

## Analysis of Power Consumption (Tetuan City)

Power Consumption (Average)					
Zones	Morning	Afternoon	Evening	Night	Highest period
1	28434.11	34505.09	40193.22	26247.46	Evening
2	18603.9	22707.67	26051.98	16806.48	Evening
3	13973.43	17785.33	23792.01	15790.86	Evening

Power Consumption Metrics (Average)					
Metrics	Morning	Afternoon	Evening	Night	Highest period
Humidity	71.49	58	68.26	75.28	Night
Temperature	17.74	21.67	19.01	16.82	Afternoon
Wind Speed	2.04	2	1.92	1.87	Morning

Similarities in Power Consumption		
<b>Paired t-test</b>		
Alpha	0.05	
Hypothesized Mean Difference	0.2	
	<b>Zone 1</b>	<b>Zone 2</b>
Mean	32344.97056359	21042.5091
Variance	50844922.48192	27055247
Observations	52416	52416
Pearson Correlation	0.834518939646	
Observed Mean Difference	11302.46148126	
Variance of the Differences	15996593.15858	
df	52415	
t Stat	646.9690999509	
P (T<=t) one-tail	0	
t Critical one-tail	1.644882698709	
P (T<=t) two-tail	0	
t Critical two-tail	1.960009244965	

Descriptive Statistics			
	Temperature	Humidity	Wind Speed
Mean	18.81	68.26	1.96
Standard Error	0.03	0.07	0.01
Mode	15.18	85.9	0.082
Median	18.78	69.86	0.086
Variance	33.82	241.84	5.52
Std. Dev.	5.82	15.55	2.35
Range	36.763	83.46	6.433
Minimum	3.247	11.34	0.05
Maximum	40.01	94.8	6.483
Sum	985946.22	3577890.92	102708.57

Correlation Analysis			
Correlations	Temperature	Humidity	Wind Speed
Temperature	1.000		
Humidity	-0.460	1.000	
Wind Speed	0.477	-0.136	1.000

Covariance Analysis			
Covariances	Temperature	Humidity	Wind Speed
Temperature	33.82		
Humidity	-41.62	241.83	
Wind Speed	6.52	-4.96	5.52

## Seasonality

how is the power consumption in the days of the week?

Weekly Power consumption trend			
Days	zone 1	zone 2	zone 3
1 Monday	4696619.13	3064329.37	2564507.74
2 Tuesday	4710676.34	3098678.38	2567763.10
3 Wednesday	4733533.30	3114340.23	2570600.89
4 Thursday	4729317.76	3145703.68	2569491.66
5 Friday	4656815.41	3090389.51	2526619.88
6 Saturday	4644436.95	2964377.62	2593611.00
7 Sunday	4432331.45	2733030.35	2585495.20

Hourly power consumption trend			
Hour	zone 1	zone 2	zone 3
0	181303.41	118152.44	111943.34
1	165393.20	106590.47	101824.83
2	157756.13	100380.94	95886.58
3	152028.74	96315.51	91431.63
4	147801.46	93744.49	88026.23
5	140625.46	89849.45	79358.28
6	139221.58	89608.19	72309.60
7	144230.12	94314.69	70007.19
8	159499.57	105178.07	76762.72
9	178352.15	117844.33	86869.59
10	195398.74	128140.05	95398.02
11	206925.77	134655.23	101696.28
12	210315.12	137261.28	105953.62
13	210673.64	137750.92	107340.80
14	207861.59	137132.12	105959.60
15	203471.98	135050.40	104270.45
16	200311.23	132086.87	103749.31
17	209549.85	138194.54	112997.97
18	233076.78	152663.41	131104.61
19	256775.51	166342.47	150752.83
20	262935.54	169121.46	156165.65
21	253298.87	163372.28	151120.12
22	234411.82	151709.66	141174.27
23	206457.48	134662.04	126194.98

How different is the consumption during different seasons and time of the day?

Weekly Power consumption trend				Season	Winter
Days	zone 1	zone 2	zone 3	Period	Afternoon
Monday	1142831.60	873879.37	570223.55		
Tuesday	1163350.78	888187.43	459867.06		
Wednesday	1161466.24	875056.75	527322.27		
Thursday	1077269.05	817080.02	451963.44		
Friday	1194602.32	859565.86	568891.64		
Saturday	1151474.78	889989.36	495062.46		
Sunday	1130403.61	825602.45	485719.49		

Hourly power consumption trend			
Hour	zone 1	zone 2	zone 3
0	26434.82	19842.58	13738.82
1	23696.48	17546.43	12456.17
2	22265.66	16194.70	11731.24
3	21540.25	15683.00	11381.71
4	21402.96	15598.35	11272.31
5	22138.79	16240.02	11602.31
6	22905.57	16797.48	11271.36
7	21996.05	16204.94	9288.82
8	23954.10	17516.53	9378.00
9	27186.07	19856.17	10749.99
10	30164.47	21817.74	12040.55
11	32115.68	23140.21	12872.05
12	32658.07	23751.48	13405.51
13	32740.75	23758.04	13612.24
14	32237.42	23667.98	13386.82
15	31668.93	23726.25	13148.39
16	31477.21	23574.10	12992.91
17	36355.29	27610.47	17086.09
18	40888.70	30721.76	19927.81
19	40601.95	30519.80	19977.84
20	40078.16	30312.59	20048.89
21	38265.10	29203.17	19400.46
22	35219.04	26703.98	17939.72
23	30610.69	23197.93	15746.01