蕁麻疹就診人數資料

資料來自高雄榮民總醫院 (皮膚科)，為 2017 年 1 月 1 日至 2017 年 12 月 31 日診斷 ICD-9 代碼為 995.3(過敏) 每日就診人數資料，此篇為過敏的結果。

univariate gam

Generalized additive Poisson model

$$\ln(patient) = Intercept + \beta \times Airpollution + s(temperature) + s(humidity) + s(time)$$

s= a cyclic cubic regression splines

下列依不同的空汙指標分別做單變數 Generalized additive Poisson model，並以時間趨勢、當天的溫度與濕度作為共變量做平滑函數的擬合，下列各空汙列出了不同的滯後天數 (row, 當天 前七天) 與不同的移動平均天數 (colum, 當天平均 七天平均) 的模型結果 (p-value 與空汙估計係數)

CO

Table 1: linear term p-value with lag and moving average data

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.286	0.384	0.189	0.764	0.891	0.998	0.891
2	0.683	0.747	0.331	0.211	0.665	0.902	0.737
3	0.347	0.758	0.606	0.598	0.330	0.690	0.756
4	0.239	0.284	0.389	0.755	0.227	0.136	0.459
5	0.107	0.332	0.582	0.728	0.518	0.859	0.698
6	0.252	0.209	0.847	0.711	0.635	0.917	0.336
7	0.978	0.984	0.869	0.710	0.607	0.674	0.976
8	0.139	0.333	0.877	0.764	0.800	0.530	0.447

row:lag days,col:moving average for the n days

Table 2: Parametric coefficients with lag and moving average data

	beta	mv2	mv3	mv4	mv5	mv6	mv7
1	-0.442	0.455	0.812	0.209	-0.107	-0.002	-0.130
2	0.167	-0.169	0.596	0.862	0.332	0.104	0.317
3	0.377	0.160	-0.317	0.362	0.746	0.338	0.293
4	0.478	0.554	0.525	0.215	0.926	1.263	0.695
5	-0.675	-0.517	-0.342	-0.241	-0.500	0.151	0.366
6	-0.477	-0.671	-0.120	0.256	0.365	0.088	0.905
7	0.012	-0.011	-0.104	0.261	0.398	0.358	-0.029
8	0.600	0.509	0.096	-0.209	0.196	0.533	0.717

SO2

Table 3: linear term p-value with lag and moving average data

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.660	0.468	0.080	0.702	0.726	0.773	0.681
2	0.000	0.002	0.070	0.000	0.020	0.030	0.059
3	0.030	0.244	0.194	0.542	0.020	0.143	0.090
4	0.140	0.530	0.099	0.102	0.269	0.008	0.088
5	0.769	0.248	0.654	0.178	0.179	0.311	0.014
6	0.055	0.278	0.981	0.321	0.420	0.340	0.520
7	0.443	0.225	0.334	0.847	0.238	0.808	0.776
8	0.004	0.246	0.036	0.125	0.405	0.127	0.967

row:lag days,col:moving average for the n days

Table 4: Parametric coefficients with lag and moving average data

	beta	mv2	mv3	mv4	mv5	mv6	mv7
1	0.401	-0.976	2.698	0.669	0.674	0.591	-0.899
2	2.757	3.677	2.767	6.111	4.453	4.437	4.133
3	-2.214	1.458	1.980	1.056	4.408	2.992	3.710
4	1.227	-0.831	2.522	2.820	2.118	5.396	3.739
5	0.265	1.464	-0.709	2.322	2.561	2.071	5.353
6	-1.954	-1.455	0.038	-1.748	1.544	1.950	1.406
7	0.694	-1.662	-1.555	-0.343	-2.304	0.500	0.621
8	-3.030	-1.559	-3.384	-2.701	-1.599	-3.135	-0.091

O3

Table 5: linear term p-value with lag and moving average data

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.485	0.546	0.535	0.920	0.772	0.714	0.620
2	0.871	0.872	0.831	0.870	0.449	0.364	0.307
3	0.031	0.152	0.258	0.278	0.306	0.130	0.092
4	0.873	0.338	0.495	0.532	0.490	0.494	0.237
5	0.748	0.618	0.874	0.934	0.891	0.800	0.746
6	0.643	0.543	0.468	0.874	0.839	0.830	0.839
7	0.016	0.054	0.083	0.080	0.199	0.206	0.211
8	0.913	0.414	0.540	0.544	0.483	0.759	0.751

row:lag days,col:moving average for the n days

Table 6: Parametric coefficients with lag and moving average data

	beta	mv2	mv3	mv4	mv5	mv6	mv7
1	-0.003	-0.003	-0.003	0.000	0.001	0.002	0.002
2	0.001	0.001	0.001	0.001	0.004	0.004	0.005
3	0.008	0.006	0.005	0.005	0.005	0.007	0.008
4	-0.001	0.004	0.003	0.003	0.003	0.003	0.006
5	-0.001	-0.002	0.001	0.000	0.001	0.001	0.002
6	-0.002	-0.003	-0.003	-0.001	-0.001	-0.001	-0.001
7	-0.010	-0.008	-0.008	-0.008	-0.006	-0.006	-0.006
8	-0.000	-0.004	-0.003	-0.003	-0.003	-0.002	-0.002

PM2.5

Table 7: linear term p-value with lag and moving average data

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.003	0.916	0.962	0.342	0.992	0.657	0.809
2	0.008	0.881	0.330	0.479	0.853	0.571	0.921
3	0.360	0.431	0.429	0.844	0.914	0.623	0.760
4	0.702	0.358	0.809	0.391	0.975	0.927	0.508
5	0.219	0.221	0.133	0.609	0.173	0.563	0.524
6	0.107	0.133	0.237	0.230	0.766	0.343	0.803
7	0.967	0.606	0.547	0.593	0.483	0.916	0.467
8	0.761	0.890	0.553	0.462	0.499	0.473	0.913

row:lag days,col:moving average for the n days

Table 8: Parametric coefficients with lag and moving average data

	beta	mv2	mv3	mv4	mv5	mv6	mv7
1	-0.020	-0.001	-0.000	-0.008	0.000	-0.004	-0.002
2	0.017	-0.001	0.008	0.006	-0.002	0.005	0.001
3	-0.006	0.006	-0.007	0.002	0.001	-0.005	0.003
4	-0.002	-0.007	0.002	-0.008	-0.000	-0.001	-0.006
5	-0.008	-0.010	-0.013	-0.004	-0.012	-0.005	-0.006
6	-0.011	-0.012	-0.010	-0.011	-0.003	-0.009	-0.002
7	0.000	-0.004	-0.005	-0.005	-0.006	-0.001	-0.007
8	-0.002	-0.001	-0.005	-0.006	-0.006	-0.007	-0.001

PM10

Table 9: linear term p-value with lag and moving average data

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.012	0.713	0.753	0.603	0.909	0.986	0.793
2	0.002	0.593	0.076	0.139	0.516	0.295	0.396
3	0.153	0.555	0.529	0.595	0.623	0.984	0.512
4	0.494	0.189	0.922	0.468	0.769	0.766	0.855
5	0.034	0.036	0.018	0.247	0.089	0.471	0.516
6	0.002	0.020	0.085	0.105	0.627	0.370	0.981
7	0.881	0.102	0.121	0.191	0.155	0.516	0.257
8	0.298	0.435	0.080	0.087	0.137	0.151	0.545

row:lag days,col:moving average for the n days

Table 10: Parametric coefficients with lag and moving average data

	beta	mv2	mv3	mv4	mv5	mv6	mv7
1	-0.009	0.002	0.001	-0.002	0.001	0.000	0.001
2	0.011	0.002	0.008	0.007	0.003	0.005	0.004
3	-0.005	0.002	-0.003	0.002	0.002	0.000	0.003
4	-0.002	-0.005	0.000	-0.003	0.001	0.002	-0.001
5	-0.008	-0.009	-0.011	-0.005	-0.008	-0.004	-0.003
6	-0.011	-0.010	-0.008	-0.008	-0.002	-0.004	-0.000
7	-0.001	-0.007	-0.007	-0.006	-0.007	-0.003	-0.006
8	-0.004	-0.003	-0.008	-0.008	-0.007	-0.007	-0.003

NO

Table 11: linear term p-value with lag and moving average data

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.291	0.655	0.765	0.654	0.961	0.885	0.906
2	0.730	0.380	0.561	0.901	0.926	0.601	0.536
3	0.641	0.779	0.332	0.396	0.674	0.763	0.550
4	0.544	0.678	0.999	0.603	0.653	0.856	0.840
5	0.135	0.398	0.552	0.540	0.391	0.468	0.641
6	0.659	0.466	0.977	0.759	0.792	0.997	0.868
7	0.885	0.942	0.966	0.698	0.596	0.706	0.901
8	0.851	0.925	0.743	0.545	0.819	0.977	0.990

row:lag days,col:moving average for the n days

Table 12: Parametric coefficients with lag and moving average data

	beta	mv2	mv3	mv4	mv5	mv6	mv7
1	-0.065	-0.030	0.022	0.035	-0.004	-0.012	-0.011
2	-0.021	-0.060	-0.043	-0.010	-0.008	-0.045	-0.056
3	0.027	-0.019	-0.070	-0.066	-0.034	-0.026	-0.054
4	0.035	0.027	-0.000	-0.040	-0.037	-0.015	-0.018
5	-0.092	-0.057	-0.043	-0.047	-0.070	-0.062	-0.042
6	-0.027	-0.050	-0.002	0.024	0.022	0.000	0.015
7	-0.009	0.005	-0.003	0.031	0.044	0.033	0.011
8	0.011	-0.006	-0.024	-0.047	-0.019	0.002	0.001

NO2

Table 13: linear term p-value with lag and moving average data

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.004	0.005	0.520	0.472	0.763	0.954	0.701
2	0.018	0.764	0.335	0.704	0.993	0.857	0.723
3	0.756	0.138	0.821	0.342	0.926	0.845	0.814
4	0.051	0.505	0.136	0.945	0.594	0.633	0.874
5	0.825	0.310	0.857	0.353	0.893	0.626	0.742
6	0.351	0.517	0.949	0.580	0.842	0.461	0.244
7	0.036	0.090	0.527	0.239	0.435	0.171	0.556
8	0.730	0.112	0.087	0.420	0.295	0.568	0.308

row:lag days,col:moving average for the n days

Table 14: Parametric coefficients with lag and moving average data

	beta	mv2	mv3	mv4	mv5	mv6	mv7
1	0.020	0.025	0.006	0.008	0.004	0.001	0.005
2	-0.018	0.003	0.009	-0.004	0.000	-0.002	-0.005
3	0.002	-0.013	0.002	0.010	-0.001	0.002	0.003
4	-0.014	-0.006	-0.015	-0.001	0.006	-0.006	-0.002
5	0.002	-0.009	-0.002	-0.010	0.002	0.006	-0.004
6	-0.007	0.006	0.001	0.006	-0.002	0.009	0.015
7	-0.016	-0.015	-0.006	-0.013	-0.009	-0.017	-0.008
8	0.002	-0.014	-0.017	-0.009	-0.012	-0.007	-0.013