State-Level Cancer Treatment Costs:

How Much and Who Pays?

Florence K. Tangka, PhD[1], **Justin G. Trogdon, PhD**[2], **Donatus U. Ekwueme, PhD**[1], **Gery P. Guy Jr, PhD**[1], **Isaac Nwaise, PhD**[3], and **Diane Orenstein, PhD**[4]

[1]Division of Cancer Prevention and Control, Centers for Disease Control and Prevention, Atlanta, Georgia

[2]RTI International, Research Triangle Park, North Carolina

[3]Division of Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia

[4]Division of Community Health, Centers for Disease Control and Prevention, Atlanta, Georgia

Abstract

BACKGROUND—Cancer treatment accounts for approximately 5% of national health expenditures. However, no state-level estimates of cancer treatment costs have been published.

METHODS—In analyses of data from the Medical Expenditure Panel Survey, the National Nursing Home Survey, the US Census Bureau, the Current Population Survey, and the Centers for Medicare & Medicaid Services, this study used regression modeling to estimate annual state-level cancer care costs during 2004 to 2008 for 4 categories of payers: all payers, Medicare, Medicaid, and private insurance.

RESULTS—State-level cancer care costs ranged from $227 million to $13.6 billion (median = $2.0 billion) in 2010 dollars. Medicare paid between 25.1% and 36.1% of these costs (median = 32.5%); private insurance paid between 36.0% and 49.6% (median = 43.3%); and Medicaid paid between 2.0% and 8.8% (median = 4.8%). Cancer treatment accounted for 3.8% to 8.7% of all state-level medical expenditures (median = 7.0%), 8.5% to 15.0% of state-level Medicare expenditures (median = 10.6%), 1.0% to 4.9% of state-level Medicaid expenditures (median = 2.2%), and 5.5% to 10.9% of state-level private insurance expenditures (median = 8.7%).

CONCLUSIONS—The costs of cancer treatment were substantial in all states and accounted for a sizable fraction of medical expenditures for all payers. The high cost of cancer treatment underscores the importance of preventing and controlling cancer as one approach to manage state-level medical costs.

Corresponding author: Florence K. Tangka, PhD, Centers for Disease Control and Prevention, DCPC/EARB, 4770 Buford Highway NE, MS K-55, Atlanta, GA 30341-3717; Fax: (770) 488-4639; ftangka@cdc.gov.

Keywords

cost of illness; payer; cancer; state cancer cost; state cancer cost by payer

INTRODUCTION

Each year, approximately 1.6 million persons in the United States receive a cancer diagnosis.[1] Cancer accounts for approximately 5% of overall national health care expenditures.[2–4] Over the past 20 years, the cost of treating the most common cancers has nearly doubled nationally.[2,5]

Previous studies have quantified cancer costs at the national level and for specific payers.[2,3,6–10] For example, in 2010, Tangka et al[2] reported that 34% of US medical expenditures attributed to cancer treatment in 2001 to 2005 were financed by Medicare and Medicaid and 7% by other public sector health plans. However, there has not been an analysis of state-level cancer treatment costs to public sector payers even though these costs are among the justifications for publicly funded cancer prevention efforts at the state level. Although we are not aware of any estimates of state-level spending on cancer prevention, overall public health spending varies widely by state[11] despite its beneficial effects.[12]

This study estimated annual state-level medical expenditures during 2004 to 2008 for cancer treatment by Medicare, by Medicaid, by private insurers, and by all payers combined. We also estimated the following by state and payer: the proportion of the population treated for cancer within the last year; the aggregate cost of cancer treatment in dollars and as a percentage of all medical costs; and the percentage of cancer treatment costs paid by Medicare, by Medicaid, and by private insurance.

Our cost estimates represent the dollars that could be saved if cancer were prevented, an important part of the decision to invest in cancer prevention. Prevention investments should also consider the costs of the prevention efforts[13] and nonmonetary benefits provided by prevention.[14,15] For example, if cancer treatment costs are low relative to other diseases, then investments in effective cancer prevention need to either be cheap or provide substantial nonmonetary (quality of life) benefits. Otherwise, prevention efforts should be targeted elsewhere. This study may be useful to state-level cancer prevention and control programs in allocating resources across insured populations and setting priorities for cost containment.

MATERIALS AND METHODS

Overview

We estimated state-level cancer treatment costs in 3 steps. First, we estimated, by state, the payer populations (ie, the number of people with health care coverage through each payer) for Medicare, Medicaid, private insurance and all payers combined. Second, we estimated "treated cancer prevalence" (ie, the percentage of members of each population who had been treated for cancer within the previous year) and average cost per person treated by adult age group (18–44, 45–64, or 65 years), sex (male or female), and payer (Medicare, Medicaid,

private insurance, or all payers). Third, we generated the total costs of cancer treatment by multiplying population, treated cancer prevalence, and average costs for each demographic cell by state and payer.

Payer Population Estimates

Our payer enrollment estimates for all payers combined were based on 2008 US Census Bureau estimates, those for Medicaid on Medicaid Statistical Information System statistics for fiscal year 2008, those for Medicare on data from the Kaiser Family Foundation 2008 Medicare Health and Prescription Drug Plan Tracker, and those for private insurance on data from the 2008 Current Population Survey (CPS).[16–19] Estimates of the number of Medicaid beneficiaries included all beneficiaries, including those enrolled in capitated Medicaid managed care, during 2008. Estimates of the number of Medicare beneficiaries included all beneficiaries with Medicare Parts A or B.

Because the Centers for Medicare & Medicaid Services does not report Medicaid or Medicare enrollment by sex or age, we estimated the sex and age distribution of the population covered by each payer on the basis of 2008 CPS data for private payers and 2007 through 2009 CPS data for Medicaid and Medicare. We then applied these estimated distributions to each of the state enrollment populations.

Estimates of the Treated Cancer Population

To estimate the percentage of people who had been treated for cancer during the interview year, we used data from the "Medical Condition files" of the 2004 to 2008 Medical Expenditure Panel Survey (MEPS),[20] a nationally representative survey of the civilian noninstitutionalized population administered by the Agency for Healthcare Research and Quality. Respondents' self-reported conditions were transcribed by professional coders using the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) and grouped into related categories using Clinical Classification Codes.[21] We considered treatment for medical conditions reported with Clinical Classification Codes of 11 through 43 and 45 as having been treatment for cancer.

For the population covered by each category of health care payer, we used logistic regression models to estimate the probability of their receiving cancer treatment that adjusted for survey year and survey participants' age, sex, and region of residence (Northeast, South, Midwest, or West). We used stepwise regressions to identify significant interactions among these variables to be included in the models. The significant interactions in the stepwise regressions represent age-by-sex-by-region categories with enough sample and power to detect differences in cancer treatment rates. For each category of payer, we used coefficients from the logistic regressions and MEPS sampling weights to produce nationally representative estimates of average annual cancer treatment rates during 2004 to 2008 by age, sex, and region. These estimates also reflected additional adjustments made to account for cancer treatment received by nursing home residents, on the basis of data from the 2004 National Nursing Home Survey.[22]

To estimate the number of people in each payer/age/ sex category who had been treated for cancer in 2008, we multiplied our estimates of treated cancer prevalence for each payer/age/sex category by our estimates of the total number of people in the corresponding category. To estimate the total number of people treated for cancer in each payer category, we then added the estimated numbers treated in each sex and age category within that payer category.

Estimates of Cancer Treatment Costs

MEPS measures total annual medical spending, which in addition to the payments by public and private insurers that we looked at in our study, also includes out-of-pocket payments by treatment recipients or other noninsurance payers in the form of copayments, deductibles, and payments for services not covered by insurance. The costs captured by MEPS represent actual payments to providers rather than the charges of providers, which may or may not ever be collected. MEPS spending data are obtained through a combination of self-reports of utilization by patients and validation of these reports by payers.

We used a 5-step process to estimate cancer treatment costs incurred by each category of payer. First, we estimated per-person cancer treatment costs by using a logistic regression model to predict the probability that a person would incur any medical costs and a generalized linear model with a gamma distribution and a log-link to estimate the total annual medical expenditures for people who incurred such costs. To choose among alternative nonlinear estimators, we used an algorithm recommended by Manning and Mullahy[23] and found the generalized linear model was the most appropriate for the data. All regressions included the following variables: age; age squared; sex; race/ethnicity; education; family income; other sources of health insurance; year indicators; and indicators for cancer, arthritis, asthma, back problems, congestive heart failure, chronic obstructive pulmonary disease, coronary heart disease, depression, diabetes, dyslipidemia, HIV/AIDS, hypertension, injuries, other cardiovascular disease, other mental health/substance abuse, pneumonia, pregnancies, renal failure, skin disorders, and stroke.

Second, we calculated expenditures attributable to cancer by comparing predicted expenditures for people with each unique combination of diseases with predicted expenditures for people without that combination of diseases while holding all other variables constant. For example, cancer alone and cancer with hypertension were treated as 2 different combinations of diseases. We then divided the total expenditures attributable to the combinations of diseases back to the constituent diseases (ie, a share of all cancer with hypertension disease costs that are attributable to cancer). The shares attribute a greater share of the joint expenditures to the disease with the larger coefficient in the regression.[24] We estimated per-person cancer treatment costs for each age/sex/region category on the basis of coefficients from the national model.

Third, we used data from the 2004 National Nursing Home Survey[22] and National Health Accounts[25] to adjust the per-person estimates of cancer treatment costs to account for the population of people with cancer that reside in nursing homes. Cost for nursing home residents is of 2 types: baseline, per-diem nursing home costs and any medical treatment received outside of the home (eg, for acute illnesses). For the latter, we assume cancer

treatment costs received outside of the nursing home are equal to those for non-nursing home patients. This includes hospice costs, which are captured in MEPS for the noninstitutionalized population.

Fourth, we used restricted-access MEPS data to generate state-specific per-person cost estimates for residents of the 30 largest states. For other states, we used aggregated data to the Census division to which they belong. We regressed log (positive) medical expenditures on the variables in the model plus state/census division dummies. The coefficients on the dummies provided measures of the differences in average medical care costs across states that we used to scale the national estimates to make them state-specific.

Fifth, after adjusting MEPS cost data to 2010 values in accordance with Agency for Healthcare Research and Quality recommendations,[26] we multiplied our per-person estimates of cancer treatment costs in each age/sex category by the estimated number of people whose cancer treatment was paid for by each category of payer in each state. We also estimated the share of all medical care costs attributable to cancer treatment (ie, the attributable fraction) by dividing our estimates of cancer treatment costs by national health account estimates of total medical expenditures by payer and state. All cost estimates are expressed as 2010-equivalent dollars.

Because of the large number of data sources that we used to produce our estimates, we could not generate standard errors for our estimates of cancer treatment costs by payer and state. However, because MEPS data were the primary source of sampling error, we generated standard errors for the logistic regression-treated prevalence estimates and the per-person medical cost estimates.

RESULTS

Our estimates of state-level average annual cancer prevalence rates during 2004 to 2008 ranged from 3.2% in Utah to 5.1% in Florida (median = 4.2%). By category of payer, the estimated prevalence rate was highest among Medicare beneficiaries (median = 16.1%) and lowest among Medicaid beneficiaries (median = 2.8%) (Table 1). Average annual cancer costs per person ranged from $9990 (Alaska) to $12,620 (Michigan) and were lower for Medicaid than Medicare or private insurance (Table 2). Total estimated state-level cancer treatment costs ranged from $227 million in Alaska to $13.6 billion in California (median = 2.0 billion; Table 3). Cancer treatment costs accounted for 3.8% (Alaska) to 8.7% (Florida) of total state medical expenditures (median = 7.0%; Table 4).

State-level estimates of cancer treatment costs paid by Medicare ranged from $57 million in Alaska to nearly $4.2 billion in California (median = $642 million). Medicare paid for 25.1% (Alaska) to 36.1% (Arkansas) of state-level cancer treatment costs (median = 32.5%), and cancer treatment accounted for 8.5% (Louisiana) to 15.0% (Hawaii) of state-level Medicare expenditures (median = 10.6%).

State-level estimates of cancer treatment costs paid by Medicaid ranged from $6 million in Wyoming to $1.1 billion in California (median = $96 million). Medicaid paid for 2.0% (New Hampshire) to 8.8% (District of Columbia) of state-level cancer treatment costs

(median = 4.8%), and cancer treatment accounted for 1.0% (Connecticut) to 4.9% (Wisconsin) of state-level Medicaid expenditures (median = 2.2%).

State-level estimates of cancer treatment costs paid by private insurance ranged from $113 million in Alaska to $5.7 billion in California (median = $856 million). Private insurance paid for 36.0% (Louisiana) to 49.6% (Alaska) of state-level cancer treatment costs (median = 43.3%), and cancer treatment accounted for 5.5% (Alaska) to 10.9% (Idaho) of state-level private insurance expenditures (median = 8.7%).

We estimated that the relative standard errors for the estimates of treated cancer prevalence based on MEPS data were 8% for all payers, 10% for private insurance, 11% for Medicare, and 15% for Medicaid. The relative standard errors for the estimates of per-person cancer treatment costs were 9% for Medicare, 10% for private insurance, 11% for all payers, and 26% for Medicaid.

DISCUSSION

This study shows the impact of cancer treatment costs on the total annual medical expenditures of individual states during 2004 to 2008, as well as the percentage of these costs that were financed by Medicare, Medicaid, and private insurance. Our estimates that cancer treatment accounted for 3.8% to 8.7% of total state-level medical costs were consistent with results from previous national estimates showing that cancer treatment costs accounted for approximately 5% of total medical expenditures.[2–4] Our finding that 30.4% to 43% of state-level expenditures for cancer treatment were paid for by either Medicare or Medicaid indicates that the cost of treating cancer has a substantial impact on both the federal budget and state budgets.

Our analysis shows high costs of cancer treatment, with the large share of these costs financed by the public sector. For comparison with other conditions, cardiovascular disease accounts for approximately 17% of national health expenditures[27] and obesity accounts for approximately 9%, 42% of which is financed by public insurance and includes some cancer costs.[28] Several types of cancer screening (ie, breast, cervical, and colorectal) have been shown to be cost-effective.[29,30] Furthermore, the higher the treatment costs of cancer, the more cost-effective cancer prevention and control efforts become.[31] Thus, helping states quantify and understand the financial impact caused by cancer can inform state decisions on investments in cost-effective cancer prevention and disease management programs. In the future, it will be beneficial to document the costs and benefits of such efforts to identify affordable approaches for decision-makers to consider for preventing and controlling cancer in their states.

Limitations

The MEPS, our primary data source, has at least 5 notable limitations that may have affected our estimates: 1) we used cross-sectional files; 2) its results are subject to sampling error; 3) participants' reports of their cancer status were not verified by chart review; 4) its small sample sizes precluded us from stratifying our estimates of cancer costs by type of cancer; and 5) the survey did not include cancer stage or sample people who were institutionalized

(although we did adjust estimates to account for cancer treatment received by nursing home residents). Our estimates do not reflect the true overall costs of cancer, which, in addition to medical treatment costs, also include patients' and caretakers' time costs, the costs of lost productivity, and intangible costs associated with psychological pain and stress experienced by cancer patients and their families.[32,33]

Because we generated state estimates from a national model, differences in our estimates of state-level costs were primarily a reflection of differences in population size and the distribution of demographic characteristics, including insurance status, rather than differences in cancer prevalence and treatment or in how cancer treatment was paid for. We adjusted state-level estimates of treated prevalence rates to account for regional differences in these rates. We also adjusted estimates of per-person treatment costs to account for state-level differences in per-person medical expenditures while controlling for demographic factors and disease prevalence. However, despite these adjustments, our results do not represent differences in state-level treatment patterns among providers.[34]

Conclusions

In every state, Medicare covers the largest share of cancer treatment costs, although cancer treatment accounts for a sizable fraction of medical expenditures by all payers. As the US population ages, Medicare expenditures related to cancer treatment for older Americans are likely to continue to increase.[10]

State-level estimates of cancer treatment costs can complement state-level cancer incidence and prevalence estimates to provide a comprehensive picture of the impact of cancer in a state population. This comprehensive picture may help cancer prevention and management programs determine priorities. The evidence from this report clearly indicates that cancer treatment imposes high annual total and public sector medical costs across states.

Acknowledgments

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TABLE 1

Estimates of Average Annual State-Level Cancer Prevalence Rates During 2004 to 2008, Overall and Among Residents Covered by Medicare, Medicaid, and Private Insurance

State	All Residents	Medicare	Medicaid	Private Insurance
Alabama	4.4	15.9	3.3	4.8
Alaska	3.3	15.4	2.2	4.1
Arizona	4.2	16.9	1.9	4.9
Arkansas	4.5	16.2	2.1	5.0
California	3.8	16.9	2.5	4.4
Colorado	3.8	16.9	2.7	4.4
Connecticut	4.5	16.3	2.6	4.9
Delaware	4.5	16.5	3.0	5.0
District of Columbia	4.1	16.1	3.4	4.5
Florida	5.1	17.2	4.0	5.5
Georgia	3.7	15.6	2.4	4.0
Hawaii	4.5	16.9	2.4	5.2
Idaho	4.0	17.0	2.0	4.7
Illinois	3.7	14.7	2.4	3.9
Indiana	3.8	14.9	2.2	4.1
Iowa	4.2	15.4	3.5	4.4
Kansas	3.9	15.1	2.5	4.1
Kentucky	4.4	15.9	3.3	4.8
Louisiana	4.2	15.8	2.9	4.3
Maine	4.9	15.9	4.0	5.5
Maryland	4.2	16.8	3.0	4.6
Massachusetts	4.5	16.1	3.4	4.9
Michigan	4.0	14.8	2.8	4.2
Minnesota	3.9	15.4	3.5	4.0
Mississippi	4.2	15.6	3.3	4.6
Missouri	4.0	14.5	3.5	3.8
Montana	4.6	16.5	2.2	5.5
Nebraska	3.9	15.4	3.3	4.2
Nevada	3.9	16.8	2.3	4.0
New Hampshire	4.5	16.2	2.3	4.7
New Jersey	4.4	16.2	3.1	4.9
New Mexico	4.2	16.5	2.2	5.2
New York	4.4	16.1	3.5	4.7
North Carolina	4.2	16.0	2.8	4.8
North Dakota	4.2	15.7	3.1	4.4
Ohio	4.0	14.8	2.8	4.0
Oklahoma	4.3	16.4	2.3	4.7
Oregon	4.4	17.2	2.1	5.2

State	All Residents	Medicare	Medicaid	Private Insurance
Pennsylvania	4.8	16.4	3.1	5.2
Rhode Island	4.6	15.8	2.9	4.9
South Carolina	4.4	16.0	3.5	4.7
South Dakota	4.1	15.1	3.4	4.6
Tennessee	4.4	16.2	3.1	4.8
Texas	3.7	16.2	2.5	4.1
Utah	3.2	16.6	1.8	3.4
Vermont	4.7	16.2	3.5	5.0
Virginia	4.2	16.5	3.0	4.4
Washington	4.1	16.9	2.1	4.8
West Virginia	4.9	15.9	2.8	5.8
Wisconsin	4.0	15.0	3.4	4.0
Wyoming	4.2	17.1	2.0	4.7
Median	4.2	16.1	2.8	4.7

TABLE 2

Estimates of Average Annual State-Level Cancer Cost per Person During 2004 to 2008, Overall and Among Residents Covered by Medicare, Medicaid, and Private Insurance

State	All Payers	Medicare	Medicaid	Private Insurance
Alabama	11,300	6190	4850	6340
Alaska	9990	6210	4530	6450
Arizona	9660	5810	3910	5650
Arkansas	10,010	5650	4350	5750
California	9680	5590	4150	5590
Colorado	11,760	6830	5070	6920
Connecticut	12,450	7180	4580	7020
Delaware	11,870	6550	4170	6590
District of Columbia	11,510	6870	4330	6540
Florida	11,810	6760	5390	6760
Georgia	10,140	6400	4750	6190
Hawaii	11,600	6540	4700	6400
Idaho	11,260	6110	4490	6290
Illinois	11,360	6560	4420	6640
Indiana	11,630	6580	4440	6710
Iowa	11,510	6020	4470	6210
Kansas	11,150	6280	4460	6360
Kentucky	11,200	6250	4560	6430
Louisiana	10,090	6030	4620	6020
Maine	10,790	5760	4310	5950
Maryland	10,380	5940	4350	5960
Massachusetts	11,410	6430	4020	6290
Michigan	12,620	6960	4640	7200
Minnesota	11,250	6200	4150	6350
Mississippi	9800	5660	4380	5680
Missouri	10,360	5970	4450	6030
Montana	11,470	6320	4560	6550
Nebraska	11,220	6140	4660	6240
Nevada	11,030	6950	5170	6660
New Hampshire	10,490	6130	4250	6030
New Jersey	11,820	6850	4850	6730
New Mexico	11,400	6590	4830	6770
New York	11,480	6800	4760	6580
North Carolina	10,990	6200	4400	6340
North Dakota	11,400	6110	4830	6260
Ohio	10,570	6030	4140	6110
Oklahoma	10,880	6210	4340	6190
Oregon	11,410	6220	4310	6390

State	All Payers	Medicare	Medicaid	Private Insurance
Pennsylvania	11,540	6430	4280	6290
Rhode Island	10,800	6280	3990	6020
South Carolina	10,940	6220	4640	6330
South Dakota	11,360	5970	4770	6220
Tennessee	12,450	7120	5110	7240
Texas	10,540	6720	5150	6640
Utah	10,840	6570	4650	6320
Vermont	10,610	6020	4000	5940
Virginia	11,310	6590	4880	6650
Washington	11,180	6350	4380	6400
West Virginia	12,090	6270	4400	6580
Wisconsin	12,290	6860	4490	6810
Wyoming	11,200	6350	4480	6460
Median	11,140	6350	4530	6350

TABLE 3

State-Level Estimates of Average Annual Payments for Cancer Treatment Made During 2004 to 2008 by All Payers Combined and by Medicare, Medicaid, and Private Insurance

State	Payments by All Payers[a]	Medicare Payments (% of Total)		Medicaid Payments (% of Total)		Private Insurance Payments (% of Total)	
Alabama	2330	792	(34.0)	132	(5.7)	966	(41.5)
Alaska	227	57	(25.1)	12	(5.2)	113	(49.6)
Arizona	2607	835	(32.0)	106	(4.1)	1068	(41.0)
Arkansas	1282	462	(36.1)	77	(6.0)	476	(37.1)
California	13,614	4214	(31.0)	1082	(7.9)	5672	(41.7)
Colorado	2203	662	(30.1)	85	(3.9)	1037	(47.1)
Connecticut	1973	642	(32.5)	62	(3.2)	894	(45.3)
Delaware	466	151	(32.5)	23	(4.8)	208	(44.5)
District of Columbia	280	83	(29.6)	25	(8.8)	118	(42.0)
Florida	11,028	3702	(33.6)	620	(5.6)	4192	(38.0)
Georgia	3680	1145	(31.1)	191	(5.2)	1528	(41.5)
Hawaii	678	214	(31.6)	25	(3.7)	306	(45.2)
Idaho	683	221	(32.4)	21	(3.1)	319	(46.7)
Illinois	5482	1706	(31.1)	251	(4.6)	2412	(44.0)
Indiana	2853	938	(32.9)	109	(3.8)	1236	(43.3)
Iowa	1446	469	(32.4)	79	(5.4)	643	(44.4)
Kansas	1213	396	(32.6)	39	(3.2)	536	(44.1)
Kentucky	2092	718	(34.3)	132	(6.3)	836	(40.0)
Louisiana	1850	623	(33.7)	155	(8.4)	666	(36.0)
Maine	698	230	(33.0)	53	(7.6)	292	(41.8)
Maryland	2461	739	(30.0)	100	(4.1)	1164	(47.3)
Massachusetts	3318	1051	(31.7)	170	(5.1)	1518	(45.7)
Michigan	4994	1618	(32.4)	236	(4.7)	2192	(43.9)
Minnesota	2265	713	(31.5)	110	(4.9)	1029	(45.4)
Mississippi	1199	419	(35.0)	96	(8.0)	433	(36.1)
Missouri	2454	835	(34.0)	162	(6.6)	935	(38.1)
Montana	509	166	(32.7)	11	(2.2)	231	(45.3)

State	Payments by All Payers[a]	Medicare Payments (% of Total)		Medicaid Payments (% of Total)		Private Insurance Payments (% of Total)	
Nebraska	789	255	(32.3)	38	(4.8)	347	(44.0)
Nevada	1126	383	(34.0)	30	(2.7)	454	(40.3)
New Hampshire	622	202	(32.5)	13	(2.0)	290	(46.5)
New Jersey	4534	1415	(31.2)	160	(3.5)	2083	(46.0)
New Mexico	953	317	(33.3)	53	(5.6)	375	(39.4)
New York	9909	3141	(31.7)	808	(8.2)	3948	(39.8)
North Carolina	4240	1385	(32.7)	222	(5.2)	1822	(43.0)
North Dakota	306	102	(33.3)	11	(3.6)	135	(44.3)
Ohio	4896	1633	(33.4)	236	(4.8)	2015	(41.2)
Oklahoma	1720	588	(34.2)	76	(4.4)	707	(41.1)
Oregon	1888	620	(32.8)	43	(2.3)	878	(46.5)
Pennsylvania	6888	2326	(33.8)	285	(4.1)	3015	(43.8)
Rhode Island	519	176	(33.9)	23	(4.5)	220	(42.3)
South Carolina	2146	711	(33.1)	143	(6.7)	856	(39.9)
South Dakota	377	118	(31.4)	22	(5.9)	168	(44.4)
Tennessee	3371	1144	(34.0)	235	(7.0)	1312	(38.9)
Texas	9440	3017	(32.0)	507	(5.4)	3657	(38.7)
Utah	955	286	(30.0)	20	(2.1)	459	(48.0)
Vermont	312	102	(32.6)	23	(7.2)	131	(42.0)
Virginia	3669	1166	(31.8)	124	(3.4)	1634	(44.5)
Washington	3014	965	(32.0)	109	(3.6)	1373	(45.5)
West Virginia	1073	371	(34.6)	47	(4.4)	462	(43.1)
Wisconsin	2769	898	(32.4)	231	(8.3)	1135	(41.0)
Wyoming	251	82	(32.7)	6	(2.5)	114	(45.4)
Median	1973	642	(32.5)	96	(4.8)	856	(43.3)

[a] Cost estimates in millions of 2010-equivalent US dollars.

TABLE 4

Estimates of the Percentage of State-Level Medical Expenditures Attributable to Cancer Treatment During 2004 to 2008, Overall and by Category of Payer

State	All Payers %	Medicare %	Medicaid %	Private Insurance %
Alabama	8.2	10.4	3.4	9.8
Alaska	3.8	11.7	1.3	5.5
Arizona	7.5	10.6	1.6	8.9
Arkansas	7.5	10.5	2.5	8.0
California	6.2	8.9	3.1	7.4
Colorado	7.7	13.6	2.8	10.4
Connecticut	6.8	10.9	1.3	8.9
Delaware	6.6	10.6	2.2	8.4
District of Columbia	4.8	10.3	1.7	5.9
Florida	8.7	10.1	4.7	9.6
Georgia	7.1	10.5	2.8	8.5
Hawaii	8.0	15.0	2.3	10.4
Idaho	8.1	13.8	1.8	10.9
Illinois	6.5	9.5	2.2	8.3
Indiana	6.9	10.4	1.8	8.7
Iowa	7.3	11.5	2.9	9.4
Kansas	6.6	10.6	1.8	8.4
Kentucky	7.7	10.6	3.0	8.9
Louisiana	6.3	8.5	2.7	6.6
Maine	6.5	10.9	2.5	7.9
Maryland	6.0	8.9	1.9	8.2
Massachusetts	5.7	9.6	1.6	7.5
Michigan	7.9	9.7	2.6	9.9
Minnesota	6.1	11.0	1.8	8.0
Mississippi	6.4	8.6	2.8	6.7
Missouri	6.2	9.3	2.4	6.8
Montana	8.3	14.1	1.5	10.8
Nebraska	6.4	10.8	2.5	8.2
Nevada	7.7	12.6	2.4	8.9
New Hampshire	6.3	11.3	1.0	8.5
New Jersey	7.1	9.7	1.8	9.4
New Mexico	7.6	13.8	1.9	8.6
New York	6.4	9.8	1.8	7.3
North Carolina	7.4	10.6	2.2	9.2
North Dakota	6.5	12.2	2.1	8.3
Ohio	6.3	9.1	2.0	7.4
Oklahoma	7.5	10.5	2.2	8.9
Oregon	7.9	13.4	1.5	10.6

State	All Payers %	Medicare %	Medicaid %	Private Insurance %
Pennsylvania	7.3	10.3	1.9	9.2
Rhode Island	6.1	10.3	1.4	7.4
South Carolina	7.8	10.6	3.3	8.9
South Dakota	7.0	11.6	3.5	9.0
Tennessee	8.7	11.9	3.7	9.7
Texas	6.8	9.8	2.5	7.6
Utah	7.2	13.7	1.4	10.0
Vermont	6.8	11.6	2.3	8.3
Virginia	7.8	12.9	2.5	10.0
Washington	7.1	13.2	1.9	9.4
West Virginia	8.1	11.0	2.2	10.1
Wisconsin	7.0	12.1	4.9	8.3
Wyoming	6.9	14.1	1.3	9.0
Median	7.0	10.6	2.2	8.7