

# Exploring the Local Economic Effects of the Vermont Yankee Nuclear Power Plant Closure

Salvatore Spada

For the major of Environment & Sustainability at the University of the South

## Introduction

- In the last decade, eight nuclear plants across the United States have been shut down with plans to be fully decommissioned, each employing between 500 and 1,000 workers (4).
- Plant closures have been shown to have adverse effects on housing prices, fertility rates, poverty, and other economic indicators, which have been unequal across class, gender, race, and other demographics (1,2,3).
- **For these reasons, I test the hypothesis that the closure of a nuclear power plant will greatly disrupt the local economy surrounding it, using the Vermont Yankee Nuclear Plant (VY) and the three surrounding counties as a case study.**

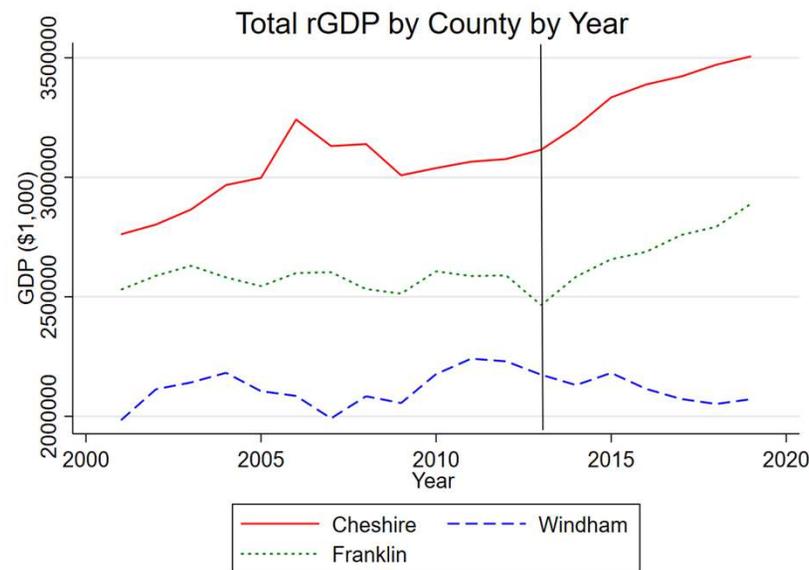
## Data

- This study uses the Census Bureau's County Business Patterns Survey (CBP), combined with real Gross Domestic Product (rGDP) and labor force statistics from the Bureau of Economic Analysis (BEA) to test the effect of plant closure on over 2,000 industries in the local economy of the VY plant.
- The BEA data set includes GDP by over 40 industries, and the CBP data provides annual payroll, number of businesses, average number of employees, and other statistics categorized by the NAICS business category codes, for over 2,000 industries.
- Data was pulled from 2001 to 2019 with the closure taking place in late 2014.

## Model

I use an event study to test whether the VY plant closure meaningfully altered the composition of the local economy, measured by GDP and CBP statistics in the five years following the VY closure using:

- # of people in Labor Force
- Unemployment rate
- # of business closures
  - Indexed by NAICS codes; agriculture, mining, utilities, wholesale trade, real estate, etc.
- rGDP by industry
  - (agriculture, industry, manufacturing, services, etc.)



**Figure 1:** Graph showing the change in rGDP in the three counties surrounding the VY plant in the 13 years before the plant closure, and the five years following the closure. The black line represents the year when the VY plant closed.

## Results

- In general, in the three surrounding counties, the VY closure led to an estimated **\$116,239,710** decrease in GDP, **1,589 person** decrease in labor force, and **19 business closures**.
- More specifically, two industries saw growth post closure (Retail trade, health care), while most (9) industries shrank, including the education, accommodations, food services, recreation, entertainment, and other industries.

## Conclusion

- The results of this study are consistent with past research suggesting that a major plant closure will cause growth in some industries, and declines in others, with a net negative effect on the economy as a whole.
- The magnitude of the effect of a closure can be mitigated with an appropriate policy prescription through job retraining, economic stimulus, etc.
- Further research should focus on other economic indicators, and whether these effects were felt equally across all demographic groups.

## Acknowledgements

I would like to thank Professors Eric Keen, Aaron Elrod, and Keri Watson for their support towards the completion of this project.

### References:

1. Bailey, D., Chapain, C., & de Ruyter, A. 2012. "Employment Outcomes and Plant Closure in a Post-industrial City: An Analysis of the Labour Market Status of MG Rover Workers Three Years On." *Urban Studies*, 49(7), 1595–1612. <https://doi.org/http://usj.sagepub.com/content/by/year>
2. Huttunen, K., & Kellokumpu, J. 2016. The Effect of Job Displacement on Couples' Fertility Decisions. *Journal of Labor Economics*, 34(2), 403–442. <https://doi.org/http://www.journals.uchicago.edu/loi/jole>
3. Jofre-Monseny, J., Sanchez-Vidal, M., & Viladecans-Marsal, E. 2018. "Big Plant Closures and Local Employment." *Journal of Economic Geography*, 18(1), 163–186. <https://doi.org/https://academic.oup.com/joeg/issue>
4. Nuclear Regulatory Commission. 2019. *Vermont Yankee Nuclear Power Station*. Fact Sheet. <https://www.nrc.gov/info-finder/decommissioning/power-reactor/vermont-yankee.html>