

Final Script

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Alright guys. I finally reproduced this then realized I made a mistake in the original (published) version. Sigh.

Let's try out a different version only with the newest ROH.

Data Importing and Cross-Validation

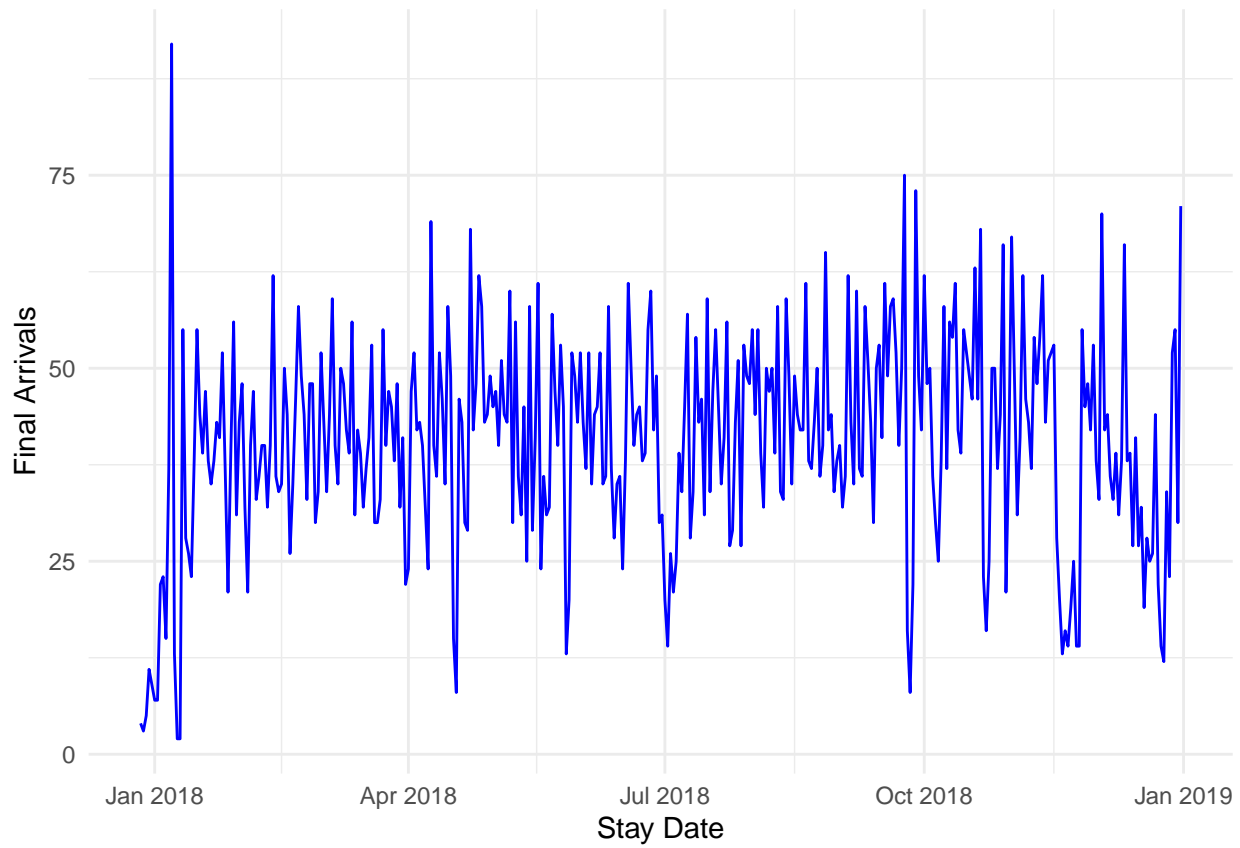


Table 1: Training Set Overview

	ROH0	DOW	ROH1	ROH2	ROH3	ROH4	ROH5	ROH6	ROH7	ROH14	ROH21	ROH30	ROH60	ROH90
2018-11-15	52	Thursday	49	46	42	41	41	41	38	29	25	22	7	1
2018-06-11	58	Monday	58	56	53	51	47	47	47	40	37	30	9	4
2018-05-04	51	Friday	48	47	46	44	41	38	38	30	28	21	4	1
2018-10-21	68	Sunday	67	67	66	66	64	59	54	44	20	18	10	5
2018-09-22	40	Saturday	38	36	36	35	33	32	31	27	20	8	5	5
2018-07-01	20	Sunday	17	16	16	14	13	13	13	10	10	6	2	2
2018-10-29	66	Monday	61	56	55	53	51	49	43	32	26	25	7	2
2018-03-21	30	Wednesday	28	25	21	21	21	20	20	9	5	5	3	0
2018-09-29	49	Saturday	45	45	42	39	37	36	36	31	26	23	17	12
2018-11-21	14	Wednesday	14	13	12	12	12	12	11	10	10	9	6	2

Modeling

Additive Pick-up

Multiplicative Pick-up

Regression

2 with the newest ROH

In this way, do not talk about high dimensional data - instead, how machine learning is superior - if that's the case.

Modeling

pickups and regression are the same.

Neural Network

K-Nearest Neighbor

Tree

Support Vector Machine

Results

Table 2: Mean Errors

	apk	mpk	reg	nn	knn	wknn	dtree	rf	svm
DBA1	-0.344	-0.629	-0.380	-3.19	0.913	-0.085	-0.075	-0.523	-0.490
DBA2	-0.294	-0.806	-0.373	-4.85	0.977	0.225	-0.335	-0.455	-0.707
DBA3	-0.299	-1.045	-0.446	-6.29	0.927	0.143	-0.602	-0.292	-0.731
DBA4	-0.042	-0.943	-0.270	-7.40	1.169	-0.082	-0.236	-0.554	-0.512
DBA5	0.161	-0.888	-0.148	-8.33	1.171	-0.019	-0.581	-0.516	-0.541
DBA6	0.338	-0.964	-0.031	-9.33	1.263	0.436	-0.631	-0.316	-0.658
DBA7	0.485	-1.098	0.068	-10.38	1.141	0.512	-0.592	0.102	-0.742
DBA14	1.841	-0.756	1.521	-15.33	1.724	1.357	0.789	1.203	0.033
DBA21	2.354	-1.374	2.201	-19.37	2.598	0.530	0.395	0.972	1.287
DBA30	3.061	-1.315	2.926	-23.33	3.656	1.866	2.290	1.933	3.267
DBA60	3.938	-1.976	3.544	-29.82	4.627	3.489	3.480	3.954	4.355
DBA90	4.422	-2.626	4.151	-32.68	3.843	3.441	4.213	4.413	5.441
13	1.302	-1.202	1.064	-14.19	2.001	0.984	0.676	0.827	0.833

Table 3: Mean Absolute Errors

	apk	mpk	reg	nn	knn	wknn	dtree	rf	svm
DBA1	1.96	1.93	1.94	3.29	3.31	2.69	2.69	2.30	1.99
DBA2	2.57	2.60	2.54	4.92	3.85	3.07	3.19	2.57	2.53
DBA3	2.74	2.72	2.66	6.34	3.73	3.41	3.80	3.04	2.66
DBA4	3.06	3.19	2.97	7.47	4.12	3.70	3.75	3.38	2.98
DBA5	3.55	3.53	3.43	8.42	4.13	3.79	4.33	3.32	3.23
DBA6	4.04	3.98	3.88	9.42	4.57	4.38	4.55	3.83	3.62
DBA7	4.55	4.67	4.40	10.46	4.54	4.71	4.40	4.10	4.08
DBA14	6.03	6.58	5.84	15.39	6.03	5.57	5.73	5.53	5.17
DBA21	7.14	8.49	7.05	19.42	7.84	7.02	6.98	6.90	6.34
DBA30	8.33	10.56	8.22	23.35	8.87	8.95	7.79	7.78	7.77
DBA60	9.72	14.88	9.50	29.82	9.88	9.81	9.39	9.41	9.27
DBA90	10.77	22.73	10.70	32.68	10.85	11.94	11.01	11.00	11.05
13	5.37	7.15	5.26	14.25	5.97	5.75	5.63	5.26	5.06

Table 4: Standard Deviation Errors

	apk	mpk	reg	nn	knn	wknn	dtree	rf	svm
DBA1	2.63	2.60	2.61	2.68	4.09	3.34	3.30	2.78	2.67
DBA2	3.39	3.31	3.35	3.46	4.97	3.96	3.92	3.35	3.25
DBA3	3.66	3.58	3.58	3.76	4.88	4.41	4.66	3.96	3.54
DBA4	4.06	4.08	3.96	4.19	5.06	4.87	4.67	4.40	3.83
DBA5	4.51	4.49	4.38	4.67	5.13	4.84	5.45	4.27	4.12
DBA6	4.98	5.04	4.83	5.14	5.44	5.40	5.51	4.70	4.52
DBA7	5.48	5.87	5.36	5.66	5.49	5.61	5.45	5.05	4.97
DBA14	7.37	8.73	7.19	8.08	7.53	7.03	7.18	6.96	6.73
DBA21	8.64	11.60	8.54	9.58	9.50	9.52	8.68	8.92	8.20
DBA30	10.34	12.99	10.22	11.21	10.50	10.89	9.99	9.93	9.57
DBA60	11.96	17.99	11.60	13.46	11.90	12.22	11.65	11.69	11.31
DBA90	13.05	29.42	12.93	14.23	13.38	14.76	13.27	13.41	13.38
13	6.67	9.14	6.55	7.18	7.32	7.24	6.98	6.62	6.34

Table 5: Mean Percentage Errors

	apk	mpk	reg	nn	knn	wknn	dtree	rf	svm
DBA1	0.006	-0.025	0.003	-0.098	0.107	0.026	0.016	-0.022	0.004
DBA2	0.019	-0.033	0.012	-0.147	0.124	0.035	0.002	-0.011	0.004
DBA3	0.028	-0.042	0.015	-0.193	0.122	0.038	-0.003	-0.002	0.007
DBA4	0.041	-0.045	0.020	-0.228	0.121	0.047	0.015	-0.016	0.017
DBA5	0.058	-0.043	0.031	-0.250	0.128	0.042	0.009	-0.014	0.014
DBA6	0.077	-0.043	0.044	-0.274	0.132	0.046	0.008	-0.010	0.014
DBA7	0.090	-0.051	0.053	-0.301	0.124	0.055	0.013	0.003	0.007
DBA14	0.193	-0.041	0.163	-0.416	0.174	0.130	0.059	0.115	0.074
DBA21	0.252	-0.060	0.238	-0.522	0.268	0.126	0.078	0.149	0.165
DBA30	0.325	-0.036	0.313	-0.631	0.335	0.237	0.215	0.208	0.295
DBA60	0.417	-0.035	0.388	-0.799	0.438	0.354	0.359	0.398	0.405
DBA90	0.463	-0.009	0.447	-0.885	0.447	0.444	0.451	0.468	0.507
13	0.164	-0.039	0.144	-0.395	0.210	0.132	0.102	0.105	0.126

Table 6: MAPE

	apk	mpk	reg	nn	knn	wknn	dtree	rf	svm
DBA1	0.060	0.061	0.059	0.102	0.158	0.103	0.098	0.078	0.066
DBA2	0.091	0.087	0.088	0.151	0.185	0.119	0.112	0.091	0.088
DBA3	0.100	0.094	0.094	0.197	0.180	0.127	0.128	0.105	0.095
DBA4	0.113	0.112	0.103	0.234	0.183	0.143	0.131	0.117	0.106
DBA5	0.137	0.121	0.123	0.258	0.189	0.145	0.146	0.114	0.114
DBA6	0.159	0.128	0.139	0.282	0.200	0.156	0.148	0.130	0.125
DBA7	0.180	0.146	0.156	0.309	0.196	0.174	0.147	0.140	0.139
DBA14	0.283	0.207	0.257	0.421	0.261	0.226	0.203	0.215	0.191
DBA21	0.352	0.266	0.341	0.526	0.380	0.276	0.254	0.288	0.273
DBA30	0.426	0.349	0.415	0.634	0.441	0.393	0.328	0.343	0.385
DBA60	0.529	0.499	0.506	0.799	0.539	0.486	0.470	0.501	0.501
DBA90	0.586	0.714	0.576	0.885	0.583	0.612	0.583	0.593	0.615
13	0.251	0.232	0.238	0.400	0.291	0.247	0.229	0.226	0.225