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**Key Sections of Central Louisville are “Food Imbalanced”**  
*These “Food Desert” communities might suffer from higher-than-normal levels of diet-related diseases and premature death*

November 25, 2007

Mari Gallagher Research & Consulting Group was retained by *The Courier-Journal* in Louisville, Kentucky, to conduct a first level analysis of mainstream locations to purchase groceries. Our past studies in other locations have found that residents of food deserts – large and isolated geographic areas with no, few, or distant mainstream grocers offering a variety of fresh and nutritious foods that support a balanced and healthy diet – are more likely both to die prematurely and to suffer from diet-related diseases after controlling for income, race, and education.

For Central Louisville (map 1 on the following page), the Census tracts with the lowest or worst access to mainstream grocers form a long strip to the west, although similar pockets exist to the east. Residents in these red-shaded areas must travel the farthest to reach a mainstream grocer. Overall, patterns cluster strikingly. This means that where you live in Central Louisville matters greatly in terms of access to healthy foods. Distance ranges to mainstream grocers for map 1 are:

Farthest distance (red): .45 to 1.22 miles  
Middle distance (white): .32 to .44 miles  
Closest distance (blue): Under .32 miles

For Outer Louisville (map 2), the patterns are not as stark except for the perimeter, which has the greatest distance to mainstream grocers. We would expect the outer rim to have the farthest distances to grocers and other types of retail because areas farther and farther from downtown are generally lower density and more spread out in terms of development patterns. Residents of those outer areas generally are more reliant on automobiles for shopping and other activities and expect to drive farther than residents of higher density, inner areas closer to downtown. Distance ranges to mainstream grocers for map 2 are:

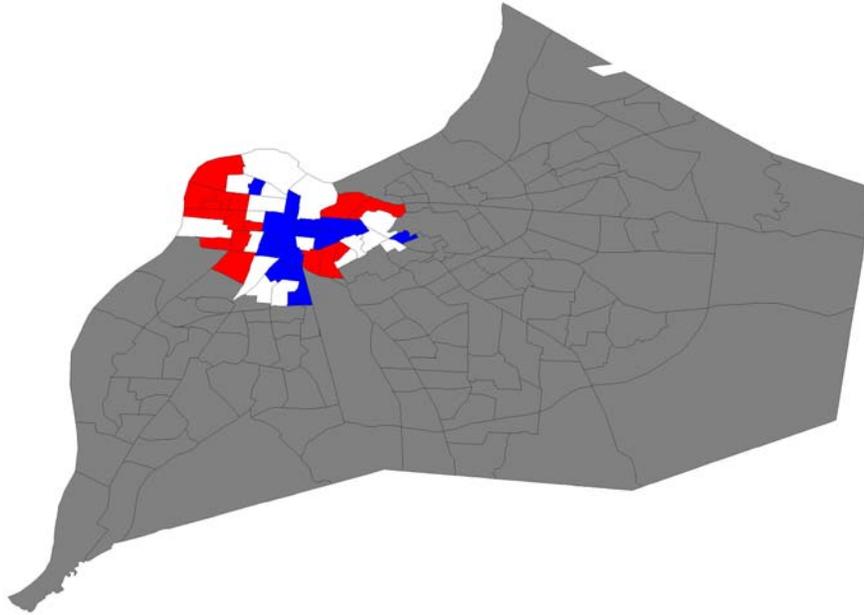
Farthest distance (red): .88 to 4.47 miles  
Middle distance (white): .56 to .87 miles  
Closest distance (blue): Under .87 miles

**Do you live in a Food Desert** in Chicago, Detroit, Louisville, New York, Savannah, Oakland, rural America or some other part of the world? **We want to hear from you.** We are developing an **interactive e-oasis** where you can post and view pictures of local food shopping options, post information on stores moving in and out, submit commentary, and take advantage of our research briefings and other resources to improve healthy food access in your community. **Please help us as we build our Food Desert site.** Send an email to [info@fooddesert.net](mailto:info@fooddesert.net) including:

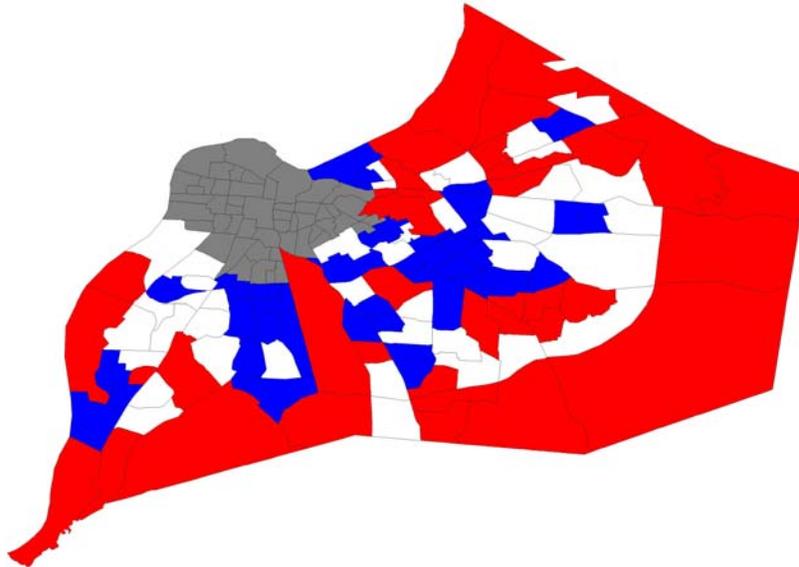
- Ideas and areas of interest
- Contact information to receive future announcements and briefings
- Local Food Desert pictures (attach to email in JPEG or comparable format and include the exact and full address so that we can map it)
- Your interest in advertising or providing a resource link on our site

**In progress:**  
[www.fooddesert.net](http://www.fooddesert.net)

**Map 1: Distance to Mainstream Grocers  
in Central Louisville by Tertile**



**Map 2: Distance to Mainstream Grocers  
in Outer Louisville by Tertile**



**Legend for both maps**

- Farthest distance
- Middle distance
- Closest distance
- Not in grouping

Tertiles are equal thirds of the data sorted from lowest to highest.

In correlating food access to diet-related health outcomes, we have found that a more important measure than simply the distance to the nearest grocer is *Food Balance*, which reveals how easy or difficult it is to choose between a mainstream and fringe food location on a daily basis. A mainstream grocer offers healthy and fresh food choices. A fringe food establishment, such as a convenience store or fast food restaurant, is the opposite; it is not inherently bad, but if it is the primary food source, local diets, public health, and land use patterns would likely suffer. An added benefit of developing Food Balance Scores is that they can be compared *across* urban, suburban, and rural geographies. For example, in a particular rural area, the closest mainstream grocer might be 3 miles away, but the closest fringe food establishment might also be 3 miles away. We would consider that area to be *in balance* in terms of food access; it is just as easy or difficult to reach one or the other food establishment. The Food Balance Score – developed exclusively by Mari Gallagher Research & Consulting Group – is the distance from each block center to the closest mainstream food venue divided by the distance to the closest fringe food venue. Fringe food includes fast food and other types of fringe places that offer groceries.

<b>Table 1: Food Balance Theory</b> (copyright applies) As communities become more out-of-balance in terms of food options, negative diet-related health outcomes increase, holding constant other key factors		<b>Actual Tertile Ranges for Central and Outer Louisville for Map 3</b>
<b>Food Balance Score description</b>	<b>Examples</b>	
Far above 1: <b>High score and worst outcome</b>	Mainstream food venue is 1 mile away, and fringe food venue is .5 miles away $1/.5 = 2$	<b>1.89 to 5.63 (far above 2)</b>
Around 1: <b>Average score and Average outcome</b>	Mainstream food venue is 1 mile away and fringe food venue is 1 mile away $1/1 = 1$	1.34 to 1.88
Far below 1: <b>Low score and best outcome</b>	Mainstream food venue is .5 miles away and fringe food venue is 1 mile away $.5/1 = .5$	<b>1.33 and under</b>

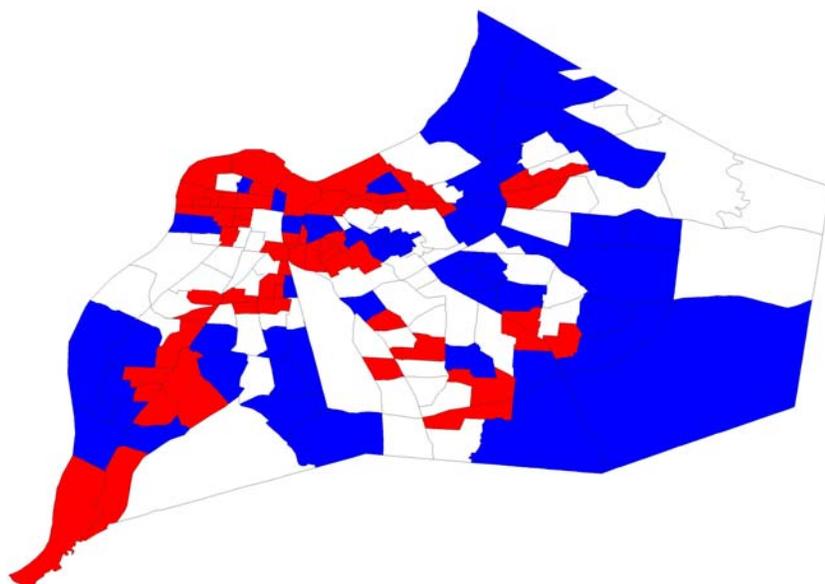
Tertiles are equal thirds of the data sorted from lowest to highest.

**Map 3: Food Balance Scores for Central & Outer Louisville by Tertile**

**Legend**

- Farthest distance
- Middle distance
- Closest distance
- Not in grouping

Tertiles are equal thirds of the data sorted from lowest to highest.



Map 3 allows us to compare the entire Louisville area in terms of Food Balance. Here we see that in the Central area, residents are, on average, closer to fringe food locations than to mainstream food locations. Those “food-imbalanced” areas are shaded in red. The outer rim generally offers more balanced choices although mainstream food locations are more distant and spread out, as we learned in Map 2. Those “food balanced” areas are shaded in blue (best score) and white (middle score). In those areas, mainstream food locations are closer than fringe food locations. We suspect that a more complete analysis would uncover meaningful statistical correlations between Food Balance and diet-related health outcomes after accounting for income, race, and education. Should this be the case, populations in red shaded areas would generally suffer greater rates of diet-related diseases and deaths than blue and white shaded areas after controlling for socio-economic factors. [\*\*We welcome inquiries from funders interested in supporting additional field work and an analysis of the relationship between food access and diet-related public health outcomes in Louisville.\*\*](#)

## **Methodology**

This level one analysis considers every block in Central and Outer Louisville, which is all 9,965 Census-defined blocks in Jefferson County (Central Louisville has 2,749 blocks and Outer Louisville has 7,216 blocks). We measured the distance between the geographic center of all 9,965 blocks and the locations of each food venue using the latitude and the longitude of each food venue and of each block center.

Of these distances, the minimum distance was calculated for each block to each food category, and a weight was created to reflect the share of population living in that block. This means the analysis accounts for density. The average distance in a Census tract is the weighted average distance from each block in the tract to the nearest food venue with greater weights given to blocks with larger numbers of residents. Our distance score, calculated in miles, is the distance the average person from that area would need to travel to reach a particular food venue.

Our Food Balance Score is the average distance to any mainstream food venue divided by the average distance to a fringe food venue. Several data sources and online data were cross-referenced to identify fast food locations and all other retail locations that sell groceries, including those that are authorized by the USDA to participate in what is commonly referred to as the Food Stamp program.

Based on a record-by-record inspection, we sorted those venues into mainstream and fringe. Of the 436 USDA Food Stamp venues we identified, 89 were mainstream, 268 were fringe, and 79 were uncertain. Of those uncertain, a random sample of 10% were visited. From those field inspections, we determined that 47 of the uncertain were likely fringe locations. We assigned uncertain to the fringe and mainstream groups based on this estimate, and estimated the distances and ratios repeatedly so a particular assignment of the uncertain did not influence the results. Additionally, we identified 337 fast food locations in Central and Outer Louisville, which are all fringe locations, and which are also reflected in our Food Balance Score.

**Table 2: Food Venue Distribution**

<b>Central and Outer Louisville Mainstream and Fringe Food Venues</b>				
<b>Status</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Frequency</b>	<b>Cumulative Percent</b>
Fast food	336	43.52	336	43.52
Other fringe retailers that sell groceries	268	34.72	604	78.24
Mainstream retailers that sell groceries (small, medium, and large grocers and supermarkets)	89	11.53	693	89.77
Uncertain	79	10.23	772	100.00
<b>Central Louisville Only</b>				
Fast food	53	27.46	53	27.46
Other fringe retailers that sell groceries	85	44.04	138	71.50
Mainstream retailers that sell groceries (small, medium, and large grocers and supermarkets)	20	10.36	158	81.87
Uncertain	35	18.13	193	100.00
<b>Outer Louisville Only</b>				
Fast food	283	48.88	283	48.88
Other fringe retailers that sell groceries	183	31.61	466	80.48
Mainstream retailers that sell groceries (small, medium, and large grocers and supermarkets)	69	11.92	535	92.40
Uncertain	44	7.60	579	100.00

**Figure 1: USDA Food Stamp Program Description**

**“The Food Stamp Program serves as the first line of defense against hunger. It enables low-income families to buy nutritious food with Electronic Benefits Transfer (EBT) cards.”**

- United States Department of Agriculture

What must retailers do to qualify for the Food Stamp Program?

Retailers must sell food for home preparation and consumption and meet one of the criteria below:

(A) Offer for sale, on a continuous basis, at least three varieties of qualifying foods in each of the following four staple food groups, with perishable foods in at least two of the categories:

- Meat, poultry or fish
- Bread or cereal
- Vegetables or fruits
- Dairy products

◆◆◆◆ OR ◆◆◆◆

(B) More than one-half (50%) of the total dollar amount of all things (food, nonfood, gas and services) sold in the store must be from the sale of eligible staple foods.

Source: United States Department of Agriculture Food and Nutrition Service website, March 2007

## About the author

Mari Gallagher is Principal of Mari Gallagher Research & Consulting Group and has enjoyed a national reputation for diverse, high impact projects around the country for over 18 years of professional history. Clients include community and civic organizations, government entities, foundations, and major corporations such as LaSalle Bank, ALDI, Kraft Foods, and Wal-Mart. The Group's work continues to be covered by media venues such as National Public Radio and CNN. Mari Gallagher's experience includes developing a full-service grocery store in an undervalued market.

More about us at: [marigallagher.com](http://marigallagher.com)

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**Mari Gallagher Research & Consulting Group is a neutral, third-party research firm.**

**We do not engage in lobbying or any type of political work.**

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Comments and inquiries welcome.

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## Acknowledgements

The kind assistance of **Chris Kenning** of *The Courier-Journal* was instrumental and greatly appreciated. We also thank Chris and his editors for commissioning this work.

Our regular collaborator, **Joseph Ferrie** of the Economics Department of Northwestern University, is our constant and kind research companion. Thank you for your help and insights!

We are also extremely grateful to **Peter Tatian** and **Randy Rosso** of the **Urban Institute** and its **National Neighborhood Indicators Partnership** for their very valuable assistance. More information on NNIP and its commitment to the democratization of data can be found at <http://www2.urban.org/nnip/>.

**Oran Hesterman** of the **Kellogg Foundation** and the **Fair Food Foundation** connected us to **Mark Sommer** of the **Mainstream Media Project** out of California, which recently launched a detailed radio broadcast titled **Food Deserts: Nutritional Starvation in the Land of Plenty** that aired in 300 radio markets around the country. The broadcast includes a discussion of USDA Food Stamp retailers. Lengthy interviews with Mari Gallagher, Oran Hesterman, and Ian Marvy can be found at: <http://www.aworldofpossibilities.com/details.cfm?id=314>

We also acknowledge the **importance and benefits of the Food Stamp program** and welcome opportunities to work with the USDA and others to improve it further.

Preparing this briefing has meant that we have had to upgrade and update our website. Thank you to the team at the **Creative Quadrant** for being our timely key to good communication. More about this minority and women-owned print and web design firm can be found at <http://creativequadrant.com/>.

Last but not least, a special and important thank you to **Robert Grossinger** and other colleagues at LaSalle Bank for funding our first major food desert publication. Much of our new work is built off this foundation.