ECON 7103 Homework 2

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1 Question 1

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

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.

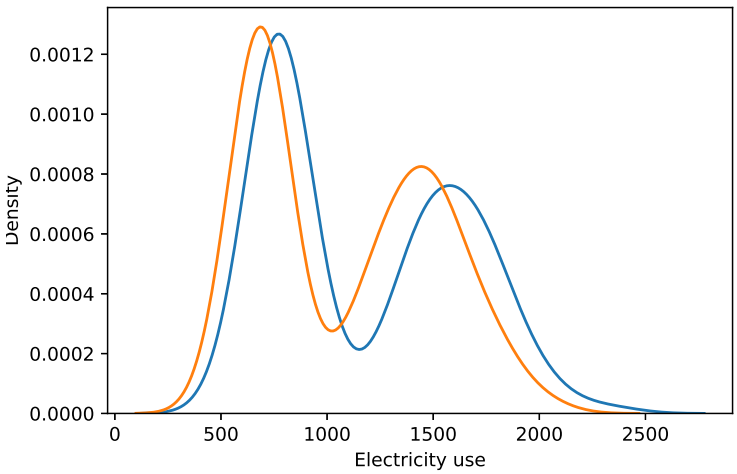

Figure 1: Sample kernel density plot of electricity use.

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)

$$\beta_0 = -83.6028$$
$$\beta_{sqft} = 0.6153$$
$$\beta_{retrofit} = -109.6662$$
$$\beta_{temp} = 3.2551$$