

Homework 2 Answers

Economics 7103

Spring semester 2021

1. See table 1. If randomization worked, the simple difference-in-means is an unbiased estimate of the treatment effect.

	Control (s.d.)	Treatment (s.d.)	Difference (p val)
Electricity	1181.33 (454.31)	1086.75 (423.96)	94.58 (0.00)
Sqft	1633.05 (682.90)	1657.55 (686.27)	-24.50 (0.57)
Temp	79.89 (2.16)	79.89 (1.97)	-0.00 (0.99)
Observations	501	499	1000

Table 1: Means by treatment and control group in the sample. The p value is from a two-way t -test for equivalence of means.

2. See figure 1, which is non-parametric evidence that the program worked:
3. Each method produces quite similar results that probably only differ in rounding error:

	(a)	(b)	(c)
Retrofit	-109.666	-109.666	-109.666
Sqft	0.615	0.615	0.615
Temperature	3.255	3.255	3.255
Constant	-83.603	-83.599	-83.603
Observations	1000	1000	1000

Table 2: Regression coefficients from OLS by hand (a), simulated OLS (b), and using the Statsmodels package (c).

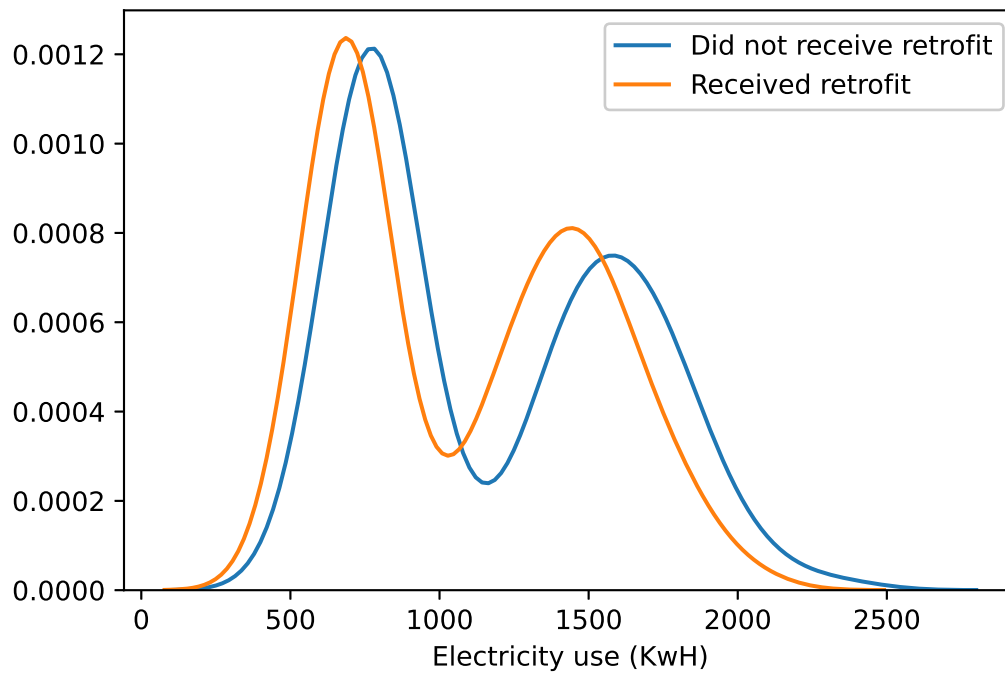


Figure 1: Caption