



CHICAGO FOOD DESERTS

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INTRODUCTION



OUR TEAM



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What can we conclude about our findings? What recommendations do we have?



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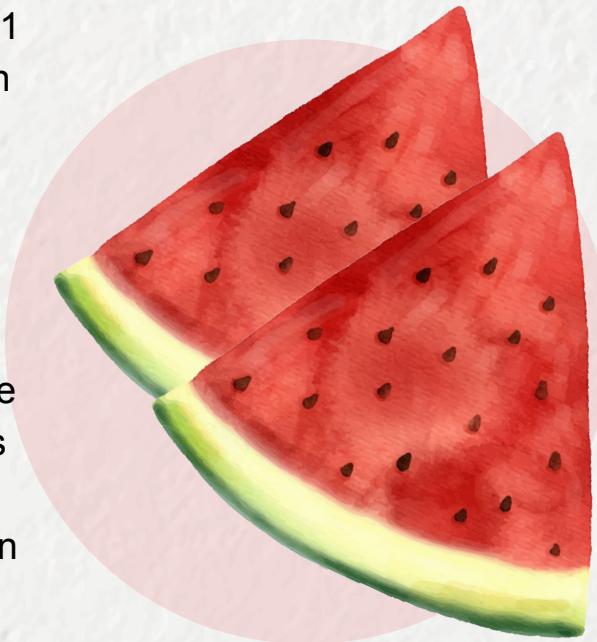
PROBLEM STATEMENT



PROBLEM STATEMENTS

37 million people, including 11 million children, lacked consistent access to healthy food In 2018. That translates to 1 in 9 people having food insecurities in the United States. With so many people experiencing food insecurities, why is approximately \$161 million of food wasted?

One reason that so many people in the United States experience food insecurities is that access to healthy food is scarce. There are communities, called food deserts, that have limited access to healthy foods. Our goal is to provide access to healthy foods within these deserts by means of local markets or mobile food trucks. We will identify food deserts in Chicago using a binary classification model. Once we have identified the food deserts, we will identify optimal locations to provide these neighborhoods with access to healthy foods.



03

BACKGROUND INFORMATION

WHAT ARE FOOD DESERTS?



III.



FOODDESERTS

Low-income census tracts with a substantial number or share of residents with low levels of access to retail outlets selling healthy and affordable foods are defined as food deserts
-USDA



III. What we typically find in food deserts

Health Concerns

- Diabetes
- Hypertension
- Obesity



Low access to grocery stores

- Lack of transportation
- Vehicle ownership

Adverse Economic Practices

- Spending and eating habits of residents in food deserts



Social Inequities

- Education
- Healthcare



04

EDA



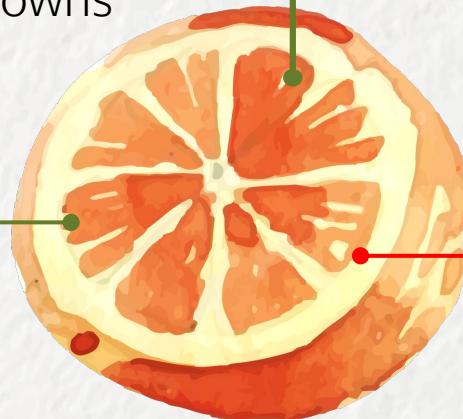
Data Breakdown

Food Access

- Low Food Access Regions
- Low Income Flag
- Vehicle Access Flag
- Demographic breakdowns
- SNAP Participation

Health

- Obesity Rates
- Diabetes Rates

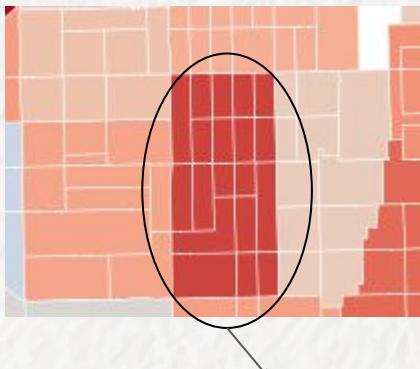


Grocery Stores Locations

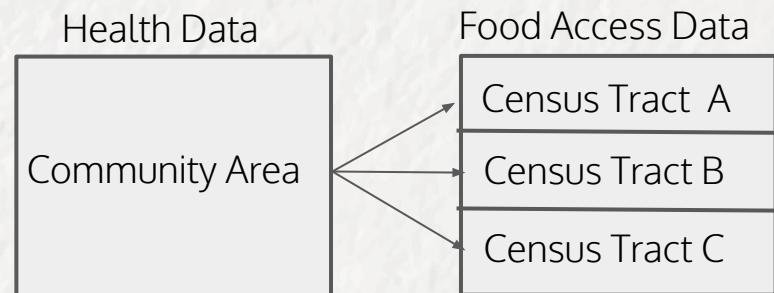
Merging the Data

Two Different Data Scales

- 77 Community Areas in Chicago
- 784 Census Tracts
- Each contains multiple census tracts.
- Census tracts subdivide populations of counties.



Merging





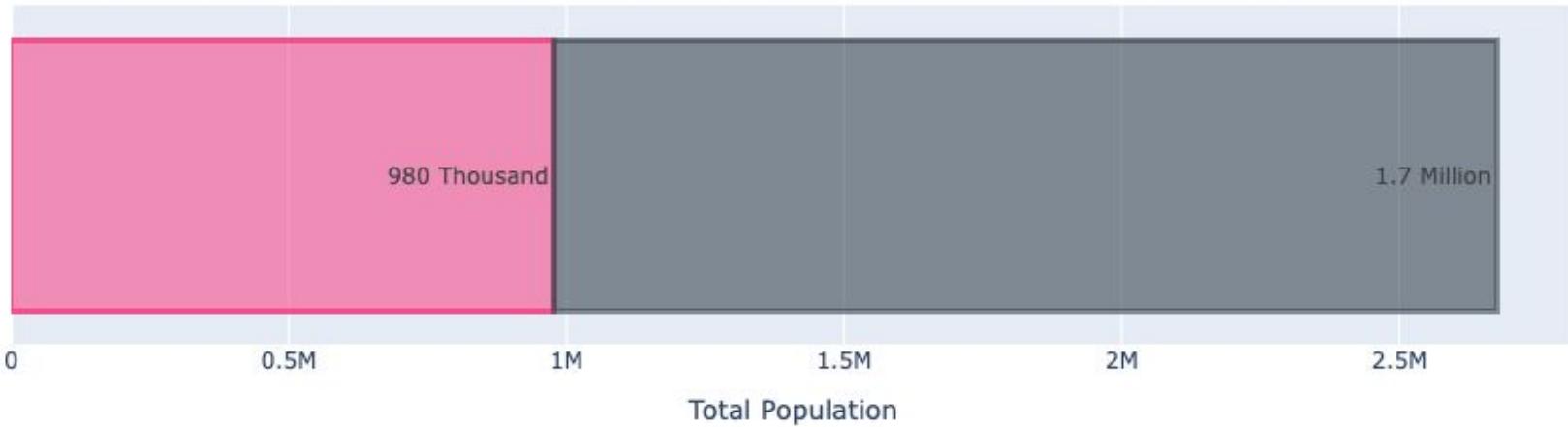
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HEALTHY FOOD ACCESS



Population in Chicago by Low Access to Healthy Food

■ Access to Healthy Food ■ Low Access to Healthy Food



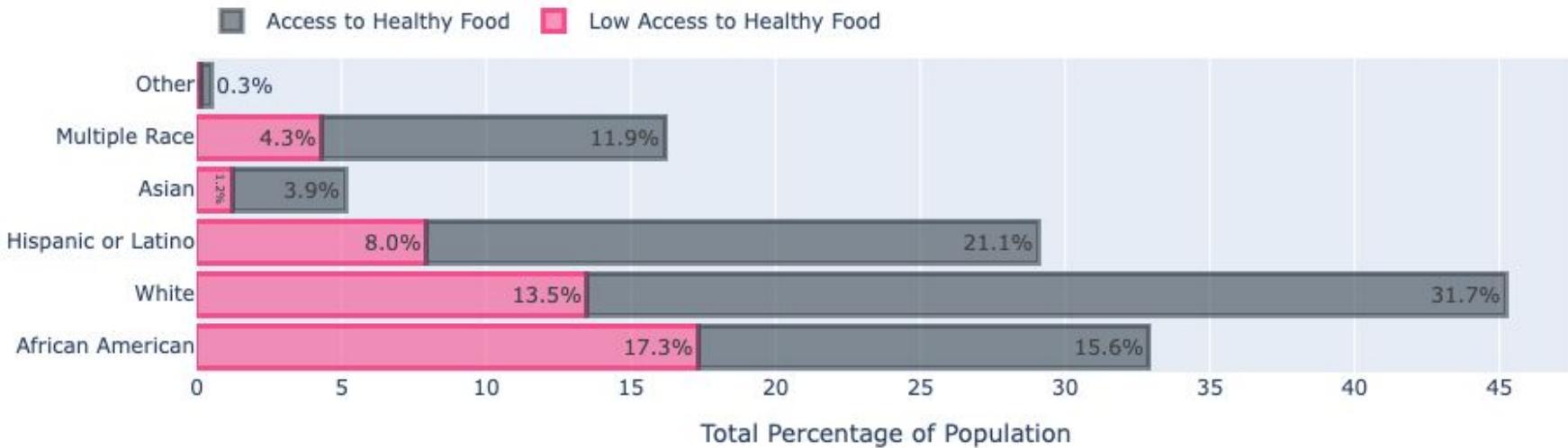


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DEMOGRAPHICS



Percentage of Population by Race by Low Access to Healthy Food





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HEALTHY FOOD ACCESS AMONG CHILDREN AND SENIORS



Percentage of Population by Age By Low Access to Healthy Food

■ Access to Healthy Food ■ Low Access to Healthy Food

Age 65 and Older

4.5%

5.8%

Age 17 and Younger

9.2%

13.9%

0

5

10

15

20

Total Percentage of Population



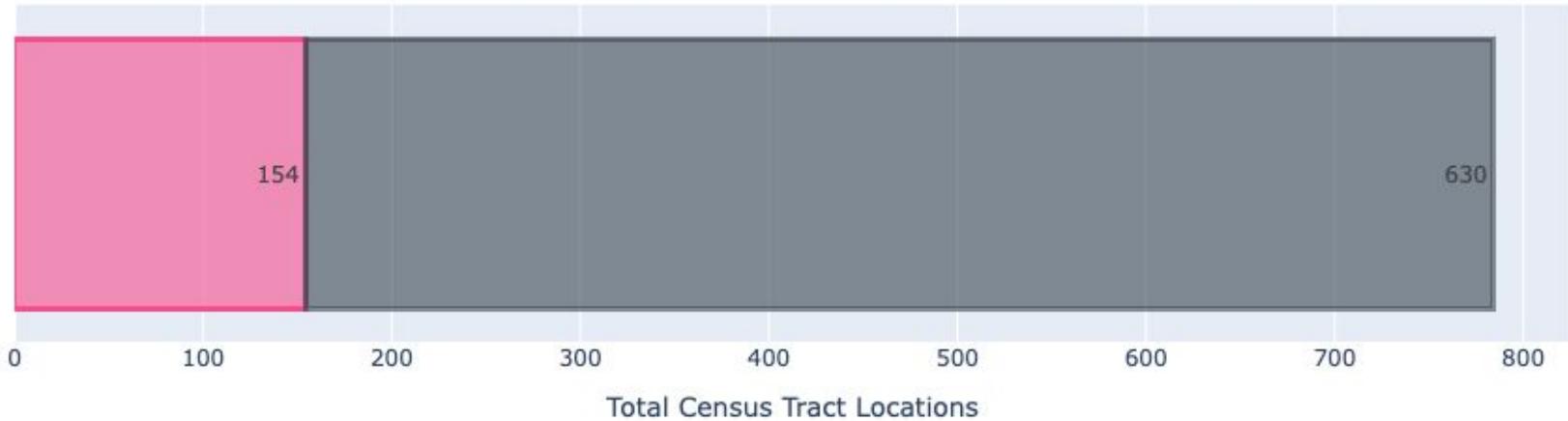
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VEHICLE ACCESS



Number of Census Tract Location in Chicago by Low Access to Vehicles

■ Access to Vehicles ■ Low Vehicle Access





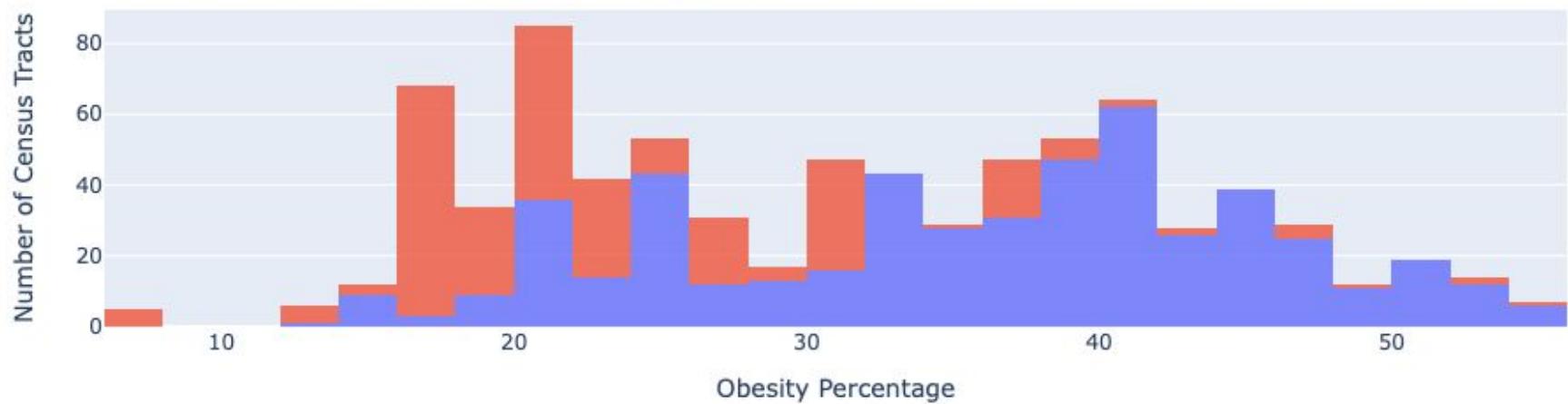
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OBESITY BY CENSUS TRACT



Histogram of Obesity based on Low Income Census Tract Locations

Low Income Census Tracts █ Low Income █ Not Low Income



IV.

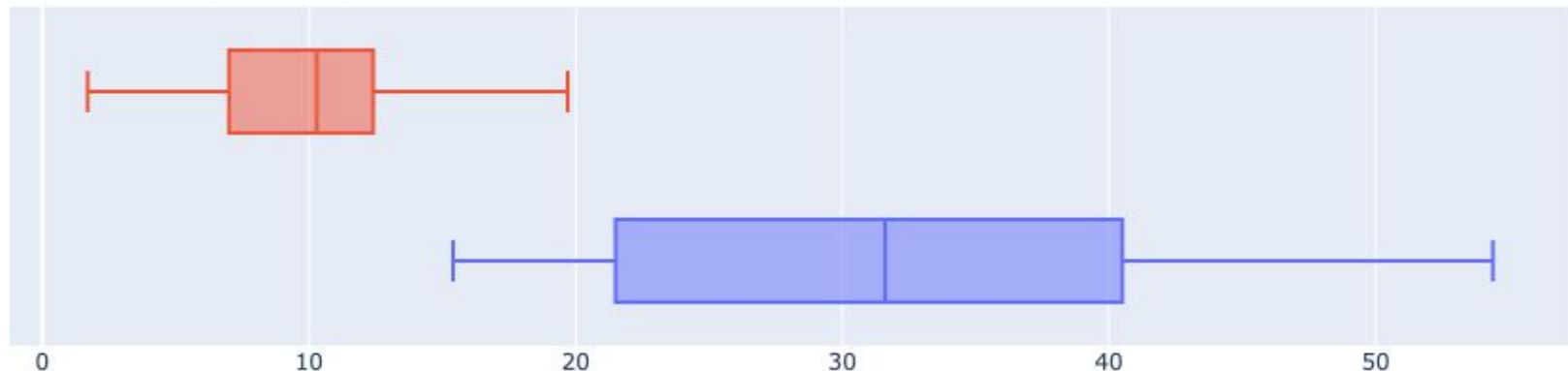
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DIABETES VS OBESITY RATES



Percentages of Diabetes and Obesity in Chicago

■ Obesity ■ Diabetes



Best Food Desert Indicators

- Linear Regression
- Features
 - Low Income Tracts
 - Low Vehicle Tracts
 - Percentage of SNAP per Tract
 - Low Access
 - Within 1 Mile
 - Within ½ Mile
- Targets
 - Obesity rate
 - Diabetes rate

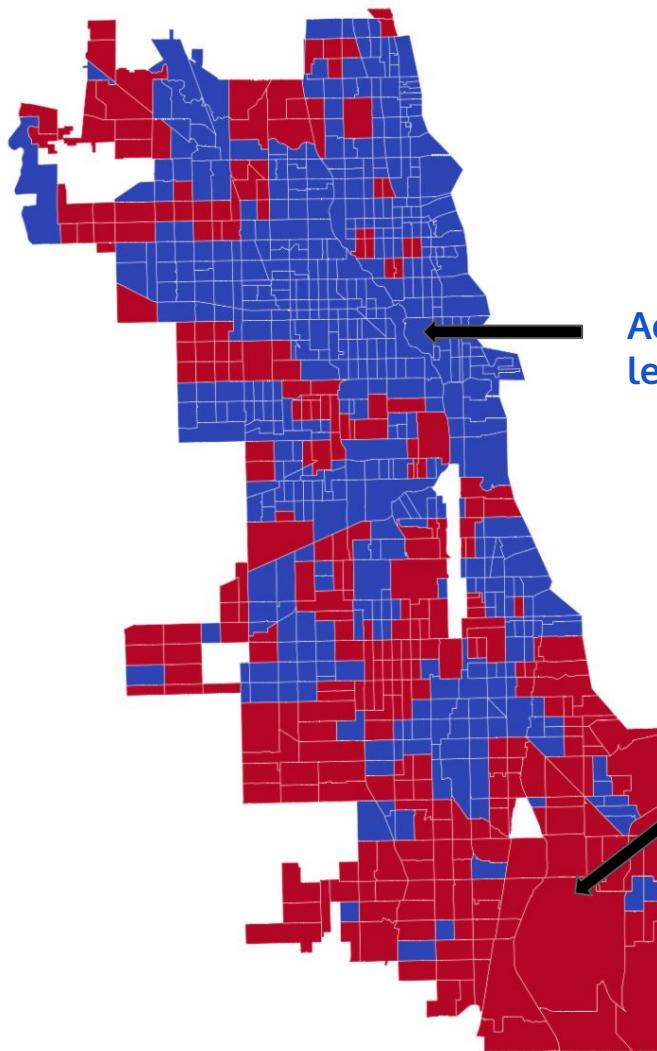
	Obesity 1-mile Low Access	Obesity ½-mile Low Access	Diabetes 1-mile Low Access	Diabetes ½-mile Low Access
Baseline RMSE	11.02%	11.02%	3.55%	3.55%
Testing RMSE	9.30%	9.02%	3.05%	3.03%



Best Health Predictors

Low Income

Low Food Access within ½-Mile

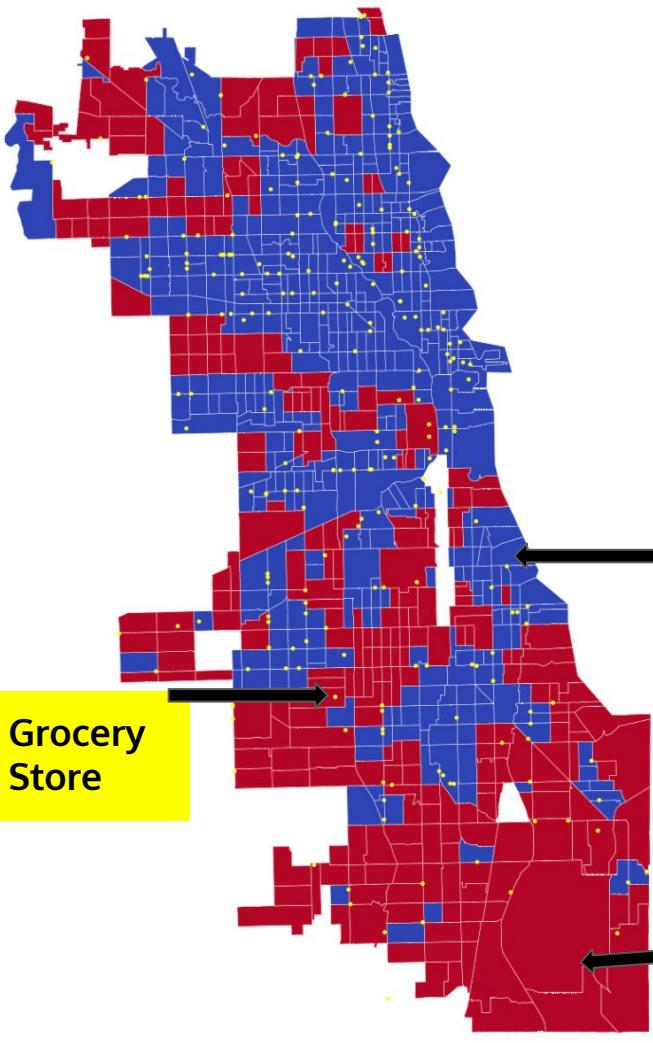


Chicago Census Tract By Low Food Access at Half-Mile

Access to healthy food
less than half-mile

Access to healthy food
greater than half-mile

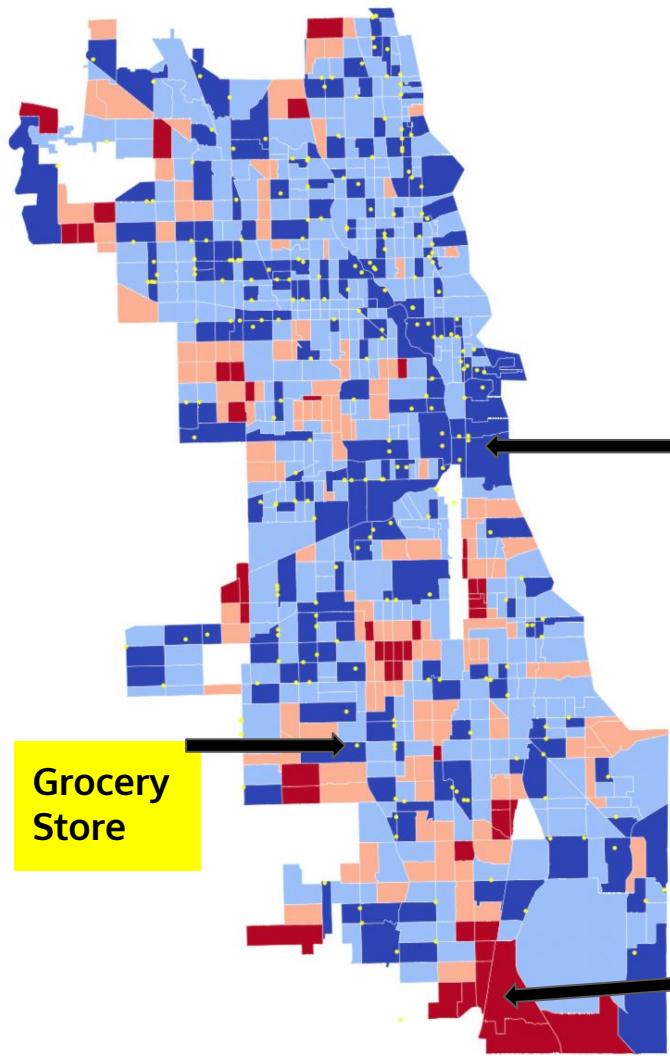




Chicago Census Tract By Low Food Access at Half-Mile with Grocery Stores

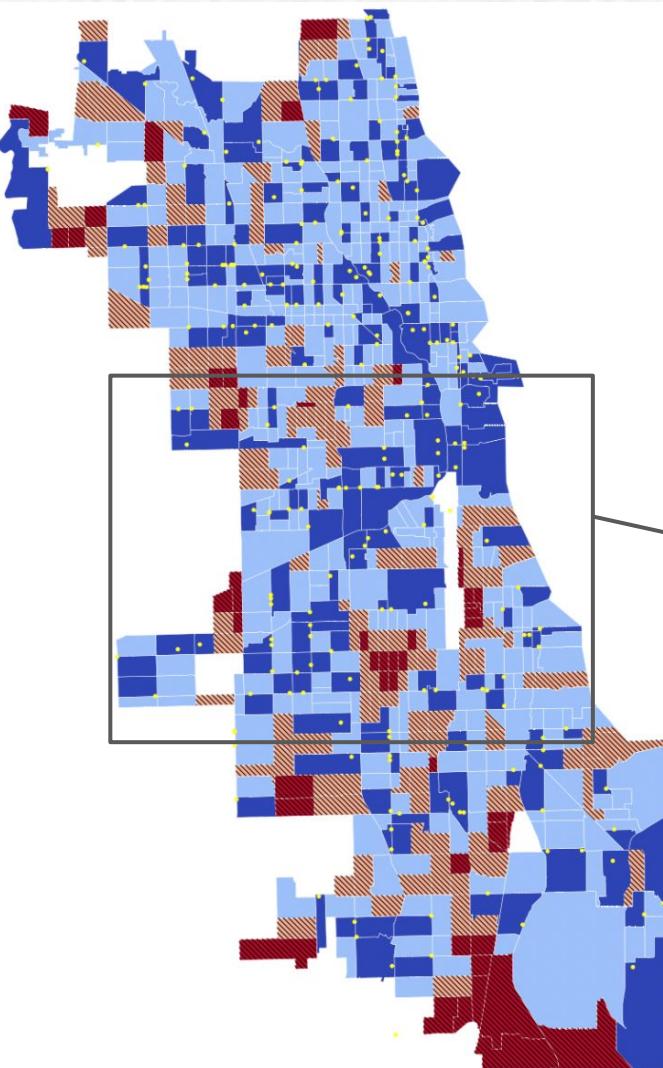
Access to healthy food greater than half-mile



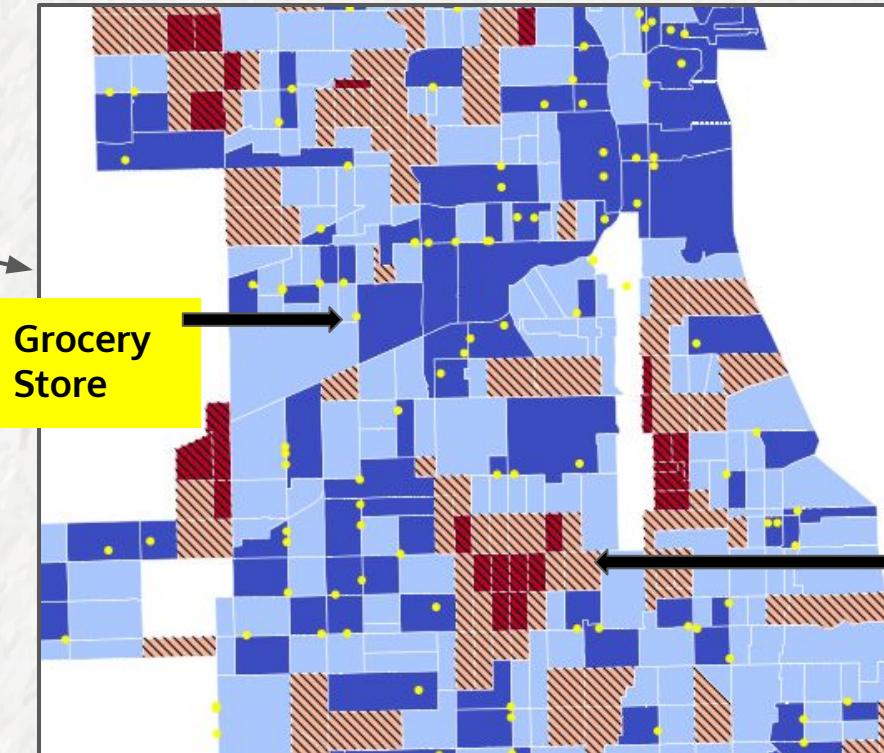


Chicago Census Tract By Access to Grocery Store

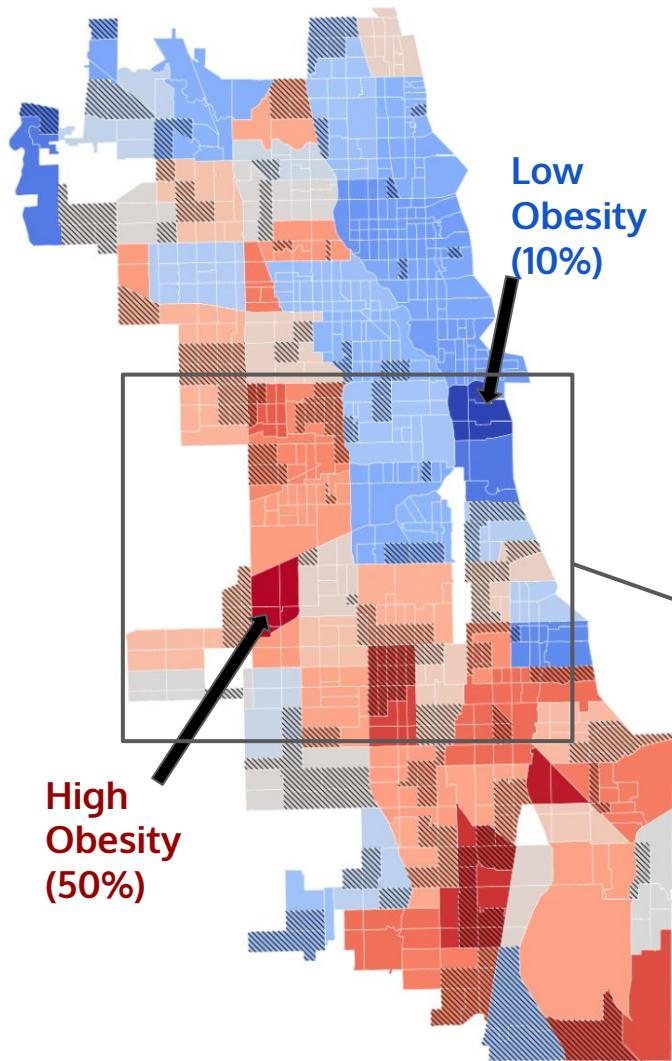




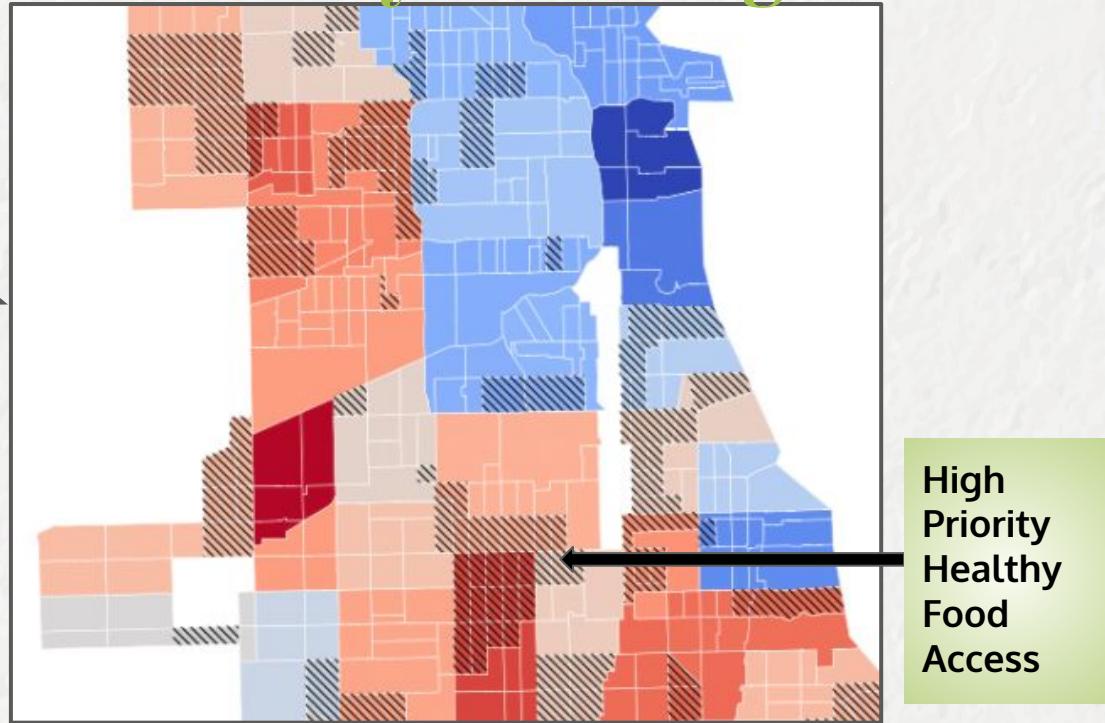
Chicago Census Tract By High Priority Access to Healthy Food

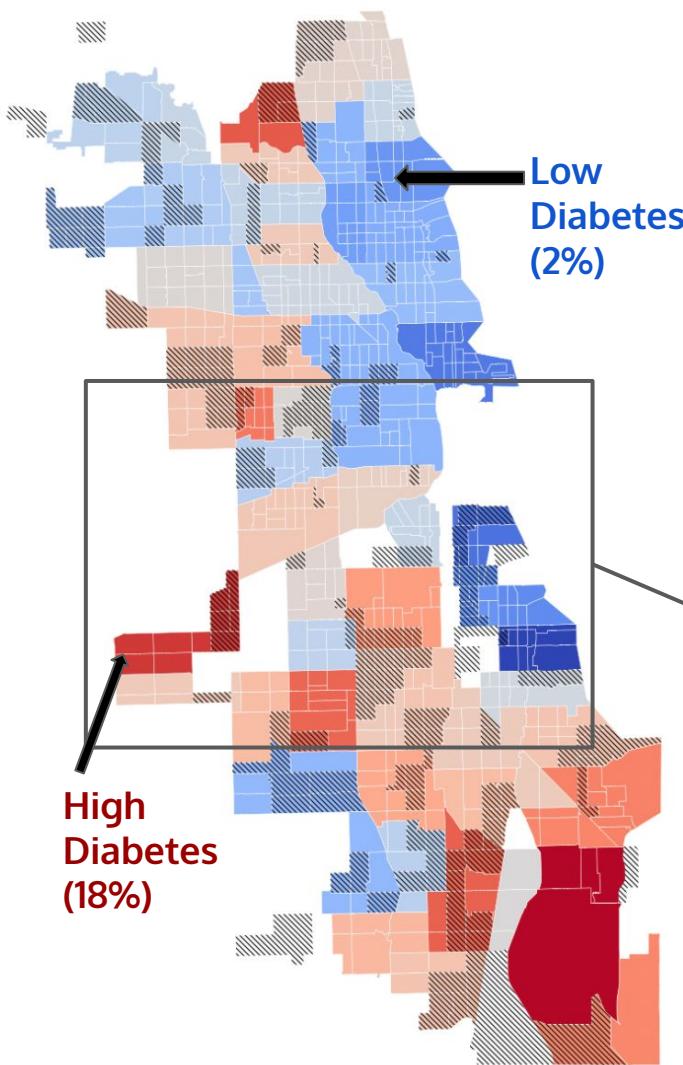


High
Priority
Healthy
Food
Access

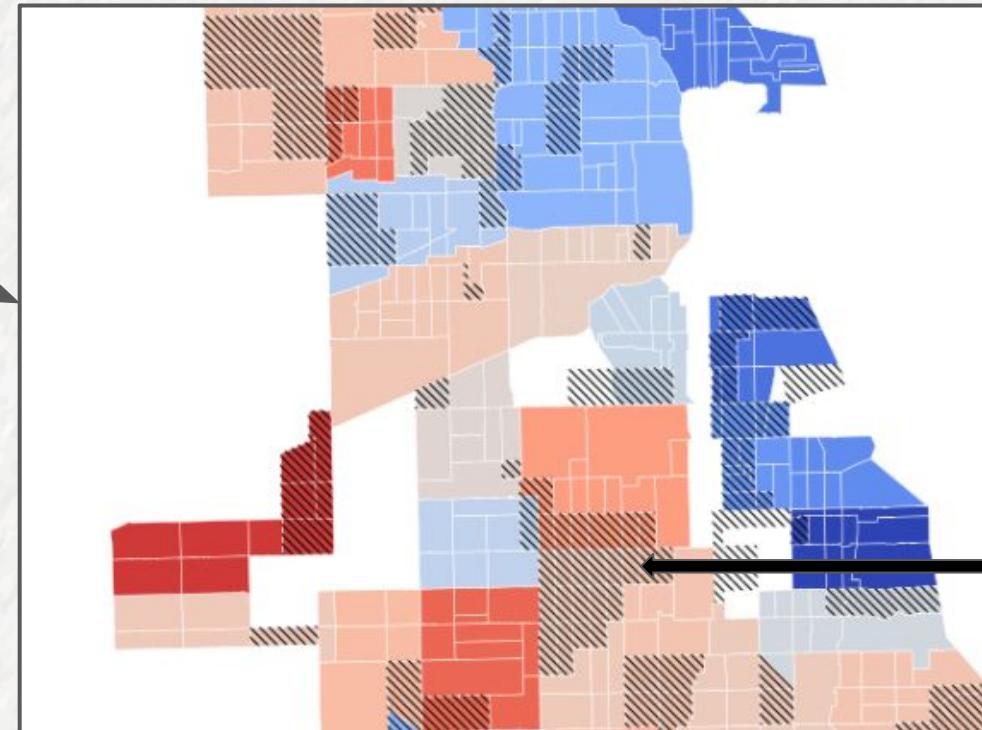


Chicago Census Tract By High Priority Access to Healthy Food and Obesity Percentages

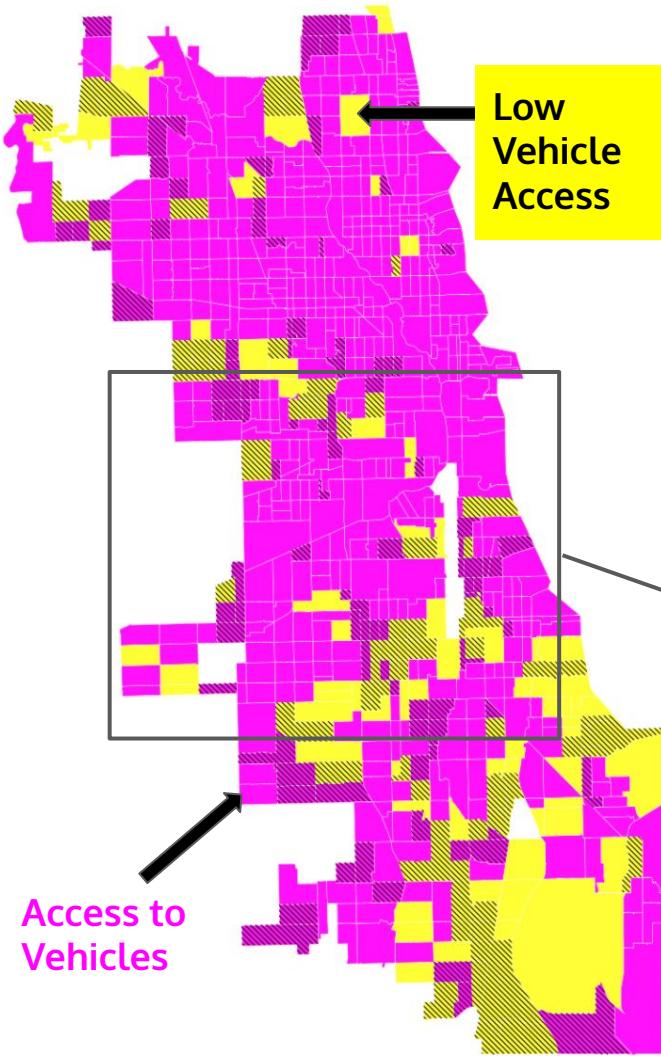




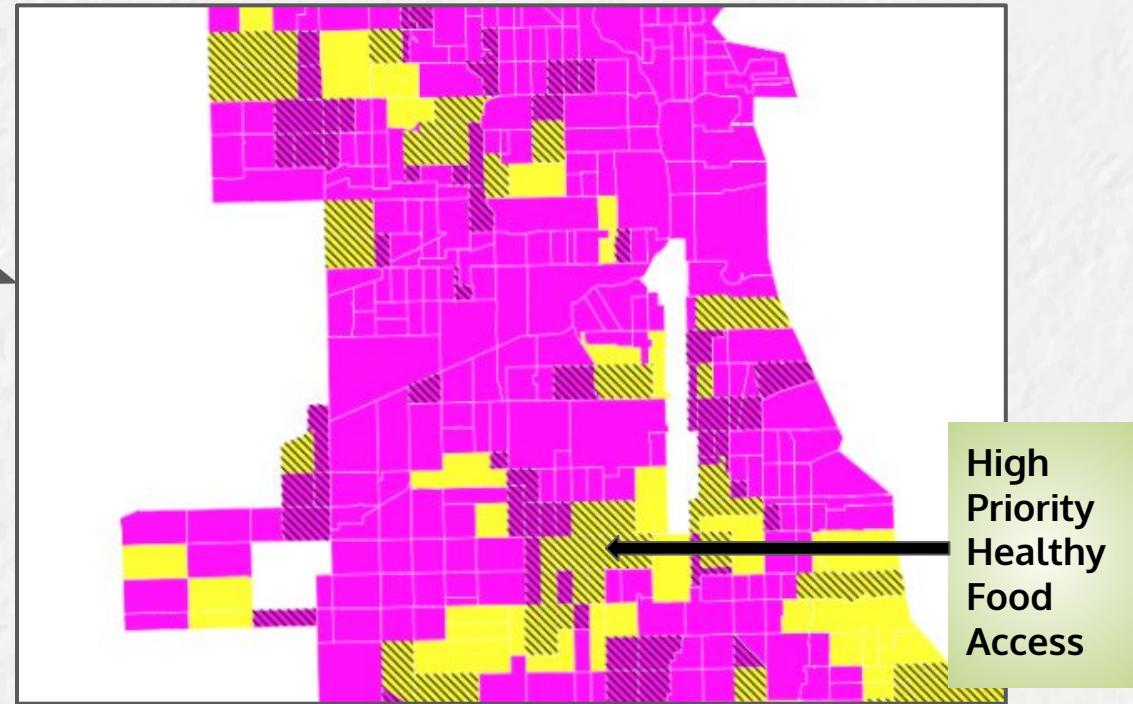
Chicago Census Tract By High Priority Access to Healthy Food and Diabetes Percentages

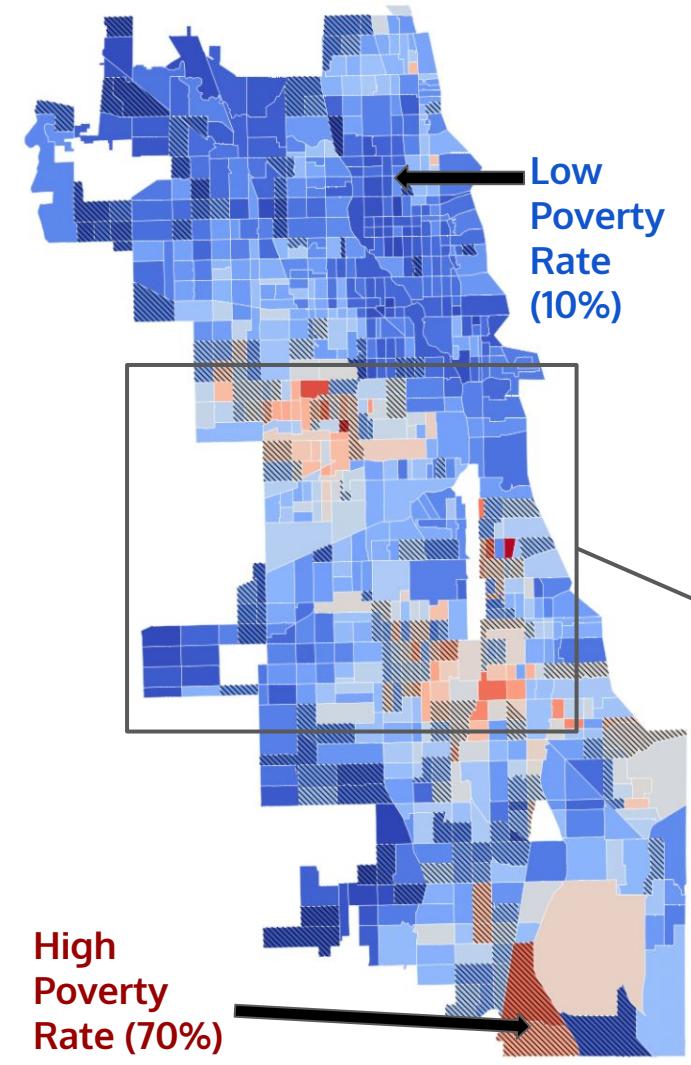


High Priority Healthy Food Access

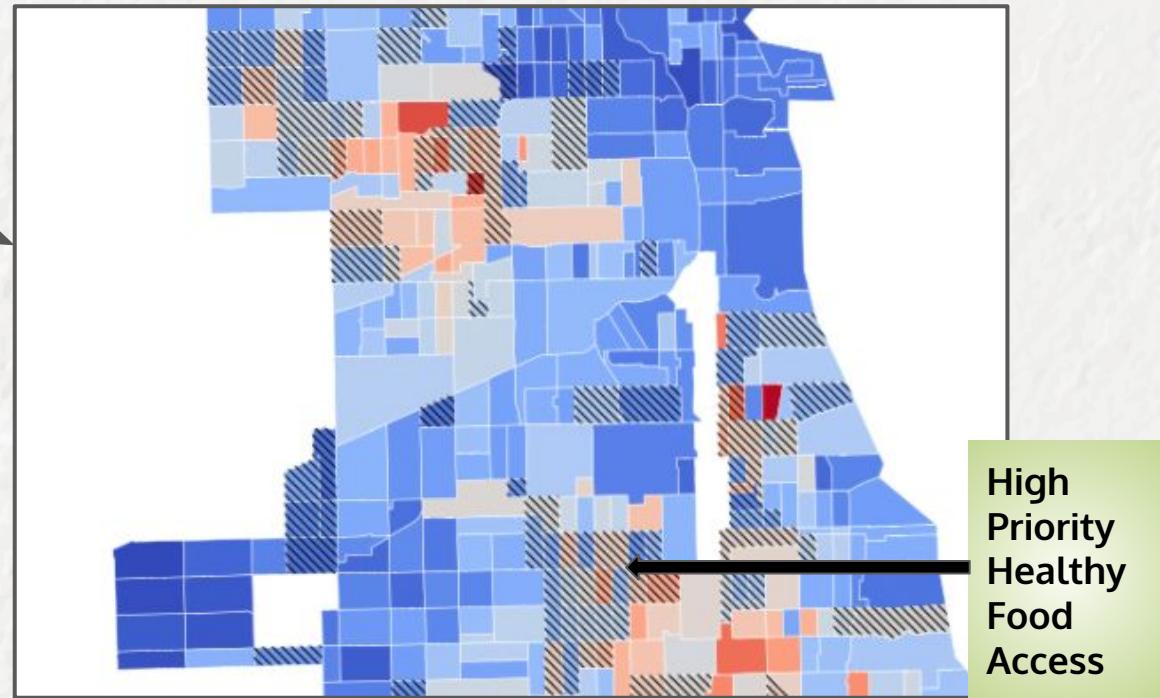


Chicago Census Tract By High Priority Access to Healthy Food and Low Vehicle Access





Chicago Census Tract By High Priority Access to Healthy Food and Poverty Rate



Predicting Food Deserts

Classification Model

- Logistic Regression
- Features
 - Low Income Tracts
 - Low Vehicle Tracts
 - Percentage of SNAP per Tract
 - Obesity Percentage per Tract
 - Diabetes Percentage per Tract
- Target - Low Food Access
- Recall - 65%
- Precision 83%

	Accuracy
Baseline	64.1%
Training	83.9%
Testing	84.2%



Conclusion/ Recommendations

- **Problems in food deserts are multilayered**
- **We looked at Chicago obesity and diabetes rates**
- **We mapped out the the Census Tract areas and from there identified the 'highest problem' areas**

Important Factors to Consider

- Cardiovascular disease
- Education outcomes
- Access to healthcare

Behavioral Approaches

- Time
- Money
- Willingness to cook

Food Truck Initiative

- Increase programs that are designed to bring food access to Chicago residents via Food Trucks



References

Data Sources

- <https://data.cityofchicago.org/Community-Economic-Development/Business-Licenses-Current-Active/uupf-x98q/data>
- <https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-line-file.2010.html>
- <https://www.ers.usda.gov/data-products/food-access-research-atlas/download-the-data/>
- <http://robparal.blogspot.com/2015/03/equivalency-file-for-using-complete.html?q=chicago+community+areas>
- <https://chicagohealthatlas.org/indicators/HCSOBP?topic=adult-obesity-rate>

Food Desert Information

- <https://urbangrowerscollective.org/freshmoves/>
- <https://www.healthline.com/nutrition/food-deserts#causes>

THANKS!



Does anyone have any questions?

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Fresh Moves Mobile Market



THE FRESH MOVES MOBILE MARKET

Our Fresh Moves Mobile Market is a bus that has been converted into a mobile farmers' market. The "produce aisle on wheels" works toward closing the 'food access gap' by bringing produce to schools, community centers, churches, and health clinics — places that folks already frequent — to make good food accessible in Black and Brown neighborhoods that have been historically divested. Customers board the bus and shop for delicious local fruit, vegetables and grocery staples. The produce is priced to be affordable for all and to provide a fair return for the farmers and makers.

[LEARN MORE](#)

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