

## Becca Castleberry

### Introduction

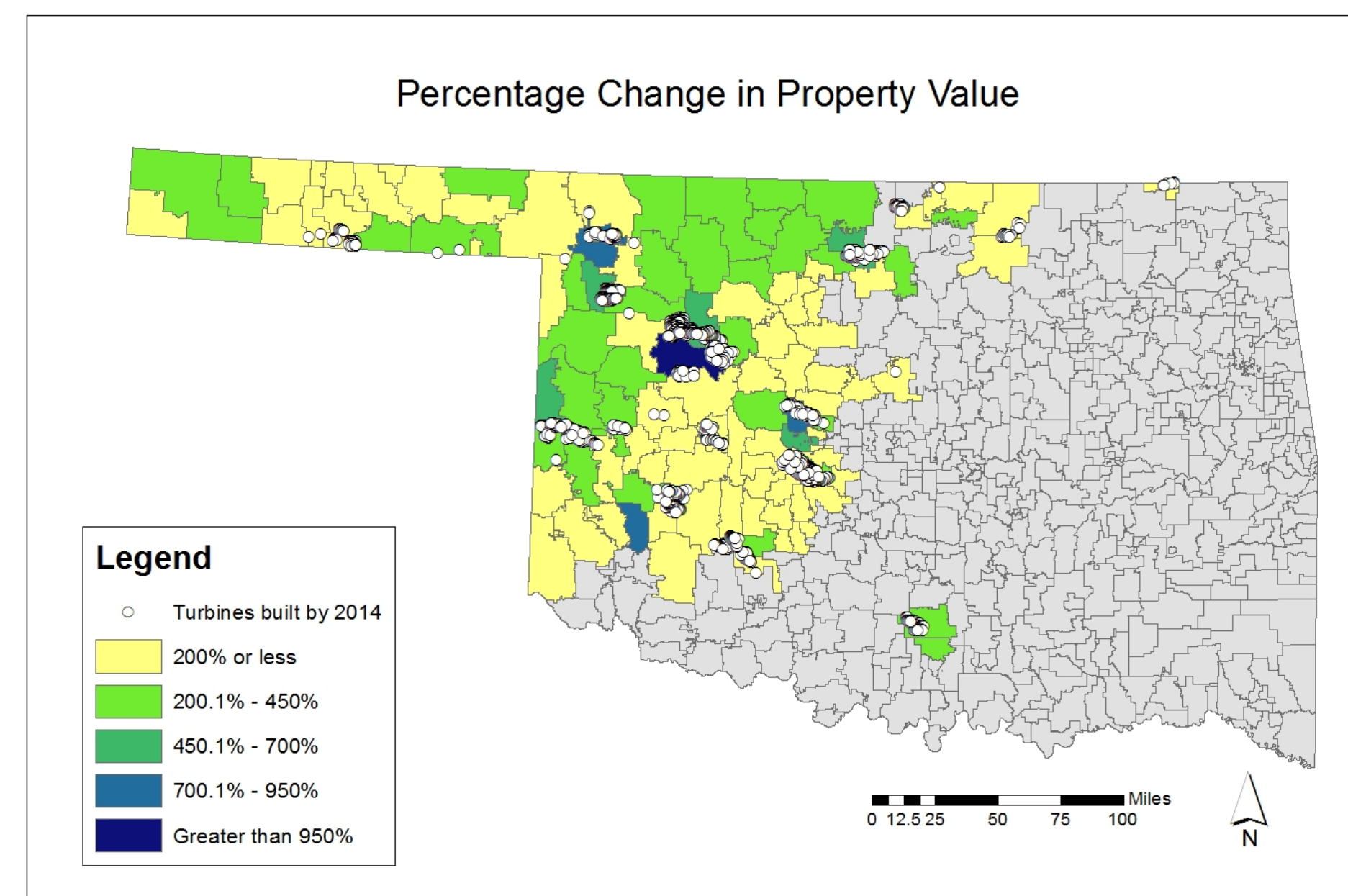
Western Oklahoma has seen explosive growth in the development of wind energy over the last decade, going from no installed capacity to producing almost 20% of the state's energy<sup>1</sup>. Associated with that development has been an increase in tax revenue and support for local schools, including many in struggling areas. This poster examines and quantifies the overall impact of the increased wind industry-related tax revenue in western Oklahoma.

### Data and Methods

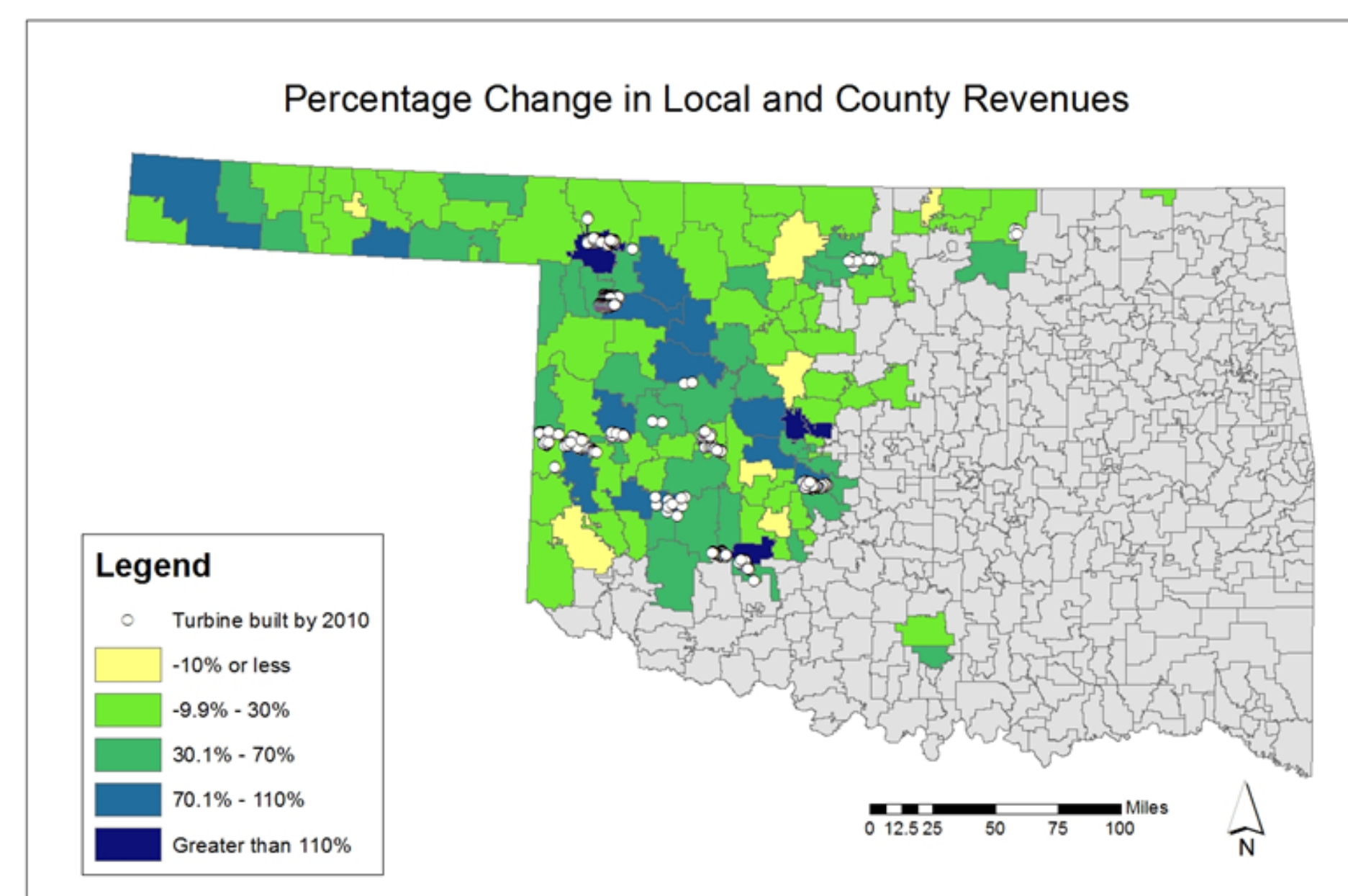
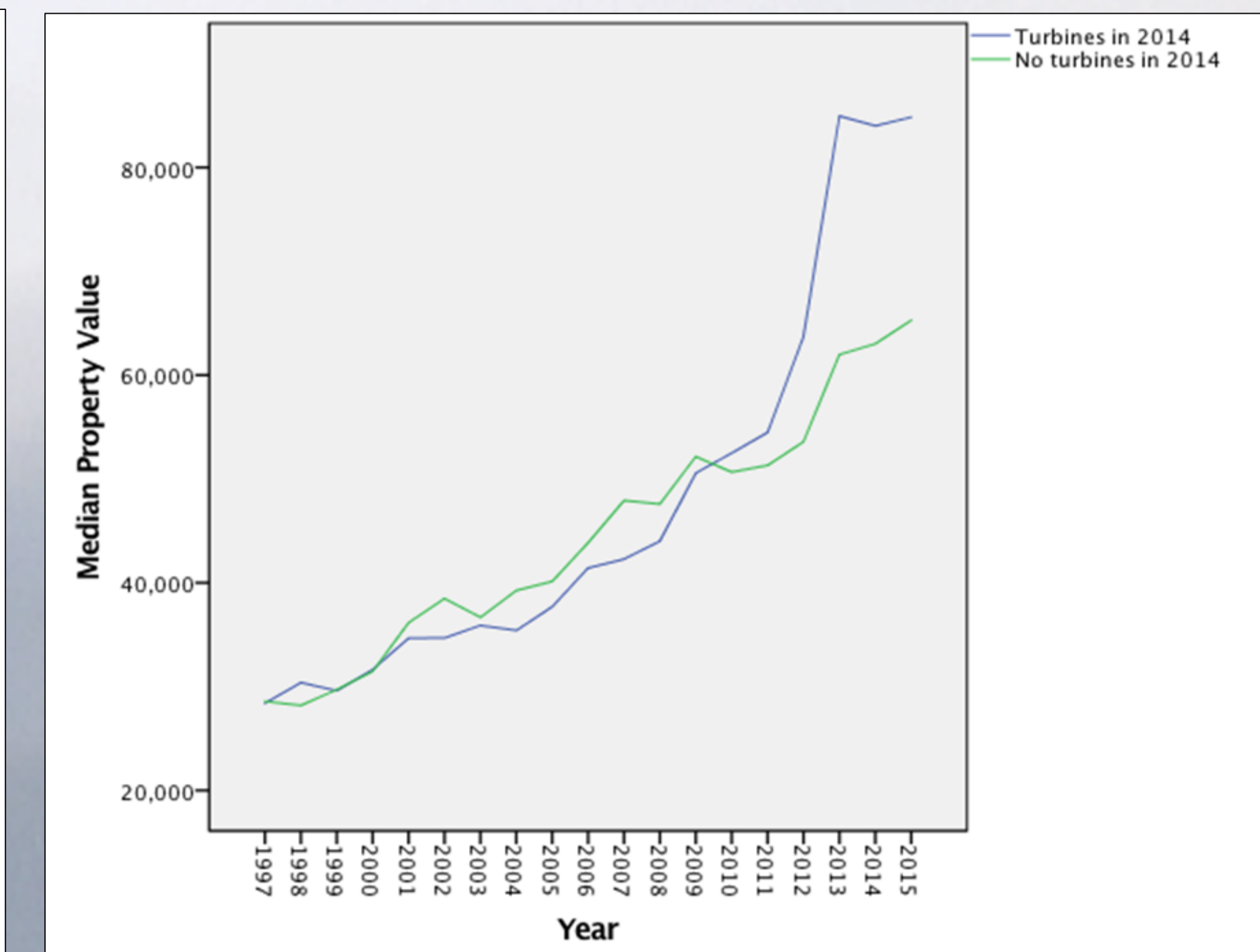
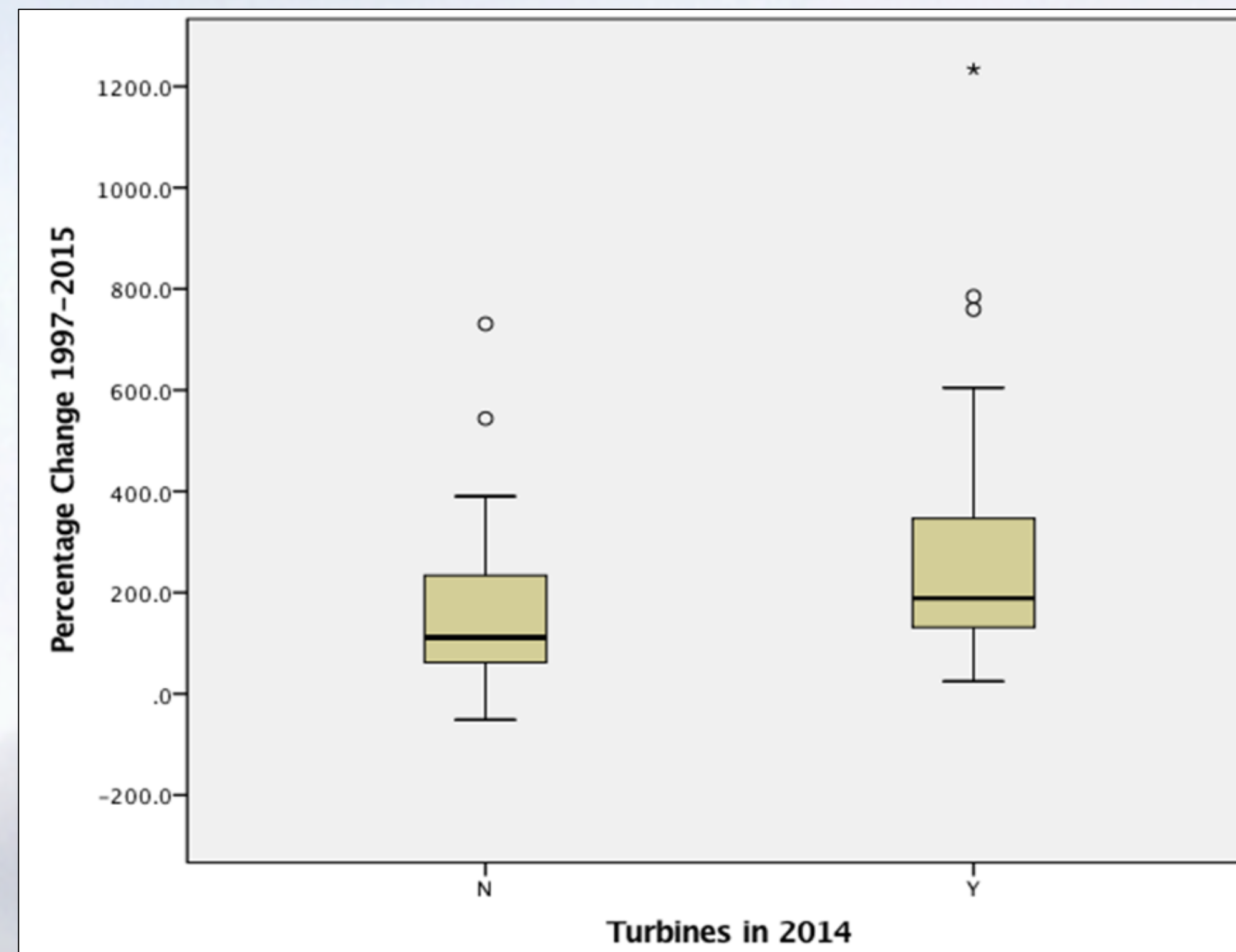
Data for average property value, percentage of revenue from local and county sources, per-student expenditures, and student-teacher ratios were collected, processed, and analyzed for 111 school districts in western Oklahoma, of which 57 contained 2,799 wind turbines<sup>2,3</sup>. The other districts selected were similar districts to the ones with wind turbines. In order to determine differences between districts with and without turbines, results were mapped and analyzed using appropriate statistical methods (e.g., spatial correlation, Chi-Square, t-tests.)

### Results

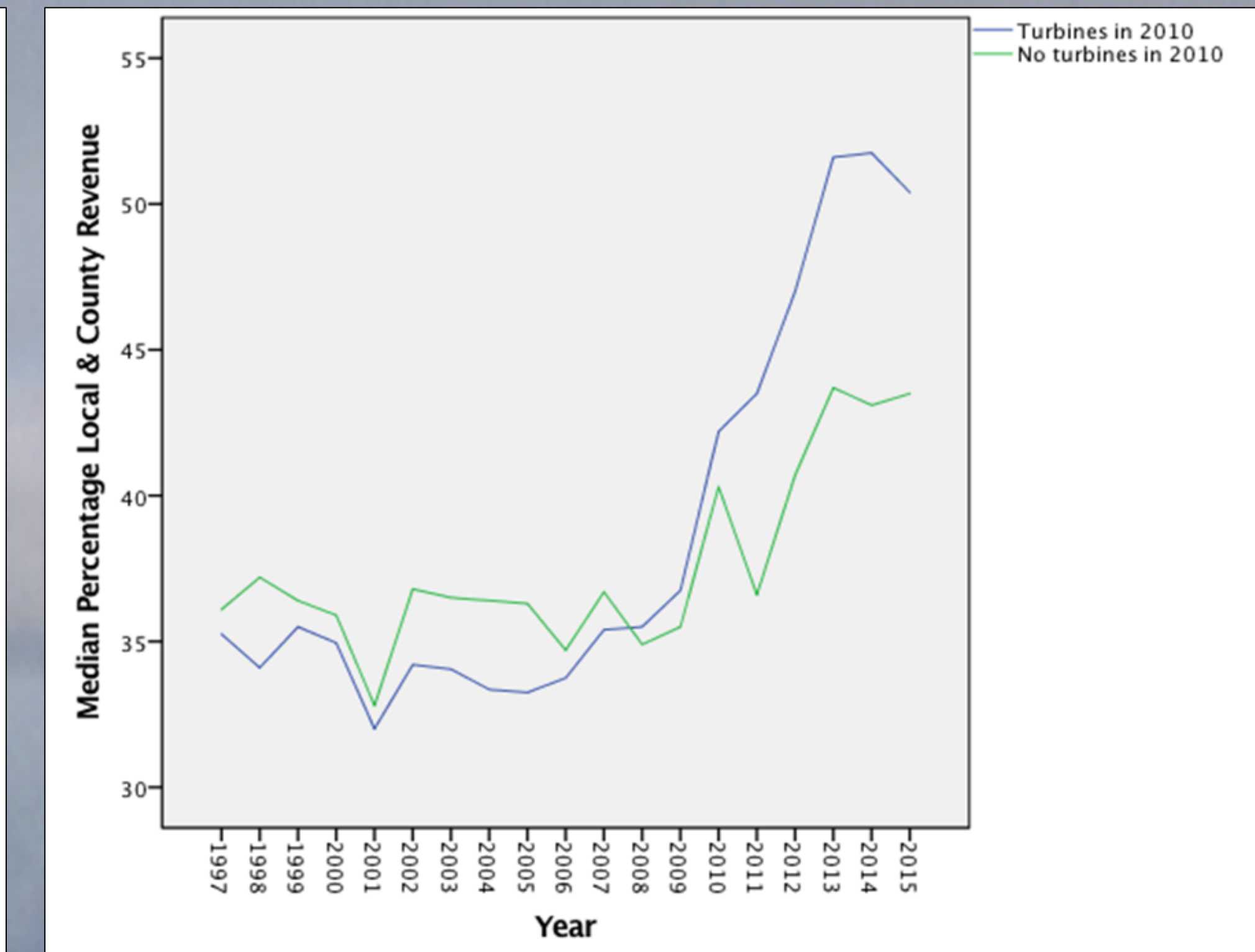
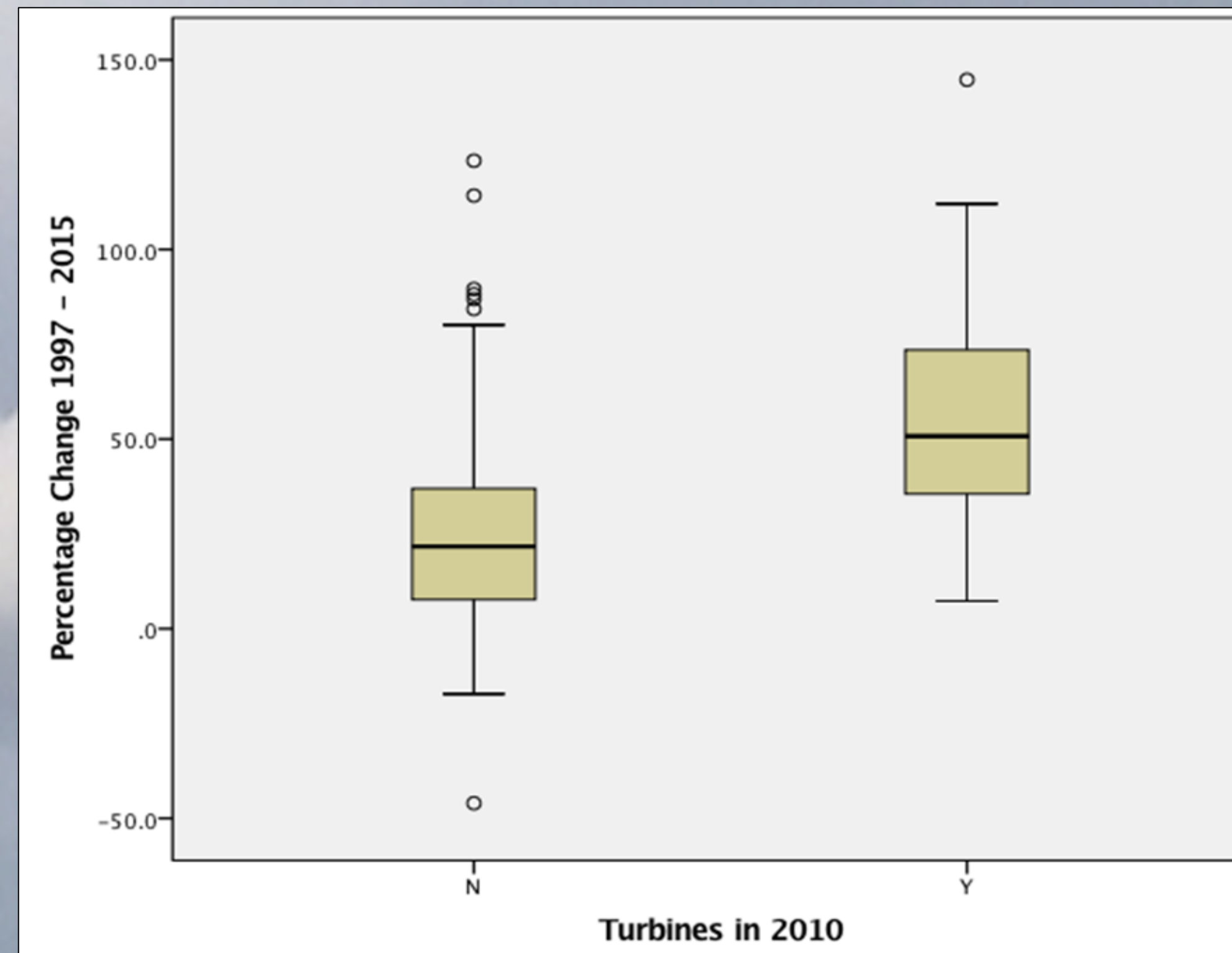
The analyses shown below are illustrative examples of those variables with statistically significant ( $\alpha = 0.05$ ) differences between school districts with (Y) and without (N) wind turbines as of 2014 and 2010.



P-value (t-test): 0.002

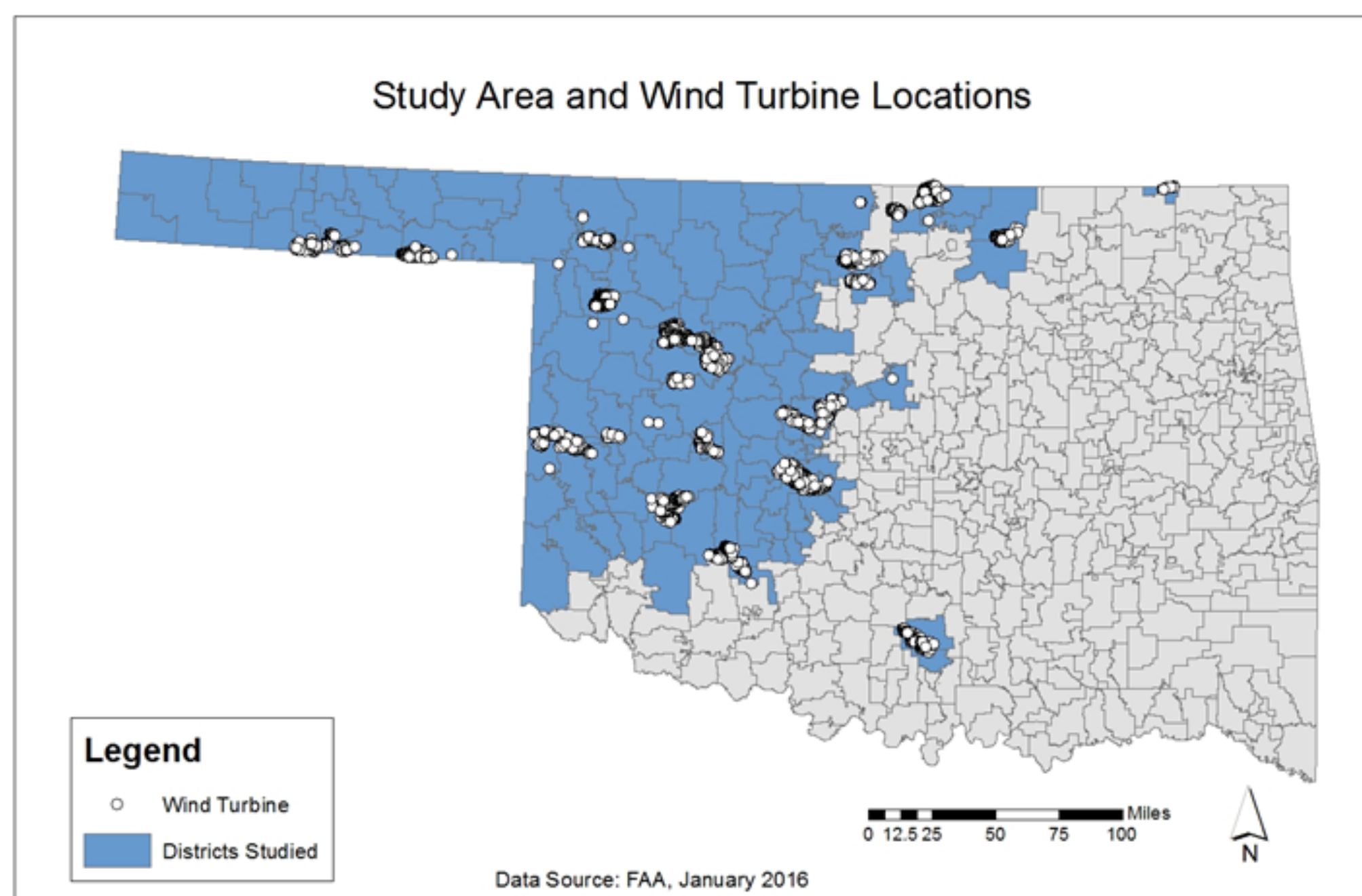


P-value (t-test): <0.001



### Key Findings

- Significant differences in property values and local and county revenues
- Pronounced changes to economic characteristics of school districts with wind turbines
- Spatial and temporal analysis shows increase is more pronounced over time and in smaller school districts, illustrating the importance of wind energy development in rural Oklahoma.



An example of the impacts of wind energy revenue on rural OK: Interior and exterior of Ft. Supply gym (population:1670)

### References

1. American Wind Energy Association. (2015). *U.S. Wind Energy State Facts*. Retrieved August 9, 2016, from <http://awea.files.cms-plus.com/FileDownloads/pdfs/Oklahoma.pdf>
2. Office of Educational Quality and Accountability. (2016). *Profiles 2015 State Report*.
3. Federal Aviation Administration. (2016, January). Retrieved August 9, 2016, from Federal Aviation Administration (FAA) Wind Turbine Location Data: [https://www.fws.gov/southwest/es/Energy\\_Wind\\_FAA.html](https://www.fws.gov/southwest/es/Energy_Wind_FAA.html)