The Costs and Environmental Justice Concerns of NIMBY in Solid Waste Disposal

REPLICATION INSTRUCTION

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0. Data availability statement

Waste-disposal data are combined from three sources. First, the waste-quantity data by county of origin and by facility of destination is obtained from California Department of Resources and Recycling and Recovery (CalRecycle). The data are available quarterly from January 1995 to December 2015. Second, the database of waste disposal facility profile (solid waste information system, or SWIS) describing the state identification (SWIS id), location coordinates, operating status, and so on is obtained from CalRecycle. This database is not time series and is updated every Friday on CalRecyle website. I use this database as of September 2017 to obtain information on state identification and location of disposal facilities. Third, information on disposal prices at waste disposal facilities is purchased from Waste Business Journal (WBJ). The data are available quarterly from January 1992 to December 2015. This disposal-price data set is proprietary and confidential.

I merge waste-flow-quantity data with SWIS-and-location data by matching facility name. The two data are from CalRecycle and hence, exact facility names are completely matched. This quantity data set includes 244 disposal facilities and is merged with WBJ price data by manually matching SWIS id, facility names, and location. The final data set for the analysis drops several observations for three reasons. First, observations of facilities that are in the waste flow data but not found in WBJ data, representing 0.52\% of California waste. Second, observations with zero prices. Since zero prices may be recorded due to missing values, I drop those observations. They represent 0.41\% of the total waste amount. Third, three facilities in California are located on Santa Catalina island and San Clemente island. Because these facilities are built for local needs and the waste management on islands is isolated from other areas on mainland due to geographical and transportation constraints, I drop those observations. They account for 0.01\% of the total waste amount.

Using the information on facility location, I calculate car-driving distance using HERE maps from a facility coordinate to the population center coordinate of a county. The population center coordinate of the county is the average centroid weighted by population of all blocks in the county. For out-of-state exports in California solid waste, I observe the export amount, but I do not observe the destination. I construct an out-of-state disposal option for haulers in the county by assuming a hauler would export to the nearest out-of-state facility (among facilities in Oregon, Nevada, or Arizona). Overall, out-of-state exports make up a very small amount of California solid waste, that is, 1.16\% during this whole period.

Information on demographics in California is obtained from 2010 U.S. Decennial Census. The data are available on the websites of the U.S. Census Bureau and IPUMS NHGIS. Additionally, I obtain CPI index (to adjust for inflation rates) from the U.S. Bureau of Labor Statistics.

1. Guide

1.1. Folder ``data" contains raw data and processing files. Note that the data on facility prices are proprietary and should be purchased at Waste Business Journal. I do not provide it here.

1.2. Files to make Tables and Figures: use folder ``stata"

1.2.1. Run file *NIMBY_main.do* to:

- Obtain essential tables and figures in the article: Figure 1-2, Table 1-2, Table B1, Figure B1, Figure C1, Figure C2.
- Get delimited files as inputs for the structural model and counterfactual calculations. After running *NIMBY_main.do*, we get necessary input files to run the file *nimby.m* in the folder "matlab"

1.2.2. Run the following files to get the corresponding tables and figures:

- NIMBY_Table_3_and_AppendixD.do
- NIMBY_Figure_3.do
- NIMBY_Table_4.do
- NIMBY_Table_5_and_6.do
- NIMBY_Table_7 and_D8.do
- NIMBY_Table_E1.do
- NIMBY_Table_E2.do
- NIMBY_Table_E3.do
- NIMBY_Table_E4.do

1.3. Files to obtain estimates of the structural model: use folder ``matlab"

1.3.1. Run file *nimby.m* to get the estimates for the structural model (Table 2) and counterfactual results.