Soda Tax Effect on Health Outcomes

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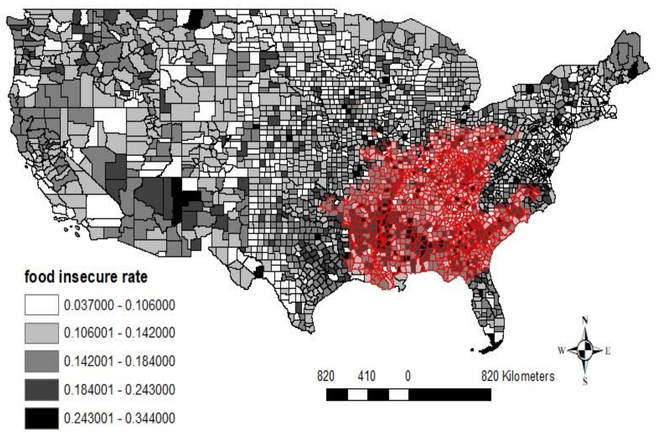
Background

- Sugar-sweetened beverages (SSBs), also called sugary drinks, are drinks that have added sugar or other sweetener.
- Consumption of SSBs is a risk factor for chronic diseases like diabetes and obesity.
- Food deserts are areas that lack the access to affordable healthy foods and drinks.
- Americans living in food deserts lack essential nutrients in their diets.
- Previous research has shown that SSBs increase the risk for chronic diseases like diabetes, obesity, and cardiovascular disease for all people.
- Previous research has also shown that food deserts is associated to high consumption of SSBs.
- The paper will be a review of the soda tax laws and also attempt to measure soda consumption with certain health outcomes by using food deserts as a proxy variable, as maybe the soda consumption-food desert measure can be used in the future to evaluate the impact of the soda tax in jurisdictions that have enacted that legislation.

Methods

- To research the soda taxes in the United States, the paper analyzed the data for health effects in two different ways:
  1. the direct health effects on diabetes and obesity
  2. variations in the various health laws
- Statistical data was gathered from the CDC and Feeding America. It was analyzed using IBM SPSS ver. 25 and ArcGIS ver. 10.6.1.

Diabetes 2013 vs. Food Deserts 2016



Obesity 2013 vs. Food Deserts 2016

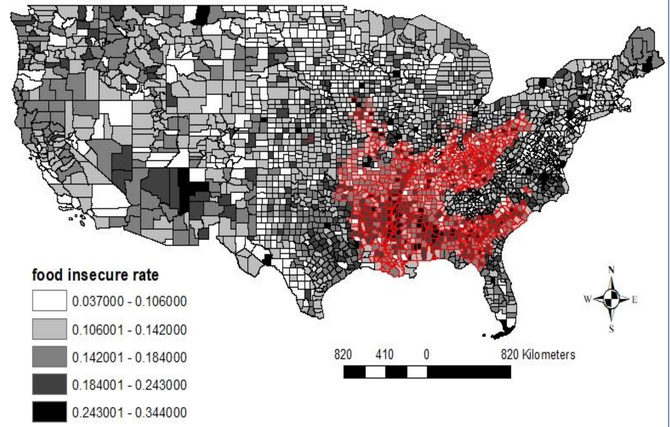


Table 1: Cities/Counties that have implemented a soda tax

City/County/Country	Date Tax Passed	Date Tax Implemented	Cost of Tax
Mexico	October 2013	could not find	1 peso per liter (5 cents per liter)
Berkeley, California	November 2014	March 2015	1 cent per ounce
Philadelphia, Pennsylvania	June 2016	January 2017	1.5 cents per ounce
Albany, California	November 2016	April 2017	1 cent per ounce
Boulder, Colorado	November 2016	July 2017	2 cents per ounce
San Francisco, California	November 2016	July 2017	1 cent per ounce
Oakland, California	November 2016	July 2017	1 cent per ounce
Cook County, Illinois*	November 2017	August 2017 Repealed December 2017	72 cents on a six pack of soda 68 cents on a two liter bottle
Seattle, Washington	June 2017	January 2018	1.75 cents per ounce

*Cook County's soda tax was repealed due to the fact that it became known that the soda tax was meant to fill a budget gap rather than as a public health service (Chicago Tribune).

Table 2: Independent t-test of chronic disease variables and food deserts

	Food desert	Not a food desert	t(df), p-value
Diabetes 2010, mean (SD)	12.331 (2.3982)	9.556 (2.0151)	-29.859(2604), p < 0.001
Diabetes 2011, mean (SD)	12.006 (2.4365)	9.192 (1.9807)	-30.433(2604), p < 0.001
Diabetes 2012, mean (SD)	10.784 (2.3194)	8.416 (1.8285)	-27.424(2604), p < 0.001
Diabetes 2013, mean (SD)	10.822 (2.3868)	8.203 (1.8184)	-30.098(2604), p < 0.001
Obesity 2010, mean (SD)	33.541 (4.0443)	29.899 (3.9011)	-21.163(2604), p < 0.001
Obesity 2011, mean (SD)	33.661 (4.2482)	30.035 (4.0140)	-20.354(2604), p < 0.001
Obesity 2012, mean (SD)	33.933 (4.3674)	30.280 (4.1641)	-19.822(2604), p < 0.001
Obesity 2013, mean (SD)	33.777 (4.6845)	30.346 (4.2117)	-18.069(2604), p < 0.001

Results

- The legislations were worded very similarly, and the definitions of what is taxed and what is not taxed is very similar too.
- Based on the maps, the incidence rate of diabetes and the prevalence rate of obesity overlapped with the food desert data. Most of the overlap was found in the south of the United States.
- Statistically, the chronic diseases compared with the food deserts were found to be significant. When the chronic diseases were compared to the hotspots, the data was found to be not statistically significant.

Discussion

- Based on the results, the data did not show significant data when being compared to the health outcomes and hotspots.
- A possible reason for the chronic diseases and hotspots not being statistically significant is because the tax is only one part of the many factors of health.
- In a recent Berkeley study, researchers found that the city's SSB consumption had decreased by 55% over the past three years. The money collected from the tax has been used to fund a community garden at a local middle school.
- It is still early to tell whether or not the soda tax works as a health policy prevention.

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Acknowledgements

I would like to thank my family for supporting me in my efforts toward school. I would also like to thank Dr. Brett Bayles, Dr. Patti Culross, and Dr. Michaela George for helping me with this project.