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# PRELIMINARY RESULTS FOR BRAZIL COVID-19 DATASET

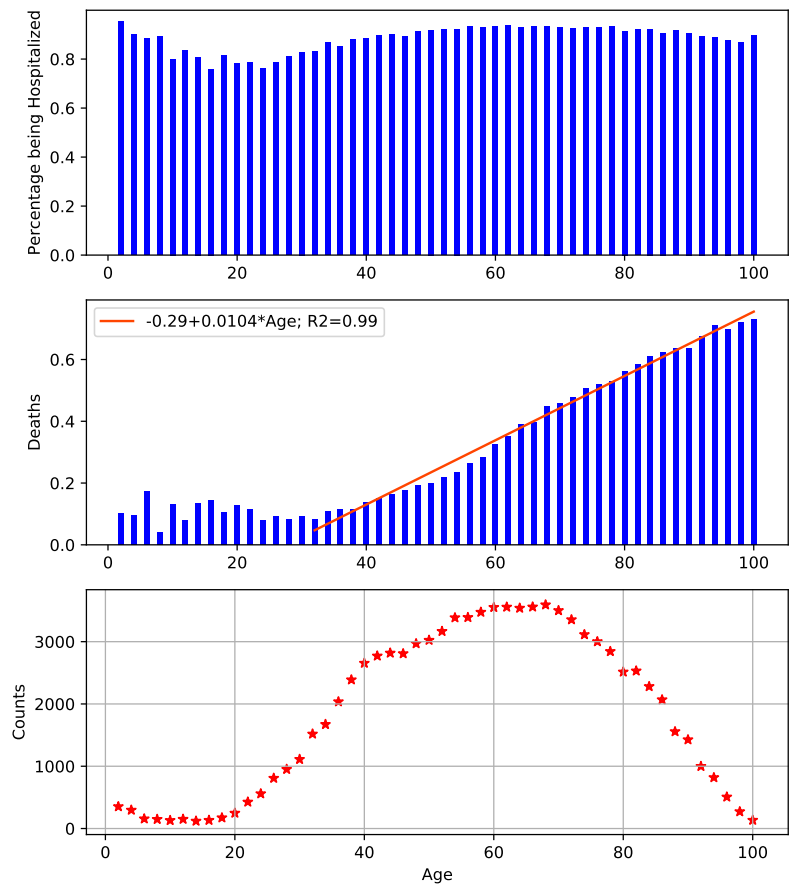
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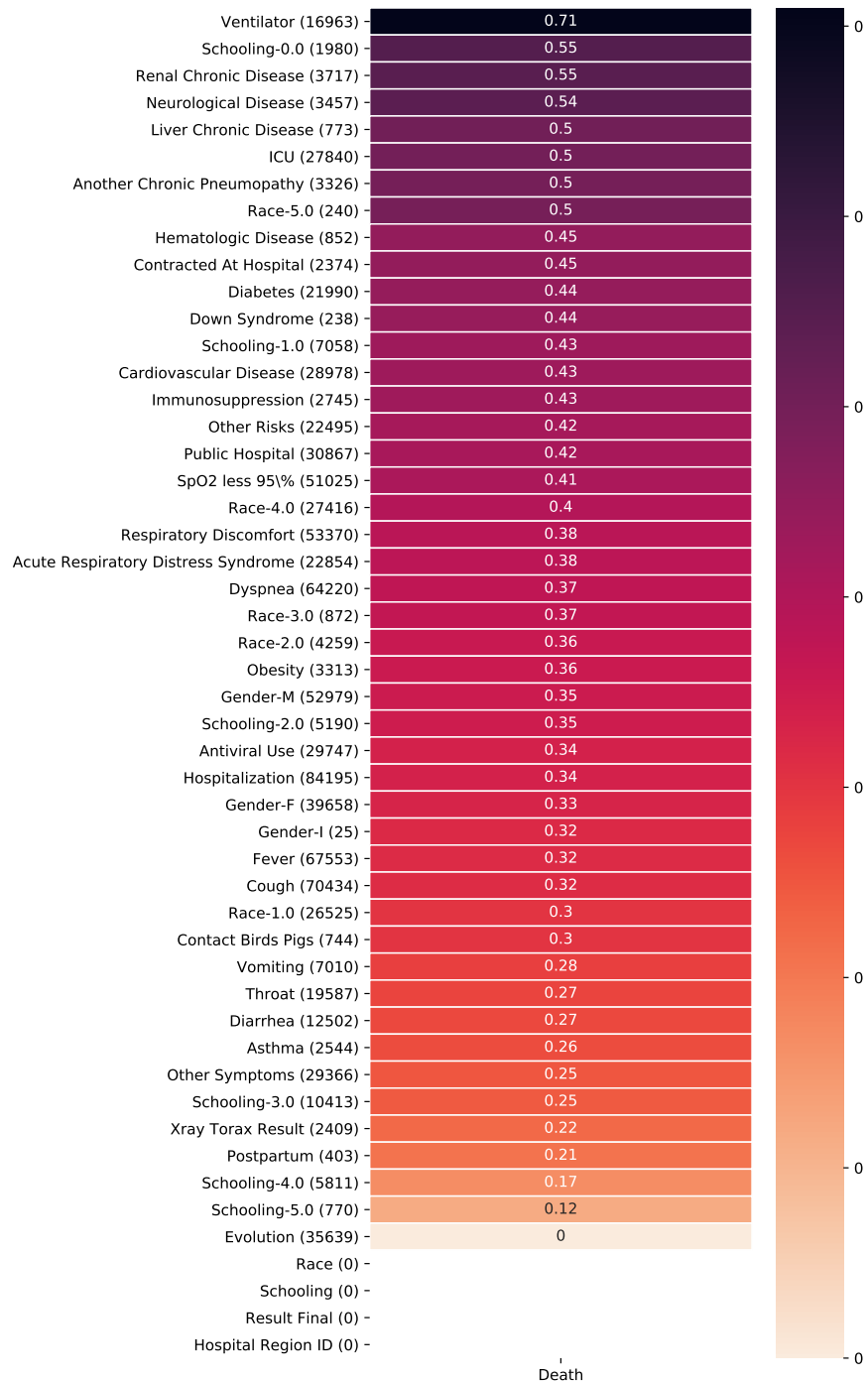
## 1 Basic Analytics

	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
Hospital Region ID	0
Public Hospital	30867

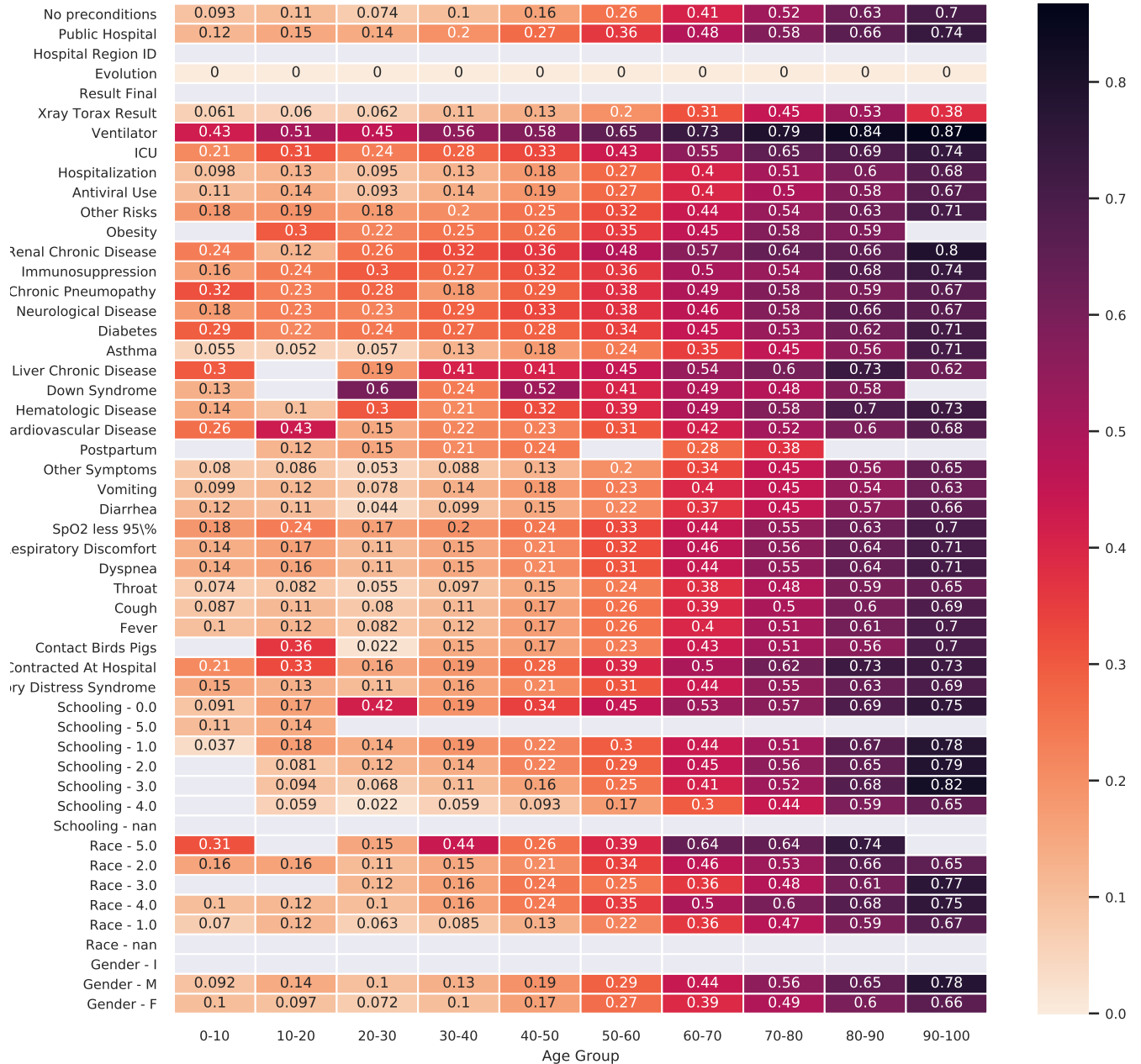
**Table 1:** Number of observations with a specific observation



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



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

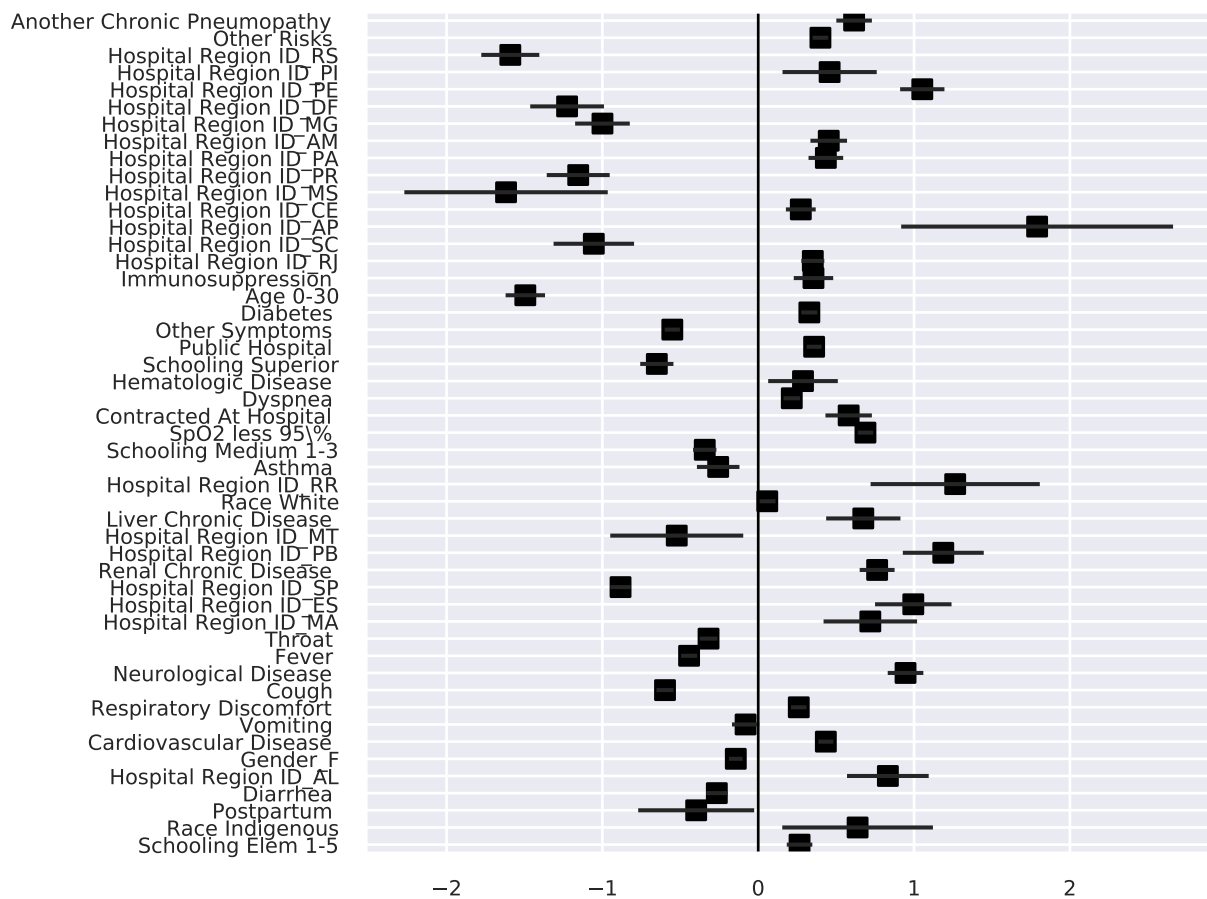


**Figure 3:** Share of hospitalized and deaths patients given characteristics and age group

## **2 Results**

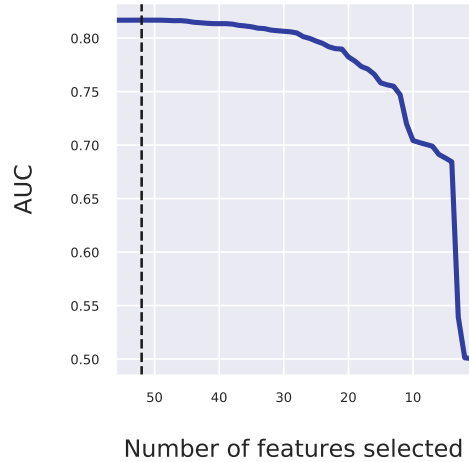
### **2.1 Mortality (previous)**

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Hospital Region ID.AC	19.768	-8506.910	8546.446	3.847014e+08	0.000	inf	0.463	1.000	0.000	0.996
Hospital Region ID.AP	1.790	0.917	2.662	5.988000e+00	2.503	14.326	0.463	0.816	0.000	0.000
Hospital Region ID.MS	-1.618	-2.271	-0.966	1.980000e-01	0.103	0.381	0.464	0.148	0.000	0.000
Hospital Region ID.RS	-1.591	-1.777	-1.405	2.040000e-01	0.169	0.245	0.470	0.197	0.000	0.000
Age 0-30	-1.495	-1.621	-1.368	2.240000e-01	0.198	0.255	0.483	0.148	0.000	0.000
Hospital Region ID.RR	1.264	0.721	1.807	3.539000e+00	2.057	6.091	0.463	0.800	0.000	0.000
Hospital Region ID.DF	-1.227	-1.463	-0.990	2.930000e-01	0.231	0.372	0.466	0.280	0.000	0.000
Hospital Region ID.PB	1.187	0.928	1.447	3.279000e+00	2.529	4.251	0.461	0.768	0.000	0.000
Hospital Region ID.PR	-1.155	-1.357	-0.953	3.150000e-01	0.257	0.385	0.467	0.260	0.000	0.000
Hospital Region ID.SC	-1.055	-1.313	-0.797	3.480000e-01	0.269	0.451	0.466	0.265	0.000	0.000
Hospital Region ID.PE	1.053	0.911	1.195	2.866000e+00	2.486	3.304	0.454	0.747	0.000	0.000
Hospital Region ID.MG	-1.000	-1.175	-0.824	3.680000e-01	0.309	0.439	0.466	0.320	0.000	0.000
Hospital Region ID.ES	0.995	0.750	1.240	2.705000e+00	2.116	3.457	0.461	0.749	0.000	0.000
Neurological Disease	0.945	0.831	1.060	2.574000e+00	2.296	2.886	0.454	0.694	0.000	0.000
Hospital Region ID.SP	-0.884	-0.949	-0.818	4.130000e-01	0.387	0.441	0.550	0.341	0.000	0.000
Hospital Region ID.AL	0.832	0.570	1.094	2.298000e+00	1.768	2.986	0.462	0.676	0.000	0.000
Renal Chronic Disease	0.763	0.651	0.875	2.145000e+00	1.918	2.399	0.452	0.702	0.000	0.000
Hospital Region ID.MA	0.719	0.419	1.019	2.053000e+00	1.521	2.771	0.463	0.578	0.005	0.000
SpO2 less 95\%	0.688	0.639	0.737	1.990000e+00	1.894	2.090	0.346	0.544	0.000	0.000
Liver Chronic Disease	0.674	0.436	0.913	1.963000e+00	1.546	2.491	0.462	0.654	0.000	0.000
Schooling Superior	-0.651	-0.757	-0.544	5.220000e-01	0.469	0.580	0.476	0.262	0.000	0.000
Race Indigenous	0.638	0.154	1.121	1.892000e+00	1.167	3.068	0.463	0.696	0.000	0.010
Another Chronic Pneumopathy	0.615	0.501	0.729	1.850000e+00	1.651	2.074	0.456	0.646	0.000	0.000
Cough	-0.598	-0.653	-0.543	5.500000e-01	0.521	0.581	0.578	0.431	0.000	0.000
Contracted At Hospital	0.580	0.431	0.729	1.787000e+00	1.539	2.073	0.459	0.656	0.000	0.000
Other Symptoms	-0.551	-0.600	-0.503	5.760000e-01	0.549	0.605	0.510	0.357	0.000	0.000
Hospital Region ID.MT	-0.523	-0.950	-0.096	5.930000e-01	0.387	0.908	0.464	0.299	0.001	0.016
Hospital Region ID.PI	0.458	0.156	0.760	1.581000e+00	1.169	2.139	0.463	0.597	0.000	0.003
Hospital Region ID.AM	0.453	0.335	0.570	1.572000e+00	1.398	1.768	0.455	0.626	0.000	0.000
Fever	-0.444	-0.495	-0.392	6.420000e-01	0.609	0.676	0.555	0.433	0.000	0.000
Hospital Region ID.PA	0.434	0.323	0.545	1.543000e+00	1.381	1.725	0.457	0.584	0.000	0.000
Cardiovascular Disease	0.434	0.385	0.482	1.543000e+00	1.470	1.620	0.411	0.567	0.000	0.000
Other Risks	0.399	0.349	0.450	1.491000e+00	1.417	1.568	0.437	0.539	0.000	0.000
Postpartum	-0.398	-0.770	-0.026	6.720000e-01	0.463	0.974	0.465	0.277	0.000	0.036
Public Hospital	0.359	0.311	0.406	1.432000e+00	1.365	1.501	0.407	0.558	0.000	0.000
Immunosuppression	0.355	0.228	0.481	1.426000e+00	1.256	1.618	0.460	0.561	0.000	0.000
Hospital Region ID.RJ	0.350	0.276	0.424	1.419000e+00	1.318	1.528	0.438	0.611	0.000	0.000
Schooling Medium 1-3	-0.343	-0.418	-0.268	7.090000e-01	0.658	0.765	0.478	0.349	0.000	0.000
Diabetes	0.328	0.276	0.380	1.388000e+00	1.318	1.462	0.425	0.577	0.000	0.000
Throat	-0.319	-0.376	-0.262	7.270000e-01	0.687	0.770	0.484	0.386	0.000	0.000
Hematologic Disease	0.287	0.064	0.511	1.333000e+00	1.066	1.666	0.462	0.583	0.000	0.012
Hospital Region ID.CE	0.273	0.178	0.369	1.314000e+00	1.194	1.446	0.454	0.585	0.000	0.000
Diarrhea	-0.266	-0.334	-0.198	7.670000e-01	0.716	0.821	0.477	0.380	0.000	0.000
Schooling Elem 1-5	0.265	0.183	0.347	1.304000e+00	1.201	1.415	0.455	0.561	0.000	0.000
Respiratory Discomfort	0.260	0.211	0.310	1.297000e+00	1.234	1.363	0.393	0.508	0.000	0.000
Asthma	-0.257	-0.393	-0.121	7.730000e-01	0.675	0.886	0.466	0.370	0.000	0.000
Dyspnea	0.215	0.162	0.268	1.240000e+00	1.176	1.308	0.377	0.495	0.000	0.000
Gender_F	-0.144	-0.188	-0.100	8.660000e-01	0.829	0.905	0.473	0.451	0.000	0.000
Vomiting	-0.081	-0.168	0.006	9.220000e-01	0.845	1.006	0.470	0.392	0.000	0.069
Hospital Region ID.BA	-0.072	-0.238	0.094	9.300000e-01	0.788	1.099	0.462	0.527	0.003	0.396
Race White	0.058	0.005	0.111	1.060000e+00	1.005	1.117	0.493	0.395	0.000	0.033
Acute Respiratory Distress Syndrome	0.011	-0.040	0.062	1.011000e+00	0.961	1.064	0.448	0.509	0.000	0.667



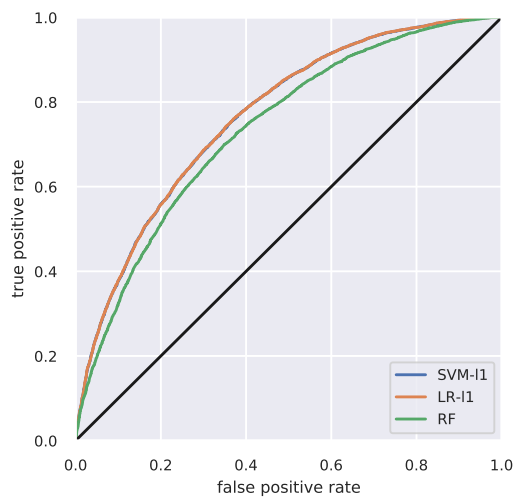


### Recursive Feature Elimination:



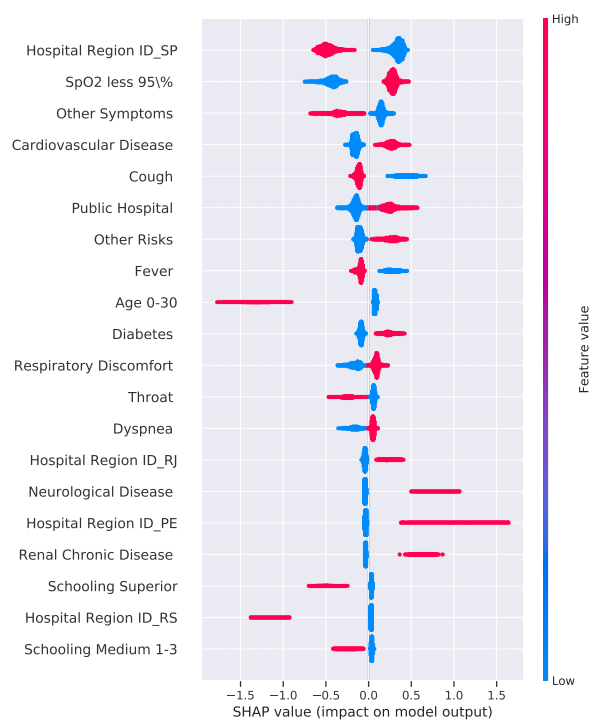
### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.692	0.693	0.670	0.694
F1w	0.692	0.693	0.665	0.693
AUC	0.766	0.766	0.736	0.772



### Coefficients:

	SVM-l1	LR-l1
Hospital Region ID.AC	1.000	1.000
Hospital Region ID.AP	0.555	0.548
Hospital Region ID.RR	0.387	0.409
Hospital Region ID.PB	0.383	0.405
Hospital Region ID.PE	0.356	0.364
Hospital Region ID.ES	0.324	0.340
Neurological Disease	0.308	0.320
Hospital Region ID.AL	0.292	0.282
Renal Chronic Disease	0.249	0.259
Hospital Region ID.MA	0.237	0.242
SpO2 less 95\%	0.225	0.234
Liver Chronic Disease	0.209	0.224
Another Chronic Pneumopathy	0.200	0.208
Race Indigenous	0.199	0.199
Contracted At Hospital	0.181	0.196
Hospital Region ID.AM	0.167	0.159
Hospital Region ID.PI	0.158	0.154
Hospital Region ID.PA	0.161	0.153
Cardiovascular Disease	0.144	0.148
Other Risks	0.130	0.136
Hospital Region ID.RJ	0.135	0.127
Public Hospital	0.117	0.123
Immunosuppression	0.114	0.120
Diabetes	0.109	0.112
Hospital Region ID.CE	0.108	0.099
Hematologic Disease	0.090	0.094
Schooling Elem 1-5	0.090	0.090
Respiratory Discomfort	0.086	0.089
Dyspnea	0.071	0.075
Race White	0.021	0.019
Acute Respiratory Distress Syndrome	0.005	0.005
Hospital Region ID.BA	-0.013	-0.015
Vomiting	-0.026	-0.027
Gender.F	-0.043	-0.047
Asthma	-0.083	-0.086
Diarrhea	-0.084	-0.090
Throat	-0.104	-0.108
Schooling Medium 1-3	-0.108	-0.115
Postpartum	-0.125	-0.122
Fever	-0.144	-0.147
Hospital Region ID.MT	-0.153	-0.155
Other Symptoms	-0.176	-0.185
Cough	-0.191	-0.200
Schooling Superior	-0.199	-0.218
Hospital Region ID.SP	-0.285	-0.292
Hospital Region ID.MG	-0.322	-0.329
Hospital Region ID.SC	-0.329	-0.345
Hospital Region ID.PR	-0.366	-0.381
Hospital Region ID.DF	-0.394	-0.405
Age 0-30	-0.432	-0.504
Hospital Region ID.MS	-0.478	-0.505
Hospital Region ID.RS	-0.486	-0.530



## 2.2 Mortality (previous) small

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Hospital Region ID_RS	-1.629	-1.793	-1.465	0.196	0.167	0.231	0.469	0.204	0.000	0.000
Hospital Region ID_PR	-1.386	-1.567	-1.206	0.250	0.209	0.299	0.466	0.258	0.000	0.000
Hospital Region ID_MG	-1.259	-1.419	-1.100	0.284	0.242	0.333	0.466	0.302	0.000	0.000
Hospital Region ID_MT	-1.102	-1.490	-0.715	0.332	0.225	0.489	0.464	0.298	0.002	0.000
Hospital Region ID_SP	-1.040	-1.083	-0.997	0.354	0.339	0.369	0.547	0.343	0.000	0.000
Hospital Region ID_RR	0.875	0.369	1.381	2.399	1.446	3.980	0.462	0.789	0.000	0.001
Another Chronic Pneumopathy	0.834	0.726	0.942	2.303	2.067	2.566	0.455	0.650	0.000	0.000
Hospital Region ID_AP	0.778	0.129	1.426	2.177	1.138	4.164	0.463	0.745	0.001	0.019
Other Symptoms	-0.714	-0.758	-0.671	0.489	0.468	0.511	0.511	0.355	0.000	0.000
Hospital Region ID_PE	0.705	0.578	0.832	2.024	1.782	2.298	0.453	0.755	0.000	0.000
Hospital Region ID_PB	0.595	0.366	0.824	1.814	1.442	2.280	0.460	0.755	0.000	0.000
Diabetes	0.575	0.528	0.622	1.777	1.696	1.862	0.423	0.580	0.000	0.000
Immunosuppression	0.495	0.378	0.613	1.641	1.459	1.846	0.459	0.584	0.000	0.000
Other Risks	0.425	0.378	0.472	1.529	1.459	1.603	0.436	0.541	0.000	0.000
Hematologic Disease	0.400	0.196	0.605	1.492	1.217	1.831	0.462	0.582	0.000	0.000
Public Hospital	0.357	0.315	0.399	1.429	1.370	1.490	0.405	0.559	0.000	0.000
Dyspnea	0.188	0.151	0.225	1.206	1.163	1.252	0.376	0.495	0.000	0.000
Hospital Region ID_BA	-0.165	-0.310	-0.021	0.847	0.734	0.979	0.461	0.550	0.000	0.025
Hospital Region ID_AL	0.130	-0.111	0.371	1.139	0.895	1.449	0.462	0.637	0.000	0.290
Hospital Region ID_AM	-0.064	-0.162	0.034	0.938	0.851	1.035	0.456	0.612	0.000	0.203
Hospital Region ID_PI	-0.050	-0.336	0.235	0.951	0.715	1.265	0.462	0.592	0.002	0.730
Hospital Region ID_MA	0.029	-0.235	0.294	1.030	0.790	1.342	0.462	0.564	0.014	0.828
Hospital Region ID_CE	-0.023	-0.101	0.055	0.977	0.904	1.057	0.452	0.597	0.000	0.562

Another Chronic Pneumopathy

Hospital Region ID\_RR

Hospital Region ID\_PE

Other Risks

Hospital Region ID\_PB

Hospital Region ID\_BA

Hospital Region ID\_MT

Hospital Region ID\_MG

Hospital Region ID\_RS

Hospital Region ID\_PR

Diabetes

Hospital Region ID\_AP

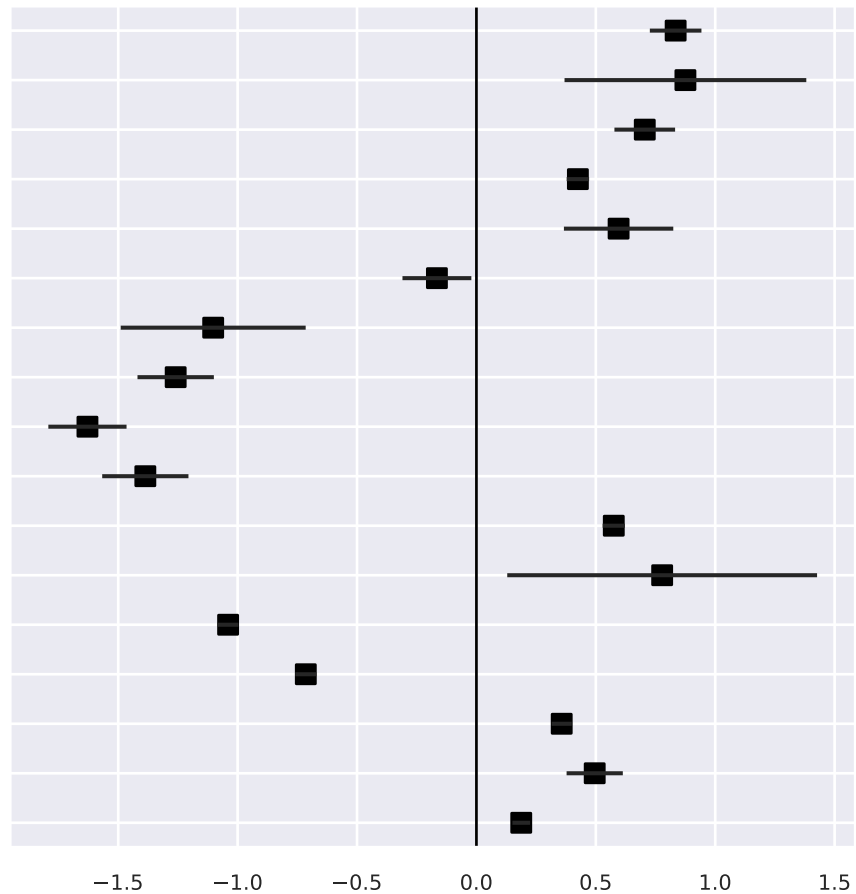
Hospital Region ID\_SP

Other Symptoms

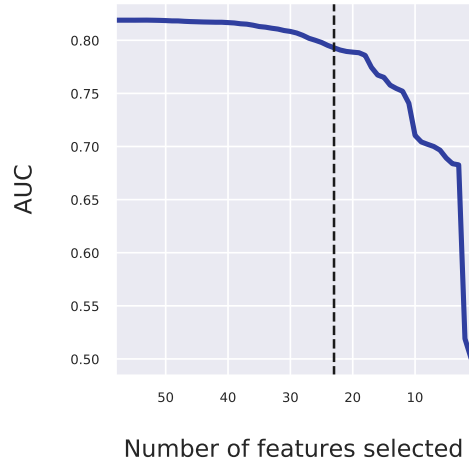
Public Hospital

Immunosuppression

Dyspnea

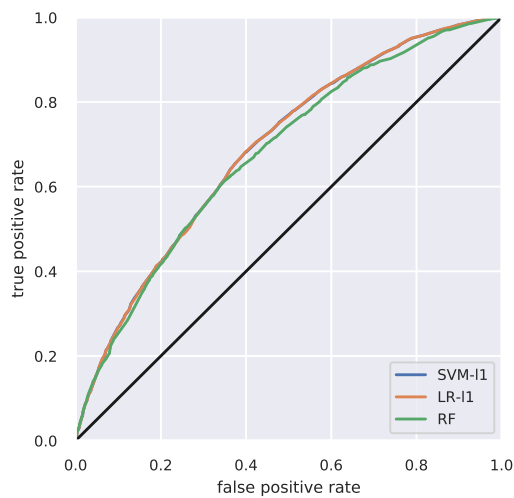


### Recursive Feature Elimination:



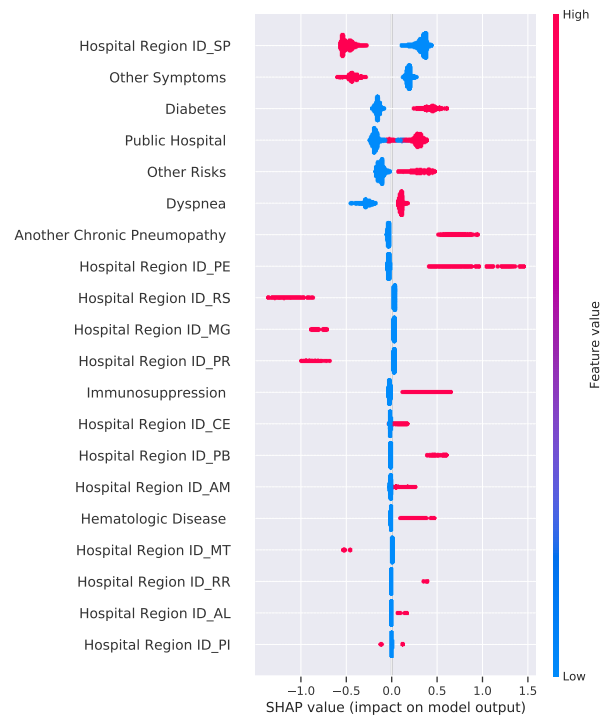
### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.634	0.635	0.628	0.637
F1w	0.634	0.635	0.620	0.638
AUC	0.691	0.691	0.679	0.694



### Coefficients:

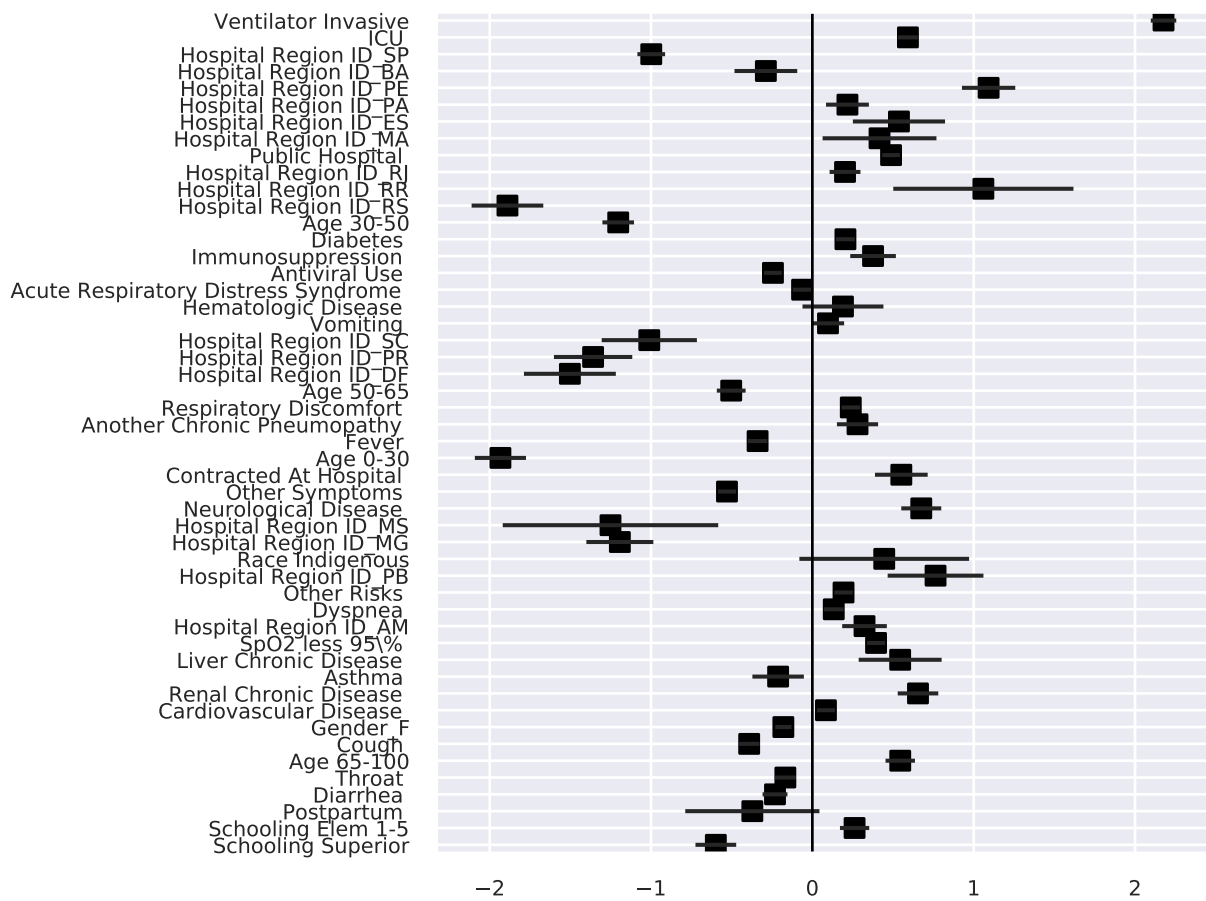
	SVM-l1	LR-l1
Hospital Region ID_RR	0.603	0.585
Another Chronic Pneumopathy	0.596	0.566
Hospital Region ID_PE	0.562	0.550
Hospital Region ID_AP	0.550	0.492
Hospital Region ID_PB	0.463	0.460
Diabetes	0.441	0.414
Immunosuppression	0.368	0.349
Other Risks	0.326	0.311
Public Hospital	0.301	0.282
Hematologic Disease	0.300	0.281
Dyspnea	0.256	0.245
Hospital Region ID_AL	0.173	0.150
Hospital Region ID_MA	0.116	0.099
Hospital Region ID_CE	0.068	0.056
Hospital Region ID_PI	0.046	0.026
Hospital Region ID_AM	0.033	0.019
Hospital Region ID_BA	-0.034	-0.027
Other Symptoms	-0.445	-0.428
Hospital Region ID_SP	-0.671	-0.612
Hospital Region ID_MT	-0.695	-0.621
Hospital Region ID_MG	-0.813	-0.755
Hospital Region ID_PR	-0.881	-0.838
Hospital Region ID_RS	-1.000	-1.000



### **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
Hospital Region ID_AC	32.413	-4715580.842	4715645.668	1.193468e+14	0.000	inf	0.462	1.000	0.000	1.000
Ventilator Invasive	2.177	2.098	2.256	8.816000e+00	8.146	9.541	0.346	0.862	0.000	0.000
Age 0-30	-1.934	-2.092	-1.775	1.450000e-01	0.123	0.169	0.482	0.150	0.000	0.000
Hospital Region ID_RS	-1.890	-2.112	-1.668	1.510000e-01	0.121	0.189	0.469	0.196	0.000	0.000
Hospital Region ID_AP	1.647	0.675	2.618	5.190000e+00	1.965	13.712	0.462	0.837	0.000	0.001
Hospital Region ID_DF	-1.503	-1.788	-1.218	2.220000e-01	0.167	0.296	0.464	0.300	0.000	0.000
Hospital Region ID_PR	-1.359	-1.602	-1.116	2.570000e-01	0.202	0.328	0.466	0.259	0.000	0.000
Hospital Region ID_MS	-1.251	-1.919	-0.583	2.860000e-01	0.147	0.558	0.463	0.191	0.000	0.000
Age 30-50	-1.203	-1.301	-1.105	3.000000e-01	0.272	0.331	0.549	0.224	0.000	0.000
Hospital Region ID_MG	-1.193	-1.401	-0.986	3.030000e-01	0.246	0.373	0.465	0.321	0.000	0.000
Hospital Region ID_PE	1.092	0.927	1.258	2.981000e+00	2.527	3.517	0.453	0.758	0.000	0.000
Hospital Region ID_RR	1.060	0.501	1.618	2.886000e+00	1.651	5.045	0.462	0.753	0.000	0.000
Hospital Region ID_SC	-1.011	-1.306	-0.716	3.640000e-01	0.271	0.489	0.464	0.302	0.000	0.000
Hospital Region ID_SP	-0.999	-1.085	-0.913	3.680000e-01	0.338	0.401	0.548	0.341	0.000	0.000
Hospital Region ID_PB	0.764	0.467	1.060	2.146000e+00	1.595	2.888	0.460	0.750	0.000	0.000
Neurological Disease	0.675	0.551	0.799	1.964000e+00	1.735	2.223	0.453	0.690	0.000	0.000
Renal Chronic Disease	0.655	0.529	0.780	1.925000e+00	1.697	2.182	0.451	0.706	0.000	0.000
Hospital Region ID_RO	0.599	-0.308	1.507	1.821000e+00	0.735	4.515	0.462	0.762	0.001	0.196
Schooling Superior	-0.598	-0.725	-0.472	5.000000e-01	0.485	0.624	0.475	0.250	0.000	0.000
ICU	0.592	0.531	0.654	1.808000e+00	1.700	1.923	0.357	0.664	0.000	0.000
Contracted At Hospital	0.551	0.388	0.715	1.736000e+00	1.474	2.044	0.458	0.644	0.000	0.000
Age 65-100	0.545	0.453	0.636	1.724000e+00	1.574	1.889	0.307	0.679	0.000	0.000
Liver Chronic Disease	0.544	0.287	0.801	1.723000e+00	1.333	2.228	0.461	0.621	0.000	0.000
Hospital Region ID_ES	0.537	0.251	0.822	1.710000e+00	1.285	2.276	0.460	0.706	0.000	0.000
Other Symptoms	-0.529	-0.586	-0.473	5.890000e-01	0.557	0.623	0.510	0.356	0.000	0.000
Age 50-65	-0.503	-0.592	-0.414	6.050000e-01	0.553	0.661	0.481	0.420	0.000	0.000
Public Hospital	0.488	0.433	0.543	1.629000e+00	1.542	1.721	0.406	0.556	0.000	0.000
Race Indigenous	0.445	-0.080	0.971	1.561000e+00	0.923	2.642	0.462	0.667	0.001	0.097
Hospital Region ID_MA	0.416	0.063	0.769	1.516000e+00	1.065	2.158	0.462	0.584	0.001	0.021
SpO2 less 95\%	0.395	0.338	0.451	1.484000e+00	1.402	1.571	0.343	0.544	0.000	0.000
Cough	-0.392	-0.455	-0.328	6.760000e-01	0.634	0.720	0.573	0.431	0.000	0.000
Immunosuppression	0.376	0.235	0.518	1.457000e+00	1.265	1.678	0.459	0.563	0.000	0.000
Postpartum	-0.372	-0.788	0.044	6.890000e-01	0.455	1.045	0.463	0.289	0.000	0.079
Hospital Region ID_MT	-0.356	-0.841	0.129	7.010000e-01	0.431	1.138	0.463	0.341	0.049	0.150
Fever	-0.339	-0.400	-0.279	7.120000e-01	0.671	0.756	0.553	0.432	0.000	0.000
Hospital Region ID_AM	0.323	0.185	0.462	1.382000e+00	1.203	1.587	0.454	0.625	0.000	0.000
Hospital Region ID_BA	-0.288	-0.483	-0.094	7.500000e-01	0.617	0.911	0.461	0.541	0.000	0.004
Another Chronic Pneumopathy	0.280	0.152	0.407	1.323000e+00	1.165	1.503	0.455	0.634	0.000	0.000
Schooling Elem 1-5	0.262	0.171	0.352	1.299000e+00	1.186	1.422	0.455	0.553	0.000	0.000
Antiviral Use	-0.244	-0.299	-0.189	7.830000e-01	0.741	0.828	0.472	0.446	0.000	0.000
Hospital Region ID_PI	0.239	-0.134	0.613	1.270000e+00	0.875	1.845	0.462	0.598	0.001	0.209
Respiratory Discomfort	0.238	0.181	0.295	1.269000e+00	1.198	1.343	0.391	0.508	0.000	0.000
Diarrhea	-0.232	-0.309	-0.154	7.930000e-01	0.734	0.857	0.476	0.376	0.000	0.000
Hospital Region ID_PA	0.217	0.085	0.350	1.243000e+00	1.088	1.419	0.456	0.581	0.000	0.001
Asthma	-0.212	-0.372	-0.053	8.090000e-01	0.690	0.949	0.465	0.363	0.000	0.009
Diabetes	0.205	0.146	0.264	1.227000e+00	1.157	1.302	0.421	0.583	0.000	0.000
Hospital Region ID_RJ	0.202	0.107	0.298	1.224000e+00	1.113	1.347	0.438	0.604	0.000	0.000
Other Risks	0.193	0.136	0.251	1.213000e+00	1.145	1.285	0.435	0.540	0.000	0.000
Hematologic Disease	0.190	-0.061	0.440	1.209000e+00	0.941	1.553	0.461	0.575	0.000	0.138
Gender_F	-0.180	-0.231	-0.129	8.350000e-01	0.794	0.879	0.472	0.450	0.000	0.000
Throat	-0.167	-0.232	-0.103	8.460000e-01	0.793	0.903	0.483	0.384	0.000	0.000
Dyspnea	0.133	0.071	0.194	1.142000e+00	1.074	1.214	0.378	0.493	0.000	0.000
Vomiting	0.097	-0.003	0.197	1.102000e+00	0.997	1.218	0.468	0.391	0.000	0.058
Cardiovascular Disease	0.084	0.028	0.140	1.088000e+00	1.028	1.151	0.409	0.568	0.000	0.003
Acute Respiratory Distress Syndrome	-0.064	-0.122	-0.006	9.380000e-01	0.885	0.994	0.446	0.509	0.000	0.032
Schooling Medium 1-3	-0.058	-0.145	0.028	9.430000e-01	0.865	1.029	0.476	0.348	0.000	0.188
Hospital Region ID_AL	-0.036	-0.356	0.284	9.650000e-01	0.700	1.329	0.461	0.661	0.000	0.826
Race White	-0.018	-0.078	0.043	9.830000e-01	0.925	1.044	0.491	0.395	0.000	0.569
Hospital Region ID_CE	-0.016	-0.132	0.099	9.840000e-01	0.876	1.104	0.453	0.576	0.000	0.780





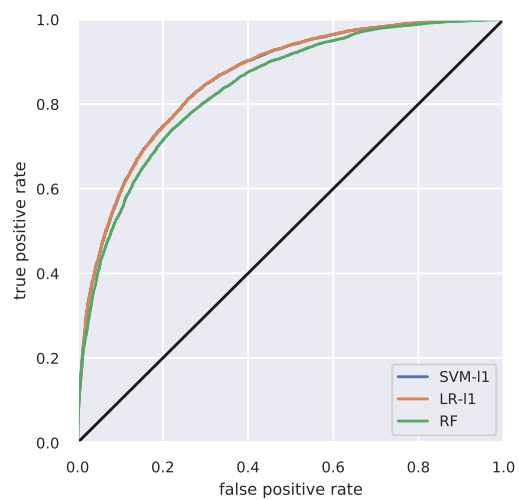
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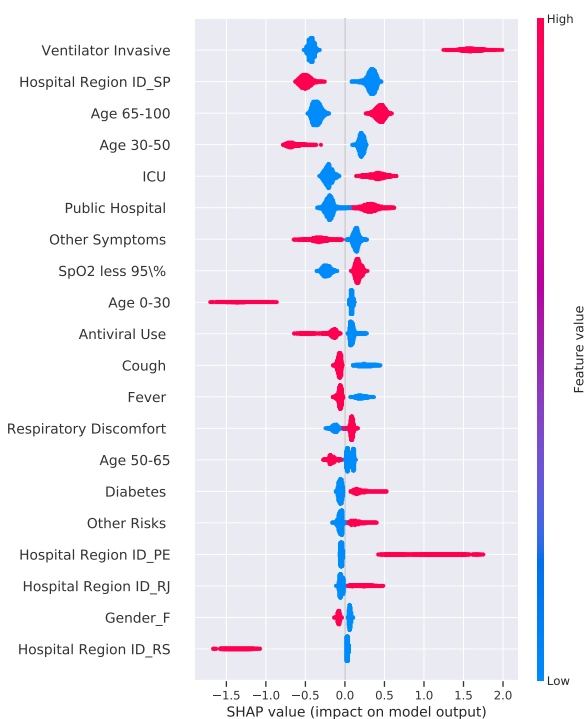
Coefficients:

Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.775	0.773	0.757	0.778
F1w	0.774	0.773	0.755	0.778
AUC	0.859	0.859	0.840	0.864



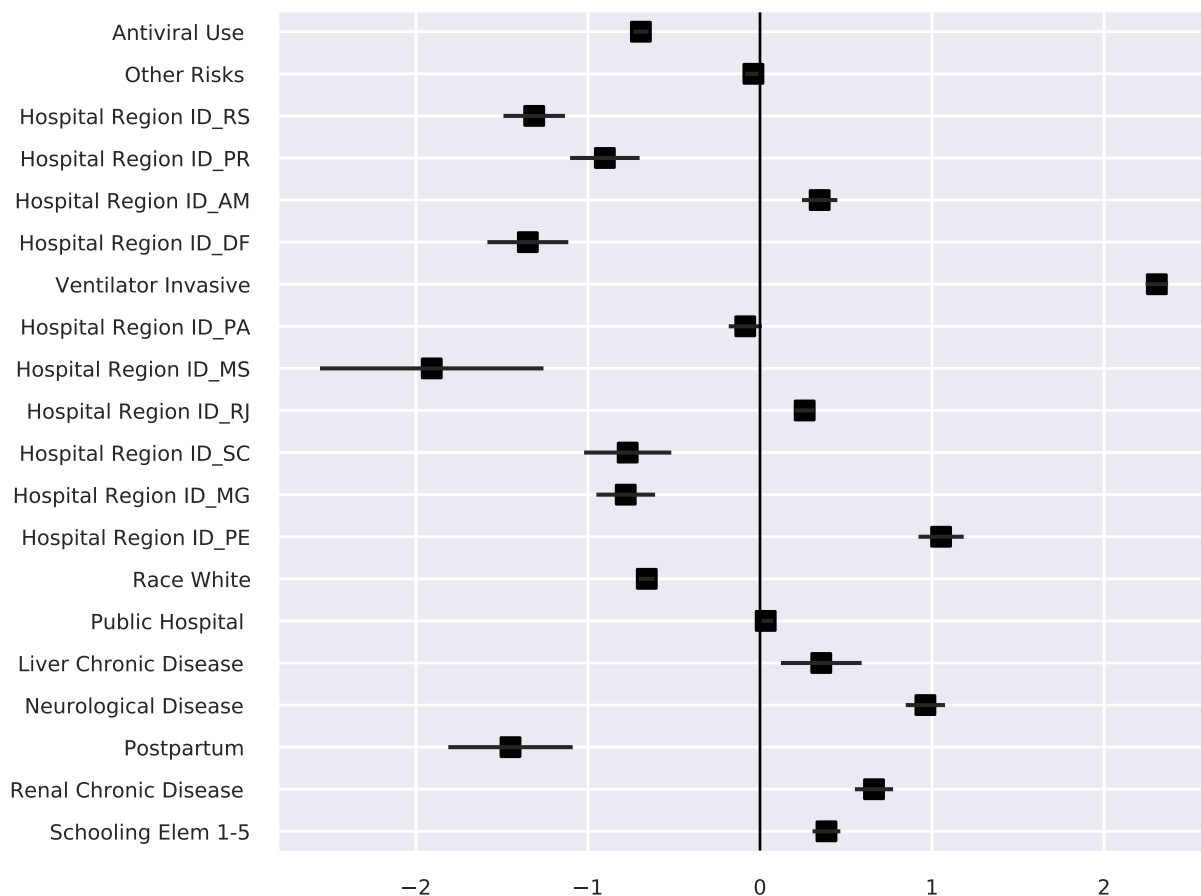
	SVM-II	LR-II
Hospital Region ID_AC	1.000	1.000
Ventilator Invasive	0.601	0.737
Hospital Region ID_AP	0.436	0.489
Hospital Region ID_PE	0.340	0.388
Hospital Region ID_RR	0.312	0.345
Hospital Region ID_PB	0.222	0.268
Age 65-100	0.219	0.243
Neurological Disease	0.196	0.229
Renal Chronic Disease	0.188	0.223
ICU	0.166	0.203
Hospital Region ID_ES	0.162	0.193
Contracted At Hospital	0.152	0.186
Liver Chronic Disease	0.149	0.181
Public Hospital	0.136	0.167
Hospital Region ID_RO	0.165	0.153
Hospital Region ID_MA	0.124	0.144
SpO2 less 95\%	0.109	0.135
Race Indigenous	0.133	0.133
Immunosuppression	0.101	0.128
Hospital Region ID_AM	0.118	0.123
Another Chronic Pneumopathy	0.080	0.094
Schooling Elem 1-5	0.074	0.089
Hospital Region ID_PA	0.085	0.089
Hospital Region ID_RJ	0.082	0.087
Hospital Region ID_PI	0.079	0.086
Respiratory Discomfort	0.066	0.083
Diabetes	0.057	0.070
Other Risks	0.052	0.067
Hematologic Disease	0.038	0.059
Dyspnea	0.042	0.050
Vomiting	0.024	0.032
Cardiovascular Disease	0.022	0.030
Hospital Region ID_CE	0.021	0.010
Hospital Region ID_AL	0.002	0.000
Race White	-0.002	-0.004
Schooling Medium 1-3	-0.016	-0.017
Acute Respiratory Distress Syndrome	-0.019	-0.019
Throat	-0.047	-0.056
Gender_F	-0.048	-0.057
Asthma	-0.055	-0.070
Hospital Region ID_BA	-0.059	-0.077
Diarrhea	-0.060	-0.077
Antiviral Use	-0.069	-0.083
Hospital Region ID_MT	-0.070	-0.086
Postpartum	-0.096	-0.109
Fever	-0.090	-0.109
Age 50-65	-0.098	-0.116
Cough	-0.108	-0.127
Other Symptoms	-0.138	-0.176
Schooling Superior	-0.148	-0.199
Hospital Region ID_SC	-0.250	-0.321
Hospital Region ID_SP	-0.254	-0.322
Age 30-50	-0.271	-0.351
Hospital Region ID_MS	-0.286	-0.369
Hospital Region ID_MG	-0.304	-0.385
Hospital Region ID_PR	-0.337	-0.442
Hospital Region ID_DF	-0.372	-0.488
Age 0-30	-0.443	-0.595
Hospital Region ID_RS	-0.479	-0.622



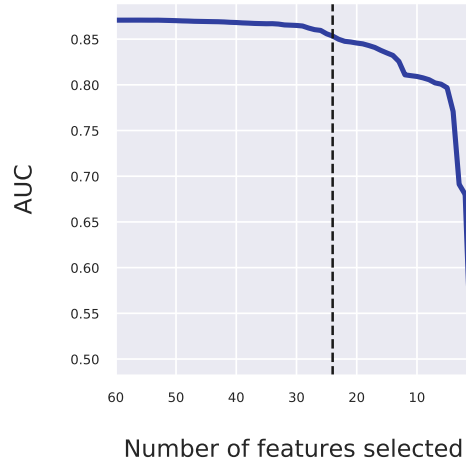
## **2.4 Mortality (advanced) small**

Include variables: Antiviral, ICU, Ventilator

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Ventilator Invasive	2.307	2.242	2.372	10.044	9.408	10.724	0.349	0.861	0.000	0.000
Hospital Region ID_MS	-1.908	-2.558	-1.259	0.148	0.077	0.284	0.465	0.138	0.000	0.000
Hospital Region ID_AP	1.583	0.805	2.361	4.869	2.237	10.601	0.463	0.833	0.000	0.000
Postpartum	-1.450	-1.812	-1.089	0.234	0.163	0.337	0.465	0.284	0.000	0.000
Hospital Region ID_DF	-1.350	-1.585	-1.114	0.259	0.205	0.328	0.466	0.304	0.000	0.000
Hospital Region ID_RS	-1.313	-1.491	-1.134	0.269	0.225	0.322	0.470	0.208	0.000	0.000
Hospital Region ID_PE	1.053	0.921	1.184	2.866	2.513	3.268	0.454	0.761	0.000	0.000
Neurological Disease	0.962	0.847	1.076	2.616	2.333	2.933	0.454	0.694	0.000	0.000
Hospital Region ID_PR	-0.902	-1.104	-0.700	0.406	0.332	0.497	0.467	0.262	0.000	0.000
Hospital Region ID_MG	-0.781	-0.951	-0.610	0.458	0.386	0.543	0.467	0.322	0.000	0.000
Hospital Region ID_SC	-0.769	-1.023	-0.516	0.463	0.360	0.597	0.465	0.285	0.000	0.000
Antiviral Use	-0.692	-0.736	-0.649	0.500	0.479	0.523	0.474	0.446	0.000	0.000
Renal Chronic Disease	0.663	0.552	0.774	1.940	1.736	2.168	0.453	0.701	0.000	0.000
Race White	-0.658	-0.704	-0.612	0.518	0.494	0.542	0.492	0.398	0.000	0.000
Hospital Region ID_RO	0.455	-0.297	1.207	1.577	0.743	3.345	0.464	0.714	0.010	0.236
Schooling Elem 1-5	0.386	0.306	0.467	1.472	1.357	1.595	0.455	0.568	0.000	0.000
Liver Chronic Disease	0.356	0.122	0.591	1.428	1.129	1.805	0.462	0.647	0.000	0.003
Hospital Region ID_AM	0.347	0.244	0.450	1.415	1.276	1.568	0.456	0.623	0.000	0.000
Hospital Region ID_RJ	0.260	0.202	0.317	1.297	1.224	1.373	0.439	0.607	0.000	0.000
Hospital Region ID_PA	-0.086	-0.182	0.010	0.918	0.834	1.010	0.459	0.565	0.000	0.080
Hospital Region ID_PI	0.079	-0.228	0.386	1.083	0.797	1.471	0.463	0.596	0.001	0.612
Hospital Region ID_CE	0.047	-0.034	0.127	1.048	0.967	1.136	0.454	0.579	0.000	0.255
Other Risks	-0.038	-0.086	0.010	0.962	0.918	1.010	0.437	0.541	0.000	0.116
Public Hospital	0.033	-0.011	0.077	1.034	0.989	1.080	0.406	0.559	0.000	0.140

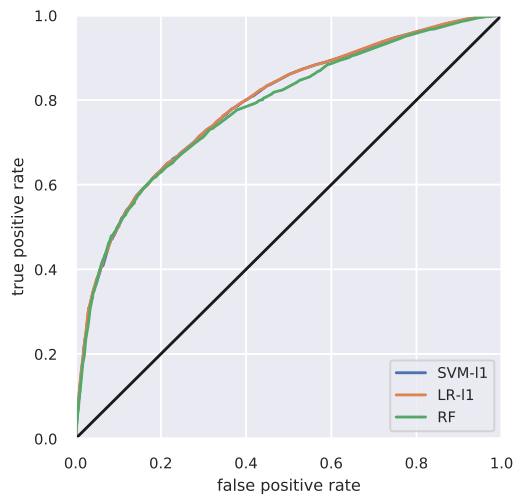


### Recursive Feature Elimination:



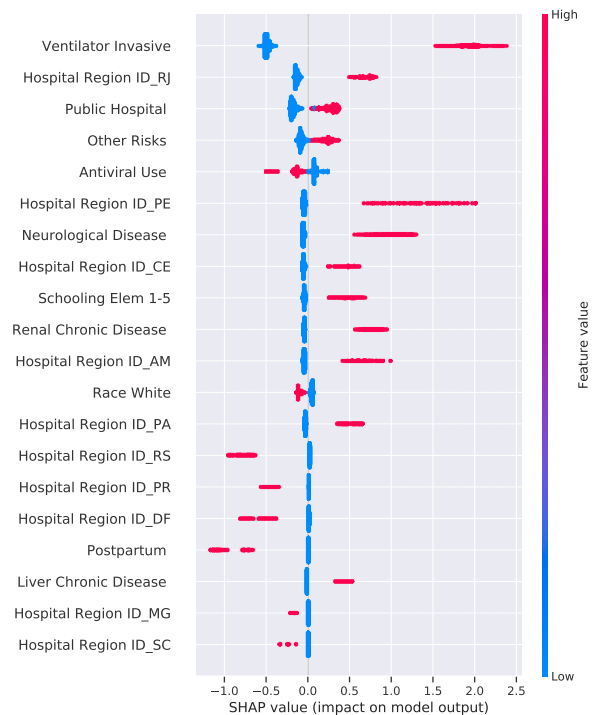
### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.723	0.723	0.716	0.728
F1w	0.719	0.719	0.704	0.724
AUC	0.789	0.790	0.781	0.792



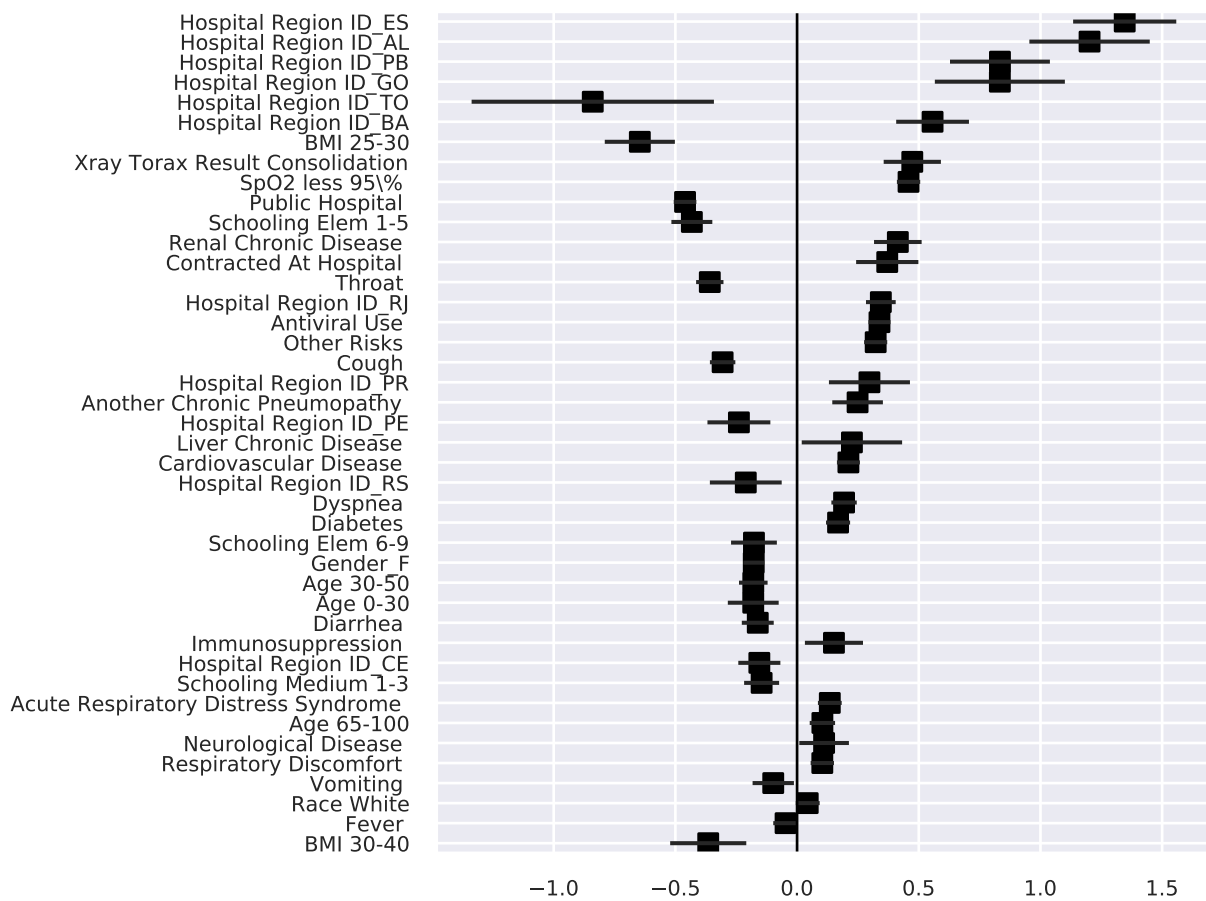
### Coefficients:

	SVM-l1	LR-l1
Ventilator Invasive	1.000	1.000
Hospital Region ID_AP	0.760	0.676
Hospital Region ID_PE	0.720	0.651
Neurological Disease	0.514	0.498
Hospital Region ID_RJ	0.392	0.381
Renal Chronic Disease	0.375	0.371
Hospital Region ID_RO	0.392	0.366
Hospital Region ID_AM	0.340	0.331
Hospital Region ID_CE	0.276	0.269
Hospital Region ID_PA	0.269	0.258
Liver Chronic Disease	0.243	0.244
Hospital Region ID_PI	0.239	0.236
Schooling Elem 1-5	0.241	0.233
Public Hospital	0.176	0.175
Other Risks	0.129	0.130
Race White	-0.034	-0.036
Antiviral Use	-0.091	-0.097
Hospital Region ID_MG	-0.104	-0.116
Hospital Region ID_SC	-0.163	-0.193
Hospital Region ID_PR	-0.201	-0.240
Hospital Region ID_DF	-0.294	-0.338
Hospital Region ID_RS	-0.296	-0.385
Postpartum	-0.430	-0.474
Hospital Region ID_MS	-0.389	-0.492



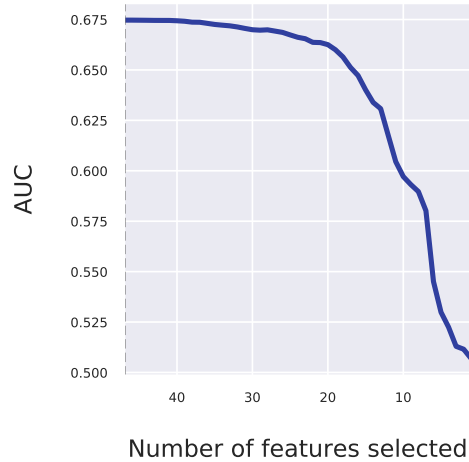
## 2.5 ICU

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Hospital Region ID.ES	1.346	1.134	1.558	3.842	3.109	4.749	0.340	0.658	0.000	0.000
Hospital Region ID.AL	1.202	0.954	1.449	3.326	2.597	4.259	0.341	0.640	0.000	0.000
Hospital Region ID.TO	-0.839	-1.337	-0.342	0.432	0.263	0.711	0.344	0.137	0.000	0.001
Hospital Region ID.PB	0.834	0.628	1.039	2.301	1.874	2.826	0.342	0.459	0.000	0.000
Hospital Region ID.GO	0.833	0.566	1.100	2.301	1.761	3.005	0.342	0.488	0.000	0.000
BMI 25-30	-0.646	-0.790	-0.502	0.524	0.454	0.605	0.483	0.339	0.000	0.000
Hospital Region ID.BA	0.557	0.407	0.706	1.745	1.503	2.026	0.340	0.476	0.000	0.000
Xray Torax Result Consolidation	0.473	0.356	0.591	1.605	1.427	1.806	0.339	0.473	0.000	0.000
Public Hospital	-0.460	-0.507	-0.414	0.631	0.602	0.661	0.371	0.296	0.000	0.000
SpO2 less 95\%	0.458	0.410	0.506	1.581	1.507	1.659	0.265	0.396	0.000	0.000
Schooling Elem 1-5	-0.432	-0.516	-0.348	0.649	0.597	0.706	0.349	0.276	0.000	0.000
Renal Chronic Disease	0.414	0.316	0.512	1.513	1.372	1.668	0.336	0.491	0.000	0.000
Contracted At Hospital	0.370	0.243	0.498	1.448	1.275	1.646	0.340	0.468	0.000	0.000
BMI 30-40	-0.365	-0.521	-0.209	0.694	0.594	0.812	0.479	0.341	0.000	0.000
Throat	-0.359	-0.415	-0.302	0.699	0.660	0.739	0.362	0.272	0.000	0.000
Hospital Region ID.RJ	0.344	0.283	0.405	1.411	1.327	1.500	0.333	0.401	0.000	0.000
Antiviral Use	0.339	0.293	0.384	1.403	1.341	1.468	0.316	0.391	0.000	0.000
Other Risks	0.323	0.275	0.370	1.381	1.317	1.448	0.318	0.414	0.000	0.000
Cough	-0.306	-0.358	-0.254	0.736	0.699	0.776	0.400	0.326	0.000	0.000
Hospital Region ID.RR	-0.303	-0.765	0.159	0.739	0.465	1.173	0.343	0.214	0.049	0.199
Hospital Region ID.PR	0.297	0.131	0.464	1.346	1.140	1.590	0.342	0.409	0.006	0.000
BMI 40-100	-0.265	-0.501	-0.029	0.767	0.606	0.972	0.342	0.490	0.000	0.028
Another Chronic Pneumopathy	0.249	0.145	0.353	1.282	1.156	1.423	0.338	0.464	0.000	0.000
Hospital Region ID.PE	-0.239	-0.368	-0.110	0.787	0.692	0.896	0.346	0.254	0.000	0.000
Liver Chronic Disease	0.225	0.019	0.432	1.253	1.019	1.540	0.342	0.443	0.000	0.032
Cardiovascular Disease	0.211	0.164	0.258	1.235	1.178	1.294	0.307	0.413	0.000	0.000
Hospital Region ID.RS	-0.211	-0.358	-0.063	0.810	0.699	0.939	0.344	0.293	0.013	0.005
Dyspnea	0.193	0.141	0.245	1.213	1.151	1.278	0.294	0.361	0.000	0.000
Age 0-30	-0.180	-0.285	-0.076	0.835	0.752	0.927	0.349	0.245	0.000	0.001
Age 30-50	-0.180	-0.239	-0.121	0.835	0.788	0.886	0.367	0.277	0.000	0.000
Gender_F	-0.178	-0.221	-0.135	0.837	0.802	0.874	0.354	0.327	0.000	0.000
Schooling Elem 6-9	-0.177	-0.271	-0.083	0.838	0.762	0.920	0.345	0.314	0.031	0.000
Diabetes	0.168	0.119	0.218	1.183	1.126	1.243	0.320	0.410	0.000	0.000
Diarrhea	-0.162	-0.227	-0.096	0.851	0.797	0.908	0.349	0.301	0.000	0.000
Hospital Region ID.CE	-0.155	-0.241	-0.069	0.856	0.785	0.934	0.347	0.299	0.000	0.000
Immunosuppression	0.151	0.032	0.271	1.164	1.033	1.311	0.341	0.414	0.000	0.013
Schooling Medium 1-3	-0.146	-0.218	-0.074	0.864	0.804	0.929	0.348	0.298	0.000	0.000
Acute Respiratory Distress Syndrome	0.134	0.086	0.183	1.144	1.089	1.201	0.332	0.373	0.000	0.000
Neurological Disease	0.111	0.009	0.213	1.117	1.009	1.237	0.339	0.439	0.000	0.033
Age 65-100	0.104	0.052	0.156	1.110	1.053	1.169	0.305	0.395	0.000	0.000
Respiratory Discomfort	0.104	0.056	0.152	1.109	1.057	1.164	0.310	0.364	0.000	0.000
Hematologic Disease	0.100	-0.107	0.308	1.105	0.898	1.360	0.342	0.416	0.019	0.344
Vomiting	-0.098	-0.183	-0.013	0.907	0.833	0.987	0.347	0.299	0.000	0.024
Hospital Region ID.AM	-0.051	-0.158	0.056	0.950	0.854	1.057	0.346	0.289	0.000	0.347
Fever	-0.047	-0.098	0.003	0.954	0.907	1.003	0.372	0.333	0.000	0.067
Race White	0.044	-0.005	0.093	1.045	0.995	1.097	0.337	0.356	0.004	0.081
Hospital Region ID.PA	-0.023	-0.131	0.085	0.978	0.878	1.089	0.347	0.257	0.000	0.681



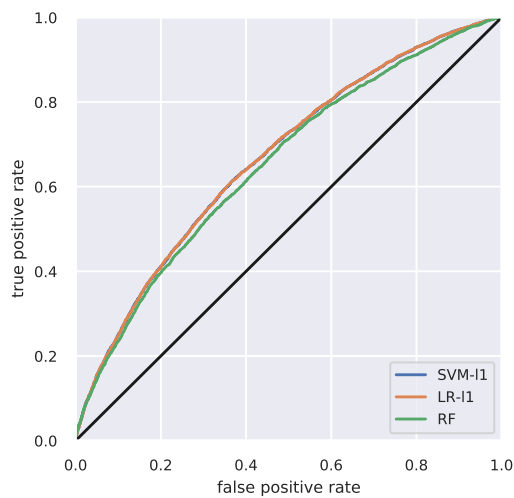


### Recursive Feature Elimination:



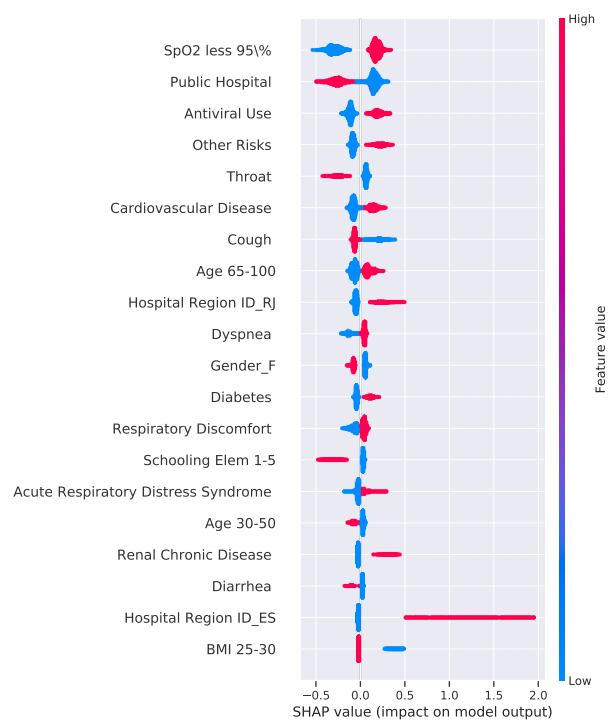
### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.670	0.671	0.648	0.679
F1w	0.630	0.632	0.509	0.636
AUC	0.668	0.668	0.653	0.680



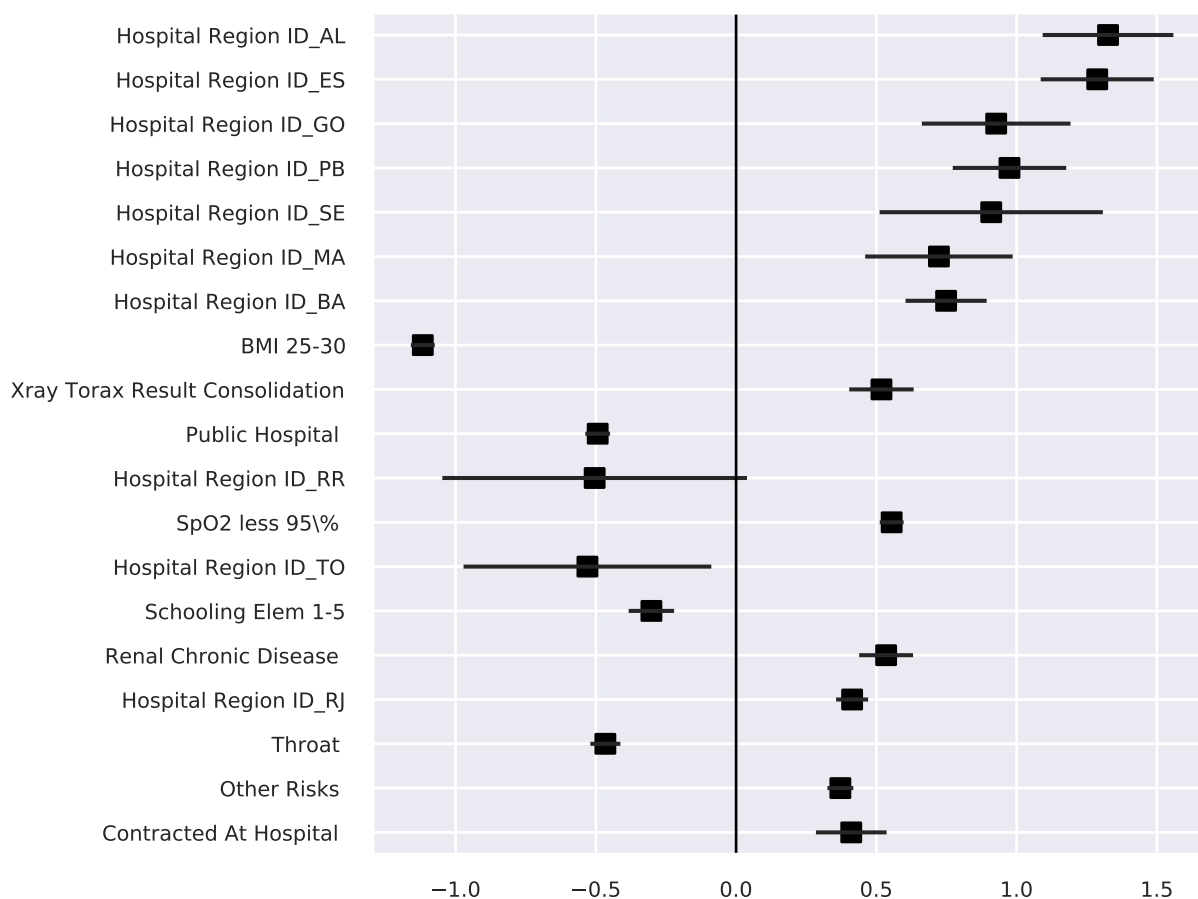
### Coefficients:

	SVM-l1	LR-l1
Hospital Region ID_ES	1.000	1.000
Hospital Region ID_AL	0.901	0.887
Hospital Region ID_PB	0.599	0.618
Hospital Region ID_GO	0.598	0.611
Hospital Region ID_BA	0.417	0.422
Xray Torax Result Consolidation	0.346	0.352
SpO2 less 95\%	0.313	0.345
Renal Chronic Disease	0.311	0.310
Contracted At Hospital	0.273	0.276
Hospital Region ID_RJ	0.248	0.262
Antiviral Use	0.233	0.254
Other Risks	0.232	0.244
Hospital Region ID_PR	0.210	0.220
Another Chronic Pneumopathy	0.189	0.185
Liver Chronic Disease	0.161	0.164
Cardiovascular Disease	0.154	0.161
Dyspnea	0.134	0.149
Diabetes	0.123	0.128
Immunosuppression	0.111	0.113
Acute Respiratory Distress Syndrome	0.093	0.101
Age 65-100	0.081	0.083
Neurological Disease	0.084	0.080
Respiratory Discomfort	0.076	0.079
Hematologic Disease	0.071	0.067
Race White	0.035	0.037
BMI 40-100	0.003	0.003
Hospital Region ID_PA	-0.003	-0.014
BMI 30-40	-0.036	-0.028
Fever	-0.028	-0.029
Hospital Region ID_AM	-0.035	-0.037
Vomiting	-0.063	-0.070
Schooling Medium 1-3	-0.093	-0.105
Hospital Region ID_CE	-0.099	-0.112
Diarrhea	-0.106	-0.118
Age 0-30	-0.091	-0.121
Age 30-50	-0.104	-0.123
Gender_F	-0.116	-0.127
Schooling Elem 6-9	-0.118	-0.128
Hospital Region ID_RS	-0.134	-0.151
Hospital Region ID_PE	-0.146	-0.170
Hospital Region ID_RR	-0.179	-0.187
Cough	-0.209	-0.221
Throat	-0.228	-0.267
Schooling Elem 1-5	-0.286	-0.320
Public Hospital	-0.313	-0.341
BMI 25-30	-0.409	-0.417
Hospital Region ID_TO	-0.407	-0.574

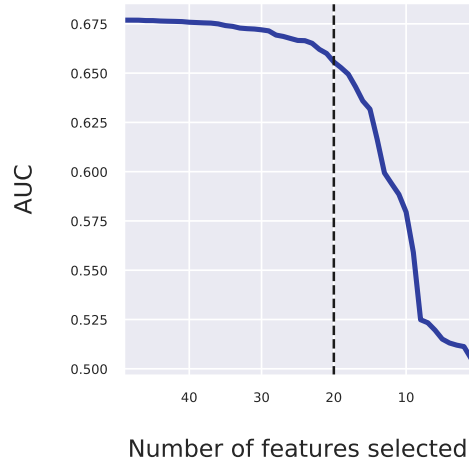


## 2.6 ICU small

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Hospital Region ID_AL	1.326	1.093	1.559	3.765	2.983	4.753	0.339	0.642	0.000	0.000
Hospital Region ID_ES	1.287	1.086	1.489	3.623	2.962	4.432	0.339	0.615	0.000	0.000
BMI 25-30	-1.117	-1.159	-1.074	0.327	0.314	0.342	0.481	0.337	0.000	0.000
Hospital Region ID_PB	0.974	0.772	1.177	2.650	2.165	3.244	0.340	0.467	0.000	0.000
Hospital Region ID_GO	0.927	0.662	1.192	2.527	1.939	3.294	0.340	0.517	0.000	0.000
Hospital Region ID_SE	0.909	0.511	1.307	2.483	1.668	3.696	0.341	0.514	0.004	0.000
Hospital Region ID_BA	0.749	0.604	0.893	2.114	1.830	2.443	0.338	0.505	0.000	0.000
Hospital Region ID_MA	0.723	0.460	0.986	2.061	1.584	2.680	0.341	0.449	0.007	0.000
SpO2 less 95\%	0.555	0.512	0.597	1.741	1.669	1.817	0.265	0.393	0.000	0.000
Renal Chronic Disease	0.535	0.439	0.631	1.707	1.551	1.879	0.335	0.480	0.000	0.000
Hospital Region ID_TO	-0.530	-0.972	-0.088	0.589	0.378	0.915	0.342	0.172	0.000	0.019
Xray Torax Result Consolidation	0.518	0.403	0.633	1.679	1.497	1.883	0.337	0.479	0.000	0.000
Hospital Region ID_RR	-0.504	-1.047	0.039	0.604	0.351	1.039	0.342	0.163	0.004	0.069
Public Hospital	-0.493	-0.537	-0.449	0.611	0.584	0.638	0.371	0.293	0.000	0.000
Throat	-0.466	-0.520	-0.412	0.627	0.595	0.662	0.361	0.268	0.000	0.000
Hospital Region ID_RJ	0.414	0.356	0.471	1.512	1.428	1.601	0.331	0.400	0.000	0.000
Contracted At Hospital	0.410	0.285	0.536	1.507	1.329	1.710	0.338	0.465	0.000	0.000
Other Risks	0.372	0.326	0.418	1.450	1.385	1.519	0.315	0.417	0.000	0.000
Antiviral Use	0.309	0.266	0.353	1.362	1.305	1.423	0.316	0.386	0.000	0.000
Schooling Elem 1-5	-0.302	-0.383	-0.221	0.739	0.682	0.802	0.346	0.281	0.000	0.000

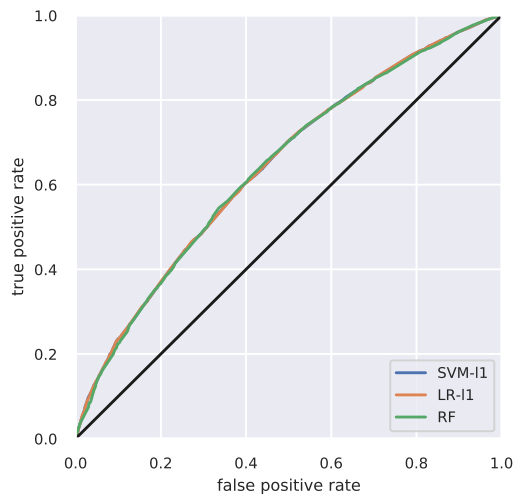


### Recursive Feature Elimination:



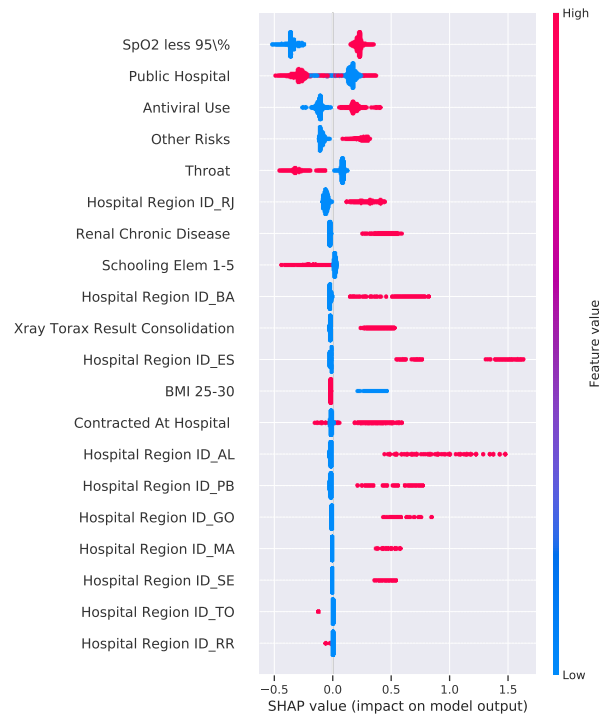
### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.663	0.663	0.646	0.667
F1w	0.608	0.606	0.510	0.609
AUC	0.643	0.643	0.642	0.649



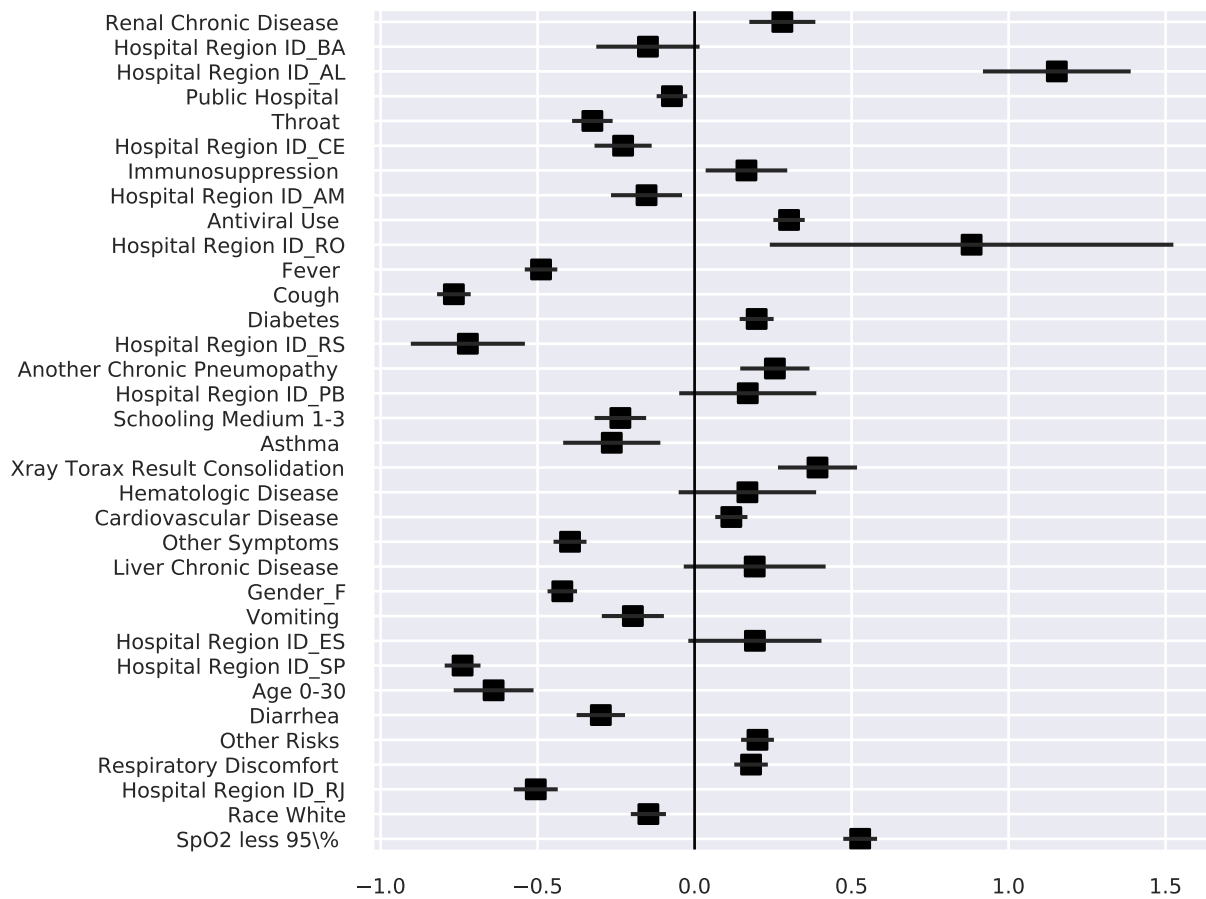
### Coefficients:

	SVM-l1	LR-l1
Hospital Region ID_ES	0.997	1.000
Hospital Region ID_AL	1.000	0.995
Hospital Region ID_PB	0.721	0.752
Hospital Region ID_GO	0.704	0.713
Hospital Region ID_SE	0.682	0.675
Hospital Region ID_BA	0.587	0.595
Hospital Region ID_MA	0.538	0.556
SpO2 less 95\%	0.420	0.463
Renal Chronic Disease	0.411	0.418
Xray Torax Result Consolidation	0.403	0.408
Hospital Region ID_RJ	0.316	0.336
Contracted At Hospital	0.314	0.320
Other Risks	0.288	0.302
Antiviral Use	0.237	0.259
Schooling Elem 1-5	-0.196	-0.223
Hospital Region ID_RR	-0.246	-0.323
Throat	-0.294	-0.338
Hospital Region ID_TO	-0.253	-0.345
Public Hospital	-0.328	-0.362
BMI 25-30	-0.400	-0.402



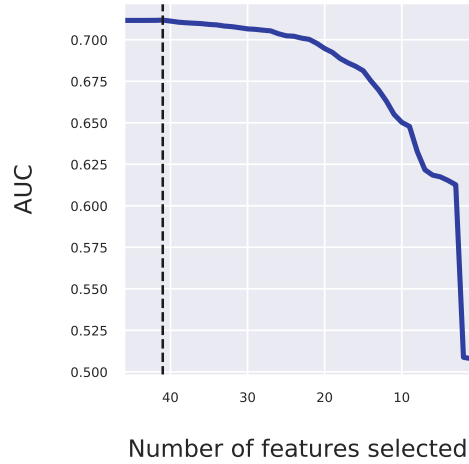
## **2.7 Ventilator**

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Hospital Region ID.AL	1.154	0.918	1.389	3.169	2.505	4.010	0.223	0.584	0.000	0.000
Hospital Region ID.RO	0.882	0.240	1.525	2.416	1.271	4.594	0.225	0.488	0.005	0.007
Cough	-0.767	-0.820	-0.713	0.465	0.440	0.490	0.277	0.211	0.000	0.000
Hospital Region ID.SP	-0.739	-0.796	-0.682	0.478	0.451	0.506	0.249	0.192	0.000	0.000
Hospital Region ID.RS	-0.722	-0.904	-0.540	0.486	0.405	0.583	0.227	0.162	0.000	0.000
Age 0-30	-0.640	-0.767	-0.513	0.527	0.464	0.599	0.232	0.126	0.000	0.000
SpO2 less 95\%	0.527	0.473	0.581	1.694	1.606	1.788	0.134	0.289	0.000	0.000
Hospital Region ID.RJ	-0.506	-0.576	-0.436	0.603	0.562	0.647	0.222	0.246	0.004	0.000
Fever	-0.489	-0.541	-0.437	0.613	0.582	0.646	0.254	0.216	0.000	0.000
Gender.F	-0.421	-0.468	-0.374	0.656	0.626	0.688	0.236	0.211	0.000	0.000
Other Symptoms	-0.397	-0.449	-0.344	0.673	0.638	0.709	0.239	0.197	0.000	0.000
Xray Torax Result Consolidation	0.391	0.265	0.517	1.479	1.304	1.677	0.222	0.331	0.000	0.000
Throat	-0.326	-0.390	-0.261	0.722	0.677	0.770	0.237	0.183	0.000	0.000
Antiviral Use	0.301	0.251	0.351	1.351	1.285	1.420	0.201	0.268	0.000	0.000
Diarrhea	-0.299	-0.376	-0.221	0.742	0.687	0.801	0.233	0.180	0.000	0.000
Renal Chronic Disease	0.279	0.174	0.385	1.322	1.190	1.469	0.220	0.341	0.000	0.000
Asthma	-0.264	-0.418	-0.109	0.768	0.658	0.897	0.227	0.186	0.035	0.001
Schooling Superior	-0.261	-0.375	-0.147	0.770	0.687	0.863	0.229	0.176	0.000	0.000
Another Chronic Pneumopathy	0.256	0.145	0.366	1.291	1.157	1.442	0.221	0.333	0.000	0.000
Schooling Medium 1-3	-0.236	-0.318	-0.154	0.790	0.727	0.857	0.230	0.188	0.000	0.000
Hospital Region ID.CE	-0.228	-0.319	-0.137	0.796	0.727	0.872	0.221	0.278	0.000	0.000
Other Risks	0.200	0.148	0.253	1.222	1.160	1.287	0.205	0.285	0.000	0.000
Diabetes	0.198	0.144	0.252	1.219	1.154	1.286	0.201	0.297	0.000	0.000
Vomiting	-0.197	-0.295	-0.098	0.822	0.744	0.907	0.229	0.183	0.000	0.000
Hospital Region ID.ES	0.192	-0.020	0.404	1.212	0.980	1.498	0.224	0.392	0.000	0.076
Liver Chronic Disease	0.191	-0.034	0.417	1.211	0.966	1.518	0.225	0.324	0.001	0.097
Respiratory Discomfort	0.180	0.126	0.233	1.197	1.135	1.263	0.159	0.268	0.000	0.000
Hospital Region ID.PB	0.169	-0.049	0.388	1.185	0.952	1.473	0.224	0.373	0.000	0.128
Hematologic Disease	0.168	-0.051	0.387	1.183	0.951	1.473	0.225	0.300	0.014	0.132
Immunosuppression	0.165	0.035	0.295	1.180	1.036	1.343	0.224	0.292	0.000	0.013
Hospital Region ID.PI	0.154	-0.139	0.446	1.166	0.870	1.563	0.225	0.338	0.006	0.304
Hospital Region ID.AM	-0.153	-0.266	-0.040	0.858	0.766	0.961	0.223	0.279	0.000	0.008
Hospital Region ID.BA	-0.149	-0.313	0.016	0.862	0.731	1.016	0.224	0.322	0.000	0.077
Race White	-0.147	-0.203	-0.091	0.863	0.816	0.913	0.232	0.211	0.000	0.000
Cardiovascular Disease	0.117	0.066	0.168	1.124	1.068	1.183	0.199	0.279	0.000	0.000
Contracted At Hospital	0.092	-0.047	0.230	1.096	0.955	1.259	0.223	0.322	0.000	0.193
Public Hospital	-0.072	-0.121	-0.023	0.930	0.886	0.977	0.205	0.261	0.000	0.004
Dyspnea	-0.033	-0.089	0.023	0.967	0.915	1.023	0.148	0.254	0.000	0.244
Neurological Disease	-0.031	-0.144	0.082	0.969	0.866	1.086	0.224	0.275	0.000	0.592
Hospital Region ID.GO	-0.009	-0.298	0.280	0.991	0.743	1.323	0.225	0.313	0.046	0.952
Acute Respiratory Distress Syndrome	-0.004	-0.058	0.050	0.996	0.944	1.051	0.213	0.262	0.000	0.880



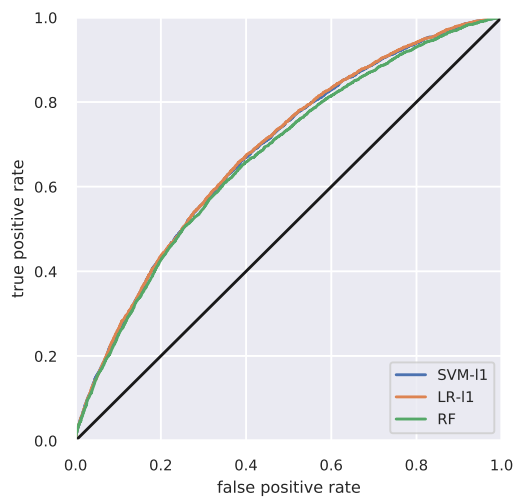


### Recursive Feature Elimination:



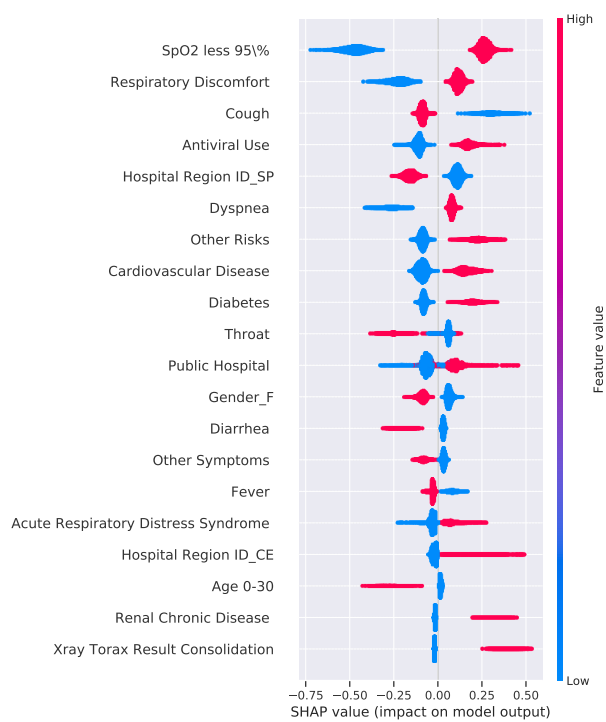
### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.762	0.762	0.759	0.765
F1w	0.693	0.693	0.655	0.692
AUC	0.685	0.686	0.674	0.694



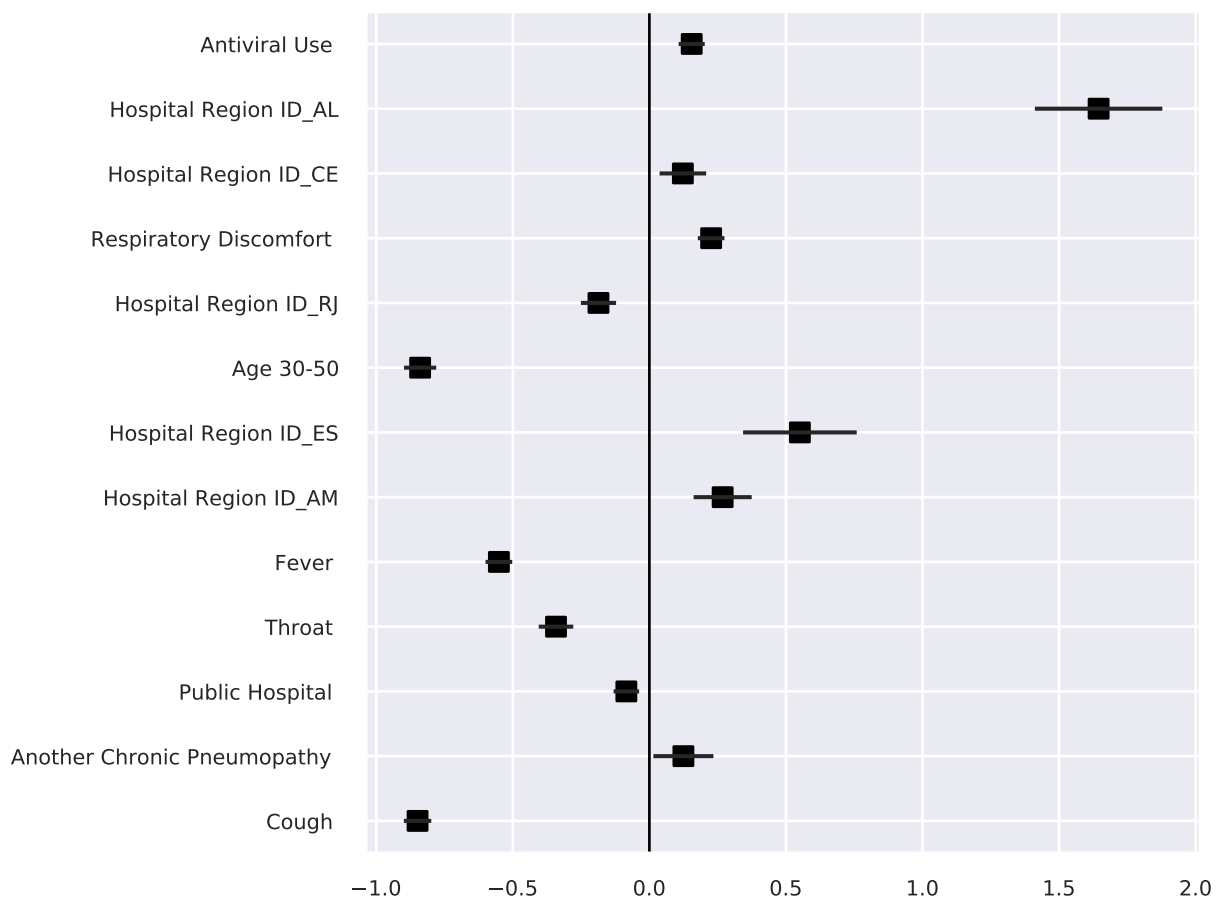
### Coefficients:

	SVM-l1	LR-l1
Hospital Region ID.AL	1.000	1.000
Hospital Region ID.RO	0.827	0.857
Hospital Region ID.ES	0.443	0.488
Hospital Region ID.PB	0.437	0.486
SpO2 less 95\%	0.332	0.477
Hospital Region ID.PI	0.373	0.421
Xray Torax Result Consolidation	0.275	0.321
Hospital Region ID.GO	0.257	0.303
Hospital Region ID.BA	0.243	0.280
Respiratory Discomfort	0.187	0.248
Dyspnea	0.168	0.246
Renal Chronic Disease	0.214	0.243
Other Risks	0.186	0.236
Antiviral Use	0.167	0.225
Another Chronic Pneumopathy	0.173	0.193
Diabetes	0.154	0.190
Contracted At Hospital	0.159	0.182
Hospital Region ID.CE	0.144	0.180
Immunosuppression	0.133	0.170
Liver Chronic Disease	0.144	0.163
Cardiovascular Disease	0.119	0.157
Hematologic Disease	0.114	0.130
Hospital Region ID.AM	0.098	0.111
Hospital Region ID.RJ	0.078	0.102
Public Hospital	0.062	0.085
Acute Respiratory Distress Syndrome	0.064	0.082
Neurological Disease	0.008	0.016
Race White	0.005	0.002
Schooling Superior	-0.023	-0.049
Schooling Medium 1-3	-0.050	-0.076
Other Symptoms	-0.067	-0.096
Fever	-0.080	-0.096
Vomiting	-0.076	-0.101
Gender.F	-0.089	-0.122
Hospital Region ID.SP	-0.115	-0.163
Diarrhea	-0.120	-0.169
Asthma	-0.128	-0.172
Hospital Region ID.RS	-0.137	-0.215
Throat	-0.161	-0.224
Age 0-30	-0.129	-0.236
Cough	-0.232	-0.290

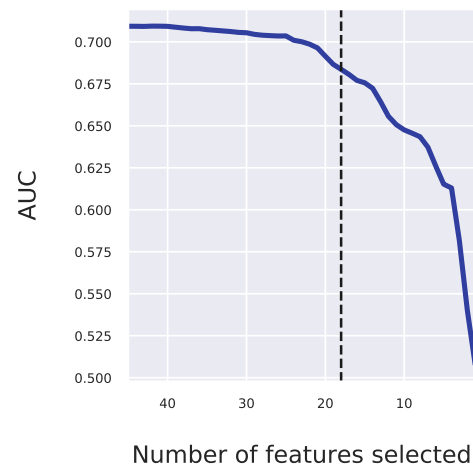


## 2.8 Ventilator small

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
Hospital Region ID.AL	1.645	1.411	1.878	5.179	4.101	6.541	0.222	0.581	0.000	0.000
Cough	-0.849	-0.899	-0.799	0.428	0.407	0.450	0.277	0.210	0.000	0.000
Age 30-50	-0.839	-0.898	-0.780	0.432	0.407	0.458	0.255	0.142	0.000	0.000
Fever	-0.551	-0.600	-0.502	0.576	0.549	0.605	0.254	0.215	0.000	0.000
Hospital Region ID.ES	0.551	0.343	0.759	1.735	1.409	2.136	0.223	0.412	0.000	0.000
Throat	-0.342	-0.405	-0.279	0.710	0.667	0.757	0.237	0.180	0.000	0.000
Renal Chronic Disease	0.286	0.186	0.386	1.331	1.204	1.471	0.219	0.347	0.000	0.000
Hospital Region ID.AM	0.268	0.162	0.375	1.308	1.176	1.454	0.222	0.277	0.000	0.000
Respiratory Discomfort	0.226	0.177	0.275	1.254	1.194	1.316	0.161	0.266	0.000	0.000
Hospital Region ID.RJ	-0.186	-0.251	-0.122	0.830	0.778	0.885	0.221	0.245	0.005	0.000
Antiviral Use	0.155	0.107	0.203	1.168	1.113	1.225	0.201	0.266	0.000	0.000
Another Chronic Pneumopathy	0.125	0.015	0.234	1.133	1.015	1.264	0.221	0.326	0.000	0.026
Hospital Region ID.CE	0.123	0.037	0.208	1.130	1.038	1.231	0.221	0.278	0.000	0.005
Hospital Region ID.BA	0.114	-0.044	0.273	1.121	0.957	1.313	0.223	0.318	0.000	0.157
Public Hospital	-0.084	-0.131	-0.038	0.919	0.877	0.963	0.205	0.258	0.000	0.000
Acute Respiratory Distress Syndrome	0.021	-0.032	0.074	1.021	0.969	1.077	0.212	0.262	0.000	0.434
Other Risks	0.014	-0.036	0.064	1.014	0.965	1.066	0.204	0.284	0.000	0.579
Dyspnea	-0.009	-0.060	0.043	0.991	0.942	1.044	0.147	0.253	0.000	0.742

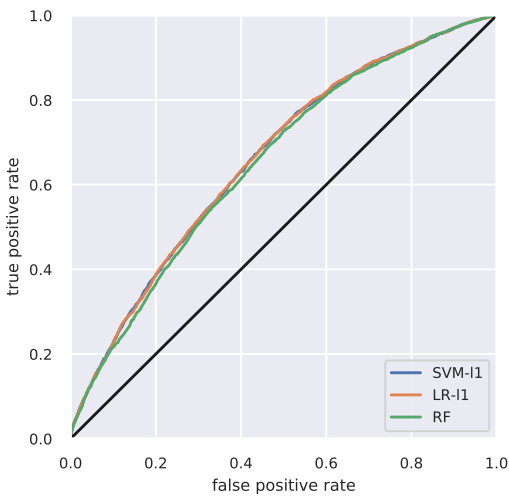


Recursive Feature Elimination:



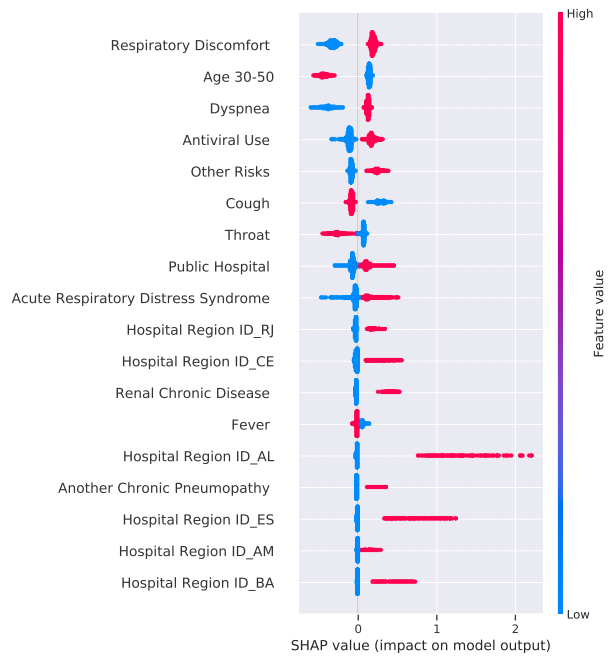
Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.759	0.760	0.758	0.763
F1w	0.676	0.676	0.654	0.676
AUC	0.663	0.663	0.654	0.670



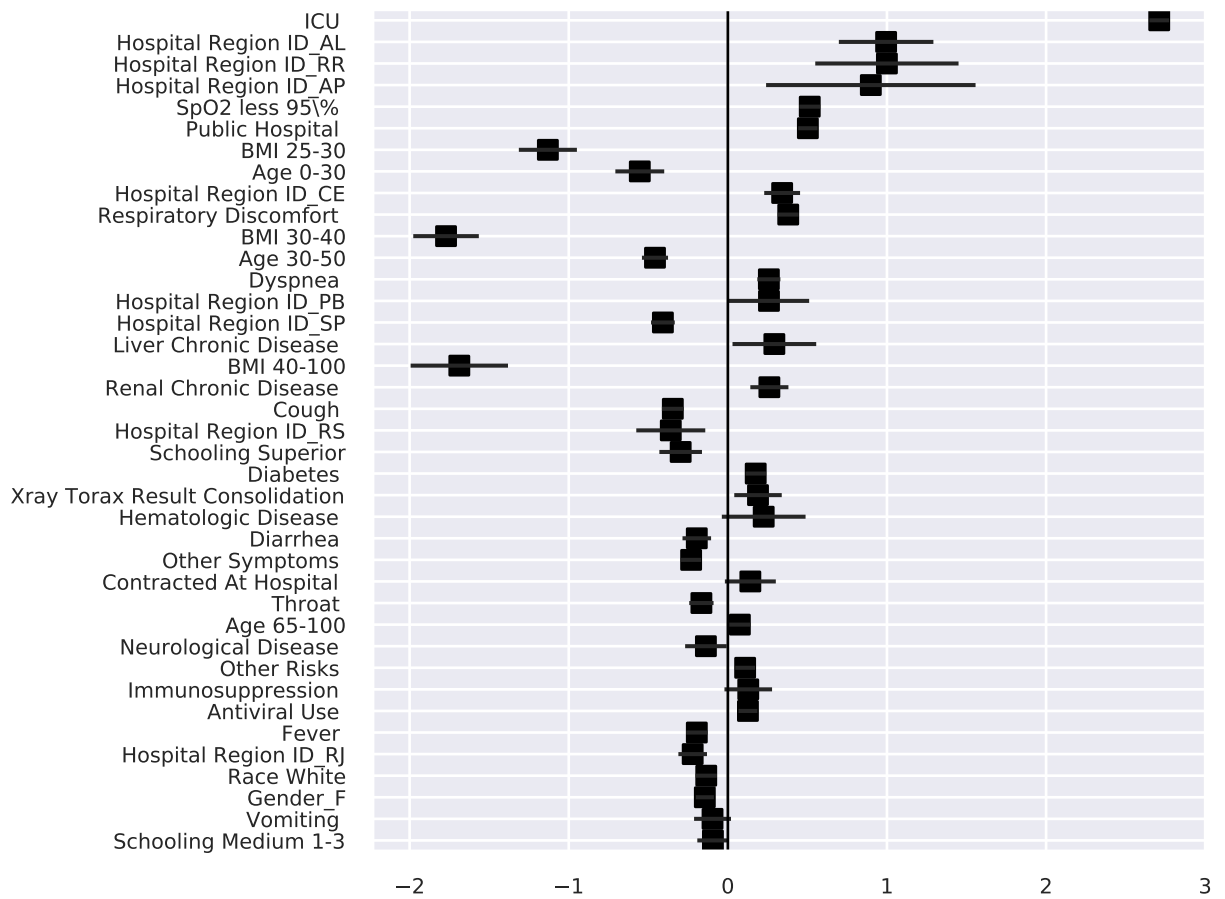
Coefficients:

	SVM-l1	LR-l1
Hospital Region ID_AL	1.000	1.000
Hospital Region ID_ES	0.504	0.537
Respiratory Discomfort	0.257	0.344
Dyspnea	0.238	0.343
Renal Chronic Disease	0.288	0.322
Hospital Region ID_BA	0.249	0.289
Other Risks	0.173	0.213
Antiviral Use	0.157	0.204
Hospital Region ID_CE	0.150	0.190
Hospital Region ID_RJ	0.132	0.175
Another Chronic Pneumopathy	0.163	0.175
Hospital Region ID_AM	0.102	0.123
Acute Respiratory Distress Syndrome	0.086	0.109
Public Hospital	0.077	0.101
Fever	-0.061	-0.073
Throat	-0.164	-0.225
Cough	-0.203	-0.250
Age 30-50	-0.244	-0.362



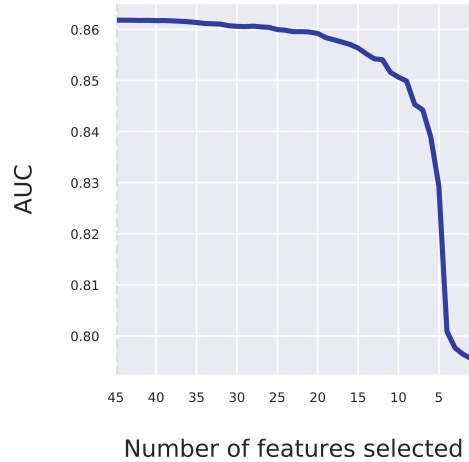
## **2.9 Ventilator with ICU**

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
ICU	2.711	2.649	2.773	15.045	14.146	16.001	0.067	0.521	0.000	0.000
BMI 30-40	-1.771	-1.977	-1.565	0.170	0.138	0.209	0.304	0.221	0.003	0.000
BMI 40-100	-1.688	-1.994	-1.382	0.185	0.136	0.251	0.221	0.358	0.000	0.000
BMI 25-30	-1.131	-1.314	-0.949	0.323	0.269	0.387	0.342	0.219	0.000	0.000
Hospital Region ID_RR	1.000	0.549	1.450	2.717	1.732	4.262	0.221	0.355	0.044	0.000
Hospital Region ID_AL	0.995	0.698	1.292	2.704	2.009	3.639	0.219	0.559	0.000	0.000
Hospital Region ID_AP	0.899	0.240	1.557	2.456	1.272	4.743	0.222	0.463	0.004	0.007
Age 0-30	-0.553	-0.707	-0.400	0.575	0.493	0.670	0.228	0.120	0.000	0.000
SpO2 less 95\%	0.515	0.449	0.580	1.673	1.567	1.786	0.130	0.285	0.000	0.000
Public Hospital	0.503	0.442	0.564	1.653	1.556	1.757	0.202	0.256	0.000	0.000
Age 30-50	-0.458	-0.540	-0.376	0.633	0.583	0.687	0.250	0.143	0.000	0.000
Hospital Region ID_SP	-0.408	-0.483	-0.334	0.665	0.617	0.716	0.244	0.191	0.000	0.000
Respiratory Discomfort	0.379	0.314	0.445	1.461	1.369	1.560	0.156	0.264	0.000	0.000
Hospital Region ID_RS	-0.359	-0.576	-0.142	0.699	0.562	0.868	0.223	0.158	0.000	0.001
Cough	-0.346	-0.415	-0.277	0.708	0.661	0.758	0.271	0.208	0.000	0.000
Hospital Region ID_CE	0.341	0.229	0.454	1.407	1.257	1.574	0.218	0.268	0.000	0.000
Schooling Superior	-0.297	-0.430	-0.163	0.743	0.650	0.850	0.225	0.167	0.000	0.000
Liver Chronic Disease	0.292	0.029	0.555	1.339	1.030	1.742	0.221	0.334	0.000	0.029
Renal Chronic Disease	0.261	0.141	0.381	1.298	1.152	1.463	0.215	0.357	0.000	0.000
Hospital Region ID_PB	0.258	0.006	0.511	1.295	1.006	1.667	0.220	0.380	0.000	0.045
Dyspnea	0.258	0.185	0.330	1.294	1.204	1.391	0.145	0.250	0.000	0.000
Other Symptoms	-0.231	-0.294	-0.168	0.794	0.745	0.846	0.235	0.193	0.000	0.000
Hematologic Disease	0.225	-0.038	0.488	1.253	0.963	1.630	0.221	0.289	0.035	0.093
Hospital Region ID_RJ	-0.221	-0.311	-0.131	0.802	0.733	0.877	0.219	0.240	0.017	0.000
Diarrhea	-0.195	-0.285	-0.105	0.823	0.752	0.900	0.229	0.178	0.000	0.000
Fever	-0.195	-0.262	-0.129	0.823	0.770	0.879	0.252	0.212	0.000	0.000
Xray Torax Result Consolidation	0.189	0.040	0.339	1.209	1.041	1.403	0.219	0.311	0.000	0.013
Diabetes	0.175	0.111	0.239	1.191	1.117	1.270	0.197	0.295	0.000	0.000
Throat	-0.166	-0.243	-0.090	0.847	0.784	0.914	0.233	0.178	0.000	0.000
Hospital Region ID_ES	-0.154	-0.403	0.094	0.857	0.668	1.099	0.220	0.384	0.000	0.224
Gender_F	-0.145	-0.202	-0.088	0.865	0.817	0.916	0.230	0.210	0.000	0.000
Contracted At Hospital	0.141	-0.019	0.301	1.152	0.981	1.352	0.219	0.322	0.000	0.083
Neurological Disease	-0.138	-0.268	-0.008	0.871	0.765	0.993	0.220	0.258	0.013	0.038
Race White	-0.136	-0.203	-0.069	0.873	0.817	0.933	0.230	0.204	0.000	0.000
Immunosuppression	0.128	-0.021	0.278	1.137	0.979	1.320	0.220	0.282	0.000	0.093
Antiviral Use	0.126	0.067	0.186	1.135	1.069	1.204	0.199	0.262	0.000	0.000
Other Risks	0.109	0.046	0.171	1.115	1.047	1.186	0.202	0.279	0.000	0.001
Hospital Region ID_AM	0.100	-0.041	0.241	1.105	0.960	1.272	0.219	0.269	0.000	0.164
Vomiting	-0.096	-0.212	0.020	0.908	0.809	1.020	0.225	0.180	0.000	0.104
Schooling Medium 1-3	-0.094	-0.192	0.004	0.910	0.825	1.004	0.226	0.188	0.000	0.061
Age 65-100	0.075	0.008	0.143	1.078	1.008	1.154	0.180	0.281	0.000	0.028
Hospital Region ID_BA	-0.038	-0.233	0.157	0.963	0.792	1.170	0.220	0.330	0.000	0.701
Another Chronic Pneumopathy	0.038	-0.091	0.167	1.039	0.913	1.182	0.218	0.317	0.000	0.565
Cardiovascular Disease	0.025	-0.037	0.087	1.026	0.964	1.091	0.194	0.277	0.000	0.425
Acute Respiratory Distress Syndrome	0.015	-0.049	0.079	1.015	0.953	1.082	0.210	0.255	0.000	0.640



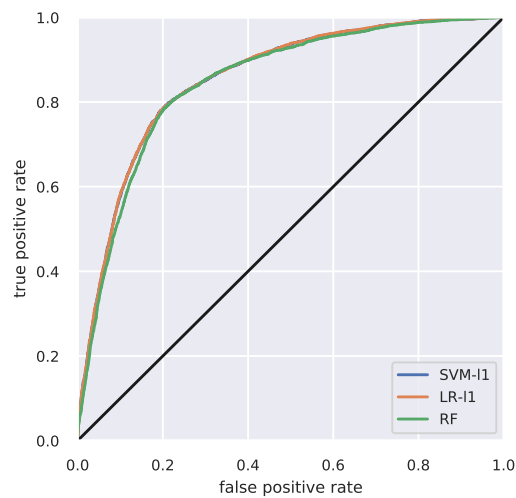


### Recursive Feature Elimination:



### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.821	0.822	0.756	0.825
F1w	0.816	0.816	0.653	0.820
AUC	0.855	0.855	0.848	0.860



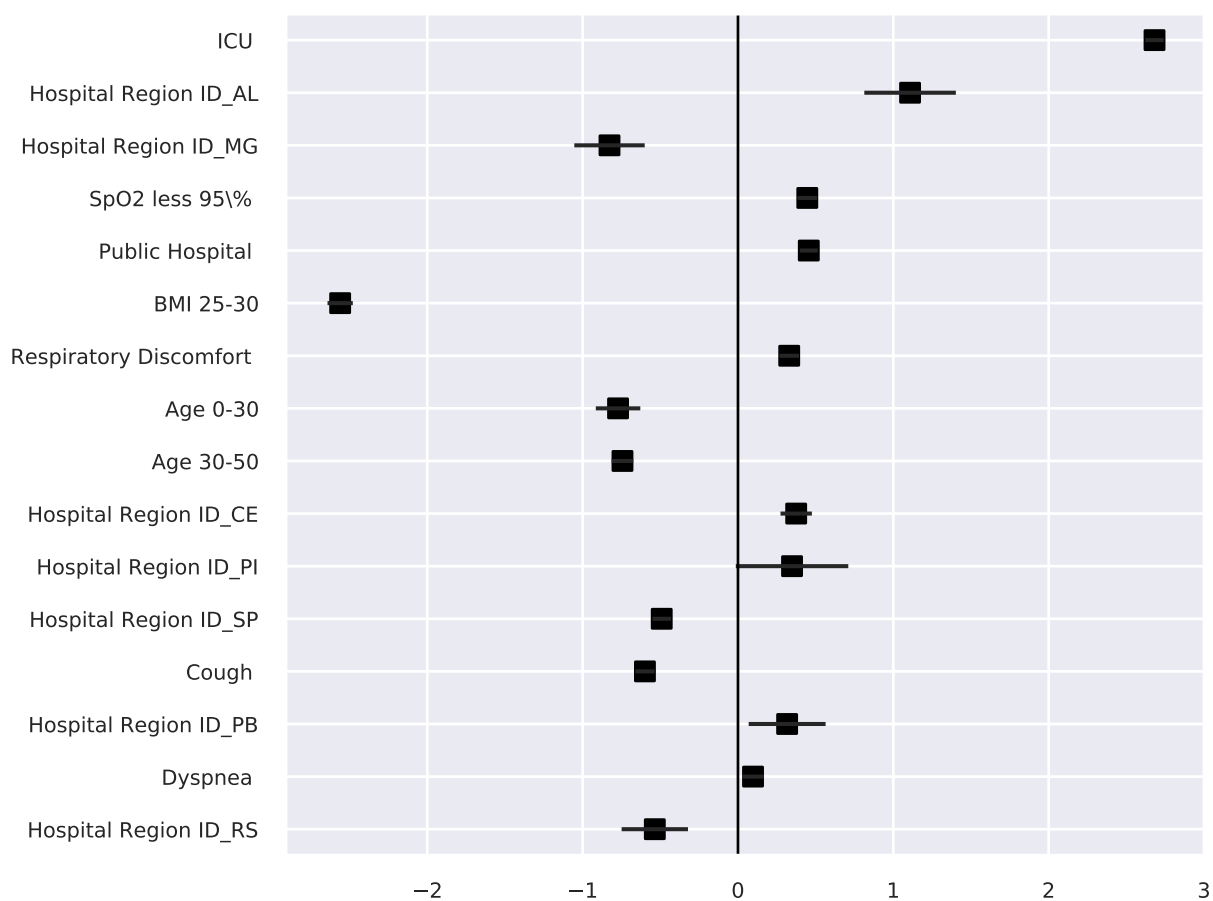
### Coefficients:

	SVM-l1	LR-l1
ICU	1.000	1.000
Hospital Region ID.AL	0.404	0.369
Hospital Region ID.RR	0.287	0.347
Hospital Region ID.AP	0.335	0.321
SpO2 less 95\%	0.177	0.204
Public Hospital	0.175	0.197
Hospital Region ID.CE	0.114	0.151
Respiratory Discomfort	0.140	0.147
BMI 30-40	0.139	0.129
Dyspnea	0.112	0.121
Hospital Region ID.PB	0.142	0.119
Liver Chronic Disease	0.100	0.109
BMI 40-100	0.113	0.109
Renal Chronic Disease	0.103	0.102
Diabetes	0.070	0.075
Xray Torax Result Consolidation	0.073	0.074
Hematologic Disease	0.076	0.072
Contracted At Hospital	0.070	0.063
Age 65-100	0.043	0.054
Hospital Region ID.AM	0.037	0.050
Other Risks	0.049	0.049
Immunosuppression	0.049	0.048
Antiviral Use	0.052	0.048
Hospital Region ID.BA	0.054	0.039
Cardiovascular Disease	0.021	0.019
Acute Respiratory Distress Syndrome	0.010	0.014
Another Chronic Pneumopathy	0.019	0.010
Schooling Medium 1-3	-0.010	-0.019
Vomiting	-0.022	-0.026
Hospital Region ID.ES	0.014	-0.031
Gender.F	-0.033	-0.035
Race White	-0.034	-0.040
Hospital Region ID.RJ	-0.050	-0.041
Fever	-0.049	-0.047
Neurological Disease	-0.062	-0.053
Throat	-0.049	-0.056
Other Symptoms	-0.065	-0.064
Diarrhea	-0.061	-0.067
Schooling Superior	-0.105	-0.093
Hospital Region ID.RS	-0.071	-0.097
Cough	-0.097	-0.099
Hospital Region ID.SP	-0.112	-0.114
Age 30-50	-0.113	-0.126
Age 0-30	-0.129	-0.155
BMI 25-30	-0.198	-0.197

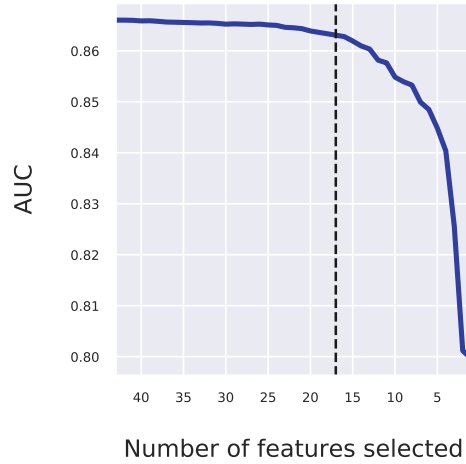


## **2.10 Ventilator with ICU small**

	Coef	2.5	97.5	Odds Ratio	2.5	97.5	Avg-0	Avg-1	KS-pv	pvalue
ICU	2.681	2.622	2.741	14.607	13.764	15.501	0.066	0.529	0.000	0.000
BMI 25-30	-2.561	-2.642	-2.479	0.077	0.071	0.084	0.337	0.221	0.000	0.000
Hospital Region ID_AL	1.108	0.813	1.403	3.028	2.255	4.066	0.221	0.585	0.000	0.000
Hospital Region ID_MG	-0.827	-1.054	-0.600	0.437	0.349	0.549	0.225	0.167	0.014	0.000
Age 0-30	-0.772	-0.915	-0.629	0.462	0.400	0.533	0.230	0.128	0.000	0.000
Age 30-50	-0.743	-0.813	-0.674	0.475	0.444	0.510	0.254	0.141	0.000	0.000
Cough	-0.599	-0.661	-0.537	0.549	0.516	0.585	0.275	0.209	0.000	0.000
Hospital Region ID_RS	-0.535	-0.749	-0.322	0.585	0.473	0.725	0.225	0.165	0.002	0.000
Hospital Region ID_SP	-0.491	-0.551	-0.431	0.612	0.577	0.650	0.247	0.191	0.000	0.000
Public Hospital	0.456	0.398	0.514	1.578	1.488	1.672	0.203	0.259	0.000	0.000
SpO2 less 95\%	0.446	0.382	0.510	1.562	1.466	1.665	0.132	0.287	0.000	0.000
Hospital Region ID_CE	0.375	0.274	0.476	1.455	1.315	1.609	0.219	0.281	0.000	0.000
Hospital Region ID_PI	0.348	-0.014	0.710	1.416	0.986	2.034	0.223	0.323	0.021	0.060
Respiratory Discomfort	0.330	0.267	0.393	1.391	1.305	1.482	0.158	0.266	0.000	0.000
Hospital Region ID_PB	0.316	0.069	0.564	1.372	1.071	1.758	0.222	0.386	0.000	0.012
Xray Torax Result Consolidation	0.248	0.101	0.394	1.281	1.106	1.483	0.221	0.315	0.000	0.001
Dyspnea	0.097	0.028	0.166	1.102	1.028	1.181	0.148	0.252	0.000	0.006

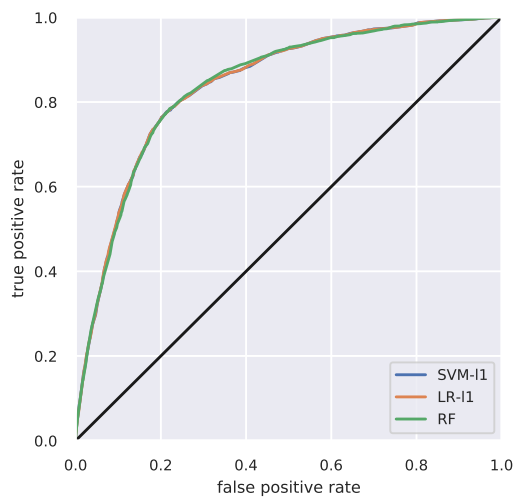


### Recursive Feature Elimination:



### Performance:

	SVM-l1	LR-l1	RF	XGBoost
Accuracy	0.813	0.812	0.793	0.813
F1w	0.809	0.808	0.752	0.808
AUC	0.841	0.841	0.841	0.844



### Coefficients:

	SVM-l1	LR-l1
ICU	1.000	1.000
Hospital Region ID.AL	0.427	0.391
Public Hospital	0.183	0.207
SpO2 less 95\%	0.177	0.206
Hospital Region ID.CE	0.147	0.184
Hospital Region ID.PI	0.164	0.154
Respiratory Discomfort	0.143	0.149
Hospital Region ID.PB	0.156	0.136
Dyspnea	0.100	0.114
Xray Torax Result Consolidation	0.091	0.093
Hospital Region ID.RS	-0.072	-0.111
Hospital Region ID.SP	-0.103	-0.114
Cough	-0.126	-0.129
BMI 25-30	-0.161	-0.159
Age 30-50	-0.181	-0.205
Age 0-30	-0.185	-0.214
Hospital Region ID.MG	-0.232	-0.235

