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	0.007	0.004	0.095	0.451	0.226	0.378	0.164
2	0.232	0.309	0.099	0.327	0.643	0.327	0.452
3	0.475	0.125	0.963	0.368	0.593	0.851	0.395
4	0.512	0.788	0.691	0.453	0.173	0.384	0.636
5	0.798	0.625	0.730	0.845	0.473	0.242	0.444
6	0.707	0.388	0.200	0.262	0.568	0.138	0.037
7	0.827	0.877	0.455	0.405	0.565	0.993	0.464
8	0.466	0.295	0.263	0.754	0.881	0.854	0.886

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	0.582	0.759	0.508	0.260	0.471	0.384	0.658
2	-0.270	0.272	0.498	0.337	0.179	0.424	0.355
3	-0.159	-0.415	0.014	0.310	0.209	0.082	0.406
4	0.144	0.072	-0.122	0.259	0.528	0.378	0.225
5	0.056	0.131	0.105	-0.068	0.280	0.510	0.365
6	-0.085	0.234	0.390	0.385	0.222	0.644	0.984
7	0.050	0.043	0.232	0.288	0.223	0.004	0.346
8	-0.165	-0.288	-0.349	-0.110	0.059	0.081	-0.069

SO2

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

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.377	0.004	0.375	0.509	0.346	0.999	0.903
2	0.838	0.855	0.006	0.192	0.241	0.174	0.662
3	0.000	0.003	0.031	0.000	0.004	0.006	0.002
4	0.018	0.261	0.335	0.457	0.006	0.091	0.100
5	0.367	0.282	0.214	0.292	0.341	0.006	0.059
6	0.238	0.104	0.875	0.039	0.056	0.089	0.001
7	0.003	0.150	0.481	0.087	0.952	0.901	0.757
8	0.286	0.334	0.932	0.751	0.590	0.319	0.295

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	-0.018	0.071	0.027	0.022	0.035	-0.000	0.005
2	0.004	-0.005	0.083	0.045	0.043	0.054	0.018
3	0.064	0.072	0.065	0.141	0.107	0.109	0.129
4	-0.049	0.029	0.030	0.025	0.102	0.066	0.068
5	0.016	-0.028	0.038	0.036	0.035	0.107	0.078
6	0.021	0.041	0.005	0.070	0.070	0.067	0.134
7	-0.065	-0.039	-0.022	-0.059	-0.002	-0.005	-0.013
8	0.019	-0.025	-0.003	0.011	-0.020	0.039	0.043

O3

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

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.444	0.875	0.405	0.453	0.515	0.410	0.324
2	0.609	0.675	0.820	0.340	0.274	0.275	0.164
3	0.785	0.659	0.720	0.692	0.285	0.195	0.188
4	0.004	0.214	0.440	0.226	0.285	0.106	0.074
5	0.711	0.257	0.612	0.740	0.471	0.493	0.238
6	0.584	0.653	0.421	0.731	0.940	0.746	0.857
7	0.765	0.601	0.472	0.951	0.781	0.593	0.740
8	0.064	0.385	0.416	0.424	0.948	0.878	0.782

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	0.001	0.000	0.002	0.002	0.002	0.002	0.003
2	-0.001	0.001	0.000	0.002	0.003	0.003	0.004
3	-0.000	-0.001	0.001	0.001	0.003	0.003	0.004
4	0.005	0.002	0.002	0.003	0.003	0.004	0.005
5	-0.001	0.002	0.001	0.001	0.002	0.002	0.003
6	-0.001	-0.001	0.002	0.001	0.000	0.001	0.000
7	-0.000	-0.001	-0.002	0.000	-0.001	-0.001	-0.001
8	-0.003	-0.002	-0.002	-0.002	0.000	-0.000	-0.001

PM2.5

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

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.042	0.014	0.871	0.248	0.591	0.580	0.147
2	0.027	0.852	0.525	0.180	0.892	0.739	0.946
3	0.038	0.668	0.661	0.285	0.576	0.428	0.793
4	0.726	0.309	0.621	0.727	0.357	0.508	0.541
5	0.858	0.710	0.531	0.552	0.837	0.556	0.326
6	0.260	0.729	0.734	0.479	0.768	0.676	0.365
7	0.494	0.472	0.846	0.671	0.817	0.483	0.971
8	0.630	0.674	0.363	0.575	0.592	0.776	0.599

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	0.005	0.007	-0.001	0.005	0.003	0.003	0.008
2	-0.005	-0.001	0.002	-0.006	0.001	-0.002	-0.000
3	0.005	-0.001	0.002	0.004	-0.003	0.004	0.002
4	-0.001	0.003	-0.002	0.002	0.004	-0.004	0.004
5	0.000	-0.001	0.002	-0.002	0.001	0.003	-0.006
6	-0.003	-0.001	-0.001	0.003	-0.001	0.002	0.005
7	-0.002	-0.002	-0.001	-0.002	0.001	-0.004	0.000
8	0.001	-0.001	-0.003	-0.002	-0.003	0.002	-0.003

PM10

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

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.004	0.009	0.899	0.030	0.107	0.092	0.010
2	0.602	0.125	0.077	0.855	0.070	0.184	0.119
3	0.167	0.642	0.055	0.030	0.543	0.008	0.025
4	0.551	0.190	0.445	0.045	0.026	0.500	0.014
5	0.357	0.739	0.642	0.885	0.178	0.106	0.839
6	0.785	0.799	0.713	0.272	0.429	0.066	0.041
7	0.261	0.407	0.419	0.637	0.998	0.657	0.552
8	0.309	0.149	0.199	0.241	0.571	0.808	0.992

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	0.004	0.005	0.000	0.005	0.004	0.005	0.008
2	-0.001	0.003	0.004	-0.000	0.005	0.004	0.005
3	0.002	0.001	0.004	0.005	0.002	0.008	0.007
4	0.001	0.002	0.002	0.005	0.006	0.002	0.008
5	-0.001	-0.001	0.001	0.000	0.004	0.005	0.001
6	-0.000	-0.000	0.001	0.003	0.002	0.005	0.006
7	-0.002	-0.002	-0.002	-0.001	-0.000	-0.001	0.002
8	-0.002	-0.003	-0.003	-0.003	-0.002	0.001	0.000

NO

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

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.081	0.126	0.429	0.840	0.718	0.747	0.419
2	0.182	0.953	0.967	0.665	0.248	0.243	0.210
3	0.772	0.219	0.776	0.881	0.679	0.298	0.323
4	0.594	0.868	0.405	0.889	0.909	0.609	0.261
5	0.943	0.908	0.810	0.763	0.788	0.811	0.990
6	0.636	0.734	0.730	0.587	0.953	0.513	0.463
7	0.465	0.701	0.506	0.577	0.565	0.897	0.538
8	0.840	0.728	0.583	0.947	0.953	0.750	0.973

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	0.019	0.022	0.013	-0.004	-0.007	-0.007	-0.019
2	-0.016	0.001	0.001	-0.008	-0.023	-0.025	-0.029
3	-0.003	-0.018	-0.005	-0.003	-0.008	-0.022	-0.023
4	-0.006	-0.002	-0.014	-0.002	-0.002	-0.011	-0.026
5	-0.001	-0.002	0.004	-0.005	0.005	0.005	-0.000
6	-0.006	0.005	0.006	0.010	0.001	0.014	0.017
7	0.009	0.006	0.011	0.010	0.011	0.003	0.014
8	-0.002	-0.005	-0.009	-0.001	0.001	0.007	-0.001

NO2

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

	p.pv	mv2	mv3	mv4	mv5	mv6	mv7
1	0.000	0.001	0.308	0.223	0.323	0.441	0.198
2	0.014	0.306	0.153	0.854	0.723	0.685	0.790
3	0.208	0.290	0.245	0.079	0.627	0.377	0.273
4	0.024	0.688	0.134	0.608	0.296	0.857	0.794
5	0.868	0.162	0.904	0.319	0.530	0.366	0.883
6	0.843	0.285	0.852	0.295	0.914	0.127	0.058
7	0.005	0.077	0.496	0.119	0.397	0.111	0.735
8	0.554	0.062	0.099	0.468	0.237	0.693	0.323

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	0.022	0.024	0.008	0.011	0.010	0.008	0.015
2	-0.014	0.007	0.011	-0.002	0.004	0.004	0.003
3	0.007	-0.007	0.009	0.016	0.005	0.010	0.013
4	-0.013	-0.003	-0.012	0.005	0.010	-0.002	0.003
5	0.001	-0.010	-0.001	-0.009	0.006	0.010	-0.002
6	-0.001	0.007	0.002	0.009	0.001	0.017	0.022
7	-0.016	-0.013	-0.005	-0.014	-0.008	-0.017	-0.004
8	0.003	-0.013	-0.013	-0.006	-0.012	-0.004	-0.011