FOOD ACCESS IN THE MIDWEST VS. NORTHEAST

Stat 4: Sathvika, Tina, Sreya, Laura

Background

54.4 million Americans live in low-income areas with poor access to healthy food (USDA ERS (2021))

- Food security: "When all people at all times have access to sufficient, safe, and nutritious food"
- Food access: Spatial accessibility and affordability of food retails
- Physical environment, economic environment, and sociocultural environment
- Race and income are highly correlated with healthy food access

https://www.fastcompany.com/90613597/54-4-million-americans-dont-have-access-to-healthy-food-thats-a-design-problem#:~:text=The%20U.S.%20Department%20of%20Agriculture,mile%20from%20the%20nearest%20supermarket.

Data

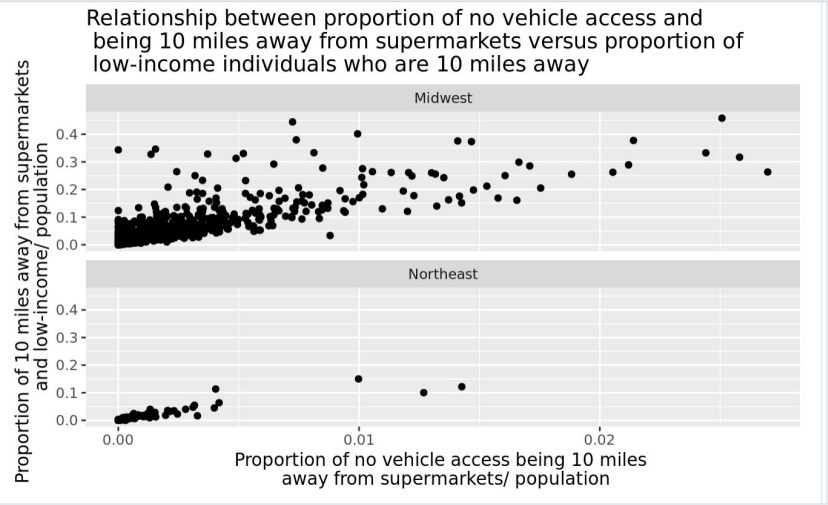
US Department of Agriculture's Economic Research Service 2010 Census Data

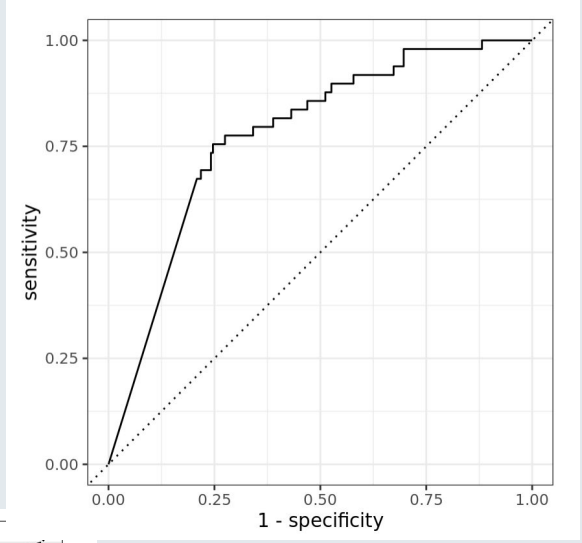
Research Question: For those classified as low income and beyond 10 miles away from a supermarket, does the Midwest or Northeast have a higher mean proportion of individuals? What variables contribute to this difference?

Variables

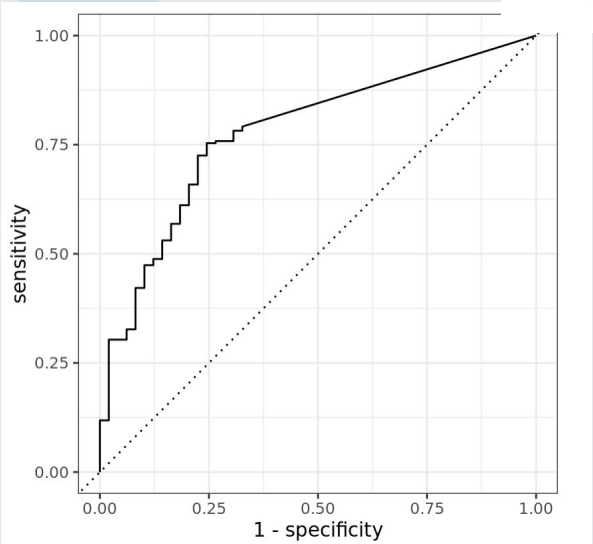
- Examples of qualitative: County, State
- Examples of quantitative: Population count, occupied housing unit count, population count beyond 10 mi from supermarket (senior, low-income, kids)

Highlights from EDA





Midwest



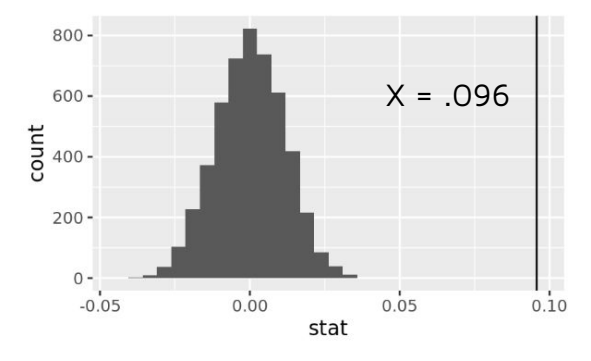
Northeast

- Positive relationship
  - ↑ No vehicle access
  - ↑ Low income and 10 miles away from supermarket

Inference Analysis

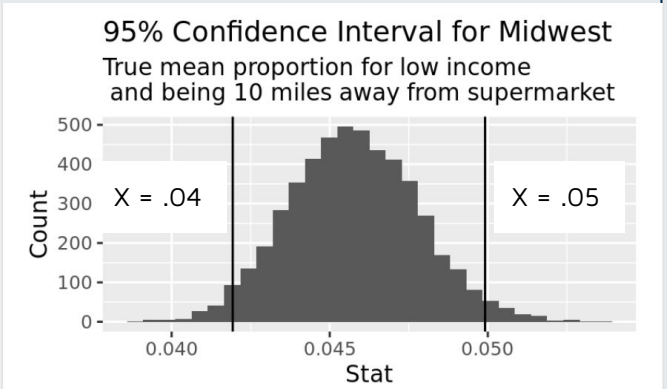
Hypothesis Test

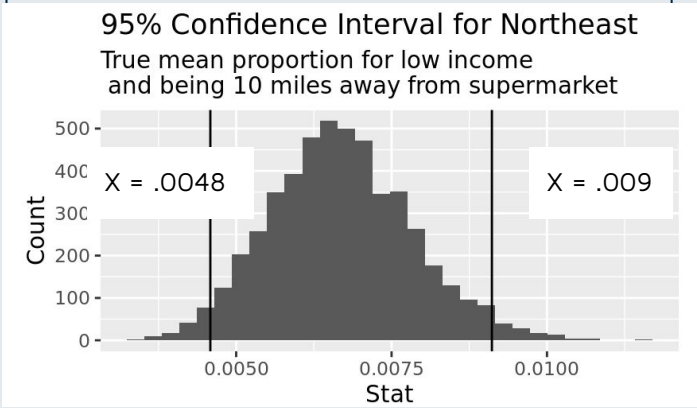
Null: The true mean proportional difference for low income and beyond 10 miles from the supermarket between the Midwest and northeast is equal to 0.
Alternate: The true mean proportional difference for low income and beyond 10 miles from the supermarket between the Midwest and northeast is greater than 0



- p = ~ 0 <Alpha = 0.5

95 percent CI





Linear regression

Best model:

Explanatory = proportion of seniors who are 10 miles from a supermarket * proportion of no vehicle access being 10 miles away from a supermarket

R^2 = .885

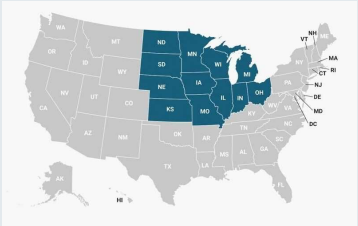
Conclusions and Future Work

Conclusion

- Midwest has significantly lower access to food due to no vehicle access beyond 10 miles to supermarkets and seniors status compared to the Northeast

- Limitation: Data leaving out farmer's markets and local shops

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION



The Future

- Backing the Centers of Disease and Control

- Recommend states in the Midwest to provide incentives