PRELIMINARY RESULTS FOR BRAZIL COVID-19 DATASET

Salomon Wollenstein-Betech, Christos G. Cassandras, Ioannis Ch. Paschalidis, Amanda Batista, Julia Fleck

1 Basic Analytics

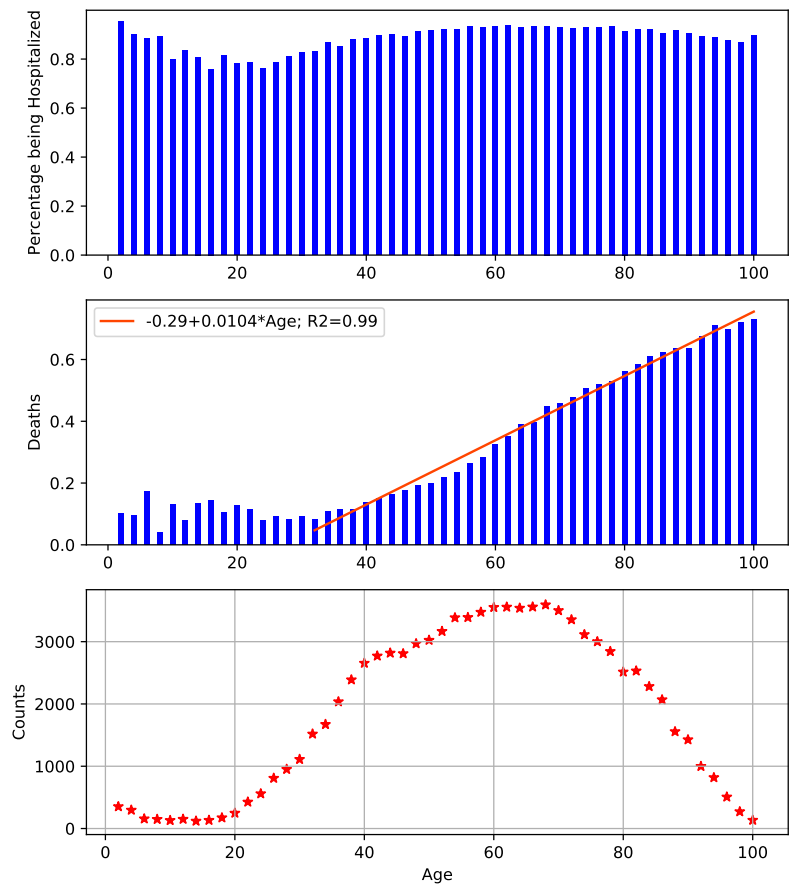|	0
N	92662
N_Hosp	84195
N_Death	31788
Female	39658
Male	52979
Race	26525
Schooling	7058
Acute Respiratory Distress Syndrome	22854
Contracted At Hospital	2374
Contact Birds Pigs	744
Fever	67553
Cough	70434
Throat	19587
Dyspnea	64220
Respiratory Discomfort	53370
SpO2 less 95\%	51025
Diarrhea	12502
Vomiting	7010
Other Symptoms	29366
Postpartum	403
Cardiovascular Disease	28978
Hematologic Disease	852
Down Syndrome	238
Liver Chronic Disease	773
Asthma	2544
Diabetes	21990
Neurological Disease	3457
Another Chronic Pneumopathy	3326
Immunosuppression	2745
Renal Chronic Disease	3717
Obesity	3313
Other Risks	22495
Antiviral Use	29747
Hospitalization	84195
ICU	27840
Ventilator	16963
Xray Torax Result	2409
Result Final	0
Evolution	35639
Public Hospital	30867
Region	0

Table 1: Number of observations with a specific observation

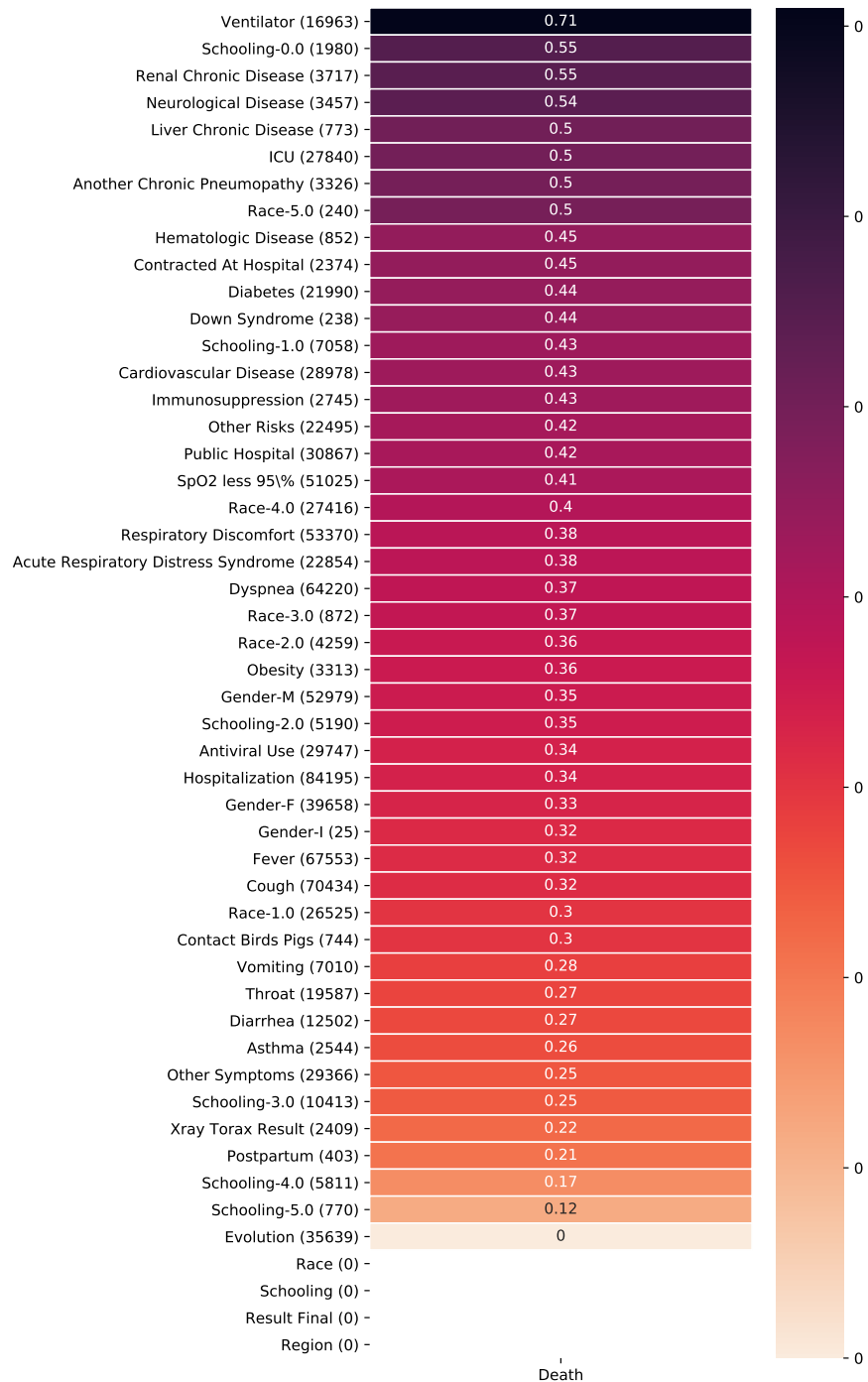**Figure 1:** Distribution of hospitalization and deaths by age group

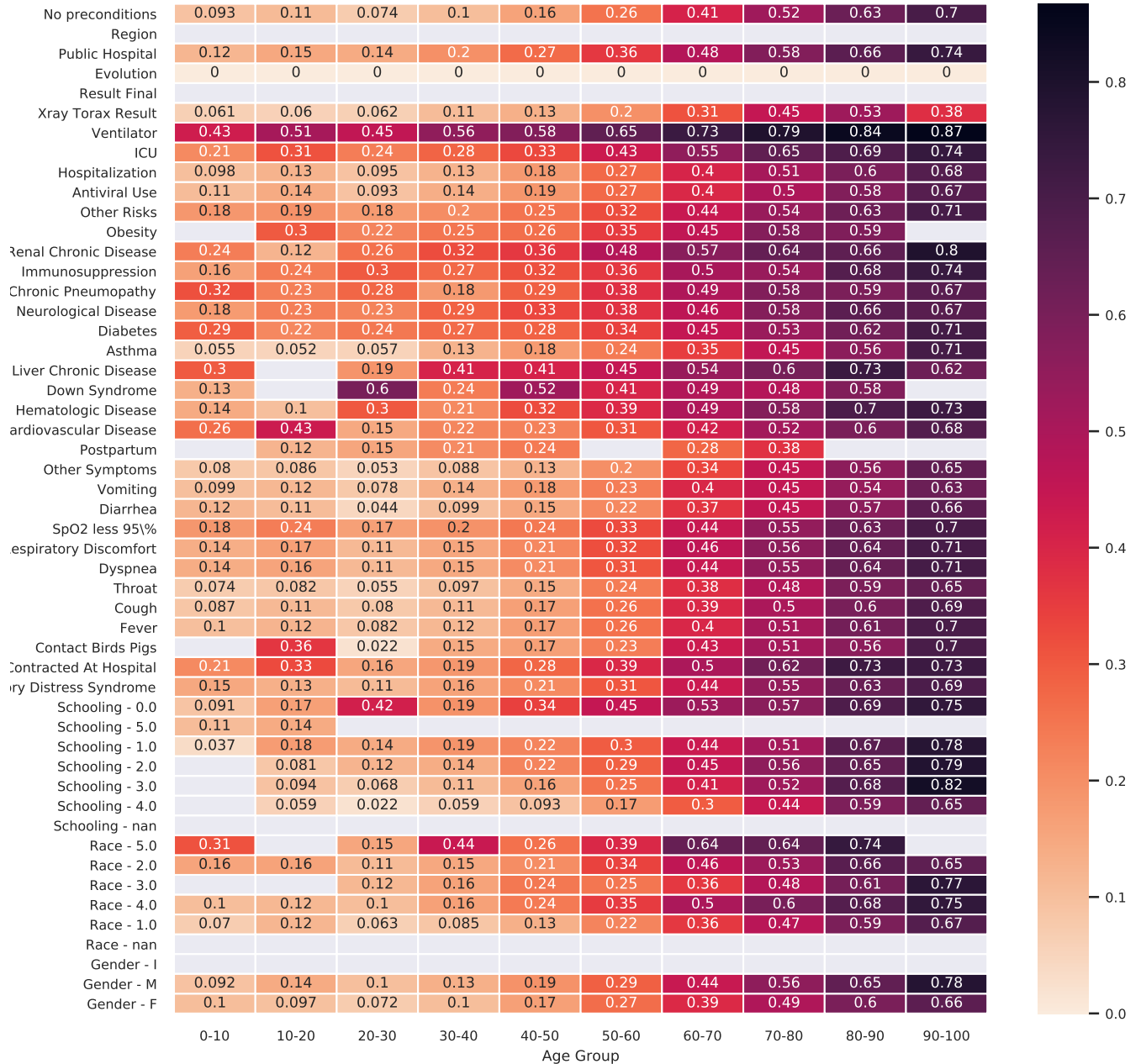**Figure 2:** Share of hospitalized and deaths patients given characteristics

Characteristic	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No preconditions	0.093	0.11	0.074	0.1	0.16	0.26	0.41	0.52	0.63	0.7
Region										
Public Hospital	0.12	0.15	0.14	0.2	0.27	0.36	0.48	0.58	0.66	0.74
Evolution	0	0	0	0	0	0	0	0	0	0
Result Final										
Xray Torax Result	0.061	0.06	0.062	0.11	0.13	0.2	0.31	0.45	0.53	0.38
Ventilator	0.43	0.51	0.45	0.56	0.58	0.65	0.73	0.79	0.84	0.87
ICU	0.21	0.31	0.24	0.28	0.33	0.43	0.55	0.65	0.69	0.74
Hospitalization	0.098	0.13	0.095	0.13	0.18	0.27	0.4	0.51	0.6	0.68
Antiviral Use	0.11	0.14	0.093	0.14	0.19	0.27	0.4	0.5	0.58	0.67
Other Risks	0.18	0.19	0.18	0.2	0.25	0.32	0.44	0.54	0.63	0.71
Obesity		0.3	0.22	0.25	0.26	0.35	0.45	0.58	0.59	
Renal Chronic Disease	0.24	0.12	0.26	0.32	0.36	0.48	0.57	0.64	0.66	0.8
Immunosuppression	0.16	0.24	0.3	0.27	0.32	0.36	0.5	0.54	0.68	0.74
Chronic Pneumopathy	0.32	0.23	0.28	0.18	0.29	0.38	0.49	0.58	0.59	0.67
Neurological Disease	0.18	0.23	0.23	0.29	0.33	0.38	0.46	0.58	0.66	0.67
Diabetes	0.29	0.22	0.24	0.27	0.28	0.34	0.45	0.53	0.62	0.71
Asthma	0.055	0.052	0.057	0.13	0.18	0.24	0.35	0.45	0.56	0.71
Liver Chronic Disease	0.3		0.19	0.41	0.41	0.45	0.54	0.6	0.73	0.62
Down Syndrome	0.13		0.6	0.24	0.52	0.41	0.49	0.48	0.58	
Hematologic Disease	0.14	0.1	0.3	0.21	0.32	0.39	0.49	0.58	0.7	0.73
Cardiovascular Disease	0.26	0.43	0.15	0.22	0.23	0.31	0.42	0.52	0.6	0.68
Postpartum		0.12	0.15	0.21	0.24		0.28	0.38		
Other Symptoms	0.08	0.086	0.053	0.088	0.13	0.2	0.34	0.45	0.56	0.65
Vomiting	0.099	0.12	0.078	0.14	0.18	0.23	0.4	0.45	0.54	0.63
Diarrhea	0.12	0.11	0.044	0.099	0.15	0.22	0.37	0.45	0.57	0.66
SpO2 less 95\%	0.18	0.24	0.17	0.2	0.24	0.33	0.44	0.55	0.63	0.7
Respiratory Discomfort	0.14	0.17	0.11	0.15	0.21	0.32	0.46	0.56	0.64	0.71
Dyspnea	0.14	0.16	0.11	0.15	0.21	0.31	0.44	0.55	0.64	0.71
Throat	0.074	0.082	0.055	0.097	0.15	0.24	0.38	0.48	0.59	0.65
Cough	0.087	0.11	0.08	0.11	0.17	0.26	0.39	0.5	0.6	0.69
Fever	0.1	0.12	0.082	0.12	0.17	0.26	0.4	0.51	0.61	0.7
Contact Birds Pigs		0.36	0.022	0.15	0.17	0.23	0.43	0.51	0.56	0.7
Contracted At Hospital	0.21	0.33	0.16	0.19	0.28	0.39	0.5	0.62	0.73	0.73
Respiratory Distress Syndrome	0.15	0.13	0.11	0.16	0.21	0.31	0.44	0.55	0.63	0.69
Schooling - 0.0	0.091	0.17	0.42	0.19	0.34	0.45	0.53	0.57	0.69	0.75
Schooling - 5.0	0.11	0.14								
Schooling - 1.0	0.037	0.18	0.14	0.19	0.22	0.3	0.44	0.51	0.67	0.78
Schooling - 2.0		0.081	0.12	0.14	0.22	0.29	0.45	0.56	0.65	0.79
Schooling - 3.0		0.094	0.068	0.11	0.16	0.25	0.41	0.52	0.68	0.82
Schooling - 4.0		0.059	0.022	0.059	0.093	0.17	0.3	0.44	0.59	0.65
Schooling - nan										
Race - 5.0	0.31		0.15	0.44	0.26	0.39	0.64	0.64	0.74	
Race - 2.0	0.16	0.16	0.11	0.15	0.21	0.34	0.46	0.53	0.66	0.65
Race - 3.0			0.12	0.16	0.24	0.25	0.36	0.48	0.61	0.77
Race - 4.0	0.1	0.12	0.1	0.16	0.24	0.35	0.5	0.6	0.68	0.75
Race - 1.0	0.07	0.12	0.063	0.085	0.13	0.22	0.36	0.47	0.59	0.67
Race - nan										
Gender - I										
Gender - M	0.092	0.14	0.1	0.13	0.19	0.29	0.44	0.56	0.65	0.78
Gender - F	0.1	0.097	0.072	0.1	0.17	0.27	0.39	0.49	0.6	0.66

Age Group

Figure 3: Share of hospitalized and deaths patients given characteristics and age group

2 Results

2.1 Mortality (previous)

|	Coef LR-l1	2.5 err	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
SVM-l1										
Region_South	-1.485	-1.616	-1.354	0.227	0.199	0.258	0.474	0.218	0.000	0.000
	0.568	0.220	0.028							
Age 0-30	-1.312	-1.445	-1.178	0.269	0.236	0.308	0.482	0.147	0.000	0.000
	0.561	0.197	0.033							
Region_Midwest	-1.112	-1.280	-0.944	0.329	0.278	0.389	0.466	0.310	0.000	0.000
	0.650	0.323	0.051							
Age 65-100	0.910	0.837	0.984	2.485	2.309	2.674	0.309	0.677	0.000	0.000
	1.319	1.817	0.176							
Race Indigenous	0.831	0.331	1.331	2.295	1.393	3.783	0.462	0.718	0.000	0.001
	1.330	2.104	0.902							
Renal Chronic Disease	0.770	0.655	0.884	2.159	1.926	2.420	0.451	0.710	0.000	0.000
	1.344	2.134	0.233							
Region_Southeast	-0.723	-0.772	-0.673	0.485	0.462	0.510	0.530	0.415	0.000	0.000
	0.744	0.468	0.023							
Age 30-50	-0.706	-0.785	-0.628	0.494	0.456	0.534	0.549	0.227	0.000	0.000
	0.681	0.363	0.038							
Down Syndrome	0.621	0.196	1.046	1.860	1.216	2.846	0.462	0.592	0.036	0.004
	1.254	1.792	0.644							
SpO2 less 95\%	0.613	0.562	0.663	1.845	1.755	1.940	0.340	0.545	0.000	0.000
	1.261	1.831	0.090							
Contracted At Hospital	0.587	0.438	0.736	1.798	1.549	2.088	0.458	0.631	0.000	0.000
	1.238	1.762	0.249							
Neurological Disease	0.530	0.414	0.647	1.699	1.512	1.909	0.453	0.692	0.000	0.000
	1.223	1.681	0.187							
Cough	-0.529	-0.586	-0.473	0.589	0.557	0.623	0.575	0.430	0.000	0.000
	0.806	0.569	0.032							
Public Hospital	0.518	0.472	0.564	1.679	1.603	1.758	0.405	0.558	0.000	0.000
	1.212	1.646	0.076							
Liver Chronic Disease	0.475	0.243	0.708	1.608	1.275	2.029	0.461	0.626	0.000	0.000
	1.195	1.579	0.333							
Other Symptoms	-0.468	-0.518	-0.418	0.626	0.596	0.658	0.508	0.357	0.000	0.000
	0.831	0.614	0.030							
Schooling Superior	-0.424	-0.533	-0.314	0.655	0.587	0.731	0.474	0.257	0.000	0.000
	0.855	0.646	0.068							
Immunosuppression	0.364	0.236	0.492	1.439	1.267	1.636	0.459	0.556	0.000	0.000
	1.148	1.428	0.172							
Throat	-0.333	-0.391	-0.276	0.717	0.676	0.759	0.483	0.383	0.000	0.000
	0.882	0.717	0.041							
Another Chronic Pneumopathy	0.312	0.197	0.426	1.366	1.218	1.531	0.455	0.639	0.000	0.000
	1.128	1.360	0.148							
Fever	-0.289	-0.342	-0.235	0.749	0.710	0.790	0.558	0.430	0.000	0.000
	0.882	0.724	0.039							
Dyspnea	0.279	0.224	0.333	1.321	1.251	1.396	0.372	0.495	0.000	0.000
	1.099	1.281	0.070							
Other Risks	0.276	0.225	0.327	1.318	1.252	1.387	0.434	0.543	0.000	0.000
	1.105	1.302	0.066							
Postpartum	0.255	-0.088	0.599	1.291	0.915	1.820	0.463	0.317	0.000	0.145
	1.064	1.224	0.376							
Respiratory Discomfort	0.252	0.201	0.303	1.287	1.223	1.353	0.393	0.506	0.000	0.000
	1.097	1.271	0.064							
Hematologic Disease	0.251	0.031	0.471	1.285	1.031	1.601	0.461	0.584	0.000	0.025
	1.094	1.267	0.254							
Diabetes	0.249	0.196	0.301	1.282	1.216	1.352	0.422	0.581	0.000	0.000
	1.101	1.274	0.066							
Asthma	-0.236	-0.375	-0.097	0.790	0.687	0.908	0.465	0.362	0.000	0.001
	0.913	0.793	0.103							
Diarrhea	-0.211	-0.280	-0.142	0.810	0.755	0.868	0.475	0.380	0.000	0.000
	0.922	0.807	0.055							
Gender_F	-0.188	-0.233	-0.142	0.829	0.792	0.867	0.471	0.451	0.001	0.000
	0.925	0.811	0.037							
Schooling Medium 1-3	-0.167	-0.244	-0.090	0.846	0.784	0.914	0.477	0.339	0.000	0.000
	0.936	0.838	0.062							
Contact Birds Pigs	-0.157	-0.415	0.101	0.855	0.660	1.106	0.463	0.372	0.006	0.233
	0.942	0.864	0.195							
Race White	-0.139	-0.193	-0.086	0.870	0.825	0.918	0.491	0.395	0.000	0.000
	0.947	0.865	0.045							
Cardiovascular Disease	0.131	0.081	0.181	1.140	1.084	1.199	0.410	0.565	0.000	0.000
	1.048	1.132	0.056							
Acute Respiratory Distress Syndrome	0.053	0.001	0.104	1.054	1.001	1.109	0.448	0.505	0.000	0.044
	1.013	1.038	0.053							
Vomiting	-0.046	-0.135	0.043	0.955	0.874	1.044	0.468	0.393	0.000	0.315
	0.981	0.956	0.081							
Age 50-65	-0.037	-0.109	0.036	0.964	0.896	1.036	0.480	0.422	0.000	0.317
	0.883	0.720	0.068							
Schooling Elem 1-5	0.034	-0.048	0.117	1.035	0.953	1.124	0.454	0.559	0.000	0.416
	1.011	1.027	0.082							

Recursive Feature Elimination:

Number of features selected
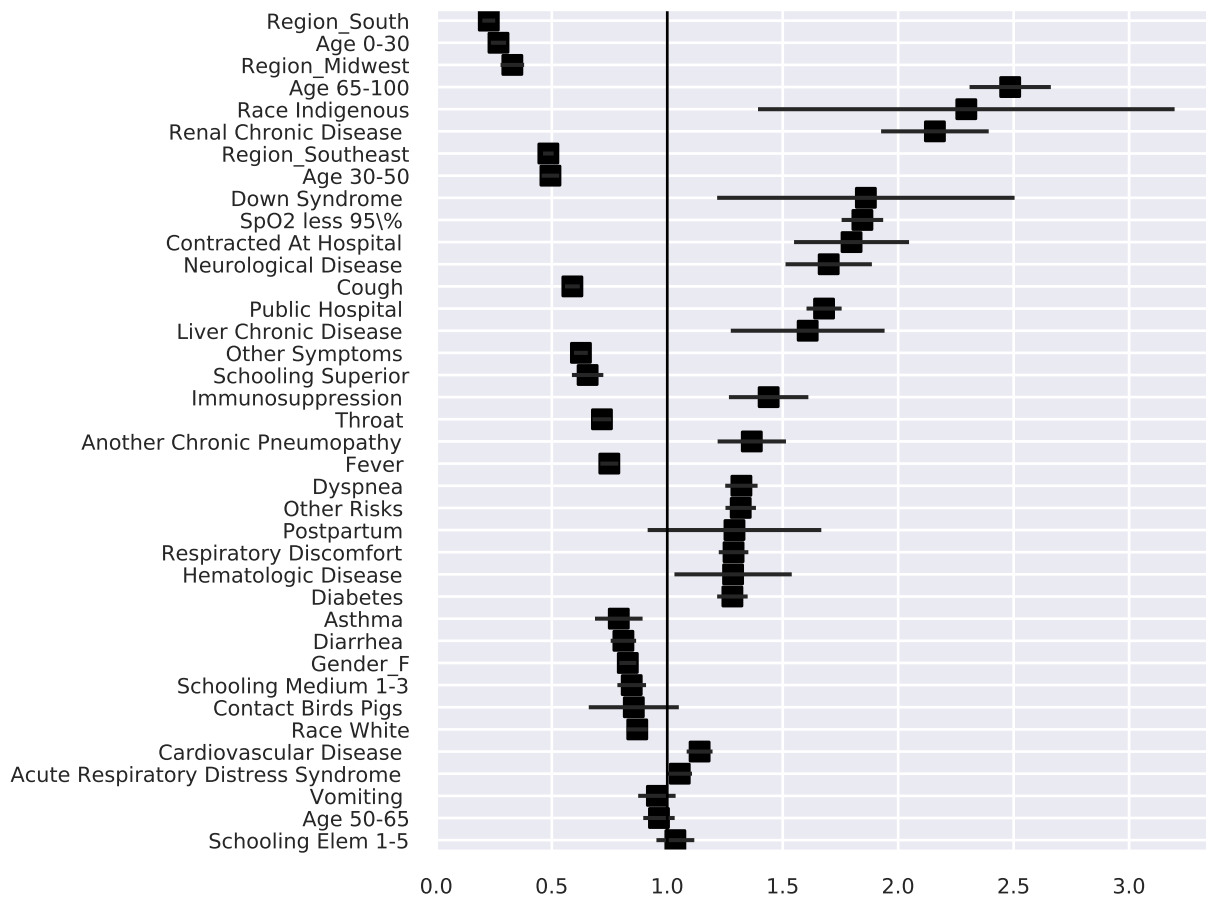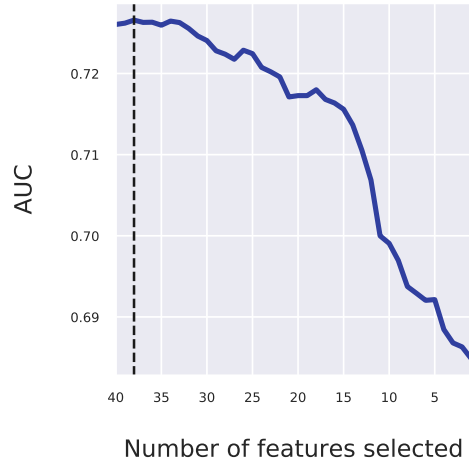
Performance:

|	SVM-l1	LR-l1	LR-l2	RF	XGBoost
Accuracy	0.703	0.702	0.702	0.677	0.706
F1w	0.703	0.702	0.702	0.677	0.706
AUC	0.772	0.772	0.772	0.748	0.776
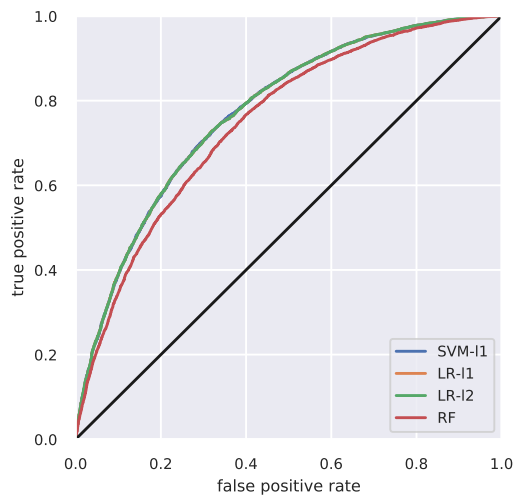
Coefficients:

	SVM-l1	LR-l1
Age 0-30	0.561	0.197
Region_South	0.568	0.220
Region_Midwest	0.650	0.323
Age 30-50	0.681	0.363
Region_Southeast	0.744	0.468
Cough	0.806	0.569
Other Symptoms	0.831	0.614
Schooling Superior	0.855	0.646
Throat	0.882	0.717
Age 50-65	0.883	0.720
Fever	0.882	0.724
Asthma	0.913	0.793
Diarrhea	0.922	0.807
Gender_F	0.925	0.811
Schooling Medium 1-3	0.936	0.838
Contact Birds Pigs	0.942	0.864
Race White	0.947	0.865
Vomiting	0.981	0.956
Schooling Elem 1-5	1.011	1.027
Acute Respiratory Distress Syndrome	1.013	1.038
Cardiovascular Disease	1.048	1.132
Postpartum	1.064	1.224
Hematologic Disease	1.094	1.267
Respiratory Discomfort	1.097	1.271
Diabetes	1.101	1.274
Dyspnea	1.099	1.281
Other Risks	1.105	1.302
Another Chronic Pneumopathy	1.128	1.360
Immunosuppression	1.148	1.428
Liver Chronic Disease	1.195	1.579
Public Hospital	1.212	1.646
Neurological Disease	1.223	1.681
Contracted At Hospital	1.238	1.762
Down Syndrome	1.254	1.792
Age 65-100	1.319	1.817
SpO2 less 95\%	1.261	1.831
Race Indigenous	1.330	2.104
Renal Chronic Disease	1.344	2.134

2.2 Mortality (previous) small

SVM-l1	Coef LR-l1 / err	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Region_South	-1.477	-1.593	-1.361	0.228	0.203	0.257	0.474	0.224	0.0	0.0
0.528	0.211	0.025								
Age 30-50	-1.177	-1.229	-1.125	0.308	0.293	0.325	0.548	0.226	0.0	0.0
0.607	0.297	0.015								
Region_Midwest	-1.156	-1.312	-1.000	0.315	0.269	0.368	0.465	0.314	0.0	0.0
0.601	0.296	0.046								
Renal Chronic Disease	0.845	0.738	0.951	2.327	2.092	2.589	0.451	0.698	0.0	0.0
1.406	2.290	0.235								
Region_Southeast	-0.618	-0.658	-0.579	0.539	0.518	0.561	0.533	0.413	0.0	0.0
0.738	0.494	0.021								
Public Hospital	0.564	0.522	0.605	1.758	1.686	1.832	0.405	0.556	0.0	0.0
1.244	1.675	0.072								
Another Chronic Pneumopathy	0.533	0.425	0.641	1.704	1.529	1.899	0.455	0.635	0.0	0.0
1.245	1.676	0.175								
Respiratory Discomfort	0.530	0.489	0.571	1.699	1.631	1.770	0.391	0.508	0.0	0.0
1.220	1.605	0.068								
Cardiovascular Disease	0.476	0.432	0.520	1.610	1.541	1.682	0.409	0.568	0.0	0.0
1.207	1.549	0.069								
Fever	-0.409	-0.450	-0.367	0.665	0.638	0.693	0.556	0.430	0.0	0.0
0.807	0.603	0.027								
Hematologic Disease	0.372	0.171	0.574	1.451	1.186	1.775	0.461	0.587	0.0	0.0
1.155	1.413	0.265								
Schooling Medium 1-3	-0.367	-0.438	-0.296	0.693	0.646	0.744	0.476	0.342	0.0	0.0
0.854	0.681	0.047								
Asthma	-0.360	-0.489	-0.231	0.698	0.613	0.794	0.465	0.362	0.0	0.0
0.858	0.690	0.085								
Other Risks	0.358	0.312	0.404	1.431	1.367	1.498	0.435	0.538	0.0	0.0
1.141	1.369	0.064								
Acute Respiratory Distress Syndrome	0.182	0.135	0.230	1.200	1.145	1.258	0.444	0.514	0.0	0.0
1.062	1.154	0.055								

Recursive Feature Elimination:

Number of features selected
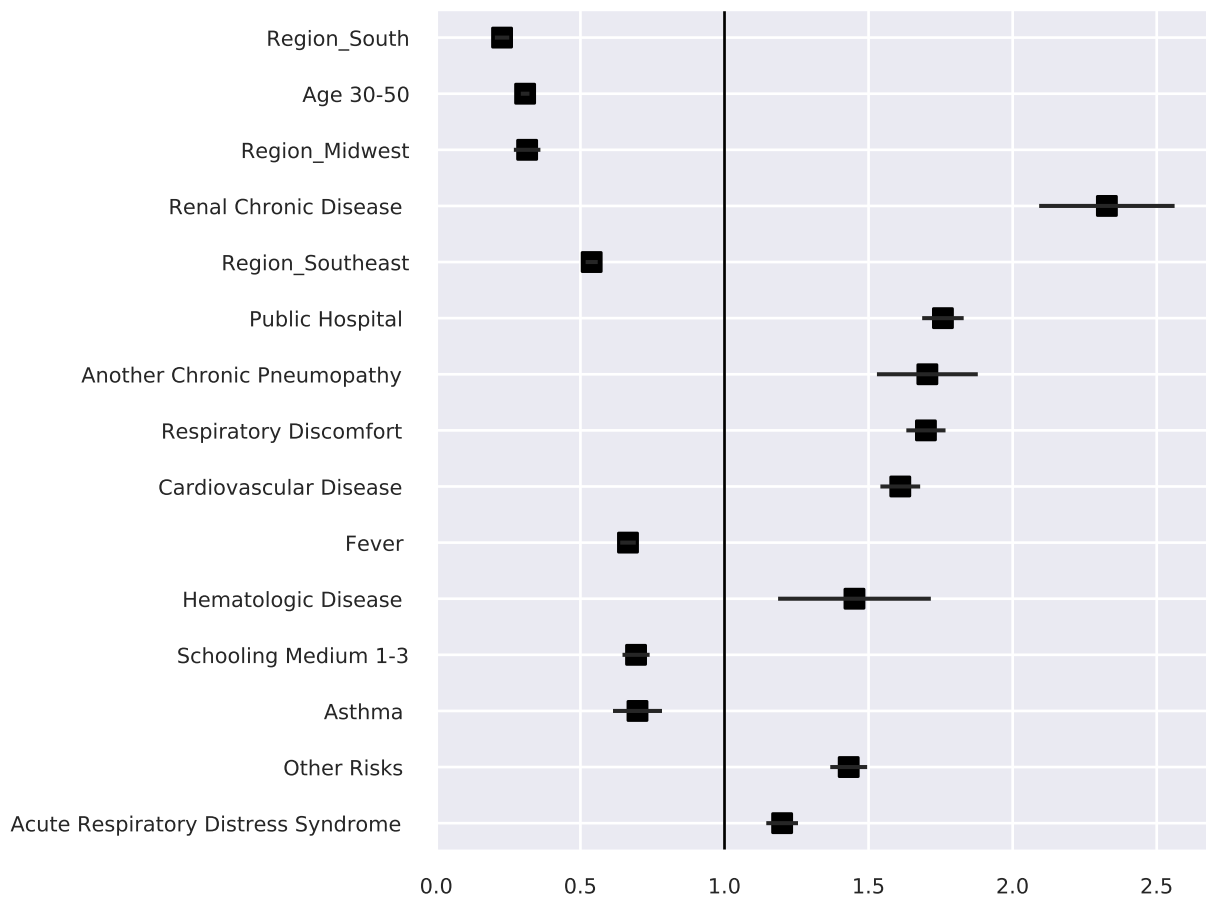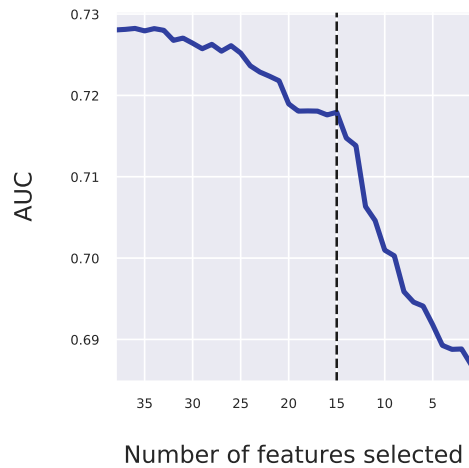
Coefficients:

	SVM-l1	LR-l1
Region_South	0.528	0.211
Region_Midwest	0.601	0.296
Age 30-50	0.607	0.297
Region_Southeast	0.738	0.494
Fever	0.807	0.603
Schooling Medium 1-3	0.854	0.681
Asthma	0.858	0.690
Acute Respiratory Distress Syndrome	1.062	1.154
Other Risks	1.141	1.369
Hematologic Disease	1.155	1.413
Cardiovascular Disease	1.207	1.549
Respiratory Discomfort	1.220	1.605
Public Hospital	1.244	1.675
Another Chronic Pneumopathy	1.245	1.676
Renal Chronic Disease	1.406	2.290

Performance:

	SVM-l1	LR-l1	LR-l2	RF	XGBoos
Accuracy	0.649	0.647	0.647	0.637	0.64
F1w	0.649	0.648	0.648	0.638	0.64
AUC	0.705	0.705	0.705	0.695	0.70
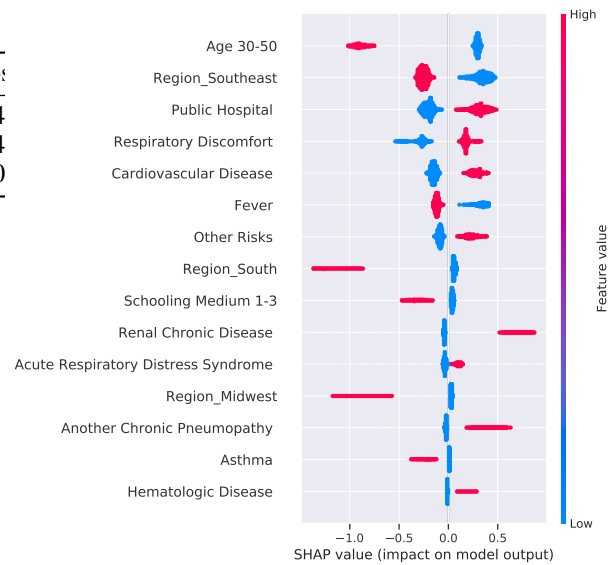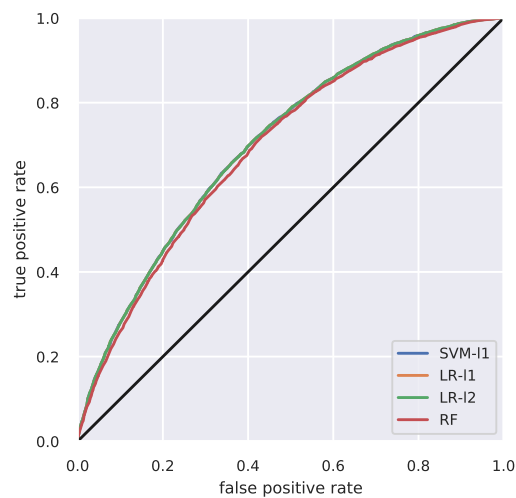
2.3   Mortality (advanced)

Include variables: Antiviral, ICU, Ventilator

| | Coef | 2.5 | 97.5 | Odds Ratio | 2.5 | 97.5 | Avg-0 | Avg-1 | KS-pv | pvalue |
SVM-l1	LR-l1	err								
Ventilator Invasive	2.083	2.007	2.160	8.032	7.439	8.672	0.347	0.858	0.000	0.000
2.110	8.037	0.593								
Age 0-30	-1.744	-1.897	-1.591	0.175	0.150	0.204	0.482	0.146	0.000	0.000
0.547	0.153	0.025								
Region_South	-1.579	-1.726	-1.432	0.206	0.178	0.239	0.474	0.225	0.000	0.000
0.579	0.205	0.028								
Region_Midwest	-1.407	-1.601	-1.212	0.245	0.202	0.298	0.465	0.324	0.000	0.000
0.612	0.245	0.043								
Age 30-50	-0.958	-1.046	-0.870	0.384	0.351	0.419	0.548	0.226	0.000	0.000
0.692	0.337	0.033								
Region_Southeast	-0.765	-0.820	-0.711	0.465	0.441	0.491	0.532	0.415	0.000	0.000
0.751	0.459	0.024								
Age 65-100	0.753	0.673	0.833	2.123	1.960	2.299	0.308	0.677	0.000	0.000
1.295	1.857	0.163								
Neurological Disease	0.660	0.536	0.785	1.935	1.709	2.192	0.452	0.703	0.000	0.000
1.285	1.923	0.226								
ICU	0.645	0.585	0.705	1.906	1.796	2.024	0.357	0.663	0.000	0.000
1.260	1.893	0.110								
Public Hospital	0.640	0.588	0.691	1.896	1.801	1.995	0.403	0.561	0.000	0.000
1.260	1.877	0.095								
Race Indigenous	0.619	0.139	1.099	1.857	1.149	3.002	0.462	0.661	0.000	0.012
1.255	1.736	0.708								
Liver Chronic Disease	0.604	0.343	0.866	1.830	1.409	2.377	0.461	0.652	0.000	0.000
1.235	1.795	0.421								
Schooling Superior	-0.566	-0.688	-0.443	0.568	0.502	0.642	0.475	0.258	0.000	0.000
0.833	0.566	0.066								
Renal Chronic Disease	0.549	0.427	0.671	1.732	1.533	1.956	0.452	0.690	0.000	0.000
1.231	1.722	0.199								
Down Syndrome	0.515	0.035	0.995	1.674	1.036	2.706	0.462	0.593	0.042	0.035
1.198	1.573	0.638								
Other Symptoms	-0.490	-0.545	-0.435	0.613	0.580	0.647	0.508	0.359	0.000	0.000
0.841	0.608	0.033								
Contracted At Hospital	0.484	0.325	0.642	1.622	1.384	1.901	0.458	0.634	0.000	0.000
1.187	1.605	0.238								
SpO2 less 95\%	0.446	0.390	0.501	1.561	1.478	1.650	0.341	0.545	0.000	0.000
1.171	1.557	0.083								
Cough	-0.444	-0.506	-0.382	0.641	0.603	0.682	0.580	0.429	0.000	0.000
0.845	0.632	0.038								
Antiviral Use	-0.411	-0.464	-0.359	0.663	0.629	0.698	0.475	0.441	0.000	0.000
0.863	0.663	0.034								
Immunosuppression	0.372	0.232	0.511	1.451	1.262	1.668	0.459	0.567	0.000	0.000
1.136	1.441	0.189								
Fever	-0.321	-0.379	-0.263	0.725	0.684	0.769	0.560	0.430	0.000	0.000
0.885	0.715	0.041								
Age 50-65	-0.310	-0.390	-0.230	0.733	0.677	0.794	0.481	0.418	0.000	0.000
0.854	0.648	0.056								
Another Chronic Pneumopathy	0.263	0.139	0.388	1.301	1.149	1.474	0.455	0.643	0.000	0.000
1.103	1.297	0.152								
Hematologic Disease	0.245	0.004	0.486	1.278	1.004	1.626	0.461	0.577	0.000	0.046
1.079	1.262	0.274								
Asthma	-0.245	-0.400	-0.090	0.783	0.670	0.914	0.465	0.362	0.000	0.002
0.921	0.787	0.113								
Postpartum	-0.239	-0.642	0.164	0.787	0.526	1.178	0.463	0.284	0.000	0.245
0.912	0.813	0.261								
Throat	-0.208	-0.271	-0.145	0.812	0.762	0.865	0.484	0.382	0.000	0.000
0.929	0.812	0.050								
Diarrhea	-0.194	-0.270	-0.118	0.823	0.763	0.888	0.476	0.377	0.000	0.000
0.934	0.824	0.060								
Dyspnea	0.164	0.104	0.223	1.178	1.110	1.250	0.373	0.494	0.000	0.000
1.056	1.162	0.068								
Diabetes	0.161	0.103	0.219	1.174	1.108	1.244	0.423	0.579	0.000	0.000
1.058	1.171	0.066								
Respiratory Discomfort	0.161	0.106	0.217	1.175	1.112	1.242	0.394	0.506	0.000	0.000
1.059	1.168	0.063								
Race White	-0.158	-0.217	-0.099	0.854	0.805	0.906	0.492	0.394	0.000	0.000
0.946	0.852	0.049								
Schooling Elem 1-5	0.150	0.060	0.239	1.161	1.062	1.270	0.455	0.554	0.000	0.001
1.058	1.156	0.099								
Other Risks	0.147	0.091	0.204	1.159	1.095	1.226	0.434	0.542	0.000	0.000
1.051	1.153	0.064								
Gender_F	-0.146	-0.196	-0.097	0.864	0.822	0.908	0.471	0.451	0.000	0.000
0.946	0.856	0.042								
Schooling Medium 1-3	-0.132	-0.216	-0.047	0.877	0.806	0.954	0.477	0.344	0.000	0.002
0.952	0.873	0.071								
Vomiting	0.077	-0.020	0.174	1.080	0.981	1.191	0.468	0.395	0.000	0.118
1.024	1.076	0.099								

Ventilator Invasive
Age 0-30
Region_South
Region_Midwest
Age 30-50
Region_Southeast
Age 65-100
Neurological Disease
ICU
Public Hospital
Race Indigenous
Liver Chronic Disease
Schooling Superior
Renal Chronic Disease
Down Syndrome
Other Symptoms
Contracted At Hospital
SpO2 less 95\%
Cough
Antiviral Use
Immunosuppression
Fever
Age 50-65
Another Chronic Pneumopathy
Hematologic Disease
Asthma
Postpartum
Throat
Diarrhea
Dyspnea
Diabetes
Respiratory Discomfort
Race White
Schooling Elem 1-5
Other Risks
Gender_F
Schooling Medium 1-3
Vomiting
Cardiovascular Disease
Acute Respiratory Distress Syndrome

0   2   4   6   8

Recursive Feature Elimination:

Performance:

	SVM-l1	LR-l1	LR-l2	RF	XGBoost
Accuracy	0.762	0.762	0.762	0.749	0.764
F1w	0.762	0.762	0.761	0.749	0.763
AUC	0.847	0.847	0.847	0.829	0.850
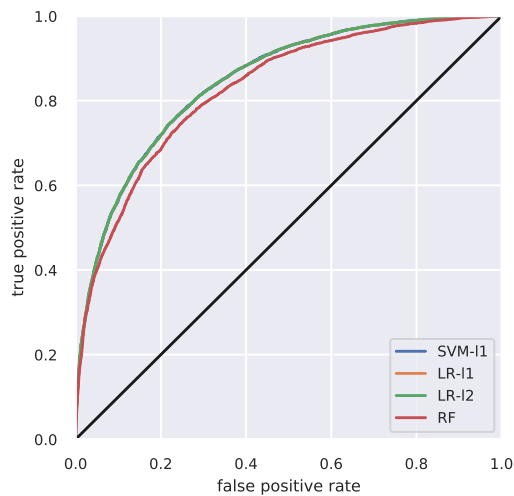
Coefficients:

	SVM-l1	LR-l1
Age 0-30	0.547	0.153
Region_South	0.579	0.205
Region_Midwest	0.612	0.245
Age 30-50	0.692	0.337
Region_Southeast	0.751	0.459
Schooling Superior	0.833	0.566
Other Symptoms	0.841	0.608
Cough	0.845	0.632
Age 50-65	0.854	0.648
Antiviral Use	0.863	0.663
Fever	0.885	0.715
Asthma	0.921	0.787
Throat	0.929	0.812
Postpartum	0.912	0.813
Diarrhea	0.934	0.824
Race White	0.946	0.852
Gender_F	0.946	0.856
Schooling Medium 1-3	0.952	0.873
Acute Respiratory Distress Syndrome	0.989	0.977
Cardiovascular Disease	1.019	1.059
Vomiting	1.024	1.076
Other Risks	1.051	1.153
Schooling Elem 1-5	1.058	1.156
Dyspnea	1.056	1.162
Respiratory Discomfort	1.059	1.168
Diabetes	1.058	1.171
Hematologic Disease	1.079	1.262
Another Chronic Pneumopathy	1.103	1.297
Immunosuppression	1.136	1.441
SpO2 less 95\%	1.171	1.557
Down Syndrome	1.198	1.573
Contracted At Hospital	1.187	1.605
Renal Chronic Disease	1.231	1.722
Race Indigenous	1.255	1.736
Liver Chronic Disease	1.235	1.795
Age 65-100	1.295	1.857
Public Hospital	1.260	1.877
ICU	1.260	1.893
Neurological Disease	1.285	1.923
Ventilator Invasive	2.110	8.037
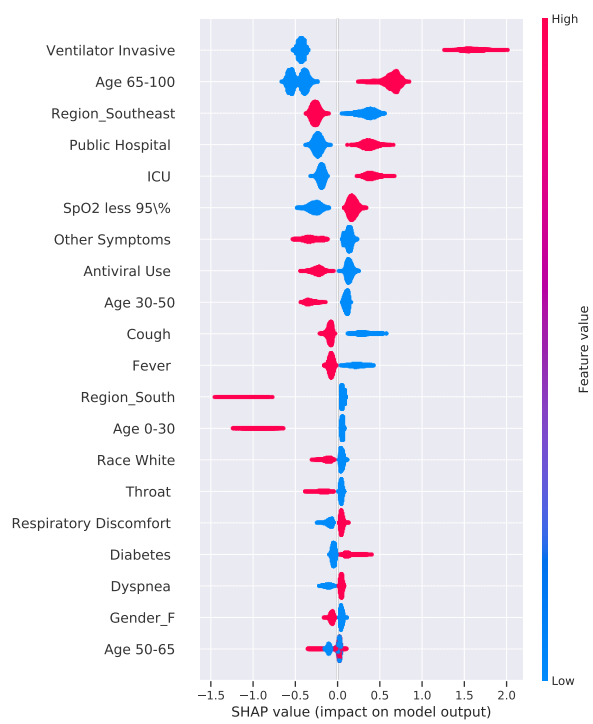
2.4 Mortality (advanced) small

Include variables: Antiviral, ICU, Ventilator

| SVM-l1 / LR-l1	Coef / LR-l1	2.5 err	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Ventilator Invasive	2.221	2.150	2.293	9.219	8.585	9.901	0.347	0.858	0.000	0.000
2.378	8.837	0.634								
Schooling Superior	-1.369	-1.474	-1.264	0.254	0.229	0.283	0.475	0.249	0.000	0.000
0.672	0.322	0.025								
Region_Midwest	-1.114	-1.279	-0.949	0.328	0.278	0.387	0.465	0.325	0.000	0.000
0.727	0.405	0.050								
Schooling Medium 1-3	-0.839	-0.910	-0.768	0.432	0.402	0.464	0.476	0.343	0.000	0.000
0.794	0.544	0.030								
Neurological Disease	0.772	0.660	0.884	2.163	1.934	2.419	0.452	0.695	0.000	0.000
1.462	2.444	0.229								
Race Indigenous	0.756	0.320	1.193	2.131	1.377	3.297	0.462	0.654	0.001	0.001
1.483	2.455	0.754								
Antiviral Use	-0.670	-0.714	-0.625	0.512	0.490	0.535	0.472	0.445	0.000	0.000
0.852	0.656	0.022								
Renal Chronic Disease	0.644	0.533	0.755	1.904	1.704	2.127	0.451	0.702	0.000	0.000
1.358	2.113	0.200								
Asthma	-0.641	-0.778	-0.504	0.527	0.459	0.604	0.465	0.360	0.000	0.000
0.834	0.613	0.068								
Vomiting	-0.404	-0.485	-0.322	0.668	0.616	0.725	0.467	0.402	0.000	0.000
0.929	0.830	0.052								
Another Chronic Pneumopathy	0.365	0.252	0.478	1.441	1.287	1.613	0.455	0.632	0.000	0.000
1.189	1.541	0.154								
ICU	0.190	0.139	0.241	1.209	1.149	1.273	0.358	0.662	0.000	0.000
1.196	1.552	0.060								
Respiratory Discomfort	-0.188	-0.225	-0.152	0.829	0.799	0.859	0.391	0.507	0.000	0.000
1.153	1.432	0.030								
Cardiovascular Disease	0.180	0.135	0.224	1.197	1.145	1.251	0.409	0.567	0.000	0.000
1.209	1.611	0.052								
Immunosuppression	0.092	-0.032	0.215	1.096	0.969	1.240	0.459	0.563	0.000	0.145
1.116	1.321	0.127								
Other Risks	0.004	-0.044	0.052	1.004	0.957	1.053	0.436	0.537	0.000	0.866
1.119	1.329	0.047								
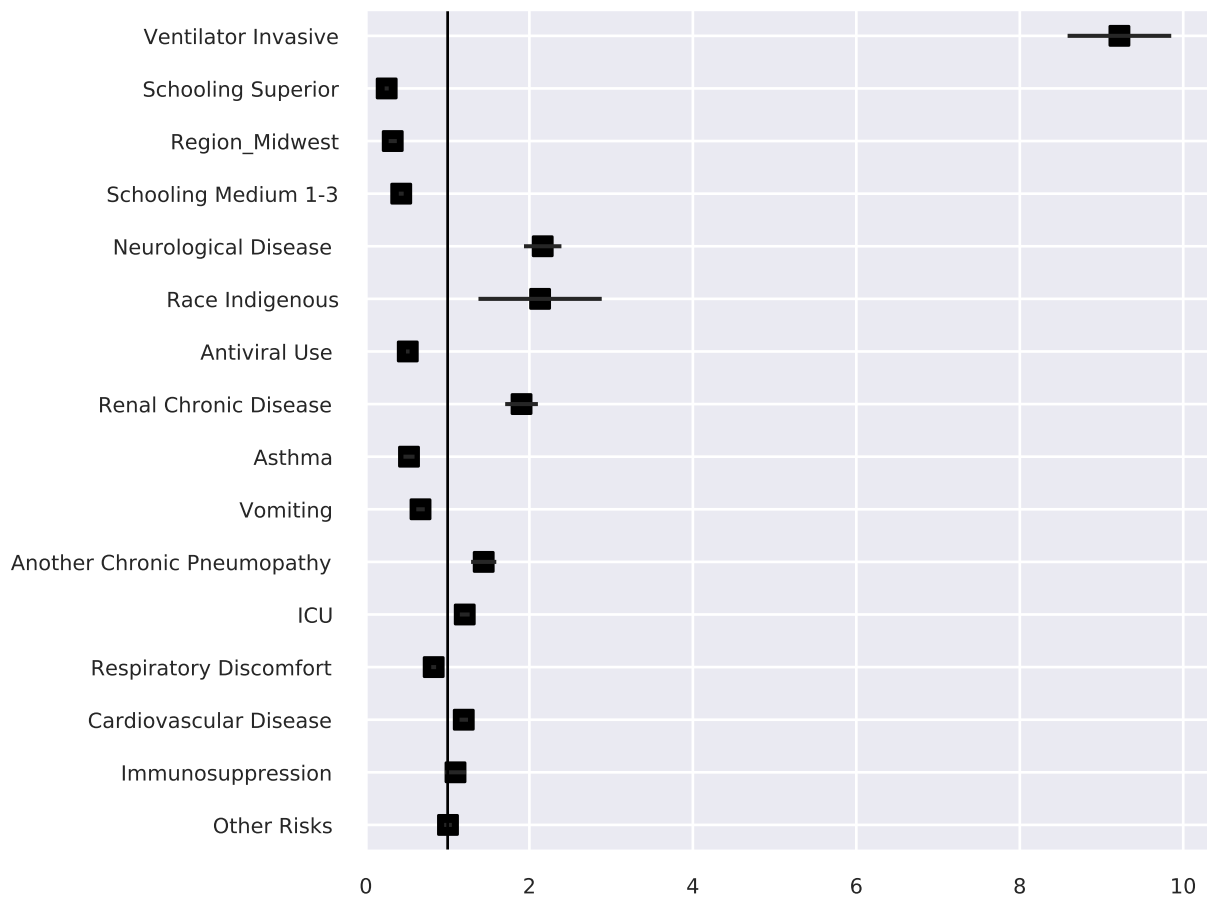
Recursive Feature Elimination:
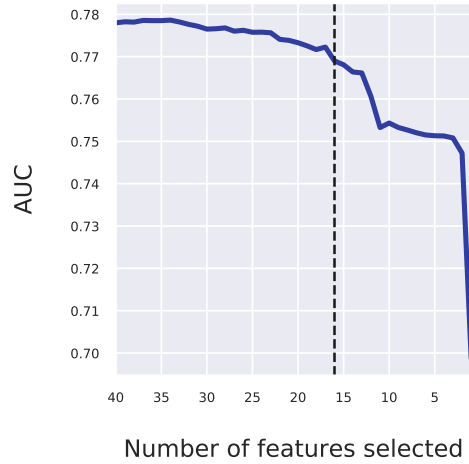
Coefficients:

	SVM-l1	LR-l1
Schooling Superior	0.672	0.322
Region_Midwest	0.727	0.405
Schooling Medium 1-3	0.794	0.544
Asthma	0.834	0.613
Antiviral Use	0.852	0.656
Vomiting	0.929	0.830
Immunosuppression	1.116	1.321
Other Risks	1.119	1.329
Respiratory Discomfort	1.153	1.432
Another Chronic Pneumopathy	1.189	1.541
ICU	1.196	1.552
Cardiovascular Disease	1.209	1.611
Renal Chronic Disease	1.358	2.113
Neurological Disease	1.462	2.444
Race Indigenous	1.483	2.455
Ventilator Invasive	2.378	8.837

Performance:

	SVM-l1	LR-l1	LR-l2	RF	XGBoos
Accuracy	0.707	0.707	0.707	0.701	0.70
F1w	0.698	0.698	0.698	0.689	0.70
AUC	0.774	0.774	0.774	0.759	0.77
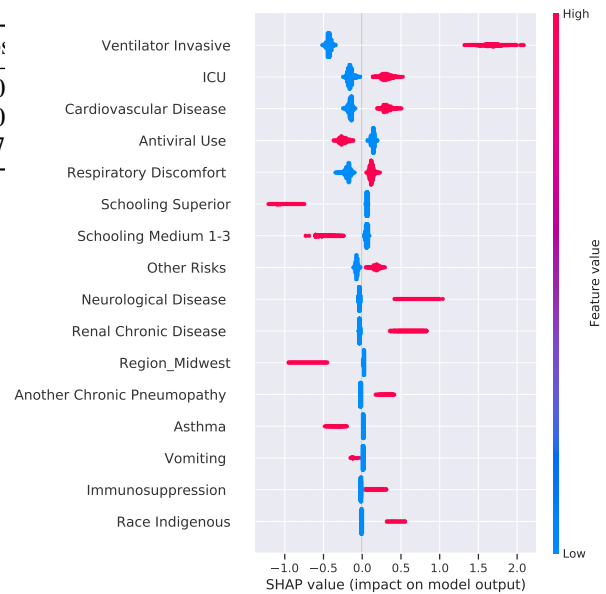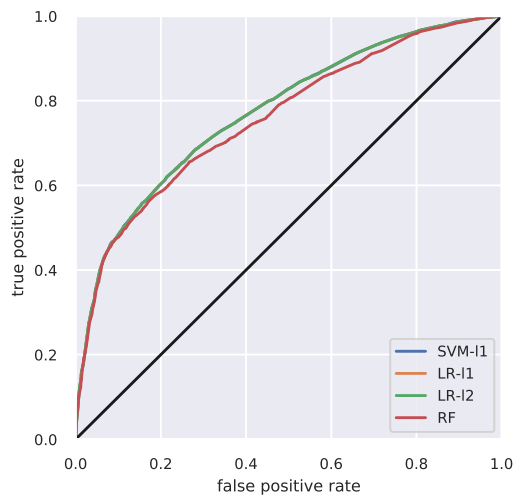
2.5 ICU

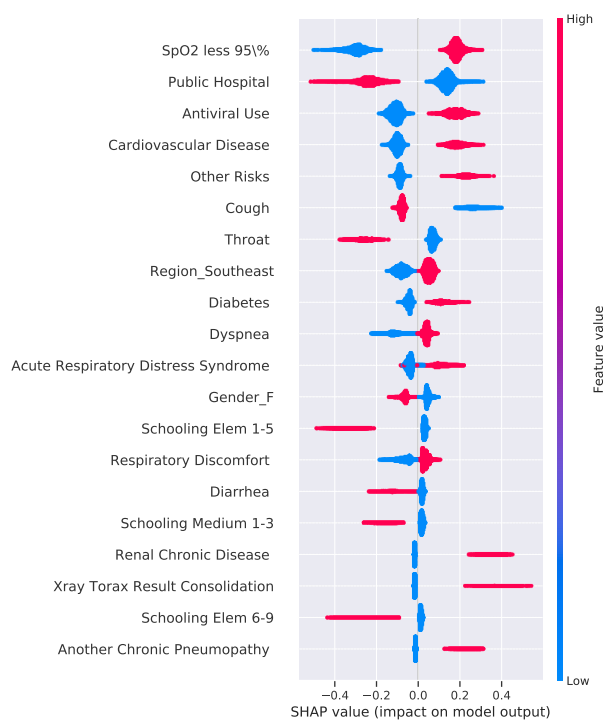| SVM-l1	Coef LR-l1	2.5 err	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Race Indigenous	-0.717	-1.244	-0.190	0.488	0.288	0.827	0.343	0.191	0.026	0.008
0.805	0.571	0.200								
Cough	-0.552	-0.601	-0.503	0.576	0.548	0.605	0.404	0.326	0.000	0.000
0.856	0.700	0.028								
Public Hospital	-0.522	-0.566	-0.479	0.593	0.568	0.620	0.370	0.297	0.000	0.000
0.842	0.664	0.025								
Schooling Elem 1-5	-0.500	-0.583	-0.417	0.607	0.558	0.659	0.349	0.276	0.000	0.000
0.838	0.647	0.049								
Xray Torax Result Consolidation	0.430	0.316	0.544	1.537	1.372	1.722	0.339	0.473	0.000	0.000
1.232	1.588	0.165								
SpO2 less 95\%	0.415	0.368	0.461	1.514	1.445	1.586	0.266	0.395	0.000	0.000
1.219	1.608	0.069								
Renal Chronic Disease	0.360	0.262	0.457	1.433	1.300	1.580	0.336	0.482	0.000	0.000
1.201	1.492	0.133								
Throat	-0.347	-0.401	-0.292	0.707	0.669	0.747	0.361	0.274	0.000	0.000
0.868	0.700	0.038								
Age 0-30	-0.344	-0.442	-0.246	0.709	0.643	0.782	0.349	0.246	0.000	0.000
0.935	0.824	0.066								
Schooling Elem 6-9	-0.320	-0.414	-0.226	0.726	0.661	0.797	0.345	0.304	0.001	0.000
0.902	0.781	0.065								
Gender_F	-0.292	-0.333	-0.252	0.746	0.717	0.778	0.354	0.328	0.000	0.000
0.938	0.858	0.029								
Antiviral Use	0.283	0.240	0.326	1.327	1.271	1.386	0.316	0.389	0.000	0.000
1.138	1.359	0.056								
Fever	-0.273	-0.319	-0.226	0.761	0.727	0.798	0.373	0.333	0.000	0.000
0.974	0.943	0.034								
Schooling Medium 1-3	-0.263	-0.333	-0.193	0.769	0.717	0.825	0.348	0.301	0.000	0.000
0.926	0.828	0.052								
Another Chronic Pneumopathy	0.259	0.156	0.362	1.296	1.169	1.436	0.338	0.460	0.000	0.000
1.133	1.308	0.127								
Other Risks	0.249	0.203	0.296	1.283	1.225	1.344	0.317	0.416	0.000	0.000
1.164	1.415	0.058								
Contracted At Hospital	0.247	0.119	0.374	1.280	1.126	1.454	0.340	0.455	0.000	0.000
1.163	1.395	0.154								
Cardiovascular Disease	0.207	0.161	0.252	1.229	1.175	1.287	0.309	0.411	0.000	0.000
1.128	1.319	0.054								
Diarrhea	-0.198	-0.263	-0.133	0.820	0.769	0.875	0.350	0.298	0.000	0.000
0.936	0.849	0.051								
Region_Midwest	0.191	0.050	0.333	1.211	1.051	1.395	0.342	0.393	0.018	0.008
1.173	1.451	0.160								
Vomiting	-0.177	-0.261	-0.093	0.838	0.770	0.911	0.347	0.293	0.000	0.000
0.942	0.863	0.068								
Hematologic Disease	0.145	-0.054	0.345	1.157	0.947	1.412	0.342	0.418	0.012	0.154
1.075	1.174	0.210								
Diabetes	0.124	0.075	0.172	1.132	1.078	1.188	0.322	0.404	0.000	0.000
1.076	1.183	0.054								
Liver Chronic Disease	0.115	-0.094	0.323	1.122	0.910	1.382	0.342	0.415	0.027	0.281
1.066	1.156	0.212								
Region_Southeast	-0.090	-0.131	-0.049	0.914	0.877	0.952	0.317	0.361	0.000	0.000
1.056	1.142	0.037								
Immunosuppression	0.087	-0.031	0.205	1.091	0.970	1.227	0.341	0.407	0.000	0.147
1.060	1.139	0.121								
Acute Respiratory Distress Syndrome	0.071	0.024	0.118	1.073	1.024	1.125	0.334	0.370	0.000	0.003
1.069	1.172	0.049								
Race White	-0.042	-0.089	0.005	0.959	0.915	1.005	0.337	0.358	0.001	0.083
1.003	1.007	0.044								
Respiratory Discomfort	0.041	-0.006	0.087	1.042	0.994	1.091	0.310	0.364	0.000	0.085
1.051	1.123	0.048								
Schooling Superior	0.039	-0.051	0.130	1.040	0.950	1.139	0.341	0.371	0.040	0.395
1.064	1.155	0.090								
Neurological Disease	0.034	-0.067	0.135	1.034	0.935	1.145	0.340	0.420	0.000	0.513
1.030	1.065	0.099								
Dyspnea	-0.014	-0.063	0.035	0.986	0.939	1.035	0.297	0.360	0.000	0.576
1.072	1.183	0.047								
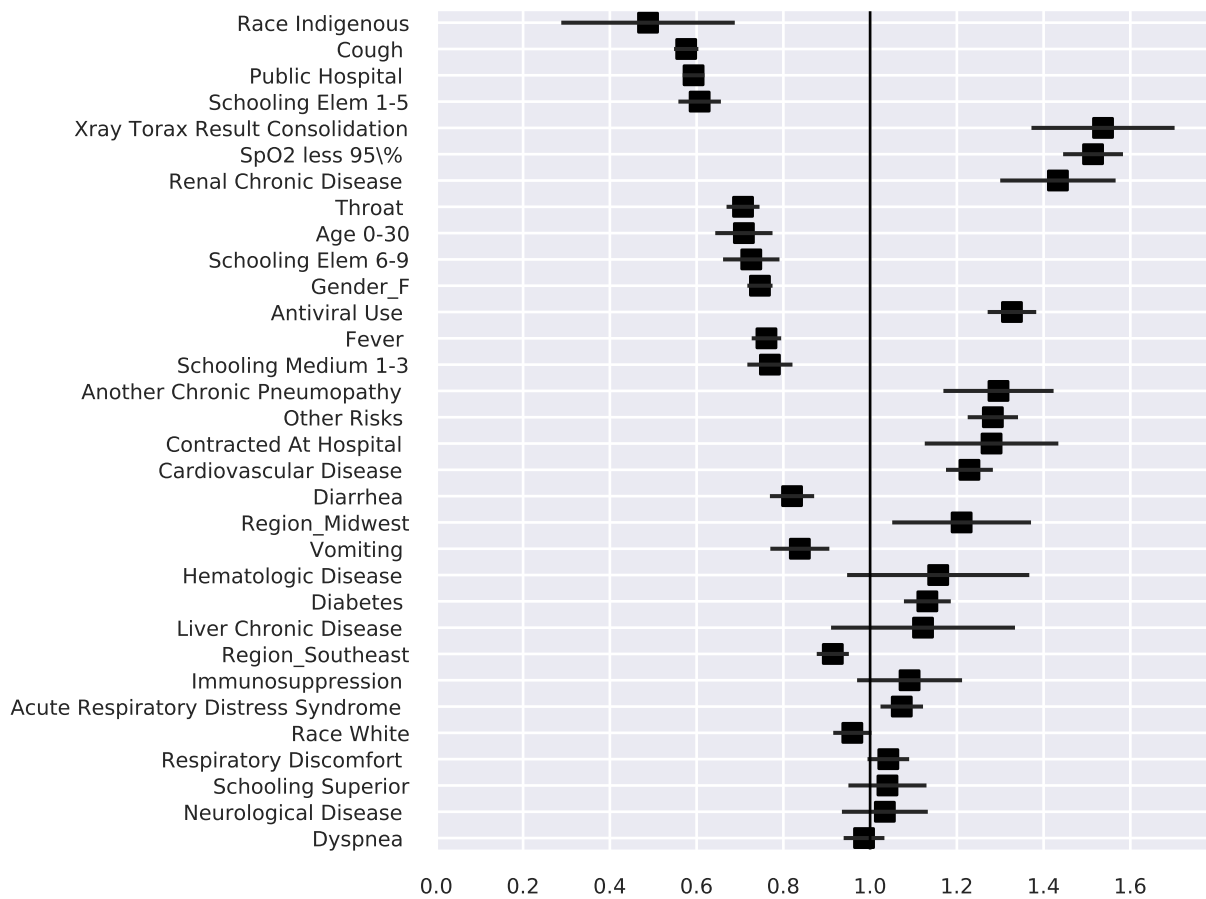
Recursive Feature Elimination:
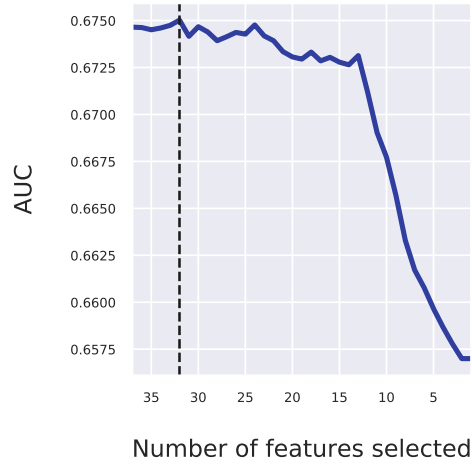
Performance:

|	SVM-l1	LR-l1	LR-l2	RF	XGBoost
Accuracy	0.663	0.662	0.662	0.641	0.665
F1w	0.609	0.610	0.610	0.503	0.608
AUC	0.654	0.655	0.655	0.646	0.662
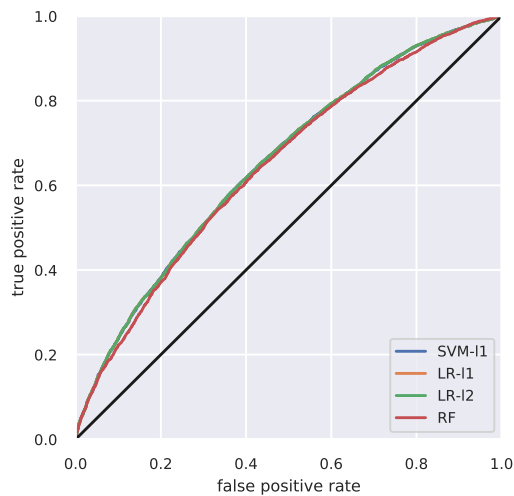
Coefficients:

	SVM-l1	LR-l1
Race Indigenous	0.805	0.571
Schooling Elem 1-5	0.838	0.647
Public Hospital	0.842	0.664
Throat	0.868	0.700
Cough	0.856	0.700
Schooling Elem 6-9	0.902	0.781
Age 0-30	0.935	0.824
Schooling Medium 1-3	0.926	0.828
Diarrhea	0.936	0.849
Gender_F	0.938	0.858
Vomiting	0.942	0.863
Fever	0.974	0.943
Race White	1.003	1.007
Neurological Disease	1.030	1.065
Respiratory Discomfort	1.051	1.123
Immunosuppression	1.060	1.139
Region_Southeast	1.056	1.142
Schooling Superior	1.064	1.155
Liver Chronic Disease	1.066	1.156
Acute Respiratory Distress Syndrome	1.069	1.172
Hematologic Disease	1.075	1.174
Dyspnea	1.072	1.183
Diabetes	1.076	1.183
Another Chronic Pneumopathy	1.133	1.308
Cardiovascular Disease	1.128	1.319
Antiviral Use	1.138	1.359
Contracted At Hospital	1.163	1.395
Other Risks	1.164	1.415
Region_Midwest	1.173	1.451
Renal Chronic Disease	1.201	1.492
Xray Torax Result Consolidation	1.232	1.588
SpO2 less 95\%	1.219	1.608

2.6 ICU small

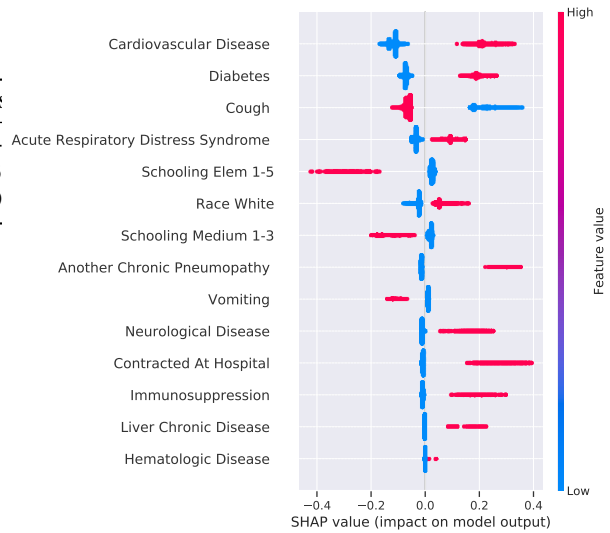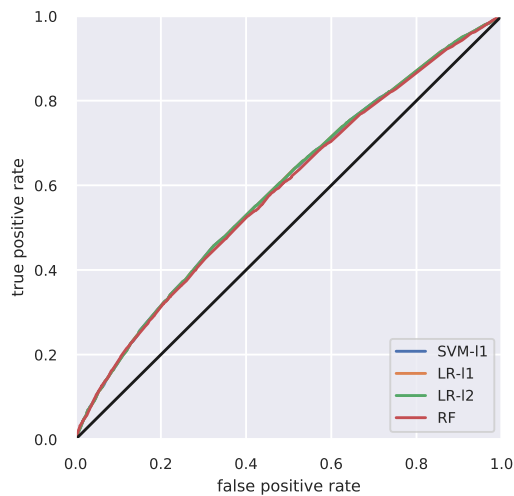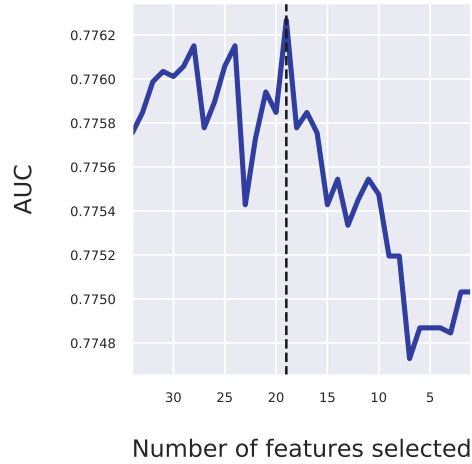| SVM-l1	Coef LR-l1	2.5 err	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Cough	-0.776	-0.808	-0.743	0.460	0.446	0.476	0.400	0.327	0.000	0.000
0.872	0.739	0.014								
Schooling Elem 1-5	-0.492	-0.571	-0.412	0.612	0.565	0.662	0.349	0.280	0.000	0.000
0.843	0.669	0.047								
Schooling Medium 1-3	-0.300	-0.368	-0.232	0.741	0.692	0.793	0.348	0.303	0.000	0.000
0.919	0.822	0.049								
Vomiting	-0.293	-0.372	-0.214	0.746	0.689	0.808	0.347	0.301	0.000	0.000
0.924	0.830	0.057								
Another Chronic Pneumopathy	0.281	0.183	0.380	1.325	1.200	1.462	0.339	0.454	0.000	0.000
1.185	1.435	0.125								
Contracted At Hospital	0.236	0.113	0.359	1.266	1.119	1.431	0.340	0.468	0.000	0.000
1.189	1.440	0.147								
Cardiovascular Disease	0.215	0.172	0.258	1.240	1.188	1.294	0.309	0.411	0.000	0.000
1.171	1.419	0.052								
Diabetes	0.177	0.130	0.224	1.194	1.139	1.251	0.321	0.411	0.000	0.000
1.138	1.329	0.055								
Immunosuppression	0.166	0.053	0.278	1.180	1.055	1.320	0.341	0.421	0.000	0.004
1.143	1.339	0.125								
Liver Chronic Disease	0.150	-0.052	0.353	1.162	0.949	1.423	0.343	0.436	0.002	0.146
1.112	1.249	0.213								
Neurological Disease	0.129	0.030	0.228	1.138	1.031	1.256	0.340	0.432	0.000	0.010
1.114	1.258	0.107								
Hematologic Disease	0.092	-0.102	0.287	1.097	0.903	1.332	0.343	0.416	0.018	0.353
1.086	1.190	0.194								
Race White	-0.042	-0.085	0.001	0.959	0.918	1.001	0.338	0.356	0.006	0.057
1.048	1.112	0.041								
Acute Respiratory Distress Syndrome	0.031	-0.014	0.076	1.031	0.986	1.079	0.334	0.372	0.000	0.179
1.080	1.189	0.045								
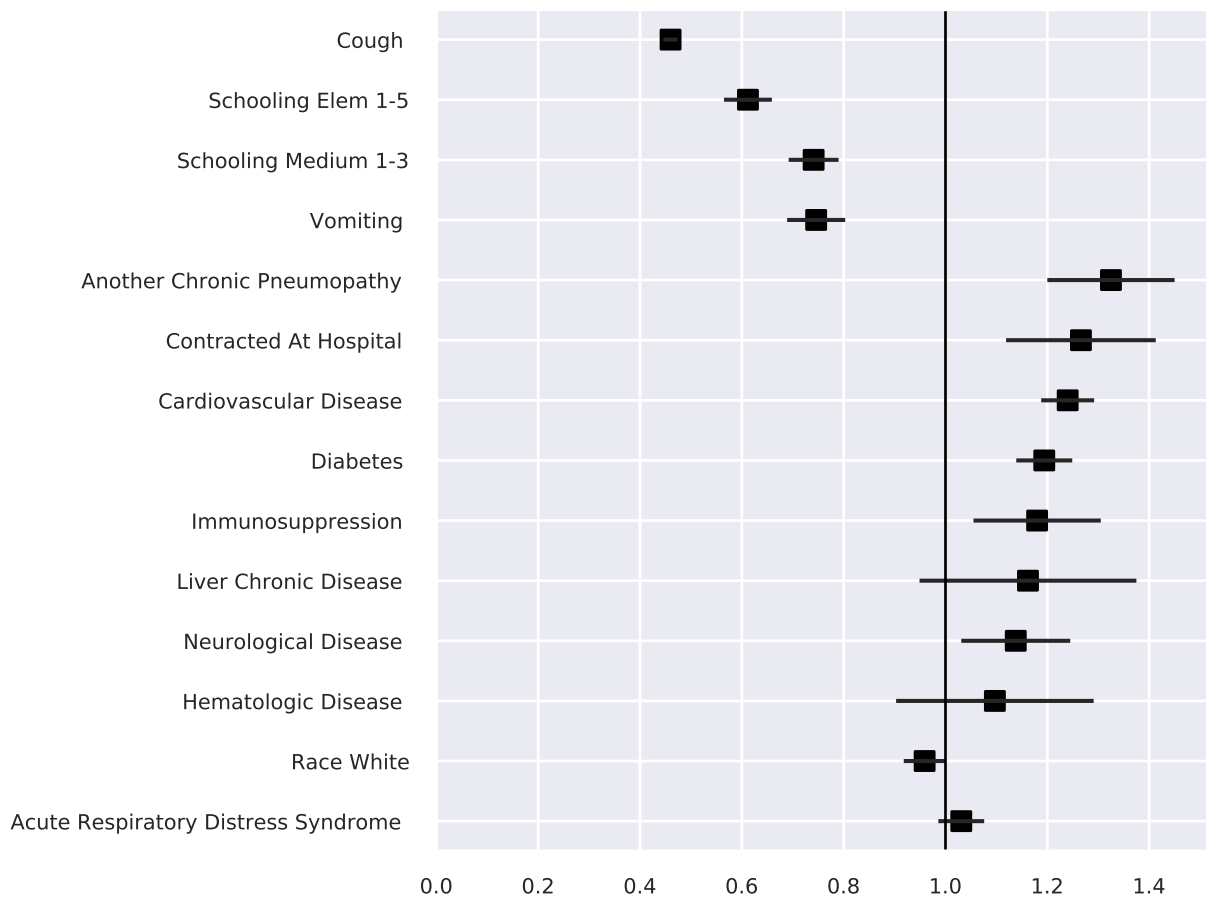
Recursive Feature Elimination:
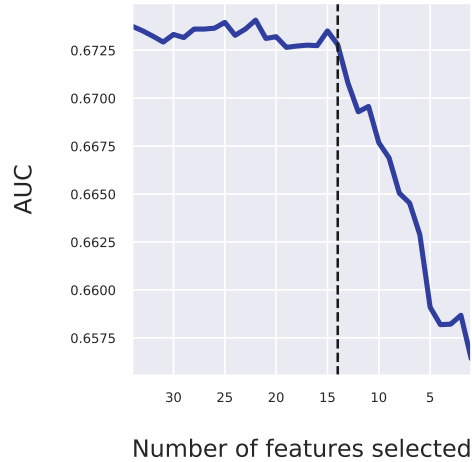
Coefficients:

	SVM-l1	LR-l1
Schooling Elem 1-5	0.843	0.669
Cough	0.872	0.739
Schooling Medium 1-3	0.919	0.822
Vomiting	0.924	0.830
Race White	1.048	1.112
Acute Respiratory Distress Syndrome	1.080	1.189
Hematologic Disease	1.086	1.190
Liver Chronic Disease	1.112	1.249
Neurological Disease	1.114	1.258
Diabetes	1.138	1.329
Immunosuppression	1.143	1.339
Cardiovascular Disease	1.171	1.419
Another Chronic Pneumopathy	1.185	1.435
Contracted At Hospital	1.189	1.440

Performance:

	SVM-l1	LR-l1	LR-l2	RF	XGBoos
Accuracy	0.648	0.648	0.648	0.642	0.64
F1w	0.544	0.544	0.544	0.503	0.53
AUC	0.592	0.592	0.592	0.588	0.59

34

2.7 Ventilator

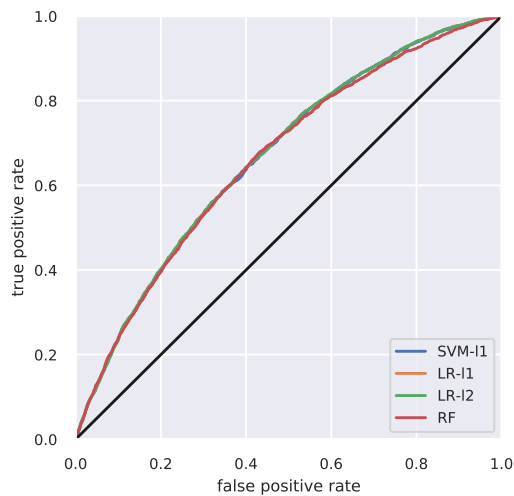| SVM-l1	Coef LR-l1	2.5 err	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Cough	-0.821	-0.873	-0.770	0.440	0.418	0.463	0.278	0.210	0.000	0.000
0.859	0.646	0.022								
Fever	-0.536	-0.586	-0.486	0.585	0.557	0.615	0.253	0.215	0.000	0.000
0.950	0.868	0.028								
Gender_F	-0.474	-0.519	-0.428	0.623	0.595	0.652	0.235	0.211	0.000	0.000
0.948	0.846	0.028								
SpO2 less 95\%	0.467	0.415	0.519	1.596	1.515	1.681	0.135	0.287	0.000	0.000
1.245	2.042	0.081								
Other Symptoms	-0.440	-0.491	-0.389	0.644	0.612	0.678	0.239	0.194	0.000	0.000
0.966	0.895	0.032								
Race White	-0.351	-0.404	-0.299	0.704	0.668	0.741	0.234	0.204	0.000	0.000
0.948	0.845	0.036								
Schooling Medium 1-3	-0.311	-0.392	-0.230	0.733	0.675	0.795	0.230	0.182	0.000	0.000
0.947	0.835	0.058								
Schooling Superior	-0.293	-0.406	-0.180	0.746	0.666	0.835	0.228	0.170	0.000	0.000
0.962	0.863	0.080								
Throat	-0.284	-0.347	-0.222	0.752	0.707	0.801	0.237	0.181	0.000	0.000
0.901	0.718	0.045								
Diarrhea	-0.282	-0.358	-0.206	0.754	0.699	0.814	0.232	0.179	0.000	0.000
0.933	0.801	0.055								
Diabetes	0.266	0.213	0.319	1.304	1.237	1.375	0.200	0.300	0.000	0.000
1.148	1.474	0.067								
Vomiting	-0.262	-0.361	-0.164	0.769	0.697	0.849	0.229	0.179	0.000	0.000
0.942	0.827	0.072								
Respiratory Discomfort	0.164	0.113	0.216	1.179	1.119	1.241	0.160	0.266	0.000	0.000
1.131	1.452	0.060								
Liver Chronic Disease	0.117	-0.103	0.337	1.124	0.902	1.401	0.224	0.302	0.013	0.297
1.098	1.271	0.222								
Cardiovascular Disease	0.114	0.065	0.164	1.121	1.067	1.178	0.197	0.281	0.000	0.000
1.093	1.298	0.054								
Contracted At Hospital	0.111	-0.025	0.247	1.117	0.976	1.280	0.222	0.318	0.000	0.109
1.152	1.446	0.141								
Dyspnea	-0.069	-0.123	-0.016	0.933	0.885	0.984	0.147	0.253	0.000	0.011
1.128	1.504	0.048								
Neurological Disease	-0.069	-0.183	0.044	0.933	0.833	1.045	0.223	0.269	0.002	0.233
1.008	1.025	0.100								
Acute Respiratory Distress Syndrome	0.051	-0.001	0.103	1.052	0.999	1.108	0.212	0.261	0.000	0.055
1.066	1.209	0.053								

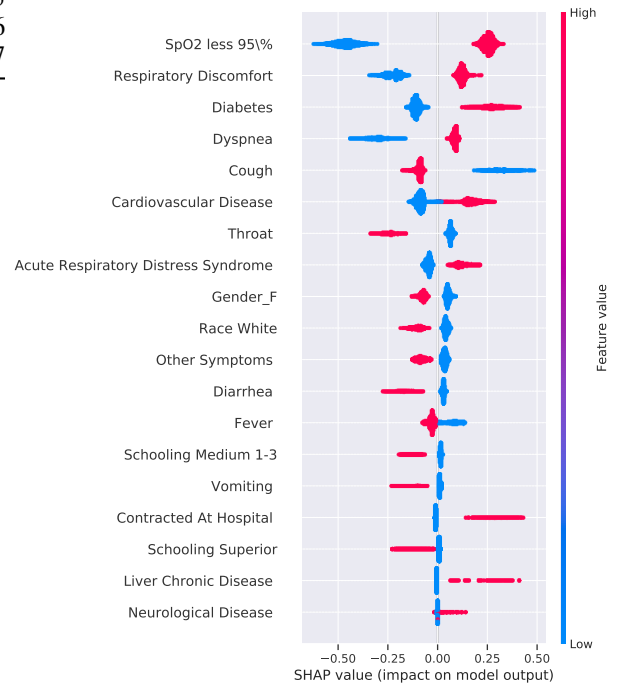Recursive Feature Elimination:

Number of features selected

Coefficients:

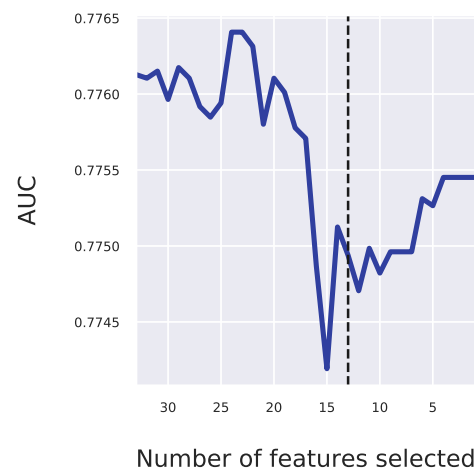|	SVM-l1	LR-l1
Cough	0.859	0.646
Throat	0.901	0.718
Diarrhea	0.933	0.801
Vomiting	0.942	0.827
Schooling Medium 1-3	0.947	0.835
Race White	0.948	0.845
Gender_F	0.948	0.846
Schooling Superior	0.962	0.863
Fever	0.950	0.868
Other Symptoms	0.966	0.895
Neurological Disease	1.008	1.025
Acute Respiratory Distress Syndrome	1.066	1.209
Liver Chronic Disease	1.098	1.271
Cardiovascular Disease	1.093	1.298
Contracted At Hospital	1.152	1.446
Respiratory Discomfort	1.131	1.452
Diabetes	1.148	1.474
Dyspnea	1.128	1.504
SpO2 less 95\%	1.245	2.042

Performance:

	SVM-l1	LR-l1	LR-l2	RF	XGBoost
Accuracy	0.755	0.755	0.755	0.754	0.754
F1w	0.667	0.665	0.665	0.649	0.66
AUC	0.667	0.669	0.669	0.664	0.67

2.8   Ventilator small

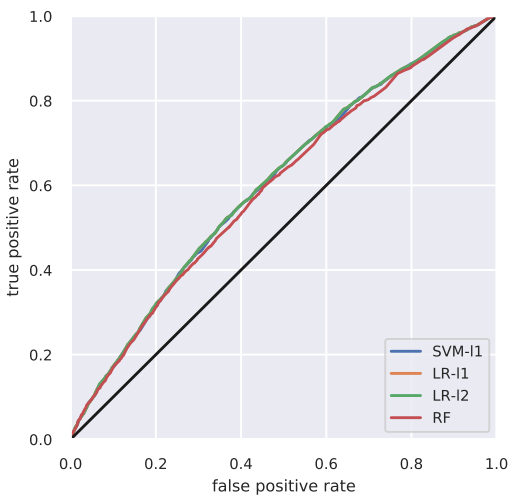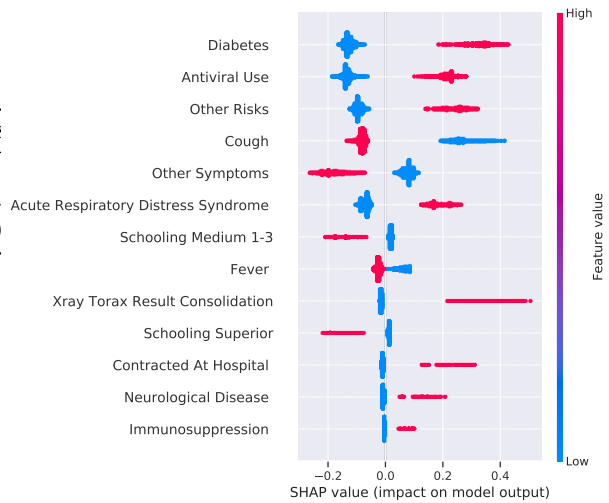|	Coef LR-l1 / SVM-l1	2.5 err	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Cough	-0.896	-0.942	-0.850	0.408	0.390	0.428	0.275	0.210	0.000	0.000
	0.876	0.687	0.018							
Fever	-0.568	-0.614	-0.522	0.566	0.541	0.593	0.250	0.216	0.000	0.000
	0.967	0.907	0.025							
Other Symptoms	-0.560	-0.610	-0.510	0.571	0.543	0.601	0.237	0.196	0.000	0.000
	0.908	0.745	0.028							
Schooling Superior	-0.429	-0.539	-0.320	0.651	0.584	0.726	0.227	0.176	0.000	0.000
	0.923	0.769	0.067							
Schooling Medium 1-3	-0.364	-0.443	-0.284	0.695	0.642	0.753	0.229	0.189	0.000	0.000
	0.937	0.813	0.053							
Xray Torax Result Consolidation	0.296	0.174	0.419	1.345	1.190	1.520	0.222	0.312	0.000	0.000
	1.174	1.529	0.155							
Diabetes	0.257	0.207	0.306	1.293	1.230	1.359	0.200	0.298	0.000	0.000
	1.186	1.603	0.063							
Antiviral Use	0.228	0.182	0.275	1.256	1.199	1.316	0.200	0.267	0.000	0.000
	1.147	1.488	0.057							
Other Risks	0.141	0.091	0.191	1.152	1.095	1.211	0.203	0.285	0.000	0.000
	1.140	1.444	0.057							
Acute Respiratory Distress Syndrome	0.083	0.032	0.133	1.086	1.033	1.142	0.211	0.262	0.000	0.001
	1.103	1.326	0.053							
Neurological Disease	-0.077	-0.190	0.036	0.926	0.827	1.036	0.223	0.273	0.001	0.180
	1.048	1.138	0.099							
Contracted At Hospital	0.029	-0.107	0.164	1.029	0.898	1.178	0.222	0.313	0.000	0.680
	1.132	1.371	0.131							
Immunosuppression	0.006	-0.120	0.132	1.006	0.887	1.141	0.223	0.279	0.000	0.925
	1.069	1.199	0.119							

Recursive Feature Elimination:

AUC vs Number of features selected

Coefficients:

	SVM-l1	LR-l1
Cough	0.876	0.687
Other Symptoms	0.908	0.745
Schooling Superior	0.923	0.769
Schooling Medium 1-3	0.937	0.813
Fever	0.967	0.907
Neurological Disease	1.048	1.138
Immunosuppression	1.069	1.199
Acute Respiratory Distress Syndrome	1.103	1.326
Contracted At Hospital	1.132	1.371
Other Risks	1.140	1.444
Antiviral Use	1.147	1.488
Xray Torax Result Consolidation	1.174	1.529
Diabetes	1.186	1.603

Performance:

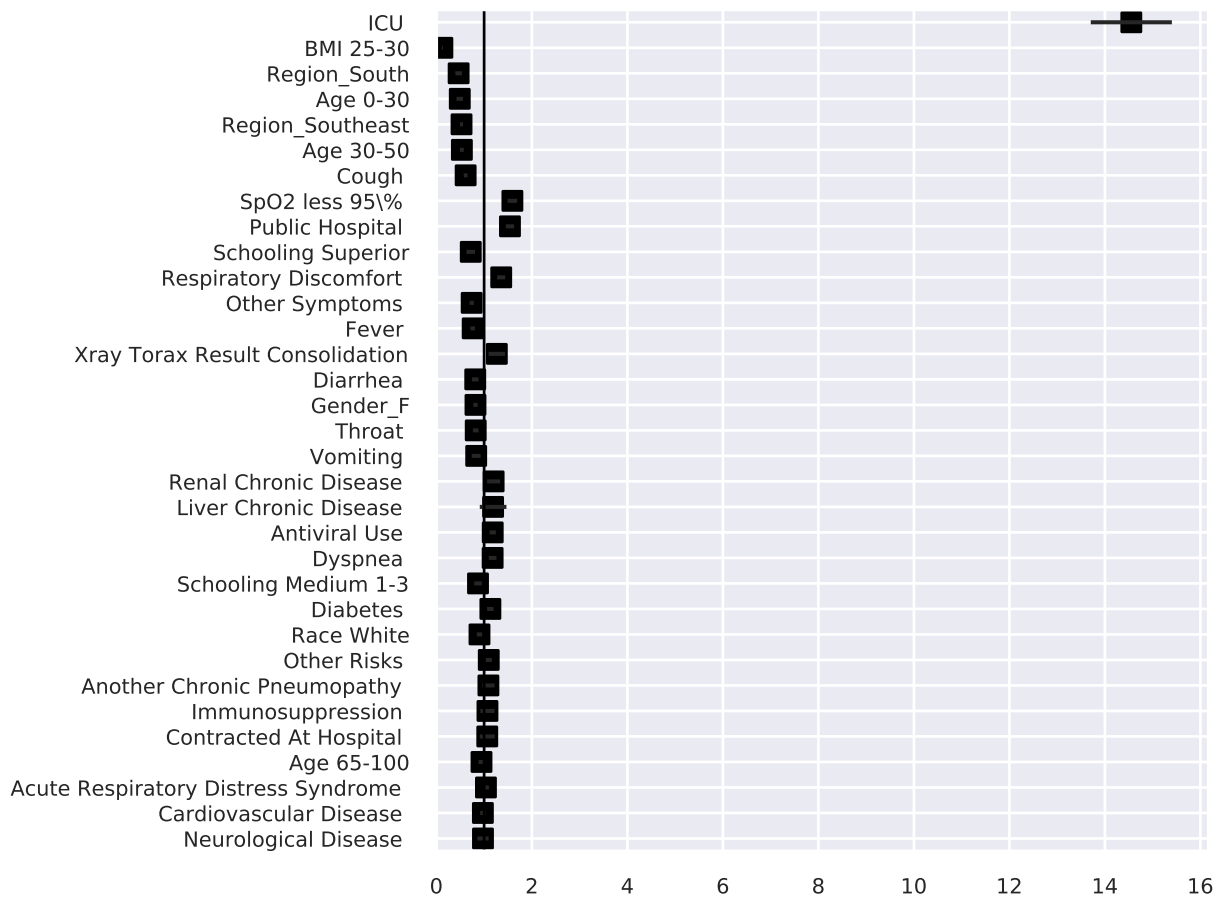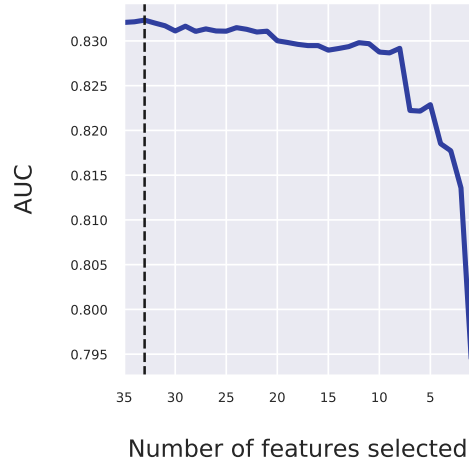|	SVM-l1	LR-l1	LR-l2	RF	XGBoost
Accuracy	0.752	0.752	0.752	0.752	0.75
F1w	0.649	0.649	0.649	0.645	0.64
AUC	0.605	0.606	0.606	0.596	0.60

2.9 Ventilator with ICU

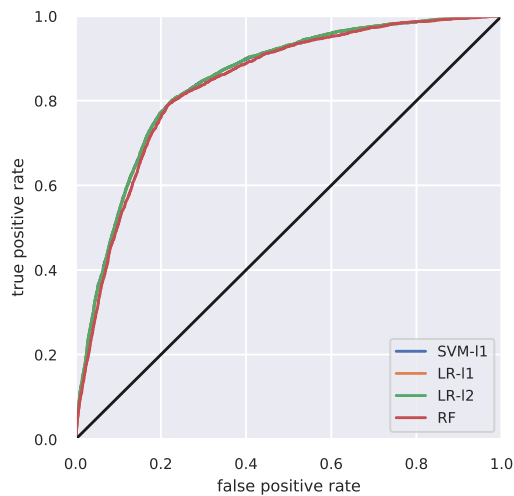| SVM-l1	Coef LR-l1	2.5 err	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
ICU	2.678	2.618	2.738	14.553	13.704	15.455	0.069	0.531	0.000	0.000
2.516	16.135	0.849								
BMI 25-30	-2.069	-2.162	-1.975	0.126	0.115	0.139	0.334	0.223	0.000	0.000
0.879	0.674	0.011								
Region_South	-0.765	-0.922	-0.607	0.466	0.398	0.545	0.229	0.168	0.000	0.000
0.846	0.556	0.068								
Age 0-30	-0.713	-0.864	-0.563	0.490	0.421	0.570	0.233	0.124	0.000	0.000
0.881	0.641	0.069								
Region_Southeast	-0.640	-0.701	-0.580	0.527	0.496	0.560	0.247	0.212	0.000	0.000
0.870	0.636	0.031								
Age 30-50	-0.627	-0.707	-0.547	0.534	0.493	0.579	0.255	0.147	0.000	0.000
0.896	0.686	0.041								
Cough	-0.489	-0.556	-0.423	0.613	0.574	0.655	0.280	0.211	0.000	0.000
0.899	0.722	0.039								
SpO2 less 95\%	0.465	0.400	0.529	1.592	1.492	1.698	0.135	0.289	0.000	0.000
1.173	1.746	0.100								
Public Hospital	0.433	0.375	0.491	1.541	1.454	1.634	0.206	0.260	0.000	0.000
1.178	1.755	0.087								
Schooling Superior	-0.328	-0.461	-0.195	0.720	0.631	0.823	0.230	0.171	0.000	0.000
0.919	0.794	0.089								
Respiratory Discomfort	0.306	0.242	0.370	1.358	1.274	1.448	0.162	0.267	0.000	0.000
1.131	1.471	0.084								
Other Symptoms	-0.303	-0.365	-0.241	0.739	0.694	0.786	0.239	0.198	0.000	0.000
0.945	0.842	0.045								
Fever	-0.274	-0.339	-0.210	0.760	0.712	0.811	0.256	0.217	0.000	0.000
0.962	0.898	0.048								
Xray Torax Result Consolidation	0.236	0.089	0.383	1.266	1.093	1.466	0.223	0.325	0.000	0.002
1.089	1.281	0.173								
Diarrhea	-0.205	-0.295	-0.116	0.814	0.745	0.890	0.234	0.181	0.000	0.000
0.951	0.845	0.069								
Gender_F	-0.200	-0.256	-0.144	0.819	0.774	0.866	0.236	0.213	0.000	0.000
0.973	0.916	0.045								
Throat	-0.193	-0.268	-0.118	0.824	0.765	0.889	0.239	0.177	0.000	0.000
0.945	0.821	0.059								
Vomiting	-0.182	-0.299	-0.065	0.834	0.741	0.937	0.231	0.175	0.000	0.002
0.955	0.851	0.093								
Renal Chronic Disease	0.181	0.061	0.302	1.199	1.062	1.353	0.221	0.351	0.000	0.003
1.073	1.220	0.137								
Liver Chronic Disease	0.173	-0.096	0.441	1.188	0.909	1.554	0.226	0.322	0.002	0.207
1.074	1.256	0.279								
Antiviral Use	0.165	0.108	0.223	1.180	1.114	1.250	0.202	0.269	0.000	0.000
1.062	1.192	0.066								
Dyspnea	0.163	0.094	0.233	1.178	1.098	1.263	0.148	0.255	0.000	0.000
1.112	1.425	0.080								
Schooling Medium 1-3	-0.137	-0.233	-0.042	0.872	0.792	0.959	0.231	0.193	0.000	0.005
0.991	0.943	0.080								
Diabetes	0.123	0.060	0.187	1.131	1.062	1.205	0.202	0.298	0.000	0.000
1.061	1.216	0.069								
Race White	-0.102	-0.168	-0.035	0.903	0.845	0.965	0.234	0.209	0.000	0.003
0.980	0.924	0.058								
Other Risks	0.092	0.031	0.154	1.097	1.031	1.166	0.205	0.286	0.000	0.003
1.051	1.167	0.066								
Another Chronic Pneumopathy	0.086	-0.041	0.213	1.090	0.959	1.238	0.222	0.334	0.000	0.186
1.036	1.098	0.131								
Immunosuppression	0.068	-0.081	0.216	1.070	0.922	1.241	0.224	0.285	0.000	0.371
1.032	1.095	0.148								
Contracted At Hospital	0.064	-0.097	0.224	1.066	0.908	1.251	0.224	0.314	0.000	0.436
1.044	1.132	0.158								
Age 65-100	-0.057	-0.122	0.009	0.945	0.885	1.009	0.184	0.285	0.000	0.090
1.030	1.128	0.060								
Acute Respiratory Distress Syndrome	0.037	-0.025	0.099	1.038	0.976	1.104	0.214	0.263	0.000	0.237
1.030	1.112	0.062								
Cardiovascular Disease	-0.027	-0.088	0.035	0.974	0.916	1.035	0.199	0.282	0.000	0.395
1.018	1.047	0.058								
Neurological Disease	-0.024	-0.154	0.105	0.976	0.858	1.111	0.224	0.274	0.000	0.711
0.982	0.970	0.118								

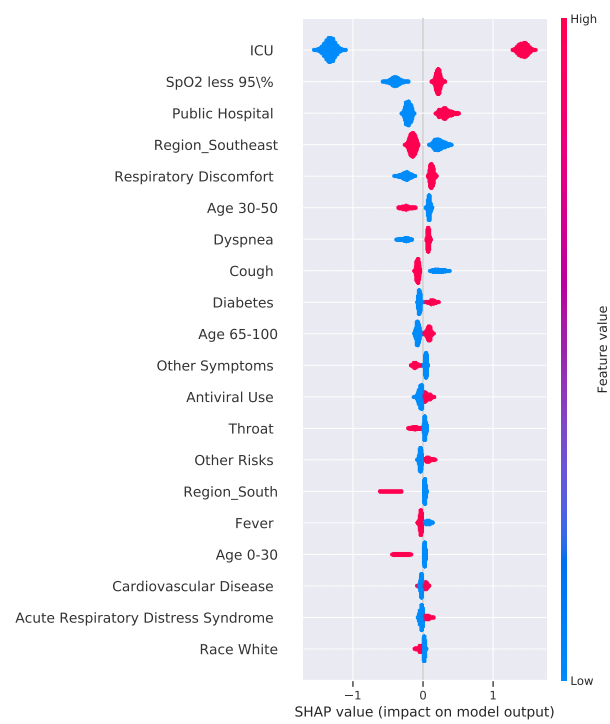|								
ICU								
BMI 25-30								
Region_South								
Age 0-30								
Region_Southeast								
Age 30-50								
Cough								
SpO2 less 95\%								
Public Hospital								
Schooling Superior								
Respiratory Discomfort								
Other Symptoms								
Fever								
Xray Torax Result Consolidation								
Diarrhea								
Gender_F								
Throat								
Vomiting								
Renal Chronic Disease								
Liver Chronic Disease								
Antiviral Use								
Dyspnea								
Schooling Medium 1-3								
Diabetes								
Race White								
Other Risks								
Another Chronic Pneumopathy								
Immunosuppression								
Contracted At Hospital								
Age 65-100								
Acute Respiratory Distress Syndrome								
Cardiovascular Disease								
Neurological Disease								

0   2   4   6   8   10   12   14   16

Recursive Feature Elimination:

Coefficients:

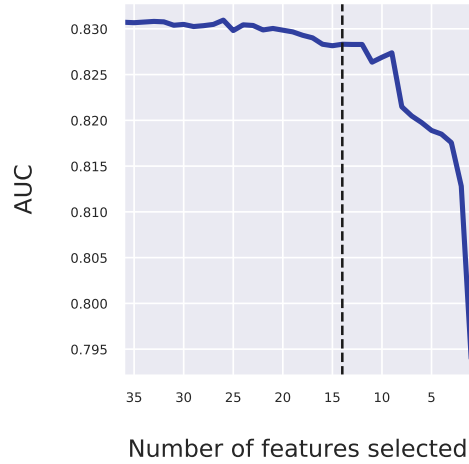|	SVM-l1	LR-l1
Region_South	0.846	0.556
Region_Southeast	0.870	0.636
Age 0-30	0.881	0.641
BMI 25-30	0.879	0.674
Age 30-50	0.896	0.686
Cough	0.899	0.722
Schooling Superior	0.919	0.794
Throat	0.945	0.821
Other Symptoms	0.945	0.842
Diarrhea	0.951	0.845
Vomiting	0.955	0.851
Fever	0.962	0.898
Gender_F	0.973	0.916
Race White	0.980	0.924
Schooling Medium 1-3	0.991	0.943
Neurological Disease	0.982	0.970
Cardiovascular Disease	1.018	1.047
Immunosuppression	1.032	1.095
Another Chronic Pneumopathy	1.036	1.098
Acute Respiratory Distress Syndrome	1.030	1.112
Age 65-100	1.030	1.128
Contracted At Hospital	1.044	1.132
Other Risks	1.051	1.167
Antiviral Use	1.062	1.192
Diabetes	1.061	1.216
Renal Chronic Disease	1.073	1.220
Liver Chronic Disease	1.074	1.256
Xray Torax Result Consolidation	1.089	1.281
Dyspnea	1.112	1.425
Respiratory Discomfort	1.131	1.471
SpO2 less 95\%	1.173	1.746
Public Hospital	1.178	1.755
ICU	2.516	16.135

Performance:

	SVM-l1	LR-l1	LR-l2	RF	XGBoost
Accuracy	0.812	0.812	0.812	0.769	0.814
F1w	0.810	0.809	0.809	0.682	0.811
AUC	0.847	0.848	0.848	0.839	0.851

2.10   Ventilator with ICU small

SVM-l1 / LR-l1	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
		err								
Cough	-0.836	-0.882	-0.790	0.433	0.414	0.454	0.278	0.211	0.000	0.000
0.880	0.700	0.019								
Fever	-0.558	-0.604	-0.513	0.572	0.547	0.599	0.253	0.217	0.000	0.000
0.963	0.899	0.025								
Schooling Superior	-0.515	-0.625	-0.404	0.598	0.535	0.668	0.230	0.163	0.000	0.000
0.901	0.703	0.063								
Gender_F	-0.477	-0.521	-0.434	0.620	0.594	0.648	0.235	0.214	0.000	0.000
0.950	0.861	0.026								
Vomiting	-0.416	-0.510	-0.322	0.660	0.600	0.725	0.230	0.180	0.000	0.000
0.912	0.745	0.060								
Renal Chronic Disease	0.356	0.255	0.456	1.427	1.291	1.577	0.220	0.359	0.000	0.000
1.230	1.659	0.136								
Another Chronic Pneumopathy	0.350	0.245	0.455	1.420	1.278	1.577	0.221	0.343	0.000	0.000
1.223	1.661	0.142								
Diabetes	0.287	0.238	0.337	1.333	1.268	1.401	0.201	0.299	0.000	0.000
1.191	1.617	0.065								
Antiviral Use	0.204	0.158	0.250	1.227	1.171	1.284	0.203	0.267	0.000	0.000
1.141	1.463	0.056								
Hematologic Disease	0.192	-0.024	0.407	1.211	0.976	1.502	0.225	0.315	0.002	0.081
1.120	1.328	0.235								
Contracted At Hospital	0.135	-0.000	0.270	1.144	1.000	1.310	0.224	0.321	0.000	0.051
1.156	1.451	0.144								
Neurological Disease	0.021	-0.091	0.133	1.021	0.913	1.142	0.224	0.276	0.000	0.717
1.065	1.184	0.108								
Immunosuppression	-0.016	-0.142	0.109	0.984	0.868	1.115	0.224	0.277	0.001	0.798
1.049	1.144	0.116								
Liver Chronic Disease	0.014	-0.205	0.233	1.014	0.815	1.263	0.225	0.294	0.038	0.899
1.066	1.174	0.199								

Recursive Feature Elimination:

Number of features selected
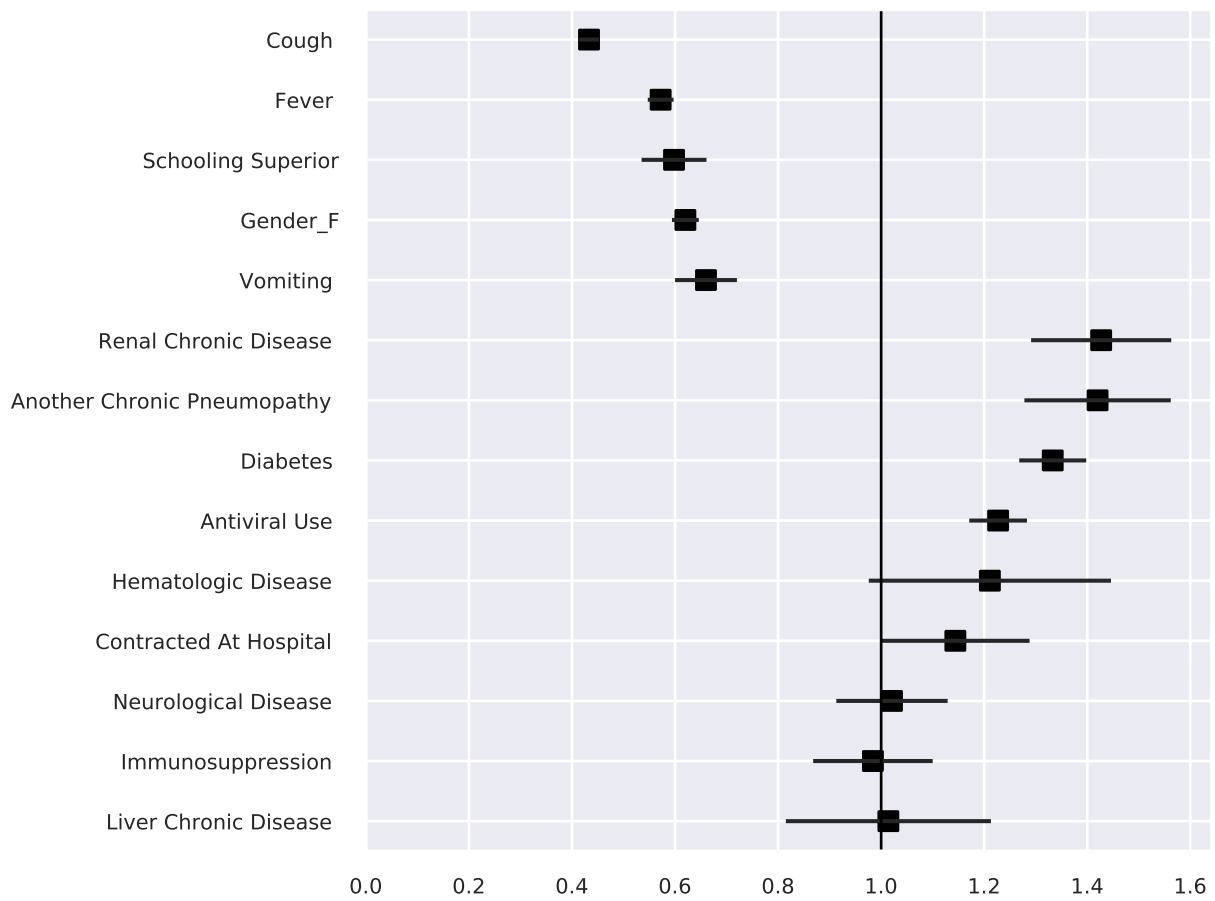
Coefficients:

	SVM-l1	LR-l1
Cough	0.880	0.700
Schooling Superior	0.901	0.703
Vomiting	0.912	0.745
Gender_F	0.950	0.861
Fever	0.963	0.899
Immunosuppression	1.049	1.144
Liver Chronic Disease	1.066	1.174
Neurological Disease	1.065	1.184
Hematologic Disease	1.120	1.328
Contracted At Hospital	1.156	1.451
Antiviral Use	1.141	1.463
Diabetes	1.191	1.617
Renal Chronic Disease	1.230	1.659
Another Chronic Pneumopathy	1.223	1.661

Performance:

	SVM-l1	LR-l1	LR-l2	RF	XGBoost
Accuracy	0.757	0.757	0.757	0.759	0.75
F1w	0.658	0.658	0.658	0.655	0.65
AUC	0.596	0.596	0.596	0.592	0.59