Incidence of Cancers Associated with Modifiable Risk Factors and Late Stage Diagnoses for Cancers Amenable to Screening

Idaho 2018–2020

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BACKGROUND AND INTRODUCTION

The Idaho Comprehensive Cancer Strategic Plan 2021–2025 includes priority areas for prevention, screening and early detection, treatment, and quality of life and survivorship.[1] This report illustrates cancer incidence in Idaho by local area for several cancers associated with modifiable risk factors and/or cancers that have population-based screening initiatives, which can contribute to decreased morbidity and mortality through early detection. This report describes incidence of 1) breast cancer among females ≥ 50 years; 2) cervical cancer among females ≥ 20 years; 3) colon & rectum cancer among men and women ≥ 50 years; 4) endometrium cancer among women of all age groups; 5) esophagus cancer among men and women of all age groups; 6) kidney & renal pelvis cancer among men and women of all age groups; 7) lung & bronchus cancer among men and women of all age groups; 8) melanoma of the skin among men and women of all age groups; and 9) oral cavity & pharynx cancer among men and women of all age groups. The purpose of this report is to provide information to the Comprehensive Cancer Alliance for Idaho, the Idaho Department of Health and Welfare, and other partners working to improve cancer prevention and early detection at the local and state level.

Cancer-associated Modifiable Risk Factors

Many cancers have modifiable risk factors, such as tobacco use, excess body weight, certain human papillomavirus (HPV) infections, and sun exposure. CDRI selected several primary cancer sites associated with modifiable risk factors, including endometrium, esophagus, kidney & renal pelvis, lung & bronchus, and melanoma of the skin.

Lung cancer is the most preventable form of cancer-related death in the United States.[2] Tobacco use accounts for at least 30% of all cancer deaths and 80% of lung cancer deaths. Besides lung cancer, tobacco use also increases the risk for acute myeloid

[1] https://ccaidaho.webs.com/idaho-cancer-plan
[2] https://www.cancer.org/healthy/stay-away-from-tobacco/health-risks-of-tobacco/health-risks-of-smoking-tobacco.html

leukemia and cancers of the mouth, larynx, pharynx, esophagus, kidney & renal pelvis, cervix, liver, bladder, pancreas, stomach, and colon/rectum.

Excess body weight is responsible for about 7% of all cancer deaths.[3] Being overweight (body mass index [BMI] 25 to 29.9) or obese (BMI ≥30) is associated with an increased risk of many cancers, including breast (in post-menopausal women), colon & rectum, endometrium, esophagus, kidney & renal pelvis, and pancreas.

HPV is associated with cancers of the cervix, vulva, vagina, penis, anus, rectum, and oropharynx.[4] The most common HPV-associated cancers are cancers of the cervix among women and cancers of the oropharynx among men.

Ultraviolet (UV) radiation exposure from the sun and man-made sources, e.g., tanning beds, is associated with an increased risk of squamous and basal cell carcinomas; intermittent acute sun exposure leading to sunburn is associated with an increased risk of melanoma.[5]

U.S. Preventive Services Task Force (USPTF) and American Cancer Society Screening Recommendations

The U.S. Preventive Services Task Force (USPSTF) is "an independent group of national experts in prevention and evidence-based medicine that works to improve the health of all Americans by making evidence-based recommendations about clinical preventive services such as screenings, counseling services, or preventive medications."[6] In January 2016, the USPSTF released recommendations on screening for women at average risk for breast cancer, including biennial screening mammography for women ages 50 to 74 years.[7] In October 2015, the American Cancer Society updated recommendations for mammography to include yearly mammograms for women ages 45 to 54, and yearly or biennial mammograms for women ≥ 55 years continuing as long as a woman is in good health with life expectancy of 10 years or

[3] https://www.cancer.org/healthy/cancer-causes/diet-physical-activity/body-weight-and-cancer-risk/effects.html
[4] http://www.cdc.gov/cancer/hpv/
[5] https://www.cancer.gov/types/skin/hp/skin-prevention-pdq
[6] https://www.ahrq.gov/prevention/guidelines/index.html
[7] https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/breast-cancer-screening

longer.[8] Based on these recommendations, CDRI selected the measure of late stage breast cancer incidence rate among women ages 50 years and older as the indicator for inadequate breast cancer screening.

In August 2018, the USPSTF released updated cervical cancer screening recommendations. Among the general population, USPTF recommends cervical cancer screening for women ages 21 to 29 years with cytology (Pap smear) every 3 years. For women ages 30 to 65 years, USPTF recommends screening every 3 years with cervical cytology alone, or every 5 years with high-risk human papillomavirus (hrHPV) testing alone, or every 5 years with hrHPV testing in combination with cytology (cotesting).[9] The American Cancer Society has similar recommendations.[8] Based on these recommendations, the availability of population estimates by age group, and Idaho's low cervical cancer screening rates,[10] CDRI selected the measure of invasive cervical cancer incidence rate among women ages ≥ 20 years as the indicator for inadequate cervical cancer screening and prevention.

In May 2021, the USPSTF updated recommendations on screening for colon & rectum cancers to include adults beginning at age 45 years and continuing until age 75 years.[11] The American Cancer Society recommends that, beginning at age 45, men and women follow a testing schedule depending on the type of test.[8] Because the prior recommendations began screening at age 50 and we are using 2018-2020 incidence data in this report, CDRI selected the measure of late stage colon & rectum cancer incidence rate among adults ages ≥ 50 years as the indicator for inadequate colon & rectum cancer screening and prevention.

Geographic Areas Used in Analysis

This report presents cancer incidence statistics for Idaho's 26 Cancer Reporting Zones (Figure 1). The motivation behind using Cancer Reporting Zones is that county is not a very satisfactory geographic unit to use for cancer reporting; counties with larger

[8] https://www.cancer.org/healthy/find-cancer-early/cancer-screening-guidelines/american-cancer-society-guidelines-for-the-early-detection-of-cancer.html
[9] https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/cervical-cancer-screening
[10] http://www.cdc.gov/brfss/
[11] https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/colorectal-cancer-screening

populations often have very heterogeneous populations and data for counties with smaller populations are often suppressed to protect patient confidentiality and/or because of concerns over statistical stability. Cancer Reporting Zones for each state are being designed via collaborations between the state cancer registry, NCI, NAACCR, and Westat, Inc. Use of this process for Idaho resulted in 26 Zones, each containing from 5-22 census tracts.[12] Idaho's most populous county, Ada, is split into 7 zones. Up to 7 of Idaho's small and medium size counties are included in each Zone. The population covered by each zone varies from about 52,000 to 83,000, providing statistical stability in each geographic entity. Use of the Idaho Cancer Reporting Zones in this report provides greater spatial resolution for large counties, reduces suppression of data for small counties, and provides more meaningful data for communities and stakeholders. Rates and percentages based on a numerator of 10 or fewer cases should be interpreted with caution. Table 1 shows 2020 population estimates for Idaho's Cancer Reporting Zones.

METHODS

Cancer Cases

A "cancer case" is defined as a primary cancer site (where the cancer started), not a metastatic cancer site (where the cancer spread to). Since an individual can have more than one primary cancer during their lifetime, the number of incident cancer cases is greater than the number of persons who are diagnosed with cancer. These analyses only include incident cancers among people who were diagnosed when they were Idaho residents.

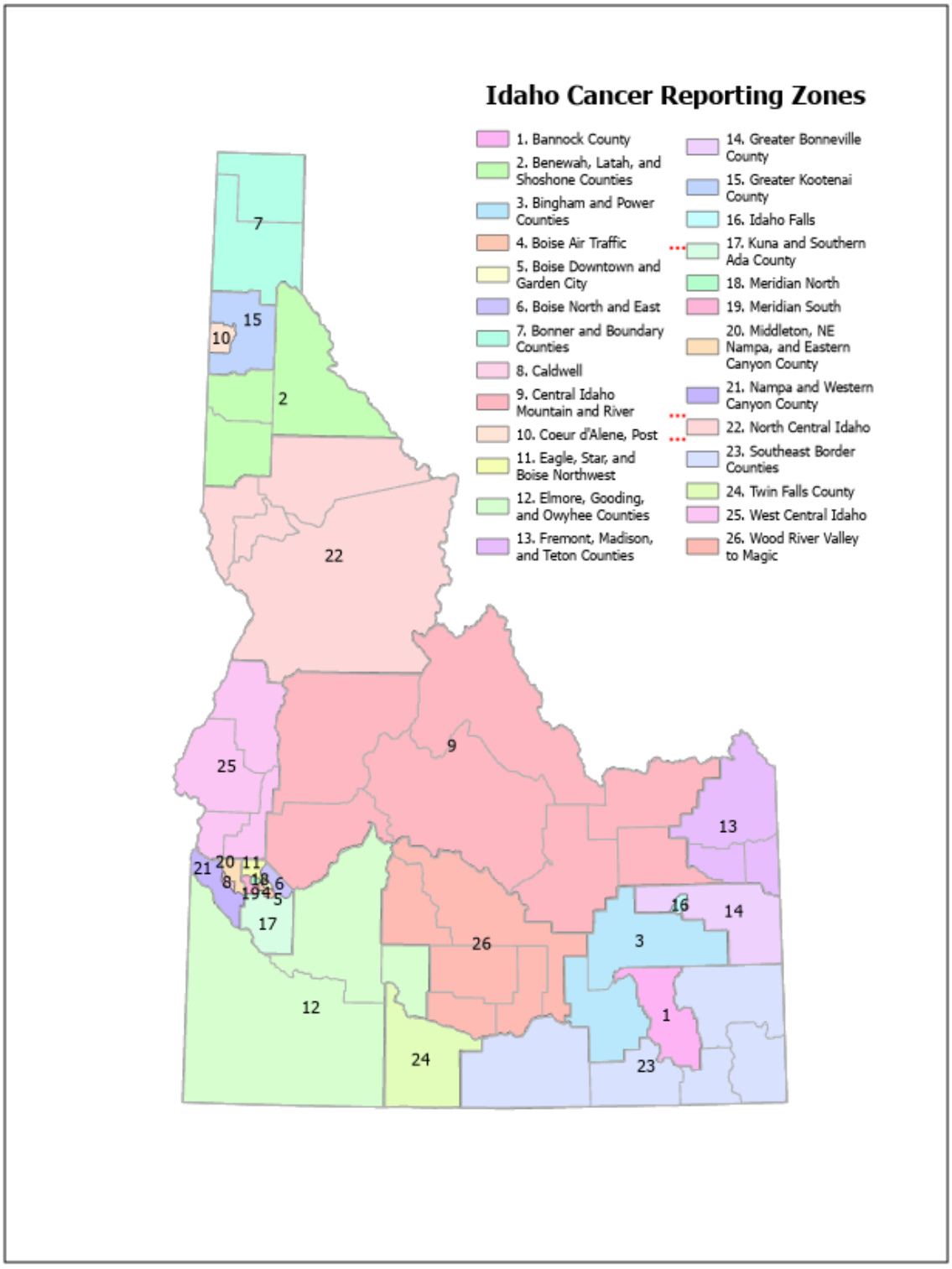
Population Estimates

Census tract population estimates that support the Idaho Cancer Reporting Zone geography used in this report were obtained from NCI.[13] The estimates were produced by Woods & Poole Economics, Inc. (W&P) under contact with NCI and are based on a

[12] Special thanks are due to Charlene Cariou and Joseph Pollard, both with IDHW at the time they served as expert stakeholders in the cancer reporting zone design and naming process.

hybrid regression, demographic, and proportional model jointly developed by the NCI, W&P, and the North American Association of Central Cancer Registries (NAACCR).

Figure 1. Map of Idaho Cancer Reporting Zones and Counties



Please see https://www.idcancer.org/ContentFiles/special/zones.kml for Google Maps/Earth layer showing detailed Idaho Cancer Reporting Zone boundaries.

Table 1. Resident Population, 2020, by Idaho Cancer Reporting Zone.[13]

Geographic Area	All Ages Male &	20+ Female	50+ Female	50+ Male
State of Idaho	1,826,913	666,999	324,754	303,341
Bannock County	88,795	32,174	14,497	13,219
Benewah, Latah, and Shoshone Counties	63,171	23,752	11,355	10,896
Bingham and Power Counties	54,845	18,537	8,826	8,494
Boise Air Traffic Corridor	67,870	27,178	13,836	11,614
Boise Downtown and Garden City	70,739	27,960	12,261	10,516
Boise North and East	65,445	26,332	12,831	12,366
Bonner and Boundary Counties	59,473	23,292	14,336	14,017
Caldwell	78,940	28,588	12,774	10,787
Central Idaho Mountain and River Wilderness	66,239	23,693	13,096	13,616
Coeur d'Alene, Post Falls	83,863	32,546	16,618	14,146
Eagle, Star, and Boise Northwest	77,476	30,217	16,634	14,768
Elmore, Gooding, and Owyhee Counties	55,199	19,183	9,304	9,231
Fremont, Madison, and Teton Counties	66,037	21,579	7,768	7,799
Greater Bonneville County	61,826	20,497	8,748	8,073
Greater Kootenai County	86,765	33,514	18,666	17,468
Idaho Falls	60,308	21,016	9,560	8,871
Kuna and Southern Ada County	64,921	20,947	7,881	8,635
Meridian North	76,189	27,344	11,907	10,607
Meridian South	71,762	26,172	11,782	10,832
Middleton, NE Nampa, and Eastern Canyon County	77,653	27,399	11,385	10,356
Nampa and Western Canyon County	80,461	28,596	14,123	13,672
North Central Idaho	70,262	26,985	15,944	15,385
Southeast Border Counties	56,278	18,849	9,322	9,001
Twin Falls County	88,411	32,030	15,073	13,670
West Central Idaho	58,281	21,882	12,604	12,126
Wood River Valley to Magic	75,708	26,738	13,623	13,177

[13] https://seer.cancer.gov/censustract-pops/

Stage at Time of Diagnosis

Staging measures the extent of disease at the time of initial diagnosis. Summary staging attempts to group cases with similar prognoses into categories of:

- in-situ (non-invasive);
- localized (invasive, cancer confined to the primary site);
- regional (invasive, direct extension of tumor to adjacent organs, and/or spread to lymph nodes);
- distant (invasive, metastasis to tissues or lymph nodes remote from the primary site); or
- unstaged (invasive, insufficient information to assign a stage).

Stage at diagnosis was collected and coded using SEER Summary Stage 2018.[14] For stage-specific incidence rate calculations, late stage was considered to mean regional and distant stages combined. Unstaged cases were included in invasive incidence statistics.

Age-Adjusted Incidence Rates

Age-adjusted incidence rates published in this report were adjusted using the direct method and standardized to the age distribution of the 2000 U.S. population.[15] Age-adjusted incidence rates represent the average number of new cases diagnosed annually per 100,000 persons. The aging process can affect the rate of cancer incidence, and age distributions can vary over time and across geographic areas. Thus, age adjustment allows rates from one geographic area or time period to be compared with rates from other geographic areas or time periods that may have differences in age distributions. Any observed differences in age-adjusted incidence rates between populations are not due to differing age structures. Age-adjusted incidence rates, rate

[14] Ruhl JL, Callaghan C, Hurlbut, A, Ries LAG, Adamo P, Dickie L, Schussler N, eds. Summary Stage 2018: Codes and Coding Instructions. National Cancer Institute, Bethesda, MD, 2018.

[15] Source: SEER Program, National Cancer Institute, 2023. http://seer.cancer.gov/stdpopulations/stdpop.19ages.html

ratios, and 95% confidence intervals were calculated using SEER*Stat software.[16] The state of Idaho overall served as the reference group for rate ratio calculations.

Limitations to Data Interpretation and Comparisons

Rates based on population estimates

The W&P population estimates match the Census Bureau's Vintage 2020 bridged single-race population estimates for 2018-2020, but are not informed by the 2020 Census. Both W&P census tract and Census population figures used in this report are estimates. Errors in the estimates will impact the rates.

Rate comparisons

Age-adjusted incidence rates based on small numbers of cases (< 10 cases) may be unstable. When comparing rates across Idaho Cancer Reporting Zones, factors such as the absolute numbers of cases and differences in demographics should be considered. Interpretations without consideration of these factors may be misleading or inaccurate.

COVID-19 Impacts on 2020 Data

The COVID-19 pandemic had wide-ranging impacts on health behaviors, cancer screening, and cancer care. Data from early on in the pandemic indicate decreases in screening and newly diagnosed cancers concurrent with lockdowns and reduced health system capacity. Data from the National Breast and Cervical Cancer Early Detection Program, which provides screening services to women with low income and underinsured women, reported a drop in breast and cervical cancer screening tests nationwide in April through June of 2020.[17] Other studies indicated decreases in newly

[16] Surveillance Research Program, National Cancer Institute SEER*Stat software (www.seer.cancer.gov/seerstat) version 8.4.0.1.

[17] DeGroff et al. "COVID-19 impact on screening test volume through the National Breast and Cervical Cancer early detection program, January–June 2020, in the United States" https://www.sciencedirect.com/science/article/pii/S0091743521001432

diagnosed breast, colorectal, lung and pancreatic cancers.[18] Although the data support subsequent increases in rates of screening and newly diagnosed cancers, it remains unclear how this initial period of reduced access to preventive or diagnostic cancer care will affect long term trends in cancer data – in Idaho and elsewhere.

In Idaho, there were decreases in cancer incidence overall in 2020 relative to prior years, which departed from recent trends in incidence for specific primary sites. Overall, there was a 7% decrease in age-adjusted rates of cancer in 2020 relative to prior years - 410.7 per 100,000 in 2020 versus 443.4 per 100,000 in 2019. The largest decreases in rates were for prostate cancer, lung cancer, colorectal cancer and cervical cancer. There were no changes in breast cancer rates overall, and the rate of late stage breast cancers decreased in 2020 – a continuation of a multi-year trend.

Cancer incidence rates decreased more in northern and southwest Idaho compared with southcentral or eastern Idaho.

Rates of cancer in 2020 decreased the most among Idahoans aged ≥ 80 years. This may be the direct result of pandemic-related mortality, as mortality rates among older age groups increased dramatically in 2020 (from 10,393 deaths per 100,000 population aged 80+ years in 2019 to 11,268 deaths per 100,000 population in 2020). Dying from other causes, such as COVID-19, may preclude the development of cancer or a cancer diagnosis, impacting cancer statistics by reducing incidence rates.

Because data in this report are presented in aggregate for 2018–2020, it is difficult to identify how differences in incidence rates between Idaho's Cancer Reporting Zones may have been impacted by screening-related behaviors, changes in population distribution, and other factors related to the COVID-19 pandemic.

It is helpful, however, to digest Idaho's cancer data as a combination of pre-pandemic and pandemic years, as it blends the impacts of historic trends which may be more

[18] Kaufman et al. "Changes in the Number of US Patients With Newly Identified Cancer Before and During the Coronavirus Disease 2019 (COVID-19) Pandemic" https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2768946

relevant today than the pandemic period alone, while accounting for the impacts of the pandemic that will undoubtedly shape cancer statistics moving forward.

RESULTS

Breast Cancer – Females Ages 50+

During 2018–2020, 3,449 invasive and 686 in situ cases of breast cancer were diagnosed among Idaho resident females ≥ 50 years old. Late stage cases comprised 29.2% of invasive cases. Breast cancer case counts by Idaho Cancer Reporting Zone are shown in Table 2. Table 2 also shows counts of late stage breast cancer cases among Idaho resident females ≥ 50 years old, age-adjusted rates of late stage breast cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. Part of Ada County, the "Boise Air Traffic Corridor," had significantly lower rate of late stage breast cancer incidence among females ≥ 50 years old and part of Kootenai County outside of Coeur d'Alene and Post Falls ("Greater Kootenai County") had a significantly higher rate than the average rate for the state of Idaho.

Cervical Cancer – Ages 20+

During 2018–2020, 181 invasive cases of cervical cancer were diagnosed among Idaho resident females ≥ 20 years old.[19] Late stage cases comprised 53.6% of invasive cases. Cervical cancer case counts by Idaho Cancer Reporting Zone are shown in Table 3. Table 3 also shows counts of invasive cervical cancer cases among Idaho resident females ≥ 20 years old, age-adjusted rates of invasive cervical cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. Bannock County had a significantly higher rate of invasive cervical cancer incidence among females ≥ 20 years old

[19] In situ cervix cases are not reportable according to national cancer statistics governing bodies and under Idaho Code 57-1703.

compared with the average rate for the state of Idaho and “Boise North and East” had a significantly lower rate.

Colon & Rectum Cancer – Ages 50+

During 2018–2020, 1,868 invasive and 19 in situ cases of colon & rectum cancers were diagnosed among Idaho residents ≥ 50 years old. Late stage cases comprised 61.3% of invasive cases. Colon & rectum cancer case counts by Idaho Cancer Reporting Zone are shown in Table 4. Table 4 also shows counts of late stage colon & rectum cancer cases among Idaho residents ≥ 50 years old, age-adjusted rates of late stage colon & rectum cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. The “Eagle, Star, and Boise Northwest” Zone had a significantly lower rate of late stage colon & rectum cancer incidence than the average rate for the state of Idaho, and “Greater Bonneville County” and “Kuna and Southern Ada County” had significantly higher rates.

Endometrium Cancer – All Ages

During 2018-2020, 782 invasive and 4 in situ cases of endometrium cancer were diagnosed among female Idaho residents. Late stage cases comprised 25.1% of invasive cases. Endometrium cancer case counts by Idaho Cancer Reporting Zone are shown in Table 5. Table 5 also shows counts of invasive endometrium cancer cases among female Idaho residents, age-adjusted rates of invasive endometrium cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. Twin Falls County 4 had a significantly higher rate of invasive endometrium cancer incidence compared with the average rate for the state of Idaho.

Esophagus Cancer – All Ages

During 2018–2020, 298 invasive and 2 in situ cases of esophagus cancer were diagnosed among Idaho residents. Late stage cases comprised 65.4% of invasive cases. Esophagus cancer case counts by Idaho Cancer Reporting Zone are shown in Table 6. Table 6 also shows counts of invasive esophagus cancer cases among Idaho

residents, age-adjusted rates of invasive esophagus cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. The “Southeast Border Counties” Zone had a significantly lower rate of invasive esophagus cancer incidence than the average rate for the state of Idaho.

Kidney & Renal Pelvis Cancer – All Ages

During 2018–2020, 1,138 invasive and 21 in situ cases of kidney & renal pelvis cancer were diagnosed among Idaho residents. Late stage cases comprised 26.2% of invasive cases. Kidney & renal pelvis cancer case counts by Idaho Cancer Reporting Zone are shown in Table 7. Table 7 also shows counts of invasive kidney & renal pelvis cancer cases among Idaho residents, age-adjusted rates of invasive kidney & renal pelvis cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. The “Central Idaho Mountain and River Wilderness” and “Fremont, Madison, and Teton Counties” Zones had significantly lower, and “Elmore, Gooding, and Owyhee Counties” and “Middleton, NE Nampa, and Eastern Canyon County” Zones had significantly higher rates of invasive kidney & renal pelvis cancer incidence than the average rate for the state of Idaho.

Lung & Bronchus Cancer – All Ages

During 2018–2020, 2,927 invasive and 16 in situ cases of lung & bronchus cancer were diagnosed among Idaho residents. Late stage cases comprised 68.3% of invasive cases. Lung & bronchus cancer case counts by Idaho Cancer Reporting Zone are shown in Table 8. Table 8 also shows counts of invasive lung & bronchus cancer cases among Idaho residents, age-adjusted rates of invasive lung & bronchus cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. The following Zones had significantly higher rates of invasive lung & bronchus cancer incidence than the average rate for the state of Idaho:

- Benewah, Latah, and Shoshone Counties
- Coeur d’Alene, Post Falls

- Elmore, Gooding, and Owyhee Counties
- Middleton, NE Nampa, and Eastern Canyon County
- North Central Idaho

The following Zones had significantly lower rates of invasive lung & bronchus cancer incidence than the average rate for the state of Idaho:

- Boise North and East
- Central Idaho Mountain and River Wilderness
- Eagle, Star, and Boise Northwest
- Fremont, Madison, and Teton Counties
- Idaho Falls
- Southeast Border Counties

Melanoma of the Skin – All Ages

During 2018–2020, 1,831 invasive and 1,849 in situ cases of melanoma of the skin were diagnosed among Idaho residents. Late stage cases comprised 12.4% of invasive cases. Melanoma of the skin case counts by Idaho Cancer Reporting Zone are shown in Table 9. Table 9 also shows counts of invasive melanoma of the skin cases among Idaho residents, age-adjusted rates of invasive melanoma of the skin incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. The following Zones had significantly lower rates of invasive melanoma of the skin incidence than the average rate for the state of Idaho:

- Benewah, Latah, and Shoshone Counties
- Bingham and Power Counties
- Boise Downtown and Garden City
- Caldwell
- Coeur d’Alene, Post Falls
- Elmore, Gooding, and Owyhee Counties

The following Zones had significantly higher rates of invasive melanoma of the skin incidence than the average rate for the state of Idaho:

- Boise North and East
- Eagle, Star, and Boise Northwest
- Meridian North
- Meridian South
- Wood River Valley to Magic

Oral Cavity & Pharynx Cancer – All Ages

During 2018–2020, 778 invasive and 25 in situ cases of oral cavity & pharynx cancer were diagnosed among Idaho residents. Late stage cases comprised 61.8% of invasive cases. Oral cavity & pharynx cancer case counts by Idaho Cancer Reporting Zone are shown in Table 10. Table 10 also shows counts of invasive oral cavity & pharynx cancer cases among Idaho residents, age-adjusted rates of invasive oral cavity & pharynx cancer incidence, 95% confidence intervals (CIs) for the rates, and rate ratios comparing the rates in the Idaho Cancer Reporting Zones to the state of Idaho. No Idaho Cancer Reporting Zone had a significantly higher or lower rate of invasive oral cavity & pharynx cancer incidence than the average rate for the state of Idaho.

DISCUSSION

This report describes geographic patterns in cancer sites that are amenable to interventions, including cancer screening, diet and physical activity modifications, avoidance of excessive UV light exposure, and tobacco cessation. Significantly elevated incidence rates of late state and invasive cancers for cancer sites with effective population-based screening tests and effective treatment regimens (breast, cervix, and colon & rectum) could indicate disparities in screening rates and access to health care by Idaho Cancer Reporting Zone. For smoking-related cancers – in particular, lung & bronchus – there are significant geographic differences in incidence rates within Idaho.

Compared with the state of Idaho, the "Greater Kootenai County" Zone had a significantly higher late stage incidence rate for breast cancer among women ages 50 and older. Bannock County had a higher than the state average cervix cancer incidence rate among women ages 20 and older. Higher rates of cervix cancer incidence have previously been observed among Hispanic women in Idaho.[20,21] For colon & rectum cancer among Idahoans ages 50 and older, the "Greater Bonneville County" and "Kuna and Southern Ada County" Zones had significantly higher late stage incidence rates than the state average. No other geographic areas had late stage incidence rates significantly higher than the statewide rate for these screening-amenable cancer sites. A previous CDRI report found significant disparities in cancer incidence patterns in Idaho by race and ethnicity and area-based contextual measures, e.g., percentage of the population with incomes below federal poverty guidelines, rural-urban commuting area.[18] The current report did not investigate differences in cancer incidence by race, ethnicity, or contextual measures. Although this report presents some evidence for geographic disparities in late stage incidence for cancers amenable to screening *within* Idaho, Idaho overall continues to have among the lowest rates of cancer screening among all U.S. states and the District of Columbia. In 2020, Idaho ranked 4th lowest in the U.S. for mammography utilization, 3rd lowest for Pap test screening, and 5th lowest for colorectal cancer screening.[20] These statistics suggest that strategies are needed to improve cancer screening statewide.

Idaho ranks 20th lowest among U.S. states and the District of Columbia for overweight and obesity prevalence, with 67.3% (age-adjusted) of adults being overweight or obese in 2021.[22] For cancer sites associated with obesity in this report (postmenopausal breast cancer, colon & rectum, endometrium, esophagus, and kidney & renal pelvis),

[20] Johnson CJ, Carson SL. Cancer Disparities in Idaho, Phase I – Incidence: Understanding Disparities in Cancer Incidence Using Individual and Area-Based Measures. Boise, ID: Cancer Data Registry of Idaho; May 2007. URL: https://www.idcancer.org/ContentFiles/special/Cancer%20Disparities%20in%20Idaho%20-%20Phase%20I%20-%20Incidence%20(with%20links).pdf

[21] Johnson CJ, Morawski BM, Rycroft RK. Cancer in Idaho – 2020. Boise, ID: Cancer Data Registry of Idaho; December 2022. URL: https://www.idcancer.org/ContentFiles/AnnualReports/cancer_in_idaho_2020.pdf

[22] Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Feb 27, 2023]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

there were not consistent geographic patterns in incidence rates. No Zone had incidence rates significantly higher than the state of Idaho across more than one of these obesity-associated site categories. However, other factors besides obesity, including tobacco use, also impact the rates of some of these cancers and may make interpreting geographic patterns difficult.

As Idaho's population has grown, mostly via net migration from other states, our tobacco use ranking among states has worsened. In 2011, Idaho ranked 5th lowest among states for tobacco use, with 17.3% of adults reporting being current smokers.[20] In 2021, Idaho ranked 20th lowest among states for tobacco use, with 13.7% of adults reporting being current smokers.[20] While smoking prevalence has declined over time, lung cancer remains the leading cause of cancer-related deaths in both men and women in Idaho. We noted some consistent geographic patterns in incidence rates for cancer sites associated with tobacco use in this report (cervix, colon, esophagus, kidney & renal pelvis, lung & bronchus, oral cavity & pharynx). When compared to the average rate for the state of Idaho, the "Kuna and Southern Ada County" Zone had significantly higher incidence rates for colorectal and lung & bronchus cancers. The "Middleton, NE Nampa, and Eastern Canyon County" Zone had significantly higher incidence rates for kidney & renal pelvis and lung & bronchus cancers. These similarities in incidence rates among cancers with common risk factors lend support for targeted, coordinated cancer prevention and control strategies.

HPV causes nearly all cervix cancers and about 70% of oropharyngeal squamous cell carcinomas (subset of oral cavity & pharynx). In 2021, among Idaho adolescents ages 13–17, about 49% of females and 46% of males had completed 2 or 3 dose vaccination regimens for HPV.[23] We did not note consistent geographic patterns in incidence rates for HPV-associated cancer sites included in this report (cervix, oral cavity & pharynx).

[23] Data source: Idaho's Immunization Reminder Information System, 2012.

Idaho regularly has among the highest melanoma mortality rates in the United States. However, like in many other U.S. jurisdictions,[24] melanoma cases in Idaho are underreported, which underestimates the true incidence of melanoma and might impact incidence rates by geographic area. CDRI is working with laboratories and dermatology offices to improve the reporting of melanoma cases statewide. At this time, differences in melanoma incidence rates by Zone may be related to differences in reporting as well as differences in underlying risk.

Cancer risk is multifactorial. Several of the cancer sites included in this report are related to more than one modifiable risk factor – including failure to receive appropriate screening. In addition, the population-attributable fractions of certain risk factors are not well-established for all of the cancer sites studied. Although it can be challenging to infer reasons for geographic differences and patterns in incidence rates for the cancers presented in this report, we hope that these results will serve as a guide for targeting specific geographic areas for enhanced cancer prevention and control activities.

[24] Melanoma reporting to central cancer registries by US dermatologists: an analysis of the persistent knowledge and practice gap. http://www.ncbi.nlm.nih.gov/pubmed/22018061

Table 2. Idaho resident female breast cancer statistics, ages 50+, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Late Stage (Regional + Distant) Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	686	2,413	808	198	30	106.4	99.8	113.3	1,006	-
Bannock County	37	107	36	7	1	95.5	68.5	129.7	43	0.90
Benewah, Latah, and Shoshone Counties	27	75	29	8	1	110.4	76.8	153.6	37	1.04
Bingham and Power Counties	16	47	16	10	3	100.7	64.9	148.9	26	0.95
Boise Air Traffic Corridor	33	106	23	3	0	60.9	39.5	90.0	26	0.57 *
Boise Downtown and Garden City	18	89	27	10	0	103.5	72.2	143.7	37	0.97
Boise North and East	46	99	37	6	1	115.7	83.0	157.1	43	1.09
Bonner and Boundary Counties	27	93	35	7	2	99.0	69.8	136.1	42	0.93
Caldwell	26	87	28	13	1	107.1	76.3	146.3	41	1.01
Central Idaho Mountain and River Wilderness	29	78	36	6	1	109.2	77.1	150.0	42	1.03
Coeur d'Alene, Post Falls	31	147	35	7	0	84.1	60.1	114.5	42	0.79
Eagle, Star, and Boise Northwest	41	165	39	6	1	94.5	68.7	126.9	45	0.89
Elmore, Gooding, and Owyhee Counties	18	63	21	9	0	109.0	72.8	156.8	30	1.02
Fremont, Madison, and Teton Counties	10	36	21	6	0	111.6	72.8	164.2	27	1.05
Greater Bonneville County	20	58	18	5	4	84.3	53.0	127.8	23	0.79
Greater Kootenai County	32	128	62	11	1	139.5	108.3	176.8	73	1.31 *
Idaho Falls	20	59	22	9	4	114.4	77.1	163.1	31	1.08
Kuna and Southern Ada County	23	85	24	2	0	115.5	73.9	173.4	26	1.09
Meridian North	34	106	34	5	1	123.5	87.3	169.8	39	1.16
Meridian South	39	101	22	7	2	90.9	60.1	131.7	29	0.85
Middleton, NE Nampa, and Eastern Canyon County	28	88	25	8	1	98.6	67.2	139.9	33	0.93
Nampa and Western Canyon County	36	130	26	12	1	93.3	65.3	129.4	38	0.88
North Central Idaho	18	104	45	9	1	124.5	92.0	164.1	54	1.17
Southeast Border Counties	12	58	28	1	3	103.9	68.7	150.5	29	0.98
Twin Falls County	18	104	44	7	0	120.8	89.1	159.8	51	1.14
West Central Idaho	17	95	31	17	0	124.0	90.9	165.4	48	1.17
Wood River Valley to Magic	30	105	44	7	1	131.5	97.3	173.9	51	1.24

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 3. Idaho resident cervical cancer statistics, ages 20+, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Invasive Incidence Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	-	79	70	27	5	9.8	8.4	11.4	181	-
Bannock County	-	9	9	1	0	20.0	11.8	31.5	19	2.03 *
Benewah, Latah, and Shoshone Counties	-	5	1	0	0	11.1	3.9	23.9	6	1.13
Bingham and Power Counties	-	1	5	2	0	13.8	5.7	27.8	8	1.40
Boise Air Traffic Corridor	-	2	4	1	0	7.5	2.9	16.0	7	0.76
Boise Downtown and Garden City	-	2	1	1	0	7.2	1.9	17.6	4	0.73
Boise North and East	-	1	0	0	0	1.6	0.0	8.3	1	0.17 *
Bonner and Boundary Counties	-	4	5	0	0	16.3	7.0	31.4	9	1.66
Caldwell	-	4	7	2	0	17.0	8.8	29.2	13	1.73
Central Idaho Mountain and River Wilderness	-	2	2	0	0	6.6	1.6	17.0	4	0.67
Coeur d'Alene, Post Falls	-	3	5	1	1	12.5	5.9	23.0	10	1.28
Eagle, Star, and Boise Northwest	-	6	1	1	0	10.4	4.4	20.5	8	1.06
Elmore, Gooding, and Owyhee Counties	-	2	1	1	0	8.0	2.1	20.4	4	0.82
Fremont, Madison, and Teton Counties	-	2	2	0	0	8.0	2.1	20.3	4	0.81
Greater Bonneville County	-	3	0	0	0	6.2	1.3	17.4	3	0.63
Greater Kootenai County	-	1	4	1	0	4.8	1.6	11.5	6	0.49
Idaho Falls	-	1	2	1	0	8.1	2.2	19.8	4	0.82
Kuna and Southern Ada County	-	2	2	0	0	6.7	1.8	17.9	4	0.68
Meridian North	-	3	2	0	1	7.7	2.8	16.9	6	0.78
Meridian South	-	3	1	1	0	5.8	1.8	14.0	5	0.59
Middleton, NE Nampa, and Eastern Canyon County	-	4	6	2	0	16.0	8.2	28.1	12	1.63
Nampa and Western Canyon County	-	4	1	3	0	8.8	3.6	17.8	8	0.89
North Central Idaho	-	2	2	1	0	6.9	2.0	16.4	5	0.70
Southeast Border Counties	-	1	1	0	2	7.5	1.9	19.2	4	0.76
Twin Falls County	-	1	2	4	0	8.6	3.3	17.6	7	0.87
West Central Idaho	-	6	1	1	1	15.6	6.6	30.5	9	1.59
Wood River Valley to Magic	-	5	3	3	0	16.9	8.4	30.0	11	1.72

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 4. Idaho resident colorectal cancer statistics, ages 50+, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Late Stage (Regional + Distant) Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	19	606	726	420	116	63.6	59.9	67.4	1,146	-
Bannock County	1	19	31	17	8	61.4	44.9	82.0	48	0.97
Benewah, Latah, and Shoshone Counties	0	22	29	12	4	59.9	42.6	81.9	41	0.94
Bingham and Power Counties	0	16	25	13	2	78.8	55.2	108.8	38	1.24
Boise Air Traffic Corridor	0	21	26	16	3	62.1	44.5	84.3	42	0.98
Boise Downtown and Garden City	0	24	27	21	7	71.7	52.6	95.4	48	1.13
Boise North and East	1	17	20	9	2	44.0	29.1	63.7	29	0.69
Bonner and Boundary Counties	0	40	43	22	11	76.2	58.0	98.4	65	1.20
Caldwell	1	19	32	15	8	64.7	47.4	86.3	47	1.02
Central Idaho Mountain and River Wilderness	5	30	18	18	3	46.9	32.3	65.7	36	0.74
Coeur d'Alene, Post Falls	1	34	31	21	4	58.5	43.5	77.0	52	0.92
Eagle, Star, and Boise Northwest	0	18	21	11	4	37.3	25.3	52.9	32	0.59 *
Elmore, Gooding, and Owyhee Counties	1	11	32	13	4	81.2	58.9	109.1	45	1.28
Fremont, Madison, and Teton Counties	2	6	14	12	1	60.5	39.1	89.5	26	0.95
Greater Bonneville County	2	20	24	21	2	93.3	67.5	125.7	45	1.47 *
Greater Kootenai County	0	57	34	26	4	61.1	46.2	79.4	60	0.96
Idaho Falls	2	18	25	13	2	67.9	47.9	93.6	38	1.07
Kuna and Southern Ada County	0	15	24	12	4	98.3	66.1	140.0	36	1.55 *
Meridian North	0	22	15	13	1	51.6	33.7	75.4	28	0.81
Meridian South	0	20	20	13	3	52.8	36.0	74.7	33	0.83
Middleton, NE Nampa, and Eastern Canyon County	0	16	26	16	4	68.9	49.1	93.9	42	1.08
Nampa and Western Canyon County	2	35	32	15	1	65.7	47.8	87.9	47	1.03
North Central Idaho	0	24	43	25	11	68.6	53.0	87.5	68	1.08
Southeast Border Counties	1	18	22	15	3	66.1	46.2	91.7	37	1.04
Twin Falls County	0	27	41	13	7	63.5	47.5	83.2	54	1.00
West Central Idaho	0	36	38	23	8	79.0	60.0	102.3	61	1.24
Wood River Valley to Magic	0	21	33	15	5	62.1	45.5	82.8	48	0.98

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 5. Idaho resident endometrial cancer statistics, females of all ages, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Invasive Incidence Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	4	554	137	59	32	23.5	21.8	25.3	782	-
Bannock County	0	20	7	3	2	21.6	14.6	30.9	32	0.92
Benewah, Latah, and Shoshone Counties	0	23	3	4	3	29.2	19.6	42.2	33	1.25
Bingham and Power Counties	0	15	6	0	0	22.6	13.7	35.2	21	0.96
Boise Air Traffic Corridor	0	16	4	1	0	14.8	8.9	23.5	21	0.63
Boise Downtown and Garden City	0	13	4	0	0	15.3	8.6	25.3	17	0.65
Boise North and East	0	18	5	3	0	18.5	11.9	27.9	26	0.79
Bonner and Boundary Counties	0	14	4	3	3	17.7	10.6	28.3	24	0.76
Caldwell	0	26	7	4	0	29.4	20.5	40.9	37	1.25
Central Idaho Mountain and River Wilderness	1	13	4	2	1	15.0	8.8	24.3	20	0.64
Coeur d'Alene, Post Falls	0	27	9	2	6	24.9	17.9	34.1	44	1.06
Eagle, Star, and Boise Northwest	0	37	10	4	0	30.4	22.4	40.7	51	1.29
Elmore, Gooding, and Owyhee Counties	0	18	3	2	0	21.9	13.7	33.6	23	0.93
Fremont, Madison, and Teton Counties	0	18	5	0	1	30.5	19.4	45.6	24	1.30
Greater Bonneville County	0	24	2	0	1	30.1	19.6	44.3	27	1.28
Greater Kootenai County	2	22	12	4	3	21.0	14.8	29.3	41	0.89
Idaho Falls	0	19	8	4	2	33.0	22.5	46.9	33	1.41
Kuna and Southern Ada County	0	22	0	1	0	25.1	15.7	38.4	23	1.07
Meridian North	0	19	7	1	1	22.8	15.0	33.4	28	0.97
Meridian South	0	24	1	2	1	23.3	15.3	34.2	28	0.99
Middleton, NE Nampa, and Eastern Canyon County	0	23	6	2	0	23.9	16.1	34.3	31	1.02
Nampa and Western Canyon County	0	26	3	4	2	23.4	16.1	33.1	35	1.00
North Central Idaho	0	25	7	2	4	26.3	17.8	37.5	38	1.12
Southeast Border Counties	0	14	3	1	0	17.2	10.1	27.8	18	0.73
Twin Falls County	0	37	8	5	1	32.7	24.1	43.5	51	1.39 *
West Central Idaho	0	19	0	3	0	17.7	10.8	28.0	22	0.75
Wood River Valley to Magic	1	22	9	2	1	24.8	16.9	35.2	34	1.06
Wood River Valley to Magic	0	21	33	15	5	62.1	45.5	82.8	48	0.98

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 6. Idaho resident esophagus cancer statistics, all ages, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Invasive Incidence Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	2	69	77	118	34	4.5	4.0	5.1	298	-
Bannock County	0	2	2	6	2	4.0	2.0	7.1	12	0.88
Benewah, Latah, and Shoshone Counties	0	3	1	6	6	7.1	4.0	11.9	16	1.58
Bingham and Power Counties	0	1	2	3	2	4.3	1.8	8.7	8	0.95
Boise Air Traffic Corridor	0	2	3	5	0	4.1	1.9	7.8	10	0.90
Boise Downtown and Garden City	0	1	5	5	1	4.6	2.4	8.3	12	1.01
Boise North and East	0	2	0	2	2	2.5	0.9	5.8	6	0.56
Bonner and Boundary Counties	0	1	0	6	4	3.5	1.7	7.0	11	0.78
Caldwell	0	3	2	4	1	4.0	1.9	7.4	10	0.87
Central Idaho Mountain and River Wilderness	0	3	4	6	1	5.1	2.7	9.0	14	1.13
Coeur d'Alene, Post Falls	2	1	2	4	0	2.1	0.8	4.7	7	0.47
Eagle, Star, and Boise Northwest	0	3	3	5	0	3.5	1.7	6.6	11	0.77
Elmore, Gooding, and Owyhee Counties	0	5	2	3	0	4.5	2.1	8.6	10	1.00
Fremont, Madison, and Teton Counties	0	2	1	1	0	2.3	0.6	6.1	4	0.52
Greater Bonneville County	0	4	4	3	1	6.6	3.4	11.7	12	1.46
Greater Kootenai County	0	2	8	3	3	4.8	2.7	8.1	16	1.07
Idaho Falls	0	2	1	1	0	2.5	0.7	6.3	4	0.55
Kuna and Southern Ada County	0	1	5	3	0	6.0	2.6	11.7	9	1.33
Meridian North	0	4	5	5	1	6.3	3.5	10.6	15	1.40
Meridian South	0	2	1	6	1	4.5	2.1	8.5	10	1.00
Middleton, NE Nampa, and Eastern Canyon County	0	3	5	4	1	5.6	2.9	9.7	13	1.24
Nampa and Western Canyon County	0	2	4	7	2	5.2	2.8	8.8	15	1.15
North Central Idaho	0	9	6	6	2	5.8	3.7	9.1	23	1.28
Southeast Border Counties	0	0	1	1	1	1.2	0.2	4.0	3	0.27 *
Twin Falls County	0	4	3	8	3	6.3	3.6	10.0	18	1.39
West Central Idaho	0	1	6	9	0	5.5	3.1	9.5	16	1.23
Wood River Valley to Magic	0	6	1	6	0	4.9	2.6	8.6	13	1.09

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 7. Idaho resident kidney & renal pelvis cancer statistics, all ages, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Invasive Incidence Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	21	820	140	158	20	18.2	17.1	19.3	1,138	-
Bannock County	2	36	6	12	2	19.2	14.4	25.2	56	1.06
Benewah, Latah, and Shoshone Counties	0	28	4	8	0	17.3	12.2	24.1	40	0.95
Bingham and Power Counties	0	27	7	2	0	21.7	15.0	30.4	36	1.19
Boise Air Traffic Corridor	0	27	6	2	1	15.5	10.7	21.8	36	0.85
Boise Downtown and Garden City	0	33	2	7	0	18.1	12.9	24.8	42	0.99
Boise North and East	1	20	5	7	0	12.9	8.6	18.6	32	0.71
Bonner and Boundary Counties	1	35	8	7	0	17.1	12.2	23.5	50	0.94
Caldwell	3	31	5	8	2	19.3	14.0	26.0	46	1.06
Central Idaho Mountain and River Wilderness	0	24	3	3	0	12.2	8.1	17.9	30	0.67 *
Coeur d'Alene, Post Falls	0	49	10	10	2	22.6	17.4	28.8	71	1.24
Eagle, Star, and Boise Northwest	0	51	5	2	2	20.3	15.3	26.7	60	1.12
Elmore, Gooding, and Owyhee Counties	0	41	4	6	1	28.7	21.1	38.0	52	1.57 *
Fremont, Madison, and Teton Counties	1	11	1	4	0	10.9	6.1	17.7	16	0.60 *
Greater Bonneville County	1	23	11	4	0	21.6	15.2	29.9	38	1.19
Greater Kootenai County	1	34	7	10	4	16.4	12.2	21.7	55	0.90
Idaho Falls	1	28	5	4	1	21.4	15.0	29.5	38	1.17
Kuna and Southern Ada County	1	23	5	5	0	20.3	13.5	29.2	33	1.11
Meridian North	2	30	5	3	0	17.6	12.3	24.5	38	0.97
Meridian South	1	33	3	7	0	19.0	13.7	25.8	43	1.05
Middleton, NE Nampa, and Eastern Canyon County	2	43	7	6	0	26.3	19.7	34.3	56	1.44 *
Nampa and Western Canyon County	1	39	4	7	0	19.4	14.3	25.8	50	1.07
North Central Idaho	1	41	4	12	2	19.6	14.6	25.9	59	1.08
Southeast Border Counties	0	24	2	4	2	16.5	11.2	23.6	32	0.91
Twin Falls County	1	24	12	7	1	14.5	10.5	19.7	44	0.80
West Central Idaho	0	35	5	6	0	18.2	13.0	25.0	46	1.00
Wood River Valley to Magic	1	30	4	5	0	14.0	9.9	19.5	39	0.77

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 8. Idaho resident lung & bronchus cancer statistics, all ages, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Invasive Incidence Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	16	831	491	1,509	96	43.9	42.3	45.6	2,927	-
Bannock County	0	27	13	69	6	38.9	32.0	47.0	115	0.89
Benewah, Latah, and Shoshone Counties	1	28	26	84	5	57.3	48.0	68.1	143	1.30 *
Bingham and Power Counties	0	15	15	36	4	38.1	29.6	48.4	70	0.87
Boise Air Traffic Corridor	0	44	17	61	3	46.3	38.4	55.6	125	1.05
Boise Downtown and Garden City	1	35	23	58	4	48.4	40.0	58.1	120	1.10
Boise North and East	0	27	15	37	1	33.1	26.1	41.6	80	0.75 *
Bonner and Boundary Counties	0	26	26	75	10	45.3	37.8	54.3	137	1.03
Caldwell	3	48	21	60	4	51.0	42.6	60.6	133	1.16
Central Idaho Mountain and River Wilderness	1	20	10	66	4	35.0	28.2	43.0	100	0.80 *
Coeur d'Alene, Post Falls	2	45	38	99	4	55.5	47.6	64.4	186	1.26 *
Eagle, Star, and Boise Northwest	0	42	21	50	2	36.2	29.8	43.8	115	0.82 *
Elmore, Gooding, and Owyhee Counties	0	52	14	49	4	58.7	48.4	70.5	119	1.34 *
Fremont, Madison, and Teton Counties	0	7	10	16	1	21.9	15.0	30.7	34	0.50 *
Greater Bonneville County	1	14	7	36	3	35.4	26.9	45.8	60	0.81
Greater Kootenai County	0	41	32	101	11	50.7	43.4	59.0	185	1.15
Idaho Falls	0	16	10	33	3	31.1	23.8	40.0	62	0.71 *
Kuna and Southern Ada County	0	27	14	43	2	57.4	44.9	72.0	86	1.31 *
Meridian North	0	30	16	38	1	40.7	32.2	50.7	85	0.93
Meridian South	0	33	14	48	0	40.9	32.9	50.2	95	0.93
Middleton, NE Nampa, and Eastern Canyon County	0	39	26	54	1	58.1	47.9	69.7	120	1.32 *
Nampa and Western Canyon County	1	38	15	62	4	44.2	36.4	53.2	119	1.01
North Central Idaho	3	43	44	101	6	52.7	45.4	61.1	194	1.20 *
Southeast Border Counties	2	16	7	27	4	26.8	20.1	35.3	54	0.61 *
Twin Falls County	0	46	17	75	5	44.1	37.1	52.1	143	1.00
West Central Idaho	1	40	21	78	2	50.7	42.5	60.3	141	1.15
Wood River Valley to Magic	0	32	19	53	2	37.3	30.4	45.4	106	0.85

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 9. Idaho resident melanoma of the skin statistics, all ages, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Invasive Incidence Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	1,849	1,552	147	80	52	30.1	28.7	31.6	1,831	-
Bannock County	104	76	5	2	2	31.0	24.5	38.6	85	1.03
Benewah, Latah, and Shoshone Counties	44	33	4	2	3	20.6	14.6	28.3	42	0.68 *
Bingham and Power Counties	51	24	2	1	2	17.4	11.5	25.2	29	0.58 *
Boise Air Traffic Corridor	56	53	4	2	3	25.2	19.1	32.7	62	0.84
Boise Downtown and Garden City	27	37	3	3	2	20.1	14.5	27.3	45	0.67 *
Boise North and East	77	82	9	1	0	38.5	30.8	47.6	92	1.28 *
Bonner and Boundary Counties	53	56	8	3	4	31.7	24.1	41.1	71	1.05
Caldwell	41	36	4	0	1	16.7	11.9	22.8	41	0.55 *
Central Idaho Mountain and River Wilderness	63	66	8	5	3	32.7	25.6	41.3	82	1.08
Coeur d'Alene, Post Falls	72	48	4	5	6	20.5	15.6	26.5	63	0.68 *
Eagle, Star, and Boise Northwest	146	104	6	3	5	38.4	31.5	46.4	118	1.27 *
Elmore, Gooding, and Owyhee Counties	45	24	7	3	0	20.4	13.9	28.8	34	0.68 *
Fremont, Madison, and Teton Counties	53	43	6	2	1	34.4	25.5	45.3	52	1.14
Greater Bonneville County	45	47	6	7	2	37.2	28.4	47.9	62	1.23
Greater Kootenai County	100	83	9	3	1	29.8	23.9	36.9	96	0.99
Idaho Falls	50	57	4	4	0	36.3	27.9	46.5	65	1.21
Kuna and Southern Ada County	66	44	6	2	1	32.1	23.6	42.7	53	1.07
Meridian North	83	88	7	3	1	49.4	39.9	60.5	99	1.64 *
Meridian South	106	93	4	3	0	45.2	36.6	55.3	100	1.50 *
Middleton, NE Nampa, and Eastern Canyon County	97	52	1	3	4	28.7	21.8	37.1	60	0.95
Nampa and Western Canyon County	86	70	4	1	2	30.0	23.5	37.8	77	1.00
North Central Idaho	63	64	8	1	2	24.3	18.7	31.3	75	0.81
Southeast Border Counties	59	40	7	6	1	29.2	21.8	38.5	54	0.97
Twin Falls County	61	86	9	1	1	33.5	27.0	41.2	97	1.11
West Central Idaho	79	50	6	9	1	26.8	20.3	34.9	66	0.89
Wood River Valley to Magic	122	96	6	5	4	40.6	33.2	49.2	111	1.35 *

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).

Table 10. Idaho resident oral cavity & pharynx cancer statistics, all ages, by Cancer Reporting Zone, 2018-2020.

Geographic Area	Cancer Stage at Diagnosis					Invasive Incidence Statistics				
	In situ	Localized	Regional	Distant	Unstaged	Rate	Lower CI	Upper CI	Cases	Rate Ratio
State of Idaho	25	237	405	76	60	11.7	10.9	12.6	778	-
Bannock County	2	9	16	0	1	8.7	5.6	13.0	26	0.74
Benewah, Latah, and Shoshone Counties	0	8	18	5	3	14.6	9.9	20.8	34	1.24
Bingham and Power Counties	0	3	12	2	1	9.7	5.7	15.6	18	0.83
Boise Air Traffic Corridor	1	10	12	3	0	9.2	5.9	13.8	25	0.78
Boise Downtown and Garden City	0	6	19	2	3	13.3	8.9	19.2	30	1.13
Boise North and East	1	8	16	4	0	10.8	7.1	16.0	28	0.92
Bonner and Boundary Counties	0	6	21	3	3	11.1	7.3	16.4	33	0.94
Caldwell	1	7	12	3	1	9.5	6.0	14.5	23	0.81
Central Idaho Mountain and River Wilderness	2	16	19	3	2	14.0	9.8	19.5	40	1.19
Coeur d'Alene, Post Falls	0	15	18	2	3	12.0	8.4	16.7	38	1.02
Eagle, Star, and Boise Northwest	4	12	28	2	2	14.2	10.2	19.5	44	1.21
Elmore, Gooding, and Owyhee Counties	1	8	14	7	1	15.6	10.3	22.6	30	1.33
Fremont, Madison, and Teton Counties	0	6	11	0	1	10.7	6.2	17.1	18	0.91
Greater Bonneville County	0	8	10	1	2	10.5	6.4	16.2	21	0.89
Greater Kootenai County	3	11	19	4	6	10.3	7.3	14.5	40	0.88
Idaho Falls	0	4	10	1	5	10.2	6.1	15.9	20	0.87
Kuna and Southern Ada County	0	9	13	1	1	15.3	9.5	23.3	24	1.31
Meridian North	0	16	12	3	1	14.7	9.9	21.0	32	1.25
Meridian South	0	11	17	4	0	12.6	8.6	18.1	32	1.08
Middleton, NE Nampa, and Eastern Canyon County	0	6	20	2	1	13.4	8.9	19.4	29	1.14
Nampa and Western Canyon County	0	7	13	4	2	9.4	6.0	14.0	26	0.80
North Central Idaho	4	13	18	6	9	12.6	9.1	17.3	46	1.08
Southeast Border Counties	3	5	8	2	4	10.3	6.1	16.3	19	0.88
Twin Falls County	1	13	24	5	0	13.3	9.5	18.3	42	1.14
West Central Idaho	0	10	12	3	4	12.5	8.1	18.6	29	1.07
Wood River Valley to Magic	2	10	13	4	4	11.2	7.6	16.2	31	0.96

* The rate ratio indicates that the rate is significantly different than the rate for Idaho ($p<0.05$).