Intro to Computational Statistics - Homework 4

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1 Problem 1

1.1 Part A

Output of Table 1.1 (only first 10 obs to make it simpler)

Descriptive Statistics for Utilities

Obs	MONTH	YEAR	TELEPHONE	ELECTRICITY	FUEL
1	Aug	88	100.02	41.61	36.93
2	Sep	88	80.62	24.48	45.73
3	Oct	88	62.55	23.90	50.95
4	Nov	88	69.35	48.67	48.93
5	Dec	88	90.79	120.60	56.61
6	Jan	89	40.27	151.23	50.44
7	Feb	89	49.29	144.29	44.50
8	Mar	89	91.50	72.75	40.67
9	Apr	89	93.71	49.63	36.04
10	May	89	46.64	33.22	39.79

1.2 Part B

Null Hypothesis:
$\mu_0 = 50$
Alternate Hypothesis:
$\mu_0 > 50$

One Sample t-test
The t-statistic for this test is 0.95, and the corresponding p-value is ¡ 0.0001. Thus, we can reject the null hypothesis, and we can conclude that the true average monthly phone cost is higher than $50 per month.

Analysis Variable : TELEPHONE				
N	Mean	Std Dev	t Value	Pr > |t|
55	73.3678182	27.2047253	20.00	<.0001

2 Problem 2

2.1 Part A

Output of Table 2.1 (only first 10 obs to make it simpler)

Obs	ID	Type	Days	Cost
1	ID001	work	0	85
2	ID007	work	0	165
3	ID009	work	5	205
4	ID012	work	0	125
5	ID029	work	5	210
6	ID036	work	5	125
7	ID045	work	13	285
8	ID055	work	10	425
9	ID069	work	2	144
10	ID090	work	2	125

2.2 Part B

Null Hypothesis:
μ_0 = No difference in average number of days for two levels of type
Alternate Hypothesis:
μ_0 = There is a difference in average number of days for two levels of type

One - Way Anova Test
The p-value is 0.287, thus, we can not reject the null hypothesis. Therefore, we conclude that the average number of days for two levels of type does not differ.