This document describes programs and data to replicate the tables and figures in **“How did air quality standards affect employment at US power plants? The importance of timing, geography, and stringency,”** by Glenn Sheriff, Ann E. Ferris, and Ronald J. Shadbegian.

**Structure**

The archive contains three top-level directories:

* The ‘data’ folder contains the seven data files needed to produce the results.
* The ‘programs’ folder contains two files containing Stata code for transforming the data into the tables and figures in the paper.
* The ‘results’ folder contains Latex code used to produce the tables and figures from the Stata output.

**Data**

* final\_data.dta contains the plant-level data used in the main analysis. It combines plant input and output data from Fabrizio, Rose, and Wolfram (2007) (frw1extract\_enf.dta from <https://www.aeaweb.org/articles?id=10.1257/aer.97.4.1250)> , EPA Title IV compliance data from (<https://ampd.epa.gov/ampd/>), manually input data on county level Clean Air Act National Ambient Air Quality Standard designations and classifications and the OTR based on the Code of Federal Regulations (CFR) and the 1990 Clean Air Act Amendments (CAAAs). It also uses net generation data from the EPA’s eGRID database (https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid) to help distinguish plants that are missing data in frw1extract\_enf.dta from plants that may have entered or exited the sample.
* nayro14.csv contains county level ozone classifications from the 2008 ozone NAAQS from EPA’s Green Book database (https://www.epa.gov/green-book/green-book-data-download). These data are used in the policy simulation.
* states\_coordinates.dta, states\_data.dta, UScounties\_coordinates.dta, UScounties\_data.dta, and cty\_status.dta are used to generate the maps in the paper. The first four are publicly available state and county boundaries. We generated the last file to assign county NOx RACT status based on the CFR and the 1990 CAAAs.

**Programs**

* The program tables.do produces Tables 1-6 and A1-A3.
* The program figures.do produces Figures 1-5,A2 and A3.

**Results**

* The file results.tex uses the output from programs tables.do and figures.do to reproduce the figures and tables used in the paper.
* The file results.pdf is the pdf output produced by results.tex.

**Variable Dictionary**

|  |  |  |
| --- | --- | --- |
| **Name** | **Description** | **Source** |
| plantid | Oris\_Platts ID | FRW |
| year | Observation year | FRW |
| yy | Observation period | generated from year |
| state | State | FRW |
| region | NERC Region | FRW |
| otr | Ozone Transport Region dummy | 1990 CAAAs |
| NOx\_RACT | Nox\_RACT dummy | CFR |
|  |  |  |
| Table 1 |  |  |
| ln\_labor | log employment | FRW |
| ln\_mwh | log generation | FRW |
| ln\_ncap | log capacity | FRW |
| plant\_age | plant age  | FRW |
| muni | non-IOU dummy | FRW |
| ioudrg\_dum | IOU in deregulating state dummy | FRW |
| coal\_dum | primary coal dummy | FRW |
| gas\_dum | primary gas dummy | FRW |
| alt\_non | SO2 or PM10 nonattainment dummy | CFR |
| title\_iv\_nox | ever affected by Title IV NOx | EPA compliance reports |
| title\_iv\_so2 | ever affected by Title IV SO2 | EPA compliance reports |
|  |  |  |
| Table 2 |  |  |
| fuel\_tv | primary fuel type (category) | FRW |
| ioudum | IOU dummy | FRW |
| ioudrg | IOU in deregulated state-year | FRW |
| arp\_nox | currently affected by Title IV NOx | EPA compliance reports |
| arp\_so2 | currently affected by Title IV SO2 | EPA compliance reports |
| SCAQMD | South Coast dummy | CFR |
| cluster\_state | state cluster variable | generated from state |
|  |  |  |
| Table 3 |  |  |
| switch | dummy for plant that switches from attainment to non-attainment | CFR, 1990 CAAAs |
| o3\_non | dummy for plant in ozone nonattaiment, not counting OTR | CFR, 1990 CAAAs |
| o3\_non\_otr | dummy for plant in ozone nonattaiment, counting OTR | CFR, 1990 CAAAs |
| s1m | dummy for plant in Subpart 1 or Marginal ozone nonattainment | CFR, 1990 CAAAs |
|  |  |  |
| Table 4 |  |  |
| plantid2 | identifier for different plant-epochs | generated from FRW |
| change | identifier for when plants change epochs | generated from FRW |
| lstsales | log state electricity sales | FRW |
| Table 5 |  |  |
| balance | Dummy for plants in balanced sample | generated from FRW |
| ent | Dummy for potential entrants | generated from eGRID |
| ext | Dummy for potential exits | generated from eGRID |
| ln\_labor\_ext | Emp. missing values replaced with zeros for entrants/exits | generated from eGRID,FRW |
| ann\_wage\_util | Log state utility wage | FRW |
| ln\_fuel\_price | Log primary fuel price | FRW |