

ECON 7103 Homework 2

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1 Question 1

	control mean (s.d.)	treated mean (s.d.)	p-values
electricity	1181.33 (454.31)	1086.75 (423.96)	(0.00)
sqft	1633.05 (682.90)	1657.55 (686.27)	(0.57)
temp	79.89 (2.16)	79.89 (1.97)	(0.99)

Table 1: Mean table.

According to Table 1 the difference in mean of electricity use between the two groups is statistically significant since the p-value is 0. For the other two variables the difference in means is not significant based on the p-values. So randomization worked.

2 Question 2

Figure 1 depicts Kernel density plot of electricity use for the two groups.

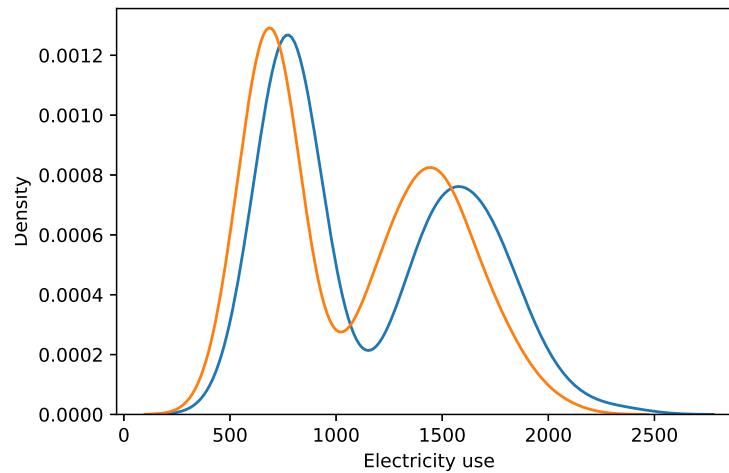


Figure 1: Sample kernel density plot of electricity use.

The retrofit program reduces the consumption of electricity, since the electricity consumption in the treated group is less compared to control group.

3 Question 3

The values for β array using the three approaches are similar and are given below:

a)

$$\beta_0 = -83.60275758$$

$$\beta_{sqft} = 0.61533854$$

$$\beta_{retrofit} = -109.66617626$$

$$\beta_{temp} = 3.25507541$$

b)

$$\beta_0 = -83.472798910$$

$$\beta_{sqft} = 0.6153380940$$

$$\beta_{retrofit} = -109.666428586$$

$$\beta_{temp} = 3.25346038$$

c)

$$\beta_0 = -83.6028$$

$$\beta_{sqft} = 0.6153$$

$$\beta_{retrofit} = -109.6662$$

$$\beta_{temp} = 3.2551$$