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Cancer Incidence in Older Adults in the United States: Characteristics, Specificity, and Completeness of the Data

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Abstract

Introduction: The number of cancer cases in the United States continues to grow as the number of older adults increases. Accurate, reliable and detailed incidence data are needed to respond effectively to the growing human costs of cancer in an aging population. The purpose of this study was to examine the characteristics of incident cases and evaluate the impact of death-certificate-only (DCO) cases on cancer incidence rates in older adults.

Methods: Using data from 47 cancer registries and detailed population estimates from the Surveillance, Epidemiology and End Results (SEER) Program, we examined reporting sources, methods of diagnosis, tumor characteristics, and calculated age-specific incidence rates with and without DCO cases in adults aged 65 through ≥95 years, diagnosed 2011 through 2015, by sex and race/ethnicity.

Results: The percentage of cases (all cancers combined) reported from a hospital decreased from 90.6% (ages 65–69 years) to 69.1% (ages ≥95 years) while the percentage of DCO cases increased from 1.1% to 19.6%. Excluding DCO cases, positive diagnostic confirmation decreased as age increased from 96.8% (ages 65–69 years) to 69.2% (ages ≥95 years). Compared to incidence rates that included DCO cases, rates in adults aged ≥95 years that excluded DCO cases were 41.5% lower in Black men with prostate cancer and 29.2% lower in Hispanic women with lung cancer.

Discussion: Loss of reported tumor specificity with age is consistent with fewer hospital reports. However, the majority of cancers diagnosed in older patients, including those aged ≥95 years, were positively confirmed and were reported with known site, histology, and stage information. The high percentage of DCO cases among patients aged ≥85 years suggests the need to explore additional sources of follow-back to help possibly identify an earlier incidence report. Interstate data exchange following National Death Index linkages may help registries identify and remove erroneous DCO cases from their databases.

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Keywords

Cancer in North America (CiNA); cancer incidence; cancer registries; case ascertainment; death certificate only; interstate data exchange; National Program of Cancer Registries; North American Association of Central Cancer Registries; older adults; Surveillance, Epidemiology, and End Results Program

Introduction

In the United States, the total number of cancer incident cases has been increasing as the population of older adults grows.[1] Between 2000 and 2015, the largest increase (33%) in cancer-related deaths occurred among those aged ≥85 years.[2] While currently only 8% of all cancers are diagnosed in the oldest old,[3] the number of incident cases and cancer related deaths is likely to continue to increase as more adults reach ages at which the risk of being diagnosed with or dying from many types of cancer is highest. In 2030, 72.1 million adults will be aged ≥65 years in the United States, up from 40.2 million in 2010.[4] The number of cancer survivors is also expected to increase, particularly among older adults (aged ≥65 years).[5] To prepare to meet the need to diagnose, treat, and provide follow-up care to the growing number of older adult patients and survivors, researchers and health care planners and policy makers need accurate, reliable, and detailed cancer incidence, survival, and prevalence data.

The North American Association of Central Cancer Registries (NAACCR) annually certifies the quality and completeness of cancer incidence data collected and reported by member cancer registries.[6] One of the criteria used to evaluate the completeness of case ascertainment in a population-based registry is the percentage of death-certificate-only (DCO) cases.[7] DCO cases are incident cases that are reported solely on the basis of a death certificate. Registries with high quality incidence data have fewer than 5% (preferably <3%) DCO cases overall. A high percentage of DCO cases (eg, ≥5%) may suggest that the cancer registry is failing to identify and register all cancer patients at the time of their diagnoses and thereby potentially underreporting incident cases in the population.[8] However, a high percentage of DCO cases may also suggest that US registries are erroneously recording some DCO cases as incident cases and thereby overreporting incident cases. A linkage study conducted by the Florida Cancer Data System and the New York State Cancer Registry showed that some DCO cases in these 2 registries were reported as non-DCO incident cases in the other state's registry, raising the possibility that DCO incident cases were being overreported (ie, incorrectly reported as an incident case) in one state's registry, and double-counted as incident cases at the national level.[9]

We used data from cancer registries participating in the Centers for Disease Control and Prevention's National Program of Cancer Registries (NPCR) and the National Cancer Institute (NCI)'s Surveillance, Epidemiology and End Results (SEER) Program, and detailed population estimates released in 2017 by the SEER Program,[10] to examine the characteristics, specificity and completeness of cancer registry data, and evaluate the potential impact of DCO cases on cancer incidence rates for older adults.

Materials and Methods

We obtained a customized file from the December 2017 submission to NAACCR from 47 statewide cancer registries covering 95% of the US population, participating in the NPCR and the SEER Program.[11] The file included incidence data for diagnosis years 2000 through 2015 and denominator data for 21 age groups (0, 1–4…90–94, ≥95 years). The population data were produced by the Census Bureau's Population Estimation Program, in collaboration with the National Center for Health Statistics, and with support from the NCI.[10]

We included all invasive incident cases diagnosed in older adults (aged ≥65 years) and diagnosed between 2011 and 2015. In situ urinary bladder cancers were included in the file because these cases are considered invasive for the purpose of incidence reporting.[12] The following variables were selected for each incident case: age, sex, race/ethnicity, *International Classification of Diseases for Oncology*, 3rd edition (ICD-O-3) site and histology,[13] year of diagnosis, type of reporting source, sequence number central, method of diagnosis, and SEER Summary Stage. Characteristics of incident cases were categorized as follows:

- Type of reporting source
  - Hospital (inpatient, outpatient, clinic or surgery center)
  - Death certificate-only
  - Physician (office or private practice)
  - Treatment center and laboratory (radiation treatment, medical oncology center, laboratory)
  - Autopsy and nursing home
- Single primary only (sequence number central: 00)
- Method of diagnosis
  - Positive confirmation (microscopic, positive laboratory test, marker study)
  - Clinical and visual (including direct visualization and radiography)
  - Unknown method of diagnosis
- Specificity of diagnosis
  - Unknown site (C80.9)
  - Histology NOS (8000-8001)
  - Unknown stage
- SEER Summary Stage (in situ, local, regional, distant) Race and ethnicity were used to construct 3 mutually exclusive racial/ethnic groups (Hispanic, non-Hispanic White [White], non-Hispanic Black [Black]). Persons with unknown or other race were included in the "all cases combined" group.

SEER*Stat[14] was used to calculate case counts and age-specific incidence rates, including 95% confidence limits. Rates per 100,000 population were age-standardized to the 2000 US standard population. We estimated the percentage of cases (all races and both sexes combined) by age (65–69 years, 70–74 years, 75–79 years, 80–84 years, 85–89 years, 90–94 years, and ≥95 years) and select characteristics of incident cases. Next, we examined the distribution of DCO cases by age and race/ethnicity. Lastly, we calculated age-specific incidence rates with and without DCO cases for cancers in the oldest old (ages ≥85 years) by sex and race/ethnicity. We selected cancers where there was a 5% minimum of cases in 2 or more of the 3 oldest age groups (85–89 years, 90–94 years, ≥95 years). We focused on the oldest old because the percentage of DCO cases was greater than 5% in each sex and racial/ethnic group after age 84 years (Figure 1). Because there was a lack of independence between rates calculated with and without DCO cases, there was no formal test to determine statistical differences between rates. Therefore, we noted differences in rates if the 95% CLs around the age-specific incidence rates with and without DCO cases did not overlap in at least 1 of the age groups.

Results

Table 1 shows select characteristics for all cancer cases combined in adults aged ≥65 years. As age at diagnosis increased, the percentage of cases reported by hospitals progressively decreased from 90.6% (ages 65–69 years) to 69.1% (ages ≥95 years) and by treatment centers and laboratories from 5.7% to 3.1%. As age increased, the percentage of DCO cases increased from 1.1% to 19.6%; by physicians, from 2.5% to 7.0%; and by autopsy and nursing home reports, from 0.1% to 1.2%. The percentage of DCO cases reported as a single primary only was over 95% in all age groups. As age increased, the percentage of cases (excluding DCO cases) with positive diagnostic confirmation decreased from 96.8% (65–69 years) to 69.2% (≥95 years), while the percentage of cases with a clinical and visual method of diagnosis increased from 2.3% to 23.3%; and from 0.8% to 7.1% for unknown method of diagnosis. In the absence of DCO cases, the percentage of cases with unknown site increased from 1.4% (65–69 years) to 6.7% (95+ years); from 1.6% to 20.6% for histology NOS; and from 6.0% to 28.5% for unknown stage. Excluding cases with unknown stage, the percentage of cases with local stage decreased from 50.5% to 41.4%, while the percentage of cases with distant stage increased from 25.0% to 34.0%. The percentage of in situ urinary bladder cancers increased from 2.1% to 4.2%.

Figure 1 shows the percentage of DCO incident cases for all cancers combined by sex, race/ethnicity, and age among adults aged ≥65 years. Black men had the highest percentage of DCO cases in all age groups, increasing from 1.7% (ages 65–69 years) to 25.5% (ages ≥95 years). The percentage of DCO cases was greater than 5% in all racial/ethnic groups among adults aged ≥85 years.

Figure 2 shows the distribution of cancer cases by cancer site among adults aged ≥85 years by sex, race/ethnicity, and age. The most frequent cancers among men in all race/ethnicity groups included urinary bladder, colorectal, lung and bronchus (lung), and prostate. Cancers that were the most common among women included colorectal, lung and bronchus (lung), breast, and pancreatic.

Table 2 and Table 3 show age-specific incidence rates for the select cancers among adults aged ≥65 years with and without DCO cases by age and race/ethnicity, for men and women, respectively. Rates for all cancer sites combined peaked in Hispanic and White men in their late 80s and among Black men in their late 70s. Among women, overall cancer rates peaked in Hispanic and Black women in their late 80s and among White women in their early 80s. The peak age at incidence differed by cancer site. Incidence of prostate cancer and female breast cancer peaked in men in their late 60s and early 70s and among women in their 70s. Among men and women, the incidence of lung cancer peaked in the late 70s and early 80s, while the incidence for melanoma and non-Hodgkin lymphoma (NHL), and cancers of the colorectum and pancreas peaked in the 80s, and incidence of bladder cancer peaked in the late 80s and early 90s. Within cancers, the peak age at incidence rates varied somewhat by sex, and race and ethnicity. Lung cancer peaked among men somewhat later than among women, prostate cancer peaked among Black men earlier than among White and Hispanic men and female breast cancer peaked among White and Black women earlier than among Hispanic women.

Compared to site-specific incidence rates excluding DCO cases to those including DCO cases, rates in adults aged ≥95 years without DCO cases were 41.5% lower in Black men with prostate cancer (618.6 vs 361.9, respectively) and 29.2% lower in Hispanic women with lung cancer (126.7 vs 89.7, respectively). Rates excluding DCO cases were lower and ranged among women between 1.9% (White, ages 70–74 years, lung cancer) to 29.2% (Hispanic, ages ≥95 years, lung cancer), and among men between 2.7% (White, ages 70–74 years, lung cancer) to 41.5% (Black, ages ≥95 years, prostate cancer). Cancer rates not reduced by the removal of DCO cases included urinary bladder, melanoma, and NHL.

Figure 3 shows age-specific incidence rates for cancers in adults aged ≥65 years where the 95% confidence limits of rates with and without DCO cases did not overlap in at least 1 of the age groups, by sex and race. The removal of DCO cases did not change the peak age at incidence in men or women although their removal did result in steeper declines in age-specific incidence rates for several common cancers, including lung, colorectal, and prostate cancers among men and colorectal, breast, lung, and pancreatic cancers among women. Among White and Black men, prostate cancer incidence rates, including DCO cases, increased a second time in men in their 90s, while rates without DCO cases continued to decline with age.

Discussion

Our study documents a loss of reported tumor specificity with age. However, the majority of cancers diagnosed in older adults had a positive diagnostic confirmation and were reported with specific site, histology, and stage information. At the same time, the increasing percentage of DCO cases among the oldest old (aged ≥85 years) may suggest the need to explore additional sources of follow-back to help possibly identify an earlier incidence report. Interstate data exchange following National Death Index linkages may help registries identify and remove erroneous DCO cases from their databases.

As the percentage of cancer cases reported by hospitals, treatment centers, and laboratories decreased with age, there was an increase in the percentage of cases reported by physicians, autopsy and nursing home reports, and death certificates. As age increased, there was a decline in the percentage of cases reported with positive diagnostic confirmation and tumor specificity (site, histology, and stage). At the same time, there was an increase in the percentage of cases with a clinical diagnosis or diagnosed by direct visualization. And as others have reported, there was an increase in the percentage of cases reported with distant or unknown stage with increasing age.[15,16] Older adults have not been recommended by the US Preventive Services Task Force to undergo routine screening for breast, cervical, and colorectal cancer past certain ages, thus limiting the opportunity for early detection of these cancers at advanced ages.[17-20] In addition, older cancer patients may have undergone fewer and less intrusive diagnostic procedures, perhaps because they had comorbidities, were frail, or were otherwise poor candidates for treatment.[16,21-23] However, it should be noted that less than 10% of cancers diagnosed in older patients were reported with unknown method of diagnosis, and the majority of cancer cases diagnosed, even in the oldest age group (aged ≥95 years), had a positive diagnostic confirmation (69%) and were reported with specific site (93.3%), histology (79.4%), and stage (71.5%). The finding that the majority of older cancer patients, including the oldest old, had detailed and specific tumor information, necessary for effective, evidenced-based treatment, may help explain why population-based cancer survival in the United States has been reported to be among the highest worldwide.[24]

Age-specific incidence rates for all cancer sites combined are reported to peak between the ages of 80–84 years for women and 85–89 years in men, and then decline.[3,10,25] Our study reported that peak incidence for all cancer sites combined occurred somewhat earlier among Black men (75–79 years) compared to Hispanic and White men (85–89 years), and somewhat later among Black women (85–89 years) compared to Hispanic and White women (80–84 years). In addition, prostate cancer incidence rates were higher and peaked somewhat earlier in Black men (65–69 years) compared to White and Hispanic men (70–74 years); and female breast cancer incidence rates were lower and peaked somewhat later in Hispanic women (75–79 years) compared to Black and White women (70–74 years). Because screening advances the age at which a cancer is diagnosed, it is not surprising that the peak age at incidence for prostate and female breast cancers occurred somewhat earlier compared to the other common cancers of older adults. As colorectal cancer is a screen-detectable cancer, screening has had the effect of reducing incidence rates overall because it often finds precancerous polyps that can be removed before they become incident cases.[26]

For the most part, age-specific incidence patterns including DCO cases were similar to those without DCO cases. Rates without DCO cases tended to decline more steeply with age for all sites combined and for cancers of the colorectum, lung, pancreas, prostate, and female breast. Of particular note was prostate cancer. After an initial decline, rates which included DCO cases increased for a second time among White and Black men in their 90s, while rates excluding DCO cases continued to decline with age into the oldest age groups. There were no differences in age-specific rates with and without DCO cases for urinary bladder, melanoma, and NHL. Deaths from melanoma and NHL may be underreported based on DCO cases because histologic information, needed to code these causes of death, was not recorded on death certificates.

The large percentage of DCO cases among the oldest old may limit the utility of incidence data in this age group. Cancer registries may want to examine the reporting sources used to identify incident cases in this age group, particularly those cases reported solely by death certificates. All US cancer registries follow similar procedures for the reporting of DCO cases.[27] The higher percentage of DCO cases among the oldest cancer patients suggests possible underreporting, particularly for Black men who had the largest percentage of DCO cases. While a cancer can be diagnosed at the time of a patient's death, this occurrence, even among the oldest old, should be somewhat uncommon in the US population. First, most patients present to a health care provider with signs and symptoms of their cancer prior to their death. Second, cancer is a reportable disease in all states,[6] thus encounters with health care providers should result in an incident report being sent to the statewide cancer registry. And third, most US cancer registries have been in operation for several decades, and prevalent cases (cases diagnosed before the registry began operation) should no longer be reported as DCO cases, as can happen in the early years of operation in a start-up cancer registry.[28] However, prostate DCO cases may pose a particular challenge for some registries: 20-year survival following a diagnosis of prostate cancer is reported to be high (≥80%) for patients diagnosed in calendar years just before many NPCR-funded cancer registries became fully operational,[6,29] and because prostate cancer deaths may be subject to attribution bias.[30] Furthermore, as fewer cancer cases diagnosed in the oldest patients were reported by hospitals and without diagnostic confirmation, the accuracy of the cause-of-death listed on the death certificate may be less reliable; a study assessing the concordance between cancer-specific cause of death and primary cancer site at diagnosis showed significant differences by cancer type and certifier type.[31,32] Nonphysician coroners had lower accuracy rates compared with physicians.

A higher percentage of DCO cases may also suggest that registries are possibly overreporting incident cases. Over 95% of DCO cases in our analysis were reported as a single primary (ie, the death certificate was the only report of cancer for that person). As shown by Wohler,[9] a DCO case may result if a cancer patient, diagnosed and registered with the cancer registry in one state, moves to a different state, dies of cancer, and is registered as a DCO case in the death state's cancer registry. Because SEER and NPCR do not require their registries to submit personal identifiers to their respective federal programs, it is not possible for the programs to identify cancer patients who are registered in 2 or more registries. However, there is a way for cancer registries to identify these cases. Cancer registries routinely link their incidence data to the National Death Index to update vital status among patients who leave the state after their diagnosis. If the registry initiating the National Death Index linkage shared relevant information with death state registries, the death state registry can identify and remove erroneous DCO cases from their databases. The exchange of information has been facilitated by the NAACCR National Interstate Data Exchange Agreement.

There are strengths and limitations that should be kept in mind when interpreting the findings and conclusions of this study. This large, population-based study was nationally representative of the US population, and was able to look at the burden of cancer in older adults by race and ethnicity. However, because cancer registries do not routinely collect information on comorbidities or insurance status, we were unable to explore possible

reasons for why some older adults did not have diagnostically confirmed cancers or why their cancers were diagnosed at a later stage compared to other older adults.

In conclusion, the surveillance data are greatly enriched by having detailed incidence data for the oldest old. These data will enable health care professionals to prepare for the growing number of adults with cancer. However, the high percentage of DCO cases among patients aged ≥85 years may suggest the need to explore additional sources of follow-back.

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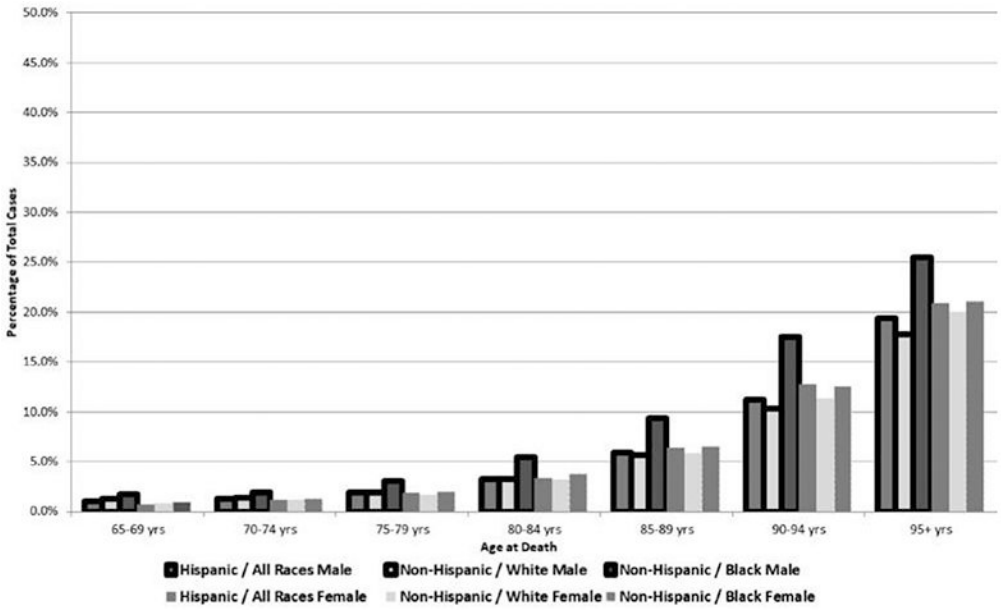

Figure 1. Percentage of Incident Cases Ascertained from Death Certicates Only for All Cancer Cases Combined by Sex, Race/Ethnicity, and Age among Adults Aged ≥65 Years (2011–2015)

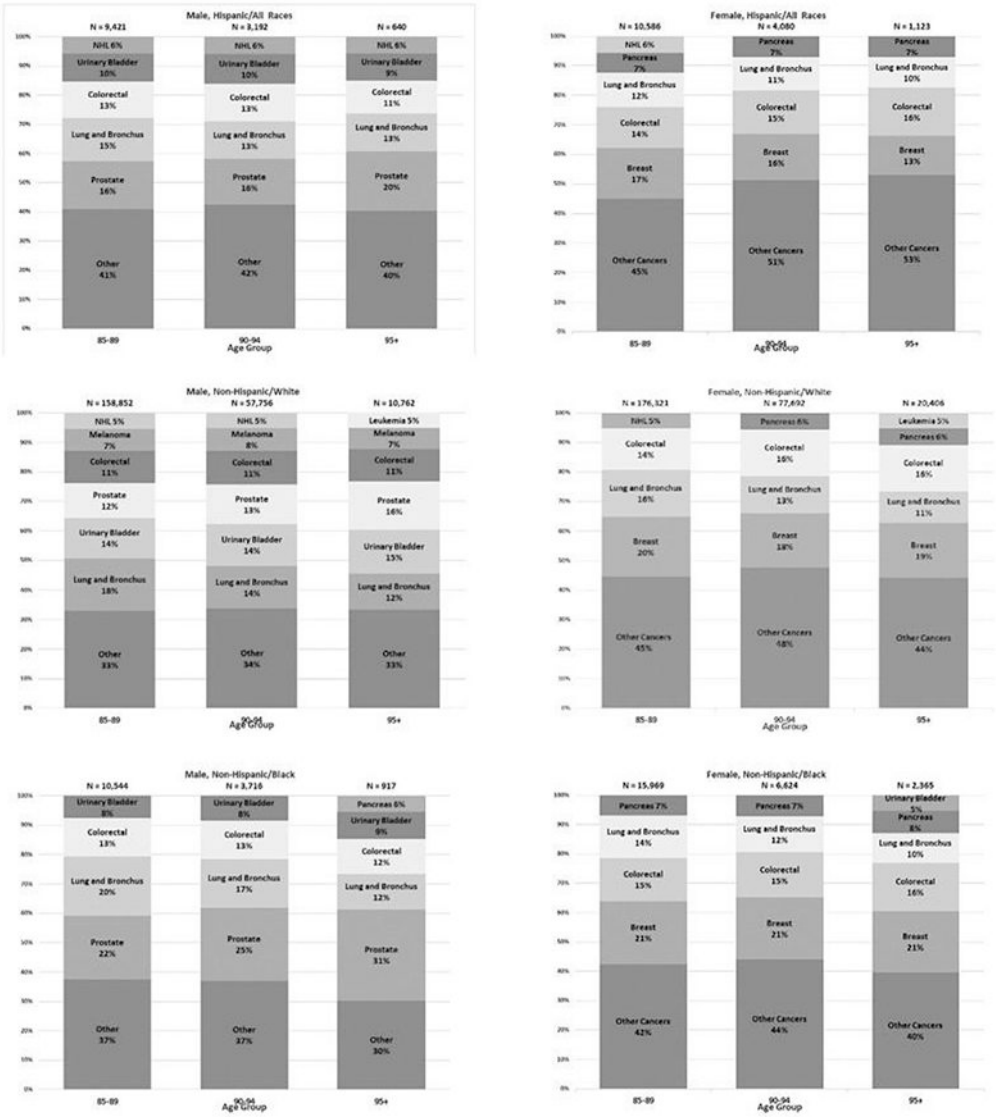

Figure 2. Distribution of Cancer Types among Adults Aged ≥85 Years by Sex, Race/Ethnicity, and Age Group (2011–2015)

Selected cancers were those with a minimum 5% of cases in 2 or more of the 3 age groups (85–89 years, 90–94 years, ≥95 years).

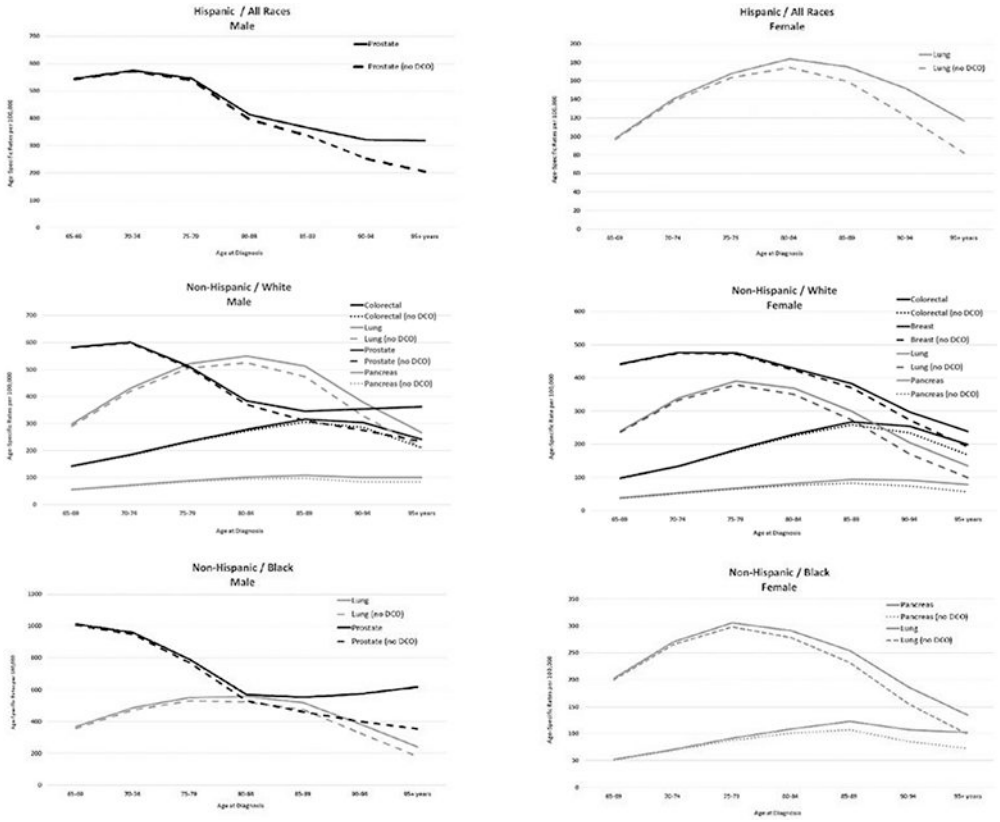

Figure 3.

Age-Specific Incidence Rates for Selected Cancers among Adults Aged ≥65 Years, With and Without Death-Certificate-Only Cases, by Sex and Race/Ethnicity (2011–2015)

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Table 1.

Select Characteristics for All Cancer Cases Combined by Age among Adults Aged ≥65 Years (2011–2015)

	Age at diagnosis (y)						
	65–69	**70–74**	**75–79**	**80–84**	**85–89**	**90–94**	**≥95**
Type of reporting source (all cases)							
Number of DCO and non-DCO cases	1,078,687	936,430	766,146	593,552	381,693	153,060	36,213
Hospital	90.6%	90.0%	89.4%	88.3%	85.4%	78.9%	69.1%
DCO	1.1%	1.3%	1.9%	3.3%	5.9%	11.2%	19.6%
Physician	2.5%	2.7%	3.0%	3.4%	4.3%	5.6%	7.0%
Treatment center and laboratory	5.7%	5.8%	5.5%	4.7%	3.9%	3.5%	3.1%
Autopsy and nursing home	0.1%.	0.1%	0.2%	0.3%	0.5%	0.8%	1.2%
Sequence number of DCO cases							
Number of DCO cases	11,795	12,349	14,517	19,719	22,600	17,138	7,091
Single primary only	96.5%	96.3%	95.5%	95.7%	95.5%	95.7%	96.2%
Method, specificity, and stage at diagnosis (non-DCO cases)							
Number of non-DCO cases	1,066,892	924,081	751,629	573,833	359,093	135,922	29,122
Method of diagnosis							
Positive Confirmation	96.8%	96.1%	94.8%	91.9%	86.9%	78.8%	69.2%
Clinical and visual	2.3%	2.9%	4.0%	6.3%	10.3%	16.8%	23.3%
Unknown method of diagnosis	0.8%	1.0%	1.2%	1.8%	2.8%	4.7%	7.1%
Specificity of diagnosis							
Unknown site	1.4%	1.7%	2.1%	2.8%	3.9%	5.4%	6.7%
Histology NOS	1.6%	2.2%	3.0%	4.8%	8.0%	13.5%	20.6%
Unknown stage	6.0%	6.8%	8.2%	10.6%	14.3%	20.7%	28.5%
Stage at diagnosis[§]							
In situ (urinary bladder)	2.6%	3.1%	3.6%	4.1%	4.2%	4.2%	4.1%
Local	50.5%	48.3%	45.8%	42.8%	41.6%	41.4%	41.4%
Regional	21.9%	21.2%	21.0%	21.3%	21.0%	20.5%	20.5%
Distant	25.0%	27.4%	29.6%	31.9%	33.2%	33.9%	34.0%

DCO, death certificate only; NOS, not otherwise specified.

§ Excluding cases with unknown stage.

Table 2.

Age-Specific Incidence Rates for the Most Common Cancers in Adults Aged ≥65 years With and Without Death-Certificate-Only (DCO) Cases by Race/Ethnicity for Males

Male/Hispanic/All Races														
Age (y)	**65-69**		**70-74**		**75-79**		**80-84**		**85-89**		**90-94**		**≥95**	
	Rate	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**
All Site	**1,500.9**	(1,486.1, 1,515.9)	**1,842.4**	(1,822.2, 1,862.7)	**2,117.1**	(2,091.0, 2,143.4)	**2,210.6**	(2,177.6, 2,243.9)	**2,237.2**	(2,192.2, 2,282.8)	**2,037.9**	(1,967.8, 2,109.8)	**1,576.4**	(1,456.6, 1,703.4)
	1,485.0	*(1,470.3, 1,499.9)*	***1,818.8***	*(1,798.7, 1,839.0)*	***2,076.3***	*(2,050.5, 2,102.3)*	***2,138.5***	*(2,106.1, 2,171.3)*	***2,104.4***	*(2,060.8, 2,148.7)*	***1,809.3***	*(1,743.3, 1,877.2)*	***1,270.9***	*(1,163.6, 1,385.5)*
							−3.3%		−5.9%		−11.2%		−19.4%	
Bladder	**64.4**	(61.4, 67.6)	**94.7**	(90.2, 99.4)	**145.2**	(138.4, 152.2)	**181.2**	(171.8, 190.9)	**215.4**	(201.6, 229.9)	**209.4**	(187.4, 233.3)	**164.7**	(124.8, 213.4)
	64.1	*(61.1, 67.3)*	***94.2***	*(89.7, 98.9)*	***144.4***	*(137.6, 151.4)*	***179.6***	*(170.3, 189.3)*	***211.6***	*(197.9, 225.9)*	***196.6***	*(175.3, 219.9)*	***150.3***	*(112.2, 197.1)*
Colorectal	**157.4**	(152.6, 162.3)	**188.5**	(182.1, 195.1)	**226.1**	(217.6, 234.8)	**265.1**	(253.8, 276.8)	**280.9**	(265.1, 297.4)	**261.1**	(236.4, 287.7)	**190.7**	(147.5, 242.7)
	156.1	*(151.3, 160.9)*	***186.4***	*(180.0, 192.9)*	***223.1***	*(214.7, 231.7)*	***259.9***	*(248.7, 271.5)*	***271.9***	*(256.4, 288.1)*	***241.3***	*(217.6, 266.9)*	***170.5***	*(129.8, 219.9)*
Lung	**147.5**	(142.8, 152.2)	**233.6**	(226.4, 240.9)	**301.1**	(291.3, 311.1)	**353.4**	(340.3, 366.9)	**332.7**	(315.5, 350.6)	**263.7**	(238.9, 290.4)	**202.3**	(157.7, 255.6)
	144.4	*(139.8, 149.0)*	***228.4***	*(221.3, 235.6)*	***293.1***	*(283.4, 303.0)*	***339.2***	*(326.43 52.5)*	***308.9***	*(292.4, 326.2*	***227.3***	*(204.3, 252.2)*	***164.7***	*(124.8, 213.4)*
Pancreas	**43.3**	(40.8, 45.9)	**65.1**	(61.4, 69.0)	**78.1**	(73.1, 83.3)	**91.8**	(85.2, 98.8)	**86.7**	(78.0, 96.0)	**88.7**	(74.6, 104.8)	**78.0**	(51.4, 113.5)
	42.1	*(39.7, 44.7)*	***63.6***	*(59.9, 67.5)*	***75.0***	*(70.1, 80.1)*	***84.7***	*(78.4, 91.4)*	***77.2***	*(69.0, 86.0)*	***73.4***	*(60.6, 88.1)*	***60.7***	*(37.6, 92.8)*
Prostate	**544.9**	(536.0, 554.0)	**575.3**	(61.4, 69.0)	**546.7**	(533.5, 560.2)	**412.6**	(398.4, 427.2)	**364.7**	(346.7, 383.5)	**320.5**	(293.1, 349.8)	**315.0**	(258.6, 380.0)
	544.0	*(535.1, 553.0)*	***572.9***	*(59.9, 67.5)*	***540.5***	*(527.3, 553.9)*	***396.5***	*(382.6, 410.8)*	***335.5***	*(318.3, 353.5)*	***252.2***	*(227.9, 278.3)*	***202.3***	*(157.7, 255.6)*
											−21.3%		−35.8%	
Melanoma	**15.6**	(14.1, 17.1)	**19.9**	(17.9, 22.1)	**28.3**	(25.3, 31.5)	**32.0**	(28.1, 36.2)	**43.9**	(37.8, 50.7)	**35.1**	(26.5, 45.7)	**46.2**	(26.4, 75.1)
	15.4	*(14.0, 17.0)*	***19.9***	*(17.9, 22.1)*	***27.9***	*(24.9, 31.0)*	***31.5***	*(27.6, 35.7)*	***42.7***	*(36.7, 49.5)*	***33.2***	*(24.8, 43.5)*	***34.7***	*(17.9, 60.6)*
NHL	**58.3**	(55.4, 61.3)	**82.9**	(78.7, 87.3)	**106.5**	(100.7, 112.6)	**120.4**	(112.8, 128.4)	**127.5**	(117.0, 138.8)	**120.0**	(103.5, 138.5)	**95.4**	(65.6, 133.9)

Male/Hispanic/All Races														
Age (y)	**65-69**		**70-74**		**75-79**		**80-84**		**85-89**		**90-94**		**≥95**	
	Rate	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**
	57.7	*(54.9, 60.7)*	***82.4***	*(78.2, 86.8)*	***105.4***	*(99.6, 111.4)*	***119.1***	*(111.6, 127.1)*	***124.7***	*(114.2, 135.8)*	***114.3***	*(98.2, 132.3)*	***95.4***	*(65.6, 133.9)*
Male/Non-Hispanic/White														
All Sites	**1,910.6**	(1,905.2, 1,915.9)	**2,348.5**	(2,341.5, 2,355. 5)	**2,665.7**	(2,656.8, 2,674.5)	**2,820.9**	(2,810.1, 2,831.7)	**2,915.6**	(2,901.3, 2,929.9)	**2,662.0**	(2,640.4, 2,683.8)	**2,206.8**	(2,165.3, 2,248.9)
	1,885.7	*(1,880.4, 1,891.0)*	***2,315.9***	*(2,308.9, 2,322.8)*	***2,614.7***	*(2,606.0, 2,623.5)*	***2,729.8***	*(2,719.2, 2,740.5)*	***2,750.6***	*(2,736.7, 2,764.5)*	***2,387.2***	*(2,366.7, 2,407.9)*	***1,815.1***	*(1,777.5, 1,853.4)*
	−1.3%		−1.4%		−1.9%		−3.2%		−5.7%		−10.3%		−17.7%	
Bladder	**134.3**	(132.9, 135.8)	**205.3**	(203.2, 207.3)	**279.8**	(276.9, 282.7)	**349.0**	(345.2, 352.8)	**400.4**	(395.1, 405.8)	**380.8**	(372.6, 389.1)	**335.2**	(318.4, 352.7)
	133.7	*(132.3, 135.1)*	***204.4***	*(202.3, 206.5)*	***278.3***	*(275.5, 281.2)*	***345.4***	*(341.6, 349.2)*	***392.7***	*(387.5, 398.0)*	***366.5***	*(358.5, 374.7)*	***310.8***	*(294.6, 327.7)*
Colorectal	**142.5**	(141.0, 144.0)	**184.0**	(182.0, 186.0)	**233.7**	(231.1, 236.3)	**278.9**	(275.5, 282.3)	**316.2**	(311.5, 320.9)	**303.5**	(296.2, 310.9)	**244.5**	(230.1, 259.5)
	140.9	*(139.5, 142.4)*	***182.0***	*(180.1, 184.0)*	***230.7***	*(228.1, 233.4)*	***273.3***	*(269.9, 276.6)*	***305.7***	*(301.1, 310.4)*	***286.2***	*(279.1, 293.4)*	***214.2***	*(200.8, 228.3)*
									−3.3%		−5.7%		−12.4%	
Lung	**298.9**	(296.8, 301.0)	**430.8**	(427.8, 433.8)	**521.1**	(517.1, 525.0)	**550.2**	(545.4, 555.0)	**512.5**	(506.5, 518.5)	**378.3**	(370.1, 386.5)	**271.6**	(256.5, 287.5)
	290.3	*(288.2, 292.3)*	***419.0***	*(416.1, 422.0)*	***504.7***	*(500.9, 508.6)*	***524.7***	*(520.0, 529.4)*	***474.2***	*(468.5, 480.0)*	***328.0***	*(320.4, 335.7)*	***215.1***	*(201.6, 229.2)*
	−2.9%		−2.7%		−3.1%		−4.6%		−7.5%		−13.3%		−20.8%	
Pancreas	**56.0**	(55.1, 56.9)	**71.4**	(70.2, 72.6)	**88.2**	(86.6, 89.9)	**101.2**	(99.2, 103.3)	**109.0**	(106.2, 111.8)	**100.1**	(95.9, 104.4)	**100.1**	(78.0, 95.5)
	54.3	*(53.4, 55.2)*	***69.2***	*(68.0, 70.4)*	***84.9***	*(83.3, 86.5)*	***95.3***	*(93.3, 97.3)*	***97.5***	*(94.9, 100.1)*	***84.1***	*(80.3, 88.1)*	***84.1***	*(58.5, 73.8)*
					−3.8%		−5.8%		−10.6%		−15.9%		−15.9%	
Prostate	**582.4**	(579.4, 585.3)	**600.7**	(597.2, 604.2)	**513.6**	(509.7, 517.5)	**384.2**	(380.2, 388.2)	**345.9**	(341.0, 350.9)	**354.2**	(346.3, 362.2)	**366.6**	(349.0, 384.9)
	580.9	*(578.0, 583.8)*	***597.9***	*(594.4, 601.5)*	***507.6***	*(503.7, 511.5)*	***370.2***	*(366.3, 374.1)*	***310.5***	*(305.9, 315.2)*	***275.9***	*(268.9, 282.9)*	***240.4***	*(226.2, 255.3)*
							−3.6%		−10.2%		−22.1%		−34.4%	
Melanoma	**108.2**	(106.9, 109.5)	**137.0**	(135.4, 138.7)	**171.9**	(169.7, 174.2)	**199.0**	(196.1, 201.8)	**217.3**	(213.4, 221.2)	**205.1**	(199.1, 211.2)	**160.8**	(149.2, 173.1)

Male/Hispanic/All Races														
Age (y)	**65-69**		**70-74**		**75-79**		**80-84**		**85-89**		**90-94**		**≥95**	
	Rate	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**
	107.8	*(106.6, 109.1)*	***136.6***	*(134.9, 138.3)*	***171.1***	*(168.9, 173.4)*	***197.6***	*(194.8, 200.5)*	***215.3***	*(211.5, 219.3)*	***201.6***	*(195.6, 207.6)*	***154.7***	*(143.3, 166.8)*
NHL	**76.0**	(74.9, 77.0)	**102.3**	(100.9, 103.8)	**129.2**	(127.3, 131.2)	**154.3**	(151.8, 156.8)	**158.7**	(155.4, 162.1)	**138.5**	(133.6, 143.6)	**95.9**	(87.0, 105.5)
	75.3	*(74.2, 76.3)*	***101.5***	*(100.1, 103.0)*	***127.7***	*(125.8, 129.6)*	***151.7***	*(149.2, 154.2)*	***154.0***	*(150.7, 157.4)*	***131.1***	*(126.3, 136.0)*	***87.5***	*(79.0, 96.7)*
Male/Non-Hispanic/Black														
All Sites	**2,378.9**	(2,361.4, 2,396.5)	**2,597.8**	(2,575.3, 2,620.5)	**2,662.0**	(2,634.1, 2,690.1)	**2,563.3**	(2,528.0, 2,598.9)	**2,556.3**	(2,507.7, 2,605.6)	**2,310.1**	(2,236.4, 2,385.6)	**1,984.8**	(1,858.4, 2,117.5)
	2,338.6	*(2,321.2, 2,356.1)*	***2,547.8***	*(2,525.5, 2,570.2)*	***2,581.0***	*(2,553.5, 2,608.7)*	***2,422.8***	*(2,388.5, 2,457.5)*	***2,316.3***	*(2,270.1, 2,363.2)*	***1,906.0***	*(1,839.2, 1,974.7)*	***1,478.3***	*(1,369.5, 1,593.4)*
	−1.7%		−1.9%		−3.0%		−5.5%		−9.4%		−17.5%		−25.5%	
Bladder	**72.8**	(69.8, 76.0)	**101.4**	(97.0, 105.9)	**130.6**	(124.5, 136.9)	**166.0**	(157.1, 175.3)	**194.4**	(181.2, 208.4)	**194.0**	(173.0, 216.7)	**187.4**	(146.9, 235.6)
	72.3	*(69.2, 75.4)*	***100.6***	*(96.2, 105.1)*	***128.8***	*(122.7, 135.1)*	***161.6***	*(152.8, 170.7)*	***188.9***	*(175.8, 202.6)*	***180.3***	*(160.1, 202.3)*	***169.4***	*(131.0, 215.5)*
Colorectal	**198.6**	(193.6, 203.7)	**234.5**	(227.8, 241.4)	**283.0**	(273.9, 292.3)	**317.6**	(305.2, 330.3)	**333.6**	(316.2, 351.7)	**303.4**	(277.1, 331.5)	**238.7**	(19,2.7, 292.4)
	195.3	*(190.3, 200.4)*	***231.1***	*(224.4, 237.9)*	***276.0***	*(267.1, 285.2)*	***307.3***	*(295.1, 319.8)*	***319.5***	*(302.5, 337.3)*	***277.9***	*(252.7, 304.9)*	***205.3***	*(162.8, 255.6)*
Lung	**366.6**	(359.7, 373.5)	**487.5**	(477.7, 497.3)	**550.6**	(538.0, 563.5)	**557.9**	(541.5, 574.7)	**519.3**	(497.5, 541.8)	**382.9**	(353.3, 414.4)	**256.7**	(208.8,312.2)
	355.3	*(348.6, 362.2)*	***473.2***	*(463.6, 482.9)*	***531.1***	*(518.7, 543.8)*	***523.0***	*(507.2, 539.3)*	***474.7***	*(453.9, 496.2)*	***326.4***	*(299.1, 355.5)*	***192.5***	*(151.4, 241.3)*
							−6.2%		−8.6%		−14.8%		−25.0%	
Pancreas	**65.5**	(62.6, 68.5)	**83.0**	(79.1, 87.2)	**97.6**	(92.3, 103.1)	**108.5**	(101.4, 116.1)	**115.6**	(105.5, 126.5)	**102.6**	(87.5, 119.5)	**123.2**	(90.8, 163.4)
	62.7	*(59.8, 65.6)*	***79.2***	*(75.3, 83.3)*	***92.1***	*(87.0, 97.4)*	***100.5***	*(93.6, 107.8)*	***99.6***	*(90.2, 109.8)*	***77.1***	*(64.1, 91.9)*	***105.2***	*(75.5, 142.8)*
Prostate	**1,010.1**	(998.7, 1,021.7)	**957.4**	(943.8, 971.2)	**789.8**	(774.6, 805.2)	**569.2**	(552.7, 586.2)	**552.0**	(529.6, 575.2)	**574.4**	(538.0, 612.7)	**618.6**	(543.0, 701.8)
	1,004.9	*(993.5, 1,016.3)*	***947.3***	*(933.8, 961.0)*	***768.9***	*(754.0, 784.1)*	***530.3***	*(514.3, 546.6)*	***461.8***	*(441.3, 483.1)*	***399.1***	*(368.8, 431.2)*	***361.9***	*(304.6, 426.8)*
							−6.8%		−16.3%		−30.5%		−41.5%	

Male/Hispanic/All Races														
Age (y)	**65-69**		**70-74**		**75-79**		**80-84**		**85-89**		**90-94**		**≥95**	
	Rate	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**
Melanoma	**3.8**	(3.1, 4.6)	**4.5**	(3.6, 5.6)	**6.4**	(5.1, 7.9)	**9.4**	(7.4, 11.8)	**5.6**	(3.5 8.4)	**6.8**	(538.0, 612.7)	**10.3**	(2.8, 26.3)
	3.7	*(3.1, 4.5)*	***4.4***	*(3.5, 5.5)*	***6.2***	*(4.9, 7.7)*	***9.3***	*(7.3, 11.7)*	***4.8***	*(3.0, 7.5)*	***6.8***	*(368.8, 431.2)*	***10.3***	*(2.8, 26.3)*
NHL	**49.9**	(47.4, 52.5)	**57.3**	(54.0, 60.7)	**70.5**	(66.0, 75.2)	**76.7**	(70.7, 83.1)	**72.7**	(64.7, 81.4)	**54.7**	(43.9, 67.4)	**61.6**	(39.5, 91.7)
	49.3	*(46.8, 51.9)*	***56.5***	*(53.2, 59.9)*	***69.6***	*(65.1, 74.3)*	***74.2***	*(68.3, 80.4)*	***69.1***	*(61.3, 77.6)*	***51.0***	*(40.5 63.3)*	***53.9***	*(33.4, 82.4)*

Rates were standardized to the 2000 US standard population. Italicized rates do not include DCO cases. Bolded rates, highlighted in grey, indicate peak age at incidence in a given sex, site, and race/ethnic group. Percentage differences between rates are shown where the 95% confidence limit (CL) of rates with and without DCO cases did not overlap. NHL, non-Hodgkin lymphona.

Table 3.

Age-Specific Incidence Rates for the Most Common Cancers in Adults Aged ≥65 years With and Without Death-Certificate-Only (DCO) Cases by Race/Ethnicity for Females

Female/Hispanic/All Races														
Age(y)	**65-69**		**70-74**		**75-79**		**80-84**		**85-89**		**90-94**		**≥95**	
	Rate	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**
All Sites	**1,056.1**	(1,044.6, 1,067.6)	**1,219.4**	(1,204.9, 1,234.1)	**1,374.8**	(1,357.0, 1,392.9)	**1,468.0**	(1,446.2, 1,490.1)	**1,493.3**	(1,465.0, 1,522.0)	**1,342.1**	(1,301.2, 1,383.9)	**1,123.1**	(1,058.3, 1,190.7)
	1,048.0	*(1,036.6, 1,059.5)*	***1,205.3***	*(1,190.9, 1,219.9)*	***1,348.6***	*(1,330.9, 1,366.5)*	***1,417.9***	*(1,396.4, 1,439.6)*	***1,398.2***	*(1,370.8, 1,426.0)*	***1,171.0***	*(1,132.9, 1,210.1)*	***888.0***	*(830.6, 948.4)*
							−3.4%		−6.4%		−12.7%		−20.9%	
Bladder	**16.4**	(15.0, 17.9)	**23.8**	(21.8, 26.0)	**31.9**	(29.2, 34.7)	**45.4**	(41.7, 49.5)	**48.0**	(43.0, 53.3)	**47.0**	(39.6, 55.4)	**43.0**	(30.1, 59.6)
	16.3	*(14.9, 17.8)*	***23.8***	*(21.8, 25.9)*	***31.6***	*(29.0, 34.5)*	***44.5***	*(40.8, 48.5)*	***46.1***	*(41.3, 51.4)*	***42.8***	*(35.7, 50.8)*	***38.3***	*(26.2, 54.0)*
Colorectal	**95.3**	(91.9, 98.8)	**115.0**	(110.6, 119.5)	**142.0**	(136.3, 147.8)	**180.8**	(173.2, 188.7)	**206.8**	(196.3, 217.7)	**197.0**	(181.6, 213.5)	**181.7**	(154.0, 213.0)
	94.9	*(91.5, 98.4)*	***114.4***	*(109.9, 118.9)*	***140.1***	*(134.5, 146.0)*	***177.8***	*(170.3, 185.6)*	***199.0***	*(188.8, 209.7)*	***179.3***	*(164.5, 195.0)*	***156.6***	*(130.9, 185.8)*
Breast	**320.1**	(313.8, 326.4)	**318.1**	(310.7, 325.6)	**320.8**	(312.2, 329.6)	**284.0**	(274.4, 293.8)	**255.0**	(243.4, 267.1)	**209.2**	(193.3, 226.1)	**143.5**	(118.9, 171.6)
	319.0	*(312.7, 325.4)*	***316.6***	*(309.3, 324.1)*	***317.9***	*(309.3, 326.6)*	***279.4***	*(269.9, 289.1)*	***246.2***	*(234.7, 258.0)*	***191.8***	*(176.5, 208.0)*	***112.4***	*(90.8, 137.5)*
Lung	**98.1**	(94.6, 101.6)	**141.0**	(136.1, 146.0)	**168.0**	(161.8, 174.4)	**183.7**	(1 76.0, 191.6)	**174.9**	(165.3, 184.9)	**152.0**	(138.4, 166.5)	**126.7**	(103.8, 153.3)
	96.6	*(93.2, 100.2)*	***138.4***	*(133.5, 143.4)*	***163.5***	*(157.4, 169.8)*	***174.2***	*(166.7, 181.9)*	***159.3***	*(150.1, 168.8)*	***122.4***	*(110.2, 135.5)*	***89.7***	*(70.5, 112.4)*
											−19.5%		−29.2%	
Pancreas	**34.6**	(32.5, 36.7)	**49.6**	(46.7, 52.6)	**69.3**	(65.4, 73.5)	**76.9**	(72.0, 82.1)	**100.0**	(92.8, 107.7)	**95.7**	(85.0, 107.4)	**84.9**	(66.3, 107.1)
	34.0	*(32.0, 36.1)*	***48.5***	*(45.6, 51.5)*	***66.7***	*(62.8, 70.8)*	***72.5***	*(67.7, 77.5)*	***89.7***	*(82.9, 97.0)*	***76.3***	*(66.8, 86.8)*	***65.8***	*(49.5, 85.6)*
Melanoma	**11.4**	(10.2, 12.6)	**12.0**	(10.6, 13.5)	**14.6**	(12.8, 16.5)	**19.1**	(16.7, 21.8)	**19.2**	(16.1, 22.7)	**15.8**	(11.6, 20.9)	**14.3**	(7.4, 25.1)
	11.4	*(10.2, 12.6)*	***11.9***	*(10.5, 13.4)*	***14.5***	*(12.7, 16.5)*	***18.8***	*(16.4, 21.5)*	***18.5***	*(15.5, 21.9)*	***15.5***	*(11.4, 20.6)*	***14.3***	*(7.4, 25.1)*
NHL	**50.0**	(47.5, 52.5)	**62.5**	(59.2, 65.9)	**84.1**	(79.8, 88.7)	**86.6**	(81.4, 92.1)	**85.2**	(78.5, 92.3)	**62.8**	(54.2, 72.4)	**50.2**	(36.2, 67.9)
	49.6	*(47.2, 52.2)*	***62.1***	*(58.8, 65.4)*	***83.7***	*(79.3, 88.2)*	***85.1***	*(79.9, 90.5)*	***83.1***	*(76.5, 90.1)*	***57.9***	*(49.7, 67.1)*	***44.2***	*(31.1, 61.0)*
Female/Non-Hispanic/White														

Female/Hispanic/All Races														
Age(y)	**65-69**		**70-74**		**75-79**		**80-84**		**85-89**		**90-94**		**≥95**	
	Rate	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**
All Sites	**1,400.5**	(1,396.1, 1,404.9)	**1,669.5**	(1,663.9, 1,675.0)	**1,875.2**	(1,868.5, 1,881.9)	**1,925.2**	(1,917.7, 1,932.8)	**1,889.6**	(1,880.8, 1,898.4)	**1,616.0**	(1,604.6, 1,627.4)	**1,269.5**	(1,252.2, 1,287.1)
	1,389.6	*(1,385.2, 1,393.9)*	***1,650.1***	*(1,644.6, 1,655.6)*	***1,842.8***	*(1,836.2, 1,849.5)*	***1,863.6***	*(1,856.2, 1,871.0)*	***1,778.7***	*(1,770.2, 1,787.3)*	***1,432.5***	*(1,421.9, 1,443.3)*	***1,015.0***	*(999.5, 1,030.7)*
	−0.8%		−1.2%		−1.7%		−3.2%		−5.9%		−11.4%		−20.0%	
Bladder	**35.0**	(34.3, 35.7)	**48.5**	(47.6, 49.5)	**62.6**	(61.4, 63.9)	**75.1**	(73.6, 76.6)	**83.1**	(81.3, 85.0)	**76.9**	(74.4, 79.4)	**63.0**	(58.9, 67.3)
	34.8	*(34.2, 35.5)*	***48.4***	*(47.4, 49.3)*	***62.2***	*(61.0, 63.4)*	***73.9***	*(72.4, 75.4)*	***80.8***	*(79.0, 82.7)*	***72.5***	*(70.1, 74.9)*	***55.7***	*(51.9, 59.8)*
Colorectal	**98.0**	(96.8, 99.2)	**133.5**	(131.9, 135.0)	**182.8**	(180.7, 184.9)	**230.1**	(227.5, 232.7;	**267.4**	(264.1, 270.8)	**254.4**	(249.9, 259.0)	**207.8**	(200.3, 215.6)
	97.4	*(96.2, 98.5)*	***132.3***	*(130.8, 133.9)*	***180.9***	*(178.8, 183.0)*	***225.6***	*(223.0, 228.2)*	***258.3***	*(255.0, 261.6)*	***233.8***	*(229.5, 238.1)*	***176.6***	*(169.7, 183.7)*
									−3.4%		−8.1%		−15.0%	
Breast	**442.4**	(439.9, 444.9)	**476.5**	(473.6, 479.5)	**474.9**	(471.6, 478.3)	**428.8**	(425.3, 432.4)	**382.7**	(378.7, 386.7)	**297.2**	(292.3, 302.1)	**241.6**	(233.4, 249.9)
	441.0	*(438.5, 443.5)*	***474.2***	*(471.2, 477.1)*	***471.6***	*(468.3, 475.0)*	***422.9***	*(419.4, 426.5)*	***370.7***	*(366.8, 374.6)*	**272.6**	*(268.0, 277.4)*	***198.6***	*(191.2, 206.2)*
									−3.1%		−8.3%		−17.8%	
Lung	**239.7**	(237.9, 241.5)	**339.4**	(336.9, 341.9)	**389.5**	(386.4, 392.6)	**368.6**	(365.3, 371.9)	**299.3**	(295.8, 302.8)	**204.2**	(200.2, 208.3)	**140.6**	(134.5, 147.0)
	236.1	*(234.3, 237.9)*	***332.8***	*(330.3, 335.3)*	***378.7***	*(375.7, 381.7)*	***350.5***	*(347.3, 353.7)*	***272.9***	*(269.5, 276.2)*	***169.8***	*(166.1, 173.5)*	***105.0***	*(99.6, 110.5)*
			−1.9%		−2.8%		−4.9%		−8.8%		−16.8%		−25.4%	
Pancreas	**38.6**	(37.8, 39.3)	**52.8**	(51.8, 53.8)	**67.7**	(66.4, 69.0)	**82.1**	(80.6, 83.7)	**93.5**	(91.6, 95.5)	**91.5**	(88.8, 94.2)	**78.7**	(74.1, 83.5)
	37.8	*(37.1, 38.6)*	***51.3***	*(50.3, 52.3)*	***65.1***	*(63.9, 66.4)*	***76.1***	*(74.6, 77.6)*	***82.5***	*(80.7, 84.4)*	***73.7***	*(71.2, 76.1)*	***56.7***	*(52.8, 60.8)*
							−7.4%		−11.8%		−19.5%		−28.0%	
Melanoma	**50.5**	(49.7, 51.4)	**54.7**	(53.7, 55.7)	**61.6**	(60.4, 62.8)	**66.3**	(64.9, 67.7)	**68.3**	(66.6, 70.0)	**59.9**	(57.7, 62.1)	**51.5**	(47.8, 55.5)
	50.4	*(49.6, 51.3)*	***54.5***	*(53.5, 55.5)*	***61.4***	*(60.2, 62.6)*	***65.9***	*(64.5, 67.3)*	***67.3***	*(65.7, 69.0)*	***58.2***	*(56.0, 60.4)*	***48.5***	*(44.9, 52.3)*
NHL	**54.3**	(53.4, 55.1)	**72.3**	(71.2, 73.5)	**88.3**	(86.9, 89.8)	**99.1**	(97.4, 100.8)	**97.2**	(95.2, 99.2)	**80.7**	(78.2, 83.3)	**54.4**	(50.6, 58.5)
	54.0	*(53.1, 54.9)*	***71.9***	*(70.8, 73.1)*	***87.4***	*(86.0, 88.9)*	***97.4***	*(95.7, 99.1)*	***94.0***	*(92.1, 96.0)*	***75.8***	*(73.4, 78.3)*	***47.9***	*(44.4, 51.7)*
Female/Non-Hispanic/Black														

Female/Hispanic/All Races														
Age(y)	**65-69**		**70-74**		**75-79**		**80-84**		**85-89**		**90-94**		**≥95**	
	Rate	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**	**Rate**	**95% CL**
All Sites	**1,362.9**	(1,351.3, 1,374.7)	**1,559.9**	(1,545.1, 1,574.7)	**1,711.1**	(1,693.1, 1,729.2)	**1,737.7**	(1,716.2, 1,759.4)	**1,760.8**	(1,733.6, 1,788.3)	**1,507.7**	(1,471.6, 1,544.4)	**1,346.4**	(1,292.7, 1,401.8)
	1,350.4	*(1,338.8, 1,362.1)*	***1,539.1***	*(1,524.5, 1,553.9)*	***1,676.3***	*(1,658.5, 1,694.3)*	***1,672.3***	*(1,651.2, 1,693.6)*	***1,645.6***	*(1,619.3, 1,672.2)*	***1,319.0***	*(1,285.3, 1,353.4)*	***1,063.5***	*(1,015.8, 1,112.8)*
							−3.8%		−6.5%		−12.5%		−21.0%	
Bladder	**22.5**	(21.0, 24.0)	**32.6**	(30.5, 34.8)	**43.4**	(40.6, 46.4)	**57.1**	(53.3, 61.2)	**64.2**	(59.1, 69.6)	**64.6**	(57.3, 72.6)	**73.3**	(59.9, 88.8)
	22.4	*(21.0, 24.0)*	***32.4***	*(30.3, 34.6)*	***42.9***	*(40.1, 45.9)*	***55.9***	*(52.1, 59.9)*	***62.1***	*(57.1, 67.4)*	***61.2***	*(54.1, 69.0)*	***59.2***	*(47.2, 73.3)*
Colorectal	**133.9**	(130.3, 137.6)	**158.5**	(153.8, 163.2)	**193.1**	(187.1, 199.2)	**223.7**	(216.1, 231.6)	**260.0**	(249.6, 270.7)	**231.5**	(217.5, 246.2)	**227.7**	(203.6, 254.0)
	133.1	*(129.5, 136.8)*	***156.6***	*(152.0, 161.4)*	***190.2***	*(184.3, 196.3)*	***218.1***	*(210.5, 225.9)*	***247.8***	*(237.6, 258.2)*	***211.9***	*(198.5, 226.0)*	***191.8***	*(169.6, 216.0)*
Breast	**405.9**	(399.5, 412.3)	**427.4**	(419.7, 435.2)	**425.0**	(416.0, 434.0)	**384.1**	(374.0, 394.4)	**377.0**	(364.5, 389.8)	**320.0**	(303.5, 337.2)	**282.7**	(255.7, 311.8)
	404.3	*(398.0, 410.7)*	***425.1***	*(417.4, 432.8)*	***421.7***	*(412.8, 430.8)*	***377.3***	*(367.3, 387.5)*	***362.7***	*(350.4, 375.3)*	***292.5***	*(276.7, 308.9)*	***240.4***	*(215.6, 267.3)*
Lung	**203.7**	(199.2, 208.2)	**270.6**	(264.5, 276.9)	**305.8**	(298.2, 313.5)	**291.7**	(282.9, 300.7)	**253.9**	(243.7, 264.5)	**186.2**	(173.6, 199.4)	**142.4**	(123.4, 163.5)
	200.4	*(196.0, 205.0)*	***266.0***	*(259.9, 272.1)*	***298.3***	*(290.8, 305.9)*	***278.7***	*(270.1, 287.4)*	***232.1***	*(222.3, 242.2)*	***155.5***	*(144.0, 167.6)*	***107.9***	*(91.5, 126.4)*
									−8.6%		−16.5%			
Pancreas	**52.0**	(49.8, 54.4)	**70.6**	(67.5, 73.8)	**91.3**	(87.1, 95.5)	**108.3**	(103.0, 113.9)	**122.4**	(115.3, 129.8)	**107.0**	(97.5, 117.1)	**100.8**	(85.0, 118.8)
	50.7	*(48.5, 53.0)*	***69.0***	*(66.0, 72.2)*	***87.1***	*(83.1, 91.3)*	***101.1***	*(96.0, 106.4)*	***107.3***	*(100.7, 114.2)*	***85.6***	*(77.1, 94.7)*	***73.3***	*(59.9, 88.8)*
									−12.3%		−20.0%			
Melanoma	**2.7**	(2.2, 3.3)	**3.4**	(2.7, 4.1)	**4.4**	(3.5, 5.4)	**6.4**	(5.2, 7.9)	**6.9**	(5.3, 8.9)	**5.2**	(3.3, 7.9)	**4.9**	(2.0, 10.2)
	2.7	*(2.2, 3.3)*	***3.2***	*(2.6, 4.0)*	***4.3***	*(3.4, 5.3)*	***6.0***	*(4.8, 7.4)*	***6.7***	*(5.1, 8.6)*	***5.0***	*(3.1, 7.6)*	***4.9***	*(2.0, 10.2)*
NHL	**38.3**	(36.3, 40.3)	**41.2**	(38.8, 43.6)	**51.0**	(47.9, 54.2)	**54.1**	(50.3, 58.0)	**51.8**	(47.2, 56.7)	**40.5**	(34.8, 46.9)	**34.5**	(25.6, 45.7)
	38.1	*(36.1, 40.1)*	***40.9***	*(38.5, 43.3)*	***50.1***	*(47.1, 53.3)*	***52.9***	*(49.2, 56.8)*	***50.5***	*(46.0, 55.3)*	***37.8***	*(32.3, 44.0)*	***33.8***	*(25.0, 44.9)*

Rates were standardized to the 2000 US standard population. Italicized rates do not include DCO cases. Bolded rates, highlighted in grey, indicate peak age at incidence in a given sex, site, and race/ethnic group. Percentage differences between rates are shown where the 95% confidence limit (CL) of rates with and without DCO cases did not overlap. NHL, non-Hodgkin lymphona.