

Paid Sick Leave Among Working Cancer Survivors and Its Associations With Use of Preventive Services in the United States

Zhiyuan Zheng, PhD¹; Stacey A. Fedewa, PhD¹; Farhad Islami, MD, PhD¹; Leticia Nogueira, PhD, MPH¹; Xuesong Han, PhD¹; Jingxuan Zhao, MPH¹; Weishan Song, MS²; Ahmedin Jemal, DVM, PhD¹; and K. Robin Yabroff, PhD, MBA¹

ABSTRACT

Background: We sought to examine the lack of paid sick leave among working cancer survivors by sociodemographic/socioeconomic and employment characteristics and its association with preventive services use in the United States. **Methods:** Working cancer survivors (ages 18–64 years; $n=7,995$; weighted $n=3.43$ million) were identified using 2001–2018 National Health Interview Survey data. Adjusted prevalence of lack of paid sick leave by sociodemographic and socioeconomic characteristics, as well as job sector, working hours, and employer size, were generated using multivariable logistic regression models. Separate analyses examined the associations of lack of paid sick leave with use of various preventive services. **Results:** Of all working cancer survivors, 36.4% lacked paid sick leave ($n=2,925$; weighted $n=1.25$ million), especially those working in food/agriculture/construction/personal services occupations or industries (ranging from 54.9% to 88.5%). In adjusted analyses, working cancer survivors with lower household income (<200% of the federal poverty level, 48.7%), without a high school degree (43.3%), without health insurance coverage (70.6%), and who were self-employed (89.5%), were part-time workers (68.2%), or worked in small businesses (<50 employees, 48.8%) were most likely to lack paid sick leave. Lack of paid sick leave was associated with lower use of influenza vaccine (ages 18–39 years, 21.3% vs 33.3%; ages 40–49 years, 25.8% vs 38.3%; ages 50–64 years, 46.3% vs 52.4%; $P<.001$ for all), cholesterol screening (ages 18–39 years, 43.1% vs 62.5%; $P<.05$), and blood pressure check (ages 18–39 years, 43.1% vs 62.5%; $P<.05$) compared with survivors having paid sick leave. **Conclusions:** In the United States, more than one-third of all working cancer survivors and more than half of survivors working for small employers and in certain occupations/industries lack paid sick leave. Survivors with lower household income or educational attainment are particularly vulnerable. Moreover, lack of paid sick leave is associated with lower use of some recommended preventive services, suggesting that ensuring working cancer survivors have access to paid sick leave may be an important mechanism for reducing health disparities.

J Natl Compr Canc Netw 2022;20(11):1244–1254.e3
doi: 10.6004/jnccn.2022.7058

Background

Approximately 33% of cancer survivors are in their prime working age range, between 20 and 64 years.¹ A cancer diagnosis can alter employment trajectories and cause long-term productivity losses.² Previous research showed that even years after diagnosis, cancer survivors may reduce working hours to receive medical care, become limited in the type of work they are able to do, or experience employment disability for health reasons.^{3–5} Moreover, many working cancer survivors may have scheduling challenges in balancing between routine work schedules and treatment plans.^{5–7} Previous studies have shown that working-age cancer survivors experience greater financial hardships than individuals without a cancer history, even after controlling for socioeconomic status, such as educational attainment and income.^{8,9} Workplace policies and benefits may explain some of this difference, because cancer survivors may struggle to fulfill job responsibilities while dealing with long-term health effects of cancer and its treatments. In addition to offering health insurance, other accommodations from employers, such as flexible work hours and improvements in working conditions, can facilitate cancer survivors' return to work and ability to maintain productivity.^{6,10,11} Access to paid sick leave is also an important benefit from employers because working cancer survivors often need extended leave from their workplaces to receive medical care.¹²

Paid sick leave provides economic protections to workers in case they become sick and face unintended loss of income because of illness. Unlike most other developed countries, there is no federal requirement for paid sick leave in the United States.^{13,14} The Family and Medical Leave Act, enacted in 1993 by Congress, only required certain employers to provide 12 weeks of *unpaid* leave per year to select employees.¹⁵ Meanwhile, lack of paid sick leave is associated with lower receipt of recommended preventive services, such as influenza vaccine and cancer



See [JNCCN.org](https://www.jnccn.org) for supplemental online content.

¹Surveillance and Health Equity Science, American Cancer Society; and ²Rollins School of Public Health, Emory University, Atlanta, Georgia.

screenings in the general population.^{16–18} However, little is known about the prevalence of lack of paid sick leave and its impact on the use of preventive services among working cancer survivors. Without paid sick leave, cancer survivors may have to compromise medical care to avoid lost earnings, potential job loss, and loss of employer-sponsored health insurance coverage.

Lack of paid sick leave is common in the general population and varies by type of occupation.¹⁹ This is probably because different types of employers have various standards or norms with respect to providing paid sick leave to workers.²⁰ To better understand the scope and depth of lack of paid sick leave among working cancer survivors, we used nationally representative data to evaluate access to paid sick leave by various sociodemographic/socioeconomic and employment characteristics, which can help identify subgroups of working cancer survivors who are most affected. We also examined whether lack of paid sick leave was associated with lower use of preventive services or more hospital emergency department (ED) visits among working cancer survivors.

A recent survey showed that the average age of workers changing jobs was 39 years, and people were less likely to change careers in their 50s and 60s.²¹ Cancer survivors often face long-term health effects related to cancer and its treatments, and thus paid sick leave at the workplace along with other healthcare benefits may play an important role in any decision to switch jobs or change careers. Moreover, existing literature showed that younger cancer survivors were more likely than older cancer survivors to experience financial hardship.^{8,9,22,23} This may be due to less wealth accumulation and higher household debt, such as first home mortgages and student loans, among younger cancer survivors.²⁴ Lack of paid sick leave may increase the likelihood of income loss among working cancer survivors and consequently worsen their financial hardship. Therefore, we also stratified our analyses by age group (18–39, 40–49, and 50–64 years).

Methods

The 2001–2018 National Health Interview Survey (NHIS) was used to identify working cancer survivors (ages 18–64 years) in the United States.²⁵ The NHIS is an annual cross-sectional household survey with response rates between 64.2% and 88.9% during the study period.²⁵ All NHIS adult respondents were asked about their working status as of 1 week before the interview date. Individuals who reported “working for pay at a job or business” and “with a job or business but not at work” were categorized as working individuals (supplemental eTable 1, available with this article at JNCCN.org),^{26,27} and were asked the following question: “Do you have paid sick leave on this main job or business?” We defined cancer survivors as individuals who reported ever being diagnosed with any

cancer or malignancy by a doctor or other health professional (excluding nonmelanoma skin cancer or skin cancer of unknown type). The sample was stratified into 3 age groups (18–39 years, n=1,584; 40–49 years, n=1,929; 50–64 years, n=4,482).

Individual-Level Characteristics

Individual-level characteristics included age at the time of the survey, sex, race/ethnicity, educational attainment, marital status, family income as a percentage of the federal poverty level (FPL), health insurance coverage (any private/public only/uninsured), number of chronic conditions, NHIS survey year, and US geographic region (Table 1). The number of cancers diagnosed was categorized into either 1 only, or 2 or 3. Time since the most recent cancer diagnosis was calculated by subtracting patient age at survey from age at most recent diagnosis and was categorized as recently diagnosed (<2 years) and previously diagnosed (≥2 years).

Employment Characteristics

Measures for employment characteristics included (1) job sector (private, government [federal/state/local], or self-employed), (2) working hours (full-time, ≥35 hours; part-time, ≤34 hours), (3) employer size (1–49, 50–99, 100–499, or ≥500 employees), and (4) major classifications of occupations/industries (supplemental eTable 1). There were major changes in the coding for occupation/industry classifications in 2005; therefore, lack of paid sick leave by occupation/industry excluded data from 2001 to 2004. Wages of all working populations were obtained from the US Bureau of Labor Statistics website (<https://www.bls.gov/>) for 2018 and were used as proxies for income differences by occupations/industries (supplemental eTable 2).

Healthcare Utilization Measures

Measures for use of preventive services in the past 12 months included influenza vaccine, blood pressure screening, and cholesterol testing. The measure for ED visits was based on whether a respondent reported any hospital ED visits in the past 12 months (supplemental eTable 1).

Statistical Methods

The distributions of individual-level characteristics among working cancer survivors were compared by age groups. Both unadjusted and adjusted logistic regressions were conducted to examine the trend of lack of paid sick leave by survey years. Bivariate analyses of lack of paid sick leave by occupation/industry were conducted. Generalized logistic regressions were conducted to generate adjusted percentages of working cancer survivors reporting lack of paid sick leave by sociodemographic/socioeconomic characteristics, cancer-related characteristics, and employment characteristics (job sector, working hours, and employer size, further stratified by age groups). All

Table 1. Characteristics of Working Cancer Survivors^a

Characteristic	Age 18–39 y (n=1,584; Weighted n=641,236)		Age 40–49 y (n=1,929; Weighted n=847,371)		Age 50–64 y (n=4,482; Weighted n=1,942,721)
	%	P Value ^b	%	P Value ^b	% (ref)
Total	18.7	—	24.7	—	56.6
Sex		<.001		<.001	
Female	73.7		71.2		60.9
Male	26.3		28.8		39.1
Race/Ethnicity		<.001		.019	
Non-Hispanic White	77.7		82.1		85.4
Non-Hispanic Black	7.8		6.6		6.3
Hispanic	10.9		7.4		5.2
Asian and others	3.5		3.8		3.1
Educational attainment		<.001		.893	
Less than high school or missing	8.1		5.6		5.4
High school graduate	20.9		25.7		25.1
Some college or higher	70.9		68.7		69.4
Marital status		<.001		.992	
Married or living with partner	61.0		71.7		71.7
Single/Widowed/Divorced/Separated	39.0		28.3		28.3
Number of comorbid conditions ^c		<.001		<.001	
0	58.7		47.5		33.8
1	29.4		33.3		34.2
≥2	11.9		19.2		32.0
Family income level as percentage of FPL		<.001		<.001	
<200%	27.8		14.3		8.4
200%–399%	28.3		26.6		22.1
≥400%	36.6		51.3		60.1
Missing	7.3		7.9		9.4
Health insurance coverage		<.001		<.001	
Any private	70.3		83.7		88.4
Public only	11.2		5.7		5.2
Uninsured	18.4		10.6		6.4
Region		<.001		.700	
Northeast	13.2		19.8		20.4
Midwest	28.1		26.3		24.6
South	36.2		33.0		33.9
West	22.5		21.0		21.1
Time since most recent diagnosis		.004		.521	
Previously diagnosed (≥2 y)	80.4		83.6		84.3
Recently diagnosed (<2 y)	19.6		16.4		15.7
Number of cancer diagnoses		.024		.405	
1 only	95.7		94.5		93.8
2 or 3	4.3		5.5		6.2
Job sector ^d		<.001		.001	
Private company	78.1		69.8		66.0

(continued on next page)

Table 1. Characteristics of Working Cancer Survivors^a (cont.)

Characteristic	Age 18–39 y (n=1,584; Weighted n=641,236)		Age 40–49 y (n=1,929; Weighted n=847,371)		Age 50–64 y (n=4,482; Weighted n=1,942,721)	
	%	P Value ^b	%	P Value ^b	% (ref)	
Federal government	2.2		3.7		3.7	
State government	5.8		6.1		8.3	
Local government	5.6		10.0		9.8	
Self-employed ^e	8.2		10.3		12.3	
Working hours ^d		.108		.159		
Full-time ≥35 h last week	75.0		80.7		78.2	
Normally full-time but <35 h last week	6.4		4.8		5.5	
Part-time with ≤34 h last week	18.6		14.4		16.3	
Employer size ^d		.124		.743		
1–49 employees	53.7		48.9		50.2	
50–99 employees	9.1		10.8		10.6	
100–499 employees	19.4		21.1		19.4	
≥500 employees	17.8		19.3		19.9	

Total: n=7,995, weighted n=3,431,329. Without paid sick leave: n=2,925, weighted n=1,247,342 (36.4% of total weighted n).

Abbreviation: FPL, federal poverty level.

^aAll statistical tests were 2-sided, and all P values were calculated using Pearson's χ^2 test statistic. All percentages were column percentages. Survey year was omitted in this table but was included in the adjusted analyses.

^bThe reference group was working cancer survivors aged 50–64 years.

^cThe number of chronic conditions was defined as the sum of the following conditions that a respondent was ever informed of having by a doctor or other health professional: arthritis, asthma, diabetes, emphysema, heart disease (angina, coronary heart disease, heart attack, other heart condition/disease), high cholesterol, hypertension, or stroke.

^dMissing data were excluded from adjusted analyses of paid sick leave by job categories but were included in the main analyses for use of preventive services and hospital emergency department visits. Government jobs included federal, state, and local governments, and working in a family-owned business or farm was combined as one group with self-employed in later analysis. Moreover, normally full-time worker but <35 hours last week was combined with full-time workers in later analysis.

^eIncluding own business, professional practice, or farm.

adjusted analyses controlled for sex, race/ethnicity, educational attainment, marital status, number of comorbid conditions, family income level as a percentage of FPL, health insurance coverage, time since diagnosis, number of cancer diagnoses, geographic region, and survey year. Separate adjusted logistic regressions examined associations between lack of paid sick leave and use of preventive services and any ED visits.

The sample weights were used to account for the complex survey design of NHIS for descriptive statistics, predicted margins, and variance estimates (Stata, version 16.1; StataCorp LLC). Statistical comparisons were 2-sided, and significance was defined as $P < .05$.

Results

Individual-Level Characteristics

By pooling multiple years of NHIS data, a total of 7,995 (weighted n=3.43 million) working cancer survivors aged 18 to 64 years were included in the study. Compared with the age group of 50 to 64 years, younger working cancer survivors (ages 18–39 and 40–49 years) were more likely to be female, racial/ethnic minorities, and not married or

living with a domestic partner (ages 18–39 years only) and to have educational attainment lower than high school (ages 18–39 years only), fewer comorbid conditions, lower family income, and public or no health insurance coverage (Table 1). Most working cancer survivors were employed in the private sector and worked full-time (≥35 hours last week), and approximately half of them worked for small employers (1–49 employees).

Lack of Paid Sick Leave by Sociodemographic/Socioeconomic and Cancer-Related Characteristics

Of all working cancer survivors, approximately 36.4% (n=2,925; weighted n=1.25 million) reported lack of paid sick leave (Table 1). In adjusted analyses, working cancer survivors who were uninsured (70.6%) or covered by public insurance only (57.3%) were more likely to report lack of paid sick leave than those with any private insurance (30.9%; $P < .001$) (Table 2). Moreover, lack of paid sick leave was more common among male versus female cancer survivors, as well as survivors with lower family income or lower educational attainment. Compared with non-Hispanic White survivors, non-Hispanic Black and Hispanic survivors were less likely to report lack of

Table 2. Percentages of Lack of Paid Sick Leave by Characteristics of Working Cancer Survivors^a

Characteristic	Unadjusted		Adjusted	
	% (95% CI)	P Value ^b	% (95% CI)	P Value ^b
Age				
18–39 y	42.1 (39.0–45.2)	ref	35.5 (32.5–38.5)	ref
40–49 y	36.3 (33.6–39.0)	.004	35.8 (33.3–38.4)	.867
50–64 y	34.5 (32.7–36.3)	<.001	36.9 (35.1–38.6)	.442
Sex				
Female	35.7 (34.0–37.4)	ref	35.0 (33.4–36.6)	ref
Male	37.7 (35.1–40.2)	.202	39.0 (36.6–41.3)	.007
Race/Ethnicity				
Non-Hispanic White	36.7 (35.1–38.3)	ref	37.6 (36.2–39.1)	ref
Non-Hispanic Black	27.1 (22.7–31.4)	<.001	26.0 (22.0–29.9)	<.001
Hispanic	38.2 (33.8–42.5)	.530	29.6 (25.8–33.3)	<.001
Asian and others	42.6 (35.2–50.0)	.128	40.0 (33.1–46.9)	.514
Educational attainment				
Less than high school or missing	55.8 (50.3–61.3)	ref	43.3 (37.9–48.7)	ref
High school graduate	43.7 (40.9–46.6)	<.001	40.6 (38.0–43.2)	.362
Some college or higher	32.1 (30.5–33.7)	<.001	34.2 (32.7–35.8)	.001
Marital status				
Married or living with partner	36.1 (34.4–37.9)	ref	37.9 (36.2–39.5)	ref
Single/Widowed/Divorced/Separated	36.9 (34.9–38.9)	.529	32.8 (31.0–34.7)	<.001
Number of comorbid conditions ^c				
0	36.6 (34.4–38.8)	ref	37.2 (35.2–39.3)	ref
1	35.9 (33.7–38.2)	.662	35.9 (33.8–37.9)	.342
≥2	36.5 (33.7–39.3)	.941	35.5 (32.9–38.2)	.314
Family income level as percentage of FPL				
<200%	59.5 (55.9–63.0)	ref	48.7 (44.4–52.9)	ref
200%–399%	39.8 (37.1–42.5)	<.001	39.7 (37.0–42.4)	<.001
≥400%	27.8 (26.0–29.7)	<.001	31.2 (29.3–33.1)	<.001
Missing	43.3 (38.5–48.0)	<.001	40.9 (36.3–45.4)	.013
Health insurance coverage				
Any private	29.8 (28.3–31.3)	ref	30.9 (29.4–32.3)	ref
Public only	62.5 (57.1–67.8)	<.001	57.3 (51.5–63.1)	<.001
Uninsured	75.7 (71.6–79.7)	<.001	70.6 (66.0–75.2)	<.001
Region				
Northeast	31.2 (28.3–34.2)	ref	34.0 (31.2–36.9)	ref
Midwest	39.4 (36.8–42.1)	<.001	38.3 (35.8–40.9)	.027
South	34.8 (32.3–37.4)	.066	34.2 (32.0–36.5)	.912
West	39.6 (36.6–42.5)	<.001	39.4 (36.4–42.3)	.011
Time since most recent diagnosis				
Previously diagnosed (≥2 y)	36.3 (34.8–37.8)	ref	36.3 (34.9–37.7)	ref
Recently diagnosed (<2 y)	36.7 (33.3–40.0)	.837	36.5 (33.4–39.5)	.935
Number of cancer diagnoses				
1 only	36.0 (34.5–37.3)	ref	36.1 (34.8–37.5)	ref
2 or 3	42.8 (36.9–48.7)	.027	40.1 (34.6–45.6)	.173

Abbreviation: FPL, federal poverty level.

^aSurvey year was omitted in the table but was included in the adjusted analyses. All analyses were adjusted for age at time of the survey, sex, race/ethnicity, educational attainment, marital status, number of comorbid conditions, health insurance coverage, time since diagnosis, number of cancer diagnoses, survey year, and geographic region.

^bP values were obtained from univariate generalized linear regressions with binomial distribution and logit link function.

^cP values were obtained from multivariate generalized linear regressions with binomial distribution and logit link function.

paid sick leave. Married cancer survivors were more likely to report lack of paid sick leave than others. There were no differences in adjusted analyses by cancer-related variables.

Lack of Paid Sick Leave by Employment Characteristics

There were large variations in lack of paid sick leave by occupation/industry (Figures 1 and 2). Occupations with the greatest prevalence of lack of paid sick leave were personal care and service (73.4%), construction/extraction (68.9%), food preparation/serving-related (67.6%), and building/grounds cleaning/maintenance (54.9%). Industries with the greatest lack of paid sick leave were agriculture/forestry/fishing/hunting (88.5%), accommodation/food services (73.3%), administrative/support/waste management (66.8%), and construction (61.9%). Moreover, using 2018 wages of all working populations from the US Bureau of Labor Statistics,²⁸ occupations/industries that had lower level of paid sick leave among working cancer survivors generally paid lower wages to workers (supplemental eTable 2).

Adjusted results showed that survivors who were self-employed, had part-time jobs (≤ 34 hours), or worked for small businesses (1–49 employees) were least

likely to have paid sick leave across all 3 age groups (Table 3). In general, younger working cancer survivors were more likely than older survivors to report lack of paid sick leave (ages 18–39 years, 42.1%; ages 40–49 years, 36.3%; ages 50–64 years, 34.5%). Similar patterns were found by job sector, working hours, and employer size.

Lack of Paid Sick Leave and Use of Preventive Services

In adjusted analyses, lack of paid sick leave was associated with lower use of influenza vaccine (ages 18–39 years, 21.3% vs 33.3%; ages 40–49 years, 25.8% vs 38.3%; ages 50–64 years, 46.3% vs 52.4%; $P < .05$ for all), cholesterol screenings (ages 18–39 years, 43.1% vs 62.5%; $P < .05$), and blood pressure checks (ages 18–39 years, 85.0% vs 91.7%; $P < .05$) (Figure 3). Lack of paid sick leave was not associated with any ED visits (supplemental eFigure 1).

Evaluation of Trend of Lack of Paid Sick Leave Over Time

Both unadjusted and adjusted results showed that there was no statistically significant linear trend of lack of paid sick leave in the period from 2001 through 2018 (supplemental eFigure 2).

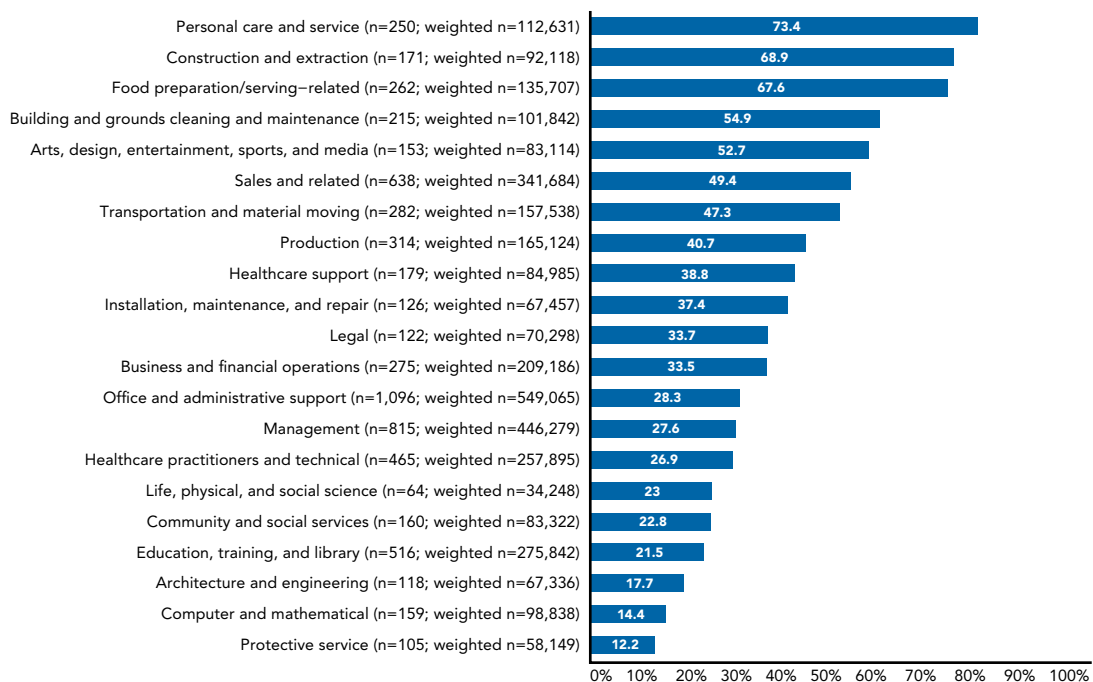


Figure 1. Unadjusted percentages of working cancer survivors without paid sick leave, by occupations, 2004–2018 NHIS (total n=6,670; weighted n=3,533,856). Data from 2001 to 2004 were also omitted because of major changes in the coding of categorizations of occupation and industry. Several occupations were omitted because of small sample sizes (cutoff n<50): farming, fishing, and forestry occupations (n=22); military-specific occupations (n=7); and unknown (n=48). Supplemental eTable 2 provides 2018 population wages by occupation. Abbreviation: NHIS, National Health Interview Survey.

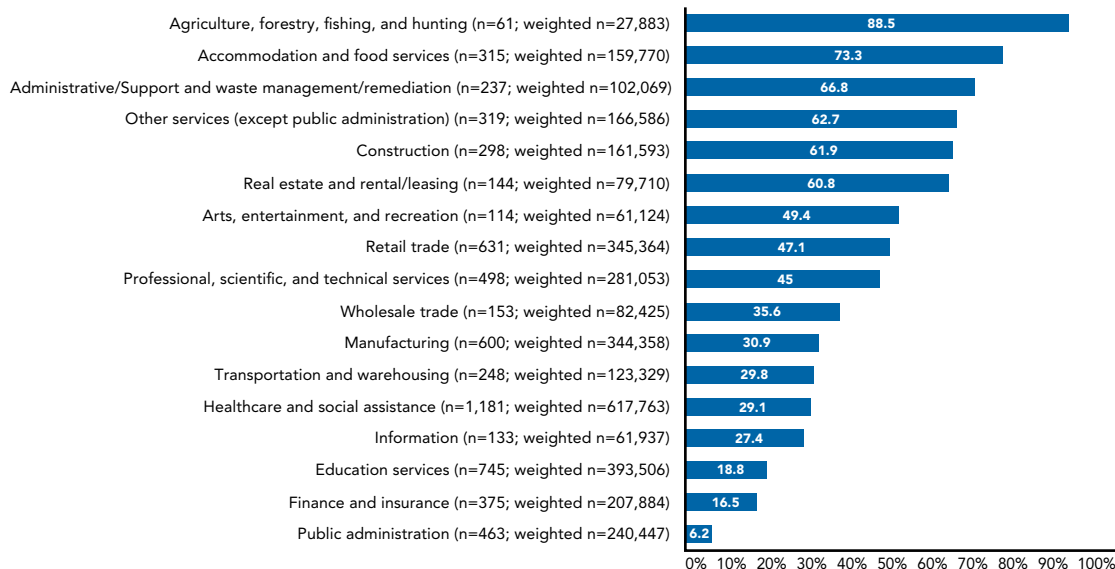


Figure 2. Unadjusted percentages of working cancer survivors without paid sick leave, by industries, 2004–2018 NHIS (total n=6,670; weighted n=3,533,856). Data from 2001 to 2004 were also omitted because of major changes in the coding of categorizations of occupation and industry. Several industries were omitted because of small sample sizes (cutoff n<50): management of companies and enterprises industries (n=15); mining industries (n=37); utilities industries (n=45); and unknown (n=52). Supplemental eTable 2 provides 2018 population wages by industry. Abbreviation: NHIS, National Health Interview Survey.

Discussion

This study used nationally representative data and found that approximately 1.25 million (36.4% of total weighted sample) working cancer survivors aged 18 to 64 years lacked paid sick leave in the United States. Lack of paid sick leave varied greatly by occupations/industries. Cancer survivors working in agriculture, services, construction, or food-related industries/occupations were most likely to lack paid sick leave. In adjusted analyses, lack of paid sick leave was more common among younger survivors (ages 18–39 years) and survivors with lower household income or educational attainment. Moreover, cancer survivors with part-time jobs or working for smaller employers were also less likely to have access to paid sick leave. Among working cancer survivors, lack of paid sick leave was associated with lower use of preventives services, including influenza vaccine (all age groups), and blood pressure checks/cholesterol screenings (ages 18–39 years only). Therefore, ensuring that all working cancer survivors have paid sick leave may be an important mechanism for reducing disparities in receipt of recommended preventive services.

Our results suggest that certain subgroups of working cancer survivors experience disproportionately high risks of lack of paid sick leave, especially those who are publicly insured or uninsured and have lower family income and educational attainment. This is consistent with previous research showing that cancer survivors with lower socioeconomic status are more likely to experience medical financial hardship and worry about daily

financial needs.^{8,9,22–24,29} Higher intensity of financial hardship has also been linked with worse self-rated health and more ED visits among cancer survivors.³⁰ The gap in access to paid sick leave might further exacerbate health disparities in access to care among working cancer survivors.³¹ In particular, we found that lack of paid sick leave was also associated with lower use of recommended preventive services. Although the Affordable Care Act eliminated cost-sharing for all preventive services recommended by the US Preventive Services Task Force in most health plans since 2010,³² some may still not avail themselves of preventive services because of worry about not getting paid or losing their jobs if they take time off for health reasons.³³ Additional research is also needed to examine the associations between lack of paid sick leave and receipt of guideline-concordant cancer screenings among working cancer survivors.

Our findings are very timely during the ongoing, rapidly evolving COVID-19 pandemic, which has caused major disruptions in almost all economic sectors, including the food supply chain. Our results showed that lack of paid sick leave was especially common among cancer survivors working in industries related to agriculture and food services or preparation. Many COVID-19 outbreaks have occurred in food processing plants, especially in meat and poultry processing facilities,³⁴ probably because workers need to stay in close quarters in the production process and may work while symptomatic. Moreover, cancer survivors may already face higher risks of COVID-19

Table 3. Adjusted Percentages of Lack of Paid Sick Leave by Employment Characteristics, Stratified by Age Group, 2001–2018 NHIS^a

Characteristic ^b	% (95% CI)	P Value ^c
Overall percentage of all 3 age groups	36.4 (35.0–37.7)	—
Job sector		
Private	34.7 (33.2–36.2)	ref
Government	13.2 (11.1–15.3)	<.001
Self-employed	89.5 (86.6–92.5)	<.001
Working hours		
Full-time (≥35 hours)	30.4 (29.0–31.8)	ref
Part-time (≤34 hours)	68.2 (64.7–71.6)	<.001
Employer size		
1–49 employees	48.8 (46.9–50.8)	ref
50–99 employees	26.0 (22.6–29.5)	<.001
100–499 employees	26.3 (23.8–28.8)	<.001
≥500 employees	18.2 (15.6–20.8)	<.001
Age 18–39 y (n=1,584; weighted n=641,236)		
Overall	42.1 (39.4–44.9)	—
Job sector		
Private	40.7 (37.6–43.8)	ref
Government	22.4 (16.2–28.6)	<.001
Self-employed	91.5 (84.9–98.1)	<.001
Working hours		
Full-time (≥35 h)	36.1 (33.1–39.2)	ref
Part-time (≤34 h)	69.6 (62.3–76.8)	<.001
Employer size		
1–49 employees	50.6 (47.0–54.2)	ref
50–99 employees	34.7 (26.8–42.7)	.002
100–499 employees	35.8 (29.4–42.2)	<.001
≥500 employees	26.3 (19.6–33.0)	<.001
Age 40–49 y (n=1,929; weighted n=847,371)		
Overall	36.3 (34.1–38.5)	—
Job sector		
Private	34.3 (31.6–37.0)	ref
Government	14.0 (9.8–18.2)	<.001
Self-employed	93.9 (89.6–98.3)	<.001
Working hours		
Full-time (≥35 h)	30.8 (28.3–33.3)	ref
Part-time (≤34 h)	71.2 (64.3–78.0)	<.001
Employer size		
1–49 employees	50.0 (46.3–53.7)	ref
50–99 employees	27.7 (21.7–33.8)	<.001
100–499 employees	22.9 (18.1–27.7)	<.001
≥500 employees	19.0 (14.4–23.5)	<.001

(continued on next column)

infection because their immune system can be weakened by cancer and its treatments,³⁵ and they have a high prevalence of conditions associated with COVID-

Table 3. Adjusted Percentages of Lack of Paid Sick Leave by Employment Characteristics, Stratified by Age Group, 2001–2018 NHIS^a (cont.)

Characteristic ^b	% (95% CI)	P Value ^c
Age 50–64 y (n=4,482; weighted n=1,942,721)		
Overall	34.5 (32.9–36.0)	—
Job sector		
Private	32.9 (30.8–35.0)	ref
Government	10.4 (8.0–12.7)	<.001
Self-employed	87.6 (83.5–91.6)	<.001
Working hours		
Full-time	28.3 (26.6–30.0)	ref
Part-time	66.8 (62.2–71.4)	<.001
Employer size		
1–49 employees	47.7 (45.1–50.3)	ref
50–99 employees	22.7 (18.2–27.1)	<.001
100–499 employees	24.9 (21.7–28.1)	<.001
≥500 employees	15.9 (12.7–19.0)	<.001

Abbreviation: NHIS, National Health Interview Survey.

^aAll statistical tests were 2-sided, and all P values were derived from regression analyses.

^bGovernment jobs included federal, state, and local governments, and working in a family-owned business or farm was combined as one group with self-employed. Moreover, normally full-time worker but <35 hours last week was combined with full-time workers. All analyses were adjusted for sex, race/ethnicity, educational attainment, marital status, number of comorbid conditions, health insurance coverage, time since diagnosis, number of cancer diagnoses, survey year, and region.

^cThe reference group was labeled as “ref” in the corresponding analyses.

19 infection.³⁶ Therefore, targeted healthcare policies are needed to strengthen safety as well as economic protections (ie, paid sick leave) for working cancer survivors.

To help mitigate the health impact of COVID-19 on the workforce, Congress passed the Families First Coronavirus Response Act: Employer Paid Leave Requirements, effective on April 1, 2020, through the end of that year.³⁷ The act required certain private and public employers to provide their employees with up to 2 weeks of paid sick leave related to COVID-19 symptoms, testing, quarantines, and treatments. Vaccination for COVID-19 was retrospectively added to the act by The White House in April 2021.³⁸ Although the Families First Coronavirus Response Act: Employer Paid Leave Requirements expired at the end of 2020, the American Rescue Plan Act of 2021 extended the paid sick leave mandate until September 30, 2021.^{39–41} Unfortunately, both acts have expired, and workers who are impacted by the new COVID-19 variants will no longer be protected. Moreover, there are large variations in mandates of paid sick leave at the state and local government levels. For example, a New York City 2014 paid sick leave mandate was associated with improved preventive

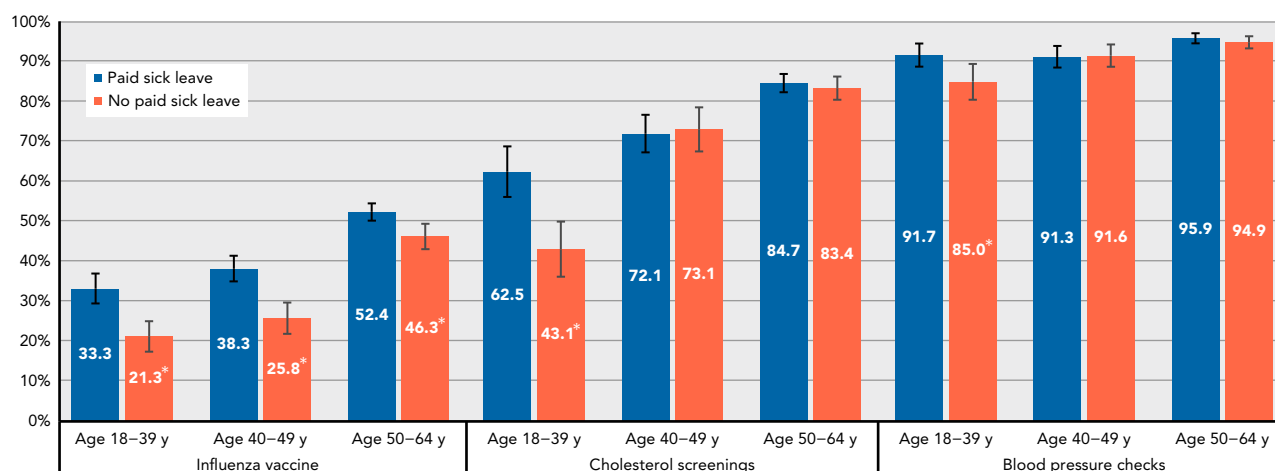


Figure 3. Adjusted percentages of use of influenza vaccine (2001–2018, stratified by age group: 18–39 years, n=1,584; 40–49 years, n=1,929; and 50–64 years, n=4,482), cholesterol screenings (2003, 2008, 2011–2018, stratified by age group: 18–39 years, n=614; 40–49 years, n=871; and 50–64 years, n=2,397), and blood pressure checks (2001–2018, stratified by age group: 18–39 years, n=1,584; 40–49 years, n=1,929; and 50–64 years, n=4,482) among working cancer survivors with and without paid sick leave in the United States, 2001–2018 NHIS. All analyses were adjusted for age at time of the survey, sex, race/ethnicity, educational attainment, marital status, number of comorbid conditions, health insurance coverage, time since diagnosis, number of cancer diagnoses, survey year, and region. All measures refer to a time period of 12 months before the survey date. Cholesterol screenings were only available in years 2003, 2008, and 2011–2018. Black bars represent 95% confidence intervals.

Abbreviation: NHIS, National Health Interview Survey.

* $P < .05$.

services use among low-income adults.⁴² However, 30 states do not have any mandates for paid sick leave,⁴³ and cancer survivors working in these states may have higher risk of lacking paid sick leave.

This study has several limitations. Measures of paid sick leave, employment characteristics, and use of preventive services are self-reported. Because working status was measured as of last week at the time of the survey, and because preventive services were measured as of the past 12 months, this discordance could be a potential source of bias in our study. For example, cancer survivors who worked at some point in the past year but were unemployed in the past week were not included in our analyses. Moreover, working cancer survivors with and without paid sick leave might be inherently different because of the job selection process. Workers may weigh health benefits (eg, paid sick leave) against work schedule or pay scale. Therefore, additional research on employment dynamics is needed to understand differences in healthcare use between working cancer survivors with and without paid sick leave. Moreover, certain types of employers that offer paid sick leave to their employees may also be more likely to offer on-site vaccinations. Some employers may offer paid sick leave for vaccinations but not for other preventive services. Therefore, the observed differences in influenza rates by paid sick leave may also be due to differences in on-site vaccination promotions and employer policies. In addition, future research should also address

any differential impact of lack of paid sick leave on healthcare utilization between working cancer survivors and working individuals without a cancer history. More than 80% of our study sample are longer-term cancer survivors surveyed ≥ 2 years since diagnosis. Future research that focuses on recently diagnosed cancer survivors who are still undergoing cancer treatments is needed.

Conclusions

A healthy workforce is essential for long-term economic development. However, lack of paid sick leave is common among working cancer survivors, and it varies greatly by employment characteristics in the United States. Working cancer survivors with lower household income or educational attainment are most likely to lack paid sick leave. Moreover, lack of paid sick leave among working cancer survivors is associated with lower use of certain types of preventive services, which may translate into health disparities.

Submitted December 2, 2021; final revision received July 28, 2022; accepted for publication July 29, 2022.

Author contributions: Study concept and design: All authors. Statistical analysis: Zheng. Interpretation of results: All authors. Manuscript preparation: Zheng. Manuscript revision: All authors.

Disclosures: Z. Zheng, X. Han, and J. Zhao have disclosed receiving grant/research support from AstraZeneca, outside the scope of this study. Dr. Yabroff has disclosed serving as a member of the Flatiron Health Equity Advisory Board. All authors from the American Cancer Society (ACS) are employed by the ACS, which receives grants from private and corporate foundations, including foundations associated with companies in the health

sector for research. W. Song has disclosed not receiving any financial consideration from any person or organization to support the preparation, analysis, results, or discussion of this article.

Correspondence: Zhiyuan Zheng, PhD, Surveillance and Health Equity Science, American Cancer Society, 250 Williams Street, Atlanta, GA 30303. Email: jason.zheng@cancer.org

References

- Miller KD, Nogueira L, Devasia T, et al. Cancer treatment and survivorship statistics, 2022. *CA Cancer J Clin* 2022;72:409–436.
- de Boer AG, Taskila T, Ojajarvi A, et al. Cancer survivors and unemployment: a meta-analysis and meta-regression. *JAMA* 2009; 301:753–762.
- Yabroff KR, Lawrence WF, Clauser S, et al. Burden of illness in cancer survivors: findings from a population-based national sample. *J Natl Cancer Inst* 2004;96:1322–1330.
- Earle CC, Chretien Y, Morris C, et al. Employment among survivors of lung cancer and colorectal cancer. *J Clin Oncol* 2010;28: 1700–1705.
- Blinder VS, Gany FM. Impact of cancer on employment. *J Clin Oncol* 2020;38:302–309.
- Sun W, Chen K, Terhaar A, et al. Work-related barriers, facilitators, and strategies of breast cancer survivors working during curative treatment. *Work* 2016;55:783–795.
- Greidanus MA, de Boer AG, de Rijk AE, et al. Perceived employer-related barriers and facilitators for work participation of cancer survivors: a systematic review of employers' and survivors' perspectives. *Psychooncology* 2018;27:725–733.
- Banegas MP, Guy GP Jr, de Moor JS, et al. For working-age cancer survivors, medical debt and bankruptcy create financial hardships. *Health Aff (Millwood)* 2016;35:54–61.
- Zheng Z, Jemal A, Han X, et al. Medical financial hardship among cancer survivors in the United States. *Cancer* 2019;125:1737–1747.
- Miller S. High-value care, workplace flexibility aid employees with cancer. Accessed September 9, 2021. Available at: <https://www.shrm.org/resourcesandtools/hr-topics/benefits/pages/high-value-care-and-workplace-flexibility-aid-employees-with-cancer.aspx>
- Northeast Business Group on Health. Cancer survivorship challenges and opportunities for employers. Accessed September 9, 2021. Available at: <https://online.flippingbook.com/view/48119/>
- de Moor JS, Kent EE, McNeel TS, et al. Employment outcomes among cancer survivors in the United States: implications for cancer care delivery. *J Natl Cancer Inst* 2021;113:641–644.
- US Department of Labor. Sick leave. Accessed April 20, 2020. Available at: <https://www.dol.gov/general/topic/workhours/sickleave>
- Raub A, Chung P, Batra P, et al. Paid leave for personal illness: a detailed look at approaches across OECD countries. Accessed October 4, 2021. Available at: <https://www.worldpolicycenter.org/>
- US Department of Labor: Wage and Hour Division. Family and Medical Leave Act. Accessed April 20, 2020. Available at: <https://www.dol.gov/agencies/whd/fmla>
- DeRigne L, Stoddard-Dare P, Collins C, et al. Paid sick leave and preventive health care service use among U.S. working adults. *Prev Med* 2017; 99:58–62.
- Peipins LA, Soman A, Berkowitz Z, et al. The lack of paid sick leave as a barrier to cancer screening and medical care-seeking: results from the National Health Interview Survey. *BMC Public Health* 2012; 12:520.
- Lamsal R, Napit K, Rosen AB, et al. Paid sick leave and healthcare utilization in adults: a systematic review and meta-analysis. *Am J Prev Med* 2021;60:856–865.
- US Bureau of Labor Statistics. The economics daily: 94 percent of managers, 56 percent of construction and extraction workers had paid sick leave, 2019. Accessed April 20, 2022. Available at: <https://www.bls.gov/opub/ted/2020/94-percent-of-managers-56-percent-of-construction-and-extraction-workers-had-paid-sick-leave.htm>
- US Bureau of Labor Statistics. Employee benefits survey: paid sick leave: what is available to workers? Accessed September 9, 2021. Available at: <https://www.bls.gov/ncs/ebs/factsheet/paid-sick-leave.htm#ref1>
- Indeed Editorial Team. Career change report: an inside look at why workers shift gears. Accessed April 20, 2022. Available at: <https://www.indeed.com/lead/career-change>
- Ramsey SD, Bansal A, Fedorenko CR, et al. Financial insolvency as a risk factor for early mortality among patients with cancer. *J Clin Oncol* 2016; 34:980–986.
- Ramsey SD, Blough D, Kirchoff A, et al. Washington state cancer patients found to be at greater risk for bankruptcy than people without a cancer diagnosis. *Health Aff (Millwood)* 2013;32: 1143–1152.
- Zheng Z, Jemal A, Tucker-Seeley R, et al. Worry about daily financial needs and food insecurity among cancer survivors in the United States. *J Natl Compr Canc Netw* 2020;18:315–327.
- Centers for Disease Control and Prevention, National Center for Health Statistics. NHIS data, questionnaires and related documentation. Accessed April 20, 2020. Available at: <https://www.cdc.gov/nchs/nhis/data-questionnaires-documentation.htm>
- Driscoll AK, Bernstein AB. Health and access to care among employed and unemployed adults: United States, 2009–2010. *NCHS Data Brief* 2012;83:1–8.
- Park S, Pan L, Lankford T. Relationship between employment characteristics and obesity among employed U.S. adults. *Am J Health Promot* 2014; 28:389–396.
- US Bureau of Labor Statistics. May 2018. Accessed September 27, 2021. Available at: <https://www.bls.gov/oes/tables.htm>
- Han X, Zhao J, Zheng Z, et al. Medical financial hardship intensity and financial sacrifice associated with cancer in the United States. *Cancer Epidemiol Biomarkers Prev* 2020;29:308–317.
- Zheng Z, Han X, Zhao J, et al. Financial hardship, healthcare utilization, and health among U.S. cancer survivors. *Am J Prev Med* 2020; 59:68–78.
- Heymann J, Sprague A. Why adopting a national paid sick leave law is critical to health and to reducing racial and socioeconomic disparities—long past due. *JAMA Health Forum* 2021;2: e210514.
- Chen SC, Pearson SD. Policy framework for covering preventive services without cost sharing: saving lives and saving money? *JAMA Intern Med* 2016;176:1185–1189.
- DeRigne LA, Stoddard-Dare P, Quinn L. Workers without paid sick leave less likely to take time off for illness or injury compared to those with paid sick leave. *Health Aff* 2016;35:520–527.
- Dyal JW, Grant MP, Broadwater K, et al. COVID-19 among workers in meat and poultry processing facilities — 19 states, April 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:557–561.
- American Cancer Society. Why people with cancer are more likely to get infections. Accessed September 12, 2021. Available at: <https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/low-blood-counts/infections/why-people-with-cancer-are-at-risk.html>
- Jiang C, Yabroff KR, Deng L, et al. Prevalence of underlying medical conditions associated with severe COVID-19 illness in adult cancer survivors in the United States. *J Natl Cancer Inst* 2022;114:156–159.
- US Department of Labor, Wage and Hour Division. Families First Coronavirus Response Act: employer paid leave requirements. Accessed September 12, 2021. Available at: <https://www.dol.gov/agencies/whd/pandemic/ffcr-employer-paid-leave>
- The White House. FACT SHEET: President Biden to call on all employers to provide paid time off for employees to get vaccinated after meeting goal of 200 million shots in the first 100 days. Accessed September 27, 2021. Available at: <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/21/>
- Findlay S. Biden and Democrats propose national paid leave. Accessed October 4, 2021. Available at: <https://www.healthaffairs.org/doi/10.1377/forefront.20210617.789833/full/>
- Internal Revenue Service. COVID-19-related tax credits for paid leave provided by small and midsize businesses FAQs. Accessed October 4, 2021. Available at: <https://www.irs.gov/newsroom/covid-19-related-tax-credits-for-paid-leave-provided-by-small-and-midsize-businesses-faqs>
- The White House. American Rescue Plan. Accessed October 4, 2021. Available at: <https://www.whitehouse.gov/american-rescue-plan/>

42. Ko H, Glied SA. Associations between a New York City paid sick leave mandate and health care utilization among Medicaid beneficiaries in New York City and New York state. *JAMA Health Forum* 2021;2:e210342.
43. Society for Human Resource Management. State by state: paid sick leave. Accessed September 12, 2021. Available at: <https://www.shrm.org/resourcesandtools/legal-and-compliance/employment-law/pages/state-local-paid-sick-leave-chart.aspx>



See [JNCCN.org](https://www.jnccn.org) for supplemental online content.

Supplemental online content for:

Paid Sick Leave Among Working Cancer Survivors and Its Associations With Use of Preventive Services in the United States

Zhiyuan Zheng, PhD; Stacey A. Fedewa, PhD; Farhad Islami, MD, PhD; Leticia Nogueira, PhD, MPH; Xuesong Han, PhD; Jingxuan Zhao, MPH; Weishan Song, MS; Ahmedin Jemal, DVM, PhD; and K. Robin Yabroff, PhD, MBA

J Natl Compr Canc Netw 2022;20(11):1244–1254.e3

eFigure 1: Adjusted Percentages of Any Emergency Department Visits in the Past 12 Months Among Working Cancer Survivors With and Without Paid Sick Leave in the United States

eFigure 2: Unadjusted and Adjusted Percentages of Working Cancer Survivors Without Paid Sick Leave by Survey Year

eTable 1: National Health Interview Survey Measures

eTable 2: 2018 US Working Population Wages by Occupation and Industry

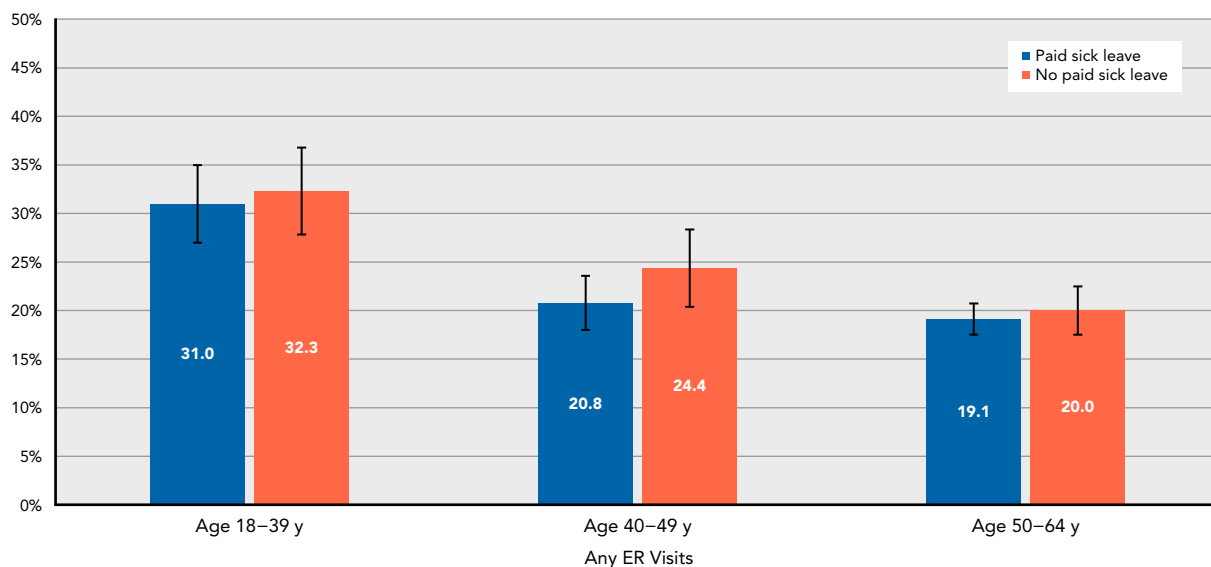


Figure 1. Adjusted percentages of any ED visits (2001–2018 NHIS, stratified by age group: 18–39 years, n=1,584; 40–49 years, n=1,929; and 50–64 years, n=4,482) in the past 12 months among working cancer survivors with and without paid sick leave in the United States. The analysis adjusted for age at time of the survey, sex, race/ethnicity, educational attainment, marital status, number of comorbid conditions, health insurance coverage, time since cancer diagnosis, number of cancer diagnosis, survey year, and region. Black bars represent 95% confidence intervals. Abbreviations: ED, emergency department; NHIS, National Health Interview Survey.

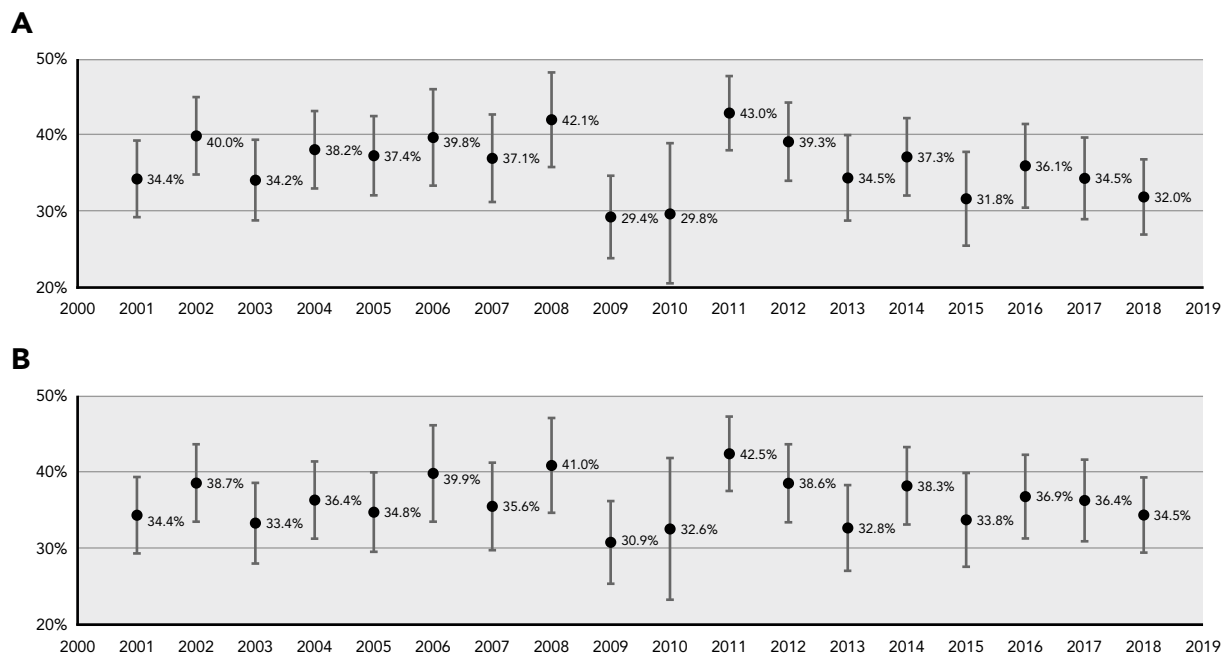


Figure 2. (A) Unadjusted and **(B)** adjusted percentages of working cancer survivors without paid sick leave by survey year. The adjusted analysis controlled for age at time of the survey, sex, race/ethnicity, educational attainment, marital status, number of comorbid conditions, health insurance coverage, time since cancer diagnosis, number of cancer diagnoses, and region. There were no statistically significant linear trends from either unadjusted analysis ($P=.078$) and adjusted regression analysis ($P=.866$). Black bars represent 95% confidence intervals.

eTable 1. NHIS Measures						
Measures		Universe	NHIS Question	Time Frame	Years of Availability	
Main exposures	Job and employment related measures	Employment status last week	Sample adults aged ≥ 18 y	Corrected employment status last week <ul style="list-style-type: none"> • Working for pay at a job or business • With a job or business but not at work • Looking for work • Working, but not for pay, at a family-owned job or business • Not working at a job or business and not looking for work 	Past week	2001–2018
		Job categories	Sample adults aged ≥ 18 y who were working last week	Which of these best describes the job you held most recently? <ul style="list-style-type: none"> • Employee of a private company for wages • A federal government employee • A state government employee • A local government employee • Self-employed in own business, professional practice, or farm • Working without pay in a family-owned business or farm 	Past week	
				How many hours did the respondent work last week at all jobs or businesses? Response: 1–94 hours or ≥ 95 hours		
				How many people work at this location (both full-time and part-time workers)? Please include yourself. <ul style="list-style-type: none"> • 1 employee • 2–9 employees • 10–24 employees • 25–49 employees • 50–99 employees • 100–249 employees • 250–499 employees • 500–999 employees • $\geq 1,000$ employees 		
				Occupation: https://www.bls.gov/cps/cenocc2010.htm , major occupational groups and detailed occupations, as determined by the US Census Bureau and the Bureau of Labor Statistics		
	Industry: https://www.bls.gov/cps/cenind2012.htm ; major industry groups and detailed industries, as identified by the US Census Bureau and the Bureau of Labor Statistics	NA				
Paid sick leave	Paid sick leave status from the main job	Sample adults aged ≥ 18 y who were working last week	Do you have paid sick leave on the main job or business? Response category: Yes or No	Past week	2001–2018	
Healthcare utilization	ED use	Any ED use	Sample adults aged ≥ 18 y	During the past 12 months, how many times have you gone to a hospital emergency room about your own health? (This includes ED visits that resulted in a hospital admission.)	Past 12 months	2001–2018
	Preventive services	Influenza vaccine		During the past 12 months, have you had a flu vaccination? A flu vaccination is usually given in the fall and protects against influenza for the flu season.		2001–2018
		Blood pressure screening		During the past 12 months, have you had your blood pressure checked by a doctor, nurse, or other health professional?		2001–2018
		Cholesterol screening		During the past 12 months, have you had your blood cholesterol checked by a doctor, nurse, or other health professional? (Note: participants consist of all males aged ≥ 35 years; males aged 20–34 years and females aged ≥ 20 years if with history of heart disease or its known risk factors [ie, smoking, diabetes, high blood pressure, and obesity])		2003, 2008, 2011–2018

Abbreviations: ED, emergency department; NA, not applicable; NHIS, National Health Interview Survey.

eTable 2. 2018 US Working Population Wage Estimates^a by Occupation and Industry

	Median Hourly Wage	Mean Hourly Wage	Annual Mean Wage
By occupation			
Farming, fishing, and forestry ^b	\$12.20	\$14.49	\$30,140
Personal care and service	\$11.74	\$13.51	\$28,090
Construction and extraction	\$22.12	\$24.62	\$51,220
Food preparation/serving-related	\$11.09	\$12.30	\$25,580
Building, grounds cleaning, maintenance	\$12.91	\$14.43	\$30,020
Arts, design, entertainment, sports, and media	\$23.70	\$28.74	\$59,780
Sales and related	\$13.55	\$20.09	\$41,790
Transportation and material moving	\$15.74	\$18.41	\$38,290
Healthcare support	\$14.30	\$15.57	\$32,380
Production	\$16.86	\$18.84	\$39,190
Installation, maintenance, and repair	\$21.89	\$23.54	\$48,960
Legal	\$38.85	\$52.25	\$108,690
Business and financial operations	\$32.86	\$36.98	\$76,910
Office and administrative support	\$17.19	\$18.75	\$38,990
Management	\$50.11	\$58.44	\$121,560
Healthcare practitioners and technical	\$31.94	\$39.42	\$82,000
Community and social services	\$21.62	\$23.69	\$49,280
Life, physical, and social science	\$31.77	\$36.62	\$76,160
Education, training, and library	\$23.89	\$27.22	\$56,620
Computer and mathematical	\$41.51	\$44.01	\$91,530
Architecture and engineering	\$38.55	\$42.01	\$87,370
Protective service	\$19.54	\$23.36	\$48,580
By industry			
Agriculture, forestry, fishing, and hunting	\$12.26	\$15.53	\$32,300
Accommodation and food services	\$11.12	\$12.93	\$26,890
Administrative/Support and waste management/remediation services	\$14.84	\$19.43	\$40,410
Construction	\$22.73	\$26.58	\$55,290
Other services (except public administration)	\$15.59	\$20.53	\$42,700
Real estate and rental/leasing	\$18.41	\$23.85	\$49,610
Arts, entertainment, and recreation	\$13.19	\$18.18	\$37,810
Retail trade	\$12.40	\$16.21	\$33,720
Professional, scientific, and technical services	\$32.32	\$40.08	\$83,370
Wholesale trade	\$21.07	\$27.75	\$57,720
Transportation and warehousing	\$20.17	\$23.54	\$48,960
Manufacturing	\$19.88	\$25.49	\$53,020
Healthcare and social assistance	\$18.56	\$25.97	\$54,020
Information industries	\$30.49	\$37.01	\$76,990
Education services	\$23.48	\$27.26	\$56,710
Management of companies and enterprises ^b	\$33.18	\$41.07	\$85,430
Mining ^b	\$25.04	\$31.11	\$64,710
Finance and insurance	\$25.89	\$35.18	\$73,170
Utilities ^b	\$36.49	\$38.12	\$79,290
Public administration	\$24.49	\$28.06	\$58,360

^aObtained from the US Bureau of Labor Statistics website (<https://www.bls.gov/oes/tables.htm>). Moreover, these wages were for all of the working population in the United States, and were used as a proxy for level of pay among working cancer survivors ages 18–64 y in our sample.