ESTIMATING THE PRICE ELASTICITY OF ELECTRICITY: EVIDENCE FROM MUNICIPAL ELECTRIC AGGREGATION
We are interested in estimating the price elasticity of electricity. Our results will be useful for:

- Energy companies
  - Help them make better decisions regarding how much to charge consumers for electricity
- Policy makers
  - Help them anticipate the effects of a carbon tax, as this would lead to a higher demand for electricity. This in turn, would increase prices of electricity.
What is MEA?

- Municipal Electric Aggregation (MEA) allows counties to purchase electricity on behalf of their residents and small businesses.
- MEA makes electricity relatively cheaper since residents have more bargaining power collectively.
- Counties throughout Illinois voted on whether or not to implement MEA.
Data

- Monthly electricity usage for almost every county in Illinois, from 2007 to 2014 – from ComEd
- Treatment group: towns that implemented MEA
- Control group: towns that did not implement MEA
- Also have town-level characteristics such as average income, population, age, etc. – from American Community Survey, as reported in 2010
Regression

- Regress electricity usage on MEA

\[ U_{ct} = \beta_0 + \beta_1 MEA_{ct} + \alpha_{cm} + \alpha_y + \epsilon_{ct} \]

- Include town-by-month and year fixed effects to account for trends in usage across months for each city as well as trends across years

- Cluster by town to account for similarities in usage within towns across time
Test coefficient on MEA to determine if cities that implemented MEA have higher electricity usage than those that did not

- Towns with MEA use 10.29% more electricity than those without MEA
  - Significant at the 5% level

<table>
<thead>
<tr>
<th>log_usage</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t</th>
<th>P&gt;t</th>
<th>[95% Conf. Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post_MEA</td>
<td>0.102955</td>
<td>0.0168238</td>
<td>6.12</td>
<td>0.069932</td>
<td>0.069932 - 0.1359785</td>
</tr>
</tbody>
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Next Steps

- We have determined there is a change in the quantity of electricity used.
- Furthermore, since MEA makes electricity less expensive, there is a change in the price of electricity as well.
- From this, we can estimate the price elasticity of electricity:
  \[
  \frac{\%\Delta Q}{\%\Delta P}
  \]
- We will also estimate the price elasticity of electricity at the individual level.