

# Economics 7103 - Homework 2

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## Python

**Note:** *I asked Afi to help me with the Python code only. That's why I will follow similar steps as he did with small modifications.*

### Question 1.1

**Response:** Randomization worked which is demonstrated by comparison across control and treatment groups that indicates statistical balance in observables. Column 3 presents the differences in means and the standard errors of the differences in brackets. The differences are small and in case of electricity consumption statistically significant.

	Control	Treatment	P-value
Monthly electricity usage by HHs (kWh)	1181.33	1086.75	0.001
	454.31	423.96	[3.403]
Square feet of home	1633.05	1657.55	0.572
	682.90	686.27	[-0.566]
Outdoor average temperature (°F)	79.89	79.89	0.987
	2.16	1.97	[-0.016]
Observations	501.000000	499.000000	

Table 1: Summary Statistics for the treated and control groups.

### Question 1.2

### Question 1.3

## Stata

### Question 2.1

### Question 2.2

### Question 2.3

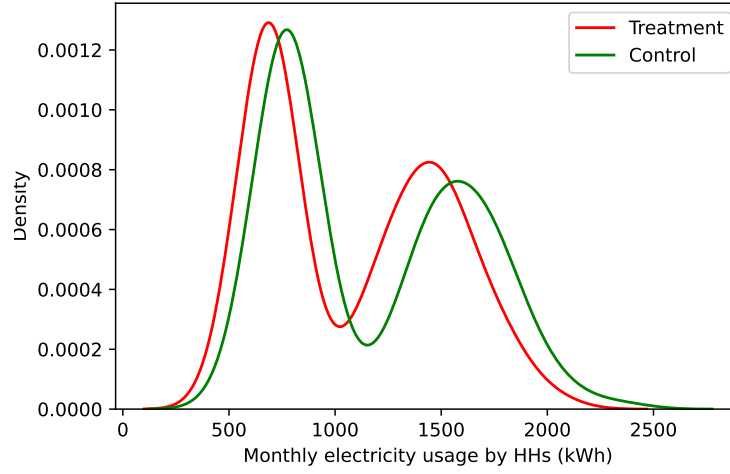


Figure 1: Kernel density plots of the electricity use for treated group and control group.

	Control	Treatment	P-value
electricity	1181.33 (454.31)	1086.75 (423.96)	0.001 [3.404]
sqft	1633.05 (682.90)	1657.55 (686.27)	0.572 [-0.566]
temp	79.89 (2.16)	79.89 (1.97)	0.987 [-0.016]
Observations	501	499	1,000

Table 2: Summary statistics produced using Stata

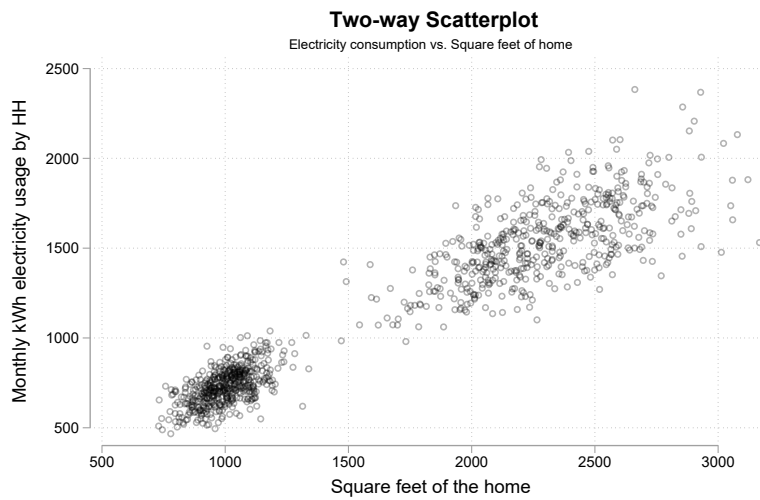


Figure 2: Scatterplot with electricity consumption and square feet of home

	VARIABLES	(1) electricity
[] article	retrofit	-109.7*** (7.943)
	sqft	0.615*** (0.00678)
	temp	3.255* (1.932)
	Constant	-83.60 (154.7)
	Observations	1,000
	R-squared	0.919
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

Table 3: OLS regression results using Stata