

Supplementary Online Content

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

eTable 1. Number of cases and distribution (%) of key demographic and clinical characteristics of 1,149, 891 patients diagnosed with breast, prostate, lung, or colorectal cancer or melanoma between 1997 and 2014 in California, by insurance status^a and sex.

		Men				Women			
		None	Private	Medicare	Other public ^b	None	Private	Medicare	Other public ^b
Calendar period (number of cases)									
1997-2002		3556	97189	71390	21867	2794	102725	57276	17572
2003-2008		3723	100861	64149	34084	2603	103401	49411	31895
2009-2014		3094	91836	60626	34155	2455	102642	53381	37206
Cancer site									
Breast						47.2	63.6	47.9	56.7
Prostate		38.5	56.7	56.3	45.1				
Lung		28.0	15.2	21.3	19.7	21.9	13.7	26.2	21.4
Colorectal		23.1	17.5	16.3	20.9	21.6	14.5	21.5	19.1
Melanoma		10.4	10.6	6.2	4.5	9.3	8.1	4.4	2.8
Age at diagnosis									
18-49		16.4	10.1	0.0	7.0	30.9	27.6	0.0	22.5
50-59		36.2	30.2	2.7	19.9	34.5	30.1	3.5	23.5
60-69		33.3	34.6	31.3	34.1	24.6	22.2	24.7	23.1
70-79		10.4	18.0	44.6	27.3	6.4	12.6	41.0	17.9
80+		3.8	7.1	20.4	11.8	3.6	7.6	30.7	12.9
Stage									
Localized		42.9	64.4	59.5	47.0	38.2	55.6	48.8	40.3
Regional		18.7	18.0	16.8	19.4	28.5	29.6	26.7	33.4
Distant		33.4	15.0	19.0	28.6	28.8	13.2	20.7	22.5
Unknown		4.9	2.5	4.8	5.0	4.5	1.6	3.8	3.8
Race/ethnicity									
NH White		50.4	69.4	73.7	48.3	47.8	68.9	78.8	43.0

	NH Black	12.7	7.8	6.0	13.4	8.9	5.8	5.3	10.4
	Hispanic	24.5	12.6	10.9	21.3	26.8	13.2	8.7	28.6
	Chinese	2.6	2.3	1.9	4.3	3.5	3.0	1.6	4.2
	Japanese	0.7	1.0	1.2	0.3	1.0	1.3	1.4	0.7
	Filipino	2.7	2.2	1.7	4.5	4.2	3.3	1.5	4.9
	Other Asian	4.6	2.1	2.0	6.0	6.9	3.3	1.7	7.1
	Other/Unknown	1.8	2.6	2.5	1.8	1.7	1.2	0.9	1.1
Neighborhood SES									
	Q1 (Low SES)	23.6	9.5	12.6	26.7	21.5	9.0	11.9	28.0
	Q2	21.5	15.8	18.0	24.7	21.4	15.6	18.2	25.9
	Q3	19.0	20.6	21.1	21.0	20.5	20.9	22.0	20.4
	Q4	18.0	24.8	22.2	16.3	18.6	25.3	22.9	25.8
	Q5 (High SES)	17.9	29.3	26.2	11.3	18.1	29.3	25.0	9.0
Marital status									
	Unmarried	48.5	21.6	25.7	45.5	52.1	36.7	55.4	61.1
	Married	46.0	70.9	68.7	49.7	43.3	59.0	41.9	36.0
	Unknown	5.5	7.5	5.6	4.8	4.6	4.3	2.7	3.0
Surgery									
	No	56.3	44.3	56.4	59.2	34.8	15.1	27.9	28.0
	Yes	43.6	55.7	43.4	40.7	65.1	84.9	72.1	71.9
	Unknown	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Radiation therapy									
	No	77.2	73.5	71.6	70.0	72.8	62.4	70.5	67.0
	Yes	22.7	26.5	28.3	29.9	27.1	37.6	29.4	33.0
	Unknown	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1
Chemotherapy									
	No	77.5	21.6	25.7	45.5	58.5	58.4	75.1	56.1
	Yes	20.8	70.9	68.7	49.7	38.8	40.0	23.0	41.3
	Unknown	1.7	7.5	5.6	4.8	2.7	1.6	2.0	2.5

^a 5% of eligible cases were excluded from the analysis because of unknown insurance status. The proportion was similar in each calendar period. Excluded patients were older, more likely to live in low SES neighborhoods, and more likely to have missing information on race/ethnicity, marital status, stage at diagnosis, and treatment.

^b 74% of patients in the 'Other public' insurance category had Medicaid insurance.

eTable 2. Distribution (%) of stage at diagnosis by insurance status, for each cancer site, sex and calendar period of diagnosis: California, 1997-2014

	1997-2002				2003-2008				2009-2014			
	None	Private	Medicare	Public	None	Private	Medicare	Public	None	Private	Medicare	Public
Breast												
Localized	48.2	62.2	66.2	49.1	46.2	62.3	66.3	50.7	46.6	64.5	68.0	52.0
Regional	36.1	33.4	27.0	39.7	34.9	33.4	26.9	39.1	34.6	30.9	25.0	37.2
Distant	10.2	3.2	4.3	6.9	14.9	3.6	5.0	7.7	14.3	3.9	5.7	9.1
Unknown	5.6	1.2	2.5	4.4	4.0	0.7	1.8	2.5	4.5	0.7	1.3	1.7
Prostate												
Localized	70.4	85.1	82.4	74.6	70.2	80.3	79.8	76.2	68.2	78.5	74.5	71.5
Regional	11.2	8.1	6.7	9.1	16.1	15.1	11.1	11.5	14.1	15.5	13.8	13.3
Distant	10.5	3.7	5.1	8.4	10.5	3.2	5.2	8.0	13.0	3.9	7.6	10.5
Unknown	7.9	3.1	5.7	7.8	3.3	1.5	3.9	4.3	4.7	2.0	4.1	4.7
Lung (men)												
Localized	6.9	14.5	15.8	12.1	6.9	12.8	14.6	12.2	6.6	13.8	16.7	13.2
Regional	14.6	21.5	20.4	18.8	12.2	20.9	21.1	19.3	15.9	21.2	21.5	20.5
Distant	71.9	58.1	55.5	61.4	77.4	63.5	59.4	64.4	73.6	62.5	57.9	63.0
Unknown	6.7	5.9	8.4	7.7	3.4	2.9	5.0	4.2	3.9	2.5	3.8	3.3
Lung (women)												
Localized	7.7	17.2	18.2	14.5	8.4	17.0	17.3	13.7	8.1	18.5	20.3	15.9
Regional	14.2	20.8	20.6	19.5	13.3	21.0	22.3	19.2	15.7	21.4	21.5	18.7
Distant	72.4	55.9	52.6	58.0	75.0	58.8	54.9	62.3	73.4	57.7	54.3	61.3
Unknown	5.6	6.0	8.7	7.9	3.3	3.2	5.6	4.8	2.8	2.4	3.9	4.1
CRC (men)												
Localized	26.9	39.9	38.6	31.5	28.4	42.8	41.4	34.4	29.4	42.9	41.4	32.2
Regional	32.6	38.5	38.8	39.0	36.0	36.1	36.0	36.2	36.5	36.1	34.8	36.3
Distant	33.5	18.8	17.9	23.8	31.4	18.7	19.1	25.2	30.5	18.9	19.8	26.9
Unknown	7.0	2.8	4.6	5.6	4.2	2.4	3.4	4.2	3.6	2.0	4.0	4.5

CRC (women)												
Localized	29.3	37.2	37.3	31.2	30.1	40.7	39.4	33.0	31.6	42.6	39.8	33.4
Regional	40.0	40.3	39.3	39.3	37.3	36.8	37.3	38.2	34.7	35.8	36.1	35.3
Distant	25.9	19.7	18.1	22.9	28.1	20.0	18.4	23.3	29.5	19.4	18.9	25.5
Unknown	4.8	2.8	5.3	6.7	4.5	2.5	4.9	5.6	4.2	2.2	5.1	5.9
Melanoma (men)												
Localized	73.7	86.2	81.9	71.0	75.4	84.4	81.1	65.2	71.3	83.0	79.8	64.5
Regional	11.6	7.1	7.2	13.2	10.2	9.7	10.0	17.7	15.8	9.9	10.8	17.9
Distant	8.3	3.4	5.6	8.8	10.9	3.9	5.6	11.7	9.6	4.2	6.0	13.9
Unknown	6.5	3.3	5.3	7.0	3.5	1.9	3.4	5.4	3.3	3.0	3.4	3.6
Melanoma (women)												
Localized	81.1	90.5	82.2	73.9	85.7	90.0	81.7	70.3	78.0	88.3	82.5	67.8
Regional	5.2	5.3	7.4	12.0	8.3	6.3	11.1	16.6	7.9	6.6	10.2	17.6
Distant	5.6	1.7	4.9	6.7	3.0	2.2	4.4	8.3	10.7	2.2	4.4	9.1
Unknown	8.0	2.5	5.5	7.4	3.0	1.5	2.8	4.8	3.3	2.8	2.9	5.4

eTable 3. Five-year cancer-specific survival at age 65 by insurance status and calendar period, for each cancer site and sex: California, 1997-2014

	1997-2002			2003-2008			2009-2014		
Men	Survival	95% CIs		Survival	95% CIs		Survival	95% CIs	
Prostate cancer									
No insurance	0.92	0.90	0.94	0.90	0.88	0.93	0.90	0.87	0.94
Private only	0.96	0.96	0.96	0.97	0.96	0.97	0.97	0.96	0.97
Medicare	0.96	0.96	0.97	0.97	0.96	0.97	0.96	0.96	0.97
Other public	0.94	0.93	0.94	0.95	0.94	0.95	0.94	0.93	0.95
Lung cancer									
No insurance	0.08	0.06	0.10	0.09	0.06	0.12	0.09	0.07	0.11
Private only	0.17	0.17	0.18	0.19	0.18	0.20	0.23	0.22	0.25
Medicare	0.18	0.17	0.19	0.20	0.19	0.22	0.24	0.22	0.26
Other public	0.15	0.13	0.16	0.17	0.15	0.18	0.19	0.17	0.21
Colorectal cancer									
No insurance	0.49	0.44	0.54	0.53	0.48	0.59	0.52	0.48	0.58
Private only	0.69	0.68	0.70	0.72	0.71	0.73	0.73	0.72	0.75
Medicare	0.67	0.66	0.68	0.69	0.68	0.70	0.69	0.67	0.70
Other public	0.58	0.56	0.61	0.61	0.59	0.63	0.59	0.57	0.61
Melanoma									
No insurance	0.75	0.68	0.83	0.80	0.70	0.90	0.78	0.69	0.88
Private only	0.89	0.87	0.91	0.90	0.87	0.93	0.91	0.89	0.93
Medicare	0.85	0.81	0.89	0.87	0.82	0.92	0.87	0.83	0.92
Other public	0.74	0.69	0.80	0.73	0.69	0.78	0.73	0.68	0.79
Women									
Breast cancer									
No insurance	0.77	0.74	0.80	0.72	0.69	0.76	0.69	0.64	0.74
Private only	0.90	0.90	0.91	0.91	0.91	0.92	0.92	0.91	0.92
Medicare	0.88	0.88	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Other public	0.81	0.80	0.82	0.82	0.81	0.83	0.81	0.80	0.82
Lung cancer									
No insurance	0.10	0.08	0.13	0.13	0.10	0.16	0.10	0.08	0.14
Private only	0.23	0.22	0.24	0.25	0.24	0.26	0.30	0.29	0.32

	Medicare	0.24	0.23	0.26	0.28	0.26	0.30	0.32	0.29	0.34
	Other public	0.20	0.19	0.22	0.21	0.20	0.23	0.25	0.23	0.27
Colorectal cancer										
	No insurance	0.61	0.56	0.66	0.60	0.55	0.65	0.58	0.51	0.65
	Private only	0.69	0.68	0.70	0.71	0.70	0.72	0.74	0.73	0.75
	Medicare	0.69	0.68	0.70	0.71	0.70	0.72	0.71	0.70	0.72
	Other public	0.63	0.61	0.65	0.64	0.63	0.66	0.64	0.62	0.65
Melanoma										
	No insurance	0.86	0.79	0.94	0.87	0.81	0.94	0.81	0.68	0.96
	Private only	0.93	0.91	0.94	0.93	0.91	0.96	0.94	0.93	0.96
	Medicare	0.90	0.87	0.93	0.91	0.87	0.95	0.91	0.87	0.95
	Other public	0.76	0.71	0.81	0.77	0.73	0.82	0.78	0.73	0.84

eTable 4. Five-year cancer-specific mortality by health insurance status (reference: Private only) in each calendar period of diagnosis, by cancer site and sex: California, 1997-2014

	1997 – 2002			2003 - 2008			2009-2014				
Men	Cause-specific deaths	HR	95% CI	Cause-specific deaths	HR	95% CI	Cause-specific deaths	HR	95% CI		
Prostate cancer^a											
No insurance	110	0.95	0.78-1.16	122	1.23	0.93-1.63	69	1.29	0.96-1.74		
Private only	2,417	1.00		2,126	1.00		1,213	1.00			
Medicare	2,662	0.87	0.80-0.95	2,368	0.94	0.88-1.01	*	1,656	1.01	0.92-1.10	*
Other public	907	1.04	0.92-1.18	1,270	1.10	1.01-1.20		926	1.19	1.06-1.34	*
Lung cancer^b											
No insurance	867	1.11	1.01-1.23	749	1.11	0.96-1.28	500	1.17	1.06-1.29		
Private only	13,275	1.00		10,838	1.00		7,329	1.00			
Medicare	11,647	0.99	0.96-1.02	9,588	1.01	0.98-1.05		8,092	1.01	0.97-1.06	
Other public	5,062	0.99	0.95-1.04	7,355	1.02	0.97-1.07		6,183	0.98	0.94-1.03	
Colorectal cancer^c											
No insurance	311	1.19	1.04-1.35	312	1.32	1.10-1.57	226	1.30	1.12-1.53		
Private only	4,926	1.00		4,321	1.00		2,728	1.00			
Medicare	3,753	1.01	0.96-1.06	3,117	1.05	0.99-1.11	*	2,275	1.08	1.01-1.16	*
Other public	1,496	1.12	1.04-1.21	2,372	1.13	1.05-1.21		2,135	1.17	1.10-1.25	
Melanoma^d											
No insurance	71	1.92	1.50-2.47	64	1.68	1.23-2.30	37	1.89	1.34-2.65		
Private only	857	1.00		926	1.00		571	1.00			
Medicare	455	1.09	0.95-1.25	525	1.06	0.93-1.21		399	1.10	0.94-1.29	
Other public	207	1.55	1.21-1.98	335	1.29	1.05-1.59		259	1.36	1.16-1.60	
Women											
Breast cancer^e											
No insurance	295	1.45	1.26-1.67	246	1.61	1.37-1.89	169	1.72	1.45-2.03		
Private only	6,005	1.00		5,112	1.00		2,802	1.00			
Medicare	2,978	1.02	0.96-1.09	2,516	1.07	0.99-1.15		1,788	1.07	0.98-1.17	
Other public	1,760	1.21	1.14-1.31	2,803	1.32	1.24-1.40		2,085	1.25	1.17-1.34	

Lung cancer ^b											
No insurance	411	1.08	0.97-1.21	447	1.05	0.89-1.23		345	1.28	1.12-1.46	*
Private only	11,165	1.00		9,909	1.00			6,761	1.00		
Medicare	10,475	1.00	0.96-1.03	9,390	0.95	0.92-0.98		7,862	1.00	0.96-1.04	
Other public	2,798	0.99	0.94-1.03	5,119	0.99	0.95-1.04		4,217	1.01	0.96-1.06	
Colorectal cancer ^c											
No insurance	168	1.16	0.96-1.41	190	1.17	0.97-1.41		140	1.33	1.08-1.64	
Private only	4,412	1.00		4,102	1.00			2,509	1.00		
Medicare	4,412	1.01	0.96-1.06	3,393	1.00	0.94-1.06		2,509	1.08	1.01-1.15	*
Other public	1,097	0.99	0.91-1.07	2,165	1.09	1.03-1.16		1,770	1.13	1.05-1.22	*
Melanoma ^d											
No insurance	20	1.08	0.63-1.85	23	1.14	0.74-1.74		17	1.71	0.95-3.10	
Private only	383	1.00		418	1.00			237	1.00		
Medicare	223	0.98	0.80-1.19	242	0.97	0.77-1.21		195	1.26	0.98-1.61	
Other public	96	1.64	1.27-2.12	166	1.32	1.04-1.66		111	1.73	1.36-2.20	

eTable 5. Five-year all-cause mortality by health insurance status (reference: Private only) in each calendar period of diagnosis, by cancer site and sex: California, 1997-2014

	1997 - 2002			2003 - 2008			2009-2014				
Men	All-cause deaths	HR	95% CI	All-cause deaths	HR	95% CI	All-cause deaths	HR	95% CI		
Prostate cancer^a											
No insurance	242	0.87	0.77-0.99	235	1.11	0.93-1.33	*	122	1.24	1.05-1.46	*
Private only	7,164	1.00		5,815	1.00			2,737	1.00		
Medicare	9,382	0.97	0.92-1.03	7,318	1.02	0.97-1.07		3,757	1.09	1.02-1.17	*
Other public	2,418	1.01	0.94-1.08	3,515	1.20	1.12-1.28	*	1,990	1.29	1.19-1.39	*
Lung cancer^b											
No insurance	1,019	1.13	1.03-1.24	904	1.16	1.00-1.35		586	1.17	1.06-1.29	
Private only	15,321	1.00		12,496	1.00			8,468	1.00		
Medicare	14,181	1.02	0.99-1.05	11,564	1.03	1.00-1.07		9,897	1.04	1.00-1.08	
Other public	6,053	1.02	0.97-1.06	9,003	1.06	1.02-1.11		7,630	1.03	0.99-1.07	
Colorectal cancer^c											
No insurance	392	1.17	1.04-1.32	402	1.31	1.13-1.52		301	1.36	1.18-1.57	
Private only	6,995	1.00		5,984	1.00			3,701	1.00		
Medicare	6,599	1.07	1.02-1.11	5,255	1.09	1.04-1.14		3,564	1.08	1.02-1.15	
Other public	2,200	1.14	1.08-1.22	3,587	1.18	1.11-1.25		3,008	1.19	1.12-1.26	
Melanoma^d											
No insurance	100	1.84	1.45-2.32	101	1.66	1.27-2.17		60	1.94	1.47-2.55	
Private only	1,556	1.00		1,614	1.00			956	1.00		
Medicare	1,097	1.02	0.93-1.12	1,358	1.08	0.98-1.19		945	1.09	0.97-1.22	
Other public	355	1.61	1.33-1.96	583	1.32	1.16-1.52		445	1.47	1.24-1.74	
Women											
Breast cancer^e											
No insurance	393	1.48	1.33-1.65	300	1.59	1.38-1.83		201	1.63	1.40-1.91	
Private only	9,319	1.00		7,664	1.00			4,024	1.00		
Medicare	7,505	1.08	1.03-1.13	5,698	1.09	1.04-1.15		3,595	1.14	1.07-1.23	
Other public	2,606	1.27	1.20-1.35	4,367	1.36	1.29-1.44	*	3,050	1.34	1.26-1.43	
Lung cancer^b											

	No insurance	476	1.09	0.98-1.21	529	1.08	0.90-1.30		415	1.34	1.18-1.52	*
	Private only	12,872	1.00		11,363	1.00			7,815	1.00		
	Medicare	12,721	1.02	0.99-1.05	11,239	0.98	0.95-1.01	*	9,444	1.01	0.97-1.05	
	Other public	3,373	1.03	0.98-1.07	6,295	1.05	1.01-1.10		5,181	1.05	1.01-1.10	
	Colorectal cancer^c											
	No insurance	210	1.09	0.92-1.29	232	1.07	0.87-1.32		171	1.29	1.07-1.55	
	Private only	6,177	1.00		5,584	1.00			3,277	1.00		
	Medicare	7,400	1.05	1.01-1.09	5,497	1.02	0.97-1.07		3,805	1.10	1.05-1.16	
	Other public	1,666	1.06	1.00-1.13	3,343	1.18	1.12-1.25	*	2,522	1.21	1.14-1.29	*
	Melanoma^d											
	No insurance	29	0.90	0.61-1.35	31	0.98	0.63-1.54		25	2.24	1.36-3.72	
	Private only	687	1.00		752	1.00			403	1.00		
	Medicare	596	1.14	0.97-1.34	645	0.97	0.85-1.10		430	1.22	1.02-1.45	
	Other public	154	1.67	1.34-2.08	291	1.30	1.10-1.55		196	1.93	1.60-2.32	

Footnotes to eTables 4 and 5.

^a Prostate cancer: adjusted for race, lymph node involvement, grade, surgery, radiation, chemotherapy, marital status, nSES, NCI-designated cancer center, patient racial distribution of reporting hospital, patient SES distribution of reporting hospital, patient insurance distribution of reporting hospital, year of diagnosis, and clustering by hospital.

^b Lung cancer: adjusted for race, lymph node involvement, histology, surgery, radiation, chemotherapy, marital status, nSES, neighborhood racial composition, urban/rural (men only), NCI-designated cancer center, patient racial distribution of reporting hospital (women only), patient SES distribution of reporting hospital, patient insurance distribution of reporting hospital (men only), year of diagnosis, and clustering by hospital.

^c Colorectal cancer: adjusted for race, tumor size, lymph node involvement, grade, anatomical subsite, surgery, radiation, chemotherapy, marital status, nSES, neighborhood racial composition, urban/rural, NCI-designated cancer center, patient SES distribution of reporting hospital, year of diagnosis, and clustering by hospital.

^d Melanoma: adjusted for race, thickness, lymph node involvement, surgery, radiation, chemotherapy, marital status, nSES, NCI-designated cancer center (men only), neighborhood racial composition, patient SES distribution of reporting hospital (women only), patient insurance distribution of reporting hospital, year of diagnosis, and clustering by hospital.

^e Breast cancer: adjusted for race, tumor size, grade, surgery, radiation, chemotherapy, ER/PR status, marital status, nSES, neighborhood racial composition, urban/rural, NCI-designated cancer center, patient racial distribution of reporting hospital, patient SES distribution of reporting hospital, year of diagnosis, and clustering by hospital.

* Indicates Wald p-value for individual cross-product interaction terms between health insurance category and time-period (reference: 1997-2002) was p<0.05 in an overall model.

Figures in **bold** indicate that the HR is statistically significantly different to the reference group (private insurance) in a given calendar period (p<0.05).

Models were stratified by age at diagnosis (single year of age) and stage at diagnosis (localized, regional, distant)

eFigure A-D. Five-year cancer-specific survival at age 65 by insurance status and calendar period, for A) lung cancer (men), B) colorectal cancer (men), C) melanoma (men) and D) melanoma (women).

