POI Regression Analysis

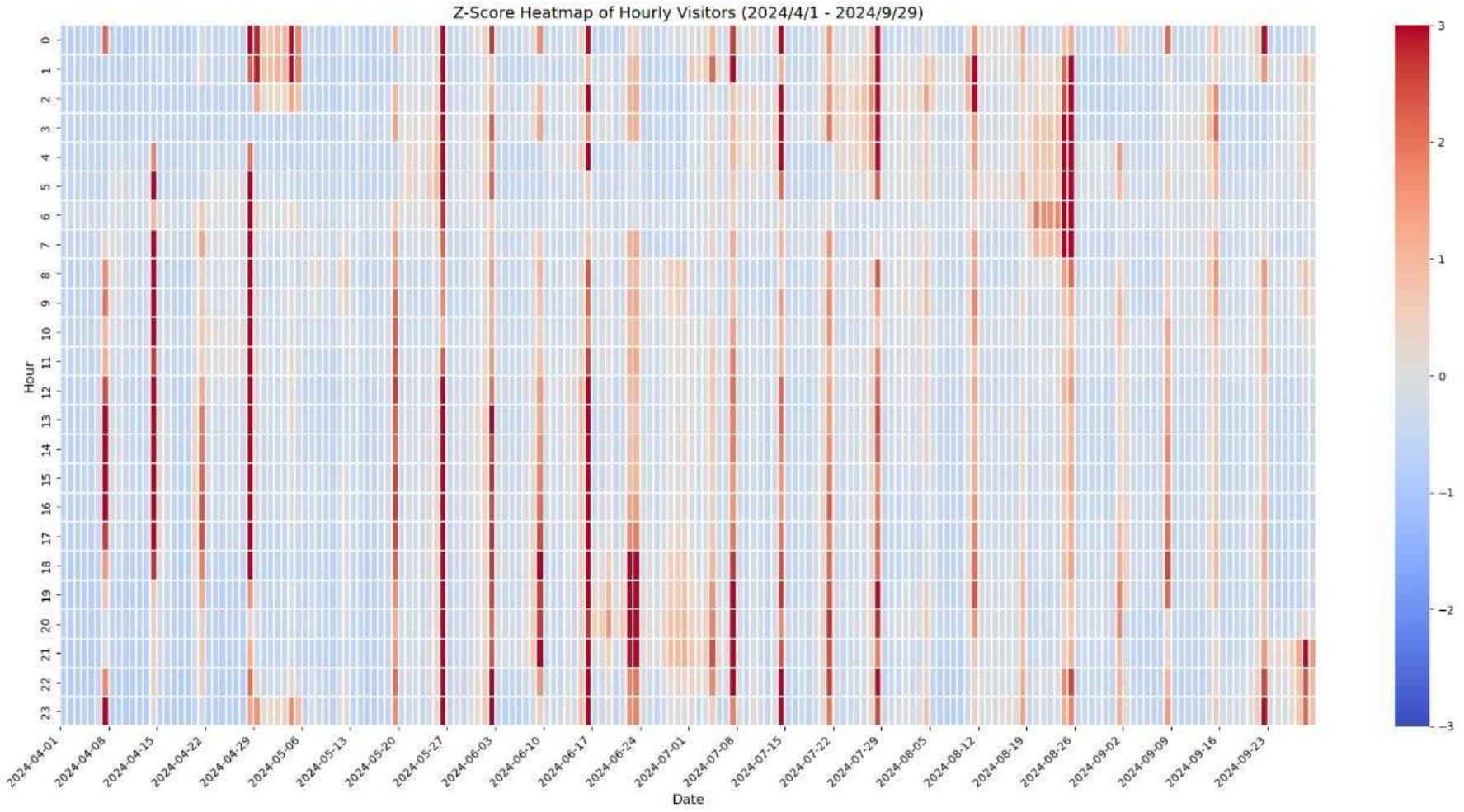
DIRECTED BY Takahiro Yabe, Graham Dove
MENTORED BY Vaidehi Raipat
PRESENTED BY Ruixin Gan, Zheyan Chen, Yin Wang


Water Front Zone_FM
Plaza Zone_FM
Recreation Zone_FM
Trail Zone_FM
FLUSHING
CHINATOWN
Van Wyck Expy
GCP
25A
495
678
Kissena Park - L
Athletic Zone - K
Kissena Park - 1
Kissena Nature - 1
Kissena Park - 3
Kissena Park - 2
Villa Green Zone_P
Athletic Zone_P
Trail Zone_P
Entrace Zone_P
Meadows Zone_P
Lakeside Zone
Prospect Park W
Flatbush Ave
Washington Ave
Ocean Ave
Prospect Park SW
Parkside Ave
Sullivan Hill
Quaker Hill
Lookout Hill
President St
Garfield Pl
1st St
2nd St
3rd St
4th St
5th St
6th St
7th St
8th St
7th Ave
8th Ave
16th St
17th St
18th St
20th St
Windsor Pl
Sherman St
Terrace Pl
Seeley St
Vanderbilt St
Reeve Pl
Woodruff Ave
Crooke Ave
Parade Pl
Caton Ave
E 2nd St
E 3rd St
E 4th St
E 5th St
E 7th St
Prospect Ave
908H

POI List with Shaded Level and Water feature

Park	Name by Land Use	Type	Land Cover	Large Event	Small Event	Hour Visits Aggregated by Week	Water Area
Flushing Meadow Park	Water Front Zone_FM	Custom	Lakeside with trails	06-24 +220%,	05-01 +106% , 08-31 +122%	04-15 ~ 09-29	1
	Athletic Zone_FM	Custom	Open fields with trees	06-07 ~ 06-09 Music Show,		T	0
	Plaza Zone_FM	Custom	Open plazas with trees	06-07 ~ 06-09 Music Show, 08-26 ~ 09-08 US Open		T	1
	Recreation Zone_FM	Custom	Open meadow with trees	07-20 Music Show, 08-03 Boat Festival	05-26 +117%,	T	1
Prospect Park	Entrance Zone_P	Custom	Entrance/Forested with trails	04-28 Half Marathon,	06-22 +112%	T	0
	Trail Zone_P	Custom	Forested with trails	04-28 Half Marathon		T	1
	Athletic Zone_P	Custom	Open fields with trees		06-15 +109%	T	0
	Villa Green Zone_P	Custom	Playgrounds/Forested with trails	07-30 +410%	06-15 +104%, 06-22 +112%,	T	0
	Lakeside Zone_P	Custom	Lakeside with trails			T	1
	Meadows Zone_P	Custom	Open meadow with trees	04-28 Half Marathon,	06-22 +175%	T	1
Kissena Corridor Park	Athletic Zone_K	Custom	Open Field with Tree			T	0
	Nature and Trail Zone_K	Custom	Lakeside with Forest and Trail			04-08 ~ 09-22	1

Two Y variables



Actual Visits vs Z-score(row wise)

Factor Data

Y Variables	Visit Number Z-score Row	
Factor		Type
Shaded Area	Minimal	Binary
	Partial	Binary
	Fully	Binary
Water Area		Binary
Date	Weekday	Binary
	Weekend	Binary
Season	Spring	Binary
	Summer	Binary
	Fall	Binary
Time	Morning	Binary
	Afternoon	Binary
	Evening	Binary
	Night	Binary
Heat	Extreme Hot	Binary
	Hot	Binary
	Average Temperature	Binary
	Cool	Binary
Wether	Clear/Partly Cloudy	Binary
	Cloudy/Low Visibility	Binary
	Low/Moderate Rain	Binary
	Heavy Rain/Thunderstorms	Binary
Holiday		Binary
Event		Binary

Time

Morning	06 - 11
Afternoon	12 - 17
Evening	18 - 21
Night	22 - 05

Holiday

05-27	Memorial Day
06-19	Juneteenth
07-04	Independence Day
09-02	Labor Day

Flushing Meadow Park:
Add Recreation Zone POI Feature (binary)

Kissena Corridor Park:
Merge Water Area and Shaded Area Features

Date	Month	Time	Visits	Z_Score_row	Shaded_A	Shaded_A	Shaded_A	Water_Are	Weekday	Weekend	Spring	Summer	Fall
2024/4/1	4	0	3.47433	-1.03	1	0	0	0	1	0	1	0	0
2024/4/1	4	1	3.47433	-0.96	1	0	0	0	1	0	1	0	0
2024/4/1	4	2	3.47433	-0.71	1	0	0	0	1	0	1	0	0
2024/4/1	4	3	6.042313	-0.47	1	0	0	0	1	0	1	0	0
2024/4/1	4	4	6.042313	-0.38	1	0	0	0	1	0	1	0	0
2024/4/1	4	5	3.323272	-0.51	1	0	0	0	0	1	1	0	0
2024/4/1	4	6	3.323272	-1.25	1								
2024/4/1	4	7	9.554407	-1.47	1								
2024/4/1	4	8	61.66935	-1.21	1								
2024/4/1	4	9	72.39446	-1.29	1								
2024/4/1	4	10	68.50472	-1.33	1								
2024/4/1	4	11	51.47295	-1.42	1								
2024/4/1	4	12	76.66184	-1.37	1								
2024/4/1	4	13	108.535	-1.35	1								
2024/4/1	4	14	134.8946	-1.33	1								
2024/4/1	4	15	141.4656	-1.34	1								
2024/4/1	4	16	182.2135	-1.32	1								
2024/4/1	4	17	211.0655	-1.27	1								
2024/4/1	4	18	154.9098	-1.37	1								
2024/4/1	4	19	77.03949	-1.38	1								
2024/4/1	4	20	28.85204	-1.22	1								
2024/4/1	4	21	11.17828	-1.13	1								
2024/4/1	4	22	2.681276	-1.08	1								
2024/4/1	4	23	2.681276	-1.26	1								
2024/4/2	4	0	1.851285	-1.05	1								
2024/4/2	4	1	1.851285	-1	1								
2024/4/2	4	2	1.851285	-0.76	1								
2024/4/2	4	3	3.219626	-0.66	1								
2024/4/2	4	4	3.219626	-0.58	1								

Morning	Afternoon	Evening	Night	Extreme	Hot	Average	Cool	Clear_Part	Cloudy_Lc	Light_Moc	Heavy_Rai	Windy	Holiday	Event_bin
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
1	0	0	0	0	0	0	1	0	1	0	0	0	0	0
1	0	0	0	0	0	0	1	0	1	0	0	0	0	0
1	0	0	0	0	0	0	1	0	1	0	0	0	0	0
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1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
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0	1	0	0	0	0	0	1	0	1	0	0	0	0	0
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0	0	1	0	0	0	0	1	0	1	0	0	0	0	0
0	0	1	0	0	0	0	1	0	1	0	0	0	0	0
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0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
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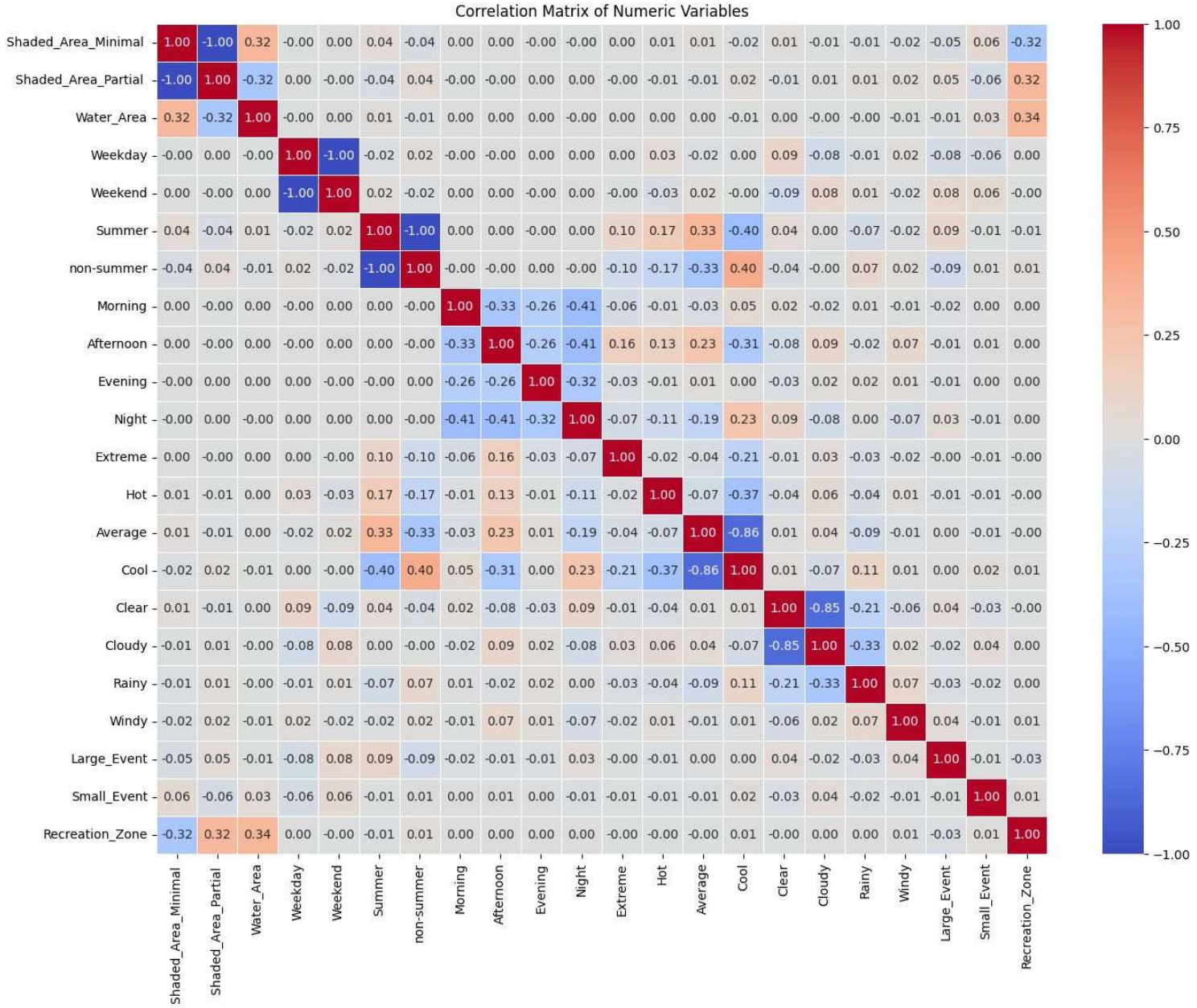
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
0	0	0	1	0	0	0	1	0	1	0	0	0	0	0
1	0	0	0	0	0	0	1	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	0	0	1	0	0	0	0

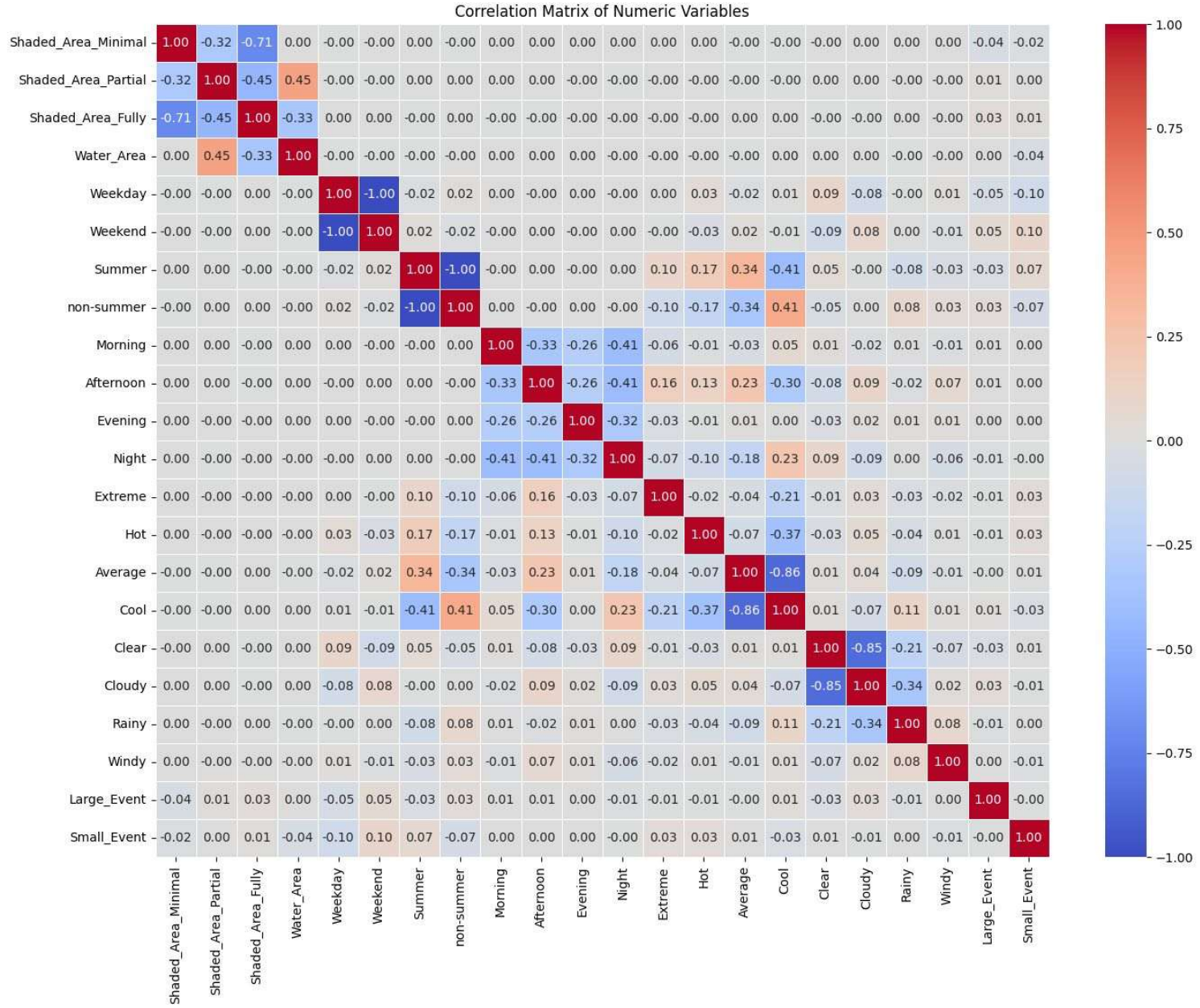
Correlation Flushing Park

	feature	VIF
0	Shaded_Area_Minimal	1.942098
1	Water_Area	4.597724
2	Weekend	1.432558
3	Summer	2.231146
4	Morning	1.533182
5	Afternoon	1.809710
6	Evening	1.382066
7	Extreme	1.070447
8	Hot	1.135609
9	Average	1.498943
10	Cloudy	2.316230
11	Rainy	1.174039
12	Windy	1.041930
13	Large_Event	1.041537
14	Small_Event	1.011614
15	Recreation_Zone	2.008958



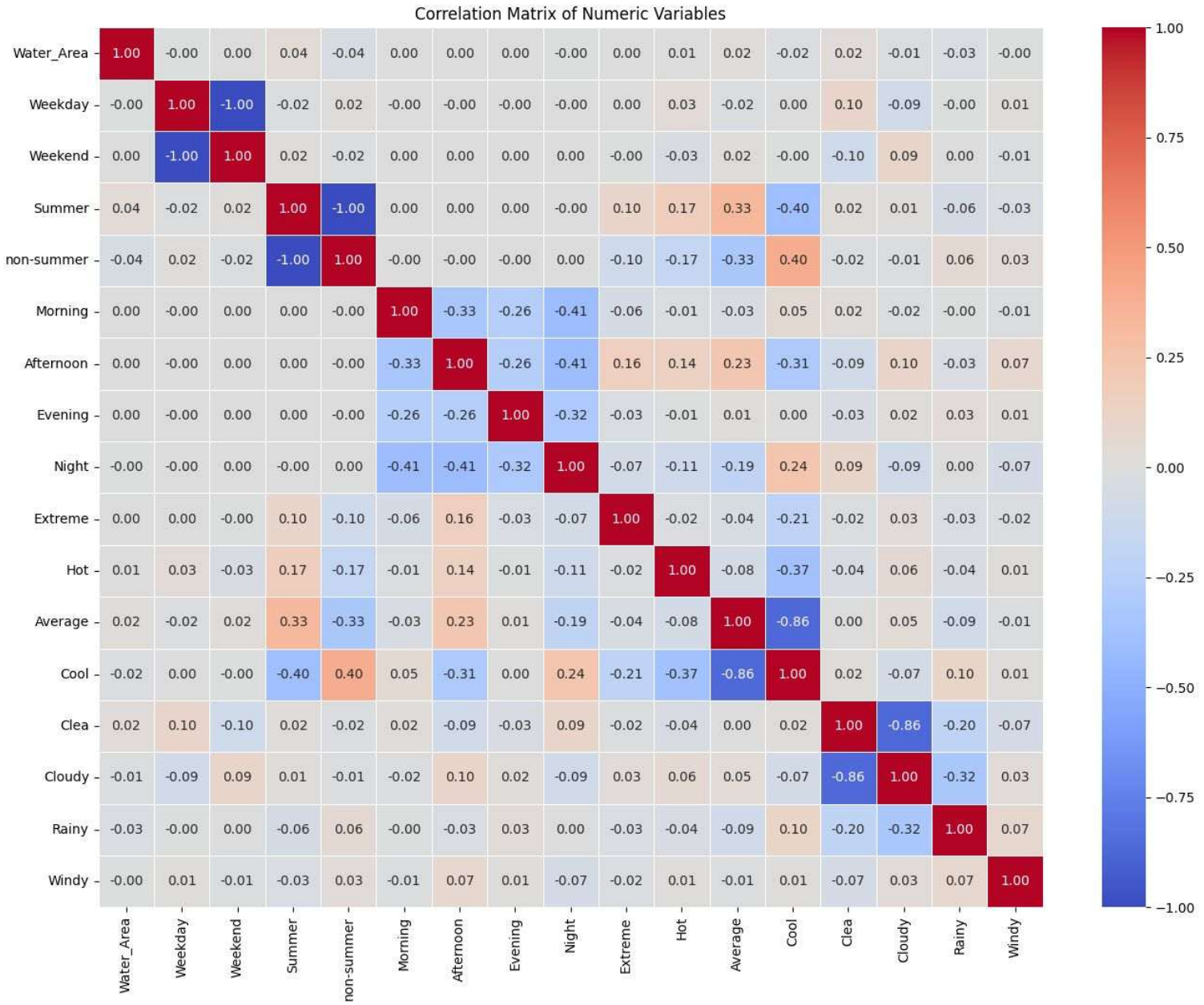
Correlation Prospect Park

	feature	VIF
0	Weekend	1.455780
1	Shaded_Area_Partial	1.693665
2	Shaded_Area_Fully	2.302187
3	Water_Area	2.424755
4	Summer	1.870509
5	Evening	1.407132
6	Morning	1.607892
7	Afternoon	1.656295
8	Extreme	1.071172
9	Hot	1.168311
10	Cool	3.763221
11	Rainy	1.240134
12	Cloudy	2.598959
13	Windy	1.042371
14	Large_Event	1.008779
15	Small_Event	1.022607



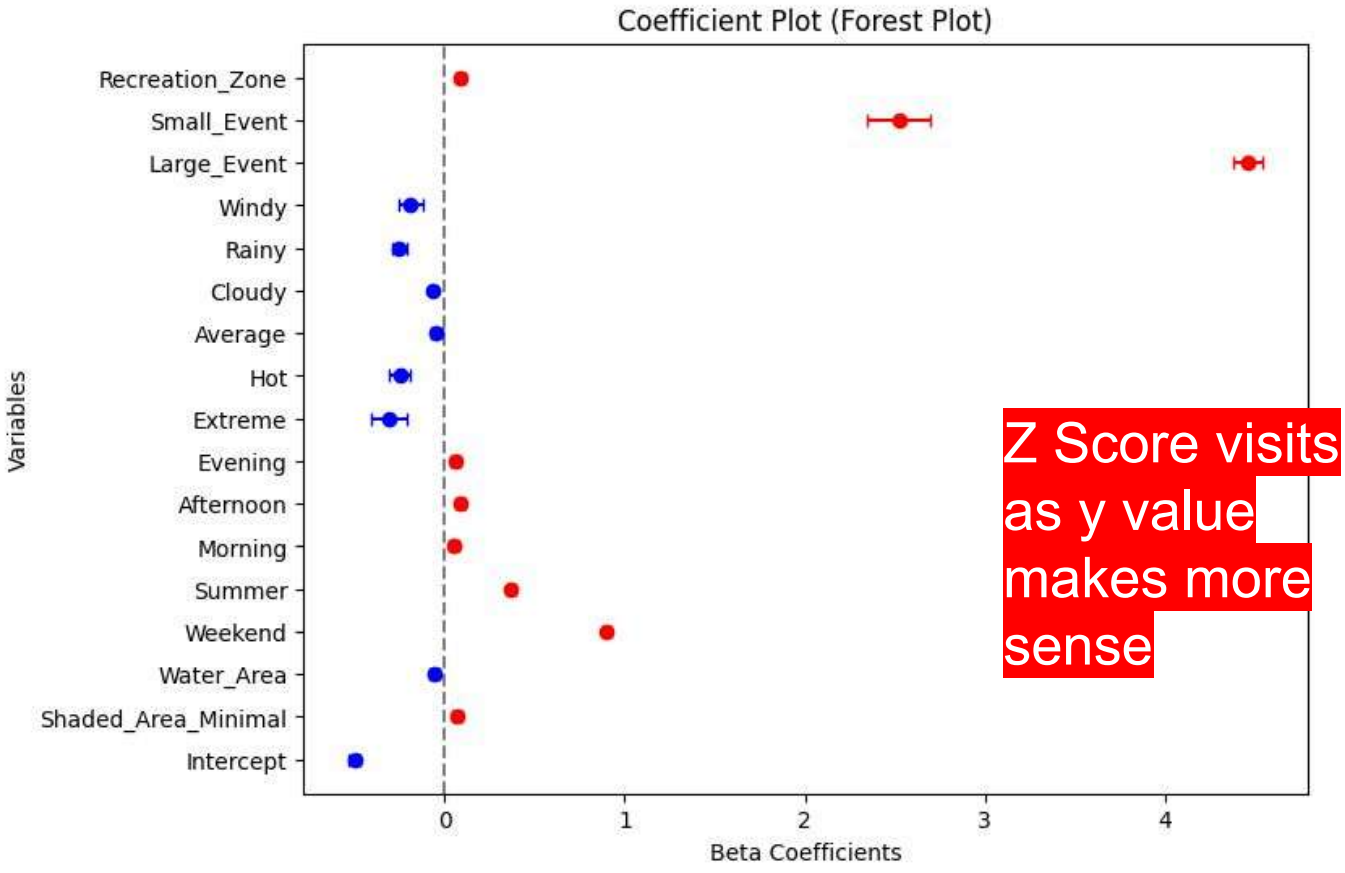
Correlation
Kissena Park

	feature	VIF
0	Weekend	1.461335
1	Water_Area	1.890397
2	Summer	2.225647
3	Evening	1.473279
4	Morning	1.686629
5	Afternoon	1.835735
6	Extreme	1.124708
7	Average	2.237727
8	Cool	4.453650
9	Rainy	1.216735
10	Cloudy	2.605077
11	Windy	1.042021



Flushing Park(only has two shaded level)

Y = Zscore_row



Z Score visits as y value makes more sense

OLS Regression Results

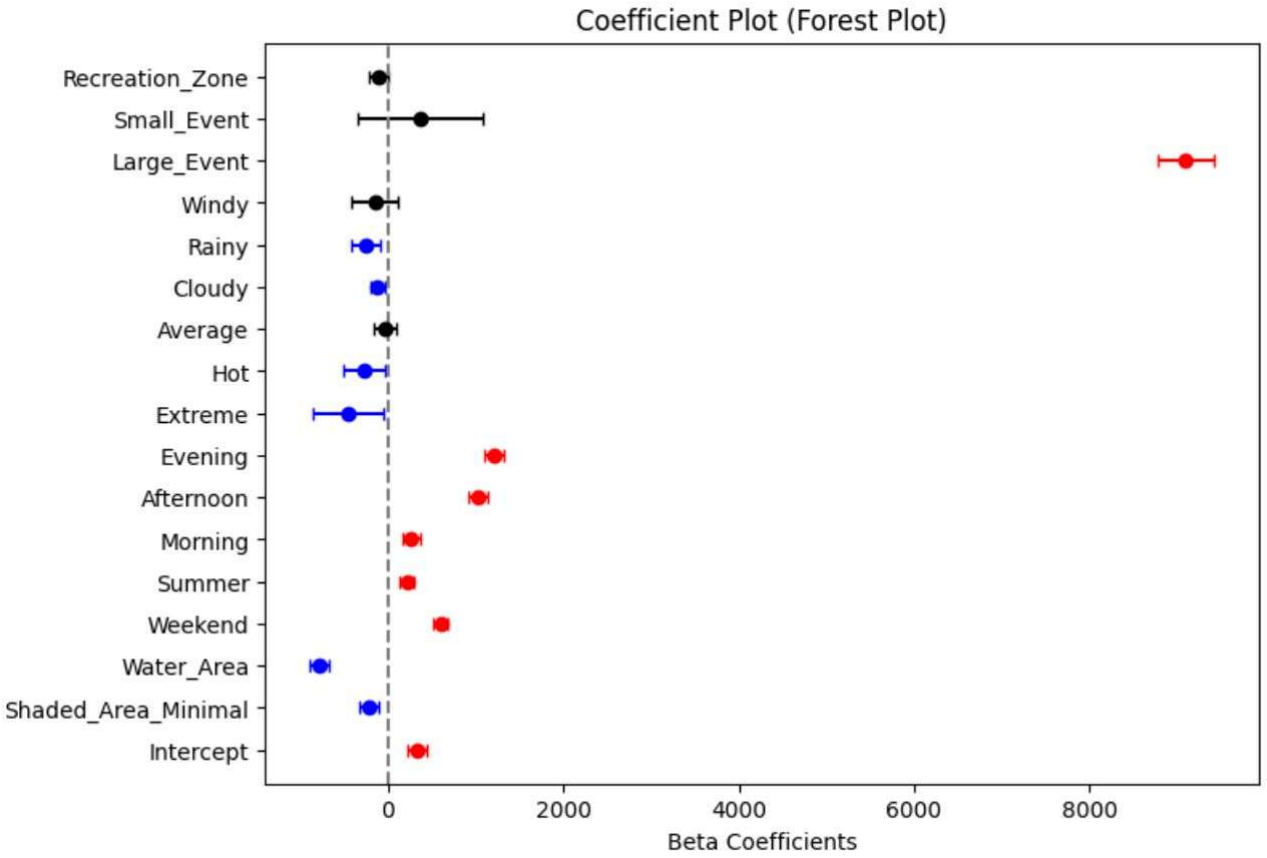
Dep. Variable:	Z_Score_row	**R-squared:**	0.585
Model:	OLS	**Adj. R-squared:**	0.584
Method:	Least Squares	**F-statistic:**	1507.
Date:	Tue, 25 Mar 2025	**Prob (F-statistic):**	0.00
Time:	19:31:22	**Log-Likelihood:**	-16736.
No. Observations:	17136	**AIC:**	3.351e+04
Df Residuals:	17119	**BIC:**	3.364e+04
Df Model:	16		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	-0.5018	0.015	-33.903	0.000	-0.531	-0.473
Shaded_Area_Minimal	0.0679	0.014	4.811	0.000	0.040	0.096
Water_Area	-0.0571	0.014	-4.151	0.000	-0.084	-0.030
Weekend	0.8998	0.011	83.703	0.000	0.879	0.921
Summer	0.3692	0.011	33.751	0.000	0.348	0.391
Morning	0.0531	0.013	4.056	0.000	0.027	0.079
Afternoon	0.0861	0.014	6.113	0.000	0.059	0.114
Evening	0.0605	0.015	4.061	0.000	0.031	0.090
Extreme	-0.3114	0.051	-6.132	0.000	-0.411	-0.212
Hot	-0.2509	0.030	-8.393	0.000	-0.309	-0.192
Average	-0.0476	0.016	-3.006	0.003	-0.079	-0.017
Cloudy	-0.0666	0.011	-6.219	0.000	-0.088	-0.046
Rainy	-0.2524	0.020	-12.558	0.000	-0.292	-0.213
Windy	-0.1898	0.033	-5.682	0.000	-0.255	-0.124
Large_Event	4.4642	0.041	108.825	0.000	4.384	4.545
Small_Event	2.5252	0.090	28.152	0.000	2.349	2.701
Recreation_Zone	0.0831	0.014	6.024	0.000	0.056	0.110

Omnibus:	6660.037	**Durbin-Watson:**	0.434
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	101061.690
Skew:	1.455	**Prob(JB):**	0.00
Kurtosis:	14.536	**Cond. No.**	30.1

Flushing Park(only has two shaded level)

Y = Visits



OLS Regression Results

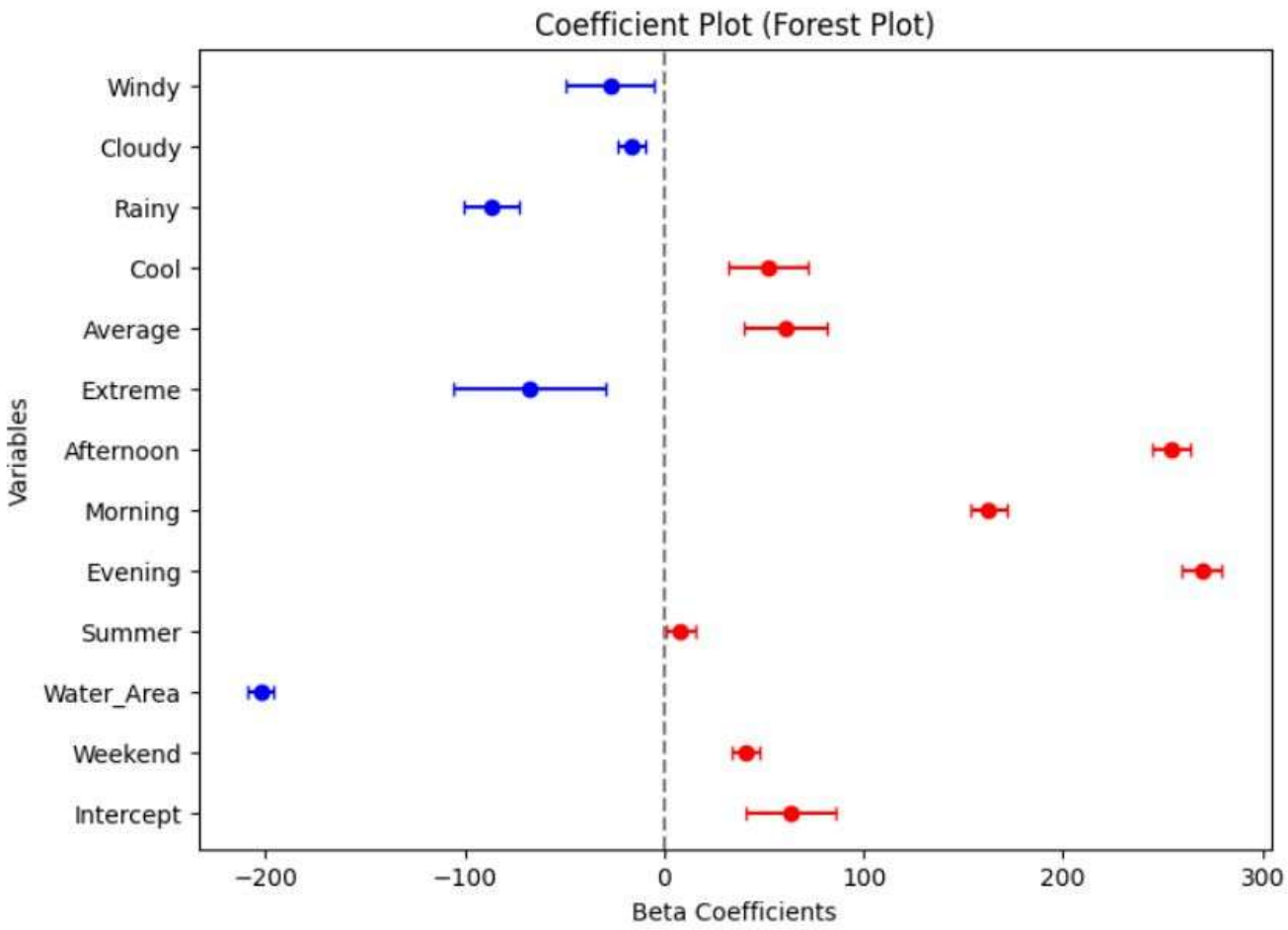
Dep. Variable:	Visits	**R-squared:**	0.208
Model:	OLS	**Adj. R-squared:**	0.207
Method:	Least Squares	**F-statistic:**	281.1
Date:	Tue, 25 Mar 2025	**Prob (F-statistic):**	0.00
Time:	19:35:18	**Log-Likelihood:**	-1.5898e+05
No. Observations:	17136	**AIC:**	3.180e+05
Df Residuals:	17119	**BIC:**	3.181e+05
Df Model:	16		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	336.1920	59.603	5.641	0.000	219.364	453.020
Shaded_Area_Minimal	-218.9713	56.820	-3.854	0.000	-330.344	-107.599
Water_Area	-771.6779	55.439	-13.919	0.000	-880.344	-663.012
Weekend	604.9956	43.290	13.975	0.000	520.143	689.849
Summer	217.1246	44.050	4.929	0.000	130.781	303.468
Morning	269.9646	52.719	5.121	0.000	166.630	373.299
Afternoon	1028.1123	56.732	18.122	0.000	916.913	1139.312
Evening	1213.6511	60.003	20.226	0.000	1096.039	1331.263
Extreme	-452.7320	204.481	-2.214	0.027	-853.535	-51.929
Hot	-273.8868	120.381	-2.275	0.023	-509.845	-37.928
Average	-34.8343	63.808	-0.546	0.585	-159.904	90.235
Cloudy	-113.8860	43.143	-2.640	0.008	-198.450	-29.322
Rainy	-248.3494	80.924	-3.069	0.002	-406.968	-89.731
Windy	-146.3756	134.509	-1.088	0.277	-410.027	117.276
Large_Event	9096.0754	165.196	55.062	0.000	8772.273	9419.877
Small_Event	369.4301	361.217	1.023	0.306	-338.593	1077.453
Recreation_Zone	-94.7661	55.522	-1.707	0.088	-203.596	14.064

Omnibus:	39196.357	**Durbin-Watson:**	0.144
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	310388056.734
Skew:	22.163	**Prob(JB):**	0.00
Kurtosis:	660.839	**Cond. No.**	30.1

Kissena Park

Y = Visits



OLS Regression Results

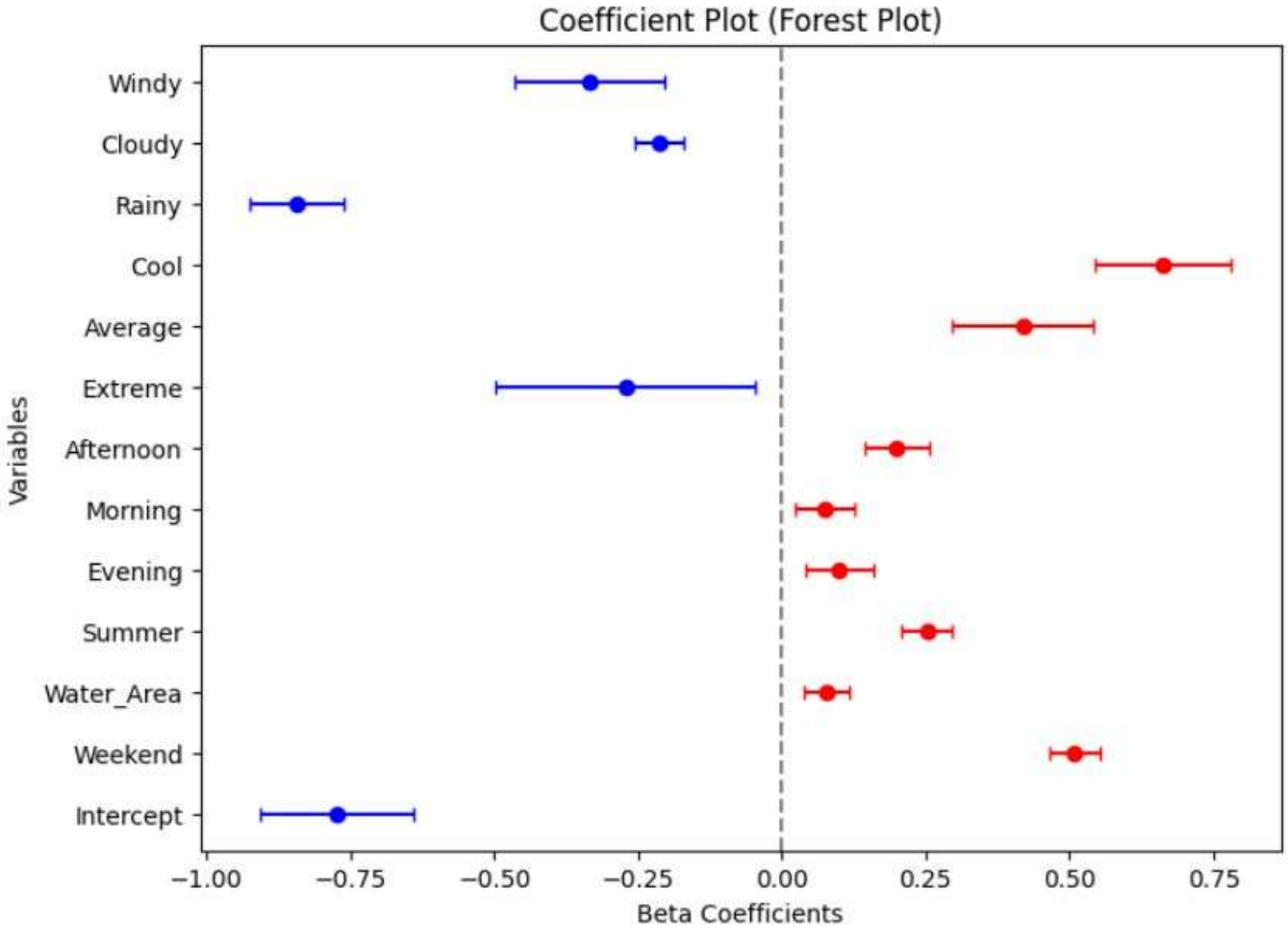
Dep. Variable:	Visits	**R-squared:**	0.489
Model:	OLS	**Adj. R-squared:**	0.488
Method:	Least Squares	**F-statistic:**	668.8
Date:	Tue, 25 Mar 2025	**Prob (F-statistic):**	0.00
Time:	19:34:43	**Log-Likelihood:**	-54314.
No. Observations:	8400	**AIC:**	1.087e+05
Df Residuals:	8387	**BIC:**	1.087e+05
Df Model:	12		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	63.3155	11.517	5.498	0.000	40.740	85.891
Weekend	40.8042	3.700	11.029	0.000	33.552	48.057
Water_Area	-202.3333	3.404	-59.433	0.000	-209.007	-195.660
Summer	8.2320	3.759	2.190	0.029	0.862	15.601
Evening	269.6738	5.154	52.320	0.000	259.570	279.778
Morning	162.7262	4.527	35.946	0.000	153.852	171.600
Afternoon	253.9111	4.882	52.008	0.000	244.341	263.481
Extreme	-67.2085	19.398	-3.465	0.001	-105.234	-29.183
Average	60.5367	10.579	5.722	0.000	39.799	81.275
Cool	51.9493	10.238	5.074	0.000	31.880	72.019
Rainy	-86.9067	7.097	-12.245	0.000	-100.819	-72.994
Cloudy	-16.3475	3.684	-4.438	0.000	-23.568	-9.127
Windy	-27.0364	11.265	-2.400	0.016	-49.118	-4.955

Omnibus:	3053.460	**Durbin-Watson:**	0.506
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	16482.017
Skew:	1.660	**Prob(JB):**	0.00
Kurtosis:	9.005	**Cond. No.**	22.4

Kissena Park

Y = Zscore row



OLS Regression Results

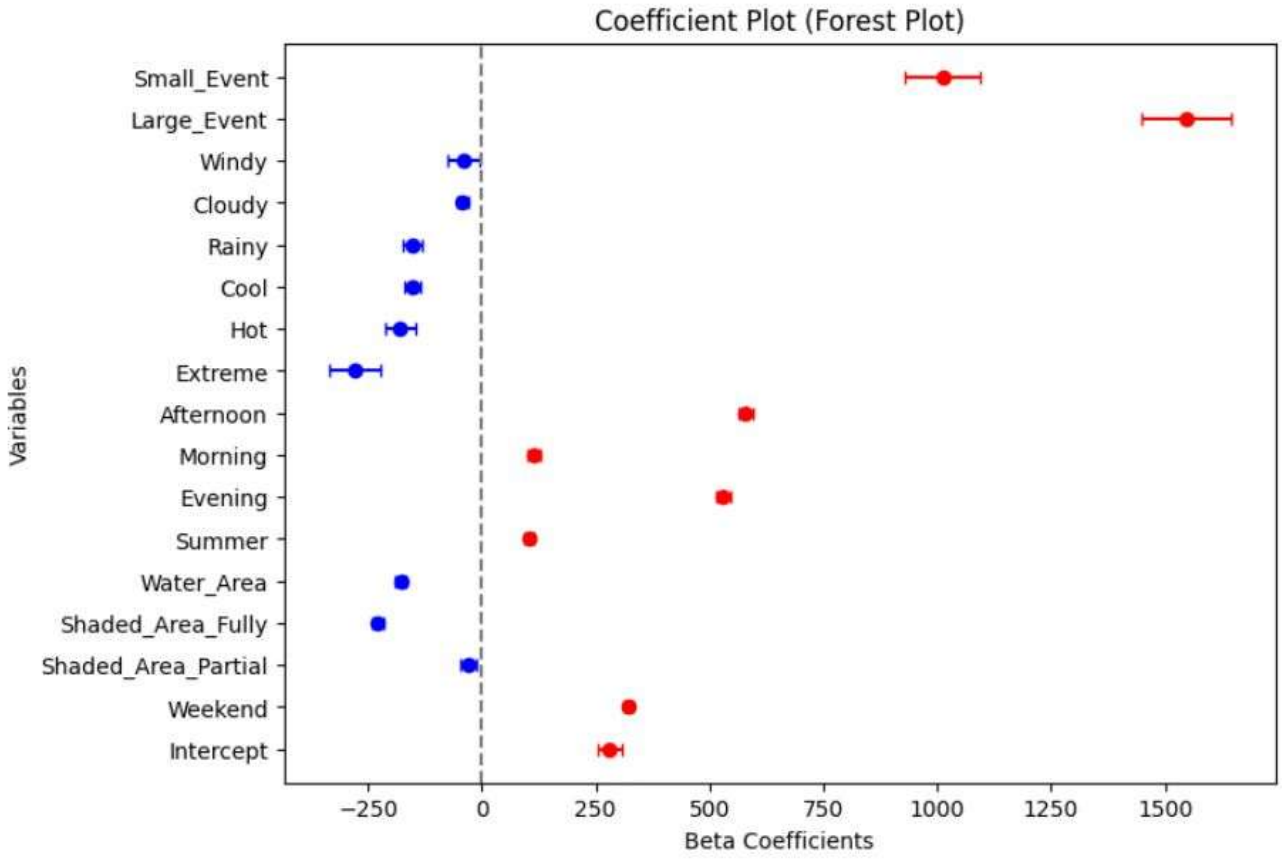
Dep. Variable:	Z_Score_row	**R-squared:**	0.130
Model:	OLS	**Adj. R-squared:**	0.129
Method:	Least Squares	**F-statistic:**	104.6
Date:	Tue, 25 Mar 2025	**Prob (F-statistic):**	3.17e-243
Time:	19:35:13	**Log-Likelihood:**	-11209.
No. Observations:	8400	**AIC:**	2.244e+04
Df Residuals:	8387	**BIC:**	2.254e+04
Df Model:	12		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	-0.7727	0.068	-11.356	0.000	-0.906	-0.639
Weekend	0.5091	0.022	23.290	0.000	0.466	0.552
Water_Area	0.0781	0.020	3.884	0.000	0.039	0.118
Summer	0.2529	0.022	11.386	0.000	0.209	0.296
Evening	0.1005	0.030	3.299	0.001	0.041	0.160
Morning	0.0747	0.027	2.792	0.005	0.022	0.127
Afternoon	0.1996	0.029	6.920	0.000	0.143	0.256
Extreme	-0.2715	0.115	-2.369	0.018	-0.496	-0.047
Average	0.4188	0.063	6.701	0.000	0.296	0.541
Cool	0.6632	0.060	10.964	0.000	0.545	0.782
Rainy	-0.8428	0.042	-20.099	0.000	-0.925	-0.761
Cloudy	-0.2118	0.022	-9.731	0.000	-0.254	-0.169
Windy	-0.3350	0.067	-5.034	0.000	-0.465	-0.205

Omnibus:	1730.946	**Durbin-Watson:**	0.465
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	4141.932
Skew:	1.149	**Prob(JB):**	0.00
Kurtosis:	5.559	**Cond. No.**	22.4

Prospect Park-Visits

Y = Visits



OLS Regression Results

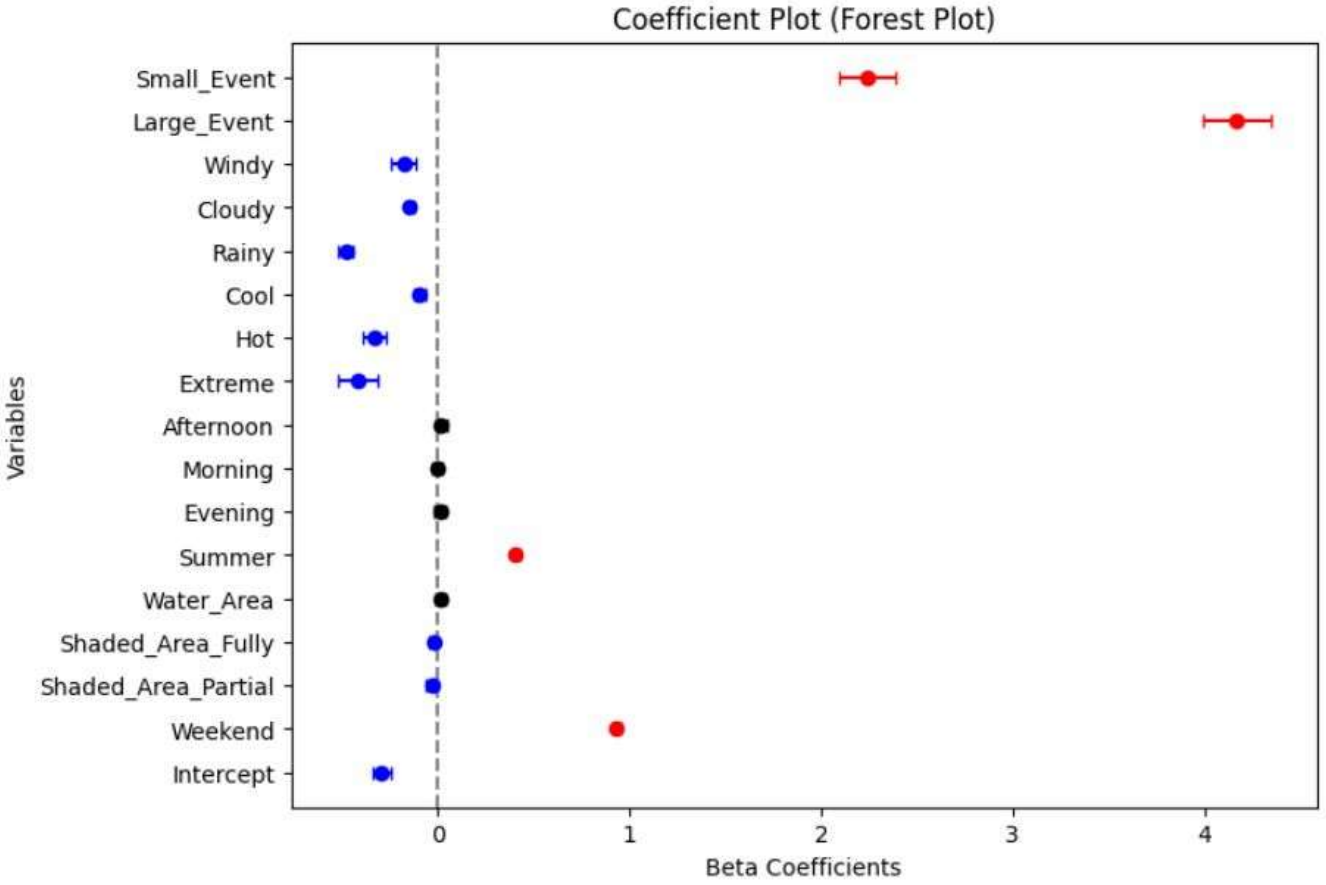
Dep. Variable:	Visits	**R-squared:**	0.400
Model:	OLS	**Adj. R-squared:**	0.399
Method:	Least Squares	**F-statistic:**	1091.
Date:	Tue, 25 Mar 2025	**Prob (F-statistic):**	0.00
Time:	19:15:36	**Log-Likelihood:**	-1.9688e+05
No. Observations:	26208	**AIC:**	3.938e+05
Df Residuals:	26191	**BIC:**	3.939e+05
Df Model:	16		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	281.5267	12.719	22.134	0.000	256.597	306.457
Weekend	322.4292	5.997	53.761	0.000	310.674	334.184
Shaded_Area_Partial	-27.8124	8.781	-3.167	0.002	-45.024	-10.601
Shaded_Area_Fully	-228.1928	6.210	-36.748	0.000	-240.364	-216.021
Water_Area	-177.4396	6.212	-28.564	0.000	-189.615	-165.264
Summer	104.5014	6.088	17.165	0.000	92.568	116.435
Evening	529.8459	8.298	63.852	0.000	513.581	546.110
Morning	115.8543	7.291	15.891	0.000	101.564	130.144
Afternoon	579.7049	7.834	74.001	0.000	564.350	595.059
Extreme	-278.4775	28.702	-9.703	0.000	-334.734	-222.221
Hot	-178.3655	17.385	-10.260	0.000	-212.440	-144.291
Cool	-153.0809	8.897	-17.205	0.000	-170.520	-135.642
Rainy	-151.6810	11.084	-13.684	0.000	-173.407	-129.955
Cloudy	-41.5947	5.983	-6.952	0.000	-53.322	-29.867
Windy	-38.1253	17.934	-2.126	0.034	-73.277	-2.974
Large_Event	1546.6483	49.746	31.091	0.000	1449.144	1644.153
Small_Event	1012.0120	41.774	24.226	0.000	930.132	1093.892

Omnibus:	23742.263	**Durbin-Watson:**	0.252
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	1434337.562
Skew:	4.183	**Prob(JB):**	0.00
Kurtosis:	38.263	**Cond. No.**	32.2

Prospect Park

Y = Zscore_row



OLS Regression Results

Dep. Variable:	Z_Score_row	**R-squared:**	0.352
Model:	OLS	**Adj. R-squared:**	0.351
Method:	Least Squares	**F-statistic:**	888.6
Date:	Tue, 25 Mar 2025	**Prob (F-statistic):**	0.00
Time:	19:16:12	**Log-Likelihood:**	-31434.
No. Observations:	26208	**AIC:**	6.290e+04
Df Residuals:	26191	**BIC:**	6.304e+04
Df Model:	16		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
Intercept	-0.2923	0.023	-12.673	0.000	-0.337	-0.247
Weekend	0.9330	0.011	85.800	0.000	0.912	0.954
Shaded_Area_Partial	-0.0314	0.016	-1.972	0.049	-0.063	-0.000
Shaded_Area_Fully	-0.0225	0.011	-1.995	0.046	-0.045	-0.000
Water_Area	0.0147	0.011	1.305	0.192	-0.007	0.037
Summer	0.4060	0.011	36.783	0.000	0.384	0.428
Evening	0.0106	0.015	0.702	0.483	-0.019	0.040
Morning	0.0009	0.013	0.066	0.947	-0.025	0.027
Afternoon	0.0187	0.014	1.317	0.188	-0.009	0.047
Extreme	-0.4156	0.052	-7.986	0.000	-0.518	-0.314
Hot	-0.3321	0.032	-10.536	0.000	-0.394	-0.270
Cool	-0.0957	0.016	-5.934	0.000	-0.127	-0.064
Rainy	-0.4815	0.020	-23.960	0.000	-0.521	-0.442
Cloudy	-0.1484	0.011	-13.675	0.000	-0.170	-0.127
Windy	-0.1770	0.033	-5.442	0.000	-0.241	-0.113
Large_Event	4.1688	0.090	46.219	0.000	3.992	4.346
Small_Event	2.2439	0.076	29.626	0.000	2.095	2.392

Omnibus:	11949.453	**Durbin-Watson:**	0.400
Prob(Omnibus):	0.000	**Jarque-Bera (JB):**	114858.896
Skew:	1.955	**Prob(JB):**	0.00
Kurtosis:	12.481	**Cond. No.**	32.2

Commonalities and Differences

Positive:

Event: 'Large_Event', 'Small_Event'
Time: 'Morning', 'Afternoon', 'Evening'
Week: 'Weekend'
Season: 'Summer'
Heat Category: 'Average', 'Cool'
Weather Category: 'Clear'

Negative:

Time: 'Night'
Week: 'Weekday'
Season: 'Non_summer',
Heat Category: 'Extreme', 'Hot'
Weather Category: 'Cloudy', 'Rainy', 'Windy'

Depends:

Water: 'Water_Area'
Shaded: 'Shaded_Area_Minimal', 'Shaded_Area_Partial', 'Shaded_Area_Fully',