

National and State Estimates of Lost Earnings From Cancer Deaths in the United States

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 [Supplemental content](#)

IMPORTANCE Information on the economic burden of cancer mortality can serve as a tool in setting policies and prioritizing resources for cancer prevention and control. However, contemporary data are lacking for the United States nationally and by state.

OBJECTIVE To estimate lost earnings due to death from cancer overall and for the major cancers in the United States nationally and by state.

DESIGN, SETTING, AND PARTICIPANTS Person-years of life lost (PYLL) were calculated using numbers of cancer deaths and life expectancy data in individuals aged 16 to 84 years who died from cancer in the United States in 2015. The annual median earnings in the United States were used to assign a monetary value for each PYLL by age and sex. Cancer mortality and life expectancy data were obtained from the National Center for Health Statistics and annual median earnings from the US Census Bureau's 2016 Current Population Survey's March Annual Social and Economic Supplement. Data analysis was performed from October 22, 2018, to February 25, 2019.

MAIN OUTCOMES AND MEASURES Lost earnings due to cancer death, represented as estimated future wages in the absence of premature death.

RESULTS A total of 8 739 939 person-years of life were lost to cancer death in persons aged 16 to 84 years in the United States in 2015, translating to lost earnings of \$94.4 billion (95% CI, \$91.7 billion-\$97.3 billion). For individual cancer sites, lost earnings were highest for lung cancer (\$21.3 billion), followed by colorectal (\$9.4 billion), female breast (\$6.2 billion), and pancreatic (\$6.1 billion) cancer. Age-standardized lost earning rates per 100 000 were lowest in the West and highest in the South, ranging from \$19.6 million (95% CI, \$19.1 million-\$20.2 million) in Utah to \$35.3 million (\$34.4 million-\$36.3 million) in Kentucky. Approximately 2.4 million PYLL and \$27.7 billion (95% CI, \$26.9 billion-\$28.5 billion) in lost earnings (29.3% of total that occurred in 2015) would have been avoided in 2015 if all states had the same age-specific PYLL or lost earning rates as Utah.

CONCLUSIONS AND RELEVANCE Our findings indicate large state variation in the economic burden of cancer and suggest the potential for substantial financial benefit through delivery of effective cancer prevention, screening, and treatment to minimize premature cancer mortality in all states.

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Cancer is the second leading cause of death and is projected to cause more than 606 880 deaths in the United States in 2019.¹ Cancer deaths impose significant economic burden in the United States because of productivity losses due to premature death.² A common approach to assess this burden is to estimate the loss of future earnings due to cancer death.³⁻⁵ This measure—hereafter termed *lost earnings*—is based on person-years of life lost (PYLL) and expected earnings during those years. Person-years of life lost incorporate age and residual life expectancy at death to represent the average number of years a person would have lived in the absence of cancer.⁶ Thus, deaths at younger ages are associated with higher PYLL and, consequently, greater lost earnings.

Several studies have examined the economic burden of cancer death in the United States, but they are based on older data and/or include a limited number of cancer sites.^{3-5,7} Furthermore, despite substantial geographic variation in cancer mortality,¹ little research has estimated this burden at subnational levels.^{8,9} Contemporary comprehensive information on the economic burden associated with cancer mortality at national and state levels could be used in setting policies and prioritizing resources for cancer prevention and control. In this study of population-based data, we provide contemporary estimates for PYLL due to cancer death and associated lost earnings at national and state levels for all cancers combined and for major cancers in men and women in the United States.

Methods

We obtained data from the National Center for Health Statistics on the number of cancer deaths by single year of age, sex, and the highest attained educational level and life expectancy by age and sex in 2015 in the United States.^{10,11} National Center for Health Statistics mortality data provide complete state- and national-level coverage of the US population.¹⁰ At the national level, we evaluated all cancers combined and the top 15 causes of cancer death in each sex (19 cancer sites in total) (Table). At the state level, we limited our analyses to all cancers combined and 7 cancer sites with adequate numbers of cancer deaths, including lung and bronchus (lung), female breast, colorectum, prostate, pancreas, ovary, and liver and intrahepatic bile duct. This study was based on deidentified publicly available data and did not require institutional review board approval or patient written consent.

We obtained data on annual median earnings of employed primary or sole salary and wage workers in 2015 stratified by age group, sex, educational level, and employment status from the US Census Bureau's 2016 Current Population Survey's March Annual Social and Economic Supplement (eMethods in the Supplement).¹² National median earnings and life expectancies were used in both national- and state-level calculations to compare lost earnings across states using a common metric. Data analysis was performed from October 22, 2018, to February 25, 2019.

Key Points

Question What is the estimated monetary value of lost earnings due to cancer deaths in the United States nationally and by state?

Findings In this population-based study, estimated lost earnings due to cancer deaths in persons aged 16 to 84 years in the United States in 2015 were \$94.4 billion; age-standardized lost earning rates were the largest in the South, followed by the Midwest. Achieving Utah's age-specific lost earning rates in all states could reduce lost earnings related to cancer deaths in the United States in 2015 by 29.3% (\$27.7 billion), ranging from 13.6% in Colorado to 47.3% in Kentucky and 47.0% in Mississippi.

Meaning Preventing premature deaths from cancer through delivery of effective cancer prevention, screening, and treatment may have economic benefit for the United States nationally and in all states.

Statistical Analysis

We upwardly adjusted earnings for fringe benefits (eg, health insurance, retirement benefits, and paid leave) because they are compensation provided to employees, using national estimates from previous studies (ie, by 22.4% for full-time workers and 10.3% for part-time workers).^{4,13} To quantify the results of uncertainty in wage and employment status data and generate 95% CIs for our estimates, we applied a simulation method with 1000 replications for each age group and sex stratum.¹⁴

Person-years of life lost were calculated by multiplying the number of cancer deaths in each age (single year from 16 to 84 years) and sex group by corresponding residual life expectancy.⁶ Age- and sex-specific lost earnings were calculated by multiplying PYLL by the annual median earning in the corresponding group in 2015 US dollars. A person who died because of cancer at a certain age would have had different earnings and probabilities of employment in older ages in the absence of premature death. We accounted for these variations using lost earnings in the corresponding age group in each future year of residual life expectancy. All estimated future lost earnings were adjusted with a 3% annual discount rate consistent with recommendations for converting future dollars to their present values¹⁵ and for increases in median wage over time using the average annual change during 2013-2017 in the United States (1.6% increase annually).¹² Person-years of life lost and lost earnings were summed over all age groups to obtain total PYLL and lost earnings for each cancer site by sex. To provide comparable results across states, we calculated age-standardized PYLL and lost earning rates using the 2000 US standard population. Rates for sex-specific cancers are per 100 000 persons of the corresponding sex. We also calculated lost earnings that would have been prevented if age-specific lost earning rates (ages 16-19, 20-24, ..., 80-84 years) in all states were the same as those in the state with the lowest age-standardized lost earning rate. In an additional sensitivity analysis, we calculated lost earnings based on decedents' educational level as described in the eMethods in the Supplement. Person-years of life lost and lost earnings were calculated using Stata statistical software, version 13.1 (StataCorp).

Table. Number of Cancer Deaths and Associated PYLL and Lost Earnings in Persons Aged 16 to 84 Years in Both Sexes Combined, United States, 2015

Cancer Site (ICD-10 Code) ^a	No. of Cancer Deaths	Total PYLL	Crude PYLL Rate, per 100 000 Persons ^b	Total Lost Earnings, Million \$ (95% CI)	Crude Lost Earning Rate, Million \$ per 100 000 Persons (95% CI) ^b	Mean Lost Earnings, \$1000 per Death (95% CI)
All cancers (C00-C97)	492 146	8 739 939	2724	94 435 (91 748-97 261)	29.4 (28.6-30.3)	191.9 (186.4-197.6)
By age group, y						
16-39	8935	431 956	416	10 063 (9952-10 171)	9.7 (9.6-9.8)	1126.3 (1113.8-1138.3)
40-49	20 808	742 446	1813	15 729 (15 499-15 967)	38.4 (37.8-39.0)	755.9 (744.9-767.3)
50-59	79 431	2 135 153	4846	35 098 (34 303-35 992)	79.7 (77.9-81.7)	441.9 (431.9-453.1)
60-69	146 659	2 824 888	8051	24 293 (23 104-25 455)	69.2 (65.8-72.5)	165.6 (157.5-173.6)
70-79	162 470	2 019 600	10 305	7427 (6621-8229)	37.9 (33.8-42.0)	45.7 (40.8-50.6)
80-84	73 843	585 897	10 104	1800 (1650-1996)	31.0 (28.4-34.4)	24.4 (22.3-27.0)
Lung (C34)	133 843	2 224 263	693	21 262 (20 502-22 024)	6.6 (6.4-6.9)	158.9 (153.2-164.5)
Colorectum (C18-C20, C26.0)	41 448	766 136	239	9404 (9154-9661)	2.9 (2.9-3.0)	226.9 (220.8-233.1)
Breast (female) (C50)	34 396	745 895	458	6150 (5991-6321)	3.8 (3.7-3.9)	178.8 (174.2-183.8)
Pancreas (C25)	35 001	595 333	186	6099 (5903-6303)	1.9 (1.8-2.0)	174.3 (168.7-180.1)
Liver, IHBD (C22)	23 088	425 573	133	5503 (5319-5686)	1.7 (1.7-1.8)	238.3 (230.4-246.3)
Brain, ONS (C70-C72)	14 489	311 195	97	4559 (4464-4662)	1.4 (1.4-1.5)	314.7 (308.1-321.7)
Leukemia (C90.1, C91-C95)	17 429	306 839	96	3752 (3657-3852)	1.2 (1.1-1.2)	215.3 (209.8-221.0)
Lymphoma (C81-C85, C96.3)	16 493	277 090	86	3206 (3116-3302)	1.0 (1.0-1.0)	194.4 (188.9-200.2)
Esophagus (C15)	13 527	236 307	74	3168 (3055-3289)	1.0 (1.0-1.0)	234.2 (225.8-243.2)
Head and neck (C00-C14, C30-C32) ^c	12 231	227 546	71	3135 (3034-3237)	1.0 (0.9-1.0)	256.4 (248.1-264.6)
Kidney, renal pelvis (C64-C65)	12 073	211 330	66	2618 (2534-2705)	0.8 (0.8-0.8)	216.9 (209.9-224.0)
Stomach (C16)	9432	177 414	55	2350 (2289-2412)	0.7 (0.7-0.8)	249.2 (242.7-255.8)
Prostate (C61)	19 229	245 960	156	2407 (2260-2562)	1.5 (1.4-1.6)	125.2 (117.6-133.2)
Melanoma (skin) (C43)	7338	139 718	44	1938 (1888-1988)	0.6 (0.6-0.6)	264.1 (257.3-270.9)
Ovary (C56)	11 938	234 938	144	1629 (1582-1679)	1.0 (1.0-1.0)	136.5 (132.5-140.7)
Urinary bladder (C67)	11 166	159 802	50	1523 (1459-1592)	0.5 (0.5-0.5)	136.4 (130.6-142.6)
Myeloma (C90.0-C90.2)	9968	156 053	49	1465 (1413-1518)	0.5 (0.4-0.5)	147.0 (141.7-152.3)
Cervix (C53)	3936	109 243	67	1224 (1198-1250)	0.8 (0.7-0.8)	311.0 (304.5-317.6)
Uterine corpus (C54)	8769	169 731	104	1074 (1039-1110)	0.7 (0.6-0.7)	122.5 (118.5-126.6)

Abbreviations: ICD-10, *International Classification of Diseases and Related Health Problems, Tenth Revision*; IHBD, intrahepatic bile duct; ONS, other nervous system; PYLL, person-years of life lost.

^a Individual cancer sites are ordered by total lost earnings.

^b Crude rates by age group for all cancers combined are age specific. Other

crude rates are for the entire US population, including ages younger than 16 and older than 84.

^c Include cancers of the lip, oral cavity, pharynx, nose, nasal cavity, middle ear, and larynx.

Results

National Estimates

A total of 492 146 cancer deaths occurred in persons aged 16 to 84 years in the United States in 2015, translating to a total of 8 739 939 PYLL (Table). Overall lost earnings were \$94.4 billion (95% CI, \$91.7 billion-\$97.3 billion), with a rate of \$29.0 million (95% CI, \$28.6 million-\$30.3 million) per 100 000 persons and mean lost earnings of \$191 900 (95% CI, \$186 400-\$197 600) per cancer death.

For individual cancer sites, the total lost earning was highest for lung cancer (\$21.3 billion; 22.5% of total), followed by colorectal (\$9.4 billion; 10.0%), female breast (\$6.2 billion; 6.5%), and pancreatic (\$6.1 billion; 6.5%) cancer (Table). The cancer with the highest PYLL and lost earnings in persons 50 years or older was lung cancer. In those aged 16 to 49 years, PYLL were highest for female breast cancer, but lost earnings were highest for leukemia in ages 16 to 39 years and lung cancer in ages 40 to 49 years (eTable 2 in the [Supplement](#)), reflecting lower labor participation rates and wages among

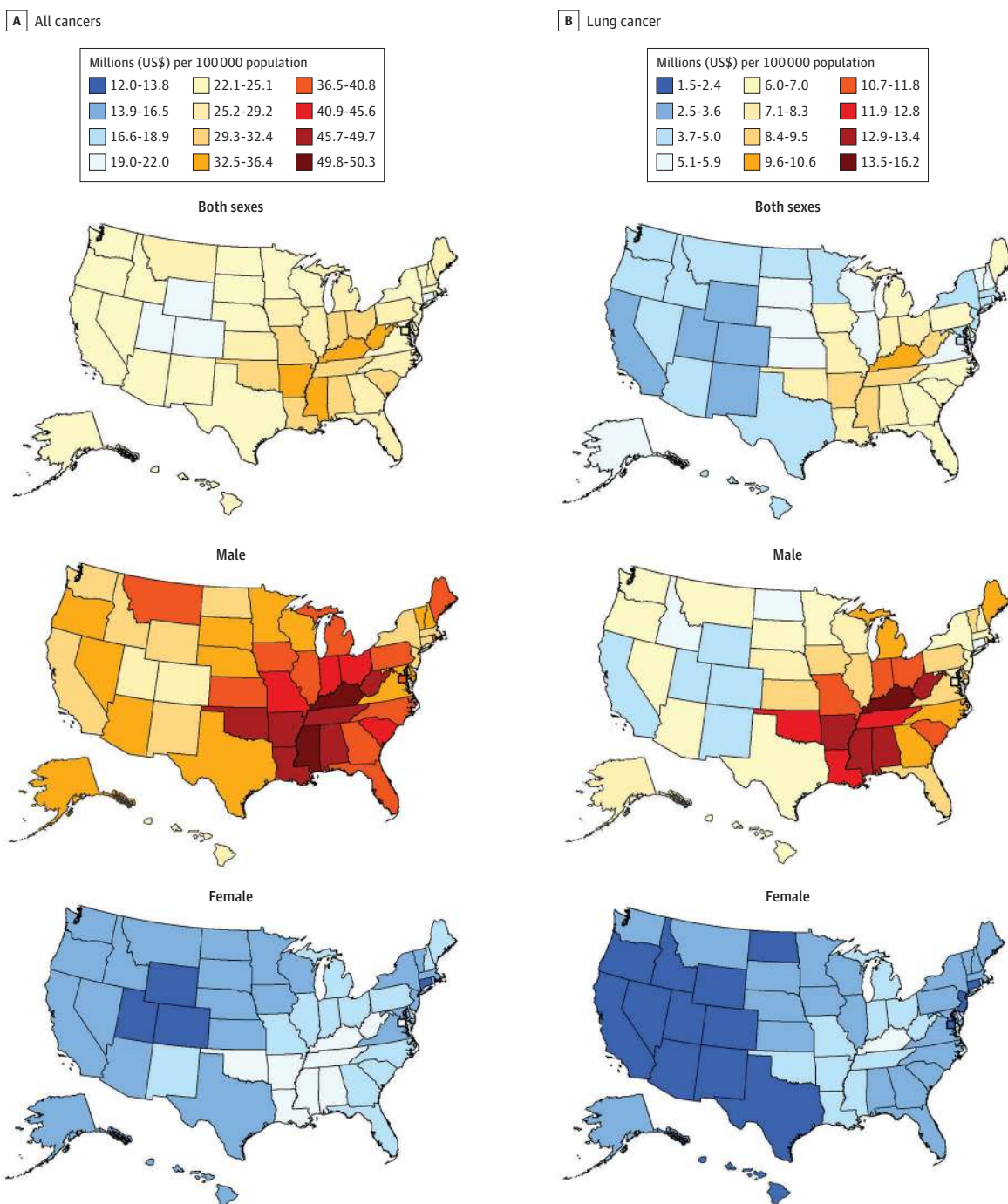
women (eTable 1 in the [Supplement](#)), which in addition to a higher number of deaths among men (eTable 3 in the [Supplement](#)), could also explain higher PYLL and lost earnings for all cancers combined and non-sex-specific cancers in men.

The total lost earnings in additional analysis based on decedents' educational level (\$86.6 billion; 95% CI, \$84.4 billion-\$88.9 billion) (eTable 4 in the [Supplement](#)) was 9% lower compared with estimates described above. By cancer site, lost earnings were generally comparable or slightly lower, with the highest absolute difference for lung cancer (\$17.4 billion vs \$21.3 billion).

State-Level Estimates

Person-years of life lost and total lost earnings in 2015 in persons aged 16 to 84 years ranged from 13 338 and \$139 million in Wyoming to 862 942 and \$9512 million in California, respectively (eTable 3 in the [Supplement](#)). The overall age-standardized lost earning rate in million dollars per 100 000 ranged from \$19.6 million (95% CI, \$19.1 million-\$20.2 million) in Utah to \$35.3 million (\$34.4 million-\$36.3 million) in Kentucky. States with the highest age-standardized lost

Figure 1. Age-Standardized Lost Earning Rates (Million Dollars per 100 000) Owing to Death From All Cancers Combined and Lung Cancer in Persons Aged 16 to 84 Years by Sex and State, 2015

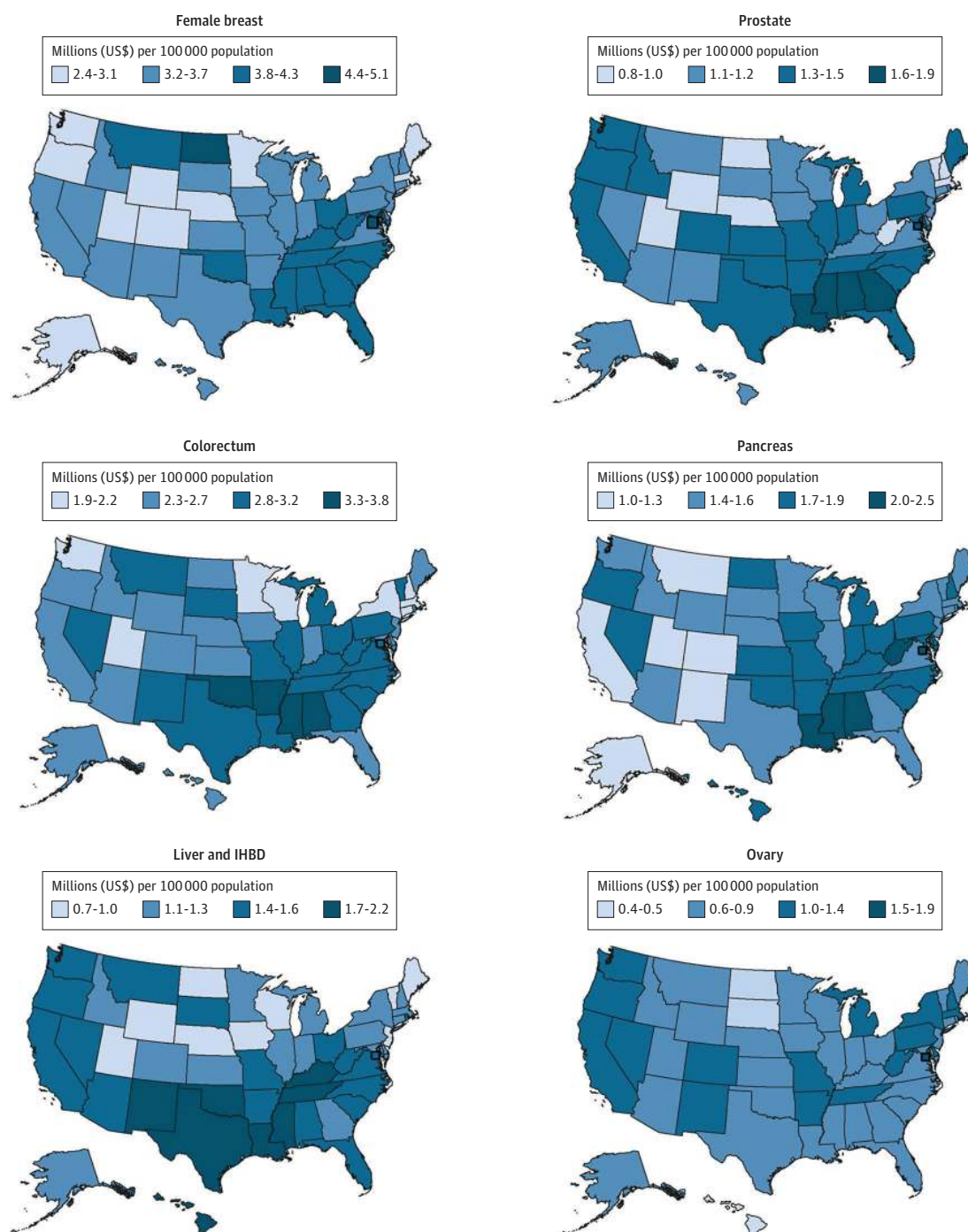


Lost earning rates are age-adjusted to the 2000 US standard population.

earning rates were located in the South, followed by states in the Midwest (Figure 1; eTable 3 in the Supplement). States with the lowest age-standardized lost earning rates were in the West or Northeast and Hawaii. Sex-specific patterns were similar to those of overall findings (Figure 1, eTable 3 in the Supplement).

By cancer site, total lost earnings were higher for lung cancer than any other individual cancer site in all states (eTable 3 in the Supplement). Similar to all cancers combined, states with the highest age-standardized lost earning rates for lung (Figure 1) and female breast, colorectal, prostate, and pancreatic cancer (Figure 2) were mostly located in the South, followed by the

Figure 2. Age-Standardized Lost Earning Rates (Million Dollars per 100 000) Owing to Death From Selected Major Cancers in Persons Aged 16 to 84 Years in Both Sexes Combined by State, 2015



Lost earning rates are age-adjusted to the 2000 US standard population; IHBD indicates intrahepatic bile duct.

Midwest. States in the South (notably along the southern US border) and on the West Coast, the District of Columbia, and Hawaii had the highest age-standardized lost earnings for liver and intrahepatic bile duct cancer. By sex, states with the highest age-standardized lost earning rates for lung cancer among women were mostly located in the Midwest and neighboring

states in the South and among men in the South (Figure 1). The distribution of states in terms of age-standardized lost earning rates for other non-sex-specific cancer sites in women and men were generally comparable (eTable 3 in the [Supplement](#)).

Approximately 2.4 million PYLL and \$27.7 billion (95% CI, \$26.9 billion-\$28.5 billion) in lost earnings (29.3% of the total)

would have been avoided in the United States in 2015 alone if age-specific PYLL and lost earning rates, respectively, in all states were the same as those in Utah (eFigure 1 in the [Supplement](#)). The proportion of avoidable lost earnings by state using Utah as the reference ranged from 13.6% in Colorado to 47.3% in Kentucky.

In additional analysis based on decedents' educational level, total lost earnings were slightly lower (eg, \$9.4 billion vs \$9.5 billion for all cancers combined in California) but the pattern of age-standardized lost earning rates across states was similar to those described above (eTable 4 in the [Supplement](#)), with a wide variation across states in the proportion of avoidable lost earnings if age-specific lost earning rates were the same as those in the state with the lowest age-standardized rate, ranging from 16.4% in California to 42.1% in Mississippi (eFigure 2 in the [Supplement](#)).

Discussion

We estimated that, in persons aged 16 to 84 years, more than 8.7 million years of life were lost due to cancer deaths in the United States in 2015, translating to \$94.4 billion in lost earnings. We also found considerable variation in age-standardized lost earning rates across states, with the rate in Kentucky approximately 80% higher than in Utah. States with the highest overall age-standardized lost earning rates were in the South, followed by the Midwest. By individual cancer site, the total lost earning was highest for lung cancer in all states. If age-specific lost earning rates in all states were the same as in Utah, approximately 2.4 million PYLL and \$27.7 billion in lost earnings would have been avoided in the United States in 2015 alone. By quantifying the economic burden of premature mortality due to cancer, our findings highlight state-level disparities and indicate that preventing premature cancer deaths would have substantial economic benefit nationally and for all states.

Person-years of life lost and lost earnings were high for many cancers associated with modifiable risk factors and effective screening and treatment, suggesting that a substantial proportion of the mortality burden is potentially avoidable. This notion is further supported by our findings: although exposure to modifiable risk factors, cancer screening, and high-quality treatment can be further improved in Utah,^{16,17} even achieving Utah's present age-specific lost earning rates by other states could reduce lost earnings from cancer deaths by 29% nationally and by as much as 47% in Kentucky and Mississippi.

According to prior research, considerable proportions of deaths from all cancers combined (45%) and several major cancer types, including lung (86%), colorectal (54%), breast (28%), and pancreas (24%), in the United States are attributable to potentially modifiable risk factors, such as smoking, excess body weight, physical inactivity, and dietary factors, although little is known about the cause of some other cancers (eg, brain cancer).¹⁸ Differences in the prevalence of potentially modifiable risk factors could in part explain geographic variations in age-standardized PYLL and lost earning rates. For example, consistent with our results for lung cancer, smoking

prevalence among men in the United States is highest in the Southern states and lowest in Utah.¹⁶ The prevalence of excess body weight is also higher in the Southern states,¹⁶ which may in part explain greater age-standardized lost earning rates for female breast, colorectal, and liver cancers in those states. Clinic-based interventions and/or referrals for smoking cessation and improved diet and physical activity can help patients reduce their exposure to risk factors.^{19,20}

Other proven interventions vary across states and generally are suboptimal.^{16,18} For example, the state-level tax per cigarette pack as of June 2018 ranged from \$0.17 in Missouri to \$4.35 in New York and Connecticut; it was less than \$1.00 in 14 states and \$4.00 or higher in only 3 states.²¹ Approximately 2% of all cancers (including virtually all cervical cancers) are associated with human papillomavirus,¹⁸ and human papillomavirus vaccination could prevent these cancers.²² Yet, the proportion of adolescents aged 13 to 17 years who were up-to-date with human papillomavirus vaccination in 2017 was 48.6% nationally, and by state, with the exception of Rhode Island and the District of Columbia (approximately 78%), the proportion ranged from 28.8% in Mississippi to 65.5% in Massachusetts,²³ which is substantially lower than the Healthy People 2020 target (80%).²⁴

Screening for early detection of cervical, colorectal, and breast cancer has been a major contributor to substantial declines in mortality rates of these cancers in the United States,²² and health care professional recommendation for screening is associated with screening receipt.²⁵ However, proportions of eligible individuals who are up-to-date with recommended cancer screening remain below the Healthy People 2020 targets, with variations across states.^{16,22,26} For example, the proportion of age-eligible adults who are up-to-date with colorectal cancer screening in 2016 was 58.8% in Oklahoma and 75.8% in Connecticut.²⁷ More recently, screening for lung cancer with low-dose computed tomography has been recommended for some current or recent heavy smokers, but the uptake in 2015 was only 3.9%,²⁸ and little is known about state-level variation. Stage of disease at diagnosis, which can reflect use of effective screening and early clinical evaluation of cancer symptoms, also varies widely by state. For example, the proportion of localized-stage colorectal cancer among men 50 years or older in 2010-2014 was considerably lower in Oklahoma (34.0%) than in Utah (41.9%),²⁹ which had the highest and lowest age-standardized lost earning rates for male colorectal cancer in this study, respectively.

Following a cancer diagnosis, patients interact with multiple clinicians, including surgeons, medical oncologists, and radiation oncologists, to make decisions about cancer treatment. However, receipt of evidence-based treatment varies by state. For example, the proportion of patients with early-stage non-small cell lung cancer in 2007-2011 who received curative-intent surgery ranged from 52% to 54% in Louisiana and Wyoming to 75% to 77% in Massachusetts, New Jersey, and Utah.³⁰ Less is known about state-level variation in systemic treatments, including chemotherapy, hormonal therapy, immunotherapy, and targeted agents. Overall, treatment receipt is associated with socioeconomic status and health insurance coverage, which also vary substantially by state.³¹⁻³⁶

We used a human capital approach, which assigned more PYLL value for individuals with higher incomes and placed no value on PYLL for individuals not in the workforce, including children, homemakers, and retirees. A number of approaches have been used to value PYLL as well as time lost from work and usual activities.³⁷⁻³⁹ Other approaches use economic concepts related to willingness-to-pay for each additional year of life (eg, \$150 000)⁷ and have estimated higher economic burden for cancer deaths in the United States than human capital approaches (eg, \$960.6 billion⁷ in 2000). The human capital approach mainly estimates the effect of cancer deaths on the economy, whereas the willingness-to-pay approach provides estimates of the overall value of life lost.⁷ We chose to estimate lost earnings for which objective data were available, whereas values given to a year of life lost in the willingness-to-pay approach were less clear.⁴⁰ Even so, the total lost earning in this analysis—\$94.4 billion in persons 16 to 84 years—for cancer deaths that occurred in 2015 is substantial.

Several studies have estimated lost earnings due to premature cancer deaths in other countries, in which total lost earnings have been lower than our estimates, largely due to fewer cancer deaths, shorter life expectancy, or lower wages.^{5,41,42} For many countries, lost earnings are highest for lung cancer with some exceptions, for example, liver cancer in China (largely due to hepatitis B virus infection) and cancer of the lip and oral cavity in India (due to smokeless tobacco use).⁴¹

Our estimate for total lost earnings due to cancer death is lower than that of an earlier study (\$115.8 billion in 2000).⁴ Unlike the prior study, we did not include cancer deaths in persons 85 years or older, nor did we generalize employment status in those 75 to 79 years to all older ages in that study, which likely overestimated lost earnings in older age groups. We also estimated lost earnings based on decedents' educational level in sensitivity analysis because cancer deaths occur more commonly in persons with lower levels of education (often with lower earnings) than higher levels of education owing to higher exposure to known cancer risk factors (eg, smoking) or more limited access to care⁴³⁻⁴⁵; thus, estimates based on median earnings for all educational levels combined may overestimate the actual amount of lost earnings. Nevertheless, differences between total lost earnings calculated using these

2 approaches were relatively small, with variation by cancer site. Differences were generally greater for cancers with higher occurrence in lower educational level groups, such as lung and other smoking-related cancers.⁴⁶ In interpretation of results based on decedents' educational level, age-standardized lost earning rates reflect both PYLL rate and educational attainment distribution in states. Thus, between 2 states with the same PYLL rate, the state with lower educational attainment would have a lower age-standardized lost earning rate.

Limitations and Strengths

We likely underestimated productivity loss because our estimates do not include lost earnings from lower performance or absenteeism, informal caregiving, and cancer deaths in persons younger than 16 years and 85 years or older because of data limitations. Furthermore, the mean life expectancies were based on life tables for all causes of death, thus underestimating life expectancies in the absence of cancer. Strengths of this study include use of observed nationwide mortality data by single year of age and sex for cancer deaths and detailed reporting of PYLL and lost earnings by sex, cancer site, and state. We also conducted a detailed sensitivity analysis that reflects differing economic conditions across states.

Conclusions

The economic burden of lost earnings from premature cancer deaths in the United States appears to be significant. There is also large variation across states, reflecting disparities in the burden. Previous studies have shown that approximately half of all cancer deaths in the United States and a substantial proportion of deaths from cancer types with the highest economic burden in this study (eg, lung and colorectal cancer) are attributable to potentially modifiable risk factors and that delivery of effective screening and treatment could prevent a number of premature cancer deaths. Implementation of comprehensive cancer prevention interventions and equitable access to high-quality care across all states could reduce the burden of cancer and associated geographic and other differences in the country. Health care professionals can contribute to achieving this goal because they play a central role in the delivery of cancer prevention, screening, and treatment.

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Critical revision of the manuscript for important intellectual content: All authors.

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