

SRO Summary

Adrian A. Fernandez '16

“Emissions Leakage: Evidence from Smog Checks and Vehicle Trade”

Professor Joseph Shapiro (Yale University)

Professor Arthur van Benthem (The Wharton School, University of Pennsylvania)

I was tasked with collecting and interpreting data from vehicle inspection programs across the United States. Data collection itself was a monumental task, and interpretation another, but both proved manageable, interesting and rewarding.

Motorists living in certain high-pollution zones within the United States are required to present their vehicles for annual or biennial inspections (“smog checks”) to determine whether locally driven cars are emitting an acceptable quantity of pollutants. A vehicle that fails its inspection may be banned from public roads unless it is repaired and its pollution footprint reduced. Professor Shapiro and Professor van Benthem are particularly interested in what happens to vehicles that fail such inspections: are they scrapped? Are they repaired? Are they sold outside of the jurisdiction of their inspection program, where they are no longer subject to its requirements? Or do owners flout the law and continue to operate their dirty vehicles? The answer would reveal important environmental consequences of smog check programs.

I was responsible for collecting vehicle inspection data from state agencies across the United States. This took a vast amount of freedom of information requests, letters, emails, phone calls, and insistent pleading: but soon I had amassed several hard-won gigabytes of data. The job was instructive in that I realized just how valuable good data are and how difficult it can be to obtain.

The other part of my job involved making sense of the data, and later performing some basic cleaning using Stata. I interpreted data fields and explained them one by one. Next, I read and produced summaries of the laws and regulations governing all 38 jurisdictions that implement inspection programs, producing some 70 pages of writing. The knowledge I accumulated proved particularly valuable when it came time to analyze the data. Finally, I wrote Stata programs to clean data I had received, boosting my knowledge of Stata programming substantially.

I was very happy to begin working just as this project was getting started, as I had the chance to observe the early stages of economics research, when plans and ideas are mapped, preliminary analysis takes place, concepts turn into visible results, and all kinds of interesting things are done, whether finding solutions to obstacles or interpreting puzzling results.

Being part of this project has made me even more interested in economics research, and has taught me much more than I could have expected. I am grateful to Professor Shapiro, the SRO program, and the Yale economics department for making this experience possible.