

# The Impact of Soda Tax at Different Socioeconomic Levels on Health and Food Access and Insecurity

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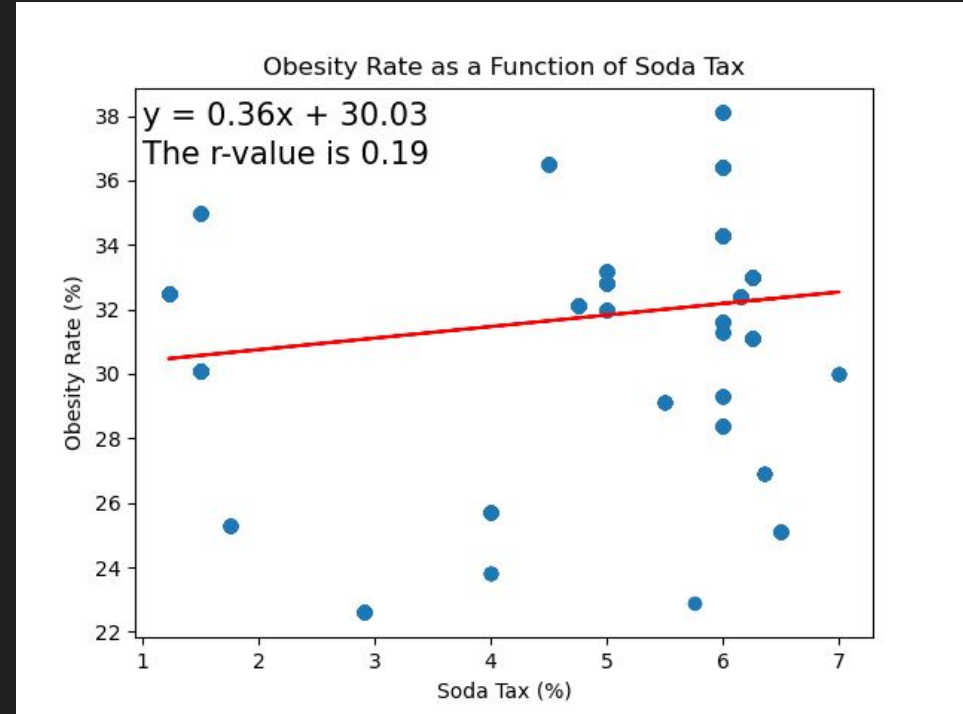
# Our Data

- U.S. Department of Agriculture Food Environment Atlas
- Assembles stats in 3 broad categories:
  - Food Choices
  - Health and Wellbeing
  - Community Characteristics
- We focused on food choice and health and wellbeing



# Does a Soda Tax Influence a Population's Obesity Rate?

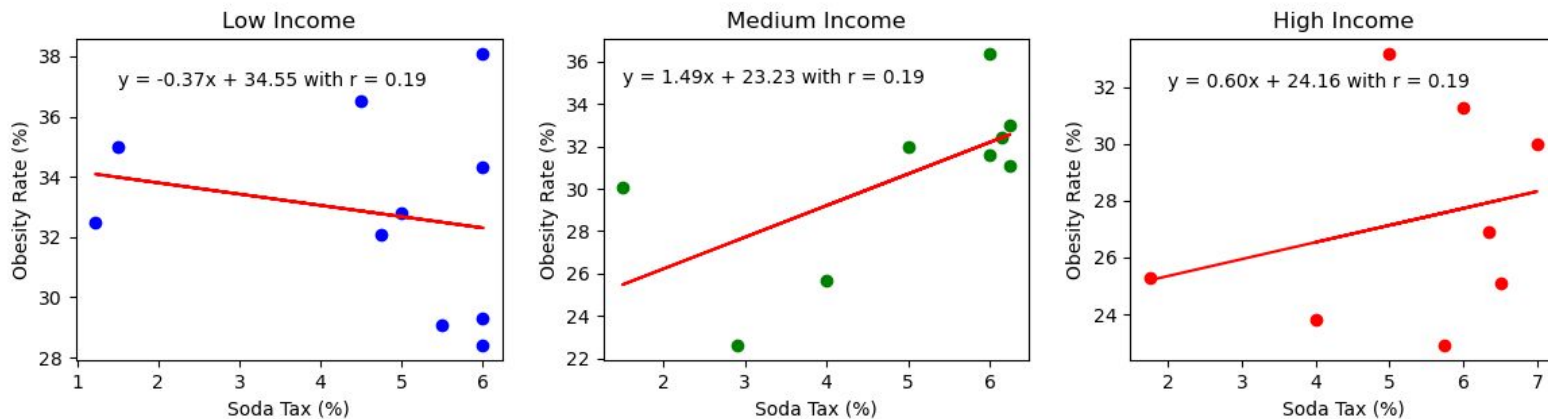
- No!
- Plot of Soda Tax & Obesity Rate
- Each datapoint represents a US State along with their average obesity rate
- R-value = 0.19 indicating no correlation



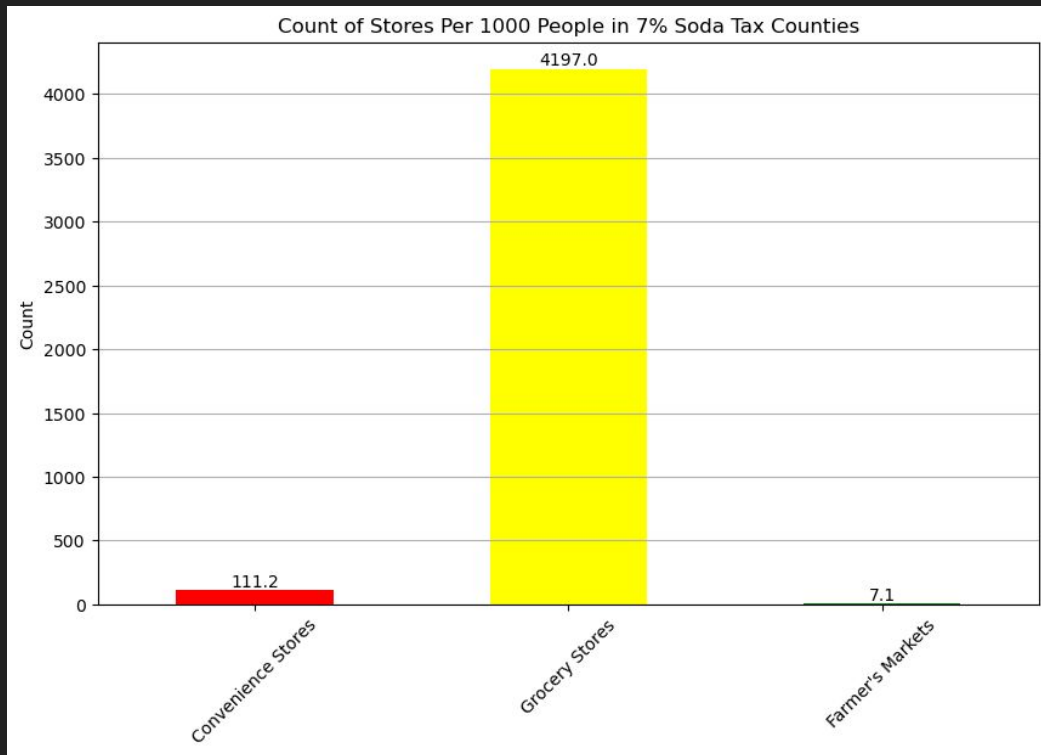
# What about at different income levels?

- Still no!
- R-Value = 0.19 for all... indicating no correlation between soda tax and obesity
- Binning was used to group data into low, medium, and high income groups
- Tried to group the data so that roughly a third in each group

The affect of Soda Tax on Obesity Rate at Different Income Levels



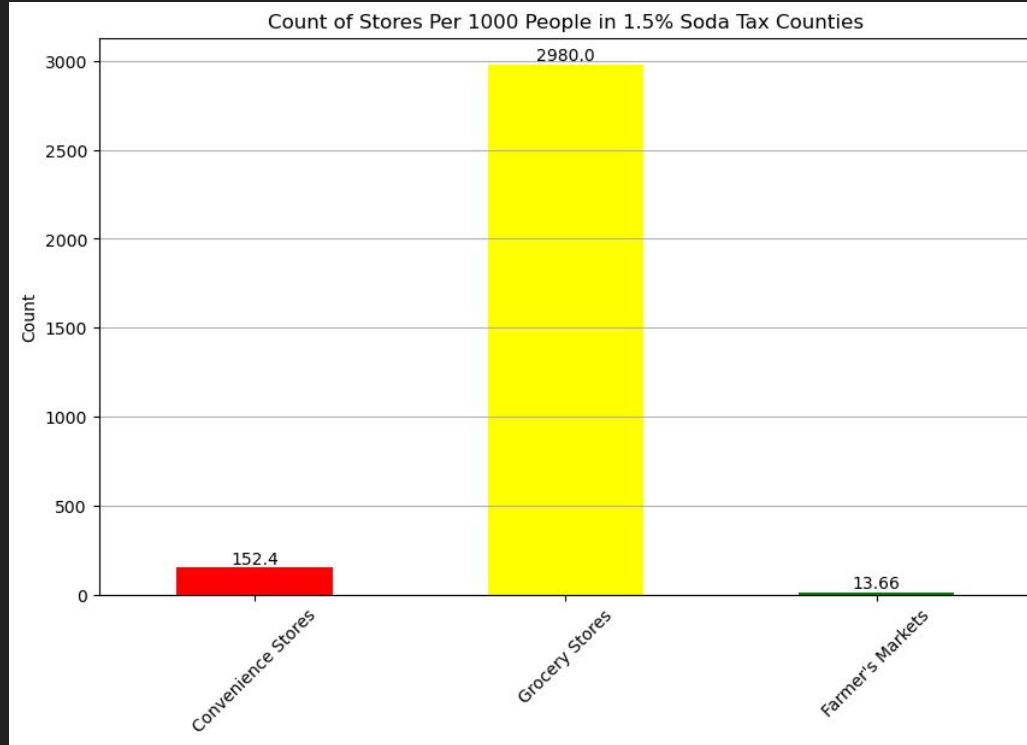
# Do states with high soda taxes have access to fresh food?



The highest soda taxes in the nation are at 7%.

Here we see the total number of convenience stores (low access to fresh food), grocery stores, and farmers markets in the counties with 7% soda tax, per 1000 people.

# Do states with high soda taxes have access to fresh food?



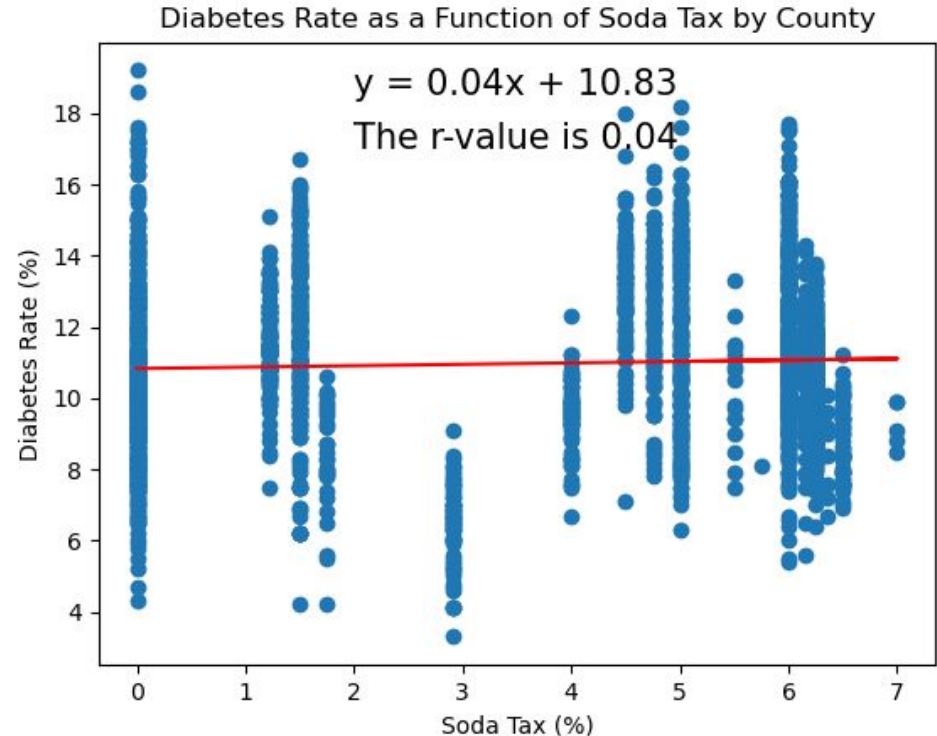
The lowest soda tax rate (other than 0%) in the nation 1.5%.

In this graph, we can see that there are actually a lower amount of grocery stores per 1000 people, and slightly more convenience stores than in the highest tax bracket of 7%.

This signifies that high or low soda taxes probably do not impact access to fresh food in a negative way.

# Does a Soda Tax Influence a Population's Diabetes Rate?

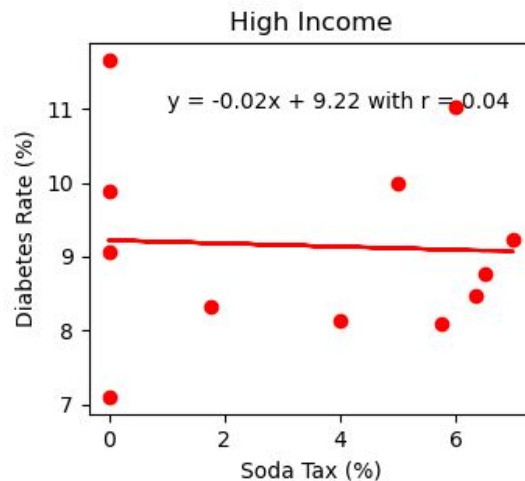
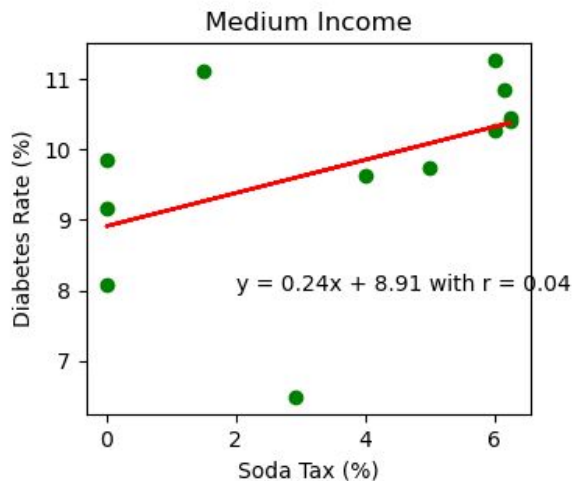
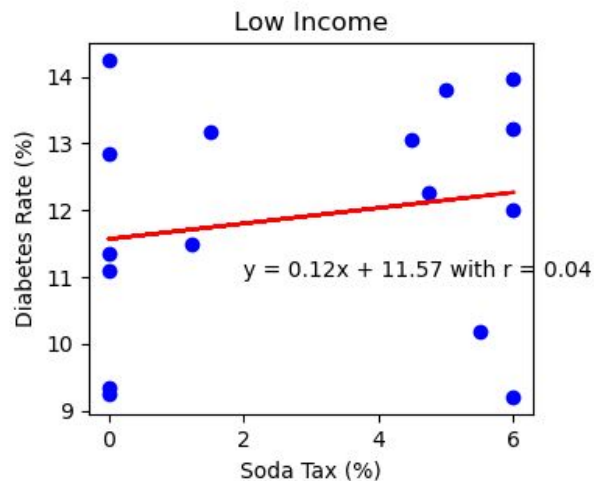
- Initial hypothesis was higher tax would have an impact on lowering diabetes rates
- No impact on Diabetes rate
  - As indicated by r-value of 0.04
- Junk Food Tax and Diabetes Rate Plot
- Data points consist of every county in US
- Parallels to Obesity Rate are evident.



# Does a Soda Tax Influence a Population's Diabetes Rate at Different Income Levels?

- Still no influence as shown by the R-Value of 0.04
- Equal division between three subcategories for continuity with other plots.

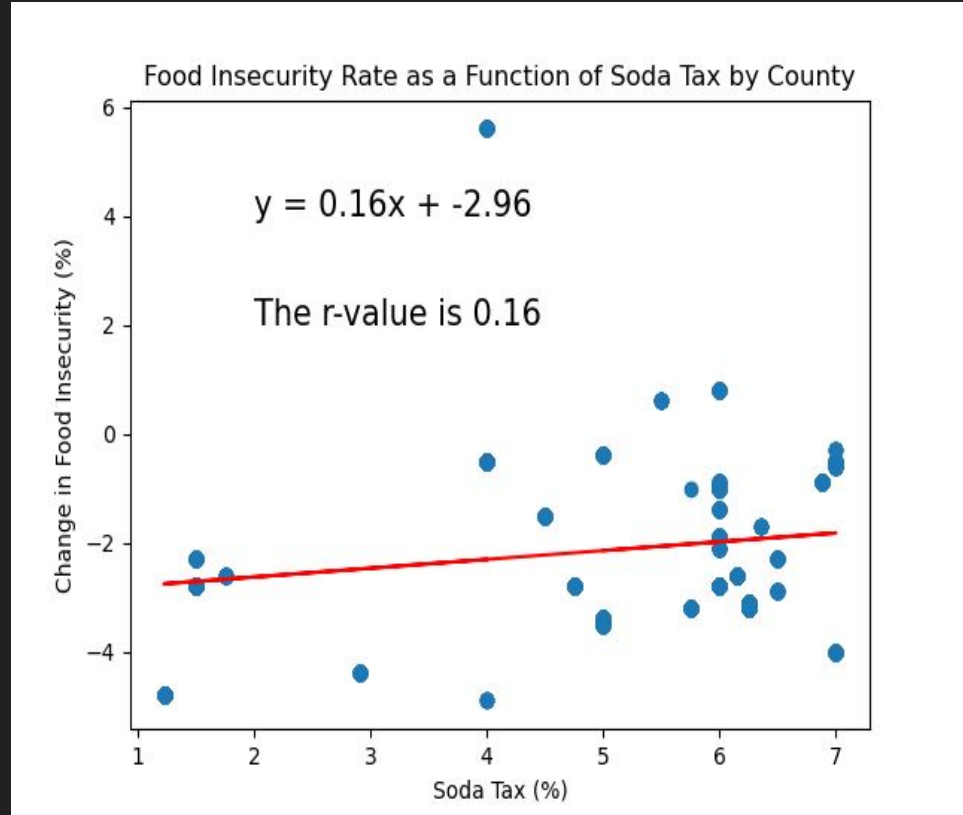
The affect of Soda Tax on Diabetes Rate





# How Do Soda Taxes Influence Food Insecurity by Counties?

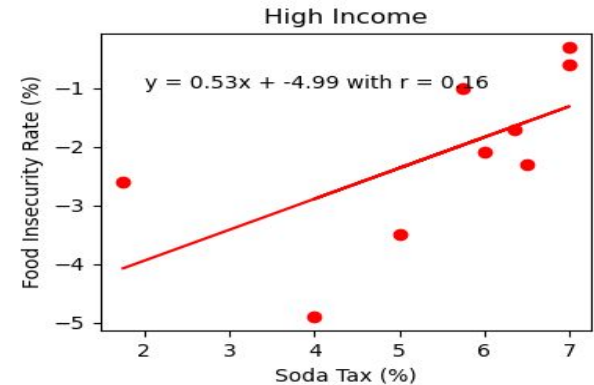
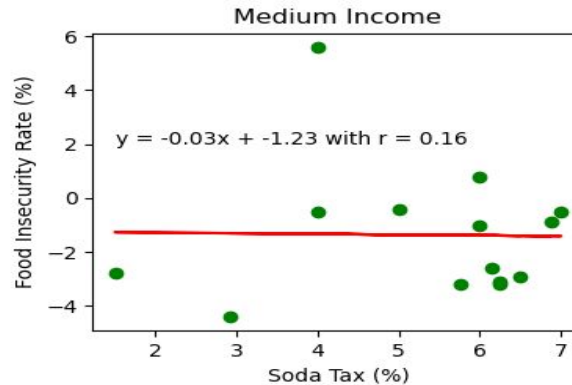
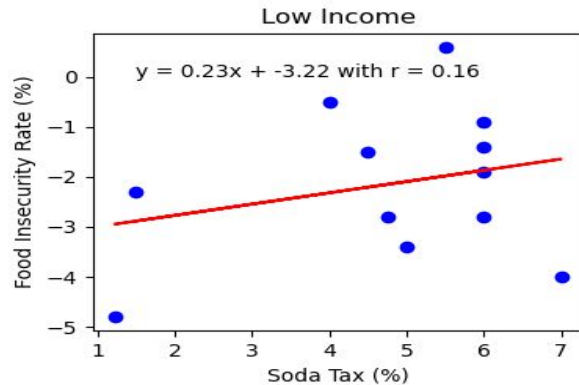
- Weak Correlation: The low r-value (0.16) indicates a lack of correlation between the variables.
- Minimal Soda Tax Impact: Despite the addition of a soda tax, the correlation remains barely noticeable.
- Insignificant Impact on Food Insecurity: The soda tax did not significantly affect food insecurity levels.



# How Do Soda Taxes Influence Food Insecurity at Different Income Levels? (2)

- Weak Correlation: The low r-value (0.16) suggests a weak correlation between variables.
- Income Variation Impact: Despite income variations, soda taxes have minimal impact on fluctuations in food insecurity.
- Limited Influence Across Incomes: The overall correlation stays low, highlighting the limited impact of soda taxes on food insecurity, regardless of income differences.

The affect of Soda Tax on Food Insecurity



# Analysis & Conclusion

- Overall Correlation:
  - No correlation ( $r < 0.20$ ) for all analysis.
- Income Level Analysis:
  - Correlation remains consistent at  $r < 0.20$  across different income levels.
  - Suggests that income levels do not significantly influence the relationship between soda tax and any of the other variables researched.
  - There is data that shows higher taxed areas have more access to fresh food and could be impacted less by this tax.

# Our Data Sets & Repository

- Economic Research Service (ERS), U.S. Department of Agriculture (USDA). Food Environment Atlas.  
<https://www.ers.usda.gov/data-products/food-environment-atlas/>
- <https://news.cornell.edu/stories/2021/05/study-grocery-taxes-increase-likelihood-food-insecurity>
- <https://github.com/Evan-Mucciolo/Project-1-Junk-Food-Tax>