

Supplemental Materials

Table 1S. All lung cancer patients: discrete poisson purely spatial clusters, Michigan 1985-2018.

Cluster no.	Observed Patients	Relative risk	Log-likelihood ratio	P-value
1	11521	1.74	1427.52	<0.0001
2	8502	1.69	974.792	<0.0001
3	10046	1.60	935.503	<0.0001
4	11173	1.52	834.873	<0.0001
5	9000	1.39	429.78	<0.0001
6	1296	2.44	390.52	<0.0001
7	8835	1.36	359.89	<0.0001
8	7201	1.39	343.46	<0.0001
9	6504	1.27	171.99	<0.0001
10	859	2.00	164.95	<0.0001
11	2994	1.39	142.81	<0.0001
12	657	1.95	118.1	<0.0001
13	2358	1.39	113.88	<0.0001
14	2953	1.33	108.08	<0.0001
15	2451	1.31	82.53	<0.0001
16	4443	1.21	77.76	<0.0001
17	1000	1.52	75.62	<0.0001
18	58	8.72	74.26	<0.0001
19	1355	1.41	71.42	<0.0001
20	106	4.16	70.52	<0.0001

21	815	1.52	62.48	<0.0001
22	3323	1.21	57.42	<0.0001
23	888	1.40	44.28	<0.0001
24	3823	1.15	34.33	<0.0001
25	500	1.42	26.94	<0.0001
26	646	1.34	25.57	<0.0001
27	2443	1.15	23.47	<0.0001
28	22	6.24	21.81	<0.0001
29	128	1.74	16.42	<0.0001
30	2486	1.12	15.93	0.0001
31	8	12.03	12.56	0.0024

Table 2S. All lung cancer patients: discrete poisson space-time clusters, Michigan 1985-2018.

Cluster no.	Observed patients	Relative risk	Log-likelihood ratio	P-value	Start year	End year
1	3967	1.70	468.89	<0.0001	2008	2017
2	3762	1.64	389.07	<0.0001	1985	1994
3	3180	1.61	310.32	<0.0001	1999	2008
4	3480	1.55	288.96	<0.0001	1989	1998
5	545	3.37	278.61	<0.0001	1988	1997
6	411	3.57	226.79	<0.0001	1985	1992
7	2121	1.56	179.83	<0.0001	1996	2005
8	70	17.63	134.84	<0.0001	1985	1990
9	1343	1.62	134.39	<0.0001	1989	1998
10	2902	1.38	132.53	<0.0001	2009	2018
11	3001	1.35	121.77	<0.0001	2009	2018
12	389	2.24	98.62	<0.0001	1986	1995
13	695	1.75	90.53	<0.0001	1986	1990
14	1820	1.37	82.15	<0.0001	2000	2009
15	256	2.35	71.69	<0.0001	1989	1998
16	2760	1.27	70.70	<0.0001	2006	2015
17	19342	1.90	61.48	<0.0001	1995	2004
18	2468	1.26	61.14	<0.0001	2009	2018
19	339	1.93	59.91	<0.0001	1988	1997
20	1347	1.36	58.22	<0.0001	2010	2018
21	27	15.47	48.68	<0.0001	1987	1995

22	1673	1.28	46.03	<0.0001	2004	2013
23	1762	1.42	43.01	<0.0001	2008	2017
24	373	1.66	40.93	<0.0001	1987	1995
25	66	3.70	38.17	<0.0001	1985	1989
26	616	1.33	22.79	<0.0001	2009	2018
27	165	1.76	22.15	<0.0001	1985	1994
28	344	1.40	17.71	0.0031	2005	2009
29	325	1.41	17.04	0.0057	1987	1996
30	103	1.89	16.95	0.0062	1991	1994
31	806	1.23	16.53	0.010	2004	2013

Table 3S. Localized (early) stage lung cancer*: discrete poisson space-time clusters, Michigan 1985-2018.

Cluster no.	Observed patients	Relative risk	Log-likelihood ratio	P-value	Start Year	End Year
1	160	5.36	138.31	< 0.0001	1986	1995
2	531	2.26	136.32	< 0.0001	1990	1999
3	541	1.92	93.56	< 0.0001	1996	2005
4	665	1.74	85.40	< 0.0001	2008	2017
5	546	1.74	69.51	< 0.0001	1989	1998
6	315	2.06	65.15	< 0.0001	1988	1997
7	90	4.22	60.89	<0.0001	1985	1992
8	499	1.68	55.86	<0.0001	1985	1991
9	422	1.75	55.40	< 0.0001	1988	1997
10	304	1.87	48.33	< 0.0001	1993	2002
11	386	1.72	47.58	<0.0001	1986	1992
12	594	1.51	44.11	< 0.0001	2008	2017
13	252	1.64	26.27	< 0.0001	2009	2017
14	164	1.83	24.49	< 0.0001	2016	2017
15	127	1.88	20.54	0.0002	2010	2017
16	131	1.84	19.92	0.0005	2012	2017
17	110	1.94	19.63	0.0006	1990	1998
18	484	1.35	19.44	0.0007	2009	2017
19	190	1.58	17.08	0.0057	1990	1993
20	104	1.89	17.08	0.0058	1987	1996

21	31	3.44	16.31	0.015	2013	2017
22	58	2.36	16.30	0.015	1994	2001
23	62	2.21	15.17	0.031	2001	2010

*Highlighted clusters after year 2000 (n=9).

Table 4S. Regional stage lung cancer*: discrete poisson space-time clusters, Michigan 1985-2018.

Cluster no.	Observed patients	Relative risk	Log-likelihood ratio	P-value	Start Year	End Year
1	930	1.85	142.25	< 0.0001	2000	2009
2	253	3.04	111.03	< 0.0001	1990	1995
3	813	1.69	93.76	< 0.0001	2000	2009
4	372	2.22	92.20	< 0.0001	1992	2001
5	747	1.67	83.36	< 0.0001	1992	2001
6	471	1.85	72.36	< 0.0001	1991	2000
7	123	3.62	69.02	< 0.0001	1991	1999
8	79	4.18	52.87	< 0.0001	1986	1991
9	120	2.84	47.41	< 0.0001	1995	2004
10	593	1.54	47.37	< 0.0001	1996	2005
11	99	2.85	39.37	< 0.0001	1989	1997
12	621	1.44	36.35	< 0.0001	1988	1997

13	672	1.41	34.51	< 0.0001	1995	2004
14	219	1.78	30.39	< 0.0001	1991	1997
15	61	3.14	28.19	< 0.0001	1986	1990
16	686	1.34	27.08	< 0.0001	1985	1994
17	329	1.53	25.84	< 0.0001	1990	1999
18	647	1.34	25.01	< 0.0001	1997	2006
19	291	1.53	22.88	< 0.0001	1997	2006
20	119	1.88	19.34	0.0006	2004	2013
21	78	2.08	16.60	0.0071	1993	2002
22	5	59.35	15.50	0.0260	1987	1988

*Highlighted clusters after year 2000 (n=3).

Table 5S. Distant stage lung cancer*: discrete poisson space-time clusters, Michigan 1985-2018.

Cluster no.	Observed patients	Relative risk	Log-likelihood ratio	P-value	Start year	End year
1	1677	2.03	327.812	< 0.0001	2005	2014
2	1813	1.94	319.97	< 0.0001	1985	1994
3	1806	1.91	303.48	< 0.0001	2004	2013
4	1633	1.86	254.03	< 0.0001	1994	2003
5	1467	1.85	225.25	< 0.0001	2005	2014
6	1482	1.79	205.33	< 0.0001	2006	2015
7	1184	1.75	153.43	< 0.0001	2006	2015
8	1209	1.55	100.50	< 0.0001	2005	2013
9	196	3.29	97.057	< 0.0001	1991	1999
10	141	3.24	68.23	< 0.0001	1985	1990
11	743	1.56	63.09	< 0.0001	2004	2013
12	1217	1.40	61.75	< 0.0001	2008	2017
13	784	1.52	60.41	< 0.0001	2008	2013
14	1172	1.37	52.13	< 0.0001	2009	2017
15	124	2.67	44.32	< 0.0001	1993	2002
16	435	1.60	41.11	< 0.0001	2006	2015
17	1013	1.29	29.75	< 0.0001	2008	2017
18	12	16.84	22.59	< 0.0001	1987	1995
19	134	1.86	21.12	0.0002	1986	1995
20	991	1.23	20.23	0.0004	2009	2017
21	269	1.48	18.32	0.0023	2009	2012

22	637	1.284	18.26	0.0024	2010	2014
23	381	1.345	15.19	0.0330	2005	2012
24	83	1.955	15.10	0.0340	2009	2011

*Highlighted clusters after year 2000 (n=17).