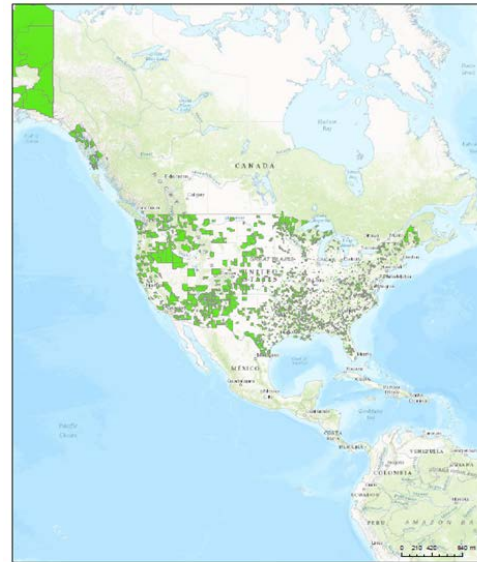


GIS used to Identify the Location of Farmer Markets and Community Gardens within Food Deserts in Virginia

Presented by Latia Jackson and Stacey Bradshaw

Research team Ms. Darlette Meekins, Dr. Shobha Sriharan, Dr. Marcus Comer, Ms. Latia Jackson, and Ms. Stacey Bradshaw

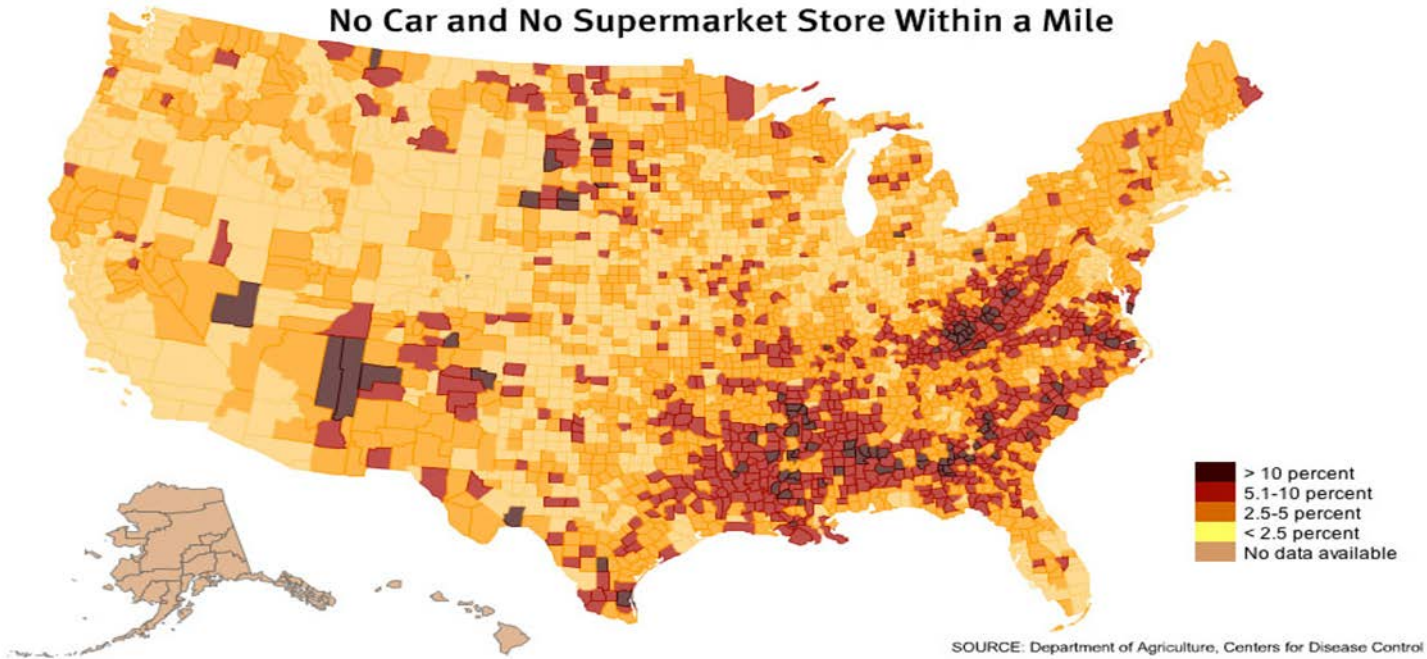
A food desert is defined as an area where populations live more than one mile from a supermarket or large grocery store, if in an urban area, or more than 10 miles from a supermarket or large grocery store, if in a rural area (Ver Ploeg et al. 2012).



Us Example Food Desert
Date: 2/14/2017
Source: USDA Economic Research Service, ERS. For more information:
<https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation>

Food Desert Atlas: ERS

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

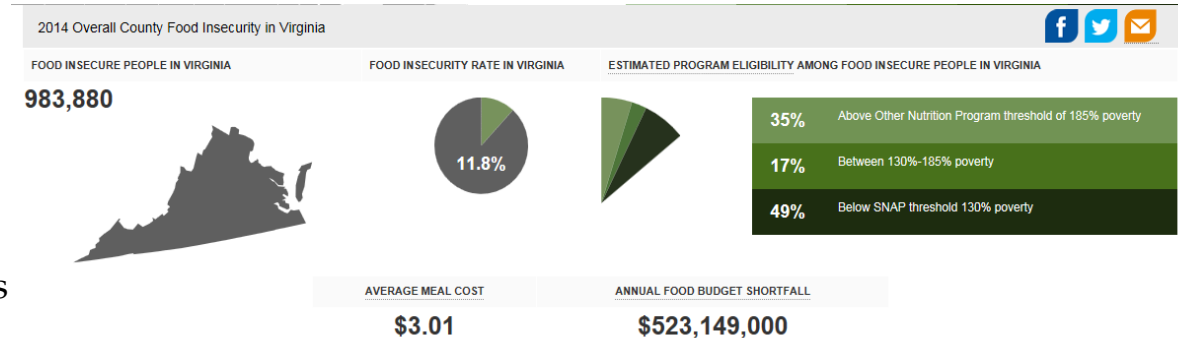


Food Insecurity

Although related, food insecurity and poverty are not the same. Poverty in the United States is only one of many factors associated with food insecurity.

Introduction

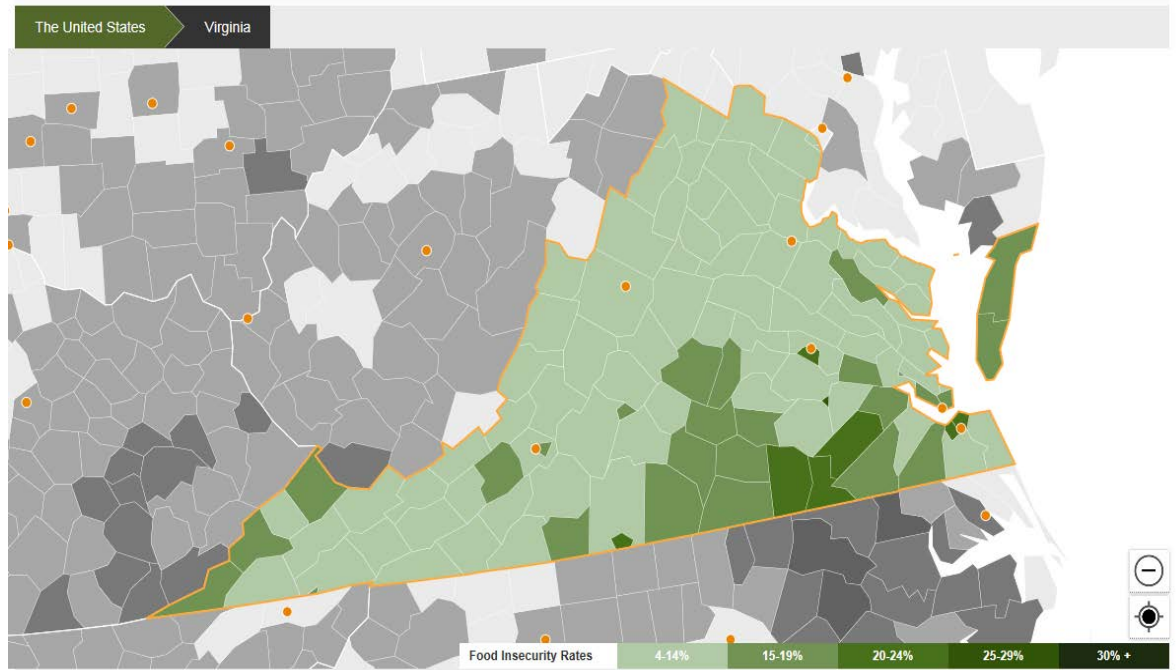
Obesity, diabetes and heart disease are at epidemic proportions. Fast food restaurants and processed foods are everywhere we turn and are part of our daily lives. A 2013 study determined that certain areas of the state are considered to be a food desert, meaning many communities do not have access to healthy, fresh foods.



<http://map.feedingamerica.org/county/2014/overall/virginia>

Proposal

It is not just the poorer, more rural areas experiencing this problem, as there are low food access areas identified all over the state. There is a local food movement underway with farmers markets and community gardens being established in smaller communities. This project will compare those identified Virginia food deserts to where farmers markets and community gardens are being established.



<http://map.feedingamerica.org/county/2014/overall/virginia>

| Locality | Grocery stores | Superstores | Convenience stores | Fast food restaurants |
|----------------|----------------|-------------|--------------------|-----------------------|
| Virginia | 1,532 | 122 | 4,016 | 5,908 |
| Fredericksburg | 12 | 1 | 20 | 39 |
| Hampton | 18 | 2 | 78 | 100 |
| Harrisonburg | 16 | 2 | 29 | 49 |
| Lynchburg | 15 | 2 | 34 | 76 |
| Martinsville | 4 | 1 | 9 | 22 |
| Petersburg | 13 | 1 | 34 | 27 |
| Richmond City | 60 | 1 | 131 | 177 |
| Wise County | 12 | 0 | 38 | 30 |

Source: U.S. Department of Agriculture, Economic Research Service (USDA-ERS 2013b).

Table 1: Food Sources

| | Low access | | Low income | SNAP eligible | | Lack of transportation | | Grocery stores | Super-stores | Convenience stores | Fast food restaurants | Adult obesity | Food insecurity | |
|-------------------|------------|--------|-------------|---------------|--------|------------------------|-------|--|--------------|--------------------|-----------------------|---------------|-----------------|-------|
| | No. | Rate | % below FPL | No. | Rate | No. | Rate | Number of stores (# per 1,000 population) | | | Rate | No. | Rate | |
| State of Virginia | 1,426,484 | 17.75% | 10.7% | | 9.29% | 59,509 | 0.04% | 1532 (2.4) | 122 (.02) | 4016 (.74) | 5908 (.73) | 29.81% | 1,026,730 | 12.7% |
| N Fredericksburg | 6,390 | 26.32% | 16.1% | 4,445 | 21.16% | 255 | 2.68% | 12 (.52) | 1 (.04) | 20 (.86) | 39 (1.68) | 29.2% | 4,370 | 18.2% |
| E Hampton | 32,202 | 23.43% | 14.0% | 21,501 | 15.89% | 908 | 1.65% | 18 (.12) | 2 (.01) | 78 (.54) | 100 (.69) | 36.8% | 24,490 | 17.7% |
| N Harrisonburg | 4,208 | 8.60% | 31.8% | 14,413 | 37.30% | 91 | 0.57% | 16 (.35) | 2 (.04) | 29(.64) | 49 (1.09) | 29.1% | 8,860 | 18.4% |
| P Lynchburg | 19,951 | 26.40% | 23.2% | 17,559 | 26.91% | 1,123 | 3.95% | 15 (.20) | 2 (.03) | 34 (.46) | 76 (1.03) | 31.2% | 13,490 | 18.0% |
| P Martinsville | 3,489 | 25.25% | 24.1% | 4,453 | 33.24% | 161 | 2.65% | 4 (.27) | 1 (.07) | 9 (.61) | 22 (1.50) | 32.4% | 3,610 | 26.0% |
| C Richmond City | 41,569 | 20.36% | 26.3% | 58,532 | 30.53% | 3,039 | 3.49% | 60 (.29) | 1 (.005) | 131 (.64) | 177 (.87) | 31.3% | 46,380 | 22.8% |
| W Wise Co | 3,924 | 9.47% | 21.6% | 10,656 | 27.28% | 879 | 5.51% | 12 (.29) | 0 (0) | 38 (.91) | 30 (.72) | 35.3% | 5,190 | 12.5% |
| C Petersburg | 7,216 | 22.26% | 21.8% | 8,649 | 27.15% | 716 | 5.25% | 13 (.39) | 1 (.03) | 34 (1.03) | 27 (.82) | 37.6% | 8,620 | 26.6% |

Table 2: Some Factors influencing Food Deserts

Climate Change

Climate change affects every aspect of life. With a drastically changing climate, increased severity of tropical storms and less rainfall in varied areas, food production, distribution and prices are sure to respond to this effect.

Food Deserts in Relation to Climate Change

- **Food Production will decrease as less resources and changing weather patterns disrupt the growth of crops.**
- **Food Distribution will be limited as the economical benefits will be halted such as shipping to convince stores**
- **Food Prices will increase since the production of**

Corner Markets



Disadvantages:

- High prices
- Limited healthy choices
- Limited amount of fresh fruits and vegetables

Title:



- Certain areas of the state are considered to be a food desert, meaning many communities do not have access to healthy, fresh foods.

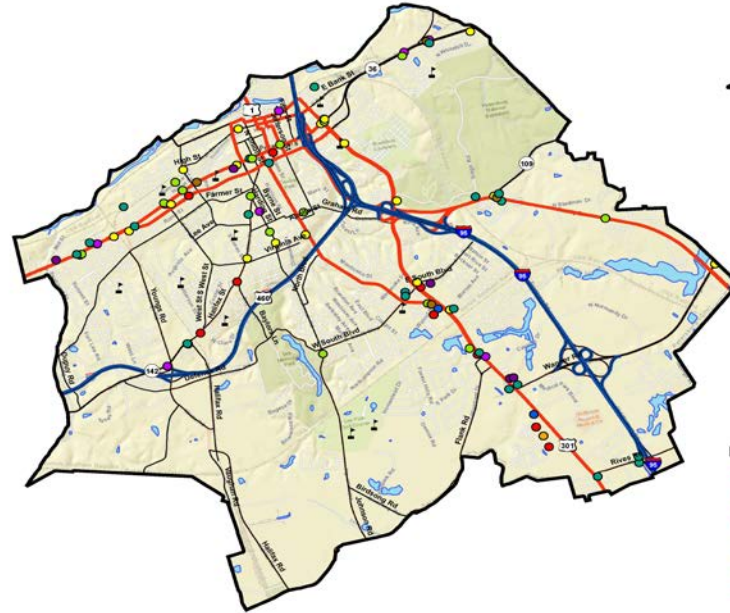
Accessibility



- The theory of food deserts is that poor people eat poor diets in part because fresh, healthy food is not accessible or affordable in areas where they tend to live.



Food Desert Study: Petersburg, Virginia



ArcGIS used to map a Food resources in Petersburg

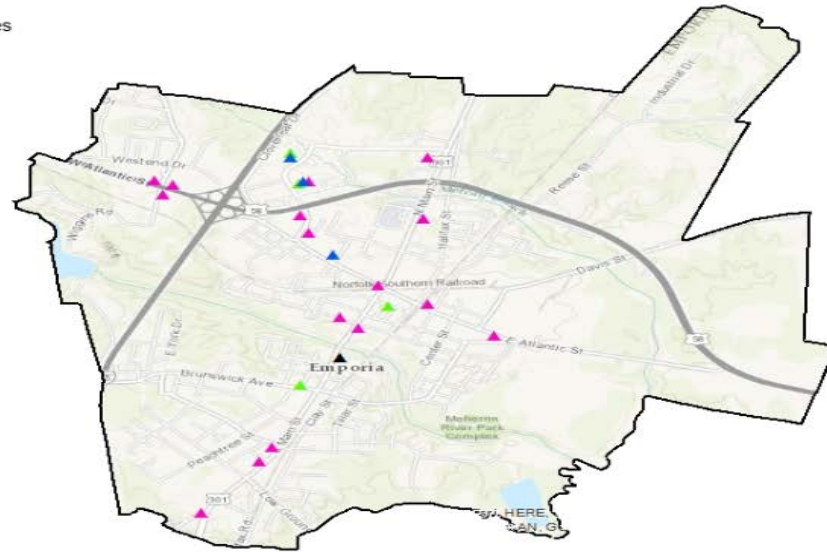


Store Locations in
Emporia, VA by Type



Stores by Type

- ▲ Farmers Market
- ▲ Pharmacy
- ▲ Convenience Stores
- ▲ Grocery Stores





Store Locations Compared to Racial Population of African-Americans

Lynchburg



- ▲ Pharmacy
- ▲ Farmers Market
- ▲ Grocery Stores
- ▲ ConvenienceStores
- ▲ GasStations

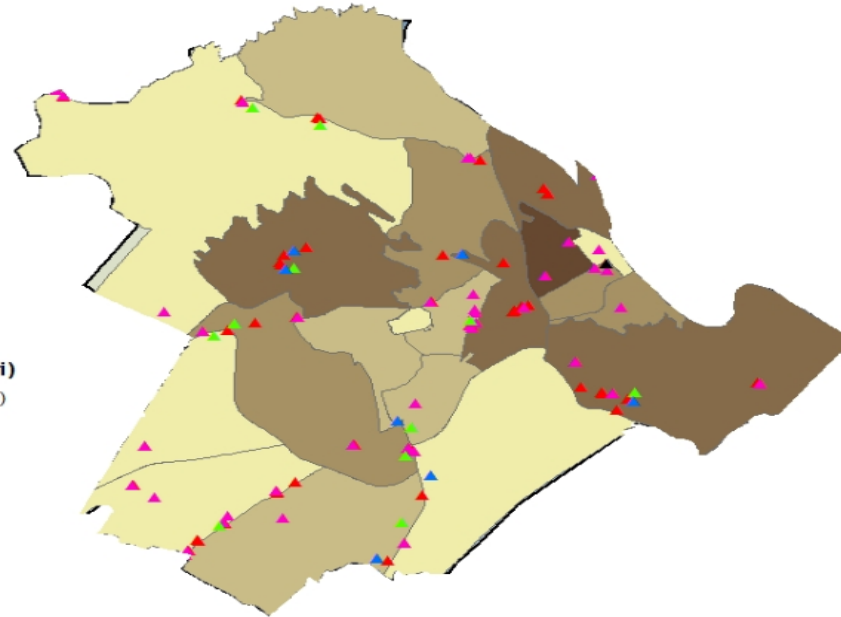
Black

- 83 - 319
- 320 - 772
- 773 - 1347
- 1348 - 2236
- 2237 - 2724

Counties

2012 Diversity Index (Esri)

- 82 to 100 (More Diverse)
- 56 to 81 (US Index: 61)
- 30 to 55
- 4 to 29
- 1 to 3 (Less Diverse)
- No population





Store Locations by Type
in Lynchburg, VA



Lynchburg

- ▲ Pharmacy
- ▲ Farmers Market
- ▲ Grocery Stores
- ▲ ConvenienceStores
- ▲ GasStations

