

## Multimedia Appendix 1: State data tables

Table A1 consists of the States by declining interest in the term 'Asthma' from 2004 to 2015, Table A2 consists of the normalized values for the online interest by State for each year from 2004 to 2015, and Tables A3 and A4 present the smoothing parameters and coefficients for the Holt-Winters forecasting by State, respectively.

**Table A1.** Online Interest for 'Asthma' by State in USA from January 2004 to December 2015

State	Score	State	Score	State	Score	State	Score
Delaware	100	South Carolina	89	Massachusetts	81	Arizona	78
West Virginia	97	Indiana	88	Oklahoma	81	Wisconsin	77
North Carolina	95	Colorado	87	New Jersey	81	Texas	76
Kentucky	95	Alabama	87	Montana	80	Hawaii	73
Maine	94	Georgia	86	Washington	80	Utah	72
Tennessee	93	South Dakota	86	New York	80	Iowa	72
Connecticut	92	New Mexico	85	Kansas	79	Louisiana	71
Maryland	92	Vermont	85	Alaska	79	Florida	69
Mississippi	92	Missouri	85	New Hampshire	78	Nevada	67
Pennsylvania	91	Minnesota	84	Ohio	78	California	67
Nebraska	91	Arkansas	84	North Dakota	78	Virginia	61
Idaho	89	District of Columbia	83	Wyoming	78	Oregon	55
Rhode Island	89	Michigan	83	Illinois	78		

**Table A2.** Online Interest for 'Asthma' by State by Year from 2004 to 2015

State	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Alabama	38	58	76	50	52	73	80	83	90	77	82	88
Alaska	67	73	100	52	44	77	70	88	86	86	79	93
Arizona	48	52	58	39	47	67	64	72	83	66	70	78
Arkansas	45	76	80	51	54	63	74	85	82	80	78	79
California	40	45	53	35	36	44	37	61	65	56	57	63
Colorado	48	54	62	52	53	73	75	83	87	73	72	81
Connecticut	54	63	76	48	59	81	75	93	91	78	87	90
Delaware	78	79	95	100	100	100	82	93	95	100	100	100
DC	52	52	68	43	45	68	64	78	82	71	74	78
Florida	37	41	49	34	40	57	55	65	68	56	61	65
Georgia	48	54	67	50	51	73	68	83	89	73	71	79
Hawaii	58	62	52	43	48	63	67	71	80	62	64	66
Idaho	81	73	65	52	58	89	77	95	97	80	87	85
Illinois	52	56	67	42	49	69	64	69	75	64	66	72
Indiana	59	69	82	45	51	77	71	81	88	70	76	78
Iowa	55	62	68	43	47	75	73	73	75	61	60	67
Kansas	51	57	68	47	48	64	77	79	85	69	67	62
Kentucky	67	72	79	52	64	94	80	96	98	83	83	94
Louisiana	64	49	63	40	44	58	57	69	71	59	61	63
Maine	58	83	88	66	56	83	83	99	100	89	93	87
Maryland	53	58	78	52	55	85	82	82	85	74	77	91
Massachusetts	57	55	69	45	54	73	67	77	79	68	71	80
Michigan	44	59	72	49	53	73	68	79	76	68	68	77
Minnesota	51	62	74	47	52	75	78	78	81	69	72	78
Mississippi	54	83	68	41	45	65	64	84	92	75	79	99
Missouri	56	59	71	46	52	75	73	80	80	68	69	81
Montana	49	62	81	56	47	81	67	95	89	81	77	81
Nebraska	78	73	79	49	55	87	80	87	98	79	85	86
Nevada	39	42	51	35	44	64	59	60	65	65	61	68
New Hampshire	60	49	78	41	50	69	68	79	79	67	67	82
New Jersey	51	56	66	41	47	67	63	76	78	69	71	75
New Mexico	75	69	64	47	61	79	95	76	86	77	74	85
New York	49	57	65	46	49	69	64	70	77	66	65	72
North Carolina	55	63	79	51	62	85	82	91	95	82	80	82
North Dakota	91	91	94	54	69	99	79	86	85	84	73	74
Ohio	48	54	68	44	46	68	68	73	78	66	67	72
Oklahoma	46	64	63	46	48	62	71	77	87	72	71	74
Oregon	48	50	68	43	50	71	69	74	79	46	34	38
Pennsylvania	52	61	74	48	55	75	75	88	91	78	77	84
Rhode Island	64	49	80	52	61	72	84	94	93	85	84	89
South Carolina	61	54	73	46	51	82	70	77	89	80	78	79
South Dakota	100	97	89	57	64	73	71	88	96	70	80	98
Tennessee	48	58	70	45	48	76	76	87	96	78	81	88
Texas	45	52	64	41	47	64	60	70	73	63	66	70
Utah	43	52	66	37	42	53	59	70	69	65	66	67
Vermont	63	95	74	67	44	70	55	93	85	91	76	92
Virginia	40	48	63	40	35	37	33	76	82	67	55	53
Washington	46	52	65	46	51	70	66	78	77	70	68	74
West Virginia	86	81	67	75	69	95	100	100	98	94	81	93
Wisconsin	57	61	71	43	50	67	71	74	73	64	63	68
Wyoming	85	100	88	50	55	52	84	91	86	90	78	80

**Table A3. Smoothing Parameters for the Holt-Winters' Forecasting by State**

<b>State</b>	<b>alpha (<math>\alpha</math>)</b>	<b>beta (<math>\beta^*</math>)</b>	<b>gamma (<math>\gamma</math>)</b>
Alabama	0.1050	0.0162	0.7013
Alaska	0.0491	0.0877	0.4980
Arizona	0.1491	0.0381	0.4310
Arkansas	0.0426	0.0882	0.6637
California	0.2817	0.0000	0.6552
Colorado	0.0685	0.0000	0.3896
Connecticut	0.1059	0.0000	0.4359
Delaware	0.1665	0.0208	0.4038
District of Columbia	0.0923	0.0000	0.5157
Florida	0.1447	0.0195	0.6686
Georgia	0.2049	0.0321	0.4613
Hawaii	0.0146	0.6730	0.6628
Idaho	0.0090	1.0000	0.5640
Illinois	0.1829	0.0274	0.4946
Indiana	0.0525	0.0334	0.5058
Iowa	0.1160	0.0540	0.5406
Kansas	0.0701	0.0122	0.4871
Kentucky	0.0604	0.0494	0.4764
Louisiana	0.0893	0.1310	0.4797
Maine	0.0274	0.1580	0.3866
Maryland	0.0263	0.0000	0.4569
Massachusetts	0.0841	0.0554	0.5767
Michigan	0.1009	0.0239	0.6195
Minnesota	0.1291	0.0088	0.5211
Mississippi	0.1009	0.0000	0.6027
Missouri	0.0972	0.0000	0.5170
Montana	0.0954	0.0783	0.3634
Nebraska	0.0566	0.1721	0.2803
Nevada	0.0321	0.0490	0.6138
New Hampshire	0.0902	0.0775	0.4581
New Jersey	0.1657	0.0260	0.4642
New Mexico	0.1470	0.0072	0.3644
New York	0.1818	0.0245	0.5085
North Carolina	0.1209	0.0098	0.4294
North Dakota	0.0459	0.0485	0.4518
Ohio	0.0997	0.1281	0.3487
Oklahoma	0.2460	0.0389	0.5948
Oregon	0.1868	0.0000	0.5835
Pennsylvania	0.1784	0.0215	0.5000
Rhode Island	0.1205	0.0124	0.5135
South Carolina	0.0805	0.0851	0.2857
South Dakota	0.1044	0.0957	0.4531
Tennessee	0.0779	0.0372	0.5314
Texas	0.1822	0.0000	0.4703
Utah	0.0448	0.0430	0.4546
Vermont	0.0945	0.0330	0.4606
Virginia	0.5253	0.0000	0.8483
Washington	0.1281	0.0209	0.4646
West Virginia	0.0755	0.0453	0.4634
Wisconsin	0.1103	0.0241	0.6439
Wyoming	0.0826	0.1182	0.4289

**Table A4. Coefficients for the Holt-Winters' Forecastings by State**

	a	b	s1	s2	s3	s4	s5	s6	s7	s8	s9	s10	s11	s12
AL	27.42	-0.03	6.89	8.01	7.80	8.62	3.85	5.88	-0.34	2.91	5.36	12.26	2.44	4.88
AK	40.03	0.25	18.27	5.19	1.36	12.3	22.14	6.02	5.59	5.90	8.89	8.78	13.97	3.01
AZ	69.21	0.15	10.48	19.51	9.27	14.7	0.40	-3.72	-10.33	-0.01	-2.12	8.94	5.75	6.45
AR	32.11	0.08	11.38	10.28	8.23	11.0	2.22	-1.70	2.75	-1.77	14.8	7.41	8.68	1.56
CA	67.85	0.11	4.71	1.43	4.29	4.19	2.15	-10.63	-13.96	-12.67	-5.53	-1.71	-0.40	-3.70
CO	54.69	-0.08	-2.42	4.61	8.37	9.81	4.61	-0.35	-1.59	1.27	3.21	5.99	0.83	-2.45
CT	58.75	0.01	-2.08	0.88	0.08	7.65	0.51	-3.06	-8.06	-7.41	3.88	1.24	-1.54	-4.23
DC	58.46	-0.09	-2.35	-3.71	0.45	4.03	7.67	-6.60	-6.42	-3.51	1.25	2.11	-4.05	2.25
DE	21.62	-0.15	3.10	6.64	7.49	4.81	6.08	3.14	4.57	3.89	7.41	9.57	4.92	8.63
FL	70.72	0.06	-3.60	-0.12	-0.05	-2.19	-6.04	-8.45	-8.75	-10.65	-4.73	-0.48	-1.97	-7.95
GA	71.98	0.10	-5.87	-3.70	6.21	11.0	-4.32	-10.44	-9.74	-6.82	-1.93	-0.18	-1.72	-5.00
HI	15.87	0.06	4.97	9.97	10.18	9.70	2.19	6.44	2.52	0.43	8.84	7.21	2.48	5.21
ID	28.41	0.01	2.77	1.29	5.85	5.20	3.58	2.32	3.66	6.95	8.46	9.85	4.85	2.67
IL	55.00	0.00	0.57	1.09	2.85	7.97	4.34	-2.93	-2.40	-2.49	4.16	10.01	5.10	-1.56
IN	60.80	-0.02	-2.92	-5.85	0.56	6.84	-1.90	-9.62	-13.63	-6.00	-0.92	2.18	-1.71	-6.39
IA	35.73	0.06	-8.69	-6.07	1.02	-1.72	-2.74	-8.36	-8.67	-7.87	-5.42	-0.24	-6.21	-6.19
KS	29.79	-0.13	2.03	5.58	6.96	7.19	4.50	4.38	-0.43	6.63	6.57	10.74	0.60	-7.72
KY	39.66	0.04	5.51	3.14	4.30	5.31	6.17	2.29	4.65	2.76	9.29	6.25	6.65	0.89
LA	38.63	-0.05	8.32	9.87	11.57	6.96	2.77	0.58	-4.60	3.40	1.11	10.80	8.72	-0.06
ME	52.14	0.12	7.53	5.14	17.53	11.5	5.48	1.57	-5.89	-1.72	9.17	12.08	13.91	7.92
MD	64.07	0.01	-4.38	-2.99	-1.80	7.94	1.47	-10.15	-5.29	-8.14	2.58	5.83	2.85	-3.81
MA	45.67	0.05	2.61	3.99	5.96	6.61	8.90	-1.26	-3.03	-1.90	7.41	6.26	6.35	3.95
MI	64.56	0.04	-8.75	-3.33	0.59	2.26	-1.66	-6.55	-13.19	-11.45	-2.61	-0.14	-4.01	-4.58
MN	56.21	-0.19	4.86	8.46	4.26	11.8	8.08	-1.28	-3.49	-1.41	7.16	11.42	7.37	5.21
MS	43.92	-0.22	-0.27	2.54	11.47	14.9	3.34	-5.71	0.86	-1.29	1.73	15.53	4.36	-0.29
MO	61.87	0.01	0.02	-1.09	-3.40	4.83	-0.57	-8.90	-9.70	-7.99	-1.50	2.06	-1.30	-3.40
MT	41.50	-0.04	0.46	7.20	10.72	4.97	6.30	6.63	2.03	-1.68	10.6	5.85	2.58	1.58
NE	41.78	0.18	-2.37	2.35	3.91	9.18	3.38	-1.05	2.72	3.74	3.91	6.07	-0.02	-2.02
NV	35.65	0.08	13.62	21.59	19.62	14.7	11.32	5.52	-2.01	2.55	3.11	5.61	8.26	2.12
NH	39.74	0.20	9.90	3.84	8.49	8.16	11.15	-5.53	0.35	-0.09	7.76	18.00	6.88	2.66
NJ	73.25	0.10	-3.38	-4.18	-1.22	7.08	3.99	-9.22	-10.01	-16.13	-4.15	5.06	-1.75	-3.62
NM	51.18	0.07	-0.53	1.35	1.93	1.52	-5.30	-6.87	-11.80	-8.40	-6.07	3.24	1.32	-9.66
NY	57.21	0.00	3.08	3.44	5.12	7.45	7.69	-2.12	-7.03	-9.90	0.23	7.17	6.13	4.04
NC	74.44	0.04	-5.21	-2.60	1.13	5.15	-5.03	-9.10	-9.61	-10.47	-2.49	0.94	0.77	-5.73
ND	8.29	-0.05	6.22	0.05	4.50	5.17	3.01	0.71	3.06	6.29	1.92	2.27	7.73	4.79
OH	50.09	0.05	-0.61	1.45	4.15	10.0	2.10	-2.71	-2.57	-2.66	2.57	6.42	3.27	-1.41
OK	47.43	0.13	7.67	9.41	7.08	9.96	2.45	3.14	3.14	7.37	12.1	11.51	7.66	2.27
OR	41.00	-0.23	-1.71	0.42	6.73	3.92	11.57	11.82	-0.56	-0.65	6.15	2.78	0.88	-3.18
PA	66.30	0.10	-4.80	-2.94	-1.10	4.99	1.12	-6.37	-8.97	-9.78	-0.76	5.71	-0.21	-6.30
RI	52.70	0.08	-14.61	-5.99	-2.57	4.28	-3.41	-13.80	-10.98	-16.87	-6.07	1.10	-9.84	-10.82
SC	41.38	-0.08	2.31	5.67	6.36	8.23	2.60	-3.13	-5.09	-4.33	1.37	5.68	3.29	0.66
SD	13.80	-0.03	2.91	3.66	9.35	7.16	4.73	4.23	1.56	2.18	2.26	3.29	3.51	-0.33
TN	65.42	0.08	-11.31	-6.03	-6.32	8.95	-7.26	-10.38	-13.09	-6.63	-0.82	-6.65	-6.78	-9.28
TX	73.10	-0.10	4.56	2.22	4.96	13.6	1.65	-9.83	-10.45	-6.94	2.25	6.22	4.11	-2.04
UT	56.92	0.05	-3.00	-5.14	3.93	-0.90	-4.96	-6.57	-11.50	-7.32	-3.27	1.85	-6.75	-8.76
VT	29.90	-0.04	12.23	10.60	0.83	11.5	6.20	0.49	-1.66	-3.09	5.08	11.63	20.28	5.04
VA	77.71	-0.32	-2.12	-0.68	5.15	12.8	7.04	-3.16	2.38	-1.00	7.60	3.32	-0.06	-0.78
WA	72.27	0.03	-3.31	0.71	4.07	5.81	2.07	-3.52	-8.45	-11.27	-5.87	-2.82	-6.01	-11.25
WV	35.61	0.08	3.74	8.13	14.29	13.0	5.31	4.06	5.54	2.53	7.07	11.44	9.41	6.47
WI	37.06	-0.09	3.57	6.21	2.00	13.5	3.93	0.47	0.40	-3.24	2.58	14.99	7.85	2.24
WY	13.31	0.07	9.10	5.16	7.87	6.86	3.00	3.92	3.04	6.00	1.38	8.21	5.36	4.46