

Supplementary Online Content

Dood RL, Zhao Y, Armbruster SD, et al. Defining survivorship trajectories across patients with solid tumors: an evidence-based approach. *JAMA Oncol*. Published online June 2, 2018. doi:10.1001/jamaoncol.2018.2761

eTable 1. Baseline demographic data for cohort and cancer types

eFigure 1. Mortality gap creation

eTable 2. Survivorship trajectory details and causes of death

eFigure 2. Age-sex matched mortality gap for all tumor types

eFigure 3. Ovarian cancer mortality gaps by histology

This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1: Baseline demographic data for cohort and cancer types

Tissue	N	Survival	Follow-up	Age	Sex	Race				Surgical management	Radiation therapy
metastatic status		Median in years	median in years	mean in years (sd)	n= female	n= white	n= black	n= other	n= unknown	n=yes	n=yes
Digestive System											
Colon	172769	5.3	4	69.2 (12.5)	88094 (51%)	144501 (83.6%)	15730 (9.1%)	12197 (7.1%)	341 (0.2%)	156886 (90.8%)	8001 (4.6%)
Local	132472	8.3	6	69.3 (12.3)	67536 (51%)	111117 (83.9%)	11148 (8.4%)	9932 (7.5%)	275 (0.2%)	129891 (98.1%)	5285 (4%)
Distant	32307	0.8	1	67.6 (12.9)	16170 (50.1%)	26645 (82.5%)	3659 (11.3%)	1987 (6.2%)	16 (0%)	23936 (74.1%)	2331 (7.2%)
Rectum	77649	5.9	4	65.7 (13.2)	33100 (42.6%)	65507 (84.4%)	4818 (6.2%)	6958 (9%)	366 (0.5%)	64770 (83.4%)	26546 (34.2%)
Local	61841	8.5	6	65.3 (13)	26372 (42.6%)	52231 (84.5%)	3619 (5.9%)	5704 (9.2%)	287 (0.5%)	57391 (92.8%)	20993 (33.9%)
Distant	10197	0.9	1	64.8 (13.1)	4144 (40.6%)	8564 (84%)	738 (7.2%)	884 (8.7%)	11 (0.1%)	5158 (50.6%)	3889 (38.1%)
Pancreas	72976	0.4	0	67.8 (12.5)	36643 (50.2%)	59262 (81.2%)	8160 (11.2%)	5460 (7.5%)	94 (0.1%)	12205 (16.7%)	14378 (19.7%)
Local	27730	0.8	1	67.7 (12.3)	14379 (51.9%)	22465 (81%)	3037 (11%)	2196 (7.9%)	32 (0.1%)	9261 (33.4%)	8958 (32.3%)
Distant	35519	0.2	0	66.1 (12)	16779 (47.2%)	28597 (80.5%)	4167 (11.7%)	2722 (7.7%)	33 (0.1%)	2588 (7.3%)	4349 (12.2%)
Stomach	54078	0.9	1	67.8 (13.4)	20556 (38%)	39831 (73.7%)	5781 (10.7%)	8364 (15.5%)	102 (0.2%)	31219 (57.7%)	9743 (18%)
Local	30425	1.9	2	67.9 (13)	11555 (38%)	22177 (72.9%)	3117 (10.2%)	5072 (16.7%)	59 (0.2%)	24497 (80.5%)	5777 (19%)
Distant	17922	0.4	0	65.6 (13.3)	6328 (35.3%)	13265 (74%)	2019 (11.3%)	2624 (14.6%)	14 (0.1%)	5841 (32.6%)	3332 (18.6%)
Esophagus	32223	0.8	1	65.7 (11.7)	7886 (24.5%)	25351 (78.7%)	4951 (15.4%)	1891 (5.9%)	30 (0.1%)	9789 (30.4%)	19748 (61.3%)
Local	17605	1.2	1	65.9 (11.4)	4373 (24.8%)	13974 (79.4%)	2603 (14.8%)	1009 (5.7%)	19 (0.1%)	7960 (45.2%)	11231 (63.8%)
Distant	9492	0.5	0	63.5 (11.2)	1873 (19.7%)	7357 (77.5%)	1502 (15.8%)	630 (6.6%)	3 (0%)	1286 (13.5%)	5624 (59.2%)
Liver	29653	0.7	1	62 (14.8)	8235 (27.8%)	18897 (63.7%)	3951 (13.3%)	6740 (22.7%)	65 (0.2%)	7012 (23.6%)	2112 (7.1%)
Local	19687	1	1	61.3 (14.4)	5283 (26.8%)	12219 (62.1%)	2691 (13.7%)	4739 (24.1%)	38 (0.2%)	6341 (32.2%)	1120 (5.7%)
Distant	4989	0.2	0	60.6	1340	3142	774	1066	7	455	809

				(16.1)	(26.9%)	(63%)	(15.5%)	(21.4%)	(0.1%)	(9.1%)	(16.2%)
Gum, mouth floor	23620	4.9	4	62.1	9212	19846	2523	1138	113	16642	10441
				(14.1)	(39%)	(84%)	(10.7%)	(4.8%)	(0.5%)	(70.5%)	(44.2%)
Local	19121	5.8	4	62.6	7653	16119	1979	957	66	14965	8324
				(13.4)	(40%)	(84.3%)	(10.3%)	(5%)	(0.3%)	(78.3%)	(43.5%)
Distant	1486	1.1	1	62.3	497	1157	263	65	1	757	976
				(12.8)	(33.4%)	(77.9%)	(17.7%)	(4.4%)	(0.1%)	(50.9%)	(65.7%)
Tongue	22419	5.3	3	60.7	7082	19052	1920	1349	98	13419	12875
				(13.3)	(31.6%)	(85%)	(8.6%)	(6%)	(0.4%)	(59.9%)	(57.4%)
Local	17991	6.5	4	60.5	5790	15442	1359	1117	73	11915	9951
				(13.2)	(32.2%)	(85.8%)	(7.6%)	(6.2%)	(0.4%)	(66.2%)	(55.3%)
Distant	2830	1.4	1	60.6	704	2247	438	143	2	1070	2201
				(11.8)	(24.9%)	(79.4%)	(15.5%)	(5.1%)	(0.1%)	(37.8%)	(77.8%)
Gallbladder	19800	0.8	1	69.5	11762	15950	1434	2385	31	10929	3684
				(12.8)	(59.4%)	(80.6%)	(7.2%)	(12%)	(0.2%)	(55.2%)	(18.6%)
Local	12449	1.2	1	69.1	7174	10011	848	1570	20	8932	2711
				(12.6)	(57.6%)	(80.4%)	(6.8%)	(12.6%)	(0.2%)	(71.7%)	(21.8%)
Distant	5326	0.3	0	67.8	3440	4260	462	600	4	1745	739
				(12.5)	(64.6%)	(80%)	(8.7%)	(11.3%)	(0.1%)	(32.8%)	(13.9%)
Small intestine	14143	6.2	3	62	6483	11498	1731	879	35	11153	861
				(15.3)	(45.8%)	(81.3%)	(12.2%)	(6.2%)	(0.2%)	(78.9%)	(6.1%)
Local	7537	8.6	4	62.5	3579	6008	1058	444	27	6819	347
				(14.3)	(47.5%)	(79.7%)	(14%)	(5.9%)	(0.4%)	(90.5%)	(4.6%)
Distant	3279	1.8	2	62.6	1545	2696	415	166	2	2208	216
				(13.2)	(47.1%)	(82.2%)	(12.7%)	(5.1%)	(0.1%)	(67.3%)	(6.6%)
Anus	13966	11	4	57.1	6749	11416	1738	529	283	8253	6938
				(15.2)	(48.3%)	(81.7%)	(12.4%)	(3.8%)	(2%)	(59.1%)	(49.7%)
Local	11996	12.7	5	56.3	5619	9790	1470	460	276	7582	5651
				(15.1)	(46.8%)	(81.6%)	(12.3%)	(3.8%)	(2.3%)	(63.2%)	(47.1%)
Distant	1079	1.4	1	61.6	626	868	162	49	0	400	770
				(14.1)	(58%)	(80.4%)	(15%)	(4.5%)	(0%)	(37.1%)	(71.4%)
Lip	11054	11.8	9	65.3	1812	10718	79	111 (1%)	146	9885	695
				(14.2)	(16.4%)	(97%)	(0.7%)		(1.3%)	(89.4%)	(6.3%)
Local	9958	11.9	9	65.3	1608	9676	68	99 (1%)	115	9322	570
				(14.2)	(16.1%)	(97.2%)	(0.7%)		(1.2%)	(93.6%)	(5.7%)
Distant	83	3.2	3	65.6	13	78	3	2	0	68	29
				(14)	(15.7%)	(94%)	(3.6%)	(2.4%)	(0%)	(81.9%)	(34.9%)
Salivary gland	10992	11.3	6	59.6	5152	9207	854	869	62	9489	5613
				(18.3)	(46.9%)	(83.8%)	(7.8%)	(7.9%)	(0.6%)	(86.3%)	(51.1%)
Local	7760	14.1	7	57.8	3666	6462	641	618	39	7277	4033
				(18.6)	(47.2%)	(83.3%)	(8.3%)	(8%)	(0.5%)	(93.8%)	(52%)
Distant	1078	1.8	1	64.2	350	897	83	96	2	787	746
				(15.7)	(32.5%)	(83.2%)	(7.7%)	(8.9%)	(0.2%)	(73%)	(69.2%)

Peritoneum, Retroperitoneum	7524	2.8	2	58.1 (20.5)	4820 (64.1%)	6361 (84.5%)	587 (7.8%)	566 (7.5%)	10 (0.1%)	5082 (67.5%)	1249 (16.6%)
Local	3166	5.6	3	56.4 (20.7)	1968 (62.2%)	2624 (82.9%)	277 (8.7%)	259 (8.2%)	6 (0.2%)	2644 (83.5%)	678 (21.4%)
Distant	2915	1.8	2	58.4 (21.2)	2108 (72.3%)	2478 (85%)	219 (7.5%)	217 (7.4%)	1 (0%)	1877 (64.4%)	335 (11.5%)
Appendix	4264	10.5	4	54.6 (16.9)	2204 (51.7%)	3583 (84%)	368 (8.6%)	291 (6.8%)	22 (0.5%)	4047 (94.9%)	161 (3.8%)
Local	2819	19.9	6	53.3 (17.8)	1407 (49.9%)	2387 (84.7%)	253 (9%)	160 (5.7%)	19 (0.7%)	2800 (99.3%)	85 (3%)
Distant	1273	2.2	2	58 (13.7)	731 (57.4%)	1047 (82.2%)	104 (8.2%)	119 (9.3%)	3 (0.2%)	1103 (86.6%)	72 (5.7%)
Intrahepatic bile duct	3960	0.5	0	67.2 (13.5)	1915 (48.4%)	3048 (77%)	235 (5.9%)	673 (17%)	4 (0.1%)	644 (16.3%)	787 (19.9%)
Local	1888	0.8	1	65.9 (13.2)	921 (48.8%)	1440 (76.3%)	120 (6.4%)	328 (17.4%)	0 (0%)	473 (25.1%)	454 (24%)
Distant	1215	0.3	0	64.4 (13.1)	575 (47.3%)	921 (75.8%)	82 (6.7%)	211 (17.4%)	1 (0.1%)	138 (11.4%)	206 (17%)
Unspecified digestive organs	2675	0.4	0	67.2 (14.8)	1402 (52.4%)	2154 (80.5%)	290 (10.8%)	230 (8.6%)	1 (0%)	393 (14.7%)	252 (9.4%)
Local	159	1.2	1	66.5 (12.5)	79 (49.7%)	129 (81.1%)	17 (10.7%)	13 (8.2%)	0 (0%)	76 (47.8%)	16 (10.1%)
Distant	1829	0.3	0	66.3 (13.5)	966 (52.8%)	1459 (79.8%)	214 (11.7%)	155 (8.5%)	1 (0.1%)	215 (11.8%)	209 (11.4%)
Respiratory System											
Lung and Bronchus	190488	0.8	1	66 (11.3)	73742 (38.7%)	153457 (80.6%)	24226 (12.7%)	12681 (6.7%)	124 (0.1%)	52773 (27.7%)	92632 (48.6%)
Local	52080	2	2	67.4 (10.8)	23950 (46%)	41295 (79.3%)	6578 (12.6%)	4178 (8%)	29 (0.1%)	26390 (50.7%)	22232 (42.7%)
Distant	56136	0.5	0	66.5 (11.4)	24544 (43.7%)	42511 (75.7%)	8610 (15.3%)	4997 (8.9%)	18 (0%)	4737 (8.4%)	28788 (51.3%)
Larynx	36419	7.1	5	63 (11.1)	6718 (18.4%)	30322 (83.3%)	4644 (12.8%)	1353 (3.7%)	100 (0.3%)	19342 (53.1%)	25982 (71.3%)
Local	25322	7.8	8	62.8 (10.9)	4605 (18.2%)	21431 (84.6%)	3015 (11.9%)	830 (3.3%)	46 (0.2%)	14502 (57.3%)	17912 (70.7%)
Distant	1721	1.4	1	62.2 (10.5)	305 (17.7%)	1355 (78.7%)	312 (18.1%)	54 (3.1%)	0 (0%)	1074 (62.4%)	1224 (71.1%)
Oropharynx	15784	5.2	3	58.9 (12.2)	4030 (25.5%)	13034 (82.6%)	1962 (12.4%)	741 (4.7%)	47 (0.3%)	7599 (48.1%)	12334 (78.1%)
Local	11069	6.1	4	58.8 (10.9)	2629 (23.8%)	9312 (84.1%)	1327 (12%)	402 (3.6%)	28 (0.3%)	5713 (51.6%)	9218 (83.3%)
Distant	2411	1.7	1	59.5 (10.9)	536 (22.2%)	1876 (77.8%)	428 (17.8%)	101 (4.2%)	6 (0.2%)	887 (36.8%)	1945 (80.7%)

Hypopharynx	7037	1.6	2	63 (10.6)	1529 (21.7%)	5496 (78.1%)	1113 (15.8%)	425 (6%)	3 (0%)	3097 (44%)	5565 (79.1%)
Local	5185	1.9	2	63.3 (10.5)	1126 (21.7%)	4064 (78.4%)	810 (15.6%)	310 (6%)	1 (0%)	2460 (47.4%)	4195 (80.9%)
Distant	1499	1	1	62.1 (10.3)	317 (21.1%)	1132 (75.5%)	263 (17.5%)	102 (6.8%)	2 (0.1%)	545 (36.4%)	1160 (77.4%)
Nasopharynx	6614	5.7	4	53.5 (16.8)	2045 (30.9%)	3444 (52.1%)	616 (9.3%)	2533 (38.3%)	21 (0.3%)	1199 (18.1%)	5510 (83.3%)
Local	3169	6.2	6	52.7 (16)	972 (30.7%)	1595 (50.3%)	266 (8.4%)	1299 (41%)	9 (0.3%)	657 (20.7%)	2879 (90.8%)
Distant	748	2	2	53 (17)	206 (27.5%)	426 (57%)	84 (11.2%)	236 (31.6%)	2 (0.3%)	161 (21.5%)	627 (83.8%)
Pleura	6016	0.8	1	68.7 (11.9)	1219 (20.3%)	5491 (91.3%)	262 (4.4%)	256 (4.3%)	7 (0.1%)	1424 (23.7%)	1112 (18.5%)
Local	1352	0.8	1	66.8 (11.3)	245 (18.1%)	1246 (92.2%)	48 (3.6%)	58 (4.3%)	0 (0%)	459 (33.9%)	320 (23.7%)
Distant	2066	0.7	1	67.9 (11.4)	379 (18.3%)	1883 (91.1%)	102 (4.9%)	77 (3.7%)	4 (0.2%)	425 (20.6%)	426 (20.6%)
Middle ear accessory sinuses	3795	3	2	60 (17.9)	1579 (41.6%)	2949 (77.7%)	400 (10.5%)	432 (11.4%)	14 (0.4%)	2257 (59.5%)	2673 (70.4%)
Local	1957	3.9	3	59.3 (17.6)	813 (41.5%)	1480 (75.6%)	217 (11.1%)	251 (12.8%)	9 (0.5%)	1381 (70.6%)	1422 (72.7%)
Distant	399	1.2	1	59.1 (18.9)	173 (43.4%)	304 (76.2%)	51 (12.8%)	43 (10.8%)	1 (0.3%)	196 (49.1%)	301 (75.4%)
Nasal Cavity	2977	8.4	5	61.6 (16.9)	1222 (41%)	2470 (83%)	195 (6.6%)	286 (9.6%)	26 (0.9%)	2136 (71.8%)	1574 (52.9%)
Local	1550	10.2	6	62.3 (16.1)	646 (41.7%)	1328 (85.7%)	101 (6.5%)	111 (7.2%)	10 (0.6%)	1320 (85.2%)	743 (47.9%)
Distant	390	5.3	2	58.6 (17.3)	140 (35.9%)	292 (74.9%)	48 (12.3%)	48 (12.3%)	2 (0.5%)	261 (66.9%)	304 (77.9%)
Pharynx	2473	1.8	2	62 (13.1)	748 (30.2%)	2007 (81.2%)	365 (14.8%)	92 (3.7%)	9 (0.4%)	840 (34%)	1719 (69.5%)
Local	1536	2.1	2	62.1 (11.6)	462 (30.1%)	1261 (82.1%)	235 (15.3%)	39 (2.5%)	1 (0.1%)	610 (39.7%)	1162 (75.7%)
Distant	359	0.8	1	62.1 (11.6)	105 (29.2%)	276 (76.9%)	67 (18.7%)	16 (4.5%)	0 (0%)	103 (28.7%)	248 (69.1%)
Mediastinum	1824	17.1	4	33.7 (22)	644 (35.3%)	1473 (80.8%)	157 (8.6%)	189 (10.4%)	5 (0.3%)	727 (39.9%)	725 (39.7%)
Local	535	22.7	11	28.2 (22.6)	154 (28.8%)	443 (82.8%)	40 (7.5%)	52 (9.7%)	0 (0%)	341 (63.7%)	187 (35%)
Distant	269	1.3	1	32.4 (23.4)	61 (22.7%)	218 (81%)	23 (8.6%)	28 (10.4%)	0 (0%)	108 (40.1%)	119 (44.2%)
Trachea	514	1.5	1	60.2	211	421	57	34	2	209	377

				(15.3)	(41.1%)	(81.9%)	(11.1%)	(6.6%)	(0.4%)	(40.7%)	(73.3%)
Local	255	1.7	2	58.8	110	208	28	18	1	128	196
				(15.6)	(43.1%)	(81.6%)	(11%)	(7.1%)	(0.4%)	(50.2%)	(76.9%)
Distant	71	0.4	0	64	30	64	5	2	0	15	61
				(12.5)	(42.3%)	(90.1%)	(7%)	(2.8%)	(0%)	(21.1%)	(85.9%)
Bones and Joints, soft tissues											
Breast	188751	14.7	9	60.6	187328	163802	22307	2098	544	176824	68451
				(14.2)	(99.2%)	(86.8%)	(11.8%)	(1.1%)	(0.3%)	(93.7%)	(36.3%)
Local	171618	16.1	10	60.3	170387	149508	19809	1843	458	167034	62962
				(14)	(99.3%)	(87.1%)	(11.5%)	(1.1%)	(0.3%)	(97.3%)	(36.7%)
Distant	10111	1.8	2	62.9	10007	8319	1679	95	18	5909	3904
				(14.2)	(99%)	(82.3%)	(16.6%)	(0.9%)	(0.2%)	(58.4%)	(38.6%)
Skin	113139	21.2	8	57	50667	105179	2384	2384	3192	99112	5634
				(17.4)	(44.8%)	(93%)	(2.1%)	(2.1%)	(2.8%)	(87.6%)	(5%)
Local	94413	23.8	8	57.1	43812	89347	783	1518	2765	90872	1228
				(17.2)	(46.4%)	(94.6%)	(0.8%)	(1.6%)	(2.9%)	(96.2%)	(1.3%)
Distant	2702	0.8	1	60.6	979	2548	70	79	5	1554	889
				(16.7)	(36.2%)	(94.3%)	(2.6%)	(2.9%)	(0.2%)	(57.5%)	(32.9%)
Bones, joints	10331	12.6	5	42.1	4370	8620	947	706	58	6570	3664
				(23.8)	(42.3%)	(83.4%)	(9.2%)	(6.8%)	(0.6%)	(63.6%)	(35.5%)
Local	5781	21.8	7	37.2	2538	4808	522	420	31	4887	1193
				(22.1)	(43.9%)	(83.2%)	(9%)	(7.3%)	(0.5%)	(84.5%)	(20.6%)
Distant	2334	3.2	2	48.2	868	1934	248	148	4	969	1434
				(23.9)	(37.2%)	(82.9%)	(10.6%)	(6.3%)	(0.2%)	(41.5%)	(61.4%)
Connective Soft Tissue	24186	9.8	5	51.6	10911	19618	2527	1892	149	19346	9942
				(23.2)	(45.1%)	(81.1%)	(10.4%)	(7.8%)	(0.6%)	(80%)	(41.1%)
Local	17130	14.8	6	51.1	7653	13844	1811	1379	96	15936	7208
				(22.8)	(44.7%)	(80.8%)	(10.6%)	(8.1%)	(0.6%)	(93%)	(42.1%)
Distant	3163	1	1	47.6	1427	2475	416	267	5	1590	1302
				(25.6)	(45.1%)	(78.2%)	(13.2%)	(8.4%)	(0.2%)	(50.3%)	(41.2%)
Heart	239	1.2	1	47.7	112	182	27	NA	0	124	70
				(19.7)	(46.9%)	(NA%)	(NA%)	(NA%)	(NA%)	(51.9%)	(29.3%)
Local	105	1.2	1	44.4	52	78	12	15	0	84	30
				(18.8)	(49.5%)	(74.3%)	(11.4%)	(14.3%)	(0%)	(80%)	(28.6%)
Distant	65	0.6	0	41.1	30	49	11	5	0	26	24
				(16.3)	(46.2%)	(75.4%)	(16.9%)	(7.7%)	(0%)	(40%)	(36.9%)
Female Genital System											
Cervix	123836	40.8	21	38.3	123836	97262	14589	7461	4524	100919	18263
				(14.9)	(100%)	(78.5%)	(11.8%)	(6%)	(3.7%)	(81.5%)	(14.7%)
Local	118625	NA	22	37.5	118625	93412	13688	7074	4451	99640	15165
				(14.3)	(100%)	(78.7%)	(11.5%)	(6%)	(3.8%)	(84%)	(12.8%)
Distant	2911	0.8	1	57.3	2911	2160	500	247	4	704	2193
				(15.3)	(100%)	(74.2%)	(17.2%)	(8.5%)	(0.1%)	(24.2%)	(75.3%)

Uterus	75885	17.3	9	62.4 (12.2)	75885 (100%)	66171 (87.2%)	4451 (5.9%)	4968 (6.5%)	295 (0.4%)	68064 (89.7%)	27759 (36.6%)
Local	66816	18.8	10	62 (12)	66816 (100%)	58633 (87.8%)	3482 (5.2%)	4468 (6.7%)	233 (0.3%)	62449 (93.5%)	24206 (36.2%)
Distant	5664	1.4	1	65.1 (12.1)	5664 (100%)	4601 (81.2%)	668 (11.8%)	391 (6.9%)	4 (0.1%)	4316 (76.2%)	2414 (42.6%)
Ovary	63542	3.8	3	59.3 (16.2)	63542 (100%)	54804 (86.2%)	4209 (6.6%)	4359 (6.9%)	170 (0.3%)	52378 (82.4%)	3665 (5.8%)
Local	21118	22.8	11	52.7 (16.9)	21118 (100%)	17872 (84.6%)	1382 (6.5%)	1771 (8.4%)	93 (0.4%)	20603 (97.6%)	1364 (6.5%)
Distant	39164	2	2	62.3 (14.3)	39164 (100%)	34129 (87.1%)	2561 (6.5%)	2427 (6.2%)	47 (0.1%)	30474 (77.8%)	2106 (5.4%)
Vulva	18994	20.4	9	54.5 (18.6)	18994 (100%)	15962 (84%)	1749 (9.2%)	737 (3.9%)	546 (2.9%)	16280 (85.7%)	1271 (6.7%)
Local	18140	21.3	9	53.8 (18.3)	18140 (100%)	15220 (83.9%)	1688 (9.3%)	705 (3.9%)	527 (2.9%)	15881 (87.5%)	1042 (5.7%)
Distant	281	0.6	1	70.6 (14.8)	281 (100%)	243 (86.5%)	25 (8.9%)	12 (4.3%)	1 (0.4%)	130 (46.3%)	169 (60.1%)
Vagina, labia	8794	15.2	7	58.1 (18.6)	8794 (100%)	7243 (82.4%)	952 (10.8%)	417 (4.7%)	182 (2.1%)	6233 (70.9%)	2105 (23.9%)
Local	6203	17.2	10	57.5 (18.6)	6203 (100%)	5195 (83.7%)	648 (10.4%)	242 (3.9%)	118 (1.9%)	4975 (80.2%)	1129 (18.2%)
Distant	452	1.2	1	65.5 (16.7)	452 (100%)	353 (78.1%)	72 (15.9%)	27 (6%)	0 (0%)	147 (32.5%)	334 (73.9%)
Other female genitals	3060	5.1	3	62.4 (14)	3060 (100%)	2581 (84.3%)	238 (7.8%)	226 (7.4%)	15 (0.5%)	2600 (85%)	361 (11.8%)
Local	1377	13.4	6	59.4 (14.5)	1377 (100%)	1150 (83.5%)	116 (8.4%)	105 (7.6%)	6 (0.4%)	1309 (95.1%)	180 (13.1%)
Distant	1427	2.4	2	64.7 (12.2)	1427 (100%)	1222 (85.6%)	95 (6.7%)	107 (7.5%)	3 (0.2%)	1208 (84.7%)	142 (10%)
Uterus NOS	1903	1.7	1	62.5 (16.6)	1903 (100%)	1410 (74.1%)	355 (18.7%)	125 (6.6%)	13 (0.7%)	1173 (61.6%)	426 (22.4%)
Local	600	3.9	2	59.8 (15)	600 (100%)	435 (72.5%)	115 (19.2%)	45 (7.5%)	5 (0.8%)	511 (85.2%)	160 (26.7%)
Distant	654	0.5	0	63.4 (14.5)	654 (100%)	449 (68.7%)	147 (22.5%)	57 (8.7%)	1 (0.2%)	352 (53.8%)	154 (23.5%)
Placenta	573	-	17	29 (8.5)	573 (100%)	361 (63%)	100 (17.5%)	109 (19%)	3 (0.5%)	277 (48.3%)	41 (7.2%)
Local	220	-	18	28.6 (8.4)	220 (100%)	136 (61.8%)	38 (17.3%)	46 (20.9%)	0 (0%)	137 (62.3%)	1 (0.5%)
Distant	293	-	15	29.7 (8.7)	293 (100%)	190 (64.8%)	47 (16%)	53 (18.1%)	3 (1%)	122 (41.6%)	39 (13.3%)

Male Genital System

© 2018 American Medical Association. All rights reserved.

Prostate	206889	9.9	6	69.1 (9.7)	0 (0%)	156909 (75.8%)	33755 (16.3%)	14652 (7.1%)	1573 (0.8%)	99250 (48%)	69813 (33.7%)
Local	110187	14.7	7	66.7 (9.5)	0 (0%)	79745 (72.4%)	20152 (18.3%)	8982 (8.2%)	1308 (1.2%)	44796 (40.7%)	43274 (39.3%)
Distant	5005	2.1	2	72.1 (11.1)	0 (0%)	3219 (64.3%)	1168 (23.3%)	606 (12.1%)	12 (0.2%)	676 (13.5%)	1196 (23.9%)
Testis	26112	40	13	35 (12.7)	0 (0%)	23963 (91.8%)	649 (2.5%)	1301 (5%)	199 (0.8%)	25432 (97.4%)	9906 (37.9%)
Local	22044	NA	14	34.3 (11.3)	0 (0%)	20308 (92.1%)	515 (2.3%)	1045 (4.7%)	176 (0.8%)	21914 (99.4%)	9063 (41.1%)
Distant	2848	27.8	7	32.8 (12)	0 (0%)	2576 (90.4%)	94 (3.3%)	173 (6.1%)	5 (0.2%)	2505 (88%)	421 (14.8%)
Penis, scrotum	5558	10.9	6	61.6 (16.1)	0 (0%)	4628 (83.3%)	492 (8.9%)	323 (5.8%)	115 (2.1%)	4832 (86.9%)	402 (7.2%)
Local	5075	11.8	7	61.9 (15.9)	0 (0%)	4244 (83.6%)	443 (8.7%)	284 (5.6%)	104 (2%)	4562 (89.9%)	278 (5.5%)
Distant	126	0.8	1	62.2 (15.1)	0 (0%)	98 (77.8%)	18 (14.3%)	10 (7.9%)	0 (0%)	100 (79.4%)	46 (36.5%)
Epididymis, spermatic cord	452	12.3	7	57.1 (21.3)	0 (0%)	380 (84.1%)	35 (7.7%)	32 (7.1%)	5 (1.1%)	416 (92%)	83 (18.4%)
Local	364	15.8	8	56.7 (20.8)	0 (0%)	305 (83.8%)	28 (7.7%)	26 (7.1%)	5 (1.4%)	358 (98.4%)	60 (16.5%)
Distant	34	2.2	1	55.4 (26.5)	0 (0%)	28 (82.4%)	4 (11.8%)	2 (5.9%)	0 (0%)	26 (76.5%)	13 (38.2%)
Urinary System											
Bladder	129717	8.3	6	68.7 (12.6)	32601 (25.1%)	118847 (91.6%)	5064 (3.9%)	5153 (4%)	653 (0.5%)	121548 (93.7%)	10220 (7.9%)
Local	120384	8.9	6	68.6 (12.5)	29616 (24.6%)	110683 (91.9%)	4386 (3.6%)	4755 (3.9%)	560 (0.5%)	115692 (96.1%)	8339 (6.9%)
Distant	3980	0.5	0	69.4 (12.2)	1385 (34.8%)	3416 (85.8%)	338 (8.5%)	221 (5.6%)	5 (0.1%)	3000 (75.4%)	1306 (32.8%)
Kidney	77884	8.3	4	60.7 (16)	29144 (37.4%)	64603 (82.9%)	7956 (10.2%)	5047 (6.5%)	278 (0.4%)	63059 (81%)	7403 (9.5%)
Local	58775	12.8	6	59.7 (15.7)	22260 (37.9%)	48491 (82.5%)	6148 (10.5%)	3896 (6.6%)	240 (0.4%)	55684 (94.7%)	1761 (3%)
Distant	15310	0.6	1	62.3 (16)	5306 (34.7%)	12934 (84.5%)	1397 (9.1%)	966 (6.3%)	13 (0.1%)	6349 (41.5%)	5385 (35.2%)
Ureter, renal pelvis	11920	5.5	4	69.3 (11.9)	4805 (40.3%)	10554 (88.5%)	502 (4.2%)	833 (7%)	31 (0.3%)	10556 (88.6%)	886 (7.4%)
Local	10253	7.1	5	69.1 (11.8)	4057 (39.6%)	9119 (88.9%)	395 (3.9%)	710 (6.9%)	29 (0.3%)	9752 (95.1%)	565 (5.5%)
Distant	1125	0.5	0	69.9 (11.8)	492 (43.7%)	966 (85.9%)	71 (6.3%)	88 (7.8%)	0 (0%)	651 (57.9%)	290 (25.8%)

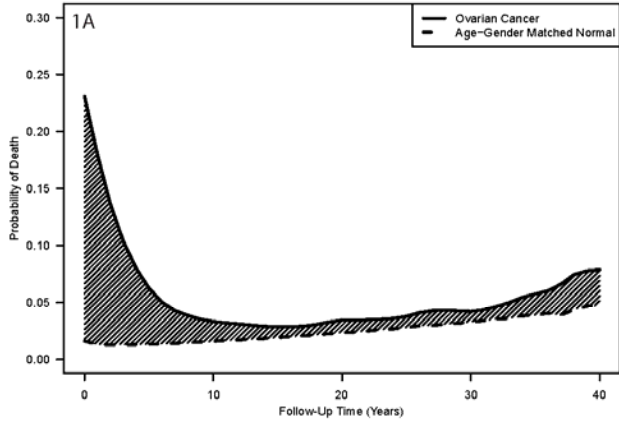
Other unspecified urinary organs	2299	5.2	4	67.5 (14.3)	790 (34.4%)	1830 (79.6%)	340 (14.8%)	110 (4.8%)	19 (0.8%)	1427 (62.1%)	488 (21.2%)
Local	1527	6.4	4	67.3 (14.2)	534 (35%)	1223 (80.1%)	224 (14.7%)	74 (4.8%)	6 (0.4%)	1237 (81%)	357 (23.4%)
Distant	239	0.8	1	68.2 (12.1)	91 (38.1%)	184 (77%)	40 (16.7%)	15 (6.3%)	0 (0%)	111 (46.4%)	80 (33.5%)
Brain, CNS, Spine											
Brain, CNS, Spine	47291	1.1	1	51.1 (21.6)	20491 (43.3%)	42185 (89.2%)	2486 (5.3%)	2494 (5.3%)	126 (0.3%)	31619 (66.9%)	31947 (67.6%)
Local	0	-	-	-	-	-	-	-	-	-	-
Distant	20	2.6	3	59.9 (14.2)	10 (50%)	14 (70%)	2 (10%)	3 (15%)	1 (5%)	14 (70%)	14 (70%)
Cerebellum	3365	30.9	8	21.6 (21.2)	1455 (43.2%)	2792 (83%)	307 (9.1%)	252 (7.5%)	14 (0.4%)	3061 (91%)	1811 (53.8%)
Local	0	-	-	-	-	-	-	-	-	-	-
Distant	0	-	-	-	-	-	-	-	-	-	-
Meninges	1071	6.6	5	59 (17.5)	585 (54.6%)	824 (76.9%)	143 (13.4%)	99 (9.2%)	5 (0.5%)	880 (82.2%)	448 (41.8%)
Local	0	-	-	-	-	-	-	-	-	-	-
Distant	2	1.3	1	24.5 (30.4)	1 (50%)	0 (0%)	1 (50%)	1 (50%)	0 (0%)	1 (50%)	1 (50%)
Ventricle	1001	14.6	5	29.3 (23.8)	433 (43.3%)	817 (81.6%)	89 (8.9%)	89 (8.9%)	6 (0.6%)	720 (71.9%)	527 (52.6%)
Local	0	-	-	-	-	-	-	-	-	-	-
Distant	1	-	4	67 (-)	1 (100%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)	1 (100%)	1 (100%)
Other Nervous System	548	2.2	2	50.8 (22.2)	234 (42.7%)	465 (84.9%)	57 (10.4%)	24 (4.4%)	2 (0.4%)	260 (47.4%)	308 (56.2%)
Local	0	-	-	-	-	-	-	-	-	-	-
Distant	11	5	5	58.1 (16.1)	2 (18.2%)	9 (81.8%)	2 (18.2%)	0 (0%)	0 (0%)	10 (90.9%)	8 (72.7%)
Pineal Gland	502	26	7	21.3 (14.7)	105 (20.9%)	364 (72.5%)	70 (13.9%)	67 (13.3%)	1 (0.2%)	257 (51.2%)	407 (81.1%)
Local	265	25.7	12	20.7 (14.2)	47 (17.7%)	189 (71.3%)	38 (14.3%)	38 (14.3%)	0 (0%)	157 (59.2%)	221 (83.4%)
Distant	39	7.1	7	21.2 (15.5)	11 (28.2%)	26 (66.7%)	6 (15.4%)	7 (17.9%)	0 (0%)	8 (20.5%)	34 (87.2%)
Pituitary gland	211	22.8	10	40.5 (22.9)	114 (54%)	153 (72.5%)	25 (11.8%)	31 (14.7%)	2 (0.9%)	124 (58.8%)	107 (50.7%)
Local	104	29.2	14	35.8 (21.8)	57 (54.8%)	81 (77.9%)	6 (5.8%)	16 (15.4%)	1 (1%)	75 (72.1%)	60 (57.7%)
Distant	7	3.3	3	45.3	3	4	1	2	0	5	2

				(19.3)	(42.9%)	(57.1%)	(14.3%)	(28.6%)	(0%)	(71.4%)	(28.6%)
Eye and Orbit											
Orbit, lacrimal gland	7354	11.8	7	60.8	3252	6657	243	365	89	4383	2982
				(17.3)	(44.2%)	(90.5%)	(3.3%)	(5%)	(1.2%)	(59.6%)	(40.5%)
Local	5058	11.5	7	60.4	2053	4732	98	173	55	3470	1653
				(17.3)	(40.6%)	(93.6%)	(1.9%)	(3.4%)	(1.1%)	(68.6%)	(32.7%)
Distant	144	3.2	2	54.4	57	125	12	7	0	92	73
				(22.7)	(39.6%)	(86.8%)	(8.3%)	(4.9%)	(0%)	(63.9%)	(50.7%)
Retina	959	NA	15	6.3	494	715	138	99	7	810	200
				(17)	(51.5%)	(74.6%)	(14.4%)	(10.3%)	(0.7%)	(84.5%)	(20.9%)
Local	784	NA	16	4.6	400	580	118	81	5	701	139
				(14.1)	(51%)	(74%)	(15.1%)	(10.3%)	(0.6%)	(89.4%)	(17.7%)
Distant	57	NA	13	4.9	32	42	7	8	0	47	25
				(16)	(56.1%)	(73.7%)	(12.3%)	(14%)	(0%)	(82.5%)	(43.9%)
Eyeball	804	12.8	9	57.7	393	779	8	12	5	588	193
				(17.9)	(48.9%)	(96.9%)	(1%)	(1.5%)	(0.6%)	(73.1%)	(24%)
Local	678	13.4	9	56.9	325	662	6	7	3	522	148
				(18.2)	(47.9%)	(97.6%)	(0.9%)	(1%)	(0.4%)	(77%)	(21.8%)
Distant	9	0.6	1	65.7	6	9 (100%)	0	0	0	7	1
				(17.5)	(66.7%)	(0%)	(0%)	(0%)	(0%)	(77.8%)	(11.1%)
Eye NOS	597	7.6	6	59.6	290	556	11	18	12	305	162
				(20.3)	(48.6%)	(93.1%)	(1.8%)	(3%)	(2%)	(51.1%)	(27.1%)
Local	269	9.8	7	56	118	251	7	7	4	178	65
				(21.8)	(43.9%)	(93.3%)	(2.6%)	(2.6%)	(1.5%)	(66.2%)	(24.2%)
Distant	20	0.9	1	65.3	9	19	0	0	1	6	3
				(17.7)	(45%)	(95%)	(0%)	(0%)	(5%)	(30%)	(15%)
Endocrine System											
Thyroid gland	70078	37.9	9	46.9	53248	57517	4034	8017	510	67162	31735
				(16)	(76%)	(82.1%)	(5.8%)	(11.4%)	(0.7%)	(95.8%)	(45.3%)
Local	64251	39.2	9	46.1	49399	52779	3682	7373	417	63287	28724
				(15.5)	(76.9%)	(82.1%)	(5.7%)	(11.5%)	(0.6%)	(98.5%)	(44.7%)
Distant	3043	7.6	4	54.5	1806	2411	220	400	12	2364	2010
				(19.8)	(59.3%)	(79.2%)	(7.2%)	(13.1%)	(0.4%)	(77.7%)	(66.1%)
Adrenal glands	2409	3.6	2	33.7	1160	1942	245	215	7	1669	522
				(29)	(48.2%)	(80.6%)	(10.2%)	(8.9%)	(0.3%)	(69.3%)	(21.7%)
Local	689	11.4	10	38.4	353	598	52	38	1	645	84
				(26.5)	(51.2%)	(86.8%)	(7.5%)	(5.5%)	(0.1%)	(93.6%)	(12.2%)
Distant	826	1.2	1	26.1	375	659	79	85	3	439	250
				(28.5)	(45.4%)	(79.8%)	(9.6%)	(10.3%)	(0.4%)	(53.1%)	(30.3%)
Thymus	2184	8.9	5	53.8	985	1511	300	366	7	1501	1291
				(16.7)	(45.1%)	(69.2%)	(13.7%)	(16.8%)	(0.3%)	(68.7%)	(59.1%)
Local	797	10	10	54.5	331	539	103	154	1	633	534
				(15.6)	(41.5%)	(67.6%)	(12.9%)	(19.3%)	(0.1%)	(79.4%)	(67%)

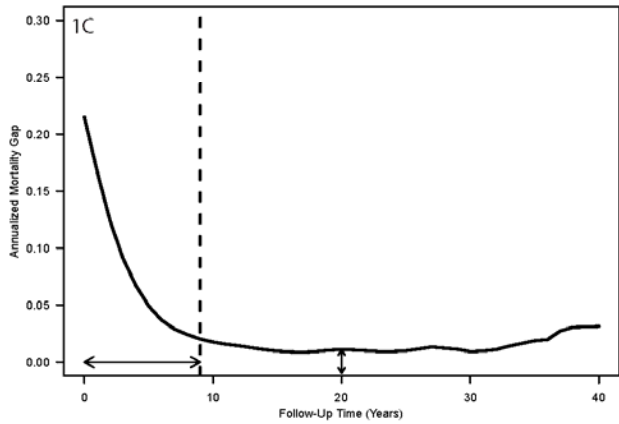
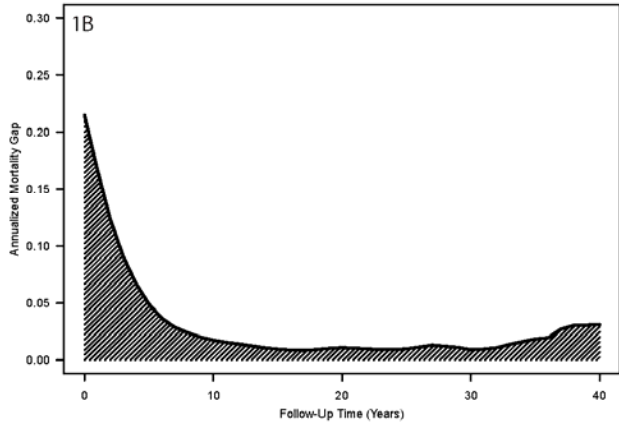
	Distant	256	2.8	3	51.4 (17.2)	117 (45.7%)	181 (70.7%)	41 (16%)	34 (13.3%)	0 (0%)	142 (55.5%)	160 (62.5%)
Spleen		1588	8.5	4	64 (14.6)	818 (51.5%)	1425 (89.7%)	86 (5.4%)	71 (4.5%)	6 (0.4%)	943 (59.4%)	66 (4.2%)
	Local	0	-	-	-	-	-	-	-	-	-	-
	Distant	4	-	10	58.5 (18.6)	0 (0%)	4 (100%)	0 (0%)	0 (0%)	0 (0%)	3 (75%)	0 (0%)
Parathyroid gland		243	17.5	8	53.9 (14.7)	124 (51%)	177 (NA%)	44 (NA%)	NA (NA%)	0 (NA%)	231 (95.1%)	24 (9.9%)
	Local	135	19.2	13	53.2 (13.2)	75 (55.6%)	99 (73.3%)	22 (16.3%)	14 (10.4%)	0 (0%)	133 (98.5%)	13 (9.6%)
	Distant	13	2.5	2	62.7 (16.3)	6 (46.2%)	12 (92.3%)	1 (7.7%)	0 (0%)	0 (0%)	10 (76.9%)	4 (30.8%)
Other												
Ill-defined		1986	1.2	1	63.3 (20.4)	966 (48.6%)	1732 (87.2%)	126 (6.3%)	121 (6.1%)	7 (0.4%)	447 (22.5%)	737 (37.1%)
	Local	0	-	-	-	-	-	-	-	-	-	-
	Distant	10	5.3	5	63.7 (11.3)	4 (40%)	8 (80%)	1 (10%)	1 (10%)	0 (0%)	1 (10%)	7 (70%)
All Cancers		2317185	7.1	4	60.9 (17.3)	1153342 (49.8%)	1933332 (83.4%)	218774 (9.4%)	148332 (6.4%)	16747 (0.7%)	1482673 (64%)	630689 (27.2%)
	Local	1412462	13.3	7	59.8 (16.9)	771863 (54.6%)	1182255 (83.7%)	127489 (9%)	89535 (6.3%)	13183 (0.9%)	1170266 (82.9%)	357884 (25.3%)
	Distant	301295	0.7	1	64 (14.6)	158883 (52.7%)	241681 (80.2%)	35344 (11.7%)	23987 (8%)	283 (0.1%)	122231 (40.6%)	88495 (29.4%)

NOS=Not otherwise specified; sd=standard deviation. Note some cases were unstaged so stratified analysis may not add to the total.

eFigure S1: Annualized Mortality Gap Example: Ovary



Legend: Figure 1A shows both the annualized mortality rate for ovarian cancer patients and age and sex-matched controls. Figure 1B shows the “gap” (shaded) between the cancer patients and controls. Figure 1C shows the graphical representations of the high risk cut-off (dotted line), and the annualized mortality gap (vertical double-arrows).



eTable 2: Survivorship trajectory details and causes of death (COD)

Tissue	N	High-risk duration	Mortality gap	Risk cluster	n=Alive at censorship	COD				COD High-risk duration
						1° cancer	2° cancer	Cardiac	Other	
Metastatic Status						1° cancer	2° cancer	Cardiac	Other	
Digestive System										
Colon	172769	7	1.34%	2	39737 (23%)	56845 (32.9%)	16975 (9.8%)	25565 (14.8%)	33647 (19.5%)	3
Local	132472	7	1.29%	2	37335(28.2%)	28781(21.7%)	12985(9.8%)	22896(17.3%)	30475(23%)	3
Distant	32307	11	2.47%	5	1751(5.4%)	24470(75.7%)	3162(9.8%)	1284(4%)	1640(5.1%)	7
Rectum	77649	8	1.58%	2	22435 (28.9%)	15175 (19.5%)	18475 (23.8%)	8928 (11.5%)	12636 (16.3%)	0
Local	61841	8	1.57%	2	20936(33.9%)	8868(14.3%)	12916(20.9%)	7868(12.7%)	11253(18.2%)	0
Distant	10197	9	4.61%	5	699(6.9%)	4553(44.7%)	4212(41.3%)	286(2.8%)	447(4.4%)	1
Pancreas	72976	9	4.33%	6	4827 (6.6%)	59473 (81.5%)	3751 (5.1%)	1509 (2.1%)	3416 (4.7%)	7
Local	27730	9	3.80%	6	3144(11.3%)	21543(77.7%)	845(3%)	668(2.4%)	1530(5.5%)	7
Distant	35519	15	2.66%	6	1321(3.7%)	30140(84.9%)	2416(6.8%)	494(1.4%)	1148(3.2%)	8
Stomach	54078	7	2.57%	5	6279 (11.6%)	30473 (56.4%)	8183 (15.1%)	3389 (6.3%)	5754 (10.6%)	4
Local	30425	7	2.51%	4	5175(17%)	13849(45.5%)	4530(14.9%)	2573(8.5%)	4298(14.1%)	4
Distant	17922	8	3.49%	6	724(4%)	13169(73.5%)	2892(16.1%)	386(2.2%)	751(4.2%)	5
Esophagus	32223	8	5.46%	5	3452 (10.7%)	22182 (68.8%)	2432 (7.5%)	1506 (4.7%)	2651 (8.2%)	5
Local	17605	9	5.21%	5	2710(15.4%)	10977(62.4%)	1216(6.9%)	990(5.6%)	1712(9.7%)	5
Distant	9492	8	6.68%	6	519(5.5%)	7494(79%)	880(9.3%)	191(2%)	408(4.3%)	6
Liver	29653	13	2.09%	5	5454 (18.4%)	16924 (57.1%)	2871 (9.7%)	598 (2%)	3806 (12.8%)	6
Local	19687	9	2.04%	5	4780(24.3%)	10344(52.5%)	1381(7%)	396(2%)	2786(14.2%)	7
Distant	4989	11	1.19%	6	251(5%)	3446(69.1%)	855(17.1%)	76(1.5%)	361(7.2%)	4
Gum, mouth floor	23620	5	5.10%	2	5339 (22.6%)	3439 (14.6%)	7490 (31.7%)	2366 (10%)	4986 (21.1%)	0
Local	19121	4	5.19%	3	4579(23.9%)	2709(14.2%)	6056(31.7%)	2010(10.5%)	3767(19.7%)	0
Distant	1486	7	7.12%	3	158(10.6%)	385(25.9%)	664(44.7%)	86(5.8%)	193(13%)	0
Tongue	22419	5	3.98%	2	7830 (34.9%)	4570 (20.4%)	5262 (23.5%)	1597 (7.1%)	3160 (14.1%)	0
Local	17991	4	3.92%	3	6729(37.4%)	3427(19%)	3915(21.8%)	1327(7.4%)	2593(14.4%)	0
Distant	2830	7	5.70%	3	702(24.8%)	834(29.5%)	914(32.3%)	115(4.1%)	265(9.4%)	0
Gallbladder	19800	12	2.26%	5	2215 (11.2%)	8269 (41.8%)	6672 (33.7%)	909 (4.6%)	1735 (8.8%)	1
Local	12449	8	2.57%	5	1832(14.7%)	4577(36.8%)	3944(31.7%)	729(5.9%)	1367(11%)	1
Distant	5326	11	12.37%	6	275(5.2%)	2896(54.4%)	1912(35.9%)	78(1.5%)	165(3.1%)	1
Small intestine	14143	4	2.91%	2	5575 (39.4%)	2154 (15.2%)	3606 (25.5%)	880 (6.2%)	1928 (13.6%)	0
Local	7537	4	2.75%	2	3494(46.4%)	1016(13.5%)	1370(18.2%)	552(7.3%)	1105(14.7%)	0

	Distant	3279	7	6.82%	2	771(23.5%)	990(30.2%)	1082(33%)	111(3.4%)	325(9.9%)	1
Anus		13966	6	2.44%	2	7439 (53.3%)	1116 (8%)	2539 (18.2%)	875 (6.3%)	1997 (14.3%)	0
	Local	11996	0	2.49%	2	6971(58.1%)	722(6%)	1846(15.4%)	755(6.3%)	1702(14.2%)	0
	Distant	1079	15	1.26%	3	229(21.2%)	277(25.7%)	441(40.9%)	35(3.2%)	97(9%)	0
Lip		11054	0	2.21%	1	3292 (29.8%)	147 (1.3%)	1877 (17%)	2460 (22.3%)	3278 (29.7%)	0
	Local	9958	0	2.22%	1	3018(30.3%)	109(1.1%)	1660(16.7%)	2229(22.4%)	2942(29.5%)	0
	Distant	83	-	-	-	17(20.5%)	10(12%)	34(41%)	10(12%)	12(14.5%)	0
Salivary gland		10992	5	1.76%	2	5057 (46%)	1559 (14.2%)	1964 (17.9%)	880 (8%)	1532 (13.9%)	0
	Local	7760	5	1.55%	2	3835(49.4%)	1042(13.4%)	1150(14.8%)	641(8.3%)	1092(14.1%)	0
	Distant	1078	8	3.69%	2	272(25.2%)	382(35.4%)	263(24.4%)	49(4.5%)	112(10.4%)	3
Peritoneum, Retroperitoneum		7524	12	2.13%	3	2059 (27.4%)	1073 (14.3%)	3597 (47.8%)	228 (3%)	567 (7.5%)	0
	Local	3166	5	3.14%	3	1219(38.5%)	351(11.1%)	1237(39.1%)	111(3.5%)	248(7.8%)	0
	Distant	2915	11	1.26%	2	502(17.2%)	527(18.1%)	1667(57.2%)	51(1.7%)	168(5.8%)	0
Appendix		4264	7	1.21%	2	2276(53.3%)	0(0%)	1446(33.9%)	206(4.8%)	336(7.8%)	-
	Local	2819	-	-	1	-	-	-	-	-	-
	Distant	1273	15	0.74%	2	-	-	-	-	-	-
Intrahepatic bile		3960	13	0.84%	6	362 (9.1%)	2158 (54.5%)	1149 (29%)	67 (1.7%)	224 (5.7%)	6
	Local	1888	12	12.83%	6	245(13%)	993(52.6%)	508(26.9%)	41(2.2%)	101(5.3%)	4
	Distant	1215	3	62.39%	-	85(7%)	674(55.5%)	394(32.4%)	11(0.9%)	51(4.2%)	2
Unspecified digestive organs		2675	19	1.07%	5	290 (10.8%)	213 (8%)	1820 (68%)	108 (4%)	244 (9.1%)	0
	Local	159	-	-	-	38(23.9%)	3(1.9%)	90(56.6%)	7(4.4%)	21(13.2%)	0
	Distant	1829	12	12.19%	4	158(8.6%)	131(7.2%)	1384(75.7%)	40(2.2%)	116(6.3%)	0
Respiratory System											
Lung and Bronchus		190488	7	6.22%	5	15575 (8.2%)	138116 (72.5%)	9066 (4.8%)	11194 (5.9%)	16537 (8.7%)	7
	Local	52080	6	6.14%	4	11033(21.2%)	29195(56.1%)	1981(3.8%)	3711(7.1%)	6160(11.8%)	7
	Distant	56136	11	9.08%	6	2895(5.2%)	46045(82%)	2803(5%)	1712(3%)	2681(4.8%)	7
Larynx		36419	5	4.54%	2	8671 (23.8%)	6949 (19.1%)	8129 (22.3%)	4901 (13.5%)	7769 (21.3%)	0
	Local	25322	5	4.47%	2	3540(14%)	4639(18.3%)	6380(25.2%)	4219(16.7%)	6544(25.8%)	0
	Distant	1721	6	6.99%	3	75(4.4%)	765(44.5%)	497(28.9%)	148(8.6%)	236(13.7%)	3
Oropharynx		15784	6	4.50%	2	5880 (37.3%)	520 (3.3%)	6336 (40.1%)	969 (6.1%)	2079 (13.2%)	0
	Local	11069	6	4.73%	3	4428(40%)	319(2.9%)	4177(37.7%)	698(6.3%)	1447(13.1%)	0
	Distant	2411	19	1.49%	3	621(25.8%)	154(6.4%)	1276(52.9%)	106(4.4%)	254(10.5%)	0
Hypopharynx		7037	5	9.33%	4	678 (9.6%)	1072 (15.2%)	3776 (53.7%)	515 (7.3%)	996 (14.2%)	0

	Local	5185	5	9.26%	4	487(9.4%)	743(14.3%)	2748(53%)	412(7.9%)	795(15.3%)	0
	Distant	1499	6	9.80%	4	171(11.4%)	273(18.2%)	824(55%)	76(5.1%)	155(10.3%)	0
Nasopharynx		6614	7	2.78%	2	2370 (35.8%)	1917 (29%)	1156 (17.5%)	329 (5%)	842 (12.7%)	4
	Local	3169	5	3.04%	3	803(25.3%)	1106(34.9%)	556(17.5%)	194(6.1%)	510(16.1%)	6
	Distant	748	7	2.76%	2	107(14.3%)	317(42.4%)	191(25.5%)	36(4.8%)	97(13%)	3
Pleura		6016	12	2.96%	6	349 (5.8%)	934 (15.5%)	4178 (69.4%)	156 (2.6%)	399 (6.6%)	0
	Local	1352	12	3.06%	6	29(2.1%)	246(18.2%)	936(69.2%)	37(2.7%)	104(7.7%)	0
	Distant	2066	13	23.62%	5	11(0.5%)	398(19.3%)	1480(71.6%)	56(2.7%)	121(5.9%)	0
Middle ear accessory sinuses		3795	6	4.08%	3	954 (25.1%)	898 (23.7%)	1164 (30.7%)	246 (6.5%)	533 (14%)	0
	Local	1957	5	4.32%	3	602(30.8%)	475(24.3%)	540(27.6%)	110(5.6%)	230(11.8%)	0
	Distant	399	6	3.34%	3	68(17%)	117(29.3%)	160(40.1%)	17(4.3%)	37(9.3%)	0
Nasal Cavity		2977	4	3.46%	2	1116 (37.5%)	213 (7.2%)	866 (29.1%)	276 (9.3%)	506 (17%)	0
	Local	1550	5	2.96%	2	686(44.3%)	95(6.1%)	396(25.5%)	128(8.3%)	245(15.8%)	0
	Distant	390	10	1.20%	1	183(46.9%)	52(13.3%)	105(26.9%)	12(3.1%)	38(9.7%)	0
Pharynx		2473	6	6.07%	4	392 (15.9%)	453 (18.3%)	1054 (42.6%)	195 (7.9%)	379 (15.3%)	0
	Local	1536	6	6.74%	4	241(15.7%)	286(18.6%)	663(43.2%)	124(8.1%)	222(14.5%)	0
	Distant	359	17	8.30%	-	40(11.1%)	91(25.3%)	185(51.5%)	14(3.9%)	29(8.1%)	0
Mediastinum		1824	6	0.85%	2	981 (53.8%)	134 (7.3%)	518 (28.4%)	55 (3%)	136 (7.5%)	0
	Local	535	7	0.61%	2	271(50.7%)	49(9.2%)	142(26.5%)	27(5%)	46(8.6%)	0
	Distant	269	4	1.37%	3	71(26.4%)	41(15.2%)	125(46.5%)	7(2.6%)	25(9.3%)	0
Trachea		514	12	3.77%	4	98 (19.1%)	125 (24.3%)	206 (40.1%)	37 (7.2%)	48 (9.3%)	0
	Local	255	10	3.31%	4	40(15.7%)	68(26.7%)	103(40.4%)	19(7.5%)	25(9.8%)	0
	Distant	71	-	-	-	1(1.4%)	22(31%)	36(50.7%)	9(12.7%)	3(4.2%)	0
Bones and joints, soft tissues											
Breast		188751	0	1.77%	1	89456 (47.4%)	40871 (21.7%)	11291 (6%)	19204 (10.2%)	27929 (14.8%)	5
	Local	171618	0	1.58%	1	86912(50.6%)	30877(18%)	10075(5.9%)	17766(10.4%)	25988(15.1%)	0
	Distant	10111	17	2.17%	2	1041(10.3%)	7296(72.2%)	532(5.3%)	552(5.5%)	690(6.8%)	13
Skin		113139	4	0.39%	1	72551 (64.1%)	10155 (9%)	8216 (7.3%)	7943 (7%)	14274 (12.6%)	0
	Local	94413	0	0.28%	1	64582(68.4%)	7266(7.7%)	5445(5.8%)	6558(6.9%)	10562(11.2%)	0
	Distant	2702	7	1.52%	3	431(16%)	1705(63.1%)	304(11.3%)	96(3.6%)	166(6.1%)	5
Bones, joints		10331	9	1.26%	2	5254 (50.9%)	2012 (19.5%)	1791 (17.3%)	374 (3.6%)	900 (8.7%)	3
	Local	5781	8	0.98%	2	3311(57.3%)	1195(20.7%)	606(10.5%)	208(3.6%)	461(8%)	4
	Distant	2334	10	2.63%	2	813(34.8%)	627(26.9%)	639(27.4%)	68(2.9%)	187(8%)	2
Connective soft		24186	7	1.18%	2	10999 (45.5%)	5074 (21%)	3904 (16.1%)	1479 (6.1%)	2730 (11.3%)	3

tissue											
	Local	17130	8	1.00%	2	9003(52.6%)	3076(18%)	2039(11.9%)	1114(6.5%)	1898(11.1%)	4
	Distant	3163	7	1.43%	3	548(17.3%)	1469(46.4%)	898(28.4%)	69(2.2%)	179(5.7%)	4
Heart		239	10	1.13%	5	46 (19.2%)	118 (49.4%)	47 (19.7%)	8 (3.3%)	20 (8.4%)	5
	Local	105	-	-	-	16(15.2%)	68(64.8%)	14(13.3%)	3(2.9%)	4(3.8%)	5
	Distant	65	-	-	-	5(7.7%)	46(70.8%)	8(12.3%)	1(1.5%)	5(7.7%)	4
Female Genital System											
Cervix		123836	4	0.38%	1	89294 (72.1%)	8359 (6.8%)	8342 (6.7%)	5256 (4.2%)	12585 (10.2%)	3
	Local	118625	0	0.36%	1	88208(74.4%)	5904(5%)	7549(6.4%)	4937(4.2%)	12027(10.1%)	3
	Distant	2911	12	3.14%	4	298(10.2%)	1873(64.3%)	466(16%)	94(3.2%)	180(6.2%)	6
Uterus		75885	5	0.70%	1	32792 (43.2%)	5771 (7.6%)	11859 (15.6%)	9836 (13%)	15627 (20.6%)	3
	Local	66816	4	0.68%	1	30951(46.3%)	3550(5.3%)	9025(13.5%)	8946(13.4%)	14344(21.5%)	3
	Distant	5664	8	1.97%	3	975(17.2%)	1795(31.7%)	2086(36.8%)	329(5.8%)	479(8.5%)	6
Ovary		63542	9	1.17%	3	19777 (31.1%)	31756 (50%)	4548 (7.2%)	2607 (4.1%)	4854 (7.6%)	9
	Local	21118	0	1.04%	1	12299(58.2%)	3469(16.4%)	1495(7.1%)	1354(6.4%)	2501(11.8%)	5
	Distant	39164	14	1.85%	2	6841(17.5%)	26557(67.8%)	2721(6.9%)	1045(2.7%)	2000(5.1%)	11
Vulva		18994	3	1.30%	1	11773 (62%)	1300 (6.8%)	1595 (8.4%)	1513 (8%)	2813 (14.8%)	0
	Local	18140	3	1.28%	1	11606(64%)	1017(5.6%)	1442(7.9%)	1411(7.8%)	2664(14.7%)	0
	Distant	281	6	21.88%	4	25(8.9%)	157(55.9%)	54(19.2%)	23(8.2%)	22(7.8%)	0
Vagina, labia		8794	5	1.41%	1	4568 (51.9%)	661 (7.5%)	1504 (17.1%)	748 (8.5%)	1313 (14.9%)	0
	Local	6203	4	1.42%	1	3136(50.6%)	278(4.5%)	1052(17%)	638(10.3%)	1099(17.7%)	0
	Distant	452	9	2.69%	3	42(9.3%)	144(31.9%)	185(40.9%)	26(5.8%)	55(12.2%)	0
Other female genitals		3060	8	1.68%	2	1153 (37.7%)	570 (18.6%)	898 (29.3%)	156 (5.1%)	283 (9.2%)	0
	Local	1377	7	1.35%	2	680(49.4%)	193(14%)	258(18.7%)	91(6.6%)	155(11.3%)	0
	Distant	1427	10	2.75%	2	408(28.6%)	355(24.9%)	534(37.4%)	49(3.4%)	81(5.7%)	0
Uterus NOS		1903	7	1.71%	3	493 (25.9%)	655 (34.4%)	475 (25%)	93 (4.9%)	187 (9.8%)	1
	Local	600	12	0.83%	3	247(41.2%)	160(26.7%)	128(21.3%)	19(3.2%)	46(7.7%)	1
	Distant	654	11	8.71%	4	81(12.4%)	300(45.9%)	220(33.6%)	15(2.3%)	38(5.8%)	1
Placenta		573	3	0.27%	1	492(85.9%)	17(3%)	30(5.2%)	3(0.5%)	31(5.4%)	3
	Local	220	-	-	1	-	-	-	-	-	-
	Distant	293	3	00.11%	1	-	-	-	-	-	-
Male Genital System											
Prostate		206889	0	2.16%	1	86227 (41.7%)	36068 (17.4%)	15858 (7.7%)	31087 (15%)	37649 (18.2%)	0
	Local	110187	0	0.71%	1	77225(70.1%)	5319(4.8%)	6280(5.7%)	8674(7.9%)	12689(11.5%)	0

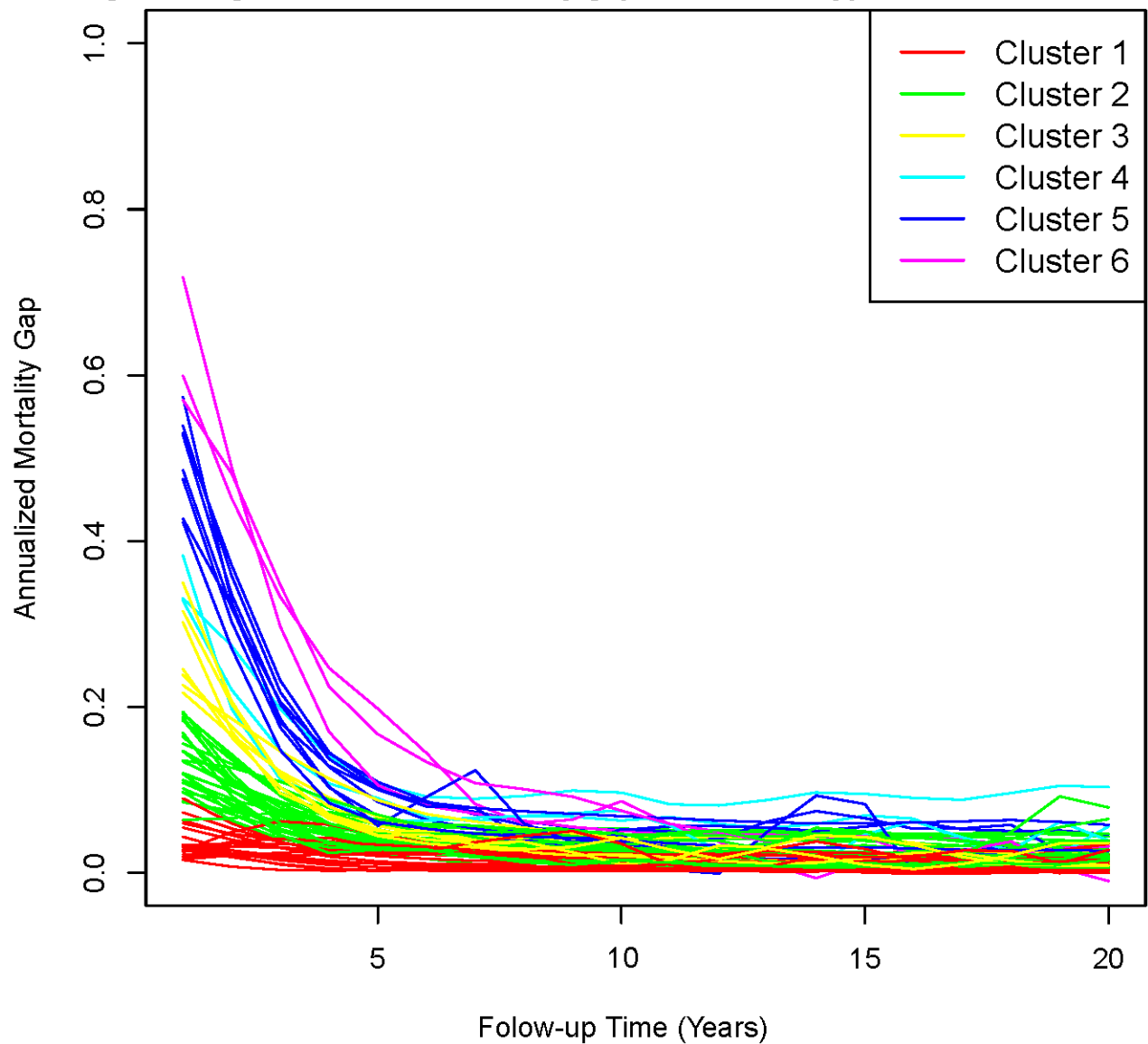
	Distant	92799	16	9.44%	2	1072(21.4%)	2731(54.6%)	280(5.6%)	388(7.8%)	534(10.7%)	8
Testis		26112	3	0.27%	1	21478 (82.3%)	1097 (4.2%)	1392 (5.3%)	599 (2.3%)	1546 (5.9%)	2
	Local	22044	0	0.18%	1	19185(87%)	434(2%)	754(3.4%)	473(2.1%)	1198(5.4%)	0
	Distant	2848	4	0.78%	1	1730(60.7%)	611(21.5%)	240(8.4%)	55(1.9%)	212(7.4%)	4
Penis, scrotum		5558	3	2.00%	1	2301 (41.4%)	472 (8.5%)	739 (13.3%)	784 (14.1%)	1262 (22.7%)	0
	Local	5075	3	2.04%	2	2190(43.2%)	378(7.4%)	658(13%)	728(14.3%)	1121(22.1%)	0
	Distant	126	-	-	-	14(11.1%)	63(50%)	33(26.2%)	5(4%)	11(8.7%)	0
Epididymis, spermatic cord		452	2	1.32%	1	195 (43.1%)	13 (2.9%)	122 (27%)	41 (9.1%)	81 (17.9%)	0
	Local	364	0	1.37%	1	170(46.7%)	10(2.7%)	86(23.6%)	33(9.1%)	65(17.9%)	0
	Distant	34	-	-	-	10(29.4%)	2(5.9%)	16(47.1%)	1(2.9%)	5(14.7%)	0
Urinary System											
Bladder		129717	4	2.45%	2	39366 (30.3%)	24945 (19.2%)	15386 (11.9%)	20756 (16%)	29264 (22.6%)	1
	Local	120384	4	2.46%	2	38278(31.8%)	20585(17.1%)	14210(11.8%)	19655(16.3%)	27656(23%)	1
	Distant	3980	6	5.21%	4	188(4.7%)	2863(71.9%)	472(11.9%)	174(4.4%)	283(7.1%)	5
Kidney		77884	4	2.59%	2	33928 (43.6%)	23655 (30.4%)	4895 (6.3%)	5847 (7.5%)	9559 (12.3%)	4
	Local	58775	3	2.47%	2	31899(54.3%)	10238(17.4%)	3467(5.9%)	4974(8.5%)	8197(13.9%)	2
	Distant	15310	10	2.32%	4	1338(8.7%)	11833(77.3%)	1011(6.6%)	407(2.7%)	721(4.7%)	8
Ureter, renal pelvis		11920	5	2.96%	2	3104 (26%)	655 (5.5%)	4363 (36.6%)	1500 (12.6%)	2298 (19.3%)	0
	Local	10253	5	2.86%	2	2955(28.8%)	481(4.7%)	3319(32.4%)	1389(13.5%)	2109(20.6%)	0
	Distant	1125	5	29.99%	4	64(5.7%)	128(11.4%)	836(74.3%)	34(3%)	63(5.6%)	0
Other Unspecified urinary organs		2299	6	2.03%	2	673 (29.3%)	262 (11.4%)	685 (29.8%)	284 (12.4%)	395 (17.2%)	0
	Local	1527	5	2.47%	2	457(29.9%)	168(11%)	453(29.7%)	182(11.9%)	267(17.5%)	0
	Distant	239	10	9.75%	4	21(8.8%)	59(24.7%)	129(54%)	13(5.4%)	17(7.1%)	0
Brain, CNS, Spine											
Brain, CNS, Spine		47291	6	3.1%	5	9920 (21%)	28507 (60.3%)	2079 (4.4%)	804 (1.7%)	5981 (12.6%)	13
	Local	-	-	-	-	-	-	-	-	-	-
	Distant	20	-	-	-	3(-)	-	11(-)	-	6(-)	-
Cerebellum		3365	8	0.81%	2	2026 (60.2%)	852 (25.3%)	141 (4.2%)	37 (1.1%)	309 (9.2%)	8
	Local	-	-	-	-	-	-	-	-	-	-
	Distant	-	-	-	-	-	-	-	-	-	-
Meninges		1071	4	4.23%	2	331 (30.9%)	218 (20.4%)	110 (10.3%)	89 (8.3%)	323 (30.2%)	0
	Local	-	-	-	-	-	-	-	-	-	-
	Distant	2	-	-	-	-	-	1(-)	-	1(-)	-

Ventricle	1001	6	1.49%	2	493 (49.3%)	290 (29%)	49 (4.9%)	13 (1.3%)	156 (15.6%)	5
Local	-	-	-	-	-	-	-	-	-	-
Distant	1	-	-	-	1(-)	-	-	-	-	-
Other Nervous System	548	6	2.95%	3	159 (29%)	17 (3.1%)	228 (41.6%)	17 (3.1%)	127 (23.2%)	0
Local	-	-	-	-	-	-	-	-	-	-
Distant	11	-	-	-	3(-)	-	5(-)	-	3(-)	-
Pineal Gland	502	3	1.16%	2	313 (62.4%)	66 (13.1%)	62 (12.4%)	6 (1.2%)	55 (11%)	4
Local	265	3	1.26%	2	146(55.1%)	40(15.1%)	41(15.5%)	4(1.5%)	34(12.8%)	0
Distant	39	-	-	-	16(-)	10(-)	3(-)	-	10(-)	0
Pituitary gland	211	3	1.95%	1	120 (56.9%)	9 (4.3%)	25 (11.8%)	13 (6.2%)	44 (20.9%)	0
Local	104	-	-	-	56(53.8%)	3(2.9%)	13(12.5%)	8(7.7%)	24(23.1%)	0
Distant	7	-	-	-	2(-)	-	-	-	2(-)	0
Eye and Orbit										0
Orbit, lacrimal gland	7354	0	2.29%	1	3522 (47.9%)	481 (6.5%)	1534 (20.9%)	659 (9%)	1158 (15.7%)	0
Local	5058	0	2.73%	2	2352(46.5%)	412(8.1%)	1029(20.3%)	461(9.1%)	804(15.9%)	0
Distant	144	-	-	-	42(29.2%)	24(16.7%)	56(38.9%)	7(4.9%)	15(10.4%)	0
Retina	959	0	0.40%	1	819 (85.4%)	51 (5.3%)	51 (5.3%)	5 (0.5%)	33 (3.4%)	4
Local	784	0	0.34%	1	698(89%)	33(4.2%)	26(3.3%)	3(0.4%)	24(3.1%)	2
Distant	57	-	-	-	38(66.7%)	8(14%)	8(14%)	1(1.8%)	2(3.5%)	2
Eyeball	804	0	2.50%	1	297 (36.9%)	74 (9.2%)	218 (27.1%)	92 (11.4%)	123 (15.3%)	0
Local	678	0	2.53%	2	253(37.3%)	65(9.6%)	178(26.3%)	83(12.2%)	99(14.6%)	0
Distant	9	-	-	-	2(-)	4(-)	2(-)	NA(-)	1(-)	0
Eye NOS	597	7	3.49%	2	171 (28.6%)	64 (10.7%)	198 (33.2%)	67 (11.2%)	97 (16.2%)	0
Local	269	0	3.57%	2	86(32%)	26(9.7%)	68(25.3%)	33(12.3%)	56(20.8%)	0
Distant	20	-	-	-	2(-)	5(-)	10(-)	NA(-)	3(-)	0
Endocrine System										
Thyroid gland	70078	2	0.26%	1	58013 (82.8%)	3069 (4.4%)	2899 (4.1%)	2081 (3%)	4016 (5.7%)	1
Local	64251	0	0.15%	1	55054(85.7%)	1725(2.7%)	2264(3.5%)	1759(2.7%)	3449(5.4%)	1
Distant	3043	3	2.15%	1	1348(44.3%)	1123(36.9%)	246(8.1%)	107(3.5%)	219(7.2%)	8
Adrenal glands	2409	8	1.78%	3	921 (38.2%)	1030 (42.8%)	235 (9.8%)	64 (2.7%)	159 (6.6%)	8
Local	689	5	2.08%	2	280(40.6%)	253(36.7%)	58(8.4%)	31(4.5%)	67(9.7%)	8
Distant	826	7	1.02%	3	192(23.2%)	493(59.7%)	80(9.7%)	13(1.6%)	48(5.8%)	10
Thymus gland	2184	4	4.69%	2	951 (43.5%)	464 (21.2%)	262 (12%)	139 (6.4%)	368 (16.8%)	0

	Local	797	2	4.33%	2	224(28.1%)	184(23.1%)	117(14.7%)	86(10.8%)	186(23.3%)	0
	Distant	256	10	13.80%	2	16(6.2%)	117(45.7%)	49(19.1%)	13(5.1%)	61(23.8%)	0
Spleen		1588	4	3.48%	2	773(48.7%)	393(24.7%)	118(7.4%)	109(6.9%)	195(12.3%)	4
	Local	-	-	-	-	-	-	-	-	-	-
	Distant	4	-	-	-	-	-	-	-	-	-
Parathyroid gland		243	0	2.35%	1	140 (57.6%)	1 (0.4%)	38 (15.6%)	26 (10.7%)	38 (15.6%)	0
	Local	135	-	-	-	63(46.7%)	1(0.7%)	20(14.8%)	23(17%)	28(20.7%)	-
	Distant	13	-	-	-	1(-)	-	10(-)	-	2(-)	-
Other											
Ill-defined		1986	7	2.74%	3	477(24%)	612(30.8%)	613(30.9%)	93(4.7%)	191(9.6%)	1
	Local	-	-	-	-	-	-	-	-	-	-
	Distant	10	-	-	-	-	-	-	-	-	-
All cancers		2317185	-	-	-	838430(36.3%)	704423(30.5%)	245056(10.6%)	201156(8.7%)	319709(13.8%)	-
	Local	1412462	-	-	-	217296(30.3%)	7848(1.1%)	119520(16.7%)	160488(22.4%)	211824(29.5%)	-
	Distant	301295	-	-	-	1224(20.5%)	720(12%)	2448(41%)	720(12%)	864(14.5%)	-

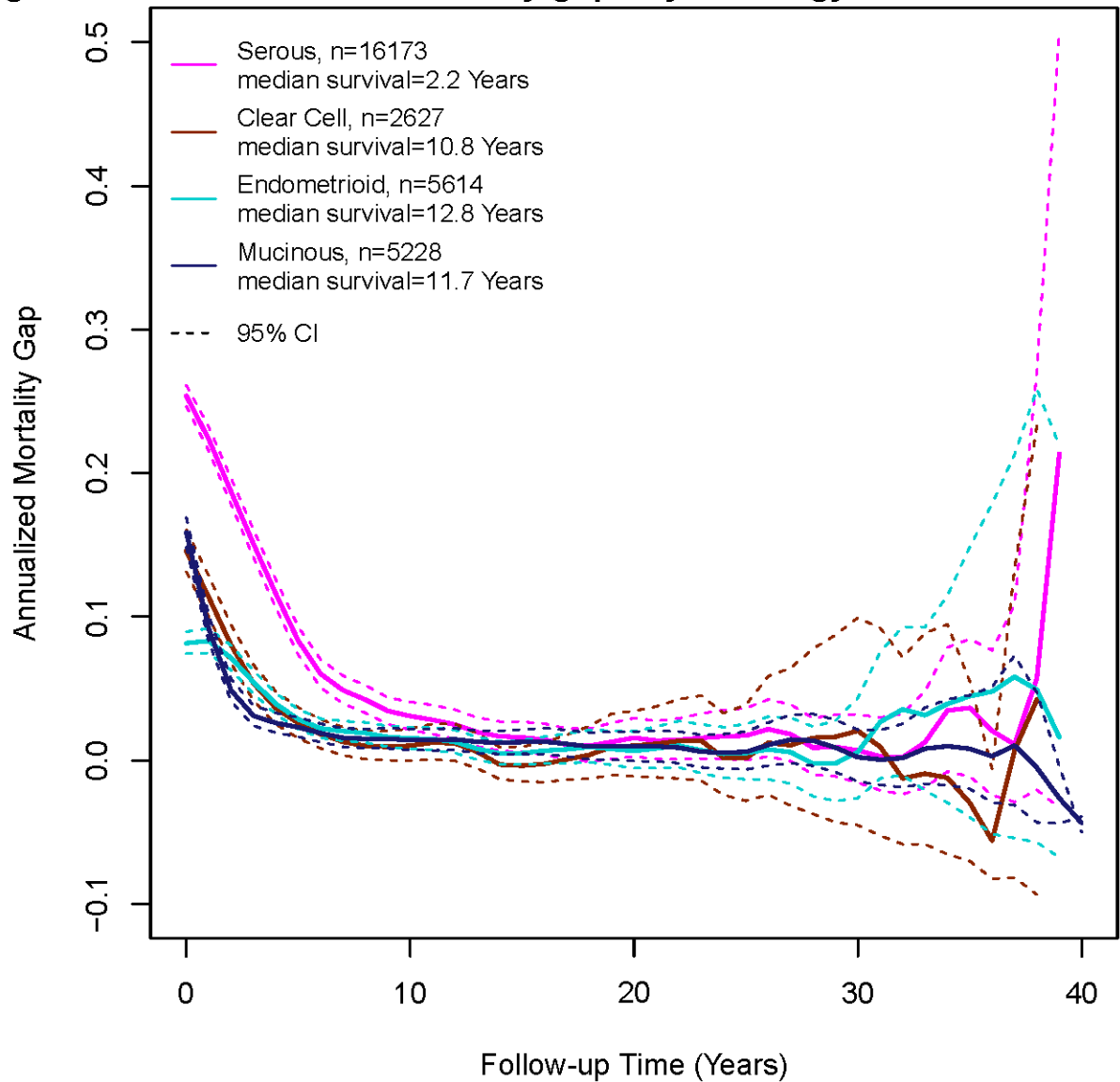
COD=Cause of death; NOS=Not otherwise specified. Note some cases were unstaged so stratified analysis may not add to the total.

eFigure 2: Age-sex matched mortality gap for all tumor types



Legend: The annualized mortality gap for all 66 investigated cancers is shown, color-coded by each determined cluster.

eFigure 3: Ovarian cancer mortality gaps by histology



Legend: The age-sex-matched annualized mortality gap for 4 common ovarian cancer histologies are depicted above. 95% confidence intervals widen over time due to decreasing population size.