, Groceries and Cultural Food

16 Convenience Stores and Dollar Stores

17 Food Pantries, Community Gardens and Soup Kitchens

18 Bus Routes and Stops
Part of Olathe and Shawnee Mission have a high crime rate of more than 2 times average, with the national average as 100.
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Assessment and Mapping of Food Sandbars in Johnson County

13. Unemployment rate
14. Crime Rate
15. Farmer Markets, Groceries and Cultural Food
16. Convenience Stores and Dollar Stores
17. Food Pantries, Community Gardens and Soup Kitchens
18. Bus Routes and Stops
19. Trails and Bikeways_Locations
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14 Crime Rate

15 Farmer Markets, Groceries and Cultural Food

16 Convenience Stores and Dollar Stores

17 Food Pantries, Community Gardens and Soup Kitchens

18 Bus Routes and Stops

19 Trails and Bikeways_Locations

20 Trails and Bikeways
16 Convenience Stores and Dollar Stores

17 Food Pantries, Community Gardens and Soup Kitchens

18 Bus Routes and Stops
556 runs down Metcalf to Shawnee Mission Pkwy to the Plaza
http://www.jocogov.org/dep/transit/route-schedules/556-metcalf-plaza-connex

575 runs along 75th St from Troost to Quivira then down to JCCC & KU Edwards.
http://www.jocogov.org/dep/transit/route-schedules/575-75th-street-quivira

710 runs during the day as well, but expresses between JCCC & KU Lawrence. So there really is no

19 Trails and Bikeways_Locations

20 Trails and Bikeways_Locations
Appendix B: 20 Secondary Data GIS Maps Overlaid

Map 1: Density of grocery, farmer markets and cultural food stores

Map 2: Density of food pantries, soup kitchens and community gardens

Map 3: Overlay of population density and density of grocery, farmer markets, and cultural food stores

Map 4: Overlay of population density and density of food pantries, soup kitchens, and community gardens

Map 5: Overlay of bus transit and grocery stores

Map 6: Overlay of bus transit and convenience stores

Map 7: Overlay of bus transit with food pantries and soup kitchens

Map 8: Overlay of minority population density with grocery, farmer markets, and cultural food stores

Map 9: Overlay of senior population density and grocery, farmer markets, and cultural food stores

Map 10: Overlay of poverty rate with grocery, farmer markets, and cultural food stores

Map 11: Overlay of poverty rate with food pantries, soup kitchens, and community gardens

Map 12: 0.5 miles from bus stops overlaid with poverty rates

Map 13: 0.5 miles from bus stops overlaid with minority populations

Map 14: Driving distance (5 minutes) from food resources overlaid with poverty rates

Map 15: Walking distance (20 minutes) from food resources overlaid with poverty rates

Map 16: Driving distance (5 minutes) from food resources overlaid with senior populations

Map 17: Walking distance (20 minutes) from food resources overlaid with senior populations

Map 18: Driving distance (5 minutes) from food resources overlaid with minority populations

Map 19: Walking distance (20 minutes) from food resources overlaid with minority populations

Map 20: Overlay of food resources with senior populations who are under the poverty line
1. Densities of grocery, farmer market and cultural food store

Based on the combined density of groceries, farmer markets, and cultural food stores in Johnson County, most of these food resources are located in northeast, such as Overland Park, Shawnee, and Leawood. Aside from these cities, Olathe, Gardner, and Bonner Springs has comparatively higher densities than other areas. In general, only a small portion of Johnson County has resources of groceries, farmer markets, and cultural food stores. These resources are absent in the western and southern part of the county, such as De Soto, Edgerton, Spring Hill, and Stilwell.

2. Densities of food pantries, soup kitchens and community gardens

3. Overlay population density and densities of grocery, farmer market, and cultural food store

4. Overlay of population density and densities of food pantries, soup kitchens, and community gardens

5. Overlay of bus transit and groceries

6. Overlay of bus transit and conveniences stores
1. Densities of grocery, farmer market, and cultural food store

2. Densities of food pantries, soup kitchens and community gardens

3. Overlay population density and densities of grocery, farmer market, and cultural food store

4. Overlay of population density and densities of food pantries, soup kitchens, and community gardens

5. Overlay of bus transit and groceries

6. Overlay of bus transit and conveniences stores

7. Overlay of JO Bus Transit with food pantries and soup kitchens
1. Densities of grocery, farmer market, and cultural food store

2. Densities of food pantries, soup kitchens and community gardens

3. Overlay population density and densities of grocery, farmer market, and cultural food store

4. Overlay of population density and densities of food pantries, soup kitchens, and community gardens

5. Overlay of bus transit and groceries

6. Overlay of bus transit and conveniences stores

7. Overlay of JO Bus Transit with food pantries and soup kitchens
Aside from the personal automobile, the main source of transportation among cities in Johnson County is JO bus transit service. Regarding the bus routes and schedules, only Route 556 and Route 575 are in service through Johnson County in the day time.

This map overlays the current bus transit service of Route 556 and Route 575 with the groceries, farmer market, and cultural food stores in Johnson County. From the map, JO only provide service to a small portion of Johnson County, where most of these food resources are located, such as Westwood, Shawnee, Overland Park, Lenexa and Leawood. Aside from these cities, there are some food resources located in the middle and southern cities, such as Olathe, and Gardner. But bus transit service is absent in these areas.

Overlay of JO Bus Transit with food pantries and soup kitchens

Overlay of minority population density with groceries, farmer markets and cultural food

Overlay of senior population (65+) and groceries, farmers' markets, and cultural food
5. Overlay of bus transit and groceries

6. Overlay of bus transit and convenience stores

7. Overlay of JO Bus Transit with food pantries and soup kitchens

8. Overlay of minority population density with groceries, farmer markets and cultural food

9. Overlay of senior population (65+) and groceries, farmers' markets, and cultural food

1. Overlay of poverty with groceries, farmer markets and cultural food

2. Overlay of Poverty with Food Pantries and

3. Overlay of bus transit and groceries
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5. Overlay of bus transit and groceries

6. Overlay of bus transit and convenience stores

7. Overlay of JO Bus Transit with food pantries and soup kitchens
   This map overlays the current bus transit service of Route 556 and Route 575 with the food pantries and soup kitchens in Johnson County. Many food pantries and soup kitchens are hard to access for people without private vehicles.

8. Overlay of minority population density with groceries, farmer markets and cultural food

9. Overlay of senior population (65+) and groceries, farmers’ markets, and cultural food

1. Overlay of poverty with groceries, farmer markets and cultural food stores
This map overlays the locations of groceries, farmer markets, and cultural food stores, with the minority index in Johnson County. The analysis showed that most of these food resources are located in northeast and middle of the County, such as Overland Park, Lenexa, Leawood, and Olathe. Most of the areas with comparatively higher minority index are within these cities. Aside from these cities, some other areas in the western and southern cities also have higher densities, such as DeSoto, Lexington Township, and Northern Gardner. However, the groceries, farmer markets, and cultural food stores are absent in these areas.
Overlay of senior population (65+) and groceries, farmers' markets, and cultural food

This map overlays the locations of groceries, farmer markets, and cultural food stores with the senior population density in Johnson County. The analysts showed that most of these food resources are located in northeast and middle of the County, such as Overland Park, Lenexa, Leawood, and Olathe, where there are comparatively higher senior population rate. Lexington and Aubury Townships have no available general food resources to support elderly population.

Overlay of poverty with groceries, farmer markets and cultural food stores

Overlay of Poverty with Food Pantries and Soup Kitchens

0.5 miles from bus stops overlay with poverty

0.5 miles from bus stops overlay with minority
Overlay of senior population (65+) and groceries, farmers' markets, and cultural food

Overlay of poverty with groceries, farmer markets and cultural food stores

This map overlays the locations of groceries, farmer markets, and cultural food stores with the poverty rate in Johnson County. The analysis showed that most of these food resources are located in the northeast and middle of the County, such as Overland Park, Lenexa, Leawood, and Olathe. Most of the areas with comparatively higher poverty rates are within these cities. Aside from these cities, some other areas in the western and southern cities also have higher poverty rates, such as De Soto, Lexington Township, Edgerton, and Spring Hill. However, the groceries, farmer markets, and cultural food stores are either absent or have a small presence in these areas.

Overlay of Poverty with Food Pantries and Soup Kitchens

0.5 miles from bus stops overlay with poverty

0.5 miles from bus stops overlay with minority
This map overlays the locations of food pantries and soup kitchens, with the poverty rate in Johnson County. The analysis showed that most of these food resources are concentrated in northeast and middle of the County, such as Overland Park, Lenexa, Shawnee Mission, and Olathe. Most of the areas with comparatively higher poverty rates are within these cities. However, there are needs for distribution of food pantries and soup kitchens in the southern Shawnee, and northern part of Lenexa.
Overlay of senior population (65+) and groceries, farmers' markets, and cultural food

Overlay of poverty with groceries, farmer markets and cultural food stores

Overlay of Poverty with Food Pantries and Soup Kitchens

0.5miles from bus stops overlay with poverty

0.5 miles from bus stops overlay with minority

Driving distance from food resource overlay with poverty

Based on the half-mile bus stop buffer and diversity index in each city, the analysis showed that JO only provide service to a small portion of Johnson County with high diversity index in the northeast cities, such as Shawnee and Leawood. Other cities with comparatively higher rates of minorities, such as Olathe and De Soto, don’t have bus transit service across cities during the day time.
Driving distance from food resource overlay with poverty

Walking distance from food resources overlay with poverty

Driving distance from food resources overlay with senior

Walking distance from food resources overlay with senior

Driving distance from food resources overlay with minority

Walking distance from food resources overlay with minority

Senior, poverty, and food resources
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- Driving distance from food resource overlay with poverty
- Walking distance from food resources overlay with poverty
- Driving distance from food resources overlay with senior
- Walking distance from food resources overlay with senior
- Driving distance from food resources overlay with minority
- Walking distance from food resources overlay with minority
- Senior, poverty, and food resources