

Data for Hope 2022: Food Deserts



Presentation recording:

<https://www.youtube.com/watch?v=adpmmbeqY3g>



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Introduction

- Abstract or Problem Statement
- Objective
- Domain Knowledge



Objective

What can we learn by exploring data related to food insecurity, such as distance from fresh food sources, participation in SNAP by all those eligible, and income levels in Clayton County, GA.

How are children impacted by food insecurity in Clayton, GA?

Food Insecurity RoundTable



Proud to be the
GEORGIA
Local Science
Engagement Network
AAAS



Food Insecurity Roundtable

Report out and lessons learned

Executive Summary

On Sept 10, 2021, Science for Georgia and their presenting partner, Inspire Brands Foundation, hosted a food insecurity roundtable. Over 4 hours, approximately 25 people who work in food organizations in Georgia, met, reviewed the state of food insecurity, and identified 3 evidence-based solutions that are short-term steps toward a long-term solution to ending *limited or uncertain access to adequate food*.

Identified several steps toward solutions to end limited or uncertain access to adequate food, including creating a centralized source of data on:

Data related to food insecurity
Distance to fresh food

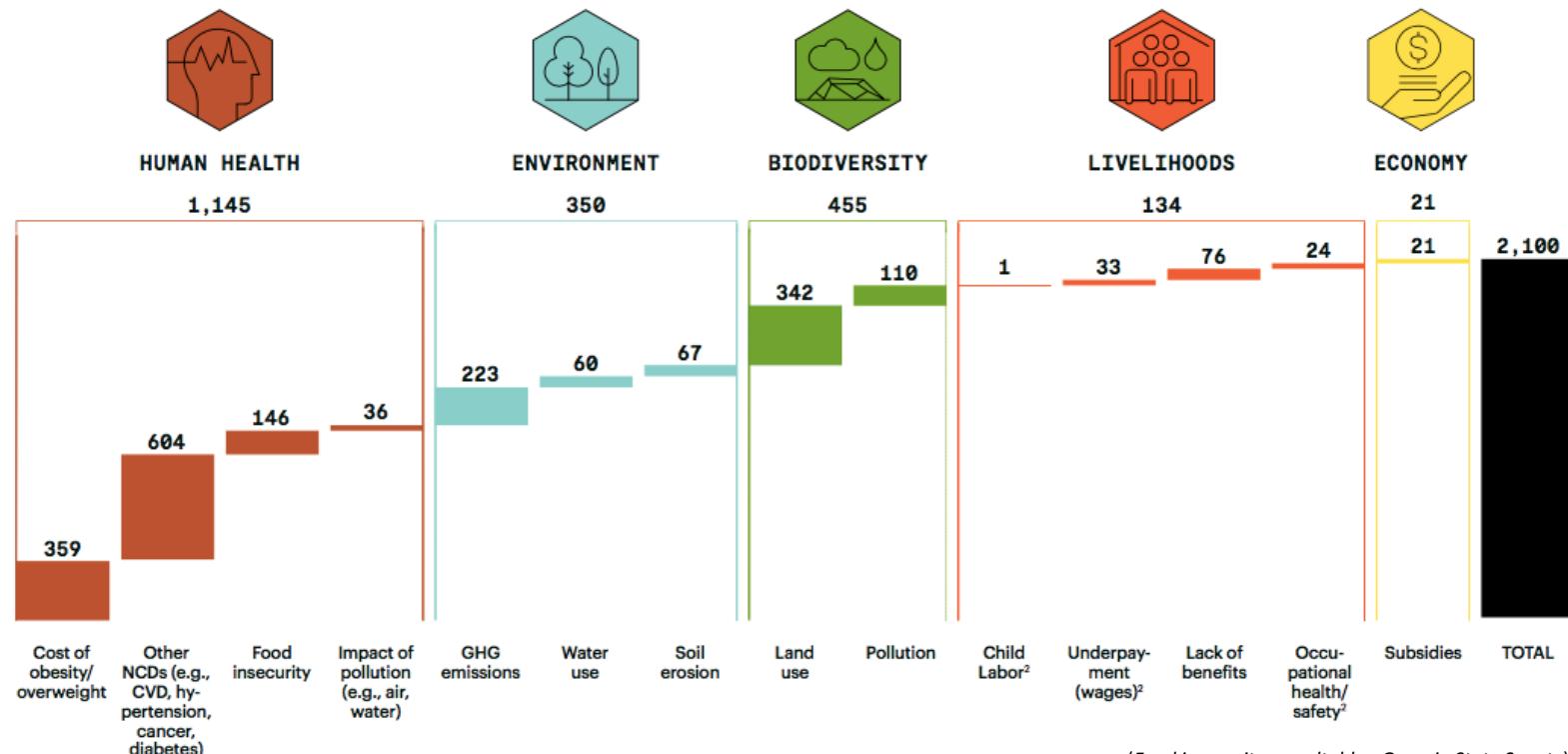
Participation in SNAP by all eligible

Income levels

The cost of lost wages, lost school days and poor health affects the US Economy by approximately \$165 Billion annually.

- “Food insecurity is linked with numerous health conditions adding an additional \$2.1 trillion for healthcare costs related to food insecurity and diet related diseases and environmental costs such as emissions, pollution, and land us.”
- Without a full stomach it is difficult to learn and concentrate, leading to poor performance in school and at work.
- Agriculture, an important part of the Georgia Economy, also is trapped in a vicious cycle that raises the cost of food production: leading to more economic stress on farmers (who are often food insecure themselves) and costlier food for consumers.”

COSTS FROM QUANTITATIVE METRICS ACROSS 14 KEY METRICS¹, ANNUAL (bn USD)



(Food insecurity roundtable - Georgia State Senate)



Food Insecurity

“While COVID-19 caused an acute spike in the people who were food insecure; over the past 20 years, the percentage of people without access to adequate food hasn’t dropped noticeably. Current food policies and program provide acute support but have not worked at removing underlying causes”.

*(Food insecurity roundtable - Georgia State Senate
<https://www.senate.ga.gov/committees/Documents/ScienceforGeorgiaRoundtable.pdf>)*

Food Desert Facts

A census tract (approximately 4000 people) that is low-income and low-food-access.

A Low-Income Census Tract is designated as eligible for USDOT New Markets Tax Credits and is defined as having a

- Poverty rate $\geq 20\%$ OR
- Median family income $\leq 80\%$ of metropolitan area's (in metro areas) or statewide (in non metro areas) median family income

Defined as census tract where over 33% or 500 people live more than 1 mile in an urban setting or 10 miles in a rural setting, from a large grocery or supermarket. Where a large grocery or supermarket is a store with over \$2M in sales and has all major food departments.

More U.S. Children Raised by Grandparents

“...over the past 40 years, the share of U.S. children living in a grandparent’s household has climbed steadily, more than doubling from 3 percent in 1970 to 7 percent in 2010.

The numbers of children with grandparents as their main care providers grew from 2.5 million in 2005 to 2.9 million in 2010, a 16 percent increase over the decade”. (Scommegna, 2012)

The Data: Exploratory Data Analysis

- 
- Data Sources
 - Data Preparation
 - Exploratory Data Analysis (EDA)
 - Visualizations

Data Sources:

- **ACS_Economic_2020_5Year_Estimates_Households** - Contains the economic indicators of Households like income , social security, Food Stamps assistance. Only the Atlanta region is covered.
 - Total Records 2791
 - Total Attributes 49
- **Demographic_Census_2020_Atlanta_Region** - Contains the demographics data from the 2020 Census. Only the Atlanta region is covered.
 - Total Records 2791
 - Total Attributes 40
- **USDA Food and Research Atlas Data 2019** - Presents an overview of food access indicators for low-income and other census tracts using different measures of supermarket accessibility; Provides food access data for populations within census tracts; and offers census-tract-level data on food access that can be downloaded for community planning or research purposes.
 - Total Records 1957
 - Total Attributes 147
 - Date Range: 2019
 - 159 Georgia Counties

Data Transformation/Cleaning:
 - Replaced NULL with empty (Made 4330227 replacements).
 - Filtered data to include only Georgia records (1957 GA records).
- **Social Determinants of Health (SDoH) Dataset from AnalyticsIQ** - Blends cognitive psychology and sophisticated data science in the creation of individual and geographic level data to help organizations understand who people are, what people do, and the *why* driving an individual's everyday decisions. This data unlocks insight into social determinants of health, R.E.L., medical utilization, and more to help identify health disparities and improve population outcomes.
 - Total Records 8,589,752
- **Zip9_geoid_mapping** - Mapping from Zip 9 to GEOFID, this file will help you link the SDoH to Census Bureau files like demographics and economic data.

Data Transformation/Cleaning:
 - Added a new column for 5-digit zip codes.
- **USA Counties and USA Zip Codes, from Spotfire's geoanalytics** - incorporating geo-location and other spatial details

Data Transformation/Cleaning:
 - Filtered to ARC counties.

Data Preparation

Used Excel and Spotfire to:

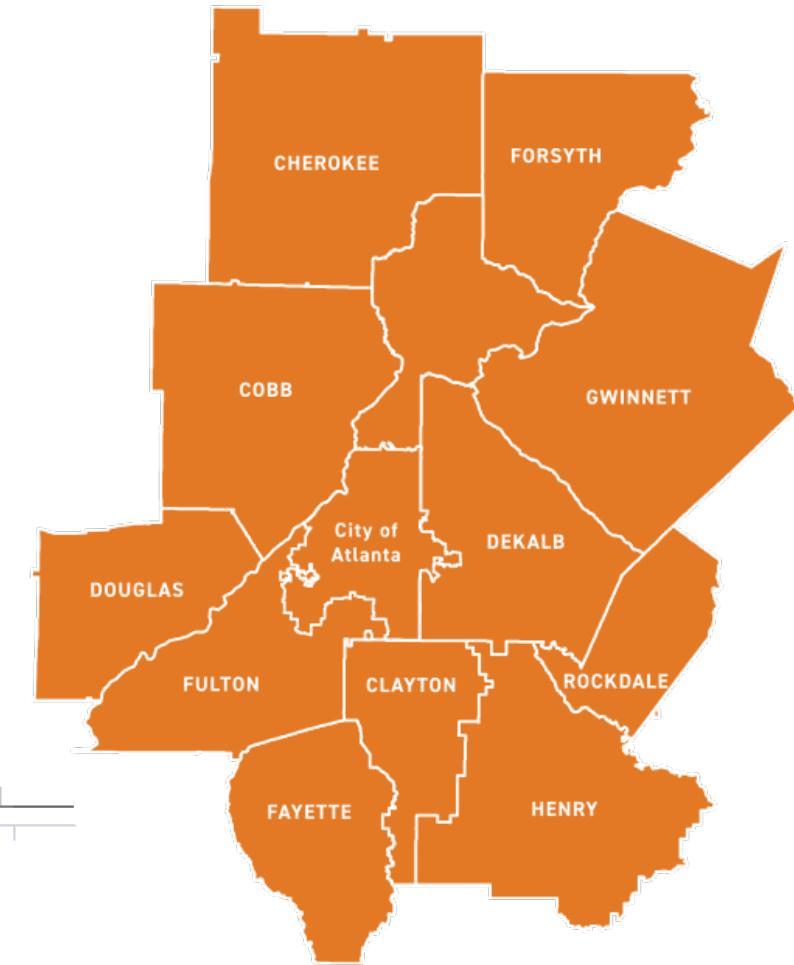
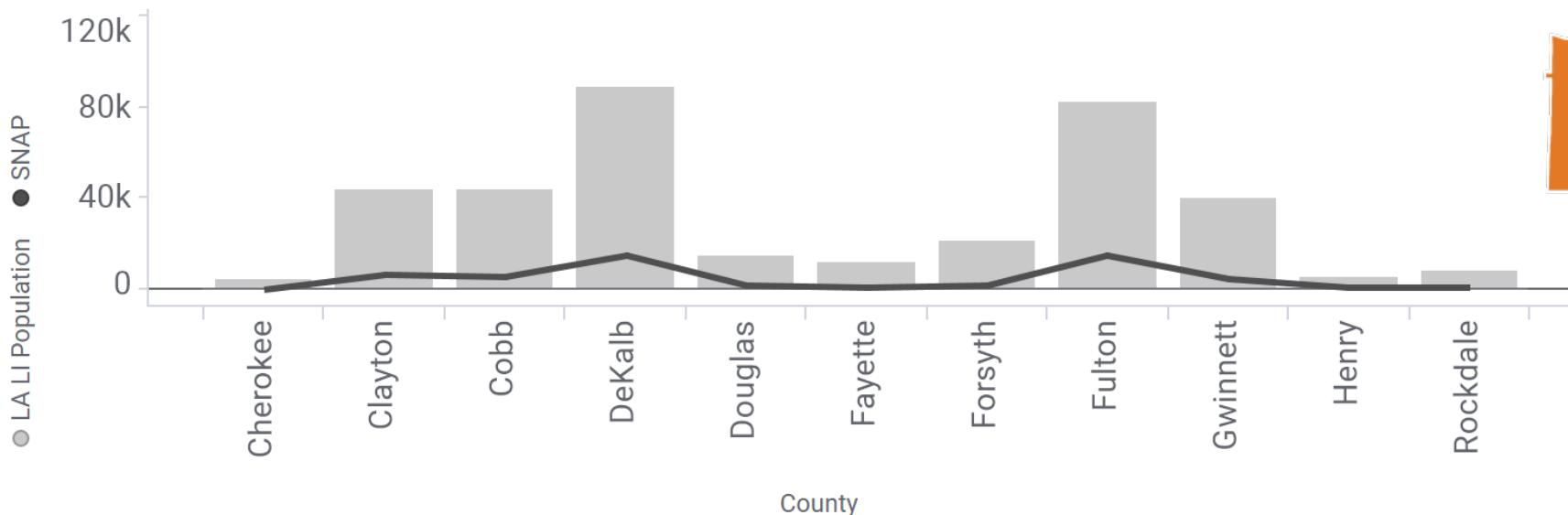
- Replaced string “NULL” to empty.
- Filtered to Georgia, then greater Atlanta Counties, then Clayton County for various Data Analysis.
- Added a column for 5-digit zip code.
- Integrated filtering and marking across tables using GEOID/Census Track/Zip Code.

Atlanta Region Commission (ARC)

USDA Food Access Research Atlas Data 2019

Low Access Low-Income Population and Housing Units receiving SNAP by County

■ LA LI Population ↗ SNAP



© 2022 Atlanta Regional Commission.

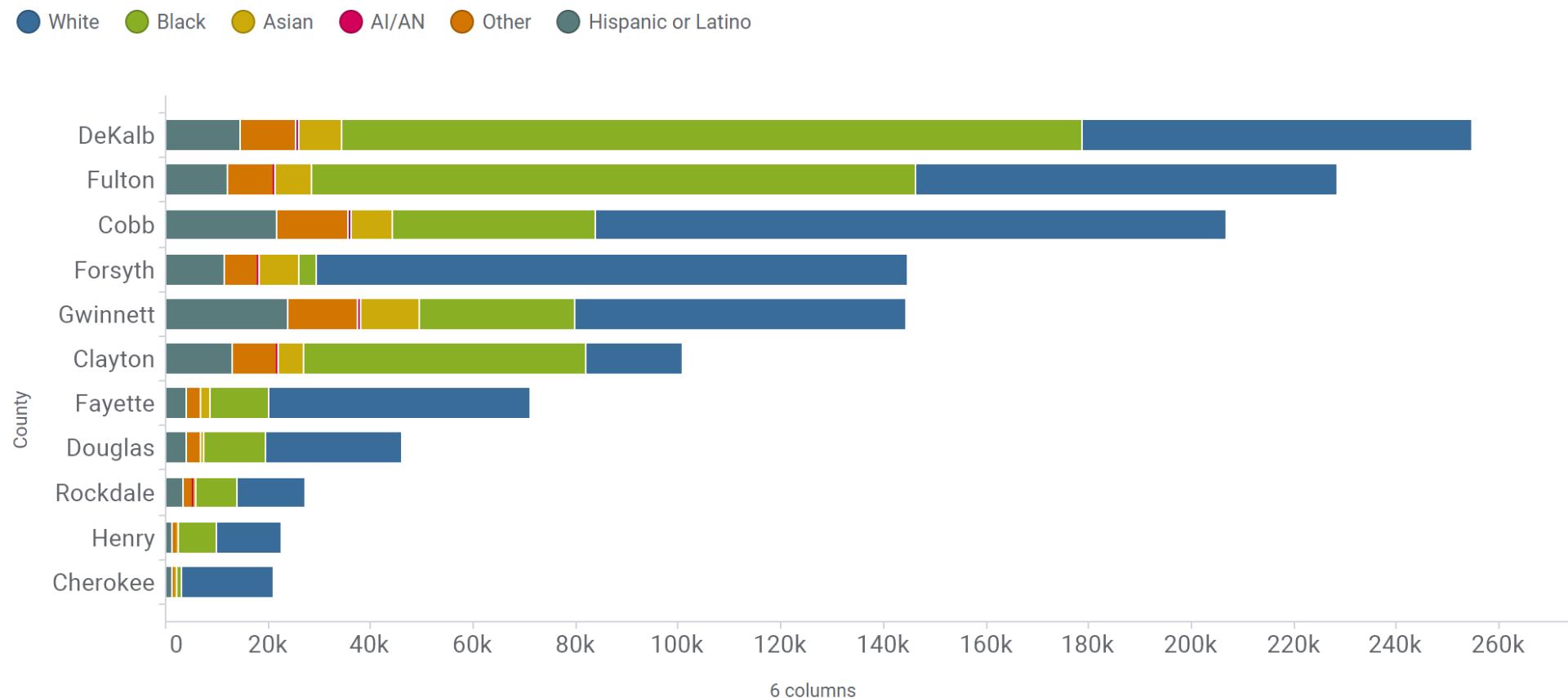
“According to The Center on Budget and Policy Priorities, about 86% of Georgia residents eligible for food assistance claimed those benefits.

Many Georgians are leaving aid on the table. It is critical to measure the number of people who qualify for food assistance programs vs. the number of people signing up for them.”

1 in 3 people facing hunger are unlikely to qualify for SNAP

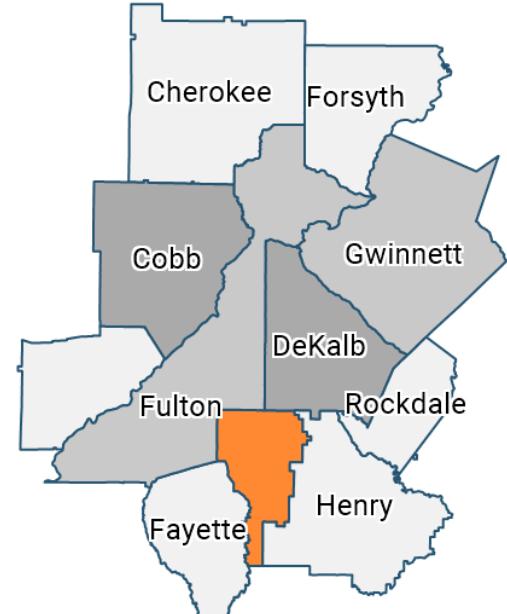
ARC: Low-Income population count beyond $\frac{1}{2}$ mile from a supermarket by Race/Ethnicity

Data Source: USDA Food Access Research Atlas Data 2019

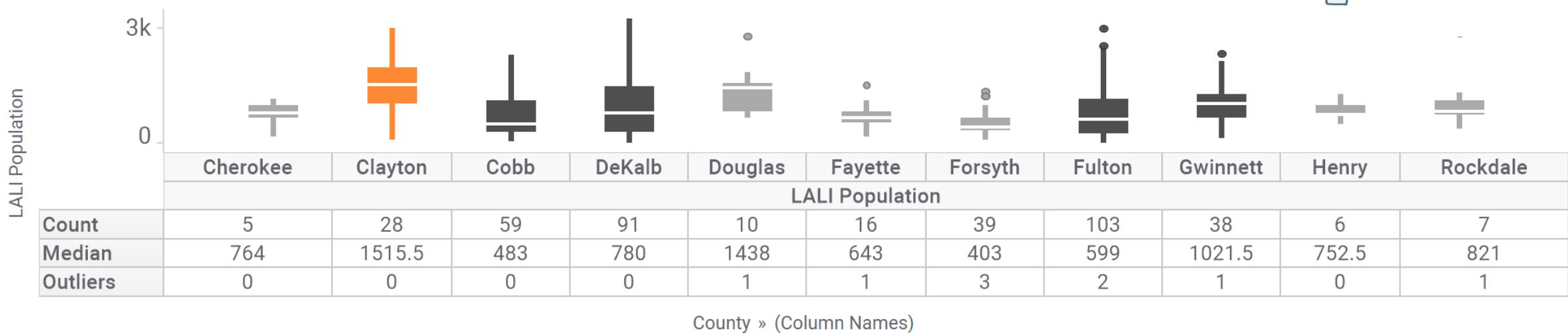


ARC: Distribution

Data Source: USDA Food Access Research Atlas Data 2019



Low Access Low-Income Population



ARC: Clayton County

“Clayton county has 13 food deserts areas which have been identified by the United States Department of Agriculture.”



i "Overall" refers to all individuals, including children, regardless of race or ethnicity

2020 Overall (All Ages) Food Insecurity In Clayton County, Georgia

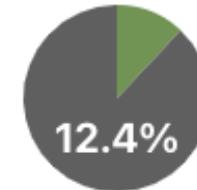


FOOD INSECURE POPULATION IN CLAYTON COUNTY, GEORGIA

35,650



FOOD INSECURITY RATE IN CLAYTON COUNTY, GEORGIA



ESTIMATED PROGRAM ELIGIBILITY AMONG FOOD INSECURE PEOPLE IN CLAYTON COUNTY, GEORGIA



24%	Above Other Nutrition Program threshold of 185% poverty
11%	Between 130%-185% poverty
65%	Below SNAP threshold of 130% poverty

AVERAGE MEAL COST IN CLAYTON COUNTY, GEORGIA

\$3.05

ANNUAL FOOD BUDGET SHORTFALL

\$17,530,000



Clayton County is the 6th most populated county in the state of Georgia out of 159 counties.

The largest Clayton County racial/ethnic groups are Black (68.8%) followed by Hispanic (13.2%) and White (9.6%).

In 2020, the median household income of Clayton County households was \$49,460.

The median age for Clayton County residents is 32.5 years young.

© 2022 Cubit Planning, Inc.

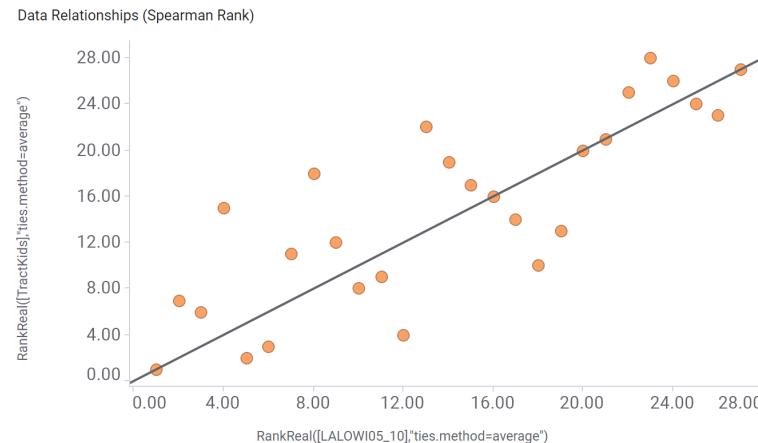
Distance to Fresh Food

Comparison Method: Spearman R without any statistical significance tests. The significance test is investigating whether we can reject or fail to reject the null hypothesis (*Spearman's rank-order correlation (cont...)*).

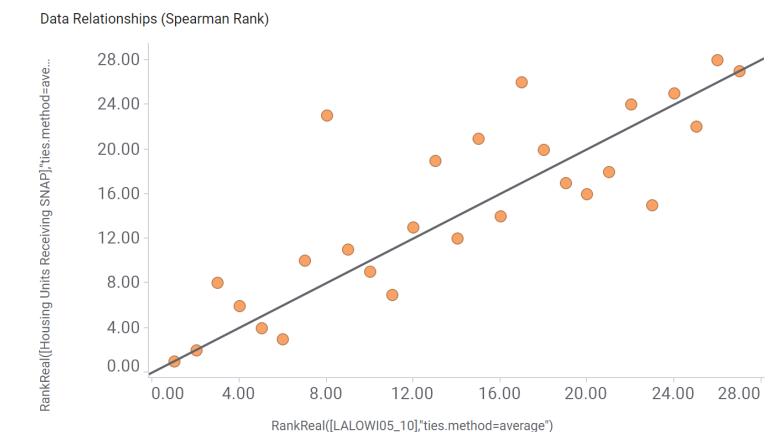
USDA Food Access Research Atlas Data 2019

“According to the USDA, in non-pandemic times, households with children were nearly 1.5 times more likely to experience food insecurity than households without children.” (Silva, 2020)

Low access, population at 1/2 mile and TractKids.



Low access, population at 1/2 mile and Kids SNAP



Data Relationships (Spearman R)

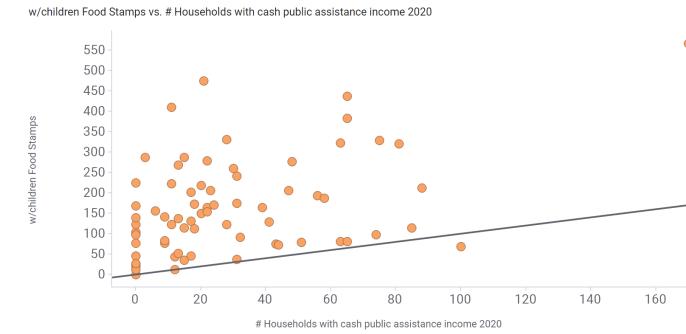
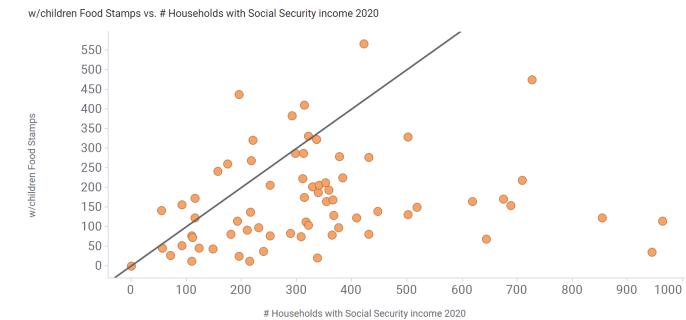
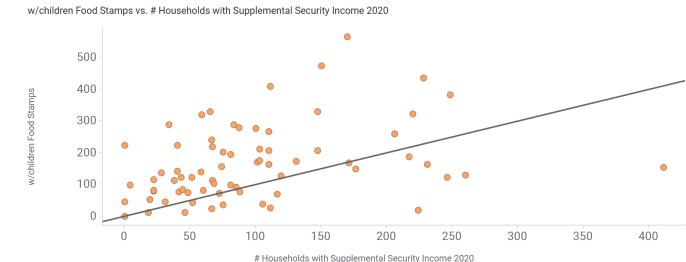
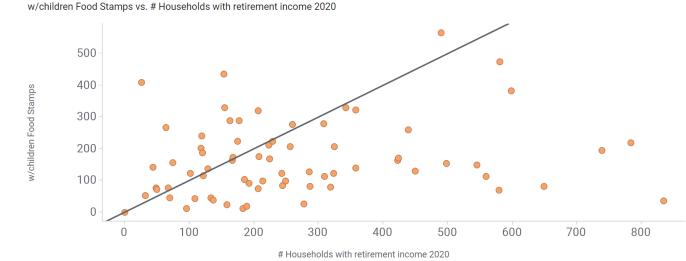
Y (numerical)	X (numerical)	p-value ▲	FStat	Rank R squa... ▾	Rank R	Df
Housing Unit...	LALOWI05_10	0.000	57.64	0.70	0.84	25
TractKids	LALOWI05_10	0.000	51.74	0.67	0.82	25

Correlations of Income with Households with Children in SNAP

Most people that qualify for Food Stamps/SNAPS, don't apply to receive the benefit (The Center on Budget and Policy Priorities).

How can we find these people to make sure they apply and receive food stamps benefits?

Data Source: ACS Economic 5 Yr Estimate 2020



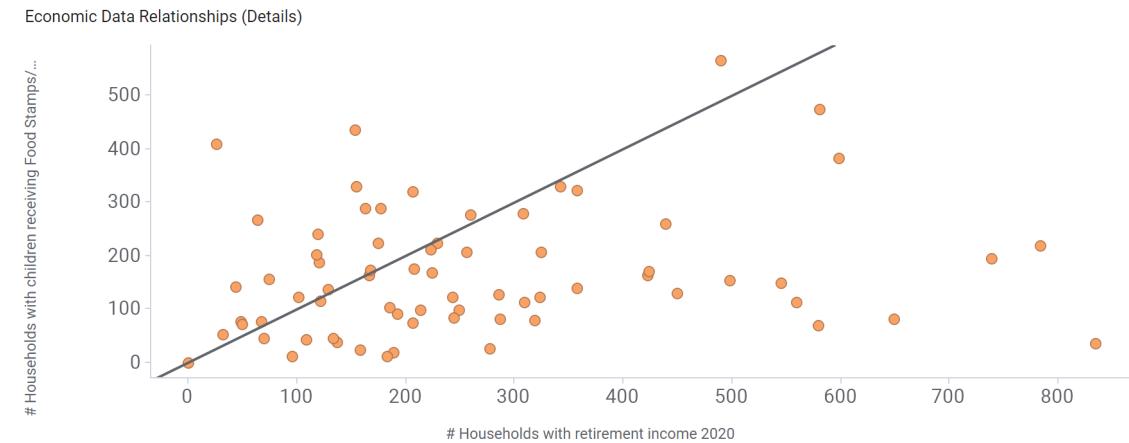
Pairwise Data Relationship - ACS Economic 5 Yr Estimate

Comparison Method: Spearman R without any statistical significance tests. The significance test is investigating whether we can reject or fail to reject the null hypothesis (*Spearman's rank-order correlation (cont...)*)

H_0 : There is no monotonic association
between the two variables

H_1 : There is monotonic association
between the two variables

Data Source: ACS Economic 5 Yr Estimate 2020



Economic Data Relationships (Spearman R)

Y (numerical)	X (numerical)	p-value ▲	FStat	Rank R squared ▾	Rank R	Df
# Households with children receiving Food Stamps/SNAP 2020	# Households with Supplemental Security Income 2020	0.000	14.22	0.17	0.42	68
# Households with children receiving Food Stamps/SNAP 2020	# Households with cash public assistance income 2020	0.002	10.17	0.13	0.36	68
# Households with children receiving Food Stamps/SNAP 2020	# Households with Social Security income 2020	0.009	7.16	0.10	0.31	68
# Households with children receiving Food Stamps/SNAP 2020	# Households with retirement income 2020	0.068	3.45	0.05	0.22	68

Conclusions

- Food insecurity among Black or Latino individuals is higher than white individuals in Clayton county.
- Children make up a large percent of Clayton County's Food Deserts.



Recommendations & Future Study

1. Everyone that qualifies for SNAP, does not receive it. Future analysis should be done to identify individuals in this group.



Recommendations & Future Study

2. Create a website that centralizes food information & resources for Clayton, to build on their existing demographic website (see image). Modeled after Virginia's www.feedva.org.

Include pages for target audiences, such as:

1. Audience:

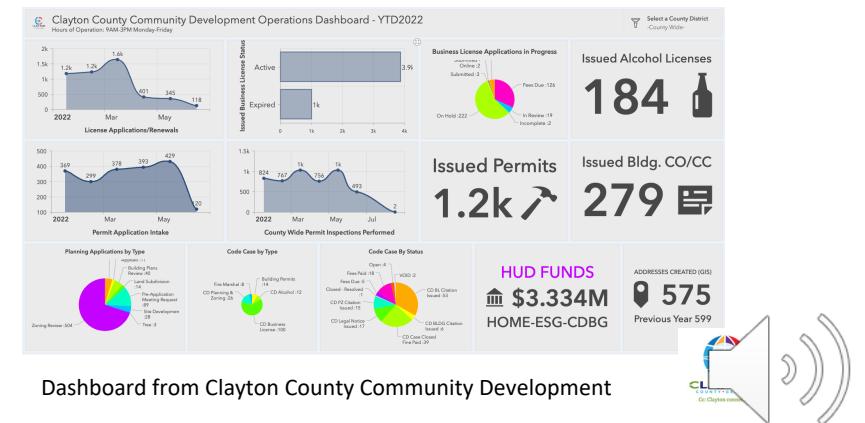
Food Banks that want to know in advance where additional food may be needed, for funding/distribution/stocking purposes, also for any mobile/spring up food distribution projects. Predicts increase in demand for food pantry's, based on influences/changes in numbers of jobless claims, cases of flu/pneumonia/hospitalizations in food desert areas?

2. Audience:

Those **needing food** & those wanting to **donate**: "Find a food pantry near you" enter address. Include a link to the Online Food Pantry.

3. Q & A Dashboard:

"Take the Healthy Eating Quiz" Audience: General public.



Appendix

Spearman's rank-order correlation (cont...). Spearman's Rank-Order Correlation - A guide to how to calculate it and interpret the output. (n.d.). Retrieved August 19, 2022, from <https://statistics.laerd.com/statistical-guides/spearmans-rank-order-correlation-statistical-guide-2.php>

Top Tip Bio. (2020, August 10). *Spearman Correlation Explained (inc. test assumptions)*. YouTube. Retrieved August 19, 2022, from <https://youtu.be/JwNwbu-g2m0>

Science for Georgia. (n.d.). Retrieved August 19, 2022, from <https://scienceforgeorgia.org/>

More U.S. children raised by grandparents. PRB. (n.d.). Retrieved August 19, 2022, from <https://www.prb.org/resources/more-u-s-children-raised-by-grandparents/#:~:text=Growing%20numbers%20of%20children%20in,from%204.7%20million%20in%202005.>

Thompson, D. (2020, August 4). *U.S. grandparents are raising millions of kids, and it's tough.* Medical Xpress - medical research advances and health news. Retrieved August 19, 2022, from <https://medicalxpress.com/news/2020-08-grandparents-millions-kids-tough.amp>

About the Atlanta Region. ARC. (2021, September 20). Retrieved August 20, 2022, from <https://atlantaregional.org/atlanta-region/about-the-atlanta-region>

Is Clayton County the best Georgia County for your business? Georgia Outline. (n.d.). Retrieved August 20, 2022, from <https://www.georgia-demographics.com/clayton-county-demographics>

Food insecurity roundtable - Georgia State Senate. (n.d.). Retrieved August 20, 2022, from <https://www.senate.ga.gov/committees/Documents/ScienceforGeorgiaRoundtable.pdf>

More U.S. children raised by grandparents. PRB. (n.d.). Retrieved August 20, 2022, from <https://www.prb.org/resources/more-u-s-children-raised-by-grandparents/>

About. cultivatinghumanity.net. (2021, February 24). Retrieved August 20, 2022, from <https://cultivatinghumanity.net/about/>

Georgia. HealthCare.gov. (n.d.). Retrieved August 20, 2022, from <https://www.healthcare.gov/small-businesses/shop-rates/georgia/>



Thank you

