Homework 2

Economics 7103

Spring semester 2023

Q1) The randomization seems to have worked and difference in mean seems to be unbiased.

	Control Mean (Std dev)	Treatment Mean (Std dev)	p-value
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: Q1 Diff of Means- Python

Q2 Graph:

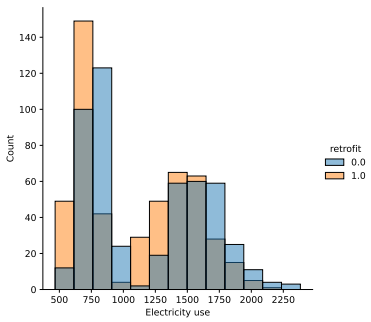

Figure 1: Histogram

		Estimates
Q3 A.	Constant	-83.602758
	sqft	0.615339
	temp	3.255075
	retrofit	-109.666176

Table 2: Q3.a) OLS by hand - Python

		Estimates
Q3 B.	Constant	-83.557159
	sqft	0.615338
	temp	3.254511
	retrofit	-109.666472

Table 3: Q3.b) OLS using SLS

		Estimates
Q3 C.	sqft	0.62
	retrofit	-109.67
	temp	-83.60
	Observations	1000.00

Table 4: Q3.c)OLS produced using Python - Statsmodel

Q4 Diff of Means Table - Stata:

	Control	Treatment	Comparison
	mean/sd	mean/sd	b
electricity	1181.33	1086.75	94.58***
	454.31	423.96	
sqft	1633.05	1657.55	-24.50
	682.90	686.27	
temp	79.89	79.89	-0.00
	2.16	1.97	
Observations	501	499	1000

Figure 2: Difference of Means

Q5 Two-way Scatter Plot:

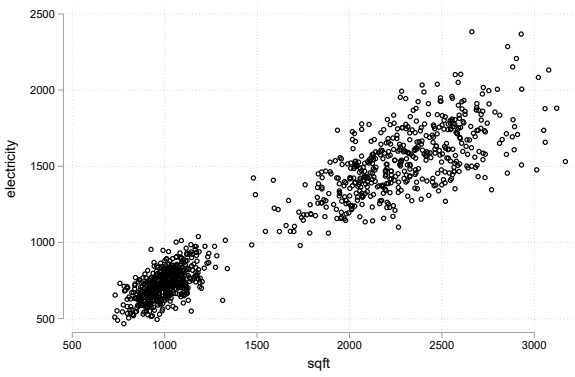

Figure 3: Two way plot

Q6

VARIABLES	(1) Ordinary least squares
sqft	0.62**
	(0.01)
temp	3.26
	(1.92)
retrofit	-109.67**
	(7.95)
Constant	-83.60
	(154.36)
Observations	1,000
R-squared	0.92

Standard errors in parentheses
** p<0.01, * p<0.05

Table 5: OLS produced using Stata