# 2025 Maine Cancer Snapshot

**A REPORT BY THE MAINE CANCER REGISTRY**

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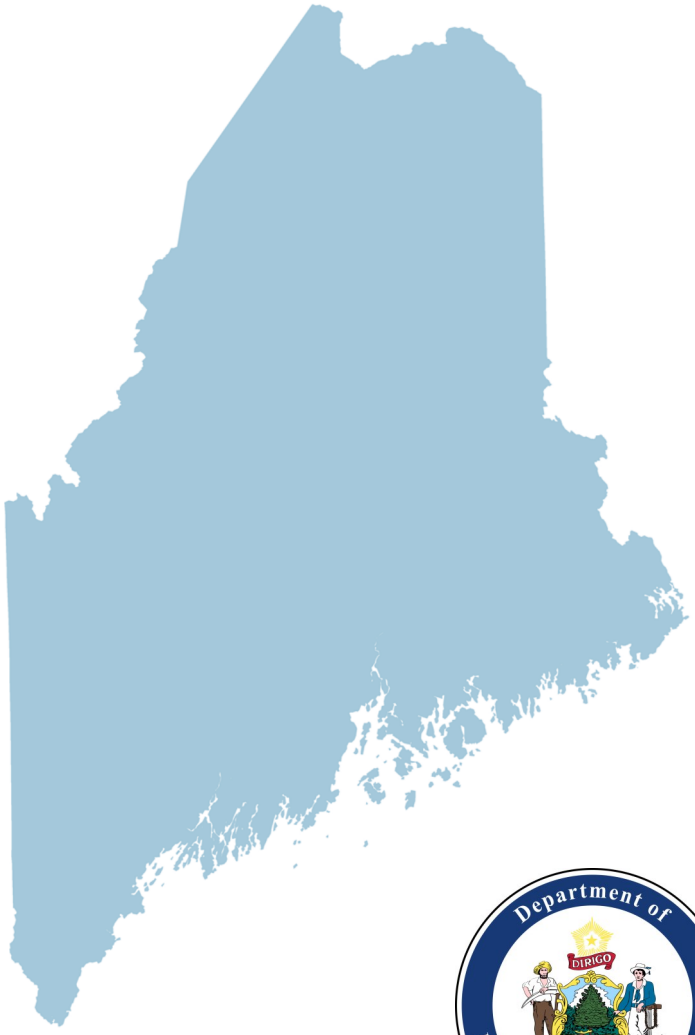


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# Key Findings

## 2025 MAINE CANCER SNAPSHOT

**Among Maine residents in 2022*, there were 10,008 new malignant cancer cases and 3,426 cancer deaths.**

### Cancer Incidence

- The overall cancer age-adjusted incidence rate for Maine is 471.8 per 100,000 compared with 442.3 for the U.S.
- The overall cancer incidence rate in Maine declined significantly from 2006-2011 but since then rates have been stable with no statistically significant changes in trend.
- The four most common newly diagnosed cancers in Maine are female breast, lung and bronchus, prostate, and colon and rectum.
- Washington, Penobscot, and Hancock counties have higher overall cancer incidence rates compared to the state.
- Trends in cancer incidence differ by sex and age group, and rates remain highest among males and those over 65.

### Cancer Mortality

- The 2022 age-adjusted overall cancer mortality rate in Maine is 153.8 per 100,000, which is significantly higher than the U.S. cancer mortality rate (143.6).
- The overall cancer mortality rate has been decreasing in Maine over the past 20 years yet remains higher than the U.S. rate.[+]
- The leading causes of cancer mortality are cancers of the lung and bronchus, pancreas, colon and rectum, female breast, and prostate.
- Somerset and Washington counties have significantly higher overall cancer mortality rates compared to the state rate.

*The 2025 Maine Cancer Snapshot is based on new cancer cases diagnosed in 2022 (cancer incidence) and cancer deaths occurring in 2022 (cancer mortality). This time-lag is consistent with reporting standards used throughout the U.S. to ensure high quality data. The process requires time for a state cancer registry to receive cancer cases from multiple reporting sources (including vital records, hospital reporters, physician offices, and pathology labs), time for follow up and data corrections, as well as time to consolidate state data and perform quality control and analysis. See cautionary note about 2020 incidence on page 16.

**Acknowledgements**

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# Cancer Incidence

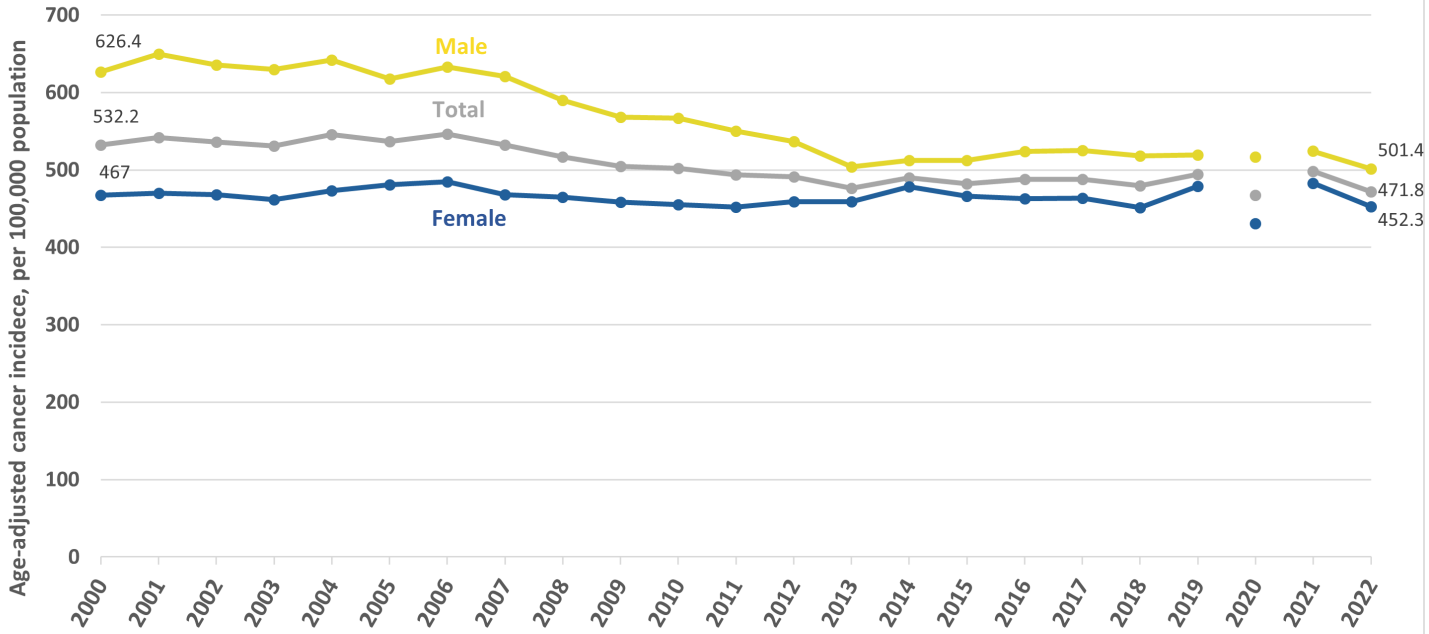
2025 MAINE CANCER SNAPSHOT

## Cancer Incidence Key Findings

- Over the past 20 years, the overall cancer incidence rate in Maine has decreased from 532.2 per 100,000 population to 471.8. Rates declined in the early 2000s followed by no significant change in trend over the last ten years.
- Over that same time period, the gap between the male and female rates has also narrowed, with the male rate decreasing more rapidly, yet remaining higher than females.
- Female breast, lung and bronchus, prostate, and colon and rectum represent just under half of all new cancer diagnoses in Maine.
- Overall cancer incidence rates, as well as incidence rates for lung and bronchus, urinary bladder, and melanoma of the skin, are significantly higher in Maine than the U.S.

## Trends by Sex

**Figure 1: Cancer Incidence Rate: All Malignant Cancers, by Sex, Maine, 2000-2022**




Rates are per 100,000 population, age-adjusted to the Year 2000 U.S. standard population.
Data source: Maine Cancer Registry, based on November 2024 NPCR-CSS data submission.

*Note: 2020 data is displayed but not included in trend analysis due to the impact of the COVID-19 pandemic on cancer reporting (see page 16).*

# Incidence: Top 10 Cancers, Maine 2022

**Red Rate** = Maine is significantly higher than U.S.

| Cancer Type | 2022 Maine (all sexes) | | | | 2022 U.S. | | |
|---|---|---|---|---|---|---|---|
| | Count | AA Rate | AA Lower 95% CL | AA Upper 95% CL | AA Rate | AA Lower 95% CL | AA Upper 95% CL |
| All Sites | 10,008 | **471.8** | 462.1 | 481.8 | **442.3** | 441.6 | 442.9 |
| Female Breast | 1,427 | **134.3** | 126.8 | 142.1 | **132.9** | 132.4 | 133.4 |
| Lung and Bronchus | 1,390 | **60.1** | 56.9 | 63.4 | **49.4** | 49.2 | 49.6 |
| Prostate | 1,279 | **112.9** | 106.5 | 119.5 | **119.1** | 118.7 | 119.6 |
| Colon and Rectum | 694 | **36.5** | 33.7 | 39.6 | **36.7** | 36.5 | 36.9 |
| Urinary Bladder | 565 | **24.8** | 22.7 | 27.1 | **17.8** | 17.6 | 17.9 |
| Melanoma of the Skin | 545 | **27.1** | 24.8 | 29.7 | **23.8** | 23.7 | 24.0 |
| Non-Hodgkin Lymphoma | 394 | **18.8** | 16.9 | 20.9 | **17.6** | 17.4 | 17.7 |
| Female Corpus and Uterus, NOS | 348 | **30.4** | 27.1 | 34.1 | **27.6** | 27.4 | 27.8 |
| Kidney and Renal Pelvis | 345 | **16.7** | 14.9 | 18.8 | **17.2** | 17.1 | 17.3 |
| Pancreas | 321 | **14.6** | 13.0 | 16.4 | **13.6** | 13.5 | 13.7 |
| | **Maine Females** | | | | **U.S. Females** | | |
| All Sites | 4,873 | **452.3** | 438.7 | 466.3 | **421.5** | 420.6 | 422.4 |
| Female Breast | 1,427 | **134.3** | 126.8 | 142.1 | **132.9** | 132.4 | 133.4 |
| Lung and Bronchus | 732 | **58.8** | 54.5 | 63.4 | **46.1** | 45.9 | 46.4 |
| Uterus (Corpus and Uterus, NOS) | 348 | **30.4** | 27.1 | 34.1 | **27.6** | 27.4 | 27.8 |
| Colon and Rectum | 336 | **32.9** | 29.3 | 37.0 | **32.5** | 32.2 | 32.7 |
| Melanoma of the Skin | 225 | **22.5** | 19.3 | 26.0 | **19.4** | 19.2 | 19.6 |
| Non-Hodgkin Lymphoma | 192 | **17.4** | 14.8 | 20.3 | **14.7** | 14.5 | 14.9 |
| Thyroid | 175 | **22.5** | 19.1 | 26.4 | **18.4** | 18.2 | 18.6 |
| Pancreas | 134 | **11.4** | 9.4 | 13.7 | **12.1** | 12.0 | 12.2 |
| Urinary Bladder | 129 | **11.1** | 9.1 | 13.3 | **7.7** | 7.6 | 7.8 |
| Kidney and Renal Pelvis | 126 | **12.1** | 10.0 | 14.7 | **11.9** | 11.8 | 12.1 |
| | **Maine Males** | | | | **U.S. Males** | | |
| All Sites | 5,132 | **501.4** | 487.0 | 516.1 | **474.6** | 473.6 | 475.6 |
| Prostate | 1,279 | **112.9** | 106.5 | 119.5 | **119.1** | 118.7 | 119.6 |
| Lung and Bronchus | 658 | **62.1** | 57.2 | 67.2 | **53.8** | 53.4 | 54.1 |
| Urinary Bladder | 436 | **42.0** | 38.0 | 46.3 | **30.4** | 30.2 | 30.7 |
| Colon and Rectum | 358 | **40.3** | 36.0 | 45.0 | **41.4** | 41.1 | 41.7 |
| Melanoma of the Skin | 320 | **32.8** | 29.1 | 36.9 | **29.8** | 29.6 | 30.1 |
| Kidney and Renal Pelvis | 219 | **21.8** | 18.9 | 25.2 | **23.1** | 22.9 | 23.4 |
| Oral Cavity and Pharynx | 204 | **18.7** | 16.1 | 21.7 | **18.0** | 17.8 | 18.2 |
| Non-Hodgkin Lymphoma | 202 | **20.6** | 17.7 | 23.9 | **21.0** | 20.8 | 21.2 |
| Pancreas | 187 | **18.4** | 15.8 | 21.5 | **15.4** | 15.2 | 15.5 |
| Leukemia | 177 | **17.9** | 15.3 | 21.0 | **17.0** | 16.8 | 17.2 |

Leading cancer types are ordered by descending Maine incidence counts. AA: Age-adjusted to the year 2000 U.S. standard population. Rates are per 100,000. 95% CL: 95% Confidence Limit. Overall rates calculated using male and female only to match US sex classification.

Data sources: Maine data: Maine Cancer Registry. U.S data: NPCR and SEER Incidence analytic file - U.S. Cancer Statistics Public Use Database. See technical notes for a full definition.

# Cancer Incidence By Sex and Age Group

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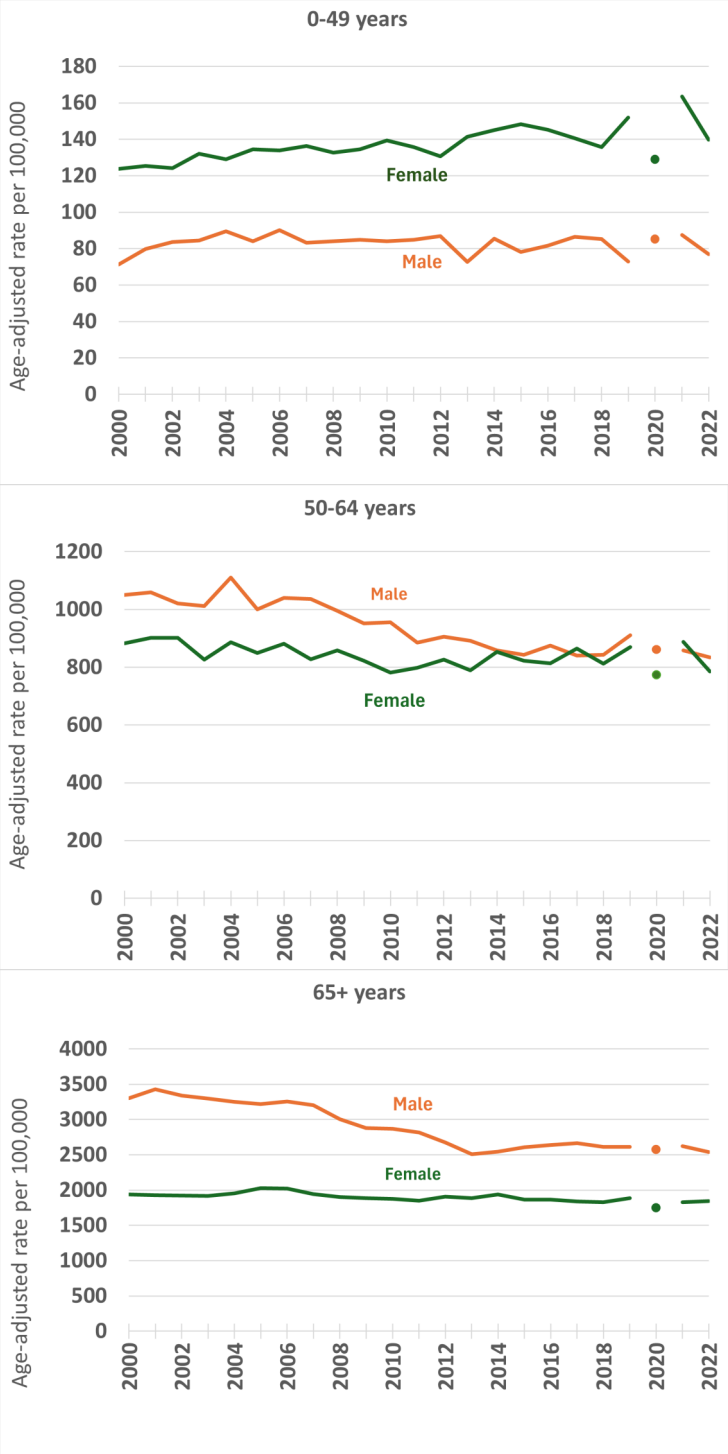
Figure 2. Trends over time in Cancer Incidence Rates by Sex and Age Group, Maine, 2000-2022




**Age 0-49**

- Among Mainers under 50 years, cancer rates among females are increasing (and higher) than male rates (which are stable).
- Cancer diagnoses among Mainers under 50 represent less than 10% of new diagnoses in 2022.

**Age 50-64**

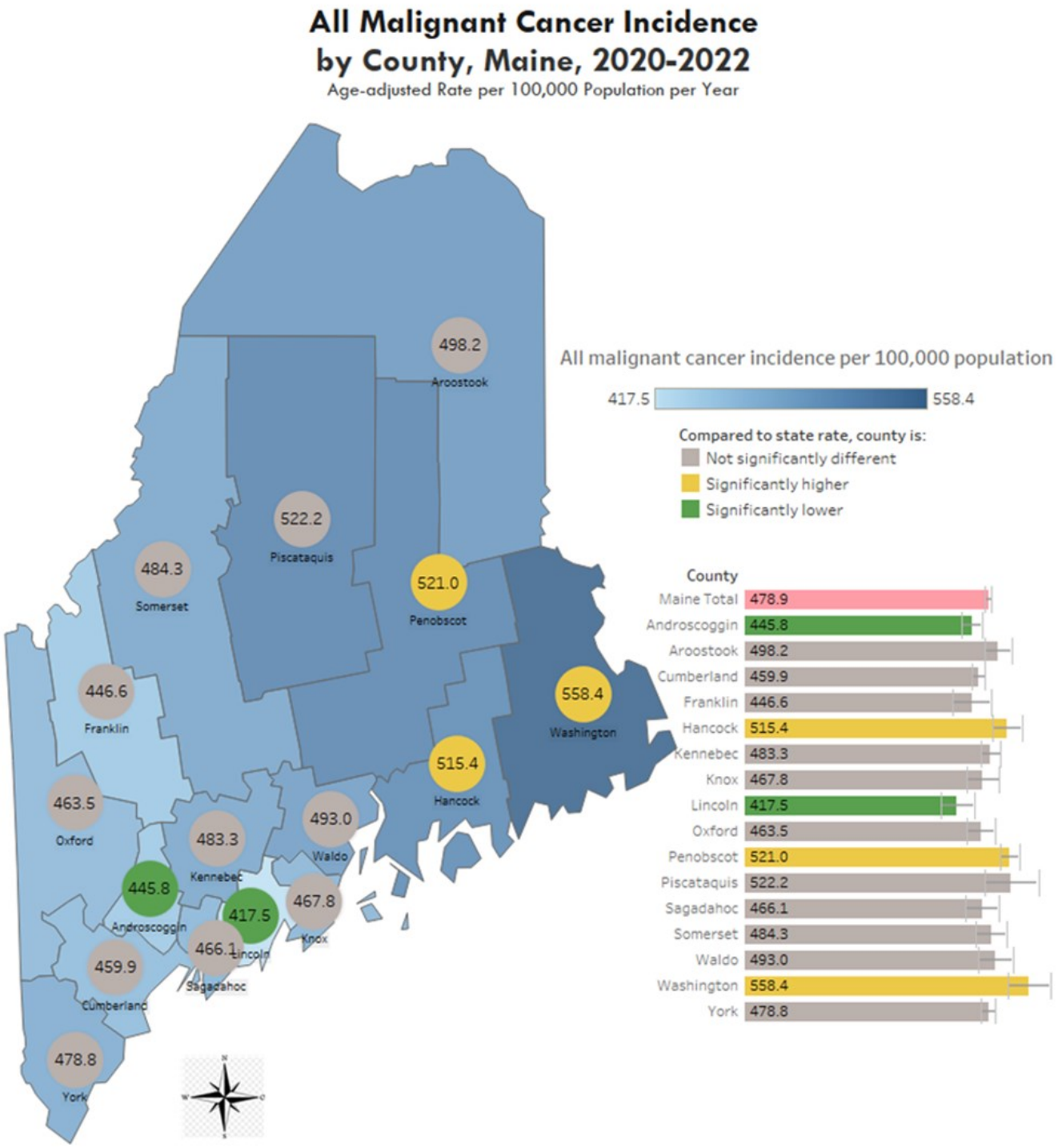
- Among Mainers 50-64 years, male and female rates have converged over the last twenty years.
- Cancer diagnoses among Mainers 50-64 years represent just over one quarter of new diagnoses in 2022.

**Age 65+**

- Among Mainers 65 years and older, male rates have decreased and then more recently plateaued in the last decade while rates among females have declined over the last decade.
- 65% of new cancer diagnoses in 2022 were among Mainers over 65.

Rates are per 100,000, age-adjusted to the year 2000 U.S. standard population.
Data source: Incidence: Maine Cancer Registry, based on November 2024 NPCR-CSS data submission.
*Note: 2020 data is displayed but not included in trend analysis due to the impact of the COVID-19 pandemic on cancer reporting (see page 16).*

# Incidence by County




© 2025 Mapbox © OpenStreetMap

Data Source: Maine Cancer Registry, based on November 2024 NPCR-CSS data submission. Rates are calculated per 100,000 population and age-adjusted to the year 2000 U.S. standard population. Map was created using Tableau and rates were mapped using the stepped display method with 4 steps. Error bars on bar chart depict 95% confidence intervals.

All Malignant Cancer Incidence

# Cancer Mortality

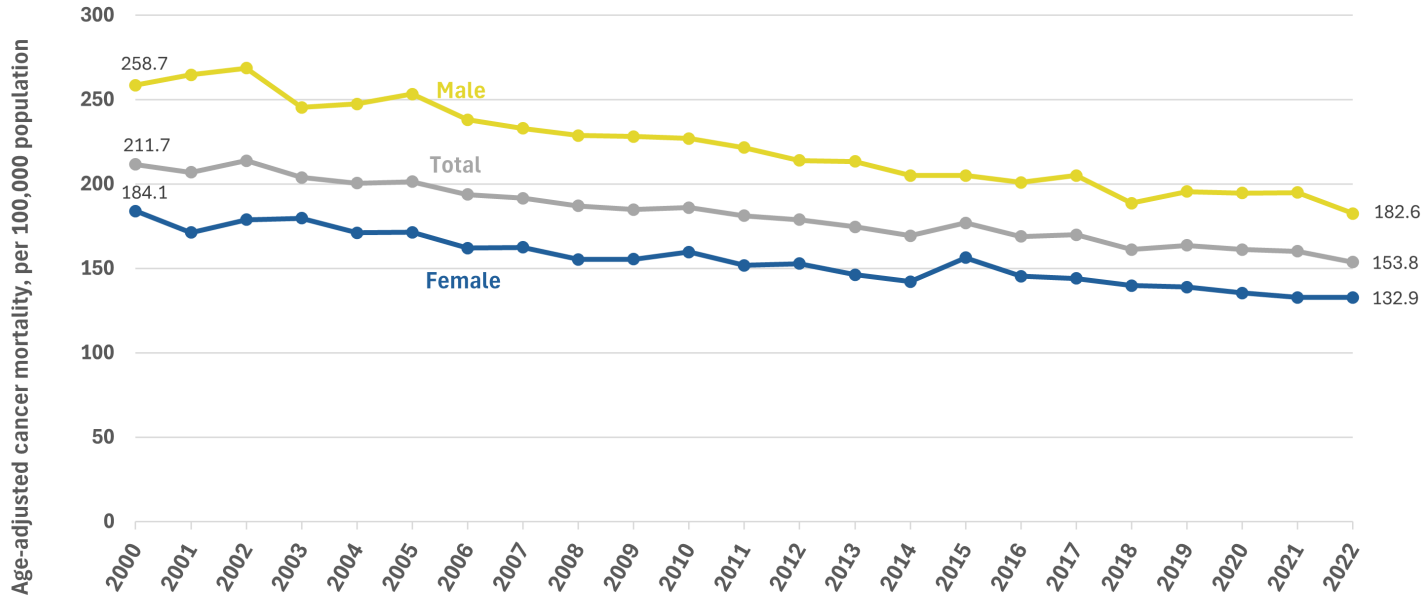
2025 MAINE CANCER SNAPSHOT

## Cancer Mortality Key Findings

- In 2022, there were 3,426 cancer deaths among Maine residents. The 2022 age-adjusted cancer mortality rate in Maine is 153.8 per 100,000, which is significantly higher than the U.S. cancer mortality rate (143.6).
- From 2000-2022, the overall cancer mortality rate has decreased from 211.7 per 100,000 to 153.8 in Maine, decreasing an average 1.4% per year over that time.
- Maine males have a significantly higher cancer mortality rate than females.
- Lung and bronchus, urinary bladder, and esophageal cancer mortality rates in Maine are significantly higher than the U.S.
- Somerset and Washington counties have significantly higher overall cancer mortality rates compared to the state overall. Cumberland County has a lower cancer mortality rate compared to the state overall.

## Trends by Sex

**Figure 3: Cancer Mortality Rate: All Malignant Cancers, by Sex, Maine, 2000-2022**




Rates are per 100,000 population, age-adjusted to the Year 2000 U.S. standard population. Data source: Maine Center for Disease Prevention. Data, Research, and Vital Statistics. 2025. Cancer deaths were identified using underlying cause-of-death codes C00-C97 (malignant neoplasms).

# Mortality: Top 10 Cancers, Maine 2022

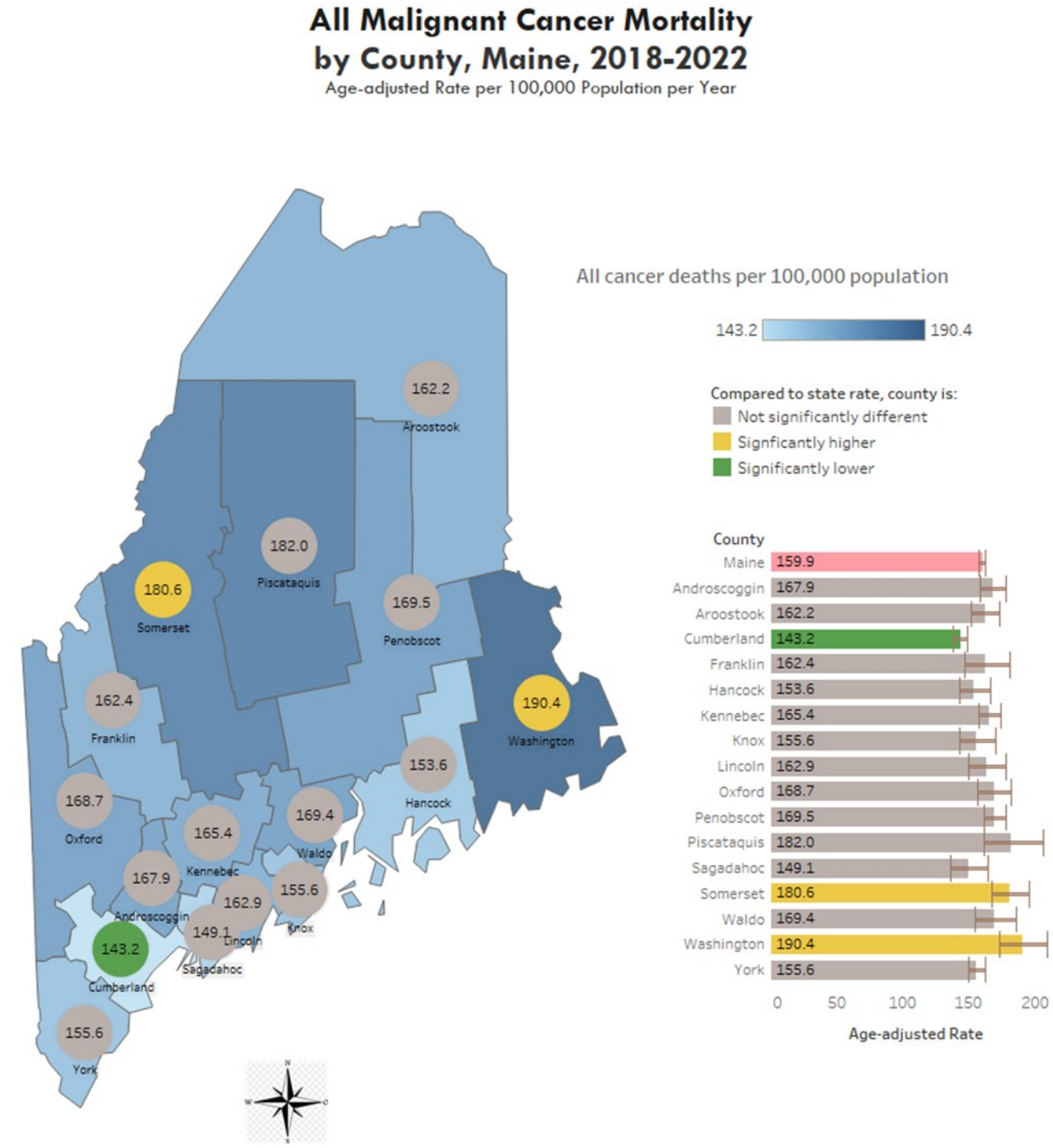
**Red Rate** = Maine is significantly higher than U.S.

| Cancer Type | Maine (all sexes) | | | | 2022 U.S. | | |
|---|---|---|---|---|---|---|---|
| | Count | AA Rate | AA Lower | AA Upper | AA Rate | AA Lower | AA Upper |
| All Sites | 3,426 | **153.8** | 148.5 | 159.2 | **143.6** | 143.2 | 144.0 |
| Lung and Bronchus | 822 | **35.7** | 33.2 | 38.2 | **30.2** | 30.0 | 30.4 |
| Pancreas | 248 | **10.9** | 9.5 | 12.3 | **11.2** | 11.1 | 11.3 |
| Colon and Rectum | 247 | **11.6** | 10.1 | 13.1 | **12.8** | 12.7 | 12.9 |
| Breast | 205 | **17.5** | 15.0 | 20.1 | **18.9** | 18.7 | 19.1 |
| Prostate | 194 | **21.0** | 18.0 | 24.1 | **19.1** | 18.9 | 19.3 |
| Urinary Bladder | 137 | **6.1** | 5.1 | 7.2 | **4.2** | 4.1 | 4.2 |
| Esophagus | 136 | **6.0** | 4.9 | 7.0 | **3.7** | 3.6 | 3.7 |
| Leukemia | 119 | **5.5** | 4.5 | 6.6 | **5.8** | 5.7 | 5.8 |
| Liver and Intrahepatic Bile Duct | 117 | **5.2** | 4.2 | 6.2 | **6.6** | 6.5 | 6.6 |
| Non-Hodgkin Lymphoma | 106 | **4.7** | 3.8 | 5.6 | **4.8** | 4.7 | 4.8 |
| | **Maine Females** | | | | **U.S. Females** | | |
| All Sites | 1,598 | **132.9** | 126.1 | 139.6 | **125.2** | 124.7 | 125.7 |
| Lung and Bronchus | 402 | **32.4** | 29.1 | 35.6 | **26.2** | 26.0 | 26.4 |
| Breast | 205 | **17.5** | 15.0 | 20.1 | **18.9** | 18.7 | 19.1 |
| Colon and Rectum | 131 | **11.3** | 9.2 | 13.3 | **10.7** | 10.6 | 10.9 |
| Pancreas | 99 | **7.9** | 6.5 | 9.7 | **9.8** | 9.7 | 9.9 |
| Ovary | 80 | **7.1** | 5.6 | 8.8 | **5.8** | 5.7 | 5.9 |
| Uterus (Corpus Uteri and Uterus, | 70 | **5.8** | 4.5 | 7.3 | **5.4** | 5.3 | 5.5 |
| Non-Hodgkin Lymphoma | 50 | **4.0** | 3.0 | 5.3 | **3.6** | 3.6 | 3.7 |
| Leukemia | 46 | **3.8** | 2.8 | 5.1 | **4.4** | 4.3 | 4.5 |
| Urinary Bladder | 40 | **3.2** | 2.3 | 4.3 | **2.1** | 2.0 | 2.1 |
| Brain and Other Nervous System | 36 | **3.4** | 2.4 | 4.6 | **3.6** | 3.5 | 3.6 |
| | **Maine Males** | | | | **U.S. Males** | | |
| All Sites | 1,828 | **182.6** | 174.0 | 191.3 | **168.8** | 168.2 | 169.4 |
| Lung and Bronchus | 420 | **40.0** | 36.1 | 44.0 | **35.3** | 35.1 | 35.6 |
| Prostate | 194 | **21.0** | 18.0 | 24.1 | **19.1** | 18.9 | 19.3 |
| Pancreas | 149 | **14.8** | 12.3 | 17.2 | **12.9** | 12.8 | 13.1 |
| Colon and Rectum | 116 | **12.0** | 9.7 | 14.3 | **15.1** | 14.9 | 15.3 |
| Esophagus | 114 | **10.8** | 8.8 | 12.9 | **6.4** | 6.3 | 6.5 |
| Urinary Bladder | 97 | **10.3** | 8.3 | 12.5 | **7.1** | 7.0 | 7.3 |
| Liver and Intrahepatic Bile Duct | 82 | **7.9** | 6.3 | 9.9 | **9.2** | 9.1 | 9.4 |
| Leukemia | 73 | **7.9** | 6.2 | 9.9 | **7.6** | 7.4 | 7.7 |
| Oral Cavity and Pharynx | 62 | **5.7** | 4.4 | 7.3 | **4.2** | 4.1 | 4.3 |
| Brain and Other Nervous System | 58 | **6.3** | 4.8 | 8.1 | **5.2** | 5.1 | 5.3 |

Leading types of cancer mortality are ordered by descending Maine counts. AA: Age-adjusted to the year 2000 U.S. standard population. Rates are per 100,000. 95% CL: 95% Confidence Limit. Overall rates calculated using male and female only to match US sex classification.

Data source: Maine Center for Disease Control, Data, Research, and Vital Statistics. U.S. data: Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) SEER*Stat Database: Mortality - All COD, Aggregated With State, Total U.S. (1969-2023) National Cancer Institute, DCCPS, Surveillance Research Program, released February 2025. Underlying mortality data provided by NCHS (www.cdc.gov/nchs). Cancer deaths were identified using cause-of-death codes C00-C97 (malignant neoplasms).

# Mortality by County




Data Source: Maine Mortality: Maine CDC's Data, Research, and Vital Statistics. Rates are calculated per 100,000 population and age-adjusted to the year 2000 U.S. standard population. Map was created using Tableau and rates were mapped using the stepped display method with 4 steps. Error bars on bar chart depict 95% confidence intervals.

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# Additional Incidence and Mortality Data for Maine

The following Maine CDC and U.S. dashboards provide additional options for detailed queries by cancer site. Click on headings below for more information.

## Maine Cancer Registry (MCR) Website

This website provides additional information about the MCR, available reports, procedures for requesting data, and resources related to cancer reporting in Maine.

## National Cancer Plan

The National Cancer Plan sets goals to reduce cancer morbidity and mortality. The Maine Cancer Coalition is currently work on a cancer plan revision to outline goals for cancer prevention, screening, diagnosis, treatment, palliative, and end-of-life care in Maine for 2021-2030.

## Maine Shared Community Health Needs Assessment (CHNA) Dashboard

This interactive dashboard shows Maine data for a variety of health behaviors, chronic diseases, and social determinants of health. Data are available for many demographic groups (sex, age, race) and subpopulations (rural residents, veterans), by county and public health district, and major cities.

## Maine Environmental Health Tracking Network Data Portal

This portal allows users to view health and environmental data by geographic region in Maine. Users can compare data across age groups, genders, regions, and time periods and make and download their own customized tables, charts, and maps.

## North American Association of Central Cancer Registries (NAACCR) Online Cancer Data

NAACCR Cancer Maps (historically called CiNA+ online) is an interactive mapping tool for U.S. and Canadian cancer incidence statistics for the most current five years of available data.

NAACCR CiNA Explorer Stats is an interactive data visualization tool for quick access to key U.S. and Canadian cancer statistics for major cancer sites by age, sex, stage, race/ethnicity, registry, and data type for the most current five years of available data.

## U.S. Cancer Statistics Data Visualizations Tool

This tool provides incidence and death counts, rates, and trend data, survival and prevalence estimates, and state, county, and congressional district data in a user-driven format. Cancer incidence and mortality trend data are presented from 1999 through 2022.

# Special Topic:
# Risk Factor Associated Cancers and Population Attributable Fraction

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There are many risk factors associated with cancer, including lifestyle factors, genetics, environment, and infection. Risk factor associated cancers are those where evidence links a common risk factor such as alcohol consumption, smoking, or physical inactivity, with increased likelihood of developing certain types of cancer.

Researchers have established methods for estimating the proportion of cancer cases that are attributable to modifiable risk factors based on the prevalence of the risk factor in the population and the strength of the association between the risk factor and the cancer type, based upon the scientific literature.[1] This is referred to as a population attributable fraction (PAF), the estimated percentage of new cancer cases that may be caused by certain exposures, such as infection, lifestyle risk factors, or environment. An estimated 40% of all new cancer cases among U.S. adults 30 and older in 2019 were attributable to potentially modifiable risk factors such as cigarette smoking, excess body weight, alcohol consumption, and UV radiation. In these calculations, age is restricted to those 30 and older to allow for the latency delay that occurs from the time of exposure to a risk factor and the development of cancer. PAF can also give us an estimate of how many cancer cases could be prevented or would not occur if the risk factors were eliminated within the population.

This special topic highlights the estimated contribution of four risk factors— cigarette smoking, alcohol consumption, excess body weight, and human papillomavirus (HPV) infection—to cancer incidence in Maine. While registry data can never determine the exact cause of an individual's cancer diagnosis, we can use the PAF to estimate the number of cancer cases in Maine that are attributable to these risk factors at a population level. This provides more specific approximation than summing all cases from sites associated with cancer risk factors (as is done with risk-factor associated cancer rates).

In addition, the special topic supplement explores the feasibility and utility of creating Maine specific PAF calculations vs. using nationally calculated PAF to understand the impact of cigarette smoking on cancer rates in Maine. Our findings suggested that estimates based on Maine cigarette smoking prevalence data were relatively close to estimates based on national PAFs, though using national PAFs leads to some overestimation due to differences in underlying cigarette smoking prevalence between Maine and the U.S. The differences in estimates vary based on site and sex. Producing Maine-specific PAFs on a regular basis requires a level of resources that extend beyond Maine Cancer Registry's current capacity. The numbers presented in this special topic provide an approximation with the acknowledged limitation that they may slightly overestimate the number of cigarette smoking attributable cancers due to lower cigarette smoking rates in Maine compared with the U.S.

Note: All PAF charts are sorted by count of attributable cases in descending order. See detailed tables for each figure in the appendix (Pages 18-20).

1. Islami F, Marlow EC, Thomson B, McCullough ML, Rumgay H, Gapstur SM, Patel AV, Soerjomataram I, Jemal A. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States, 2019. CA Cancer J Clin. 2024 Sep-Oct;74(5):405-432. doi: 10.3322/caac.21858. Epub 2024 Jul 11. PMID: 38990124.

# Special Topic:
# Risk Factor Attributable Cancers: Cigarette Smoking

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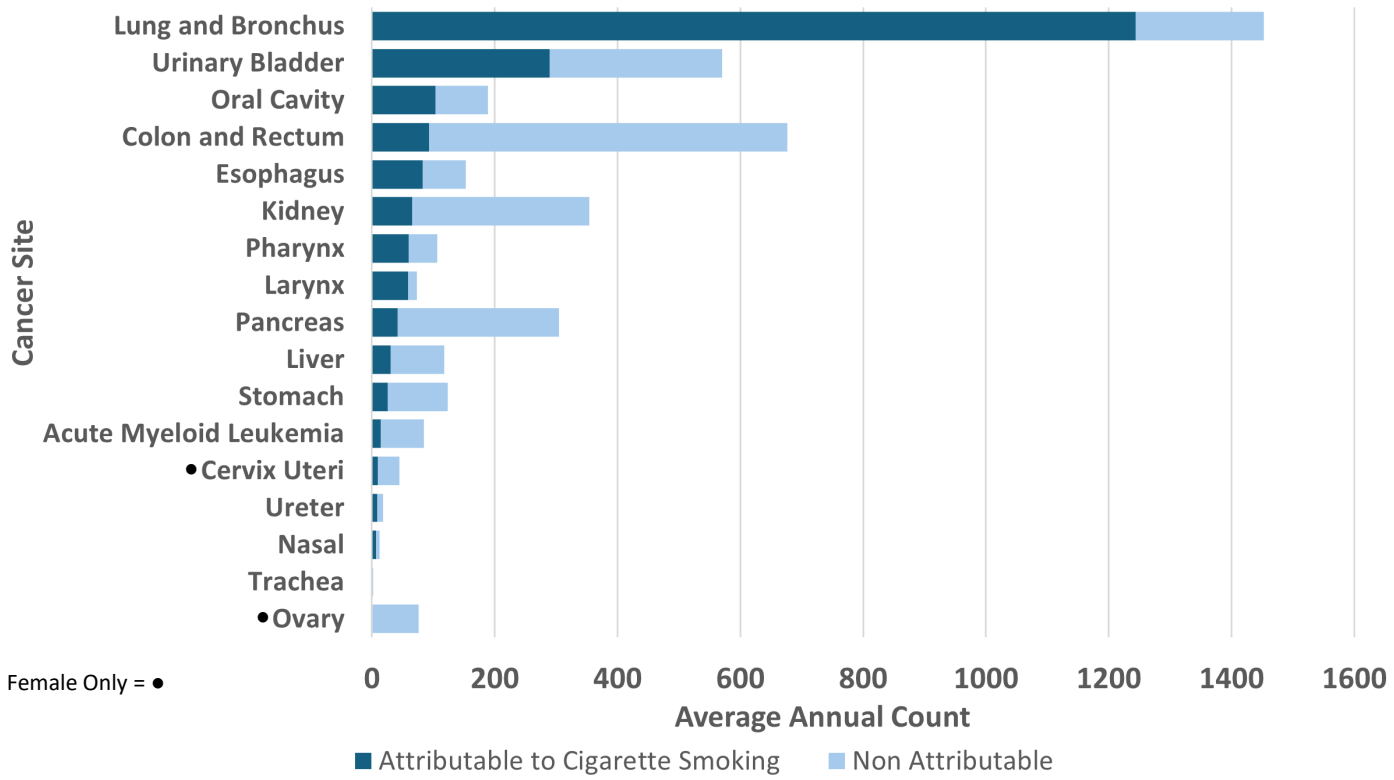
- Cigarette smoking is attributable to at least 17 different types of cancer.
- From 2018 to 2022, Maine had an estimated annual average of 2,137 malignant cancer cases among people aged 30 and over that were attributable to cigarette smoking, representing 22.1% of all malignant cancers in Maine during the period. These cases could be prevented if cigarette smoking was reduced in Maine.
- An estimated 85.6% of lung and bronchus cancer cases are attributable to cigarette smoking.[1]
- Lung and bronchus has the highest number of cases attributable to cigarette smoking, and is also the second most common cancer in Maine and the leading cause of cancer-related mortality.

**Figure 4: Average Annual New Cancer Cases by Cancer Site and Estimated Proportion Attributable to Cigarette Smoking, Maine, 2018-2022, 30 Years and older**




Data source: Incidence: Maine Cancer Registry. Graph shows Population Attributable Fraction (PAF) from Islami et al. (2024) applied to Maine's 5 year average annual incidence counts. Sorted in descending order by count of attributable cases.
Note: See page 18, Supplemental Table 2 of the Appendix. There are very few cases of trachea and ovarian cancers.

# Special Topic:
# Risk Factor Attributable Cancers: Alcohol Consumption

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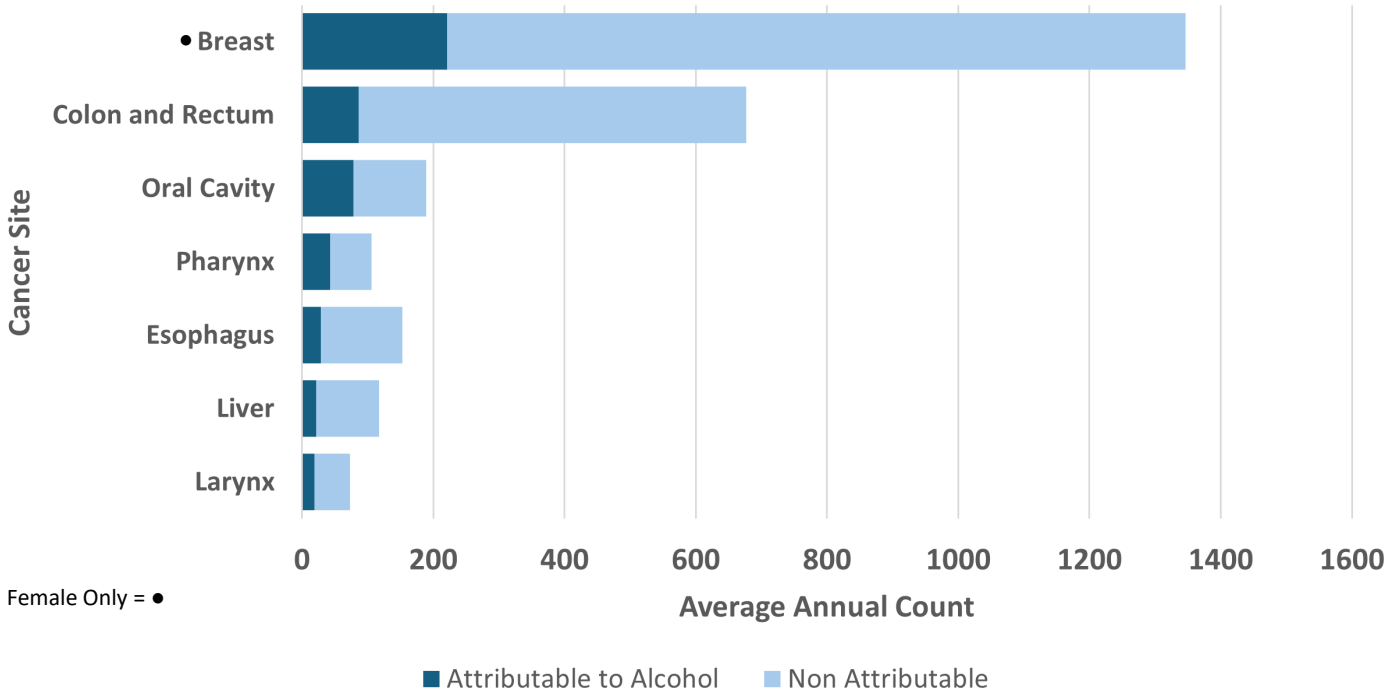
- Alcohol consumption is associated with increased risk of at least 7 different types of cancer.
- From 2018 to 2022, Maine had an estimated annual average of 500 malignant cancer cases among people aged 30 and over that were attributable to alcohol consumption, representing 5.2% of all malignant cancers in Maine during the period. These cases could be prevented if alcohol consumption was reduced for those who drink in Maine.
- An estimated 16.4% of female breast cancer cases and 18% of colorectal cancer cases among males and females are attributable to alcohol consumption.[1]
- Female breast and colorectal cancer are among the most common cancer types in Maine (see Page 4) and have the most cases attributable to alcohol consumption.

**Figure 5: Average Annual New Cancer Cases by Cancer Site and Estimated Proportion Attributable to Alcohol Consumption, Maine, 2018-2022, 30 Years and older**



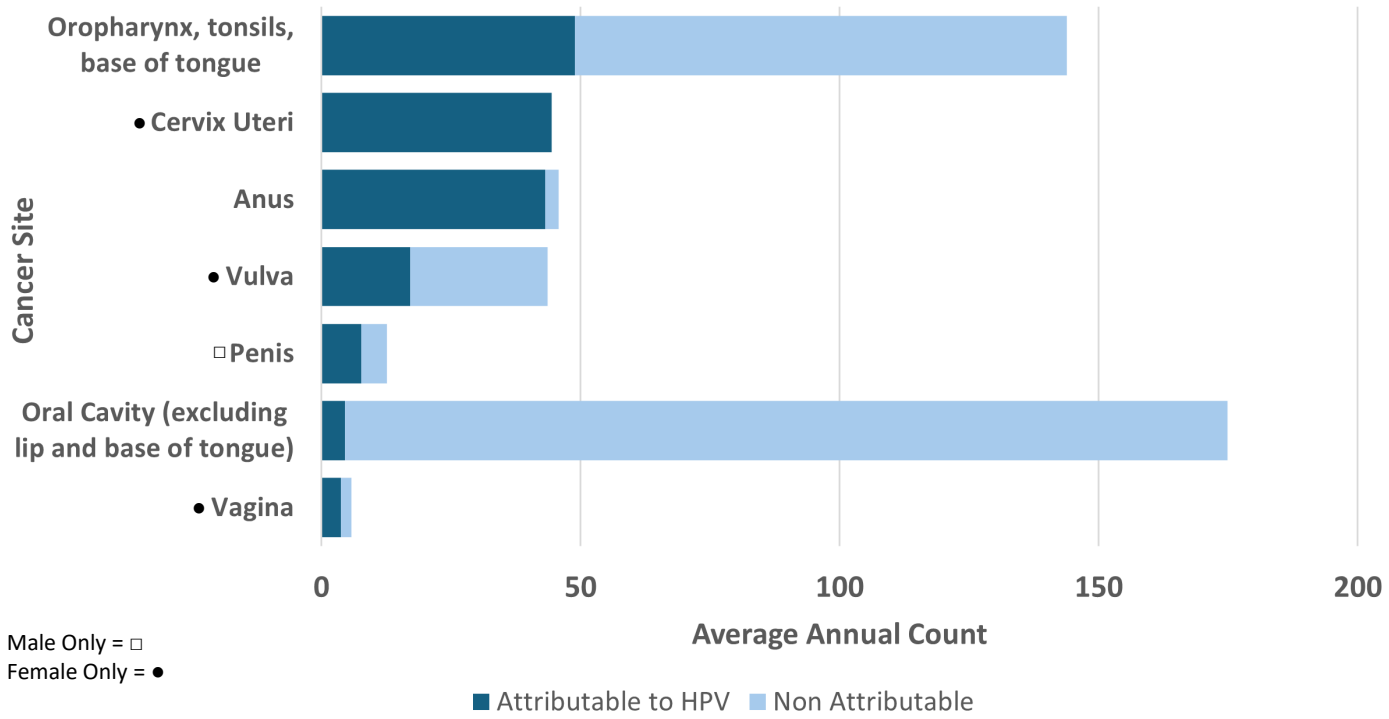

Data source: Incidence: Maine Cancer Registry. Graph shows Population Attributable Fraction (PAF) from Islami et al. (2024) applied to Maine's 5 year average annual incidence counts. Sorted in descending order by count of attributable cases. Note: See page 19, Supplemental Table 3 of the Appendix.

# Special Topic:
# Risk Factor Attributable Cancers: HPV Infection

## 2025 MAINE CANCER SNAPSHOT

- Human Papillomavirus (HPV) infection is associated with increased risk of at least 7 different types of cancer.
- From 2018 to 2022, Maine had an estimated annual average of 170 malignant cancer cases among people aged 30 and over that were attributable to HPV infection, representing 1.8% of all malignant cancers in Maine during the period. These cases could be prevented if HPV infection was reduced in Maine.
- An estimated 100% of all cervical cancer cases are attributable to HPV infection. This underscores the importance and benefits of HPV immunization among adolescents and young adults and the significant impact HPV has on reproductive health and cancer.

**Figure 6: Average Annual New Cancer Cases by Cancer Site and Estimated Proportion Attributable to HPV Infection, Maine, 2018-2022, 30 Years and older**



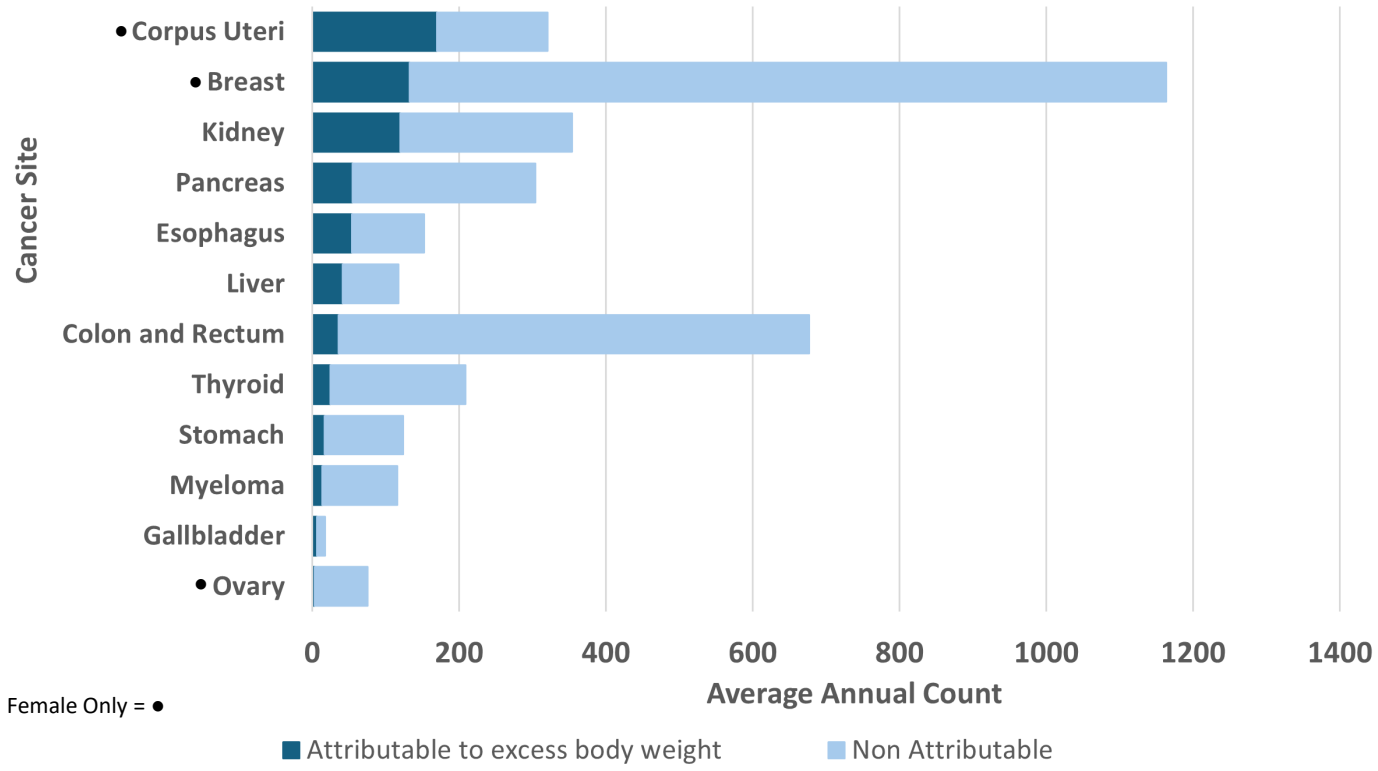

Data source: Incidence: Maine Cancer Registry. Graph shows Population Attributable Fraction (PAF) from Islami et al. (2024) applied to Maine's 5 year average annual incidence counts. Sorted in descending order by count of attributable cases. Note: See page 19, Supplemental Table 4 of the Appendix.

# Special Topic:
## Risk Factor Attributable Cancers: Excess Body Weight

2025 MAINE CANCER SNAPSHOT

- Excess body weight is associated with increased risk of at least 12 different types of cancer.
- From 2018 to 2022, Maine had an estimated annual average of 503 malignant cancer cases among people aged 30 and over that were attributable to excess body weight, representing 5.2% of all malignant cancers in Maine during the period. These cases could be prevented if excess body weight was reduced in Maine.
- An estimated 53.1% of corpus uteri cancer cases, 35.4% of esophageal, and 33.8% of kidney and renal pelvis cancer cases are attributable to excess body weight.[1]

**Figure 7: Average Annual New Cancer Cases by Cancer Site and Estimated Proportion Attributable to Excess Body Weight, Maine, 2018-2022, 30 Years and older**




Data source: Incidence: Maine Cancer Registry. Graph shows Population Attributable Fraction (PAF) from Islami et al. (2024) applied to Maine's 5 year average annual incidence counts. Sorted in descending order by count of attributable cases. Note: See page 20, Supplemental Table 5 of the Appendix.

# Technical Notes

## Maine Cancer Incidence and Mortality

**Case Definitions:** Incidence data presented in this report are based on the Surveillance, Epidemiology, and End Results (SEER) Program site recode ICD-O-3/WHO 2008 definitions, Version 2008 and are determined by primary site and histology available from Site Recode ICD-O-3/WHO 2008 - SEER Data Reporting Tools (cancer.gov). The primary site reported is the site of origin and not the metastatic site. Incidence rates do not include recurrences. The number of cancers may include multiple primary cancers occurring in one patient. Mortality case definitions for single cancers and "all sites" are based on the primary cancer site listed in the underlying cause of death and coded using the International Classification of Diseases, Tenth Edition (ICD-10) and coded using the SEER Cause of Death Recode 1969+ (03/01/2018) available from SEER Cause of Death Recode 1969+ (03/01/2018) (cancer.gov).

**Malignant Behavior Coding:** To align with SEER methodology, the MCR now uses "Behavior code ICD-O-3" rather than the "Behavior recode for analysis" field in SEER*Stat and any published statistics.

**Rates:** Incidence and mortality rates were calculated per 100,000 population. The year 2000 U.S. standard population was used for age adjustment. Incidence counts and rates presented in this report were produced using the Surveillance, Epidemiology, and End Results (SEER) Program, Surveillance Research Program, National Cancer Institute, SEER*Stat 8.4.1 software. Maine incidence counts and rates were produced from the Maine Cancer Registry dataset based on November 2024 data submission file; U.S. incidence counts and rates produced from the National Program of Cancer Registries and Surveillance, Epidemiology and End Results Program SEER*Stat Database: NPCR and SEER Incidence - U.S. Cancer Statistics Public Use Research Database, 2024 Submission (2001-2022). United States Department of Health and Human Services, Centers for Disease Control and Prevention, and National Cancer Institute. Released June 2025. Accessed at www.cdc.gov/cancer/uscs/public-use. Maine mortality counts and rates were produced using SAS 9.4 using data retrieved from the Maine CDC, Data, Research, and Vital Statistics. U.S. mortality data were retrieved from the Centers for Disease Control and Prevention, National Center for Health Statistics using the CDC WONDER Online Database, 2018-2022:Underlying Cause of Death by Single-Race Categories, released in 2024.

**Confidence Intervals:** Ninety-five percent confidence intervals are provided for all rates.

**Statistical Significance:** For Maine comparison to U.S. data and Maine county comparisons to Maine rates, incidence rates were considered similar if the 95 percent confidence intervals for two rates overlapped. If the confidence intervals did not overlap, the rates were considered to be significantly different. Maine rates that are significantly higher than the national rate are highlighted in red text. County rates significantly higher or lower than the Maine rate are displayed on the maps.

**Rates by County:** The number of new cancer cases reported in a county varies from year to year, and some of this variation is due to chance. County level cancer rates are more likely to vary on an annual basis than state level rates. In addition, counties with smaller populations tend to have greater variation between time periods. In this report, multiple years of data are combined when producing the county rates. Although combining years can make the rates more reliable, caution must still be used when interpreting county rates because of small populations. Beginning in 2022, the MCR uses the SEER field "County at DX Analysis", the county of the patient's residence at the time of diagnosis, derived from geocoded county data when available, instead of "County at DX".

**COVID-19:** In 2020, the COVID-19 pandemic disrupted access to medical care and contributed to delays in hospital reporting of cancer cases. This resulted in a drop in cancer diagnoses for the year 2020. This drop reflects changes in medical screening and care and should not be interpreted as a reduction in the underlying cancer burden. 2020 incidence rates are excluded from trend analysis. COVID-19 did not have a similar impact on cancer mortality rates, thus 2020 rates are included in trend analysis.

**Trend Analysis:** The trend analysis referenced in the text is based on Joinpoint regression analysis. Joinpoint is a software developed by the National Cancer Institute that allows one to test trends over a time period, if a trend has changed (increasing, decreasing or not significantly different from 0) and the significance of a given change. Our trend analyses followed National Cancer Institute guidance that recommends against including 2020 data in regression models for analysis of cancer incidence trends due to the lower that expected case counts that year as a result of the COVID-19 pandemic (Howlader. 2021).

**References:**

Howlader et al. How to Handle 2020 and 2021 Incidence Rates in the Joinpoint Trend Model? Surveillance Research Program, NCI, Technical Report #2024-01.

Joinpoint Regression Program, Version 5.4.0.0 - April 2025; Statistical Methodology and Applications Branch, Surveillance Research Program, National Cancer Institute.

# Appendix: Supplemental Age Charts

**Table 1: Age Adjusted Incidence Rates by Year, Sex and Age Group in Maine (1995-2022)**

| | 0-49 years | | 50-64 years | | 65+ years | |
|---|---|---|---|---|---|---|
| Year | Male | Female | Male | Female | Male | Female |
| **1995** | 63.7 | 111.9 | 917.3 | 863.2 | 3,005.4 | 1,748.4 |
| **1996** | 77.1 | 115.4 | 916.7 | 835.1 | 3,105.1 | 1,812.0 |
| **1997** | 71.6 | 111.1 | 937.6 | 833.7 | 3,298.6 | 1,909.4 |
| **1998** | 86.8 | 117.7 | 965.4 | 858.1 | 3,254.6 | 1,908.5 |
| **1999** | 70.7 | 113.5 | 956.8 | 821.2 | 3,347.8 | 1,884.1 |
| **2000** | 71.3 | 123.7 | 1,050.4 | 882.5 | 3,301.4 | 1,939.6 |
| **2001** | 79.7 | 125.4 | 1,059.2 | 901.5 | 3,427.7 | 1,927.8 |
| **2002** | 83.6 | 124.2 | 1,020.9 | 902.1 | 3,339.6 | 1,921.8 |
| **2003** | 84.4 | 132.0 | 1,011.2 | 826.3 | 3,297.6 | 1,914.8 |
| **2004** | 89.5 | 129.0 | 1,110.5 | 885.9 | 3,248.5 | 1,953.2 |
| **2005** | 84.0 | 134.5 | 1,000.8 | 848.8 | 3,217.0 | 2,026.1 |
| **2006** | 90.1 | 133.9 | 1,039.7 | 881.3 | 3,256.8 | 2,020.4 |
| **2007** | 83.2 | 136.3 | 1,036.7 | 827.9 | 3,203.4 | 1,941.6 |
| **2008** | 84.1 | 132.6 | 994.8 | 858.6 | 3,003.3 | 1,899.1 |
| **2009** | 84.8 | 134.4 | 951.9 | 821.8 | 2,880.9 | 1,884.1 |
| **2010** | 84.0 | 139.4 | 955.9 | 781.3 | 2,868.7 | 1,876.6 |
| **2011** | 84.9 | 135.7 | 884.6 | 798.3 | 2,817.1 | 1,851.3 |
| **2012** | 86.9 | 130.7 | 905.0 | 825.9 | 2,674.5 | 1,904.7 |
| **2013** | 72.6 | 141.3 | 891.5 | 789.0 | 2,511.1 | 1,885.4 |
| **2014** | 85.5 | 145.1 | 858.6 | 853.7 | 2,544.5 | 1,940.2 |
| **2015** | 78.2 | 148.3 | 842.6 | 822.7 | 2,605.3 | 1,864.3 |
| **2016** | 81.5 | 145.3 | 875.3 | 813.7 | 2,638.2 | 1,867.0 |
| **2017** | 86.4 | 140.6 | 840.0 | 864.4 | 2,663.3 | 1,836.2 |
| **2018** | 85.3 | 135.7 | 843.2 | 812.3 | 2,610.5 | 1,829.9 |
| **2019** | 72.9 | 151.8 | 910.1 | 870.3 | 2,613.0 | 1,887.0 |
| **2020** | 85.2 | 128.9 | 861.6 | 773.0 | 2,573.3 | 1,748.3 |
| **2021** | 87.4 | 163.5 | 858.6 | 888.0 | 2,624.8 | 1,827.8 |
| **2022** | 76.9 | 139.8 | 833.6 | 785.7 | 2,537.9 | 1,846.2 |

Data source: Maine Cancer Registry, based on November 2024 NPCR-CSS data submission.
AA: Age-adjusted to the year 2000 U.S. standard population. Rates are per 100,000.

# Appendix: Special Topic PAF

**Table 2: Cancers Attributable to Cigarette Smoking (2018-2022)**

| Yearly average number of cases between 2018-2022 for each cancer site and estimated number attributable to cigarette smoking | | | | |
|---|---|---|---|---|
| **Cancer** | **Average Annual Cases** | **Attributable to Cigarette Smoking** | **Not Attributable** | **PAF** |
| Lung and Bronchus | 1,453 | 1,244 | 209 | **0.86** |
| Urinary Bladder | 571 | 289 | 281 | **0.51** |
| Oral Cavity | 189 | 104 | 85 | **0.55** |
| Colon and Rectum | 677 | 93 | 584 | **0.14** |
| Esophagus | 153 | 82 | 70 | **0.54** |
| Kidney and Renal Pelvis | 354 | 66 | 289 | **0.19** |
| Pharynx | 106 | 60 | 46 | **0.57** |
| Larynx | 73 | 59 | 15 | **0.80** |
| Pancreas | 304 | 42 | 262 | **0.14** |
| Liver | 117 | 31 | 87 | **0.26** |
| Stomach | 124 | 25 | 99 | **0.20** |
| Acute Myeloid Leukemia | 85 | 14 | 71 | **0.17** |
| Cervix Uteri | 44 | 10 | 35 | **0.22** |
| Ureter | 18 | 9 | 9 | **0.49** |
| Nasal | 13 | 7 | 6 | **0.54** |
| Trachea | 1.2 | 1 | 0.2 | **0.86** |
| Ovary * | 76 | 0.6 | 75.2 | **0.008** |

**Notes:** PAF is rounded to the nearest hundredth (except for Ovary). All cancer sites, other than trachea and ovary, are rounded to the nearest whole number in the table. Totals for attributable (column 3) and non-attributable (column 4) may not add up to average annual cases (column 2) due to rounding. Sorted in descending order by count of attributable cases. PAFs are reported as the proportions of the cancer site that is attributable to the risk factor of focus. Some sites have histological subgroupings (*), these were calculated by taking the number of cancers in the subgroup that are attributable to the risk factor and then dividing by the total number of cancers in the site. Thus PAFs are reported as the proportions of the cancer site that is attributable to the risk factor of focus, not the histological subgroup.

**Ovary *** = mucinous type only

**Data source:** Maine Cancer Registry, based on November 2024 NPCR-CSS data submission.
Attributable and non-attributable cases calculated using site-specific PAF.

# Appendix: Special Topic PAF (Cont.)

**Table 3: Alcohol Consumption Attributable Cancers (2018-2022)**

| Yearly average number of cases between 2018-2022 for each cancer site and estimated number attributable to alcohol consumption | | | | |
|---|---|---|---|---|
| **Cancer** | **Average Annual Cases** | **Attributable to Alcohol** | **Not Attributable** | **PAF** |
| Breast (Female) | 1,347 | 221 | 1,126 | **0.16** |
| Colon and Rectum | 677 | 87 | 590 | **0.13** |
| Oral Cavity | 189 | 79 | 110 | **0.42** |
| Pharynx | 106 | 43 | 63 | **0.40** |
| Esophagus * | 153 | 29 | 124 | **0.19** |
| Liver * | 117 | 22 | 95 | **0.19** |
| Larynx | 73 | 19 | 54 | **0.26** |

**Table 4: HPV Infection Attributable Cancers (2018-2022)**

| Yearly average number of cases between 2018-2022 for each cancer site and estimated number attributable to HPV Infection | | | | |
|---|---|---|---|---|
| **Cancer** | **Average Annual Cases** | **Attributable to HPV Infection** | **Not Attributable** | **PAF** |
| Oropharynx, tonsils, base | 144 | 49 | 95 | **0.34** |
| Cervix Uteri | 44 | 44 | 0 | **1.00** |
| Anus | 46 | 43 | 3 | **0.94** |
| Vulva | 44 | 17 | 27 | **0.39** |
| Penis | 13 | 8 | 5 | **0.61** |
| Oral Cavity * | 175 | 5 | 170 | **0.03** |
| Vagina | 6 | 4 | 2 | **0.64** |

**Notes:** PAF is rounded to the nearest hundredth. All cancer sites are rounded to the nearest whole number in the table. Totals for attributable (column 3) and non-attributable (column 4) may not add up to average annual cases (column 2) due to rounding. Sorted in descending order by count of attributable cases. PAFs are reported as the proportions of the cancer site that is attributable to the risk factor of focus. Some sites have histological subgroupings (*), these were calculated by taking the number of cancers in the subgroup that are attributable to the risk factor and then dividing by the total number of cancers in the site. Thus PAFs are reported as the proportions of the cancer site that is attributable to the risk factor of focus, not the histological subgroup.

**Esophagus *** = squamous cell carcinoma only
**Liver *** = hepatocellular carcinoma only
**Oral Cavity *** = Oral cavity excluding lip and base of tongue

**Data source:** Maine Cancer Registry, based on November 2024 NPCR-CSS data submission.
Attributable and non-attributable cases calculated using site-specific PAF.

# Appendix B: Special Topic PAF (Cont.)

**Table 5: Excess Body Weight Attributable Cancers (2018-2022)**

| Yearly average number of cases between 2018-2022 for each cancer site and estimated number attributable to excess body weight. | | | | |
|---|---|---|---|---|
| **Cancer** | **Average Annual Cases** | **Attributable to Excess Body Weight** | **Not Attributable** | **PAF** |
| Corpus Uteri | 321 | 170 | 150 | **0.53** |
| Breast * | 1,164 | 133 | 1,031 | **0.11** |
| Kidney and Renal Pelvis | 354 | 120 | 235 | **0.34** |
| Pancreas | 304 | 55 | 250 | **0.18** |
| Esophagus * | 153 | 54 | 98 | **0.35** |
| Liver | 117 | 41 | 76 | **0.35** |
| Colon and Rectum | 677 | 36 | 641 | **0.05** |
| Thyroid | 209 | 24 | 184 | **0.12** |
| Stomach * | 124 | 17 | 107 | **0.14** |
| Myeloma | 116 | 14 | 102 | **0.12** |
| Gallbladder | 17 | 6 | 11 | **0.37** |
| Ovary | 76 | 3 | 73 | **0.04** |

**Notes:** PAF is rounded to the nearest hundredth. All other values are rounded to the nearest whole number. Totals for attributable (column 3) and non-attributable (column 4) may not add up to average annual cases (column 2) due to rounding. Sorted in descending order by count of attributable cases. PAFs are reported as the proportions of the cancer site that is attributable to the risk factor of focus. Some sites have histological subgroupings (*), these were calculated by taking the number of cancers in the subgroup that are attributable to the risk factor and then dividing by the total number of cancers in the site. Thus PAFs are reported as the proportions of the cancer site that is attributable to the risk factor of focus, not the histological subgroup.

**Esophagus *** = adenocarcinoma only
**Stomach *** = cardia only
**Female breast *** = postmenopausal cancers only (age 50+)

**Data source:** Maine Cancer Registry, based on November 2024 NPCR-CSS data submission.
Attributable and non-attributable cases calculated using site-specific PAF.

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