# CANCER IN UTAH

## Incidence and Mortality Statistics through 2019



A Publication of the Utah Cancer Registry

2022

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**Preface**

Utah Cancer Registry, Utah's statewide, population-based cancer registry, compiles this biennial report as part of its activities to disseminate cancer information for the state. Cancer is a reportable disease as stated in Utah Administrative Code Rule R384-100. Reportable cases include in situ and invasive neoplasms (with certain exceptions) as well as benign and borderline malignant brain and other central nervous system tumors. The registry collects and manages data to monitor trends in cancer incidence and mortality, evaluate cancer prevention and control measures, and facilitate cancer research. Utah Cancer Registry, which operates at the University of Utah, performs this cancer surveillance function on behalf of the Utah Department of Health and Human Services.

Cancer surveillance in Utah is made possible by the cooperation of health care providers throughout the state who report cancer case data to Utah Cancer Registry. We rely on the expertise of hospital tumor registrars who classify and code cases for submission. We thank these professionals for their contributions to cancer surveillance in Utah.

We acknowledge National Cancer Institute's Surveillance, Epidemiology and End Results program (Contract No. HHSN261201800016I), the Centers for Disease Control and Prevention's National Program of Cancer Registries (Cooperative Agreement No. NU58DP007131), University of Utah Health, and the Huntsman Cancer Institute for support of our surveillance, public health, and research activities.

Preface ..... ii

Executive Summary ..... 1

Chapter 1. The Burden of Cancer in Utah ..... 4
1.1 Cancer diagnoses and deaths in Utah, 2019 ..... 4
1.2 Cancer in Utah by sex ..... 6
1.3 Cancer in Utah by race and ethnicity ..... 6
1.4 Cancer in Utah by geography ..... 9
1.5 Cancer in Utah compared to the United States ..... 10

Chapter 2. Cancer Sites of Special Interest ..... 12
2.1 Melanoma of the skin ..... 12
2.2 Breast cancer ..... 13
2.3 Prostate cancer ..... 15
2.4 Colorectal cancer ..... 16
2.5 Human papillomavirus (HPV)-associated cancers ..... 18

Appendix A. Data and Methods ..... 20
A.1 Compiling cancer surveillance data ..... 20
A.2 Data accessed for this report ..... 20
A.3 Statistical analysis ..... 20

Appendix B. Definitions and Abbreviations ..... 22

Appendix C. Detailed Tables of Cancer Case Counts, Incidence, and Mortality ..... 24
Table C.1 New cancer cases and deaths from cancer in Utah by cancer site and sex, 2019 ..... 25
Table C.2 Cancer incidence and mortality by cancer site in Utah and the U.S., all reportable diagnoses 2015-2019 ..... 26
Table C.3 5-year relative survival in Utah, by cancer site and stage at diagnosis, 2018 period ..... 27
Table C.4 Hispanic or Latino and non-Hispanic White cancer incidence, Utah and the U.S., all reportable diagnoses 2015-2019 ..... 28
Table C.5 Hispanic or Latino and non-Hispanic White cancer mortality, Utah and the U.S., 2015-2019 ..... 29
Table C.6 Cancer in Utah counties: population and cancer counts, 2019 ..... 30
Table C.7 Cancer counts and incidence in urban and rural counties in Utah, all reportable diagnoses 2015-2019 ..... 31

References ..... 32

Tables

Table 1.1 The ten most commonly diagnosed incident cancers among females in Utah ..... 5
Table 1.2 The ten most commonly diagnosed incident cancers among males in Utah ..... 5
Table 1.3 Cancer incidence by race and Hispanic or Latino ethnicity in Utah ..... 6
Table 2.1 Colorectal cancer incidence and mortality by race and Hispanic or Latino ethnicity in Utah ..... 16

Figures

Figure 1.1 Numbers of new cancers and cancer deaths for common sites, Utah 2019 ..... 3
Figure 1.2 Age distribution of the Utah population and cancer incidence by age, 2019 ..... 4
Figure 1.3 Race and Hispanic or Latino ethnicity by age in Utah, 2019 A) total population and B) incident cancer cases ..... 6
Figure 1.4 Cancer incidence for five major sites by race and ethnicity, Utah 2015-2019 ..... 7
Figure 1.5 Cancer incidence and mortality for the Utah Hispanic or Latino population compared to the non-Hispanic White population; cancer sites with statistically significant differences, 2015-2019 ..... 8
Figure 1.6 Cancer incidence and mortality for Utah rural compared to urban counties, for all cancer sites combined and for select cancer sites of interest, 2015-2019 ..... 9
Figure 1.7 Incidence and mortality for smoking-related and select common cancers, Utah compared to the U.S., 2015-2019. Comparison of A) age-adjusted incidence and B) age-adjusted mortality ..... 11
Figure 2.1 Melanoma incidence and mortality trends, Utah and the U.S., 2010-2019 ..... 12
Figure 2.2 Melanoma incidence and mortality in the Hispanic or Latino and non-Hispanic White populations, Utah and the U.S., 2015-2019 ..... 12
Figure 2.3 Melanoma incidence trends by stage at diagnosis: A) in situ, local and B) regional, distant in Utah 2010-2019 ..... 13
Figure 2.4 Female breast cancer incidence and mortality trends for Utah and the U.S., 2010-2019 ..... 13
Figure 2.5 Breast cancer incidence by stage at diagnosis and breast cancer mortality for non-Hispanic White and Hispanic or Latina females in Utah, 2015-2019 ..... 14
Figure 2.6 Breast cancer incidence trends by stage at diagnosis, Utah 2010-2019 ..... 14
Figure 2.7 Breast cancer relative five-year survival by stage and age at diagnosis in Utah ..... 14
Figure 2.8 Prostate cancer incidence and mortality trends in Utah compared to the U.S., 2010-2019 ..... 15
Figure 2.9 Prostate cancer incidence trends by stage at diagnosis: A) local and B) regional, distant or unstaged, Utah 2010-2019 ..... 15
Figure 2.10 Prostate cancer incidence in the Hispanic or Latino and non-Hispanic White populations, Utah and the U.S., 2015-2019 ..... 16
Figure 2.11 Colorectal cancer incidence and mortality trends in Utah compared to the U.S., 2010-2019 ..... 16
Figure 2.12 Colorectal cancer incidence trends by stage at diagnosis, among individuals aged A) younger than 50 years and B) 50 years and older, Utah 2010-2019 ..... 17

Figure 2.13 Five-year relative survival in Utah residents diagnosed with colorectal cancer by stage and age at diagnosis ..... 17
Figure 2.14 Incidence and mortality trends for cancers associated with human papillomavirus (HPV), Utah and the U.S. 2010-2019 ..... 18
Figure 2.15 Incidence of human papillomavirus (HPV)-associated cancers by sex and cancer site, Utah 2015-2019 ..... 18
Figure 2.16 Incidence and mortality of human papillomavirus (HPV)-associated cancers in the Hispanic or Latino and non-Hispanic White populations, Utah 2015-2019 ..... 19
Figure 2.17 Cervical cancer incidence by stage at diagnosis, Utah compared to the U.S. 2015-2019 ..... 19

## Executive Summary

In this report, we provide the most recent cancer surveillance data for the state of Utah through 2019. We summarize the number of new cancer diagnoses and deaths for 2019, age-adjusted incidence and mortality rates for the period 2015-2019, and ten-year trends for cancer incidence and mortality from 2010-2019. We also present five-year relative survival estimates for the 2018 period, the most recent year available. In this report, in situ diagnoses are included in case counts and rate calculations unless otherwise specified.

In Chapter 1, we summarize new diagnoses and deaths from cancer in Utah. Chapter 1 also summarizes cancer incidence by sex, race and ethnicity, and geography. In 2019, there were 14,814 new cancer diagnoses in Utah. The most commonly diagnosed cancers were breast, prostate, and melanoma of the skin. There were 3,288 deaths from cancer in Utah in 2019. Lung cancer was the leading cause of cancer death overall, but there was some variation in cancer causes of death by sex. Prostate cancer and breast cancer accounted for the highest number of deaths in for males and females, respectively.

The overall cancer incidence among non-Hispanic White Utahns is higher than that of all other race and ethnic groups. However, there is variation by cancer site. We summarize incidence for five major sites by race and ethnicity. We also identify additional disparities between Hispanic or Latino and non-Hispanic White Utahns. Most notably, Hispanic or Latino Utahns have a statistically significantly higher incidence of liver, stomach, and intrahepatic bile duct cancer compared to the non-Hispanic White population. When examining cancer incidence and mortality in urban compared to rural areas, we found that rural areas exhibited statistically significantly higher incidence of lung cancer, whereas melanoma and breast cancer incidence are higher in urban counties.

After many years of exhibiting statistically significantly lower overall cancer incidence compared to the rest of the United States (U.S.), for 2015-2019 Utah's overall cancer incidence is no longer statistically significantly different from the rest of the nation. However, incidence of cancers related to smoking, particularly lung cancer, remain statistically significantly lower in Utah compared to the U.S. Overall cancer mortality is also statistically significantly lower in Utah. As cigarette smoking continues to decline in the U.S., we can expect the differences in incidence and mortality between Utah and the remainder of the nation to continue to reduce.

Chapter 2 of this report summarizes incidence and mortality for melanoma of the skin, breast, prostate, colorectal, and HPV-associated cancers. In Utah, the incidence rate of melanoma is more than double than that for the rest of the U.S. This higher incidence of melanoma in Utah is a longstanding trend. Conversely, breast cancer incidence is statistically significantly lower in Utah than the rest of the U.S. From 2010 through 2019, we observed a statistically significant increase in distant stage and unstaged prostate cancer diagnoses, whereas the incidence of local stage disease experienced a decline from 2010-2013 and has remained stable since 2013. As recommendations about prostate cancer screening have changed twice in the last ten years, it will be important to continue monitoring whether trends in late-stage prostate cancer diagnoses continue to increase.

Overall colorectal cancer incidence has been decreasing in Utah. However, incidence of regional stage colorectal cancer has been increasing among Utahns under age 50. Concerns about such increases in early-age diagnoses of colorectal cancer have resulted in new recommendations to begin colorectal cancer screening at age 45. Utah's incidence of HPV-associated cancers is statistically significantly lower than the rest of the U.S., but Utah's incidence experienced a statistically significant increase from 2010 through 2019. Utah has recently experienced a strong uptake of the HPV vaccination among adolescents, but it will be some time before we can expect to observe the effect of widespread vaccination on cancer incidence.

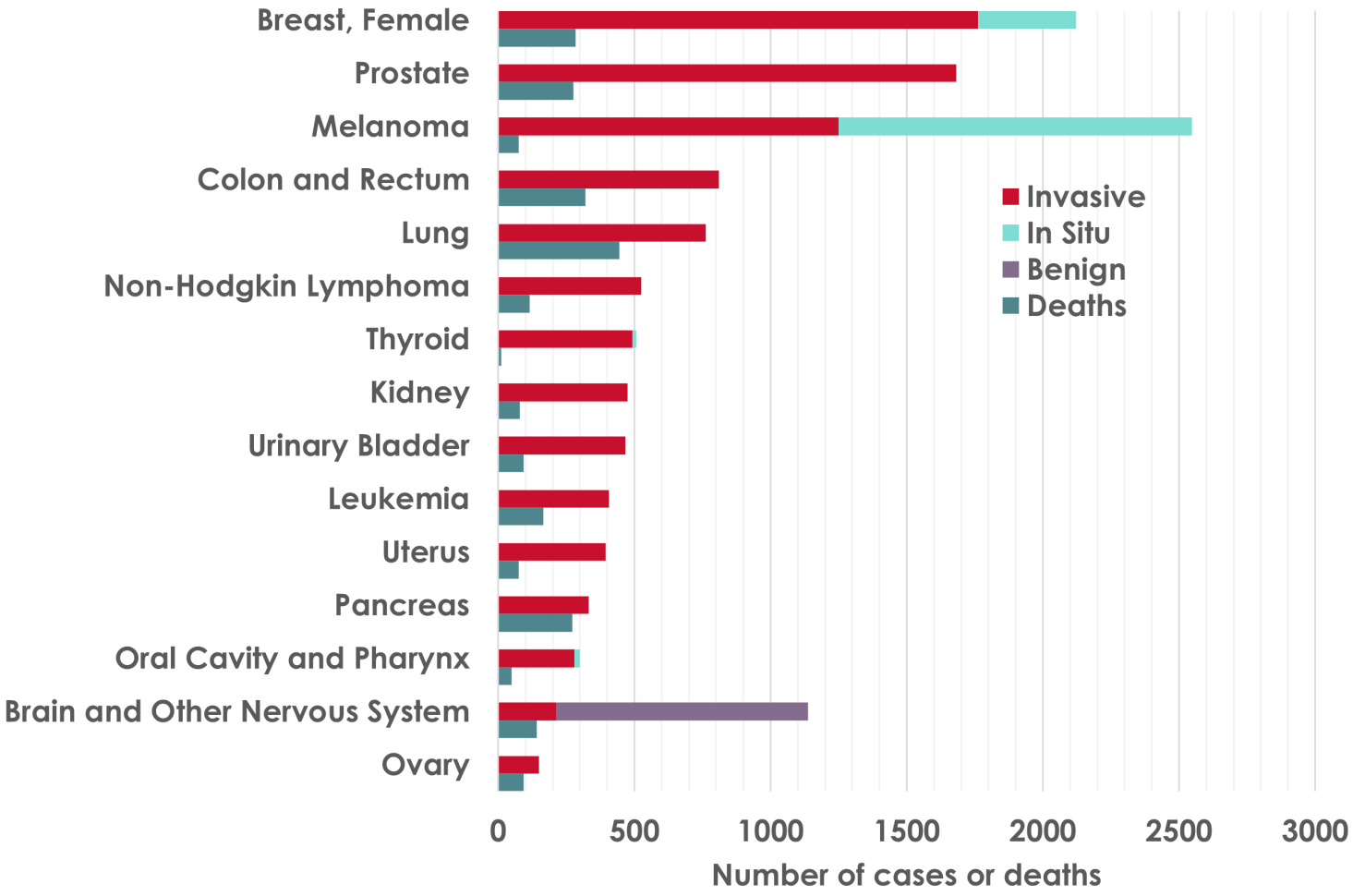



**Figure 1.1 Numbers of new cancers and cancer deaths for common sites, Utah 2019**

# Chapter 1. The Burden of Cancer in Utah

## 1.1 Cancer diagnoses and deaths in Utah, 2019

In 2019, Utah Cancer Registry documented over 14,000 new reportable cancer diagnoses among Utah residents. Out of a total of 14,814 new diagnoses, 11,888 were invasive cancer diagnoses and 2,926 were in situ or benign (Figure 1.1). The five most common cancers diagnosed in Utah were female breast (1,763 invasive, 358 in situ), prostate (1,681), melanoma of the skin (1,250 invasive, 1,297 in situ), colorectal cancer (810), and lung cancer (762). Table C.1 in the Appendix displays case counts for all major cancer sites by sex, and Table C.2 contains incidence and mortality rates. Many melanoma and breast cancer diagnoses were in situ stage, which when combined with invasive case counts resulted in melanoma being the most diagnosed cancer in Utah instead of breast cancer. All in situ cancers, with certain exceptions, are reportable diagnoses. Benign tumors of the brain and other nervous system are the only benign cancers that are reportable diagnoses. In 2019, there were 1,138 brain and central nervous system tumors diagnosed in Utah, with 81% of these (924) being benign cases. Hereafter in this report, in situ and benign diagnoses are included in case counts and incidence rate calculations unless otherwise specified.

Utah had 3,288 deaths due to cancer in 2019. Lung cancer continues to be the number one cause of cancer death among Utahns despite being only the fifth most common cancer diagnosis (Figure 1.1). In 2019, 444 Utah residents died due to lung cancer. The next most common cause of cancer death was colorectal cancer, with 321 deaths. Other cancer sites resulting in the highest numbers of cancer deaths in Utah included breast cancer, prostate cancer, and pancreatic cancer (Figure 1.1 and Table C.1). Cancer continues to be the second-leading cause of death in Utah, second only to heart disease,[1] which accounted for 3,882 deaths in 2019.[2]

Over time, cancer survival has improved.[3] With decreasing mortality, the number of cancer survivors living in Utah and throughout the United States (U.S.) continues to increase. As of January 1, 2019, there were an estimated 124,504 cancer survivors living in Utah, representing 3.9% of Utah's population. However, cancer survival depends highly upon cancer site and stage at diagnosis (Table C.3). In this report we present five-year relative survival estimates for the 2018 period, the most recent available. See Appendix A.2 for further information on calculating cancer survival. Cancer sites with the highest five-year relative survival in Utah include melanoma (99.8%), thyroid (98.7%), and prostate cancer (97.0%), see table C.3.

Cancer incidence also varies substantially by age (Figure 1.2). Cancer diagnoses are rare in children, adolescents, and young adults in Utah. Incidence increases with age with a notable spike in incidence at ages 60 and above. Utah's median age in 2019, 31.3 years, makes Utah the youngest state in the U.S.[4] This means that Utah has a relatively smaller proportion of individuals in the older age groups that are more commonly diagnosed with cancer (Figure 1.2). In 2019, only 1.6% of cancer diagnoses in Utah were among individuals under age 20, who account for nearly one-third of Utah's overall population.

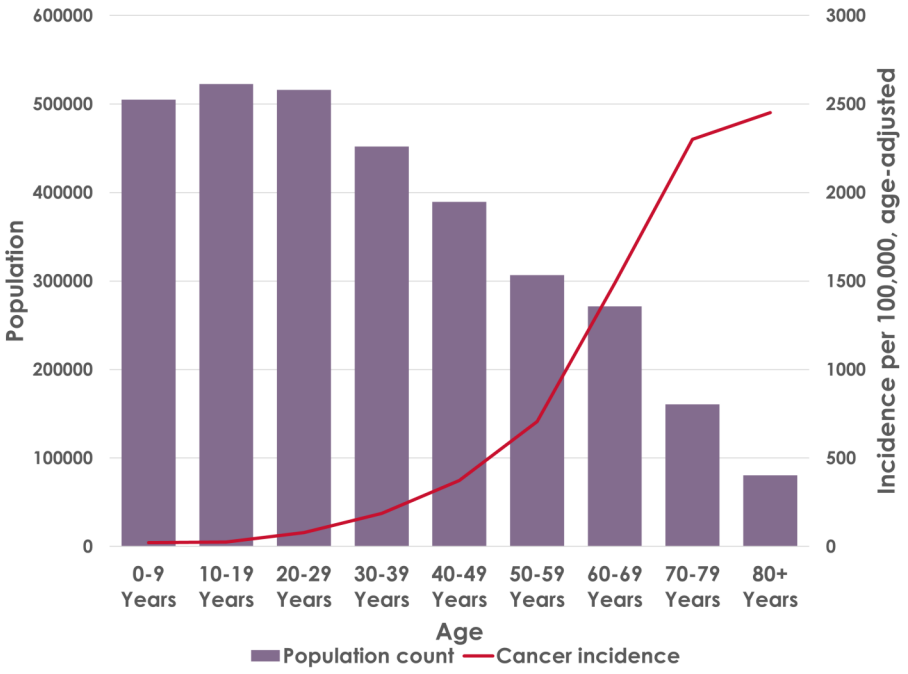



**Figure 1.2 Age distribution of the Utah population and cancer incidence by age, 2019**

**Table 1.1 The ten most commonly diagnosed incident cancers among females in Utah**

| Cancer Site | 2015-2019 Incidence Rate[a] | 2019 Counts | | |
|---|---|---|---|---|
| | | Invasive | In Situ/ Benign | Deaths |
| Breast | 137.9 | 1,763 | 358 | 285 |
| Melanoma | 67.1 | 550 | 485 | 33 |
| Brain and Other Nervous System | 42.9 | 102 | 617 | 62 |
| Colon and Rectum | 26.9 | 382 | ^ | 150 |
| Uterus | 26.4 | 394 | ^ | 76 |
| Thyroid | 25.6 | 359 | ^ | ^ |
| Lung | 23.2 | 383 | ^ | 197 |
| Non-Hodgkin Lymphoma | 14.8 | 246 | ^ | 46 |
| Leukemia | 10.9 | 165 | ^ | 59 |
| Ovary | 10.6 | 150 | ^ | 93 |

^ Number suppressed due to small cell size.
[a] Age-adjusted incidence rate per 100,000 population per year for all reportable diagnoses

**Table 1.2 The ten most commonly diagnosed incident cancers among males in Utah**

| Cancer Site | 2015-2019 Incidence Rate[a] | 2019 Counts | | |
|---|---|---|---|---|
| | | Invasive | In Situ/ Benign | Deaths |
| Prostate | 117.3 | 1,681 | ^ | 276 |
| Melanoma | 105.9 | 700 | 812 | 43 |
| Colon and Rectum | 32.4 | 428 | ^ | 171 |
| Lung | 30.3 | 379 | ^ | 247 |
| Urinary Bladder | 30.2 | 365 | ^ | 73 |
| Brain and Other Nervous System | 27.6 | 112 | 307 | 79 |
| Non-Hodgkin Lymphoma | 22.2 | 279 | ^ | 69 |
| Kidney | 20.1 | 300 | ^ | 51 |
| Leukemia | 18.5 | 241 | ^ | 107 |
| Oral Cavity and Pharynx | 15.2 | 190 | ^ | 33 |

^ Number suppressed due to small cell size.
[a] Age-adjusted incidence rate per 100,000 population per year for all reportable diagnoses

### 1.2 Cancer in Utah by sex

In 2019, 7,475 females in Utah were diagnosed with cancer (Table C.1). Among Utah males there were 7,339 diagnoses in 2019. The ten most common cancers among Utah females and males are displayed in Tables 1.1 and 1.2, respectively. The most common cancer among females is breast cancer, with an incidence rate of 137.9 per 100,000 per year for 2015-2019. For males, prostate cancer is the leading diagnosis with an incidence of 117.3 per 100,000 per year. Melanoma of the skin was the second most common cancer for both sexes. Both breast cancer and melanoma have large numbers of in situ diagnoses each year, which are included in the incidence rate calculations presented in this report. Among females, 46.9% of melanoma diagnoses occurred at the in situ stage, whereas among males, 53.7% of melanoma diagnoses were in situ. Brain and other nervous system tumors, including benign tumors, were the third most common reportable cancer diagnosis among females with a five-year incidence rate of 42.9 per 100,000 per year. Colorectal cancer was the third most common cancer in males with an incidence rate of 32.4 per 100,000 per year.

Other differences between Utah males and females include the presence of uterine, thyroid, and ovarian cancers in the top ten most diagnosed cancers among females, whereas bladder, kidney, and oral cavity and pharynx cancers are only in the top ten among Utah males. Thyroid cancer is much more commonly diagnosed among females than males; in 2019 the national incidence of thyroid cancer was more than two times higher among females than among males.[5] Similarly, nationwide, bladder cancer incidence is more than four times higher in males than females and oral cavity and pharynx cancer incidence is twice as high among males than females.

More males than females died from cancer in Utah in 2019; there were 1,788 deaths among Utah males and 1,500 among Utah females (Table C.1). This is consistent with prior analyses of nationwide data suggesting that for most cancers males experience worse survival than females.[6] The most common cause of cancer death among females was breast cancer, with 285 deaths, followed by lung cancer (197 deaths) and colorectal cancer (150 deaths; Tables 1.1 and C.1). Breast cancer diagnoses represent 19.0% of all cancer deaths among Utah females in 2019. Among males, prostate cancer was the leading cause of cancer death with 276 deaths (Tables 1.2 and C.1). Deaths from prostate cancer accounted for 15.4% of 2019 cancer deaths in males. Similar to females, among males lung cancer (247 deaths) and colorectal cancer (171 deaths) were the second and third most common cancer causes of deaths in 2019 (Table 1.2). Nationwide, lung cancer is the number one cancer cause of death for both males and females.[5]

### 1.3 Cancer in Utah by race and ethnicity

The Utah population is predominately non-Hispanic White, with this group representing 79% of the population. Hispanic or Latino Utahns are the next largest proportion of the population (14%). The state has smaller communities who are Asian or Pacific Islander, 4%, Black or African American, 1%, and

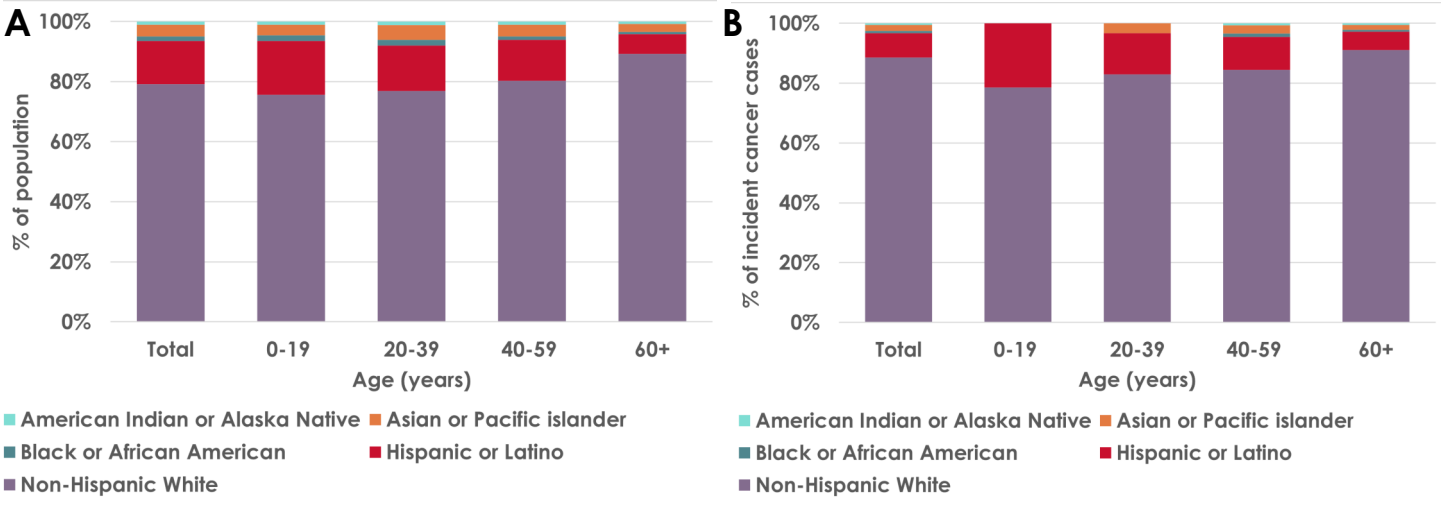



**Figure 1.3 Race and Hispanic or Latino ethnicity by age in Utah, 2019 A) total population and B) incident cancer cases**

**Table 1.3 Cancer incidence by race and Hispanic or Latino ethnicity in Utah**

| Race and Ethnicity | 2015-2019 Incidence Rate[a] | 2019 Counts | |
|---|---|---|---|
| | | Invasive | In Situ/ Benign |
| American Indian or Alaska Native | 345.4 | 86 | ^ |
| Asian or Pacific Islander | 351.9 | 256 | 40 |
| Black or African American | 479.7 | 95 | 18 |
| Hispanic or Latino | 454.0 | 978 | 205 |
| White, non-Hispanic | 509.7 | 10,232 | 2,540 |

^ Number suppressed due to small cell size.

[a] Age-adjusted incidence rate per 100,000 population per year for all reportable diagnoses

American Indian or Alaska Native, 1% (Figure 1.3). There is more racial and ethnic diversity among the population who are ages 59 and below than in the population who are ages 60 and older in Utah. Much of the Hispanic or Latino population is younger, with 72% being 39 years or younger. Cancer is a disease most commonly affecting the older population (Figure 1.2), and Utah's population of individuals aged 60 or older is disproportionately non-Hispanic White compared to its population as a whole. This means that a large share of the cancers diagnosed in Utah, 89%, are among non-Hispanic White residents.

Figure 1.4 displays cancer incidence for five common cancer sites by race and ethnicity in Utah. For breast cancer incidence, non-Hispanic White and Hispanic or Latina females have a statistically significantly higher incidence than Asian or Pacific Islander and American Indian or Alaska Native females. There is a markedly higher incidence of prostate cancer in Black or African American males compared to other races, with a statistically significant difference between Black or African American males compared to Hispanic or Latino, Asian or Pacific Islander, and American Indian or Alaska Native males. For colorectal cancer, Hispanic or Latino individuals have a statistically significantly higher incidence compared to non-Hispanic White individuals, but no other groups. Lung cancer incidence is statistically significantly lower in the Hispanic or Latino and non-Hispanic White population compared to the Black or African American population. Melanoma is much more common in non-Hispanic White individuals, with a statistically significant difference in incidence compared to that among people of other race and ethnic groups.

When differences in age distributions of the race and ethnic groups in Utah are accounted for by age-adjustment, non-Hispanic White Utahns have the highest[6] incidence rate at 509.7 per 100,000 per year from 2015-2019 (Table 1.3). This incidence rate is statistically significantly higher than that of all other race and ethnic groups with the exception of the incidence among Black and African American Utahns, at 479.7 per 100,000 per year. The 2015-2019 incidence rate for the Hispanic or Latino population was 454.0 per 100,000 per year. Lower incidence rates were observed among the American Indian or Alaska Native (345.4 per 100,000 per year) and Asian or Pacific Islander (351.9 per 100,000 per year) populations. The lower incidence among the American Indian and Alaska Native population is consistent with prior observations that the indigenous populations of the American Southwest experience overall lower cancer incidence.[7] The data for

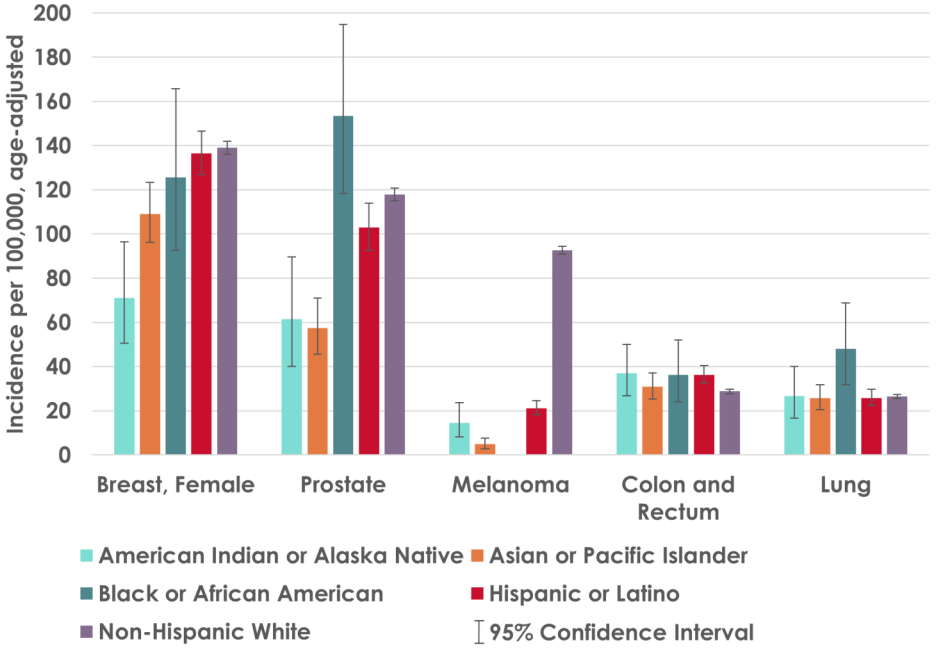



**Figure 1.4 Cancer incidence for five major sites by race and ethnicity, Utah 2015-2019**

Note: Some categories not displayed due to suppression of small cell counts (<16)

American Indian and Alaska Native cancer patients is also known to have some underreporting, as patients of this race are often misclassified into other race groups.[8] The Utah Cancer Registry makes efforts to improve American Indian and Alaska Native racial identification with Indian Health Service patient data linkages.

Cancer incidence rates are also known to vary considerably between the Asian and Pacific Islander populations,[9,10] however due to the presentation of combined population denominators in SEER*Stat it is not possible to calculate incidence rates for these groups independently. Utilizing raw case counts of new diagnoses from 2015-2019 for the Asian and Pacific Islander populations independently, we observed there are some differences among these groups. Among Asian Utahns, the cancers diagnosed most frequently from 2015-2019 were female breast, colorectal, and brain and other nervous system, respectively. Among Pacific Islander Utahns, the top three cancers were female breast, uterine, and brain and other nervous system cancers.

Figure 1.5 displays differences in incidence or mortality for select cancer sites in Utah between the Hispanic or Latino and non-Hispanic White populations, Utah's two largest groups defined by race and ethnicity. Overall incidence and mortality were statistically significantly lower among Hispanic or Latino Utahns compared to non-Hispanic White Utahns. From 2015-2019 there was a statistically significantly higher incidence of cancer for seven sites in the Hispanic or Latino population compared to the non-Hispanic White population. The cancers exhibiting the most notable excess incidence in the Utah Hispanic or Latino population compared to the non-Hispanic White population were liver, stomach, and intrahepatic bile duct. Cancers that had a statistically significant lower incidence in the Hispanic or Latino population compared to the non-Hispanic White population included melanoma, oral cavity and pharynx, urinary bladder, and prostate. Table C.4 contains incidence rates for both Hispanic or Latino and non-Hispanic White populations in Utah and the remainder of the U.S. for all cancer sites. The country as a whole exhibited higher incidence among Hispanic or Latino populations for liver, stomach, and intrahepatic bile duct cancers as well, however the

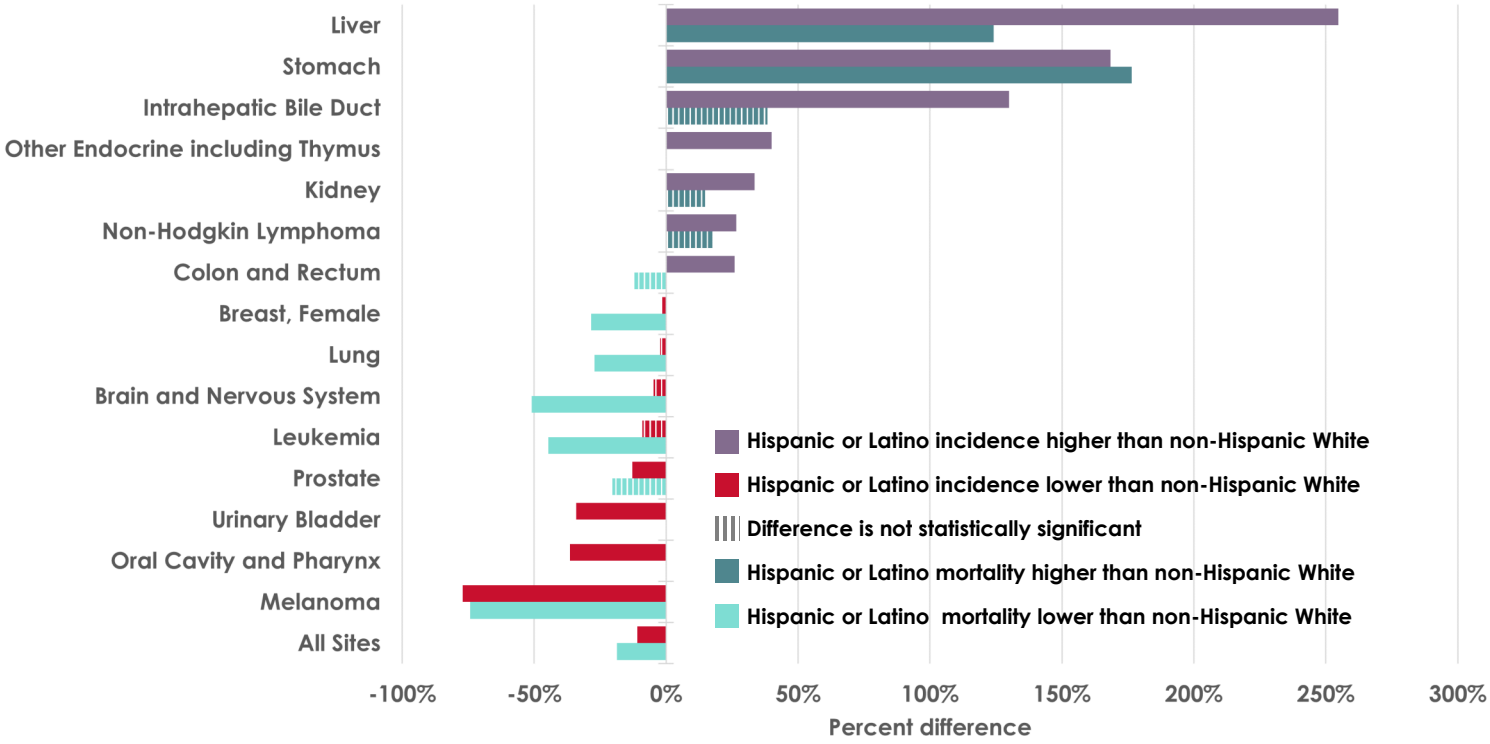



**Figure 1.5 Cancer incidence and mortality for the Utah Hispanic or Latino population compared to the non-Hispanic White population; cancer sites with statistically significant differences, 2015-2019**

Note: Some categories not displayed due to suppression of small cell counts (<16)

gaps are larger in Utah. For example, in Utah the 2015-2019 incidence rate of liver cancer in the non-Hispanic White population was 4.2 per 100,000 per year compared to 14.9 per 100,000 per year in the Hispanic or Latino population, and in the U.S. (excluding Utah) the incidence was 5.8 per 100,000 per year in the non-Hispanic White population compared to 12.1 per 100,000 per year in the Hispanic or Latino population. A known factor for the existence of the disparity in liver cancer incidence is a higher prevalence of Hepatitis C infection among Hispanic or Latino immigrants and contributing to the gap in stomach cancer incidence is a higher prevalence of H. pylori infection in the Hispanic or Latino population.[11,12] Research from the American Cancer Society shows that these disparities in incidence and mortality between non-Hispanic White and Hispanic or Latino populations are diminishing over time.[13]

There are fewer cancer sites showing a statistically significant difference in mortality between Hispanic or Latino and non-Hispanic White Utahns compared to incidence (Figure 1.5). Cancers with higher mortality rates among the Hispanic or Latino population include stomach and liver cancers. Conversely, melanoma of the skin, brain and other nervous system, female breast, leukemia, and lung cancers all exhibited statistically significantly higher mortality among non-Hispanic White Utahns. The mortality rates for Hispanic or Latino and non-Hispanic White populations for all cancer sites can be seen in Table C.5.

### 1.4 Cancer in Utah by geography

The Utah population is expanding rapidly and the U.S. Census Bureau identified it as the fastest-growing state between 2010 and 2020.[14] This growth has primarily occurred in Utah's urban counties, which now comprise 89.5% of the state's population. Conversely, large areas of Utah's landmass are sparsely populated rural and frontier areas. Table C.6 in the Appendix displays population counts and cancer case counts by county in Utah, and incidence stratified by urban vs. rural counties for cancer site can be seen in Table C.6.

Prior research has described variation in cancer incidence and mortality across urban and rural areas in the U.S. and Utah.[15,16] For the period 2015-2019, overall incidence for all cancer sites in urban Utah

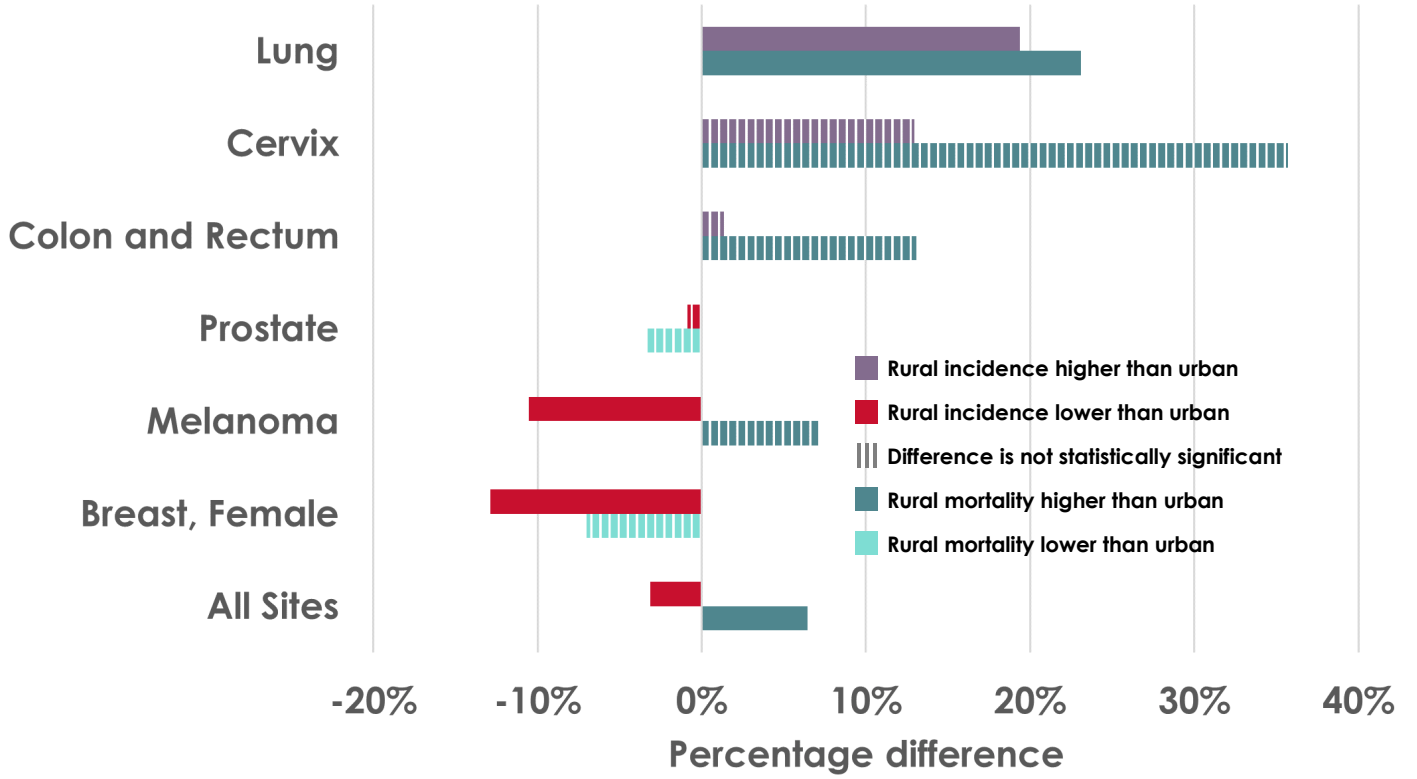



**Figure 1.6 Cancer incidence and mortality for Utah rural compared to urban counties, for all cancer sites combined and for select cancer sites of interest, 2015-2019**

counties was 505.9 per 100,000 per year, which was statistically significantly higher than the incidence in rural counties, which was 490.1(Table C.6). As seen in Figure 1.6, there was a statistically significant difference in age-adjusted cancer incidence between rural and urban counties for three cancer sites over the period of 2015-2019: melanoma, lung, and breast cancer. In our last *Cancer in Utah* report published in 2020, we observed statistically significant urban compared to rural differences in incidence in these three sites in addition to several others for 2013-2017.[17] The more recent estimates no longer show higher incidence of leukemia in rural Utah counties or higher incidence of brain and other nervous system and uterine cancers in urban counties. For the period of 2015-2019, the cancers with higher incidence rates in urban counties compared to rural counties in Utah include melanoma and female breast cancers. Nationwide data similarly show higher female breast cancer incidence in urban areas, which is attributed to higher percentages of the population in these areas being screened for breast cancer.[18,19] Conversely, lung and bronchus cancers had a higher incidence rate in rural Utah counties compared to urban counties. The National Cancer Institute attributes the disproportionate burden of lung cancer in rural areas to a higher prevalence of cigarette smoking and a shortage of medical centers offering lung cancer screening.[18]

With the population of frontier areas being especially small, incidence rate calculations by cancer site can be unstable with wide confidence intervals. Between 2015-2019, there were only 377 cancers diagnosed in frontier rural residents in Utah. The most commonly diagnosed cancers were prostate, breast, and melanoma.

### 1.5 Cancer in Utah compared to the United States

For many years, Utah has experienced substantially lower overall cancer incidence compared to the rest of the U.S. For the period 2015-2019, this gap became smaller. Overall cancer incidence in Utah was only 0.7% lower than the rest of the U.S. and no longer statistically significant (Figure 1.7 and Table C.2). However, between 2015-2019 cancer mortality was statistically significantly lower in Utah compared to the rest of the U.S. Utah's overall cancer mortality rate was 121.8 per 100,000 per year, compared to 152.6 per 100,000 per year for the rest of the U.S. (Figure 1.7 and Table C.2).

Utah's history of lower cancer incidence can in part be attributed to its lower prevalence of smoking. Cigarette smoking is the primary cause of lung cancer and is also associated with an increased risk of many other cancer sites. These include oral cavity and pharynx, kidney, colorectal, liver, pancreas, cervix, bladder, esophagus, stomach, and leukemia.[20] Incidence of all smoking-associated cancers except leukemia is statistically significantly lower in Utah than in the remainder of the U.S. (Figure 1.7). Most notably, the incidence of lung cancer in 2015-2019 was 53.4% lower in Utah than the rest of the U.S. and lung cancer mortality was 52.8% lower in Utah than the U.S. Despite that, as mentioned previously, lung cancer is a leading cause of cancer death in Utah. In 2019, 444 Utahns died of lung cancer (Table C.1). The five-year relative survival among all Utahns diagnosed with lung cancer is 26.2% (Table C.3). Relative survival is better among those diagnosed at an early stage (71.7%) compared to those diagnosed at regional or distant stage, whose five-year relative survival was only 15.2%.

Utah has long had the lowest smoking prevalence in the U.S. In 2019, 7.9% of Utah adults reported being current cigarette smokers,[21] lower than any other state. However, as other states have had sustained success with public health efforts to encourage smoking cessation and discourage smoking initiation, the gap between Utah and the rest of the U.S. has shrunk. In 2020, 12.5% of U.S. adults were current cigarette smokers, which was down from 20.9% in 2005.[22] The incidence of smoking-associated cancers has been trending downward across the U.S. as smoking prevalence has decreased.[23] As smoking continues to decline, we can expect the differences in cancer incidence and mortality between Utah and the rest of the U.S. to continue to be reduced in the future. The recent increase in uptake of electronic cigarettes (e-cigarettes)[24,25] has raised concerns about the potential impact on cancer incidence.[26] The health effects of electronic cigarettes, and the potential impact they may have on cancer incidence, are still largely unknown.[27,28]

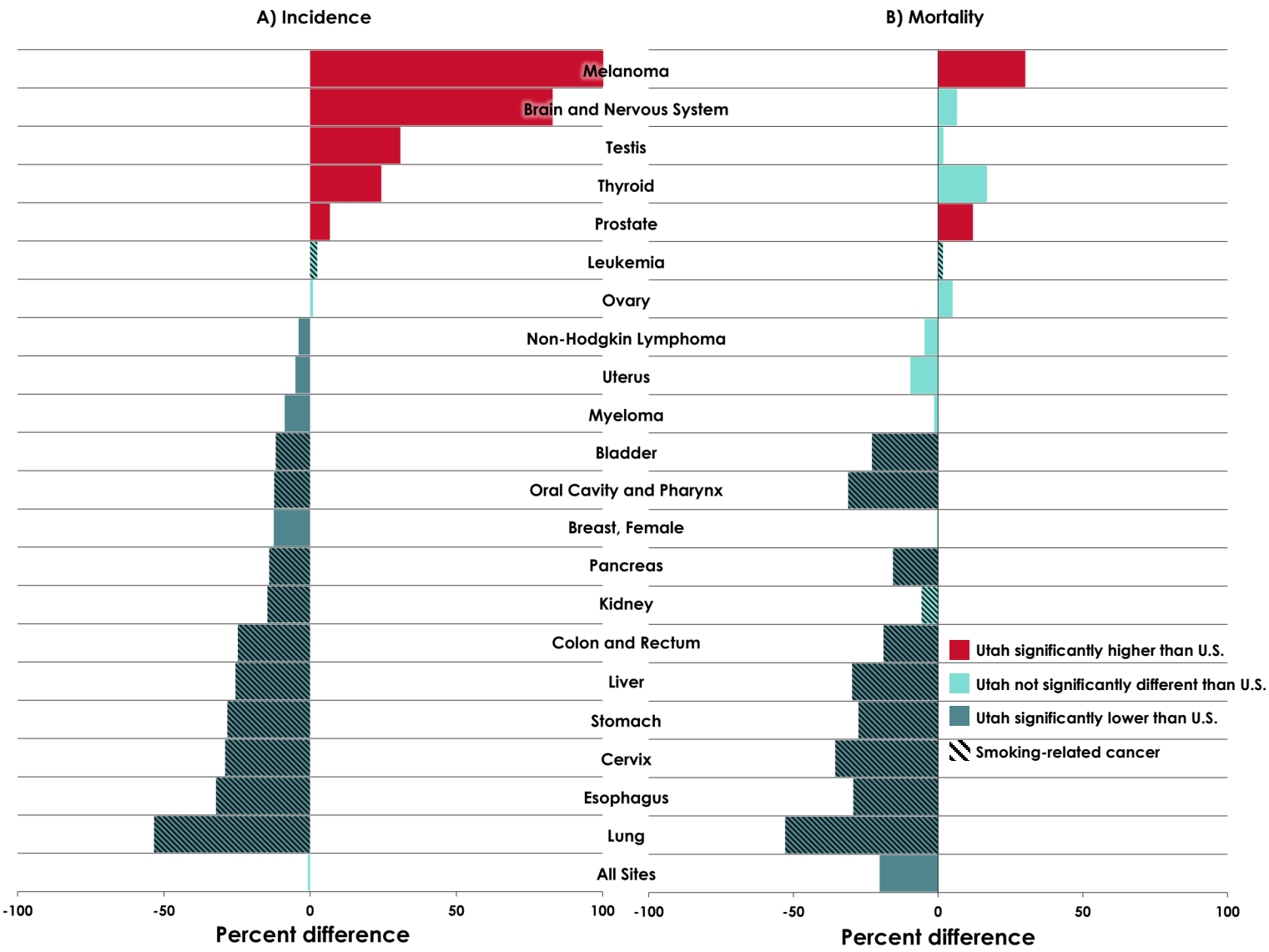



**Figure 1.7 Incidence and mortality for smoking-related and select common cancers, Utah compared to the U.S., 2015-2019. Comparison of A) age-adjusted incidence and B) age-adjusted mortality**

# Chapter 2. Cancer Sites of Special Interest

## 2.1 Melanoma of the skin

Utah continues to have a higher melanoma incidence rate than the remainder of the U.S. (Figure 2.1). Utah Cancer Registry has documented this pattern as far back as 2002 in our report *Cancer in Utah 1981-2000*.[29] In 2019 Utah had 2,547 new cases of melanoma (Table C.1). It was the second-most diagnosed cancer in both males and females (Table 1.1 and Table 1.2). The melanoma incidence rate in Utah for 2015-2019 was 84.6 per 100,000 per year compared to 41.9 for the U.S. (Table C.2). As seen in Figure 1.4, non-Hispanic White Utahns had the highest incidence of melanoma, followed by Hispanic or Latino, American Indian or Alaska Natives, and Black or African American Utahns. Figure 2.2 further illustrates the statistically significant differences in both incidence and mortality from melanoma between non-Hispanic White and Hispanic or Latino populations in Utah and the rest of the U.S. In Utah the Hispanic or Latino population had 77.1% lower incidence and 74.2% lower mortality than the non-Hispanic White population (Figure 1.5). Melanoma incidence in the Hispanic population in Utah is increasing over time.[30]

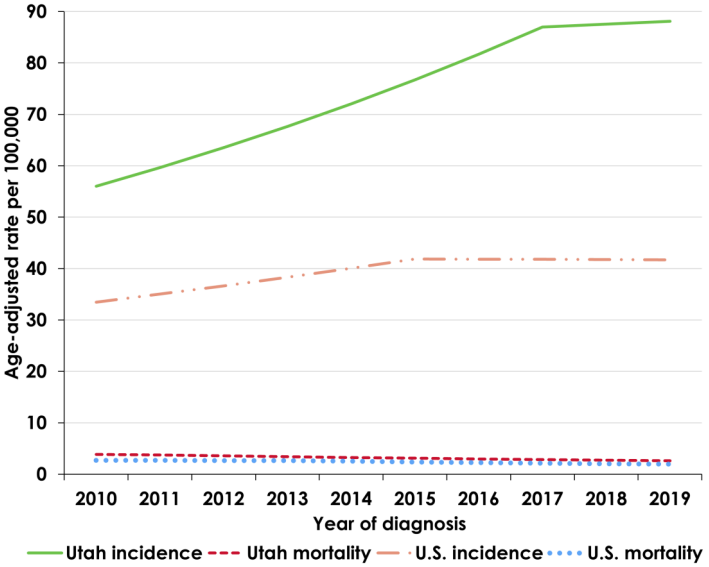



**Figure 2.1 Melanoma incidence and mortality trends, Utah and the U.S., 2010-2019**

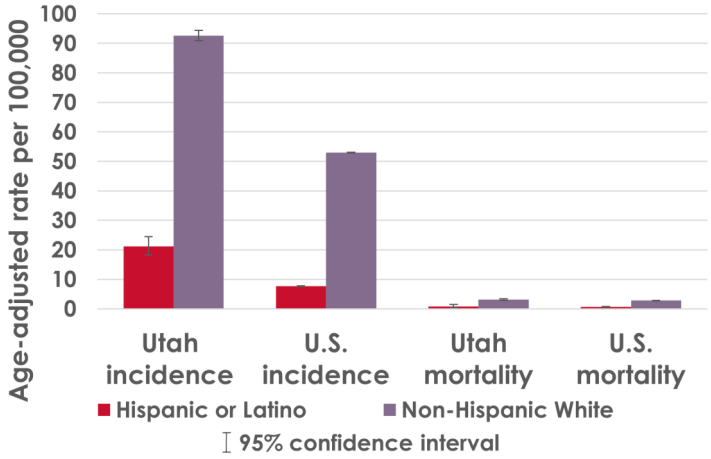



**Figure 2.2 Melanoma incidence and mortality in the Hispanic or Latino and non-Hispanic White populations, Utah and the U.S., 2015-2019**

Between 2010 and 2017 melanoma incidence in Utah increased at 6.5% per year, a statistically significant increase, before essentially leveling off between 2017-2019 with a non-statistically significant annual average percentage change of 0.64% (Figure 2.1). This increase in incidence is primarily a result of increases in in situ and local stage melanoma diagnoses, both of which exhibited a statistically significant increase from 2010 through 2019 (Figure 2.3). Regional and distant stage melanoma incidence both increased slightly in Utah during this same time period, but these changes were not statistically significant. The recent increase in primarily early-stage melanoma diagnoses has been observed nationally; some assert the trend represents over-diagnosis.[31] However, overdiagnosis does not completely explain the patterns observed in Utah, since we also observe excess melanoma mortality.[32] Individuals diagnosed with local or in situ stage melanoma have equivalent survival compared to comparable-aged cancer-free individuals, but the 5-year relative survival for Utahns diagnosed with regional or distant stage melanoma is 71.9% (Table C.3).

There is also a statistically significant difference in melanoma incidence between those living in rural and urban Utah counties. Those in urban counties have a 10.5% higher incidence (Figure 1.6). There is not a statistically significant difference in melanoma mortality between urban and rural counties, however. Intermountain Healthcare researchers reported that the majority of melanoma cancers among Utahns who live in rural areas are diagnosed at rural clinics (77%), while about a quarter of rural melanoma patients are diagnosed by providers in urban areas.[30]

There are likely many factors that contribute to the higher incidence of melanoma in Utah compared to

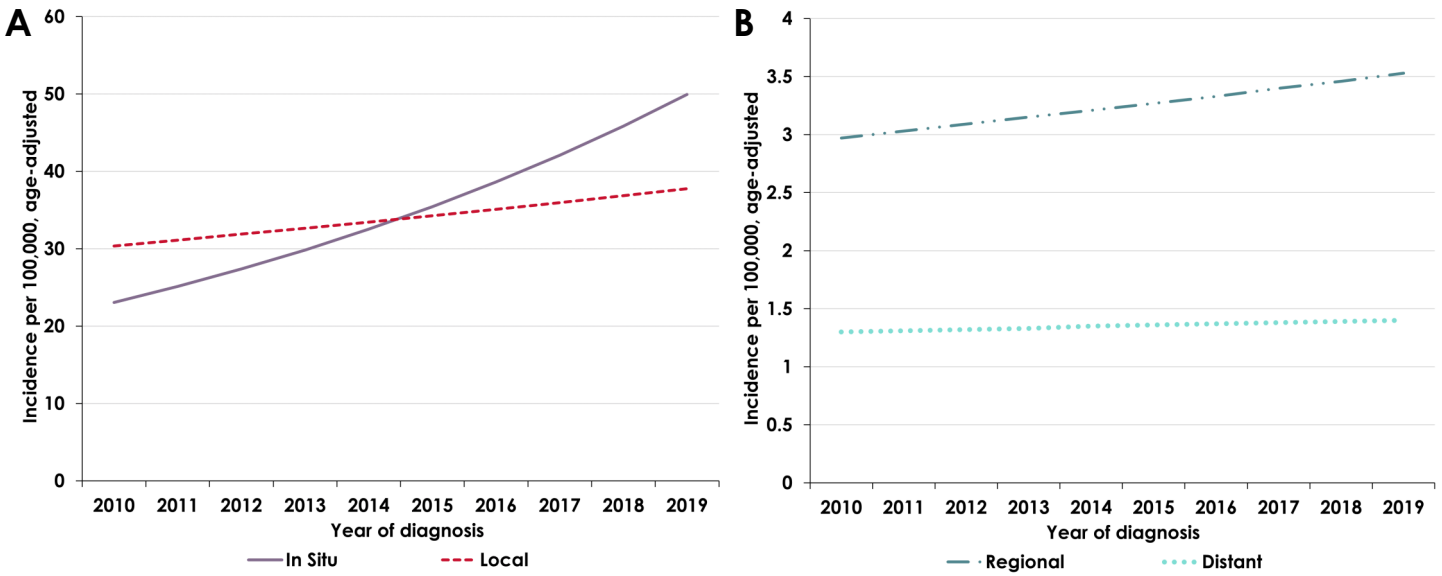



**Figure 2.3 Melanoma incidence trends by stage at diagnosis: A) in situ, local and B) regional, distant in Utah 2010-2019**

the rest of the U.S. Utah's frequent sunny days, high elevation, and outdoor recreation availability provide increased opportunities for high exposure to ultraviolet radiation.[31-32] A study utilizing NPCR and SEER data showed that melanoma incidence rates are higher in areas with greater average daily total global solar radiation, in which Utah scored in the highest exposure category.[33] Intermittent sun exposure also increases individual risk.[34] There are also known challenges in melanoma case ascertainment for central cancer registries.[35-37] Variability in ascertainment may account for some variability in incidence across states.

## 2.2 Breast cancer

In 2019, breast cancer was the most commonly diagnosed cancer in Utah and the leading cause of cancer death for females in Utah. Diagnoses of breast cancer among males are very rare, resulting in fewer than 16 cases in Utah in 2019. For the remainder of this chapter, we discuss statistics for female breast cancer only.

The incidence rate of female breast cancer in Utah for 2015-2019 was 137.9 per 100,000 per year, which is statistically significantly lower than the incidence in the U.S. of 157.5 per 100,000 per year (Table C.2). However, the mortality rate from breast cancer in Utah, 19.8 per 100,000 per year, is similar to the rest of the U.S. which is 19.9 per 100,000 per year. From 2010-2019, incidence remained relatively stable in both Utah and the U.S. (Figure 2.4). Over this ten-year period, breast cancer mortality exhibited a modest yet statistically significant downward trend in the U.S., but the trend was not statistically significant in Utah. Breast cancer mortality has been trending downward throughout the U.S. for several decades. The mortality rate decreased 40% from 1989 to 2017, but the rate of the decrease has slowed in recent years.[38]

Hispanic or Latina and non-Hispanic White females in Utah experience similar incidence of breast cancer (Table C.4). By stage, the 2015-2019 breast cancer incidence was highest for local stage breast cancer

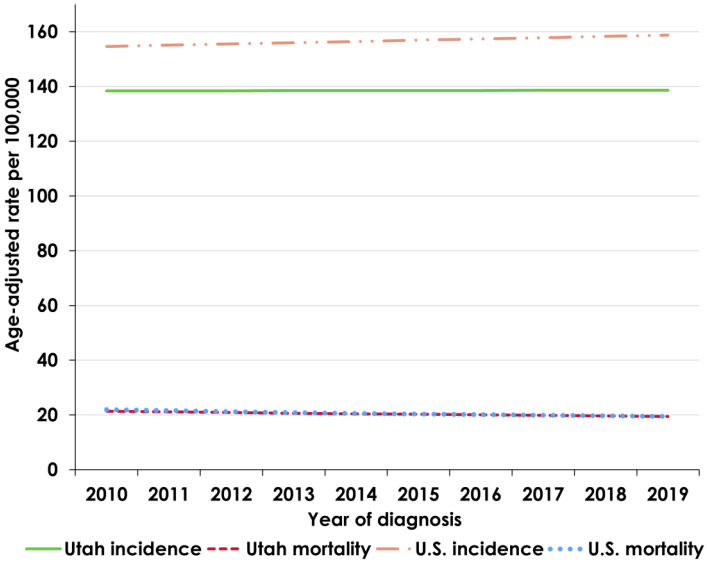



**Figure 2.4 Female breast cancer incidence and mortality trends for Utah and the U.S., 2010-2019**

among both Hispanic or Latina and non-Hispanic White females in Utah (Figure 2.5). While we observed no statistically significant differences in stage at diagnosis between Hispanic or Latina and non-Hispanic White females in Utah, breast cancer mortality was statistically significantly higher among the non-Hispanic White population at 20.4 per 100,000 per year compared to 14.6 per 100,000 per year for Hispanic or Latina Utahns (Figure 2. 5 and Table C.5).

When examining trends in breast cancer incidence by stage at diagnosis (Figure 2.6) we observed a statistically significant downward trend in the incidence of regional stage diagnoses from 2010-2019. The slight upward trend in the incidence of both local and distant stage breast cancer diagnoses was not statistically significant.

The overall 5-year relative survival for breast cancer in Utah is 91.4% (Table C.3). Breast cancer survival is heavily influenced by stage at diagnosis. Utah females diagnosed at in situ or local stages had a five-year relative survival of 99.2%. In contrast, survival was 76.5% for those diagnosed with regional or distant stage breast cancer (Table C.3). Survival is also somewhat affected by age at diagnosis. Utah females diagnosed with regional stage breast cancer at age 75 or above experienced worse survival relative to females diagnosed with regional stage cancer at an earlier age (Figure 2.7).

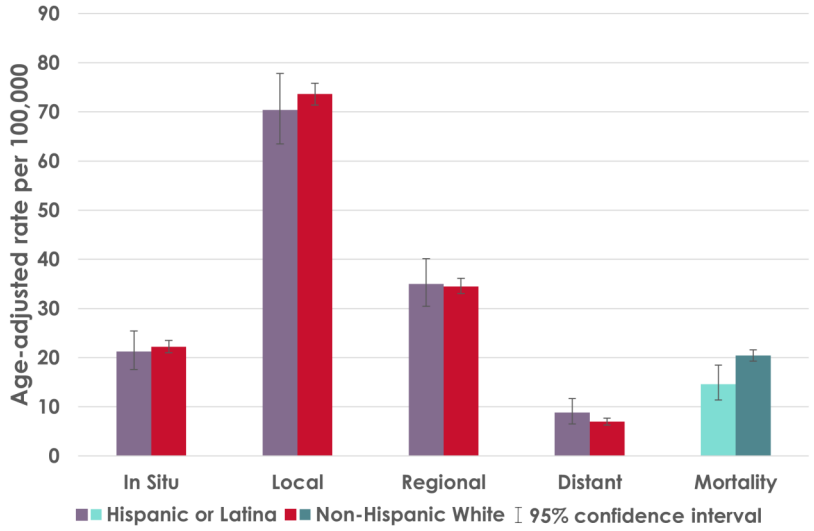



**Figure 2.5 Breast cancer incidence by stage at diagnosis and breast cancer mortality for non-Hispanic White and Hispanic or Latina females in Utah, 2015-2019**

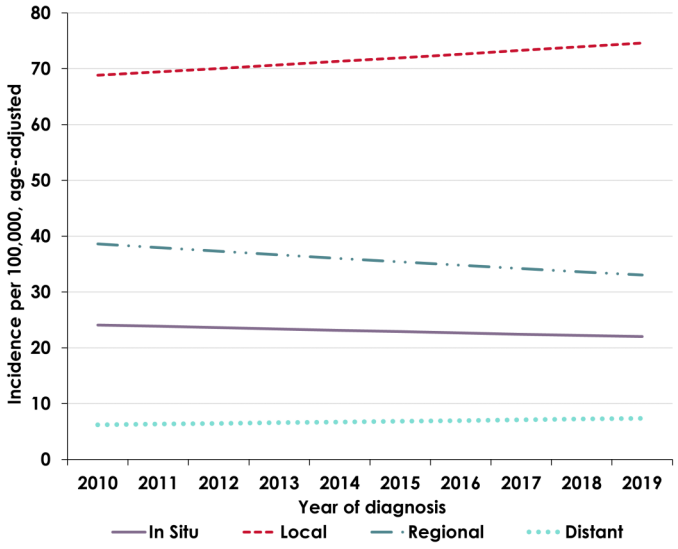



**Figure 2.6 Breast cancer incidence trends by stage at diagnosis, Utah 2010-2019**

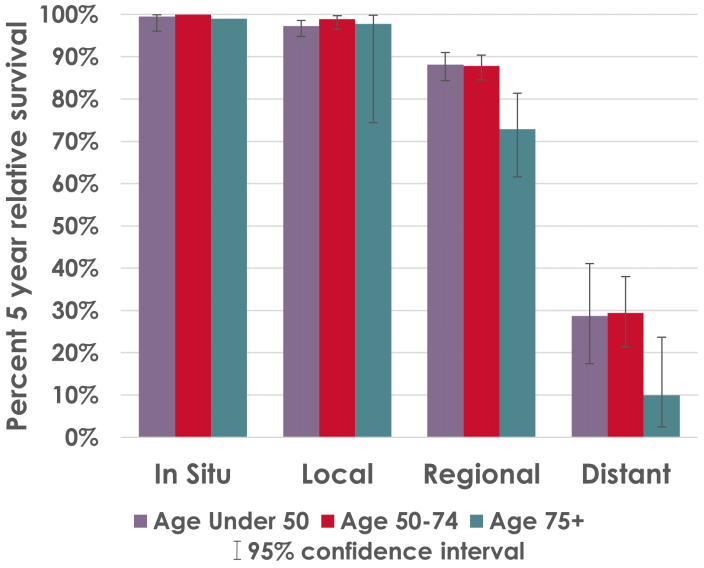



**Figure 2.7 Breast cancer relative five-year survival by stage and age at diagnosis in Utah**

## 2.3 Prostate cancer

Prostate cancer is the most common cancer diagnosed in males nationwide. In Utah the incidence is 6.8% higher and the mortality rate is 11.6% higher than the rest of the U.S. (Figure 1.7). In 2019, there were 1,681 new cancers diagnosed and 276 deaths due to prostate cancer in Utah males (Table 1.2).

The incidence rate for prostate cancers dropped in Utah between 2010 and 2013 by 13.6% per year, and in the U.S. from 2010 to 2014 by 7.3% (Figure 2.8). Afterwards, there were non-statistically significant increases in both Utah and the rest of the U.S. through 2019. The mortality rate in the U.S. from prostate cancer experienced a statistically significant decrease over this time period; it dropped by 5.4% from 2010 to 2012, and then continued a slower decline of 0.7% per year from 2012 to 2019. The mortality rate in Utah saw a similar statistically significant decline from 2010 to 2015 (5.7% per year), but then reversed to a statistically significant increase of 5.8% per year from 2015 to 2019.

In Utah, the majority of prostate cancers are diagnosed in the local stage. The incidence rate of local stage prostate cancers dropped by 16.0% per year from 2010 to 2013 (Figure 2.9), a statistically significant decline, and then was unchanged through 2019. While the incidence of regional prostate cancers was stable through the whole period, incidence of both distant (8.4% per year) and unstaged (12.2% per year) prostate cancers increased statistically significantly from 2010 to 2019.

Most prostate cancers were detected initially through prostate-specific antigen (PSA) screening. In 2012, the U.S. Preventive Services Task Force (USPSTF) changed its guidance to recommend against regular PSA screening.[39] As a result, the utilization of PSA screening dropped in the U.S.[40,41] In 2018, USPSTF updated the guidance again to recommend that the decision whether to receive PSA screening or not should be made between patient and doctor for males ages 55

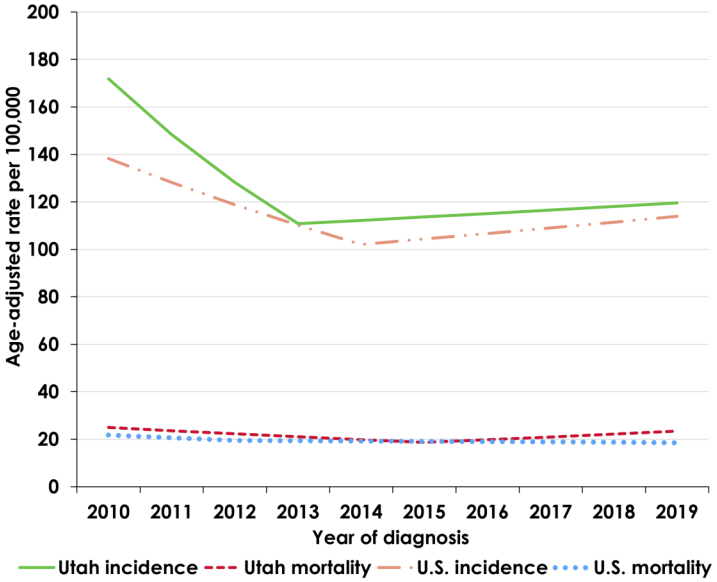



**Figure 2.8 Prostate cancer incidence and mortality trends in Utah compared to the U.S., 2010-2019**

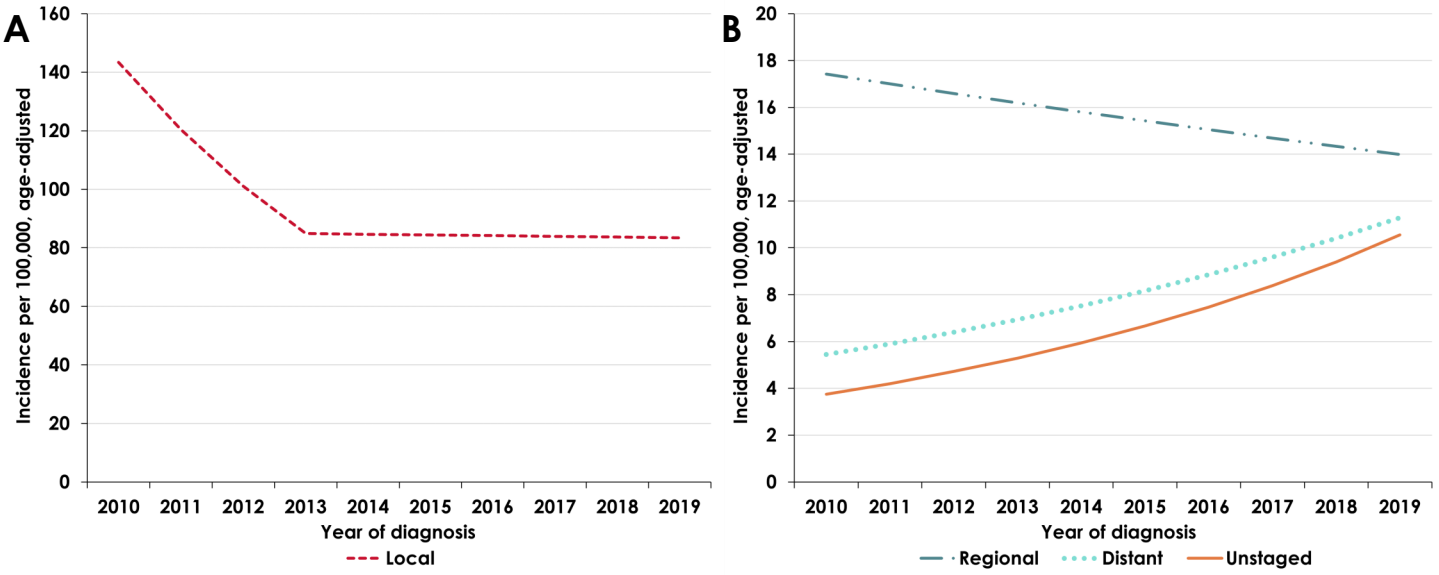



**Figure 2.9 Prostate cancer incidence trends by stage at diagnosis: A) local and B) regional, distant or unstaged, Utah 2010-2019**

to 69 years of age.[42] The impacts of the decrease in PSA screening is evident in the decline in prostate cancer incidence, especially local stage disease, observed between 2010 and 2013. The increase in incidence of distant stage and unstaged cancers and prostate cancer mortality in Utah are trends that should be monitored to determine if they continue in the years following the 2018 recommendation changes.[43,44]

The incidence of prostate cancer in both Utah and the U.S. varies by race and ethnicity. Non-Hispanic Black males have the highest incidence in both Utah (153.4 per 100,000, Figure 1.4) and the U.S. (176.1 per 100,000). Asian and Pacific Islander males have the lowest incidence both in Utah (57.4 per 100,000) and the U.S. (57.2 per 100,000). In both Utah and the U.S., incidence is statistically significantly lower in Hispanic or Latino males compared to non-Hispanic White males (Figure 2.10). We are not aware of any factors that would explain the somewhat higher incidence and mortality from prostate cancer in Utah compared to the rest of the U.S. Risk of prostate cancer is higher among males of older age and African American race,[45] but neither of these groups are overrepresented in Utah.

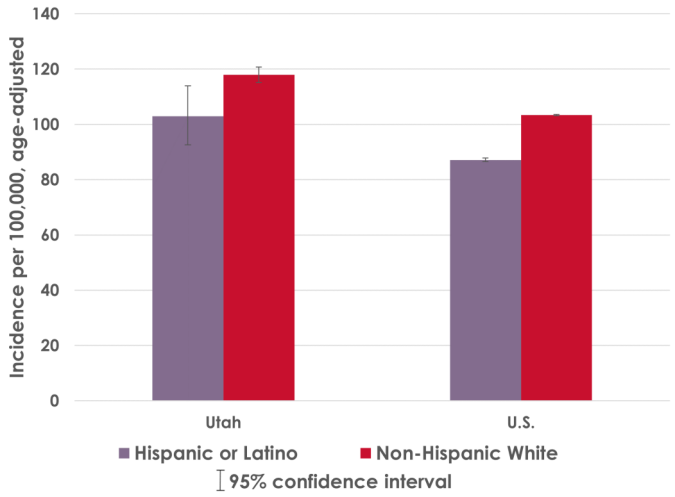



**Figure 2.10 Prostate cancer incidence in the Hispanic or Latino and non-Hispanic White populations, Utah and the U.S., 2015-2019**

## 2.4 Colorectal cancer

Cancers of the colon and rectum are one of the most common cancers diagnosed in Utah residents. There were 810 colorectal cancer cases diagnosed in Utah and 321 deaths in 2019 (Table C.1). The incidence rate in females (26.9 per 100,000, Table 1.1) is lower than in males (32.4 per 100,000, Table 1.2). In Utah, colorectal cancer incidence is 24.7% lower and mortality is 18.9% lower compared to the rest of the U.S. (Figure 1.7).

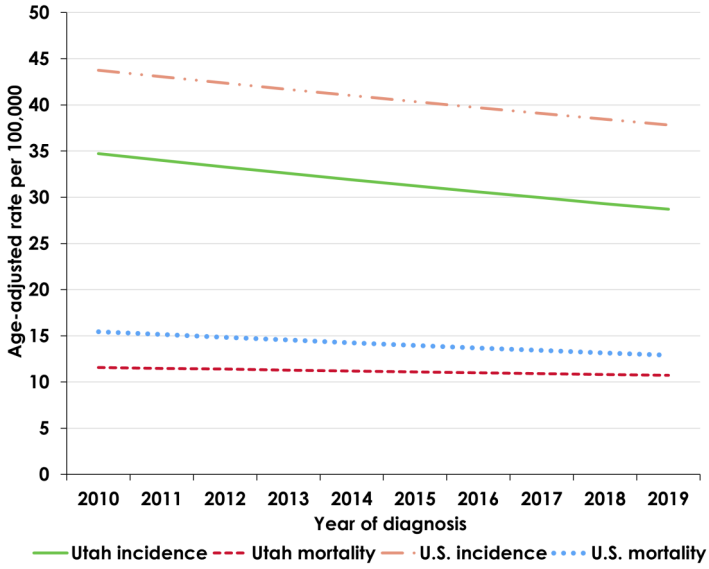



**Figure 2.11 Colorectal cancer incidence and mortality trends in Utah compared to the U.S., 2010-2019**

**Table 2.1 Colorectal cancer incidence and mortality by race and Hispanic or Latino ethnicity in Utah**

| Race and Ethnicity | 2015-2019 Incidence Rate[a] | 95% CI[b] | 2015-2019 Mortality Rate[a] | 95% CI |
|---|---|---|---|---|
| American Indian or Alaska Native | 37.0 | (26.7-50.0) | 12.2 | (6.3-20.9) |
| Asian or Pacific Islander | 30.9 | (25.4-37.1) | 13.0 | (9.4-17.4) |
| Black or African American | 36.3 | (24.0-52.1) | 18.0 | (9.4-30.3) |
| Hispanic or Latino | 36.3 | (32.5-40.5) | 9.6 | (7.5-12.0) |
| Non-Hispanic White | 28.8 | (27.8-29.8) | 10.9 | (10.3-11.5) |

[a] Age-adjusted rate per 100,000 population per year
[b] CI: confidence interval

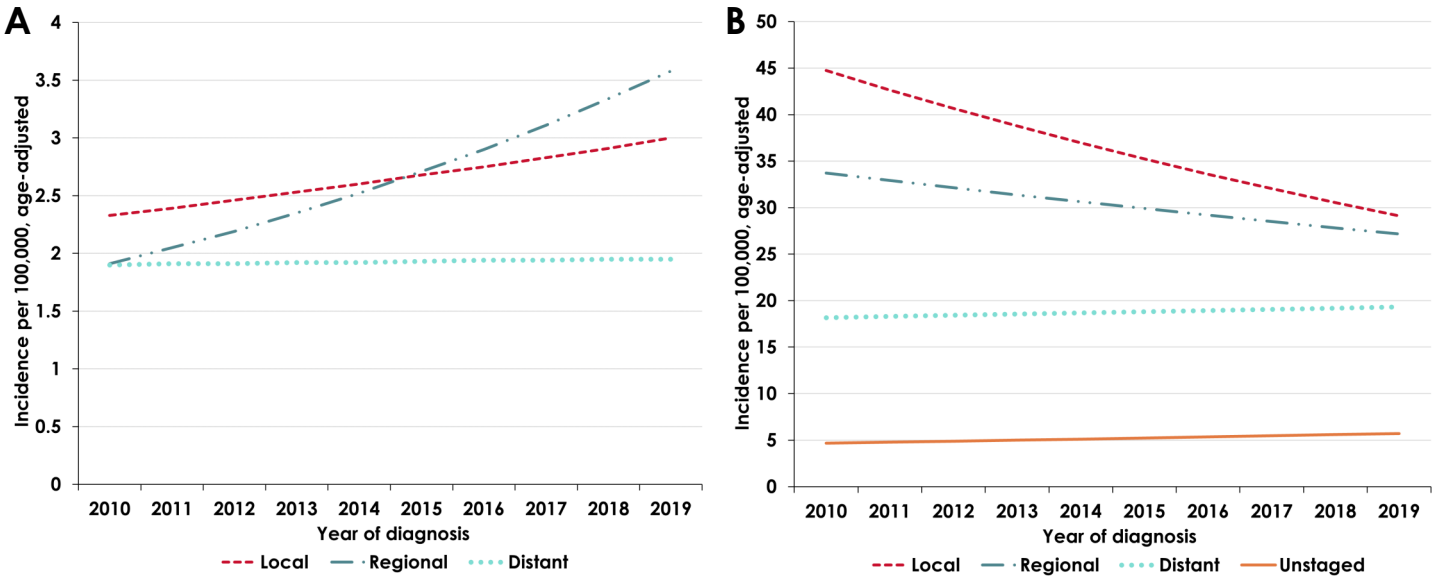



**Figure 2.12 Colorectal cancer incidence trends by stage at diagnosis, among individuals aged A) younger than 50 years and B) 50 years and older, Utah 2010-2019**

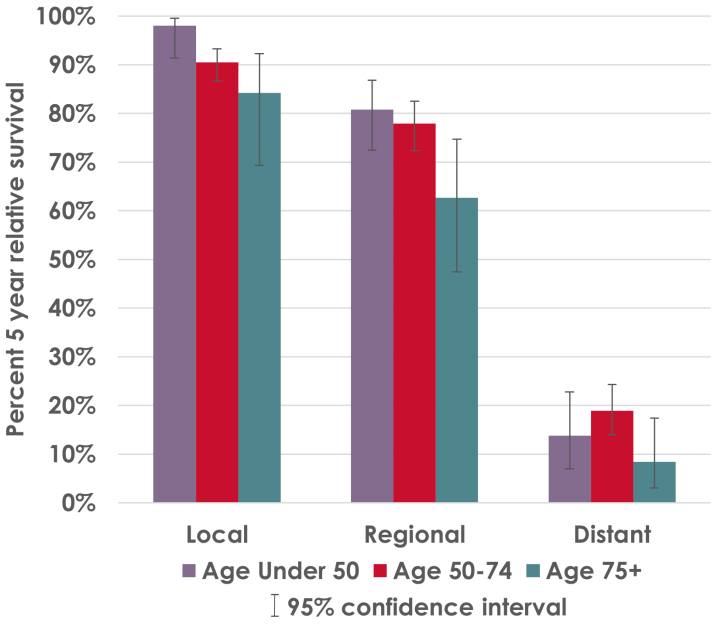



**Figure 2.13 Five-year relative survival in Utah residents diagnosed with colorectal cancer by stage and age at diagnosis**

In Utah, the rate of new colorectal cancer diagnoses has been steadily declining by 2.1% per year, a faster decline than the U.S. at 1.6% per year from 2010 to 2019(Figure 2.11). The colorectal cancer mortality rate in Utah was stable during the same time period, while the mortality rate dropped by 2.0% per year in the U.S.

The decline in colorectal cancer incidence in Utah is being driven primarily by fewer new diagnoses in individuals aged 50 or older at diagnosis (Figure 2.12). For this age group, the local stage incidence dropped by 4.7% and the regional incidence by 2.4% from 2010 to 2019 (Figure 2.12). Both distant and unstaged incidence remained stable. While the overall incidence of colorectal cancer in individuals under age 50 at diagnosis is much lower than the in older individuals, there has been a statistically significant increase in the incidence of new regional stage cancers (7.2%) in the younger age group from 2010 to 2019.

When colorectal cancer incidence was examined by race and ethnicity (Figure 1.5), non-Hispanic White Utahns had the lowest incidence of colorectal cancer (28.8 per 100,000 per year), although only Hispanic or Latino Utahns had a statistically significantly higher incidence (36.3 per 100,000) than that in non-Hispanic White Utahns (Table 2.1). There were no statistically significant racial or ethnic differences in colorectal cancer mortality, ranging from 9.6 per 100,000 for Hispanic or Latino Utahns to 18.0 per 100,000 for African American Utahns.

Colorectal cancer survival is higher among those diagnosed at local stage (Figure 2.13), so early detection via routine screening is important.[46] The increasing incidence of colorectal cancer among individuals under 50 is a concern nationwide, and the USPSTF updated its screening guidelines in 2021 to recommend colon cancer screening begin at age 45 (down from 50).[47] These recent changes happened after the timeframe of cancer data presented in this report, but we anticipate this could result in fewer late stage colorectal cancers diagnosed among individuals under 50 in the future.

## 2.5 Human papillomavirus (HPV)-associated cancers

Human papillomavirus (HPV) is a sexually transmitted infection. Certain types of HPV are associated with cancer in both males and females.[48] Cancers of the cervix, vagina, vulva, penis, anus, and oropharynx[49] are all associated with HPV infection. Estimates suggest that HPV causes over 90% of cervical cancers and a majority of cancers of other HPV-associated sites.[50] For the purposes of this report, cancers of these sites are considered HPV-associated cancers.

The incidence of HPV-associated cancers in Utah is statistically significantly lower than in the rest of the U.S. However, from 2010-2019, incidence of HPV-associated cancers in Utah increased by 1.29% per year, a statistically significant increase (Figure 2.14). Incidence in the rest of the U.S. also increased during this time period, but this trend was not statistically significant. Both Utah and the U.S. exhibited statistically significant increases in mortality from 2010 through 2019. In Utah, the mortality rate increased by 0.46% per year, and in the U.S. mortality increased by 0.65% per year.

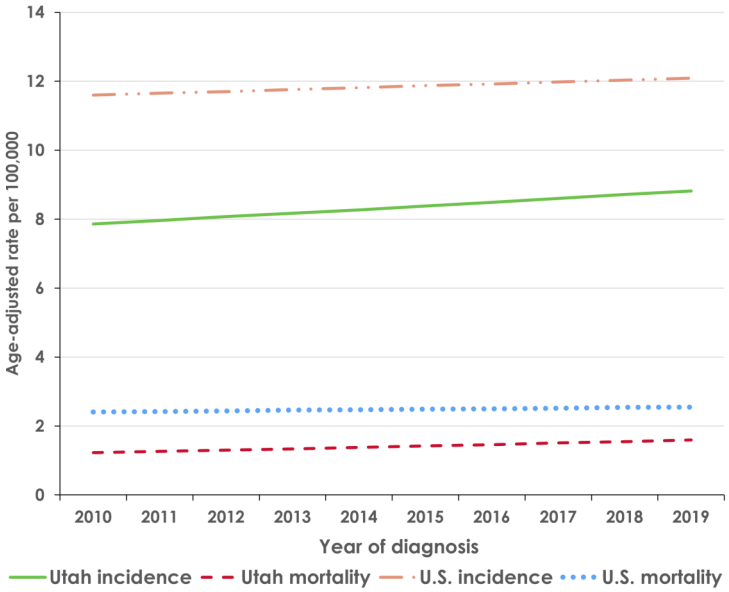



**Figure 2.14 Incidence and mortality trends for cancers associated with human papillomavirus (HPV), Utah and the U.S. 2010-2019**

The 2015-2019 incidence of HPV-associated cancers was twice as high among Utah females (11.7 per 100,000 per year) than males in Utah (5.5 per 100,000 per year, Figure 2.15). Cancers of the cervix and vulva account for much of this difference. Incidence of anal cancer was also statistically significantly higher in females than males. Conversely males experienced higher incidence of cancers of the oropharynx and tonsil than females. From 2015-2019, incidence and mortality from HPV-associated cancers did not differ significantly between Hispanic or Latino and non-Hispanic White Utahns (Figure 2.16).

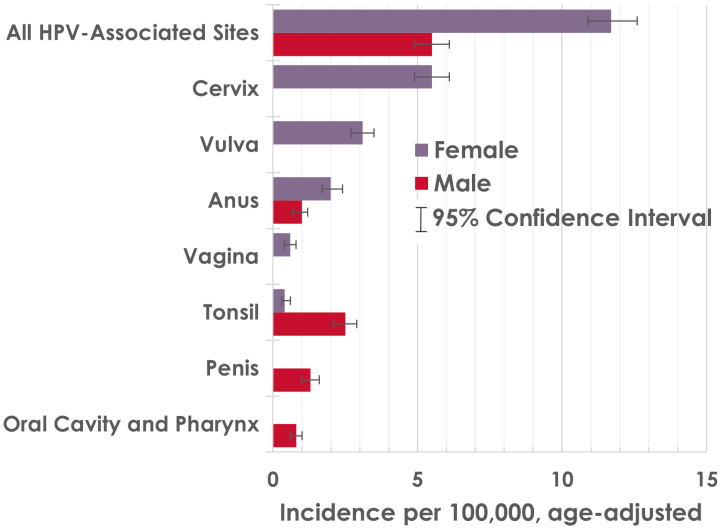



**Figure 2.15 Incidence of human papillomavirus (HPV)-associated cancers by sex and cancer site, Utah 2015-2019**

The overall incidence of cervical cancer in Utah was 5.5 per 100,000 per year compared to 7.7 per 100,000 per year for the U.S. (Table C.2). Cervical cancer is more commonly diagnosed at local stage compared to regional or distant stage in both Utah and the U.S. (Figure 2.17). In situ cervical cancers are not reportable to cancer registries. The incidence of local stage cervical cancer in Utah was 2.7 per 100,000 per year and the incidence of regional stage cervical cancer was 1.9 per 100,000 per year from 2015-2019. Throughout this time period, the incidence of cervical cancer of any stage at diagnosis in Utah was statistically significantly lower than that of the U.S. The five-year relative survival in Utah for females diagnosed with local stage cervical cancer was 93.0% compared to only 57.3% among those diagnosed at regional or distant stage (Table C.3).

HPV vaccination can reduce the risk of HPV-associated cancers.[50] The Advisory Committee on Immunization Practices recommends both males and females receive the HPV vaccine at age 11 or 12,[51] and uptake of the vaccine has increased steadily.[52] National data from 2021 indicated that 61.7% of

adolescents aged 13-17 had completed all doses of the HPV vaccine.[53] For many years, Utah had one of the lowest HPV vaccine completeness rates in the U.S. However, by 2021 Utah was on par with the nation with 61.4% of teens aged 13-17 up to date with HPV vaccination.[53] The recommendations for routine HPV vaccination began in 2006 for females and 2011 for males.[54] It can take 10-20 years for HPV infections to develop into cancer,[48] so it is still too early to observe the effects of HPV vaccination on cancer incidence.

Cervical cancer screening is another highly effective cancer control mechanism. The USPSTF recommends routine cervical cancer screening every 3-5 years for females aged 21-65 via HPV and/or cervical cytology (Pap) testing.[55] Routine screening can detect pre-cancerous cells before they develop into cancer. Evidence suggests that cervical cancer screening substantially reduces cervical cancer incidence and mortality.[55] In 2020, 62.9% of eligible females in Utah were up to date with cervical cancer screening, which was lower than the nationwide adherence of 68.8%.[56]

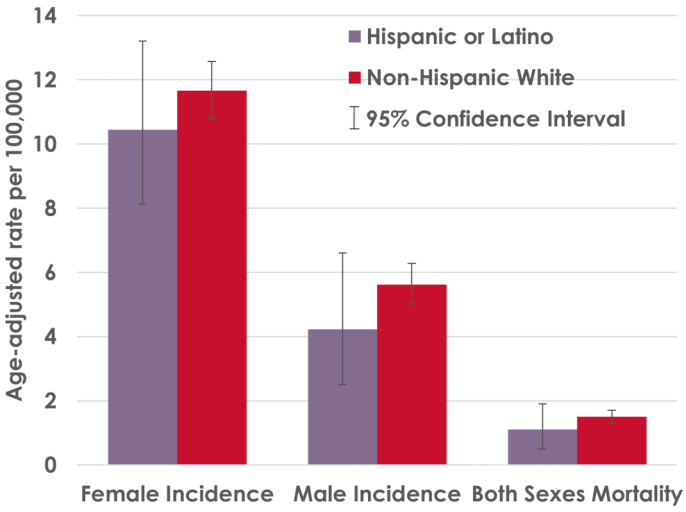



**Figure 2.16 Incidence and mortality of human papillomavirus (HPV)-associated cancers in the Hispanic or Latino and non-Hispanic White populations, Utah 2015-2019**

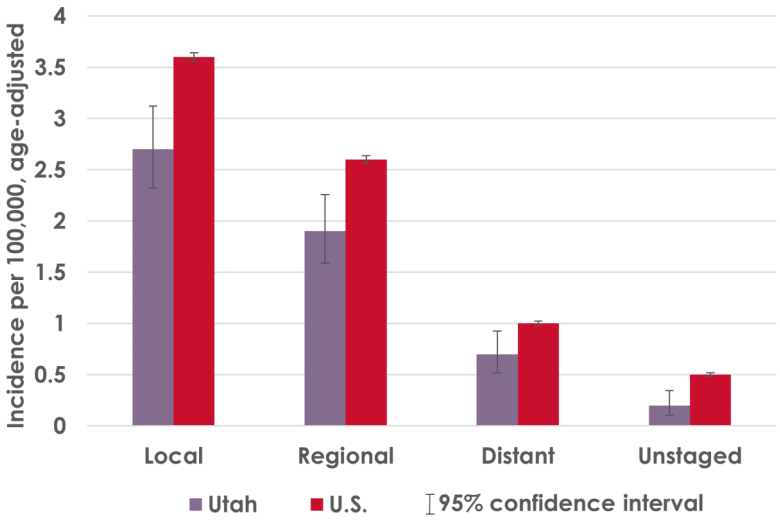



**Figure 2.17 Cervical cancer incidence by stage at diagnosis, Utah compared to the U.S. 2015-2019**

## Appendix A. Data and Methods

### A.1 Compiling cancer surveillance data

The Utah Cancer Registry collects reports of all newly diagnosed cases of reportable neoplasms among Utah residents from health care providers statewide. This information is reported for public health purposes described and authorized under Utah Code Annotated §26-5-2, 26-5-3, and 26-I-30(6)-(8), and by the Utah Administrative Code Rule R384-100, the Cancer Reporting Rule.[57] Reportable cancer diagnoses include primary, malignant cancers. Both invasive and in situ tumors are reportable, with the exception of in situ cervical cancers. Benign tumors of the brain and central nervous system are also reportable. No other benign tumors are reportable. Basal cell and squamous cell carcinomas of the skin are not reportable. Cancer case reports received from providers are consolidated, edited, and reviewed for quality assurance by Utah Cancer Registry staff.

The data utilized in this report were provided by central cancer registries participating in the National Cancer Institute's Surveillance Epidemiology and End Results (SEER) Program and/or the Centers for Disease Control and Prevention's (CDC) National Program of Cancer Registries (NPCR). This report is based on cancer diagnoses through the end of 2019, which were submitted to SEER and NPCR by participating registries in 2021 and made available for public use in 2022. This is due to the time needed to receive reports from providers and to compile, edit, and quality assure cancer case data. It takes over two years between the end of a calendar year of cancer diagnoses and when national data become available for analysis for reports such as this.

### A.2 Data accessed for this report

This report utilized the NPCR and SEER Incidence-U.S. Cancer Statistics Public Use Research Database[58] and the SEER Research Plus database[59] in SEER*Stat statistical application software.[60] Mortality data are provided in SEER*Stat by the National Center for Health Statistics (NCHS) of the CDC. Incidence and mortality rates were calculated using incident cases and deaths from January 1, 2015 through December 31, 2019. Diagnoses and deaths from January 1, 2010 through December 31, 2019 were used in calculating incidence and mortality trends. Cancers in this report are grouped following the conventions of the SEER program and the World Health Organization (2008 edition),[61] using primary site and histology codes defined in the International Classification of Diseases for Oncology, Third Edition (ICD-O-3).[62] We used the Rural Urban Continuum Codes (RUCC) to classify counties in Utah as rural (codes 4-10) or urban (codes 1-3).[63]

The population denominator for cancer incidence and mortality is the current population of the geographic area in the same year as the cancer case diagnosis or death. The population counts are provided by the U.S. Census Bureau's Population Estimates Program,[64] in collaboration with the National Center for Health Statistics. These population data are based on the Decennial Census population from 2010 and intercensal estimates for other years.

Relative survival among individuals diagnosed with cancer in Utah was calculated using incidence and survival data accessed in SEER*Stat's survival session.

### A.3 Statistical analysis

Counts of incident cancers and cancer mortality were reported for the most recent complete year available, 2019, for the population of Utah. Cancer counts and incidence rates presented in this report include all reportable cancer diagnoses, including invasive, in situ, and benign, unless otherwise noted. Cancer incidence and mortality rates were estimated for Utah compared to rates for the remainder of the 49 U.S. states and the District of Columbia. When cancer counts or incidence rates are reported by race and ethnicity, all individuals who are of Hispanic or Latino ethnicity are counted in that category regardless of their reported race. Counts or rates for race groups White, Black or African American, Asian or Pacific Islander, and American Indian or Alaska native exclude individuals identified as Hispanic or Latino.

All cancer incidence and mortality rates reported are per 100,000 population per year and are age-standardized to the 2000 U.S. standard population. Rates were calculated using the SEER*Stat statistical application software. Cancer incidence and mortality rates for specific cancer sites were estimated based on the five-year period 2015 through 2019. Five years were used to have sufficient numbers to obtain stable estimates and reliable 95% confidence intervals for comparisons, e.g., between geographic regions and

between race and ethnic groups. We identified rates that were statistically significantly different from one another using the rate ratio option in the SEER*Stat program. We estimated the percent difference between rates in two populations as the ratio of the two rates minus one multiplied by 100.

Trends in cancer incidence and mortality for specific cancer sites were summarized over the ten-year period 2010 through 2019. Incidence and mortality trends were analyzed using Joinpoint analysis, a statistical method that describes changing trends over successive segments of time by selecting the best fitting point or points where the rate of increase or decrease exhibits a statistically significant change.[65,66] Rates were calculated utilizing SEER*Stat software and analyzed using the Joinpoint Regression Program. The program estimates an annual percent change statistic for each segment and estimates statistical significance of the trend.

Survival of individuals with cancer was described as relative survival, i.e. survival among individuals diagnosed with cancer compared to comparable-age members of the general population. Relative survival was calculated using the Period Survival Method.[67] Period survival calculations allow for the most up-to-date survival estimates for current survival trends, using previous survival estimates to calculate longer-term survival. For this analysis, we used 2018 as the period cohort, so the first-year survival estimates were based on 2018 cases, and two-year survival was based on 2017 estimates, three year survival was based on 2016 estimates, and so on. These estimates are then combined to produce five-year survival estimates for cases diagnosed in 2018. Confidence intervals were calculated at the 95% level. For relative survival estimates that are at or near 100%, SEER*Stat could not calculate confidence intervals.

## Appendix B. Definitions and Abbreviations

**Age-adjusted or age-standardized**

Age-adjustment or age-standardization is a statistical technique applied to allow for comparison of disease rates between populations with different age distributions. Age-standardized rates and age-adjusted rate differences provided in this report are based on the 2000 U.S. standard population.

**Annual percent change or annual average percent change**

The annual percent change indicates the percent increase or decrease in a cancer incidence or mortality rate per year over a stated time period. It is calculated by fitting a straight line to the natural logarithm of the incidence or mortality rate for each year.

**Benign**

A tumor or growth that does not exhibit potential to invade beyond the tissue of origin. Benign tumors are included in cancer registry data only if occurring in the brain or central nervous system.

**CI**

Confidence interval. The range of possible variation in an estimate due to chance. A value falling outside the 95% confidence interval is unlikely to be different from the estimate due to chance. The width of the confidence interval reflects the degree of certainty or stability of an estimate such as a cancer incidence rate, with wider confidence intervals indicating uncertainty or instability of the rate.

**Distant stage**

Cancer that has spread from the original (primary) site to distant organs or distant lymph nodes. Also known as distant metastasis.

**Incident or incidence**

Incident cancer refers to newly diagnosed disease. Surveillance of cancer is based on the incidence rate, which is the number of newly diagnosed or incident cancer cases in a specified year, in a defined population at risk for the disease.

**HPV**

Human papillomavirus. A virus that causes most cervical cancer cases and is a contributing cause for several other cancers.

**In situ**

Cancer that is confined to the layer of cells in which it began. The cancerous growth or tumor exhibits malignant appearance of the cells, indicating potential to invade, but it has not spread to surrounding tissue.

**Invasive**

Cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding tissues. Includes local, regional, and distant stage cancers.

**Local stage**

Cancer that is invasive but is confined entirely to the organ in which it began, without evidence of spread.

**Malignant**

Cancerous cells that exhibit the ability to invade or spread to other tissues of the body.

**Mortality**

The occurrence of deaths from a disease in a specified time period within a defined population. In this report mortality is reported for cancer.

**Neoplasm**

An abnormal growth of cells. Neoplasms may be benign or malignant.

**NPCR**

National Program of Cancer Registries of the Centers for Disease Control and Prevention. NPCR was established by Congress in 1992 and funds central cancer registries in 46 U.S. states, the District of

Columbia, Puerto Rico, the U.S. Pacific Island Jurisdictions, and the U.S. Virgin Islands.

**Primary**

Cancer in the part of the body where the cancer first began. Recurrence of the same cancer or spread of the cancer to another body site is not considered a new cancer and is not counted as a primary cancer for cancer surveillance purposes.

**Regional stage**

Cancer that has spread beyond the original (primary) site to nearby lymph nodes or organs and tissues.

**Relative survival**

A measure denoting the survival of individuals diagnosed with cancer compared to the general population, matched by age and sex. It is a ratio of the number of cancer cases who survive to the number of comparable general population members who survive.

**SEER**

The Surveillance, Epidemiology, and End Results Program of the National Cancer Institute. The SEER Program was founded in 1973 and collects data on cancer cases from Utah and various other central cancer registries in the U.S.

**Stage**

A measure of cancer progression, detailing the degree to which the cancer has advanced. Stage at diagnosis is reported to cancer registries. Stage is based on the size of the tumor, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body. Cancer staging in this report are all based on the SEER Summary Stage variable.

**Unstaged**

Cancer for which there is not enough information to assign a stage at diagnosis.

## Appendix C. Detailed Tables of Cancer Case Counts, Incidence, and Mortality

## Table C.1 New cancer cases and deaths from cancer in Utah by cancer site and sex, 2019[a]

| Cancer Site | | Males and Females | | | Females | | | Males | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | New Cases | | Deaths | New Cases | | Deaths | New Cases | | Deaths |
| | | Invasive | In Situ | | Invasive | In Situ | | Invasive | In Situ | |
| All Sites | All Sites | 11,888 | 2,926 | 3,288 | 5,805 | 1,670 | 1,500 | 6,083 | 1,256 | 1,788 |
| Bones and Joints | Bones and Joints | 35 | ^ | 16 | 17 | ^ | ^ | 18 | ^ | 12 |
| Brain and Other Nervous System | Brain and Other Nervous System, incl Benign | 214 | 924 | 141 | 102 | 617 | 62 | 112 | 307 | 79 |
| Breast | Breast, Female | 1763 | 358 | 285 | 1763 | 358 | 285 | ^ | ^ | ^ |
| | Breast, Male | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| Digestive System | Esophagus | 76 | ^ | 81 | ^ | ^ | ^ | 64 | ^ | 71 |
| | Stomach | 111 | ^ | 59 | 34 | ^ | 19 | 77 | ^ | 40 |
| | Small Intestine | 70 | ^ | ^ | 20 | ^ | ^ | 50 | ^ | ^ |
| | Colon and Rectum | 810 | ^ | 321 | 382 | ^ | 150 | 428 | ^ | 171 |
| | Anus, Anal Canal and Anorectum | 46 | ^ | ^ | 35 | ^ | ^ | ^ | ^ | ^ |
| | Liver | 153 | ^ | 88 | 44 | ^ | 22 | 109 | ^ | 66 |
| | Intrahepatic Bile Duct | 32 | ^ | 36 | ^ | ^ | 20 | 18 | ^ | 16 |
| | Gallbladder | 16 | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| | Other Biliary | 35 | ^ | ^ | ^ | ^ | ^ | 22 | ^ | ^ |
| | Pancreas | 333 | ^ | 273 | 159 | ^ | 119 | 174 | ^ | 154 |
| | Retroperitoneum | 16 | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| | Peritoneum, Omentum and Mesentery | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| | Other Digestive Organs | 18 | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| Endocrine System | Thyroid | 492 | ^ | ^ | 359 | ^ | ^ | 133 | ^ | ^ |
| | Other Endocrine including Thymus | 23 | 241 | ^ | ^ | 151 | ^ | ^ | 90 | ^ |
| Eye and Orbit | Eye and Orbit | 31 | ^ | ^ | 18 | ^ | ^ | ^ | ^ | ^ |
| Female Genital System | Cervix | 74 | ^ | 18 | 74 | ^ | 18 | ^ | ^ | ^ |
| | Uterus | 394 | ^ | 76 | 394 | ^ | 76 | ^ | ^ | ^ |
| | Ovary | 150 | ^ | 93 | 150 | ^ | 93 | ^ | ^ | ^ |
| | Vagina | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| | Vulva | 36 | 16 | ^ | 36 | 16 | ^ | ^ | ^ | ^ |
| | Other Female Genital Organs | 30 | ^ | ^ | 30 | ^ | ^ | ^ | ^ | ^ |
| Leukemia | Leukemia | 406 | ^ | 166 | 165 | ^ | 59 | 241 | ^ | 107 |
| Lymphoma | Hodgkin Lymphoma | 84 | ^ | ^ | 39 | ^ | ^ | 45 | ^ | ^ |
| | Non-Hodgkin Lymphoma | 525 | ^ | 115 | 246 | ^ | 46 | 279 | ^ | 69 |
| Male Genital System | Prostate | 1,681 | ^ | 276 | ^ | ^ | ^ | 1,681 | ^ | 276 |
| | Testis | 112 | ^ | ^ | ^ | ^ | ^ | 112 | ^ | ^ |
| | Penis | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| | Other Male Genital Organs | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| Miscellaneous | Miscellaneous | 352 | ^ | 253 | 147 | ^ | 126 | 205 | ^ | 127 |
| Myeloma | Myeloma | 189 | ^ | 82 | 80 | ^ | 35 | 109 | ^ | 47 |
| Oral Cavity and Pharynx | Oral Cavity and Pharynx | 281 | 19 | 49 | 91 | ^ | 16 | 190 | ^ | 33 |
| Respiratory System | Nose, Nasal Cavity and Middle Ear | 22 | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| | Larynx | 30 | ^ | ^ | ^ | ^ | ^ | 23 | ^ | ^ |
| | Lung | 762 | ^ | 444 | 383 | ^ | 197 | 379 | ^ | 247 |
| | Pleura | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| | Trachea, Mediastinum and Other Respiratory Organs | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |
| Skin excluding Basal and Squamous | Melanoma | 1,250 | 1,297 | 76 | 550 | 485 | 33 | 700 | 812 | 43 |
| | Non-Melanoma Skin | 86 | ^ | ^ | 34 | ^ | ^ | 52 | ^ | ^ |
| Soft Tissue including Heart | Soft Tissue including Heart | 99 | ^ | 38 | 44 | ^ | 18 | 55 | ^ | 20 |
| Urinary System | Urinary Bladder | 467 | ^ | 93 | 102 | ^ | 20 | 365 | ^ | 73 |
| | Kidney | 475 | ^ | 80 | 175 | ^ | 29 | 300 | ^ | 51 |
| | Ureter | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ | ^ |

[a]Data Source: SEER*Stat Database: NPCR-SEER Incidence Data, SEER*Stat Database: Mortality

^Statistic suppressed due to small cell size (<16 cases) or allows inference of a small cell

## Table C.2 Cancer incidence and mortality by cancer site in Utah and the U.S., all reportable diagnoses 2015-2019[a]

| Cancer Site | | Incidence per 100,000 Population | | | | | Mortality per 100,000 Population | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Utah | | U.S. | | Percent | Utah | | U.S. | | Percent |
| | | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] | Diff. | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] | Diff. |
| All Sites | All Sites | 502.6 | (498.8-506.5) | 506.3 | (506.0-506.6) | -0.7 | 121.8 | (119.9-123.8) | 152.6 | (152.5-152.8) | -20.2 |
| Bones and Joints | Bones and Joints | 1.2 | (1.1-1.4) | 1.0 | (1.0-1.0) | 20.0 | 0.4 | (0.3-0.5) | 0.5 | (0.5-0.5) | -20.0 |
| Brain and Other Nervous System | Brain and Other Nervous System, incl Benign | 35.5 | (34.5-36.5) | 19.4 | (19.3-19.5) | 83.0 | 4.7 | (4.3-5.1) | 4.4 | (4.4-4.4) | 6.8 |
| Breast | Breast, Female | 137.9 | (135.1-140.7) | 157.5 | (157.3-157.8) | -12.4 | 19.8 | (18.8-20.9) | 19.9 | (19.8-20.0) | -0.5 |
| | Breast, Female (Invasive Only) | 115.8 | (113.3-118.4) | 128.1 | (127.9-128.4) | -9.6 | - | - | - | - | - |
| | Breast, Male | 1.0 | (0.8-1.3) | 1.4 | (1.4-1.4) | -28.6 | 0.1 | (0.1-0.3) | 0.3 | (0.3-0.3) | -66.7 |
| Digestive System | Esophagus | 3.2 | (2.9-3.5) | 4.7 | (4.6-4.7) | -31.9 | 2.7 | (2.5-3.0) | 3.9 | (3.8-3.9) | -30.8 |
| | Stomach | 4.6 | (4.3-5.0) | 6.5 | (6.4-6.5) | -29.2 | 2.1 | (1.9-2.4) | 2.9 | (2.9-2.9) | -27.6 |
| | Small Intestine | 2.7 | (2.4-3.0) | 2.6 | (2.5-2.6) | 3.8 | 0.4 | (0.3-0.6) | 0.4 | (0.4-0.4) | 0.0 |
| | Colon and Rectum | 29.5 | (28.6-30.4) | 39.2 | (39.1-39.2) | -24.7 | 10.9 | (10.3-11.5) | 13.4 | (13.4-13.5) | -18.7 |
| | Anus, Anal Canal and Anorectum | 1.5 | (1.3-1.7) | 2.2 | (2.2-2.2) | -31.8 | 0.2 | (0.1-0.3) | 0.3 | (0.3-0.3) | -33.3 |
| | Liver | 5.3 | (4.9-5.7) | 7.1 | (7.1-7.2) | -25.4 | 3.4 | (3.1-3.7) | 4.9 | (4.8-4.9) | -30.6 |
| | Intrahepatic Bile Duct | 1.2 | (1.0-1.4) | 1.5 | (1.5-1.5) | -20.0 | 1.4 | (1.2-1.6) | 1.8 | (1.8-1.8) | -22.2 |
| | Gallbladder | 1.0 | (0.8-1.1) | 1.1 | (1.1-1.1) | -9.1 | 0.5 | (0.4-0.6) | 0.6 | (0.5-0.6) | -16.7 |
| | Other Biliary | 1.2 | (1.0-1.4) | 1.7 | (1.7-1.7) | -29.4 | 0.3 | (0.2-0.4) | 0.5 | (0.5-0.5) | -40.0 |
| | Pancreas | 11.5 | (10.9-12.1) | 13.3 | (13.3-13.4) | -13.5 | 9.3 | (8.8-9.9) | 11.1 | (11.0-11.1) | -16.2 |
| | Retroperitoneum | 0.5 | (0.4-0.7) | 0.4 | (0.4-0.4) | 25.0 | 0.1 | (0.1-0.2) | 0.1 | (0.1-0.1) | 0.0 |
| | Peritoneum, Omentum and Mesentery | 0.4 | (0.3-0.6) | 0.5 | (0.5-0.5) | -20.0 | 0.2 | (0.1-0.3) | 0.3 | (0.3-0.3) | -33.3 |
| | Other Digestive Organs | 0.7 | (0.6-0.9) | 0.7 | (0.7-0.7) | 0.0 | 0.4 | (0.3-0.5) | 0.4 | (0.4-0.4) | 0.0 |
| Endocrine System | Thyroid | 17.4 | (16.7-18.1) | 14.0 | (13.9-14.0) | 24.3 | 0.6 | (0.5-0.7) | 0.5 | (0.5-0.5) | 20.0 |
| | Other Endocrine including Thymus | 9.0 | (8.5-9.5) | 5.5 | (5.5-5.6) | 63.6 | 0.2 | (0.1-0.3) | 0.3 | (0.3-0.3) | -33.3 |
| Eye and Orbit | Eye and Orbit | 1.0 | (0.9-1.2) | 0.9 | (0.9-1.0) | 11.1 | 0.1 | (0.1-0.2) | 0.1 | (0.1-0.1) | 0.0 |
| Female Genital System | Cervix | 5.5 | (4.9-6.1) | 7.7 | (7.7-7.8) | -28.6 | 1.4 | (1.2-1.7) | 2.2 | (2.2-2.3) | -36.4 |
| | Uterus | 26.4 | (25.2-27.6) | 27.8 | (27.7-27.9) | -5.0 | 4.5 | (4.0-5.0) | 5.0 | (4.9-5.0) | -10.0 |
| | Ovary | 10.6 | (9.9-11.4) | 10.5 | (10.4-10.6) | 1.0 | 6.8 | (6.2-7.4) | 6.5 | (6.4-6.5) | 4.6 |
| | Vagina | 0.6 | (0.4-0.8) | 0.7 | (0.7-0.7) | -14.3 | 0.1 | (0.1-0.3) | 0.2 | (0.2-0.2) | -50.0 |
| | Vulva | 3.1 | (2.7-3.5) | 3.5 | (3.5-3.5) | -11.4 | 0.2 | (0.1-0.3) | 0.6 | (0.6-0.6) | -66.7 |
| | Other Female Genital Organs | 2.0 | (1.7-2.4) | 1.9 | (1.9-1.9) | 5.3 | 0.4 | (0.2-0.5) | 0.4 | (0.4-0.4) | 0.0 |
| Leukemia | Leukemia | 14.4 | (13.8-15.1) | 14.1 | (14.0-14.1) | 2.1 | 6.2 | (5.8-6.7) | 6.1 | (6.1-6.2) | 1.6 |
| Lymphoma | Hodgkin Lymphoma | 2.4 | (2.2-2.7) | 2.6 | (2.6-2.6) | -7.7 | 0.2 | (0.1-0.2) | 0.3 | (0.3-0.3) | -33.3 |
| | Non-Hodgkin Lymphoma | 18.2 | (17.5-19.0) | 19.0 | (18.9-19.0) | -4.2 | 5.0 | (4.6-5.4) | 5.3 | (5.2-5.3) | -5.7 |
| Male Genital System | Prostate | 117.3 | (114.6-119.9) | 109.8 | (109.6-110.0) | 6.8 | 21.1 | (19.9-22.4) | 18.9 | (18.8-19.0) | 11.6 |
| | Testis | 7.5 | (6.9-8.2) | 5.7 | (5.7-5.8) | 31.6 | 0.3 | (0.2-0.4) | 0.3 | (0.2-0.3) | 0.0 |
| | Penis | 1.3 | (1.0-1.6) | 1.3 | (1.2-1.3) | 0.0 | ^ | ^ | 0.2 | (0.2-0.2) | ^ |
| | Other Male Genital Organs | 0.5 | (0.4-0.7) | 0.3 | (0.2-0.3) | 66.7 | ^ | ^ | 0.0 | (0.0-0.0) | ^ |
| Miscellaneous | Miscellaneous | 12.6 | (12.0-13.2) | 16.4 | (16.4-16.5) | -23.2 | 10.6 | (10.0-11.2) | 11.4 | (11.4-11.5) | -7.0 |
| Myeloma | Myeloma | 6.4 | (6.0-6.9) | 7.0 | (7.0-7.1) | -8.6 | 3.1 | (2.8-3.4) | 3.2 | (3.1-3.2) | -3.1 |
| Oral Cavity and Pharynx | Oral Cavity and Pharynx | 10.8 | (10.2-11.3) | 12.3 | (12.2-12.3) | -12.2 | 1.7 | (1.5-2.0) | 2.5 | (2.5-2.6) | -32.0 |
| Respiratory System | Nose, Nasal Cavity and Middle Ear | 0.7 | (0.5-0.8) | 0.7 | (0.7-0.7) | 0.0 | 0.1 | (0.1-0.2) | 0.1 | (0.1-0.1) | 0.0 |
| | Larynx | 1.6 | (1.4-1.8) | 3.3 | (3.3-3.3) | -51.5 | 0.4 | (0.3-0.6) | 0.9 | (0.9-0.9) | -55.6 |
| | Lung | 26.4 | (25.5-27.3) | 56.6 | (56.5-56.7) | -53.4 | 17.4 | (16.7-18.1) | 36.9 | (36.8-36.9) | -52.8 |
| | Pleura | ^ | ^ | 0.0 | (0.0-0.0) | ^ | ^ | ^ | 0.1 | (0.1-0.1) | ^ |
| | Trachea, Mediastinum and Other Respiratory Organs | 0.2 | (0.1-0.3) | 0.2 | (0.2-0.2) | 0.0 | ^ | ^ | 0.1 | (0.1-0.1) | ^ |
| Skin excluding Basal and Squamous | Melanoma | 84.6 | (83.0-86.1) | 41.9 | (41.8-42.0) | 101.9 | 2.8 | (2.5-3.1) | 2.1 | (2.1-2.2) | 33.3 |
| | Melanoma (Invasive Only) | 41.3 | (40.2-42.4) | 22.7 | (22.6-22.8) | 81.9 | - | - | - | - | - |
| | Non-Melanoma Skin | 2.9 | (2.6-3.2) | 1.8 | (1.7-1.8) | 61.1 | 0.8 | (0.6-0.9) | 1.0 | (1-1) | -20.0 |
| Soft Tissue including Heart | Soft Tissue including Heart | 3.4 | (3.1-3.7) | 3.3 | (3.3-3.4) | 3.0 | 1.4 | (1.2-1.6) | 1.3 | (1.3-1.3) | 7.7 |
| Urinary System | Urinary Bladder | 17.1 | (16.4-17.9) | 19.4 | (19.3-19.5) | -11.9 | 3.3 | (3.0-3.6) | 4.3 | (4.2-4.3) | -23.3 |
| | Kidney | 15.1 | (14.5-15.8) | 17.7 | (17.6-17.8) | -14.7 | 3.4 | (3.1-3.7) | 3.6 | (3.5-3.6) | -5.6 |
| | Ureter | 0.5 | (0.4-0.7) | 0.8 | (0.8-0.9) | -37.5 | ^ | ^ | 0.1 | (0.1-0.1) | ^ |

[a]Data Source: SEER*Stat Database: NPCR-SEER Incidence Data, SEER*Stat Database: Mortality
[b]Age-adjusted rate per 100,000 population; Standardized to the 2000 U.S. Standard Population
[c]CI: confidence interval
^Statistic suppressed due to small cell size (<16 cases) or allows inference of a small cell
-Statistic not listed as matching statistic listed above

## Table C.3 5-year relative survival in Utah, by cancer site and stage at diagnosis, 2018 period[a]

| Cancer Site | | All Stages at Diagnosis | | | In Situ or Local | | | Regional or Distant | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Average N | Relative Survival | 95% CI[b] | Average N | Relative Survival | 95% CI[b] | Average N | Relative Survival | 95% CI[b] |
| All Sites | All Sites | 28730 | 78.5% | (77.9-79) | 16529 | 95.7% | (95.1-96.2) | 10867 | 55.6% | (54.6-56.6) |
| Bones and Joints | Bones and Joints | 97 | 63.8% | (52.7-72.9) | 29 | 78.8% | (51.7-91.8) | 62 | 54.0% | (40.8-65.5) |
| Brain and Other Nervous System | Brain and Other Nervous System, incl Benign | 492 | 40.8% | (36.3-45.3) | 389 | 45.1% | (39.9-50.2) | 85 | 24.4% | (16.1-33.5) |
| Breast | Breast, Female | 4492 | 91.4% | (90.2-92.5) | 3044 | 99.2% | (97.1-99.8) | 1439 | 76.5% | (74.0-78.9) |
| | Breast, Male | 32 | 78.9% | (45.7-93.1) | 14 | 94.8% | (0.0-100.0) | 16 | 75.7% | (27.2-94.2) |
| Digestive System | Esophagus | 198 | 21.4% | (15.6-27.9) | 33 | 54.5% | (32.2-72.3) | 148 | 15.5% | (10.0-22.1) |
| | Stomach | 276 | 31.4% | (25.4-37.6) | 74 | 75.2% | (60.1-85.3) | 182 | 14.3% | (9.2-20.6) |
| | Small Intestine | 166 | 73.3% | (64.4-80.2) | 49 | 88.5% | (71.5-95.6) | 114 | 66.7% | (55.9-75.4) |
| | Colon and Rectum | 1909 | 67.9% | (65.4-70.3) | 825 | 91.8% | (88.7-94.0) | 1042 | 51.3% | (47.9-54.7) |
| | Anus, Anal Canal and Anorectum | 123 | 81.8% | (71.9-88.6) | 80 | 89.9% | (76.8-95.8) | 36 | 57.8% | (38.2-73.2) |
| | Liver | 357 | 28.1% | (23.3-33.1) | 174 | 49.5% | (40.9-57.5) | 156 | 12.2% | (7.5-18.2) |
| | Intrahepatic Bile Duct | 60 | 9.2% | (2.1-22.9) | 13 | 55.3% | (26.1-77.0) | 40 | 2.8% | (0.2-12.2) |
| | Gallbladder | 67 | 21.2% | (12.2-31.9) | 7 | 81.1% | (18.3-97.5) | 58 | 15.0% | (7.1-25.5) |
| | Other Biliary | 66 | 21.0% | (11.1-33.0) | 13 | 42.6% | (12.9-70.1) | 45 | 16.8% | (7.4-29.5) |
| | Pancreas | 652 | 12.6% | (9.9-15.6) | 91 | 46.4% | (35.3-56.7) | 504 | 6.7% | (4.5-9.4) |
| | Retroperitoneum | 34 | 59.4% | (38.1-75.4) | 11 | 84.8% | (51.1-96.0) | 21 | 49.2% | (24.8-69.7) |
| | Peritoneum, Omentum and Mesentery | 24 | 31.1% | (14.7-49.0) | 8 | 67.0% | (17.4-91.2) | 14 | 19.4% | (5.3-40.0) |
| | Other Digestive Organs | 35 | 23.7% | (9.5-41.4) | 0 | + | + | 31 | 24.3% | (9.7-42.4) |
| Endocrine System | Thyroid | 1316 | 98.7% | (97.6-99.3) | 905 | 99.8% | (98.9-100.0) | 401 | 94.1% | (90.4-96.4) |
| | Other Endocrine including Thymus | 46 | 87.7% | (72.9-94.7) | 17 | 100.0% | + | 28 | 81.0% | (61.0-91.4) |
| Eye and Orbit | Eye and Orbit | 76 | 75.3% | (61.6-84.8) | 65 | 77.6% | (62.0-87.4) | 7 | 52.6% | (10.7-83.1) |
| Female Genital System | Cervix | 194 | 75.5% | (68.4-81.2) | 99 | 93.0% | (84.4-96.9) | 90 | 57.3% | (45.6-67.4) |
| | Uterus | 969 | 83.0% | (80.1-85.6) | 709 | 94.5% | (91.5-96.4) | 231 | 54.6% | (47.4-61.2) |
| | Ovary | 384 | 54.4% | (48.9-59.6) | 75 | 96.3% | (86.0-99.1) | 291 | 44.7% | (38.5-50.7) |
| | Vagina | 21 | 65.9% | (39.6-82.8) | 12 | 94.6% | (58.0-99.4) | 9 | 33.2% | (4.6-67.3) |
| | Vulva | 140 | 85.1% | (76.6-90.7) | 118 | 91.1% | (82.0-95.7) | 20 | 49.5% | (25.1-70.0) |
| | Other Female Genital Organs | 51 | 52.2% | (36.1-66.0) | 7 | 84.8% | (9.6-98.8) | 43 | 48.3% | (31.3-63.4) |
| Leukemia | Leukemia | 906 | 70.4% | (66.8-73.7) | + | + | + | 901 | 70.6% | (67.0-73.9) |
| Lymphoma | Hodgkin Lymphoma | 195 | 93.9% | (88.4-96.8) | 26 | 85.0% | (63.2-94.4) | 166 | 95.4% | (89.2-98.0) |
| | Non-Hodgkin Lymphoma | 1098 | 78.3% | (75.1-81.1) | 295 | 89.5% | (83.4-93.5) | 763 | 75.3% | (71.4-78.7) |
| Male Genital System | Prostate | 3899 | 97.0% | (95.5-98.0) | 2929 | 100.0% | + | 815 | 80.2% | (76.4-83.5) |
| | Testis | 314 | 95.5% | (92.4-97.4) | 0 | + | + | 0 | + | + |
| | Penis | 35 | 84.8% | (59.6-94.9) | 29 | 86.7% | (59.3-96.2) | 5 | 36.9% | (0.7-81.9) |
| | Other Male Genital Organs | 9 | 91.4% | (30.9-99.3) | 7 | 88.4% | (24.0-98.9) | 2 | 100.0% | + |
| Miscellaneous | Miscellaneous | 713 | 39.9% | (35.7-44.1) | 14 | 100.0% | + | 404 | 55.5% | (49.4-61.1) |
| Myeloma | Myeloma | 378 | 64.4% | (58.2-69.9) | 19 | 80.7% | (47.8-94) | 359 | 63.7% | (57.3-69.5) |
| Oral Cavity and Pharynx | Oral Cavity and Pharynx | 625 | 75.5% | (71.2-79.2) | 258 | 90.1% | (82.6-94.5) | 355 | 66.2% | (60.6-71.3) |
| Respiratory System | Nose, Nasal Cavity and Middle Ear | 40 | 59.3% | (40.3-74) | 14 | 90.6% | (47.7-98.7) | 23 | 42.8% | (19.4-64.5) |
| | Larynx | 111 | 66.3% | (54.9-75.4) | 71 | 78.3% | (62.8-87.9) | 36 | 46.4% | (28.7-62.3) |
| | Lung | 1501 | 26.2% | (23.6-28.8) | 287 | 71.7% | (64.3-77.8) | 1128 | 15.2% | (12.9-17.7) |
| | Pleura | + | + | + | + | + | + | + | + | + |
| | Trachea, Mediastinum and Other Respiratory Organs | 12 | 38.7% | (12.2-65.1) | 4 | 40.1% | (1.1-83) | 8 | 37.7% | (8.7-67.7) |
| Skin excluding Basal and Squamous | Melanoma | 4362 | 99.8% | (94.3-100) | 4077 | 100.0% | + | 265 | 71.9% | (64.8-77.8) |
| | Non-Melanoma Skin | 142 | 83.7% | (71.4-91) | 112 | 88.1% | (72.8-95.1) | 14 | 63.4% | (35.5-81.9) |
| Soft Tissue including Heart | Soft Tissue including Heart | 225 | 72.7% | (65.1-78.9) | 143 | 81.0% | (71.4-87.6) | 71 | 56.5% | (43.2-67.8) |
| Urinary System | Urinary Bladder | 911 | 79.9% | (76-83.2) | 802 | 88.4% | (84.2-91.5) | 94 | 19.0% | (11.2-28.3) |
| | Kidney | 875 | 77.5% | (73.9-80.6) | 569 | 94.5% | (90.4-96.8) | 279 | 43.6% | (37.1-49.9) |
| | Ureter | 24 | 49.3% | (27-68.2) | 14 | 83.9% | (33.1-97.2) | 11 | 13.9% | (2.5-34.6) |

[a]Data Source: SEER*Stat Database: NPCR-SEER Incidence Data

[b]CI: confidence interval

+This statistic could not be calculated

## Table C.4 Hispanic or Latino and non-Hispanic White cancer incidence, Utah and the U.S., all reportable diagnoses 2015-2019[a]

| Cancer Site | | Utah | | | | U.S. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hispanic/Latino | | Non-Hispanic White | | Hispanic/Latino | | Non-Hispanic White | |
| | | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] |
| All Sites | All Sites | 454.0 | (440.1-468.2) | 509.7 | (505.5-513.8) | 387.5 | (386.6-388.4) | 527.9 | (527.5-528.3) |
| Bones and Joints | Bones and Joints | 1.9 | (1.2-2.8) | 1.2 | (1.0-1.4) | 1.0 | (0.9-1.0) | 1.0 | (1.0-1.1) |
| Brain and Other Nervous System | Brain and Other Nervous System, incl Benign | 34.4 | (30.8-38.4) | 36.1 | (35.0-37.2) | 17.0 | (16.8-17.2) | 20.5 | (20.4-20.6) |
| Breast | Breast, Female | 136.5 | (126.9-146.6) | 139.0 | (136-.0142.0) | 121.8 | (121.1-122.4) | 163.8 | (163.5-164.1) |
| | Breast, Male | ^ | ^ | 1.0 | ^ | 0.8 | (0.8-0.9) | 1.4 | (1.4-1.4) |
| Digestive System | Esophagus | 3.3 | (2.1-4.8) | 3.2 | (2.9-3.5) | 2.8 | (2.7-2.9) | 5.2 | (5.1-5.2) |
| | Stomach | 10.2 | (8.1-12.6) | 3.8 | (3.4-4.2) | 9.5 | (9.4-9.7) | 5.2 | (5.2-5.3) |
| | Small Intestine | 1.7 | (1.0-2.8) | 2.8 | (2.5-3.1) | 1.9 | (1.8-1.9) | 2.5 | (2.5-2.5) |
| | Colon and Rectum | 36.3 | (32.5-40.5) | 28.8 | (27.8-29.8) | 34.9 | (34.7-35.2) | 39.1 | (39.0-39.3) |
| | Anus, Anal Canal and Anorectum | ^ | ^ | 1.6 | ^ | 1.6 | (1.5-1.6) | 2.4 | (2.4-2.4) |
| | Liver | 14.9 | (12.4-17.7) | 4.2 | (3.8-4.6) | 12.1 | (11.9-12.2) | 5.8 | (5.8-5.9) |
| | Intrahepatic Bile Duct | 2.3 | (1.3-3.6) | 1.0 | (0.9-1.2) | 1.7 | (1.7-1.8) | 1.5 | (1.5-1.5) |
| | Gallbladder | ^ | ^ | 0.8 | ^ | 1.9 | (1.8-2.0) | 0.9 | (0.9-0.9) |
| | Other Biliary | 2.2 | (1.2-3.5) | 1.1 | (0.9-1.3) | 2.3 | (2.2-2.4) | 1.6 | (1.6-1.6) |
| | Pancreas | 11.5 | (9.2-14.1) | 11.5 | (10.9-12.1) | 11.9 | (11.8-12.1) | 13.3 | (13.2-13.3) |
| | Retroperitoneum | ^ | ^ | 0.5 | ^ | 0.4 | (0.4-0.5) | 0.4 | (0.4-0.4) |
| | Peritoneum, Omentum and Mesentery | ^ | ^ | 0.4 | ^ | 0.4 | (0.4-0.4) | 0.5 | (0.5-0.5) |
| | Other Digestive Organs | ^ | ^ | 0.7 | ^ | 0.8 | (0.8-0.8) | 0.7 | (0.7-0.7) |
| Endocrine System | Thyroid | 18.5 | (16.2-21.0) | 17.7 | (16.9-18.5) | 13.8 | (13.6-13.9) | 14.8 | (14.8-14.9) |
| | Other Endocrine including Thymus | 11.9 | (10.2-13.8) | 8.5 | (7.9-9.0) | 6.0 | (5.9-6.1) | 4.8 | (4.8-4.9) |
| Eye and Orbit | Eye and Orbit | ^ | ^ | 1.1 | ^ | 0.7 | (0.6-0.7) | 1.1 | (1.1-1.1) |
| Female Genital System | Cervix | 6.6 | (4.9-8.6) | 5.0 | (4.5-5.7) | 9.7 | (9.5-9.9) | 7.3 | (7.2-7.3) |
| | Uterus | 23.4 | (19.7-27.6) | 25.9 | (24.6-27.2) | 25.6 | (25.3-25.9) | 28.0 | (27.9-28.1) |
| | Ovary | 11.4 | (8.6-14.7) | 10.6 | (9.8-11.4) | 10.1 | (9.9-10.3) | 10.9 | (10.8-10.9) |
| | Vagina | ^ | ^ | 0.6 | ^ | 0.7 | (0.7-0.8) | 0.7 | (0.7-0.7) |
| | Vulva | ^ | ^ | 3.2 | ^ | 2.0 | (1.9-2.1) | 4.0 | (4.0-4.1) |
| | Other Female Genital Organs | ^ | ^ | 2.0 | ^ | 1.6 | (1.5-1.6) | 2.0 | (2.0-2.0) |
| Leukemia | Leukemia | 13.2 | (11.0-15.7) | 14.5 | (13.8-15.2) | 11.3 | (11.2-11.5) | 14.9 | (14.8-14.9) |
| Lymphoma | Hodgkin Lymphoma | 2.8 | (1.9-3.9) | 2.5 | (2.2-2.8) | 2.3 | (2.3-2.4) | 2.8 | (2.8-2.9) |
| | Non-Hodgkin Lymphoma | 22.8 | (19.6-26.3) | 18.0 | (17.2-18.8) | 17.5 | (17.3-17.7) | 19.8 | (19.8-19.9) |
| Male Genital System | Prostate | 102.9 | (92.6-113.9) | 117.9 | (115.1-120.7) | 87.1 | (86.5-87.8) | 103.4 | (103.2-103.6) |
| | Testis | 6.5 | (5.1-8.2) | 8.0 | (7.2-8.7) | 5.4 | (5.2-5.5) | 7.0 | (6.9-7.1) |
| | Penis | ^ | ^ | 1.2 | ^ | 1.7 | (1.6-1.8) | 1.2 | (1.2-1.2) |
| | Other Male Genital Organs | ^ | ^ | 0.5 | ^ | 0.2 | (0.2-0.2) | 0.3 | (0.2-0.3) |
| Miscellaneous | Miscellaneous | 13.2 | (10.7-16.1) | 12.5 | (11.9-13.2) | 13.5 | (13.3-13.7) | 17.0 | (16.9-17.1) |
| Myeloma | Myeloma | 7.9 | (6.0-10.1) | 6.2 | (5.8-6.7) | 6.8 | (6.6-6.9) | 6.1 | (6.1-6.2) |
| Oral Cavity and Pharynx | Oral Cavity and Pharynx | 7.0 | (5.4-8.9) | 11.0 | (10.4-11.6) | 7.4 | (7.2-7.5) | 13.7 | (13.6-13.8) |
| Respiratory System | Nose, Nasal Cavity and Middle Ear | ^ | ^ | 0.7 | ^ | 0.5 | (0.5-0.6) | 0.7 | (0.7-0.7) |
| | Larynx | 2.1 | (1.2-3.4) | 1.6 | (1.3-1.8) | 2.3 | (2.3-2.4) | 3.5 | (3.4-3.5) |
| | Lung | 25.8 | (22.3-29.8) | 26.4 | (25.5-27.4) | 29.2 | (29.0-29.5) | 61.1 | (60.9-61.2) |
| | Pleura | ^ | ^ | ^ | ^ | 0.0 | (0.0-0.0) | 0.0 | (0.0-0.0) |
| | Trachea, Mediastinum and Other Respiratory Organs | ^ | ^ | 0.2 | ^ | 0.2 | (0.2-0.2) | 0.2 | (0.2-0.2) |
| Skin excluding Basal and Squamous | Melanoma | 21.2 | (18.3-24.5) | 92.6 | (90.9-94.4) | 7.7 | (7.5-7.8) | 53.0 | (52.8-53.1) |
| | Non-Melanoma Skin | ^ | ^ | 3.0 | ^ | 1.0 | (0.9-1.0) | 1.9 | (1.9-1.9) |
| Soft Tissue including Heart | Soft Tissue including Heart | 3.2 | (2.2-4.5) | 3.4 | (3.1-3.7) | 3.1 | (3.0-3.2) | 3.3 | (3.3-3.4) |
| Urinary System | Urinary Bladder | 11.8 | (9.3-14.6) | 17.9 | (17.1-18.7) | 10.8 | (10.6-10.9) | 21.9 | (21.9-22.0) |
| | Kidney | 19.9 | (17.1-23.0) | 14.9 | (14.2-15.6) | 17.7 | (17.6-17.9) | 17.9 | (17.9-18.0) |
| | Ureter | ^ | ^ | 0.5 | ^ | 0.5 | (0.5-0.6) | 0.9 | (0.9-1.0) |

[a]Data Source: SEER*Stat Database: NPCR-SEER Incidence Data

[b]Age-adjusted incidence rate per 100,000 population; Standardized to the 2000 U.S. Standard Population

[c]CI: confidence interval

^Statistic suppressed due to small cell size (<16 cases) or allows inference of a small cell

## Table C.5 Hispanic or Latino and non-Hispanic White cancer mortality, Utah and the U.S., 2015-2019[a]

| Cancer Site | | Utah | | | | U.S. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Hispanic/Latino | | Non-Hispanic White | | Hispanic/Latino | | Non-Hispanic White | |
| | | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] |
| All Sites | All Sites | 100.6 | (93.5-108.1) | 123.6 | (121.6-125.7) | 109.7 | (109.2-110.2) | 157.5 | (157.3-157.7) |
| Bones and Joints | Bones and Joints | ^ | ^ | 0.5 | (0.3-0.6) | 0.4 | (0.4-0.4) | 0.5 | (0.5-0.5) |
| Brain and Other Nervous System | Brain and Other Nervous System | 2.5 | (1.6-3.6) | 5.1 | (4.7-5.5) | 3.1 | (3.0-3.2) | 5.1 | (5.0-5.1) |
| Breast | Breast, Female | 14.6 | (11.4-18.5) | 20.4 | (19.3-21.6) | 13.7 | (13.5-14.0) | 19.9 | (19.8-20.0) |
| | Breast, Male | ^ | ^ | 0.2 | (0.1-0.3) | 0.1 | (0.1-0.2) | 0.3 | (0.3-0.3) |
| Digestive System | Esophagus | 1.6 | (0.8-2.7) | 2.9 | (2.6-3.2) | 2.0 | (1.9-2.0) | 4.4 | (4.3-4.4) |
| | Stomach | 4.7 | (3.2-6.4) | 1.7 | (1.5-2.0) | 4.8 | (4.7-4.9) | 2.2 | (2.2-2.2) |
| | Small Intestine | ^ | ^ | 0.5 | (0.3-0.6) | 0.3 | (0.3-0.3) | 0.4 | (0.4-0.4) |
| | Colorectal | 9.6 | (7.5-12.0) | 10.9 | (10.3-11.5) | 10.8 | (10.7-11.0) | 13.4 | (13.3-13.4) |
| | Anus, Anal Canal and Anorectum | ^ | ^ | 0.2 | (0.1-0.2) | 0.2 | (0.2-0.2) | 0.3 | (0.3-0.3) |
| | Liver | 6.5 | (4.9-8.6) | 2.9 | (2.6-3.2) | 7.4 | (7.2-7.5) | 4.1 | (4.1-4.2) |
| | Intrahepatic Bile Duct | 1.8 | (0.9-3.0) | 1.3 | (1.1-1.5) | 2.0 | (1.9-2.0) | 1.7 | (1.7-1.8) |
| | Gallbladder | ^ | ^ | 0.4 | (0.3-0.6) | 0.8 | (0.8-0.9) | 0.5 | (0.5-0.5) |
| | Other Biliary | ^ | ^ | 0.2 | (0.2-0.3) | 0.5 | (0.5-0.5) | 0.5 | (0.5-0.5) |
| | Pancreas | 7.9 | (6.0-10.1) | 9.5 | (8.9-10.0) | 8.7 | (8.6-8.9) | 11.2 | (11.2-11.3) |
| | Retroperitoneum | ^ | ^ | 0.1 | (0.1-0.2) | 0.1 | (0.1-0.1) | 0.1 | (0.1-0.1) |
| | Peritoneum, Omentum and Mesentery | ^ | ^ | 0.2 | (0.1-0.3) | 0.2 | (0.2-0.2) | 0.3 | (0.3-0.3) |
| | Other Digestive Organs | ^ | ^ | 0.4 | (0.3-0.5) | 0.4 | (0.3-0.4) | 0.4 | (0.4-0.4) |
| Endocrine System | Thyroid | ^ | ^ | 0.6 | (0.5-0.8) | 0.7 | (0.6-0.7) | 0.5 | (0.5-0.5) |
| | Other Endocrine including Thymus | ^ | ^ | 0.2 | (0.1-0.3) | 0.2 | (0.2-0.2) | 0.3 | (0.3-0.3) |
| Eye and Orbit | Eye and Orbit | ^ | ^ | 0.1 | (0.1-0.2) | 0.0 | (0.0-0.0) | 0.1 | (0.1-0.1) |
| Female Genital System | Cervix | ^ | ^ | 1.4 | (1.1-1.7) | 2.5 | (2.4-2.6) | 2.0 | (2.0-2.1) |
| | Uterus | 3.5 | (2.0-5.6) | 4.5 | (4.0-5.0) | 4.2 | (4.1-4.3) | 4.6 | (4.5-4.6) |
| | Ovary | 7.3 | (5.0-10.1) | 6.9 | (6.2-7.6) | 5.0 | (4.8-5.1) | 6.9 | (6.8-6.9) |
| | Vagina | ^ | ^ | 0.2 | (0.1-0.3) | 0.2 | (0.1-0.2) | 0.2 | (0.2-0.2) |
| | Vulva | ^ | ^ | 0.2 | (0.1-0.4) | 0.3 | (0.3-0.4) | 0.7 | (0.6-0.7) |
| | Other Female Genital Organs | ^ | ^ | 0.3 | (0.2-0.5) | 0.2 | (0.2-0.3) | 0.4 | (0.4-0.4) |
| Leukemia | Leukemia | 3.6 | (2.4-5.1) | 6.5 | (6.0-6.9) | 4.4 | (4.3-4.5) | 6.5 | (6.4-6.5) |
| Lymphoma | Hodgkin Lymphoma | ^ | ^ | 0.2 | (0.1-0.2) | 0.3 | (0.3-0.4) | 0.3 | (0.3-0.3) |
| | Non-Hodgkin Lymphoma | 5.9 | (4.2-8.0) | 5.0 | (4.6-5.4) | 4.5 | (4.4-4.6) | 5.5 | (5.5-5.6) |
| Male Genital System | Prostate | 17.2 | (12.5-22.7) | 21.6 | (20.3-23.0) | 15.6 | (15.3-15.9) | 17.8 | (17.7-17.9) |
| | Testis | ^ | ^ | 0.3 | (0.2-0.4) | 0.3 | (0.3-0.3) | 0.3 | (0.3-0.3) |
| | Penis | ^ | ^ | ^ | ^ | 0.3 | (0.3-0.4) | 0.2 | (0.2-0.2) |
| | Other Male Genital Organs | ^ | ^ | ^ | ^ | 0.0 | (0.0-0.1) | 0.0 | (0.0-0.0) |
| Miscellaneous | Miscellaneous Malignant Cancer | 8.4 | (6.4-10.8) | 10.9 | (10.3-11.5) | 7.7 | (7.6-7.9) | 12.0 | (11.9-12.0) |
| Myeloma | Myeloma | 2.4 | (1.4-3.7) | 3.2 | (2.8-3.5) | 2.6 | (2.6-2.7) | 2.9 | (2.9-3.0) |
| Oral Cavity and Pharynx | Oral Cavity and Pharynx | ^ | ^ | 1.8 | (1.5-2.0) | 1.5 | (1.5-1.6) | 2.7 | (2.7-2.7) |
| Respiratory System | Nose, Nasal Cavity and Middle Ear | ^ | ^ | 0.1 | (0.1-0.2) | 0.1 | (0.1-0.1) | 0.1 | (0.1-0.1) |
| | Larynx | ^ | ^ | 0.4 | (0.3-0.6) | 0.6 | (0.6-0.7) | 0.9 | (0.9-1.0) |
| | Lung | 12.9 | (10.3-15.8) | 17.7 | (16.9-18.5) | 16.2 | (16.0-16.4) | 40.0 | (39.9-40.1) |
| | Pleura | ^ | ^ | ^ | ^ | 0.1 | (0.0-0.1) | 0.1 | (0.1-0.1) |
| | Trachea, Mediastinum and Other Respiratory Organs | ^ | ^ | ^ | ^ | 0.1 | (0.0-0.1) | 0.1 | (0.1-0.1) |
| Skin excluding Basal and Squamous | Melanoma | 0.8 | (0.3-1.5) | 3.1 | (2.8-3.4) | 0.6 | (0.6-0.7) | 2.8 | (2.7-2.8) |
| | Non-Melanoma Skin | ^ | ^ | 0.8 | (0.6-1.0) | 0.5 | (0.4-0.5) | 1.2 | (1.2-1.2) |
| Soft Tissue including Heart | Soft Tissue including Heart | 0.8 | (0.3-1.6) | 1.4 | (1.2-1.7) | 1.1 | (1.0-1.1) | 1.3 | (1.3-1.4) |
| Urinary System | Urinary Bladder | ^ | ^ | 3.5 | (3.1-3.8) | 2.4 | (2.3-2.4) | 4.7 | (4.7-4.7) |
| | Kidney | 3.9 | (2.6-5.5) | 3.4 | (3.1-3.7) | 3.4 | (3.3-3.5) | 3.7 | (3.7-3.7) |
| | Ureter | ^ | ^ | ^ | ^ | 0.1 | (0.0-0.1) | 0.1 | (0.1-0.1) |
| | Other Urinary Organs | ^ | ^ | 0.2 | (0.1-0.2) | 0.1 | (0.0-0.1) | 0.1 | (0.1-0.1) |

[a]Data Source: SEER*Stat Database: Mortality

[b]Age-adjusted mortality rate per 100,000 population; Standardized to the 2000 U.S. Standard Population

[c]CI: confidence interval

^Statistic suppressed due to small cell size (<16 cases) or allows inference of a small cell

## Table C.6 Cancer in Utah counties: population and cancer counts, 2019[a]

| Population Type | County | Population | New Cases | |
|---|---|---|---|---|
| | | | Invasive | In Situ |
| Urban | Box Elder County | 55,957 | 205 | 58 |
| | Cache County | 128,309 | 430 | 116 |
| | Davis County | 355,304 | 1367 | 331 |
| | Juab County | 12,002 | 56 | ^ |
| | Morgan County | 12,115 | 39 | ^ |
| | Salt Lake County | 1,158,585 | 4268 | 1047 |
| | Tooele County | 72,110 | 258 | 57 |
| | Utah County | 635,675 | 1650 | 546 |
| | Washington County | 177,938 | 1053 | 194 |
| | Weber County | 259,680 | 1069 | 277 |
| Rural | Beaver County | 6,725 | 28 | ^ |
| | Carbon County | 20,476 | 110 | 16 |
| | Daggett County | 964 | ^ | ^ |
| | Duchesne County | 19,877 | 95 | ^ |
| | Emery County | 10,061 | 51 | ^ |
| | Garfield County | 5,000 | 31 | ^ |
| | Grand County | 9,773 | 50 | ^ |
| | Iron County | 55,269 | 228 | 55 |
| | Kane County | 7,873 | 54 | ^ |
| | Millard County | 13,100 | 52 | 17 |
| | Piute County | 1,472 | ^ | ^ |
| | Rich County | 2,468 | 16 | ^ |
| | San Juan County | 15,228 | 69 | ^ |
| | Sanpete County | 30,986 | 109 | 26 |
| | Sevier County | 21,636 | 106 | 16 |
| | Summit County | 42,081 | 210 | 69 |
| | Uintah County | 35,806 | 118 | 19 |
| | Wasatch County | 34,210 | 137 | 42 |
| | Wayne County | 2,703 | ^ | ^ |

[a]Data Source: SEER*Stat Database: NAACCR Incidence Data

^Statistic suppressed due to small cell size (<16 cases) or allows inference of a small cell

## Table C.7 Cancer counts and incidence in urban and rural counties in Utah, all reportable diagnoses 2015-2019[a]

| Cancer Sites | | Cancer Cases | | Incidence per 100,000 Population | | | |
|---|---|---|---|---|---|---|---|
| | | Urban | Rural | Urban | | Rural | |
| | | | | Rate[b] | 95% CI[c] | Rate[b] | 95% CI[c] |
| All Sites | All Sites | 60,939 | 8,402 | 505.9 | (501.8-510.0) | 490.1 | (479.4-501.0) |
| Bones and Joints | Bones and Joints | 171 | 18 | 1.3 | (1.1-1.5) | 1.0 | (0.6-1.6) |
| Brain and Other Nervous System | Brain and Other Nervous System, incl Benign | 4,319 | 550 | 35.8 | (34.8-36.9) | 33.3 | (30.5-36.3) |
| Breast | Breast, Female | 8,648 | 1,033 | 140.0 | (137.0-143.0) | 122.0 | (114.4-129.9) |
| | Breast, Male | 57 | ^ | 1.0 | (0.8-1.3) | ^ | ^ |
| Digestive System | Esophagus | 378 | 54 | 3.2 | (2.9-3.5) | 3.0 | (2.2-4.0) |
| | Stomach | 535 | 80 | 4.6 | (4.2-5.0) | 4.7 | (3.7-5.9) |
| | Small Intestine | 324 | 44 | 2.7 | (2.4-3.1) | 2.7 | (2.0-3.7) |
| | Colon and Rectum | 3,458 | 508 | 29.4 | (28.4-30.4) | 29.8 | (27.2-32.6) |
| | Anus, Anal Canal and Anorectum | 253 | 31 | 2.0 | (1.8-2.3) | 1.8 | (1.2-2.6) |
| | Liver | 667 | 97 | 5.3 | (4.9-5.8) | 5.2 | (4.2-6.3) |
| | Intrahepatic Bile Duct | 133 | 21 | 1.1 | (0.9-1.3) | 1.3 | (0.8-2.0) |
| | Gallbladder | 102 | 19 | 0.9 | (0.7-1.1) | 1.2 | (0.7-1.8) |
| | Other Biliary | 133 | 19 | 1.2 | (1.0-1.4) | 1.1 | (0.6-1.7) |
| | Pancreas | 1,349 | 182 | 11.6 | (11.0-12.3) | 10.4 | (8.9-12.1) |
| | Retroperitoneum | 69 | ^ | 0.6 | (0.4-0.7) | ^ | ^ |
| | Peritoneum, Omentum and Mesentery | 56 | ^ | 0.5 | (0.3-0.6) | ^ | ^ |
| | Other Digestive Organs | 82 | ^ | 0.7 | (0.6-0.9) | ^ | ^ |
| Endocrine System | Thyroid | 2,196 | 265 | 17.4 | (16.7-18.2) | 16.7 | (14.7-18.9) |
| | Other Endocrine including Thymus | 1,155 | 132 | 9.0 | (8.5-9.6) | 8.4 | (7.0-10.0) |
| Eye and Orbit | Eye and Orbit | 132 | 16 | 1.0 | (0.9-1.2) | 1.0 | (0.6-1.6) |
| Female Genital System | Cervix | 334 | 45 | 5.4 | (4.8-6.0) | 6.1 | (4.4-8.2) |
| | Uterus | 1,719 | 208 | 26.8 | (25.5-28.1) | 23.4 | (20.2-26.9) |
| | Ovary | 685 | 76 | 10.8 | (10.0-11.7) | 9.1 | (7.2-11.5) |
| | Vagina | 57 | ^ | 0.9 | (0.7-1.2) | ^ | ^ |
| | Vulva | 305 | 39 | 4.8 | (4.3-5.4) | 4.5 | (3.1-6.2) |
| | Other Female Genital Organs | 129 | ^ | 2.1 | (1.7-2.5) | ^ | ^ |
| Leukemia | Leukemia | 1,720 | 282 | 14.1 | (13.4-14.8) | 16.6 | (14.7-18.7) |
| Lymphoma | Hodgkin Lymphoma | 330 | 44 | 2.4 | (2.1-2.6) | 2.7 | (2.0-3.7) |
| | Non-Hodgkin Lymphoma | 2,173 | 292 | 18.3 | (17.6-19.1) | 17.3 | (15.3-19.4) |
| Male Genital System | Prostate | 6,864 | 1,094 | 117.3 | (114.5-120.2) | 116.3 | (109.4-123.6) |
| | Testis | 531 | 56 | 7.5 | (6.9-8.2) | 7.7 | (5.8-9.9) |
| | Penis | 73 | ^ | 1.3 | (1.0-1.7) | ^ | ^ |
| | Other Male Genital Organs | 30 | ^ | 0.5 | (0.3-0.7) | ^ | ^ |
| Miscellaneous | Miscellaneous | 1,407 | 235 | 12.3 | (11.7-13.0) | 14.1 | (12.3-16.1) |
| Myeloma | Myeloma | 764 | 111 | 6.4 | (6.0-6.9) | 6.2 | (5.1-7.6) |
| Oral Cavity and Pharynx | Oral Cavity and Pharynx | 1,292 | 199 | 10.7 | (10.1-11.3) | 11.1 | (9.5-12.8) |
| Respiratory System | Nose, Nasal Cavity and Middle Ear | 80 | ^ | 0.7 | (0.5-0.8) | ^ | ^ |
| | Larynx | 179 | 38 | 1.5 | (1.3-1.7) | 2.0 | (1.4-2.8) |
| | Lung | 3,002 | 538 | 25.8 | (24.8-26.7) | 30.8 | (28.2-33.5) |
| | Pleura | ^ | ^ | ^ | ^ | ^ | ^ |
| | Trachea, Mediastinum and Other Respiratory Organs | 22 | ^ | 0.2 | (0.1-0.2) | ^ | ^ |
| Skin excluding Basal and Squamous | Melanoma | 10,284 | 1,284 | 85.6 | (84.0-87.3) | 76.6 | (72.4-81.0) |
| | Non-Melanoma Skin | 331 | 45 | 2.9 | (2.6-3.3) | 2.7 | (2.0-3.6) |
| Soft Tissue including Heart | Soft Tissue including Heart | 423 | 61 | 3.3 | (3.0-3.7) | 3.9 | (2.9-5.0) |
| Urinary System | Urinary Bladder | 1,949 | 304 | 17.0 | (16.3-17.8) | 17.9 | (15.9-20.1) |
| | Kidney | 1,808 | 268 | 15.1 | (14.4-15.8) | 15.5 | (13.7-17.6) |
| | Ureter | 56 | ^ | 0.5 | (0.4-0.7) | ^ | ^ |

[a]Data Source: SEER*Stat Database: NPCR-SEER Incidence Data

[b]Age-adjusted incidence rate per 100,000 population; Standardized to the 2000 U.S. Standard Population

[c]CI: confidence interval

^Statistic suppressed due to small cell size (<16 cases) or allows inference of a small cell

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