Table S2. The main characteristics of statistically significant space-time clusters of COVID-19 cases with regard to age, gender, urban/rural housing, patient outcome, and comorbidities across Golestan province from 1st February 2020 to 28th February 2021.

Class	Cluster	Start date	End date	Radius (km)	NO villages/cities	Observed	Expected	RR	LLR	P-value*
All Confirmed Cases	1	6-Jun-20	22-Jul-20	4.011	7	1173	251.110	4.878	906.039	< 0.001
	2	8-Nov-20	25-Jan-21	18.808	42	1219	367.875	3.449	626.268	< 0.001
	3	7-Nov-20	16-Dec-20	15.877	117	666	194.762	3.495	352.749	< 0.001
	4	10-Nov-20	31-Dec-20	26.388	58	668	207.653	3.286	325.056	< 0.001
	5	10-Nov-20	24-Feb-21	3.634	8	659	203.910	3.301	322.734	< 0.001
	6	4-Nov-20	9-Dec-20	70.865	189	360	129.887	2.801	138.101	< 0.001
	7	18-Oct-20	20-Feb-21	0.000	1	142	46.812	3.047	62.594	< 0.001
	8	13-Jun-20	2-Jul-20	5.769	13	65	16.718	3.897	40.034	< 0.001
	9	17-Nov-20	16-Dec-20	11.826	39	124	53.055	2.345	34.440	< 0.001
	10	21-Nov-20	15-Dec-20	5.962	15	54	17.084	3.166	25.262	< 0.001
	11	13-Jul-20	14-Jul-20	7.733	32	26	5.193	5.012	21.085	0.002
	12	15-Nov-20	7-Feb-21	6.517	10	57	22.641	2.521	18.295	0.022
Age 0-9	1	2-Jun-20	2-Dec-20	13.900	39	66	20.841	3.564	33.538	< 0.001
Age 10-19	1	26-May-20	2-Jul-20	5.046	10	47	6.167	8.160	55.999	< 0.001
	2	29-Oct-20	25-Jan-21	3.565	5	23	1.763	13.503	38.199	< 0.001
	3	16-Nov-20	28-Feb-21	5.876	14	32	6.119	5.457	27.605	< 0.001
	4	13-Jun-20	28-Jun-20	7.990	9	12	0.586	20.862	24.925	< 0.001
	5	15-Nov-20	2-Dec-20	0.000	1	8	0.319	25.358	18.133	0.008
	6	14-Nov-20	9-Dec-20	7.244	25	14	1.769	8.071	16.849	0.017
	7	13-Jun-20	28-Jun-20	11.876	17	7	0.259	27.350	16.380	0.026
Age 20-29	1	6-Jun-20	21-Jul-20	6.314	16	165	29.503	5.930	152.467	< 0.001
	2	10-Nov-20	31-Dec-20	48.715	57	132	31.487	4.377	90.826	< 0.001
	3	8-Nov-20	24-Dec-20	14.584	115	119	27.250	4.542	85.452	< 0.001
	4	10-Nov-20	6-Feb-21	3.757	12	70	9.376	7.659	80.870	< 0.001
	5	24-Jun-20	23-Dec-20	0.000	1	49	5.323	9.375	65.489	< 0.001
	6	16-Nov-20	28-Feb-21	0.000	1	76	19.470	3.998	47.646	< 0.001
	7	17-Nov-20	10-Dec-20	14.945	72	47	13.808	3.452	24.610	< 0.001
Age 30-39	1	30-May-20	22-Jul-20	4.011	7	288	64.693	4.681	212.326	< 0.001
	2	11-Nov-20	1-Feb-21	9.561	27	223	49.300	4.702	166.204	< 0.001
	3	21-Jun-20	23-Jul-20	11.204	75	159	30.043	5.445	137.809	< 0.001
	4	16-Jun-20	16-Dec-20	0.000	1	92	9.127	10.264	130.445	< 0.001
	5	7-Nov-20	28-Feb-21	3.634	8	202	51.912	4.023	126.863	< 0.001
	6	14-Nov-20	31-Dec-20	48.030	54	196	51.808	3.906	118.897	< 0.001
	7	9-Jun-20	16-Jul-20	5.058	9	25	5.007	5.015	20.252	0.002
	8	18-Oct-20	6-Feb-21	0.000	1	34	9.189	3.720	19.739	0.004
	9	12-Jul-20	14-Jul-20	6.422	24	13	1.479	8.811	16.748	0.034

Age 40-49	1	6-Jun-20	22-Jul-20	2.190	4	264	48.880	5.704	235.954	< 0.001
	2	11-Nov-20	16-Dec-20	59.053	77	176	37.099	4.912	137.514	< 0.001
	3	28-Oct-20	17-Dec-20	10.847	70	145	38.022	3.917	88.535	< 0.001
	4	28-Nov-20	4-Feb-21	17.949	38	139	38.910	3.663	78.131	< 0.001
	5	12-Nov-20	28-Feb-21	5.439	9	131	39.862	3.362	65.753	< 0.001
	6	10-Jun-20	21-Jul-20	6.992	25	39	10.195	3.852	23.621	< 0.001
	7	6-Jun-20	10-Jun-20	0.000	1	5	0.020	252.787	22.679	0.001
Age 50-59	1	5-Jun-20	22-Jul-20	4.011	7	188	45.796	4.277	126.199	< 0.001
	2	9-Nov-20	14-Jan-21	11.691	30	179	59.107	3.135	80.510	< 0.001
	3	20-Jun-20	5-Aug-20	11.272	78	117	32.033	3.742	67.621	< 0.001
	4	10-Nov-20	25-Feb-21	5.699	15	92	40.720	2.293	24.079	< 0.001
	5	22-Jun-20	6-Jul-20	44.734	107	41	11.646	3.550	22.370	0.001
	6	21-Nov-20	23-Nov-20	4.520	8	7	0.127	55.319	21.212	0.002
Age 60-69	1	8-Nov-20	17-Dec-20	30.879	65	139	33.616	4.276	93.678	< 0.001
	2	9-Jun-20	23-Jul-20	6.743	18	139	37.783	3.799	81.466	< 0.001
	3	25-Nov-20	25-Jan-21	0.000	1	50	7.002	7.237	55.582	< 0.001
	4	29-Oct-20	9-Dec-20	33.621	218	109	35.804	3.116	48.997	< 0.001
	5	7-Nov-20	24-Dec-20	17.658	100	108	37.826	2.919	43.908	< 0.001
	6	27-Feb-20	15-Mar-20	6.264	9	33	5.972	5.572	29.494	< 0.001
	7	30-Jun-20	19-Aug-20	10.698	43	47	16.384	2.896	19.060	0.007
Age >= 70	1	5-Jun-20	20-Jul-20	8.724	22	110	35.848	3.148	50.119	< 0.001
	2	16-Nov-20	23-Dec-20	28.855	64	96	29.867	3.288	46.701	< 0.001
	3	6-Mar-20	30-Mar-20	0.000	1	29	2.614	11.192	43.513	< 0.001
	4	22-Nov-20	23-Dec-20	16.979	82	77	24.653	3.180	35.814	< 0.001
	5	31-Oct-20	2-Dec-20	68.499	215	60	17.388	3.501	32.009	< 0.001
	6	11-Nov-20	1-Jan-21	9.821	39	54	16.430	3.329	26.923	< 0.001
Male	1	6-Jun-20	17-Dec-20	3.523	9	1265	501.265	2.723	435.965	< 0.001
	2	8-Nov-20	27-Jan-21	13.871	39	607	186.520	3.387	304.119	< 0.001
	3	15-Nov-20	6-Jan-21	22.177	39	303	86.781	3.563	164.808	< 0.001
	4	20-Jun-20	21-Jul-20	10.811	70	254	64.931	3.981	159.045	< 0.001
	5	10-Nov-20	22-Feb-21	3.634	8	297	98.510	3.071	131.103	< 0.001
	6	18-Jun-20	15-Jul-20	49.772	57	90	16.732	5.415	78.401	< 0.001
	7	27-Feb-20	12-Mar-20	6.249	8	65	14.203	4.598	48.182	< 0.001
Female	1	6-Jun-20	23-Jul-20	6.203	15	621	139.761	4.648	455.674	< 0.001
	2	10-Nov-20	20-Jan-21	18.808	42	590	174.689	3.511	310.808	< 0.001
	3	7-Nov-20	10-Dec-20	12.583	100	344	89.123	3.952	212.719	< 0.001
	4	8-Nov-20	28-Feb-21	3.634	8	373	113.686	3.361	186.955	< 0.001
	5	10-Nov-20	31-Dec-20	27.104	64	352	112.141	3.209	165.430	< 0.001
	6	7-Nov-20	25-Nov-20	70.865	189	134	35.945	3.761	78.706	< 0.001
	7	12-Oct-20	11-Feb-21	0.000	1	83	23.835	3.501	44.551	< 0.001
	8	12-Nov-20	14-Dec-20	10.916	35	72	29.965	2.412	21.163	0.001
	9	20-Nov-20	15-Dec-20	5.962	15	33	9.246	3.577	18.258	0.017

Urban	1	10-Nov-20	6-Feb-21	0.000	1	436	72.198	6.179	424.377	< 0.001
	2	3-Nov-20	10-Dec-20	76.743	6	472	126.854	3.803	278.784	< 0.001
	3	12-Nov-20	14-Dec-20	19.620	3	406	116.629	3.545	219.686	< 0.001
	4	14-Nov-20	24-Feb-21	6.368	2	620	241.611	2.629	210.436	< 0.001
	5	14-Nov-20	6-Jan-21	0.000	1	227	75.975	3.016	98.150	< 0.001
	6	20-Jun-20	23-Jul-20	19.379	5	313	133.242	2.376	88.569	< 0.001
Rural	1	6-Jun-20	23-Jul-20	10.360	42	250	61.105	4.229	166.433	< 0.001
	2	8-Nov-20	15-Jan-21	19.186	73	325	103.827	3.255	153.990	< 0.001
	3	4-Nov-20	1-Dec-20	71.343	170	174	42.316	4.207	115.837	< 0.001
	4	29-Oct-20	16-Dec-20	15.222	115	233	73.905	3.242	110.657	< 0.001
	5	10-Nov-20	20-Dec-20	21.688	58	142	44.661	3.234	67.735	< 0.001
	6	14-Nov-20	16-Dec-20	15.952	72	146	50.854	2.919	59.616	< 0.001
	7	14-Nov-20	13-Feb-21	26.665	82	230	115.994	2.023	44.578	< 0.001
	8	24-Nov-20	22-Dec-20	23.690	61	48	16.723	2.886	19.418	0.011
Recovered at home	1	6-Jun-20	2-Jul-20	4.011	7	508	73.484	7.274	558.610	< 0.001
	2	10-Nov-20	6-Feb-21	3.565	5	350	34.492	10.525	501.240	< 0.001
	3	12-Nov-20	31-Dec-20	48.030	54	584	141.687	4.343	396.238	< 0.001
	4	16-Nov-20	24-Feb-21	3.634	8	488	99.596	5.128	395.883	< 0.001
	5	7-Nov-20	16-Dec-20	10.847	70	388	82.260	4.887	301.498	< 0.001
	6	18-Jun-20	13-Jul-20	17.934	31	122	7.582	16.303	225.279	< 0.001
	7	14-Nov-20	9-Feb-21	0.000	1	75	17.792	4.243	50.885	< 0.001
	8	13-Jun-20	2-Jul-20	5.058	9	26	6.355	4.100	17.007	0.043
Hospital discharge	1	9-Jun-20	22-Dec-20	3.523	9	1137	502.427	2.408	313.504	< 0.001
	2	26-Feb-20	20-Aug-20	3.127	2	250	58.718	4.333	172.570	< 0.001
	3	20-Jun-20	5-Aug-20	15.097	119	348	123.859	2.869	137.679	< 0.001
	4	8-Nov-20	14-Jan-21	18.775	87	383	189.248	2.061	77.994	< 0.001
	5	28-Feb-20	15-Mar-20	6.249	8	74	16.397	4.537	54.065	< 0.001
	6	6-Nov-20	16-Dec-20	25.852	140	228	113.506	2.030	45.135	< 0.001
	7	20-Nov-20	15-Dec-20	5.712	14	45	9.107	4.957	36.058	< 0.001
	8	29-Oct-20	26-Nov-20	79.686	224	139	64.833	2.159	32.093	< 0.001
Death	1	19-Jun-20	18-Aug-20	2.820	6	125	32.631	4.011	77.615	< 0.001
	2	3-Mar-20	30-Mar-20	21.956	128	70	15.618	4.603	51.342	< 0.001
	3	4-Mar-20	9-Apr-20	15.715	67	74	20.606	3.686	41.909	< 0.001
	4	4-Mar-20	16-Mar-20	19.664	111	31	7.232	4.336	21.486	< 0.001
	5	24-Nov-20	23-Dec-20	9.857	36	24	5.201	4.657	17.988	0.012
	6	22-Nov-20	2-Dec-20	46.170	178	24	5.511	4.394	16.903	0.021
Cardiovascular disease	1	4-Jun-20	21-Jul-20	5.943	12	161	15.800	11.542	237.406	< 0.001
	2	24-Feb-20	22-Jul-20	28.587	65	189	48.952	4.368	123.738	< 0.001
	3	12-Jun-20	23-Jul-20	13.167	103	93	13.414	7.408	103.099	< 0.001
	4	3-Jun-20	17-Jul-20	33.376	143	76	14.890	5.368	64.302	< 0.001
	5	24-Feb-20	21-Jul-20	33.745	156	132	49.352	2.872	50.117	< 0.001

Diabetes	1	12-Jul-20	14-Jan-21	8.397	25	147	32.190	4.777	111.012	< 0.001
	2	17-Jun-20	21-Jul-20	11.498	30	109	23.807	4.732	82.037	< 0.001
	3	25-Jun-20	12-Aug-20	11.252	77	92	25.298	3.732	52.934	< 0.001
	4	31-Oct-20	28-Jan-21	17.025	79	137	63.049	2.237	33.441	< 0.001
	5	8-Nov-20	24-Dec-20	17.936	85	81	31.735	2.601	27.102	< 0.001
	6	18-Nov-20	20-Dec-20	13.804	10	25	5.206	4.839	19.509	0.005
Hypertension	1	8-Nov-20	15-Feb-21	23.729	77	189	30.169	7.002	196.648	< 0.001
	2	24-Oct-20	14-Feb-21	5.196	12	131	45.488	3.055	55.550	< 0.001
	3	7-Nov-20	9-Dec-20	12.010	86	55	10.169	5.572	48.672	< 0.001
	4	21-Oct-20	1-Feb-21	10.031	44	89	26.643	3.484	46.290	< 0.001
	5	7-Nov-20	10-Dec-20	12.320	14	24	2.587	9.409	32.201	< 0.001
	6	14-Nov-20	16-Nov-20	62.052	199	15	0.889	17.026	28.337	< 0.001
	7	15-Nov-20	15-Dec-20	24.911	93	39	10.406	3.819	23.201	< 0.001
Kidney disease	1	24-Jun-20	6-Sep-20	13.790	50	23	4.518	5.359	19.420	0.002
Lung disease	1	14-Jun-20	1-Aug-20	5.007	13	32	7.241	4.625	23.353	< 0.001
Neurological Disorders	1	15-Nov-20	1-Dec-20	45.167	188	8	0.324	27.260	18.355	0.002
Immunodeficiency	-	-	-	-	-	-	-	-	-	-
Liver disease	1	3-Jun-20	7-Jul-20	3.316	6	11	0.631	20.412	21.873	< 0.001
	2	19-May-20	25-Jun-20	6.974	52	6	0.250	26.046	13.545	0.034
Cancer	-	-	-	-	-	-	-	-	-	-

* All significant clusters have a P-value <= 0.05.