

Electric Company Study: Supplemental Materials

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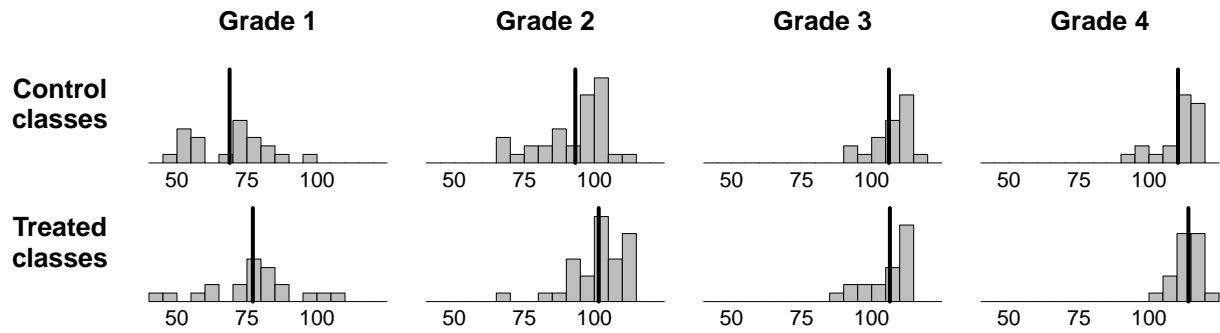
Here we document the decision making process for modeling the Electric Company Study. The code, data, and documentation for this study can be found on the project website at: https://github.com/auqmer/electric_company_Example.

```
source("code/prepare_WideElectricCompanyData.R")
```

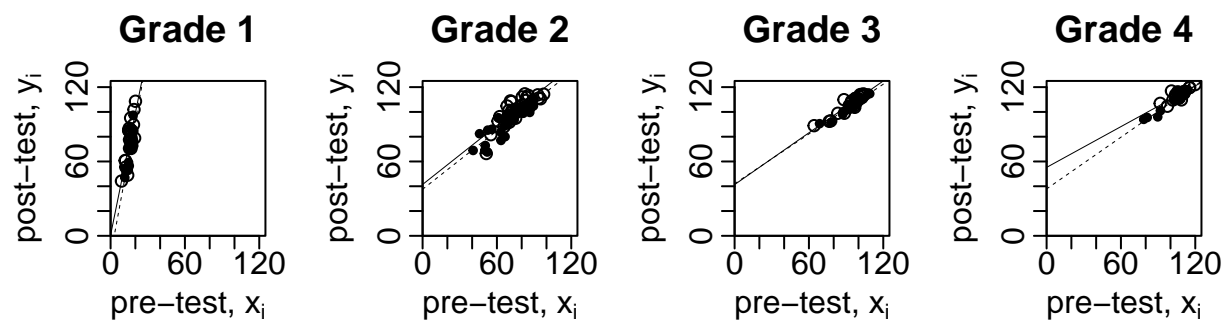
```
source("code/analyze_electricCompany.R")
```

Exploring Data

```
source("code/plotDistributionPosttest_gradeCondition.R")
```



```
source("code/ANCOVAp1ot.R")
```



	Model 1	Model 2
(Intercept)	61.56*** (1.47)	58.89*** (1.89)
pre_test	0.46*** (0.02)	0.50*** (0.02)
conditiontreatment	4.73*** (1.16)	10.15*** (2.71)
pre_test:conditiontreatment		-0.08* (0.03)
R ²	0.80	0.80
Adj. R ²	0.80	0.80
Num. obs.	192	192

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 3: Statistical models

```
kable(describe(electric), digits = 2)
```

	vars	n	mean	sd	median	trimmed	mad	min	max	range	skew	kurtosis	se
post_test	1	192	97.15	17.76	102.30	99.49	14.60	44.2	122.0	77.8	-1.04	0.27	1.28
pre_test	2	192	72.22	33.93	80.75	74.58	30.17	8.8	119.8	111.0	-0.69	-0.92	2.45
grade	3	192	2.43	1.06	2.00	2.41	1.48	1.0	4.0	3.0	0.19	-1.20	0.08
treatment	4	192	0.50	0.50	0.50	0.50	0.74	0.0	1.0	1.0	0.00	-2.01	0.04
supp	5	96	0.64	0.48	1.00	0.67	0.00	0.0	1.0	1.0	-0.55	-1.71	0.05
pair_id	6	192	48.50	27.78	48.50	48.50	35.58	1.0	96.0	95.0	0.00	-1.22	2.01
grade1*	7	192	2.43	1.06	2.00	2.41	1.48	1.0	4.0	3.0	0.19	-1.20	0.08
condition*	8	192	1.50	0.50	1.50	1.50	0.74	1.0	2.0	1.0	0.00	-2.01	0.04

Analysis of Covariance without and with interaction

To model the impact of exposure to the program, an analysis of covariance was estimated with pre-test as a covariate. This was followed by including an interaction term to see if the relation between pre-test and post-test was different across conditions.

Model Comparison

To formally test the two models, we conducted a likelihood ratio test. The results are given below.

```
kable(anova(ancova, ancovaX), digits = 2)
```

Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
189	12199.63				
188	11890.62	1	309.02	4.89	0.03

Below we display both models, noting that the second model was found to be the better fitting model.

```
texreg(list(ancova, ancovaX))
```