**Supplementary Table 1. Frequency and Incidence Rate Ratiosa by Sex and Race in SEER Site Recode ICD-O-3/WHO 2008 Sites, 2001-2016, National Program of Cancer Registries and Surveillance, Epidemiology, and End Results SEER\*Stat Database: NPCR and SEER Incidence – U.S. Cancer Statistics Public Use Research Database, Nov 2018 Submission (2001-2016).**

|  | **White** | | | | **Black** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value |
| **All Sites** | 5,525,715 | 6,630,370 | 0.955 (0.954-0.956) | <0.001 | 603,153 | 841,572 | 0.943 (0.939-0.946) | <0.001 |
| **Oral Cavity and Pharynx** | 280,102 | 112,551 | 2.763 (2.743-2.782) | <0.001 | 30,166 | 13,144 | 2.822 (2.763-2.882) | <0.001 |
| Lip | 18,731 | 6,477 | 3.538 (3.437-3.641) | <0.001 | 221 | 158 | 1.859 (1.498-2.310) | <0.001 |
| Tongue | 86,461 | 33,406 | 2.818 (2.782-2.854) | <0.001 | 6,588 | 2,669 | 3.026 (2.890-3.169) | <0.001 |
| Salivary Gland | 23,773 | 16,565 | 1.638 (1.605-1.672) | <0.001 | 2,284 | 2,527 | 1.148 (1.082-1.218) | <0.001 |
| Floor of Mouth | 15,050 | 6,428 | 2.603 (2.527-2.682) | <0.001 | 2,090 | 750 | 3.404 (3.125-3.712) | <0.001 |
| Gum and Other Mouth | 27,735 | 22,508 | 1.448 (1.423-1.475) | <0.001 | 3,641 | 2,740 | 1.658 (1.575-1.746) | <0.001 |
| Nasopharynx | 9,995 | 4,184 | 2.559 (2.467-2.655) | <0.001 | 2,455 | 1,038 | 2.804 (2.602-3.022) | <0.001 |
| Tonsil | 63,562 | 13,268 | 5.114 (5.018-5.213) | <0.001 | 5,961 | 1,533 | 4.695 (4.434-4.974) | <0.001 |
| Oropharynx | 12,460 | 3,723 | 3.702 (3.567-3.842) | <0.001 | 2,269 | 680 | 4.189 (3.836-4.578) | <0.001 |
| Hypopharynx | 16,558 | 4,142 | 4.510 (4.357-4.669) | <0.001 | 3,774 | 777 | 6.187 (5.717-6.702) | <0.001 |
| Other Oral Cavity and Pharynx | 5,777 | 1,850 | 3.519 (3.336-3.712) | <0.001 | 883 | 272 | 3.951 (3.435-4.557) | <0.001 |
| **Digestive System** | 1,475,595 | 1,202,876 | 1.464 (1.460-1.468) | <0.001 | 211,132 | 197,926 | 1.390 (1.381-1.399) | <0.001 |
| Esophagus | 135,451 | 32,886 | 4.923 (4.864-4.984) | <0.001 | 14,385 | 6,250 | 3.003 (2.913-3.097) | <0.001 |
| Stomach | 131,076 | 76,651 | 2.056 (2.038-2.075) | <0.001 | 24,459 | 18,952 | 1.760 (1.725-1.795) | <0.001 |
| Small Intestine | 36,222 | 32,263 | 1.295 (1.276-1.315) | <0.001 | 6,569 | 7,324 | 1.167 (1.127-1.208) | <0.001 |
| Colon and Rectum | 792,848 | 735,256 | 1.300 (1.296-1.304) | <0.001 | 105,331 | 114,585 | 1.219 (1.209-1.230) | <0.001 |
| *Colon excluding Rectum* | 532,239 | 548,613 | 1.193 (1.189-1.198) | <0.001 | 75,697 | 88,333 | 1.154 (1.142-1.166) | <0.001 |
| Cecum | 105,982 | 134,178 | 1.010 (1.002-1.018) | 0.02 | 15,226 | 20,710 | 0.998 (0.977-1.021) | 0.89 |
| Appendix | 15,528 | 18,433 | 0.893 (0.874-0.913) | <0.001 | 1,615 | 2,208 | 0.915 (0.855-0.978) | 0.009 |
| Ascending Colon | 93,944 | 114,044 | 1.056 (1.047-1.065) | <0.001 | 13,898 | 17,611 | 1.072 (1.047-1.097) | <0.001 |
| Hepatic Flexure | 25,965 | 26,488 | 1.254 (1.232-1.276) | <0.001 | 3,463 | 3,787 | 1.258 (1.198-1.320) | <0.001 |
| Transverse Colon | 44,521 | 48,698 | 1.150 (1.135-1.165) | <0.001 | 6,624 | 7,840 | 1.150 (1.111-1.190) | <0.001 |
| Splenic Flexure | 17,136 | 14,749 | 1.415 (1.384-1.447) | <0.001 | 3,399 | 3,322 | 1.387 (1.319-1.458) | <0.001 |
| Descending Colon | 31,917 | 26,462 | 1.433 (1.409-1.457) | <0.001 | 6,040 | 6,372 | 1.272 (1.226-1.320) | <0.001 |
| Sigmoid Colon | 167,494 | 136,033 | 1.436 (1.426-1.447) | <0.001 | 20,097 | 20,651 | 1.295 (1.269-1.322) | <0.001 |
| Large Intestine, NOS | 29,752 | 29,528 | 1.268 (1.247-1.289) | <0.001 | 5,335 | 5,832 | 1.243 (1.195-1.292) | <0.001 |
| *Rectum and Rectosigmoid Junction* | 260,609 | 186,643 | 1.602 (1.592-1.611) | <0.001 | 29,634 | 26,252 | 1.446 (1.421-1.471) | <0.001 |
| Rectosigmoid Junction | 67,522 | 51,745 | 1.507 (1.490-1.525) | <0.001 | 7,082 | 6,576 | 1.383 (1.335-1.432) | <0.001 |
| Rectum | 193,087 | 134,898 | 1.637 (1.626-1.649) | <0.001 | 22,552 | 19,676 | 1.467 (1.438-1.497) | <0.001 |
| Anus, Anal Canal and Anorectum | 22,016 | 39,981 | 0.628 (0.617-0.638) | <0.001 | 3,866 | 4,163 | 1.107 (1.058-1.158) | <0.001 |
| Liver and Intrahepatic Bile Duct | 144,461 | 55,297 | 2.943 (2.913-2.972) | <0.001 | 28,801 | 10,351 | 3.330 (3.254-3.408) | <0.001 |
| Liver | 132,900 | 43,894 | 3.398 (3.361-3.435) | <0.001 | 27,590 | 9,009 | 3.662 (3.574-3.753) | <0.001 |
| Intrahepatic Bile Duct | 11,561 | 11,403 | 1.188 (1.158-1.220) | <0.001 | 1,211 | 1,342 | 1.179 (1.087-1.279) | <0.001 |
| Gallbladder | 10,789 | 25,308 | 0.538 (0.526-0.551) | <0.001 | 1,758 | 4,509 | 0.565 (0.533-0.599) | <0.001 |
| Other Biliary | 25,863 | 21,727 | 1.466 (1.440-1.493) | <0.001 | 2,497 | 2,762 | 1.228 (1.161-1.300) | <0.001 |
| Pancreas | 162,802 | 152,470 | 1.290 (1.280-1.299) | <0.001 | 21,628 | 25,520 | 1.101 (1.080-1.122) | <0.001 |
| Retroperitoneum | 6,359 | 6,396 | 1.093 (1.055-1.133) | <0.001 | 645 | 1,108 | 0.702 (0.633-0.777) | <0.001 |
| Peritoneum, Omentum and Mesentery | 1,411 | 18,278 | 0.092 (0.087-0.098) | <0.001 | 191 | 1,285 | 0.183 (0.154-0.215) | <0.001 |
| Other Digestive Organs | 6,297 | 6,363 | 1.202 (1.160-1.246) | <0.001 | 1,002 | 1,117 | 1.218 (1.113-1.332) | <0.001 |
| **Breast** | 19,511 | 2,391,325 | 0.009 (0.009-0.009) | <0.001 | 3,136 | 318,421 | 0.014 (0.013-0.014) | <0.001 |
| **Respiratory System** | 1,111,210 | 907,621 | 1.456 (1.452-1.460) | <0.001 | 146,971 | 105,145 | 1.878 (1.862-1.893) | <0.001 |
| Nose, Nasal Cavity and Middle Ear | 14,197 | 9,375 | 1.733 (1.687-1.780) | <0.001 | 1,674 | 1,194 | 1.723 (1.595-1.862) | <0.001 |
| Larynx | 104,966 | 26,542 | 4.443 (4.383-4.504) | <0.001 | 18,067 | 4,648 | 5.123 (4.957-5.296) | <0.001 |
| Lung and Bronchus | 987,500 | 869,585 | 1.357 (1.353-1.361) | <0.001 | 126,737 | 98,980 | 1.735 (1.720-1.750) | <0.001 |
| Pleura | 521 | 332 | 1.912 (1.658-2.206) | <0.001 | 43 | 39 | 1.477 (0.918-2.370) | 0.11 |
| Trachea, Mediastinum and Other Respiratory Organs | 4,026 | 1,787 | 2.449 (2.313-2.593) | <0.001 | 450 | 284 | 1.835 (1.572-2.145) | <0.001 |
| **Bones and Joints** | 18,278 | 14,089 | 1.332 (1.303-1.363) | <0.001 | 2,247 | 2,060 | 1.175 (1.105-1.250) | <0.001 |
| **Soft Tissue including Heart** | 59,390 | 46,676 | 1.401 (1.384-1.418) | <0.001 | 7,706 | 8,297 | 1.117 (1.082-1.154) | <0.001 |
| **Skin excluding Basal and Squamous** | 454,634 | 351,943 | 1.396 (1.389-1.402) | <0.001 | 4,086 | 4,902 | 1.059 (1.014-1.106) | 0.01 |
| Melanoma of the Skin | 423,164 | 330,049 | 1.374 (1.368-1.380) | <0.001 | 1,793 | 2,355 | 1.026 (0.961-1.094) | 0.45 |
| Other Non-Epithelial Skin | 31,470 | 21,894 | 1.747 (1.716-1.778) | <0.001 | 2,293 | 2,547 | 1.091 (1.029-1.157) | 0.004 |
| **Urinary System** | 906,565 | 390,774 | 2.771 (2.761-2.782) | <0.001 | 68,512 | 44,993 | 2.005 (1.981-2.030) | <0.001 |
| Urinary Bladder | 563,304 | 181,112 | 3.907 (3.886-3.928) | <0.001 | 26,845 | 14,781 | 2.551 (2.499-2.605) | <0.001 |
| Kidney and Renal Pelvis | 330,122 | 201,205 | 1.844 (1.834-1.855) | <0.001 | 40,814 | 29,168 | 1.737 (1.710-1.764) | <0.001 |
| Ureter | 9,197 | 6,275 | 1.877 (1.817-1.939) | <0.001 | 333 | 327 | 1.449 (1.233-1.701) | <0.001 |
| Other Urinary Organs | 3,942 | 2,182 | 2.284 (2.165-2.409) | <0.001 | 520 | 717 | 1.032 (0.915-1.163) | 0.62 |
| **Eye and Orbit** | 13,504 | 10,928 | 1.361 (1.326-1.396) | <0.001 | 660 | 609 | 1.221 (1.087-1.372) | <0.001 |
| **Brain and Other Nervous System** | 140,715 | 111,615 | 1.361 (1.350-1.372) | <0.001 | 10,954 | 9,916 | 1.292 (1.256-1.329) | <0.001 |
| Brain | 133,364 | 103,571 | 1.395 (1.383-1.406) | <0.001 | 10,049 | 8,799 | 1.341 (1.302-1.381) | <0.001 |
| Cranial Nerves and Other Nervous System | 7,351 | 8,044 | 0.954 (0.924-0.986) | 0.004 | 905 | 1,117 | 0.909 (0.829-0.996) | 0.04 |
| **Endocrine System** | 119,002 | 347,471 | 0.343 (0.341-0.346) | <0.001 | 9,184 | 35,469 | 0.311 (0.304-0.319) | <0.001 |
| Thyroid | 106,278 | 336,431 | 0.315 (0.313-0.318) | <0.001 | 6,884 | 33,006 | 0.254 (0.248-0.261) | <0.001 |
| Other Endocrine including Thymus | 12,724 | 11,040 | 1.218 (1.187-1.250) | <0.001 | 2,300 | 2,463 | 1.076 (1.014-1.142) | 0.02 |
| **Lymphoma** | 416,214 | 354,529 | 1.360 (1.354-1.366) | <0.001 | 42,007 | 37,577 | 1.347 (1.328-1.367) | <0.001 |
| Hodgkin Lymphoma | 55,590 | 45,609 | 1.234 (1.219-1.250) | <0.001 | 8,318 | 7,080 | 1.329 (1.286-1.373) | <0.001 |
| Nodal | 54,209 | 44,371 | 1.236 (1.220-1.251) | <0.001 | 8,084 | 6,897 | 1.325 (1.282-1.369) | <0.001 |
| Extranodal | 1,381 | 1,238 | 1.175 (1.086-1.271) | <0.001 | 234 | 183 | 1.468 (1.199-1.800) | <0.001 |
| Non-Hodgkin Lymphoma | 360,624 | 308,920 | 1.382 (1.376-1.389) | <0.001 | 33,689 | 30,497 | 1.351 (1.330-1.373) | <0.001 |
| Nodal | 248,846 | 209,739 | 1.401 (1.392-1.409) | <0.001 | 22,381 | 18,799 | 1.449 (1.420-1.478) | <0.001 |
| Extranodal | 111,778 | 99,181 | 1.344 (1.332-1.356) | <0.001 | 11,308 | 11,698 | 1.193 (1.161-1.225) | <0.001 |
| **Myeloma** | 103,289 | 80,143 | 1.546 (1.531-1.560) | <0.001 | 23,220 | 25,249 | 1.224 (1.201-1.247) | <0.001 |
| **Leukemia** | 239,066 | 169,993 | 1.611 (1.600-1.621) | <0.001 | 21,419 | 18,625 | 1.454 (1.424-1.484) | <0.001 |
| Lymphocytic Leukemia | 129,751 | 84,887 | 1.733 (1.718-1.749) | <0.001 | 10,051 | 7,409 | 1.696 (1.643-1.750) | <0.001 |
| Acute Lymphocytic Leukemia | 32,100 | 24,180 | 1.313 (1.291-1.336) | <0.001 | 3,231 | 2,412 | 1.382 (1.309-1.459) | <0.001 |
| Chronic Lymphocytic Leukemia | 86,625 | 56,878 | 1.864 (1.844-1.884) | <0.001 | 6,251 | 4,719 | 1.779 (1.710-1.850) | <0.001 |
| Other Lymphocytic Leukemia | 11,026 | 3,829 | 3.265 (3.144-3.390) | <0.001 | 569 | 278 | 2.615 (2.252-3.043) | <0.001 |
| Myeloid and Monocytic Leukemia | 102,087 | 79,252 | 1.485 (1.471-1.499) | <0.001 | 10,252 | 10,156 | 1.289 (1.253-1.327) | <0.001 |
| Acute Myeloid Leukemia | 63,580 | 50,984 | 1.437 (1.420-1.454) | <0.001 | 6,054 | 6,397 | 1.221 (1.176-1.267) | <0.001 |
| Acute Monocytic Leukemia | 4,306 | 3,520 | 1.371 (1.310-1.435) | <0.001 | 320 | 327 | 1.283 (1.088-1.512) | 0.003 |
| Chronic Myeloid Leukemia | 31,436 | 22,619 | 1.604 (1.576-1.632) | <0.001 | 3,603 | 3,201 | 1.409 (1.341-1.481) | <0.001 |
| Other Myeloid/Monocytic Leukemia | 2,765 | 2,129 | 1.558 (1.471-1.651) | <0.001 | 275 | 231 | 1.534 (1.273-1.848) | <0.001 |
| Other Leukemia | 7,228 | 5,854 | 1.518 (1.465-1.572) | <0.001 | 1,116 | 1,060 | 1.335 (1.221-1.459) | <0.001 |
| Other Acute Leukemia | 3,463 | 2,673 | 1.591 (1.511-1.675) | <0.001 | 408 | 359 | 1.407 (1.209-1.637) | <0.001 |
| Aleukemic, Subleukemic and NOS | 3,765 | 3,181 | 1.455 (1.387-1.527) | <0.001 | 708 | 701 | 1.297 (1.161-1.447) | <0.001 |
| **Mesothelioma** | 25,077 | 7,614 | 4.081 (3.976-4.189) | <0.001 | 1,205 | 475 | 3.826 (3.428-4.276) | <0.001 |
| **Kaposi Sarcoma** | 9,606 | 1,298 | 10.098 (9.514-10.723) | <0.001 | 4,284 | 472 | 9.820 (8.918-10.834) | <0.001 |
| **Miscellaneous** | 133,957 | 128,924 | 1.306 (1.296-1.317) | <0.001 | 16,264 | 18,292 | 1.196 (1.170-1.223) | <0.001 |

|  | **AIAN** | | | | **API** | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value | | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value |
| **All Sites** | 35,264 | 44,247 | 0.939 (0.925-0.953) | <0.001 | | 182,398 | 255,008 | 0.924 (0.919-0.930) | <0.001 |
| **Oral Cavity and Pharynx** | 1,891 | 772 | 2.637 (2.411-2.887) | <0.001 | | 9,948 | 5,344 | 2.192 (2.118-2.268) | <0.001 |
| Lip | 84 | 32 | 3.039 (1.953-4.857) | <0.001 | | 91 | 74 | 1.237 (0.893-1.721) | 0.21 |
| Tongue | 471 | 193 | 2.616 (2.187-3.140) | <0.001 | | 2,028 | 1,455 | 1.656 (1.544-1.776) | <0.001 |
| Salivary Gland | 137 | 123 | 1.413 (1.073-1.857) | 0.01 | | 929 | 893 | 1.269 (1.152-1.396) | <0.001 |
| Floor of Mouth | 132 | 57 | 2.397 (1.714-3.397) | <0.001 | | 220 | 124 | 2.000 (1.588-2.530) | <0.001 |
| Gum and Other Mouth | 177 | 138 | 1.332 (1.041-1.707) | 0.02 | | 1,342 | 850 | 1.799 (1.646-1.968) | <0.001 |
| Nasopharynx | 176 | 81 | 2.141 (1.613-2.869) | <0.001 | | 3,705 | 1,534 | 2.850 (2.682-3.030) | <0.001 |
| Tonsil | 422 | 78 | 5.726 (4.449-7.465) | <0.001 | | 877 | 232 | 4.466 (3.849-5.199) | <0.001 |
| Oropharynx | 81 | 21 | 4.493 (2.687-7.871) | <0.001 | | 177 | 52 | 4.113 (2.981-5.765) | <0.001 |
| Hypopharynx | 161 | 35 | 5.371 (3.639-8.178) | <0.001 | | 480 | 97 | 6.589 (5.261-8.327) | <0.001 |
| Other Oral Cavity and Pharynx | 50 | -- | -- | -- | | 99 | 33 | 3.717 (2.458-5.759) | <0.001 |
| **Digestive System** | 11,794 | 9,534 | 1.383 (1.343-1.424) | <0.001 | | 74,341 | 58,010 | 1.568 (1.550-1.586) | <0.001 |
| Esophagus | 830 | 237 | 3.909 (3.352-4.577) | <0.001 | | 2,936 | 956 | 3.733 (3.462-4.027) | <0.001 |
| Stomach | 1,287 | 849 | 1.808 (1.645-1.988) | <0.001 | | 11,742 | 8,747 | 1.713 (1.665-1.763) | <0.001 |
| Small Intestine | 209 | 194 | 1.153 (0.931-1.427) | 0.20 | | 1,074 | 855 | 1.532 (1.395-1.682) | <0.001 |
| Colon and Rectum | 5,742 | 5,349 | 1.220 (1.171-1.270) | <0.001 | | 33,013 | 30,100 | 1.349 (1.328-1.371) | <0.001 |
| *Colon excluding Rectum* | 3,584 | 3,740 | 1.110 (1.056-1.167) | <0.001 | | 19,964 | 20,476 | 1.220 (1.196-1.245) | <0.001 |
| Cecum | 636 | 856 | 0.865 (0.772-0.968) | 0.01 | | 2,402 | 3,260 | 0.928 (0.878-0.980) | 0.008 |
| Appendix | 107 | 106 | 1.184 (0.876-1.597) | 0.28 | | 393 | 586 | 0.822 (0.719-0.940) | 0.004 |
| Ascending Colon | 523 | 637 | 0.966 (0.850-1.096) | 0.60 | | 3,015 | 3,418 | 1.112 (1.057-1.170) | <0.001 |
| Hepatic Flexure | 173 | 163 | 1.240 (0.977-1.570) | 0.08 | | 917 | 926 | 1.215 (1.104-1.336) | <0.001 |
| Transverse Colon | 279 | 323 | 0.999 (0.836-1.192) | >0.99 | | 1,580 | 1,586 | 1.234 (1.147-1.327) | <0.001 |
| Splenic Flexure | 103 | 116 | 0.956 (0.710-1.285) | 0.80 | | 690 | 607 | 1.456 (1.299-1.632) | <0.001 |
| Descending Colon | 174 | 179 | 1.177 (0.931-1.485) | 0.18 | | 1,651 | 1,488 | 1.405 (1.306-1.511) | <0.001 |
| Sigmoid Colon | 1,285 | 1,092 | 1.387 (1.270-1.514) | <0.001 | | 8,389 | 7,669 | 1.380 (1.336-1.425) | <0.001 |
| Large Intestine, NOS | 304 | 268 | 1.311 (1.093-1.573) | 0.003 | | 927 | 936 | 1.212 (1.102-1.333) | <0.001 |
| *Rectum and Rectosigmoid Junction* | 2,158 | 1,609 | 1.500 (1.399-1.609) | <0.001 | | 13,049 | 9,624 | 1.639 (1.595-1.684) | <0.001 |
| Rectosigmoid Junction | 497 | 423 | 1.362 (1.183-1.569) | <0.001 | | 3,369 | 2,734 | 1.525 (1.447-1.607) | <0.001 |
| Rectum | 1,661 | 1,186 | 1.551 (1.431-1.682) | <0.001 | | 9,680 | 6,890 | 1.685 (1.632-1.740) | <0.001 |
| Anus, Anal Canal and Anorectum | 159 | 236 | 0.721 (0.575-0.901) | 0.004 | | 348 | 545 | 0.774 (0.671-0.891) | <0.001 |
| Liver and Intrahepatic Bile Duct | 2,046 | 870 | 2.391 (2.196-2.605) | <0.001 | | 16,247 | 6,572 | 2.824 (2.742-2.909) | <0.001 |
| Liver | 1,942 | 773 | 2.534 (2.317-2.773) | <0.001 | | 15,338 | 5,754 | 3.030 (2.937-3.126) | <0.001 |
| Intrahepatic Bile Duct | 104 | 97 | 1.238 (0.910-1.681) | 0.18 | | 909 | 818 | 1.360 (1.233-1.501) | <0.001 |
| Gallbladder | 168 | 388 | 0.533 (0.434-0.649) | <0.001 | | 749 | 1,461 | 0.674 (0.614-0.739) | <0.001 |
| Other Biliary | 214 | 185 | 1.319 (1.063-1.637) | 0.01 | | 1,880 | 1,595 | 1.487 (1.387-1.594) | <0.001 |
| Pancreas | 1,012 | 982 | 1.170 (1.063-1.287) | 0.001 | | 5,677 | 5,848 | 1.205 (1.160-1.252) | <0.001 |
| Retroperitoneum | 55 | 60 | 1.001 (0.657-1.515) | >0.99 | | 294 | 375 | 0.931 (0.793-1.092) | 0.39 |
| Peritoneum, Omentum and Mesentery | -- | 113 | -- | -- | | 37 | 616 | 0.068 (0.047-0.097) | <0.001 |
| Other Digestive Organs | 60 | 71 | 0.882 (0.601-1.289) | 0.55 | | 344 | 340 | 1.317 (1.124-1.542) | <0.001 |
| **Breast** | 64 | 15,054 | 0.005 (0.004-0.007) | <0.001 | | 559 | 102,002 | 0.007 (0.007-0.008) | <0.001 |
| **Respiratory System** | 6,846 | 5,956 | 1.373 (1.322-1.425) | <0.001 | | 31,405 | 22,777 | 1.778 (1.747-1.810) | <0.001 |
| Nose, Nasal Cavity and Middle Ear | 89 | 76 | 1.199 (0.852-1.689) | 0.31 | | 644 | 428 | 1.804 (1.588-2.051) | <0.001 |
| Larynx | 681 | 183 | 4.530 (3.809-5.414) | <0.001 | | 1,794 | 280 | 8.199 (7.203-9.363) | <0.001 |
| Lung and Bronchus | 6,033 | 5,681 | 1.284 (1.235-1.336) | <0.001 | | 28,691 | 21,963 | 1.695 (1.665-1.726) | <0.001 |
| Pleura | -- | -- | -- | -- | | -- | -- | -- | -- |
| Trachea, Mediastinum and Other Respiratory Organs | 37 | -- | -- | -- | | 261 | 93 | 2.765 (2.163-3.564) | <0.001 |
| **Bones and Joints** | 172 | 159 | 1.053 (0.830-1.337) | 0.71 | | 842 | 648 | 1.379 (1.241-1.533) | <0.001 |
| **Soft Tissue including Heart** | 474 | 384 | 1.374 (1.182-1.597) | <0.001 | | 2,424 | 2,215 | 1.305 (1.229-1.385) | <0.001 |
| **Skin excluding Basal and Squamous** | 1,141 | 1,099 | 1.297 (1.183-1.421) | <0.001 | | 1,962 | 2,019 | 1.241 (1.163-1.325) | <0.001 |
| Melanoma of the Skin | 1,001 | 925 | 1.362 (1.234-1.503) | <0.001 | | 1,228 | 1,333 | 1.181 (1.088-1.280) | <0.001 |
| Other Non-Epithelial Skin | 140 | 174 | 0.986 (0.764-1.265) | 0.94 | | 734 | 686 | 1.356 (1.215-1.513) | <0.001 |
| **Urinary System** | 5,381 | 2,992 | 2.126 (2.025-2.231) | <0.001 | | 19,370 | 8,522 | 2.879 (2.804-2.956) | <0.001 |
| Urinary Bladder | 1,879 | 633 | 3.607 (3.275-3.978) | <0.001 | | 10,185 | 3,278 | 4.033 (3.873-4.200) | <0.001 |
| Kidney and Renal Pelvis | 3,459 | 2,313 | 1.670 (1.578-1.767) | <0.001 | | 8,743 | 4,860 | 2.145 (2.068-2.224) | <0.001 |
| Ureter | 25 | 28 | 1.034 (0.548-1.913) | 1.00 | | 322 | 284 | 1.464 (1.238-1.730) | <0.001 |
| Other Urinary Organs | 18 | 18 | 1.064 (0.502-2.237) | 0.96 | | 120 | 100 | 1.636 (1.235-2.168) | <0.001 |
| **Eye and Orbit** | 72 | 46 | 1.927 (1.249-2.983) | 0.003 | | 284 | 260 | 1.203 (1.009-1.435) | 0.04 |
| **Brain and Other Nervous System** | 849 | 671 | 1.318 (1.178-1.474) | <0.001 | | 4,301 | 3,556 | 1.377 (1.315-1.442) | <0.001 |
| Brain | 786 | 610 | 1.340 (1.193-1.507) | <0.001 | | 3,996 | 3,215 | 1.415 (1.349-1.485) | <0.001 |
| Cranial Nerves and Other Nervous System | 63 | 61 | 1.071 (0.707-1.612) | 0.81 | | 305 | 341 | 1.013 (0.861-1.191) | 0.91 |
| **Endocrine System** | 728 | 2,546 | 0.307 (0.281-0.336) | <0.001 | | 7,102 | 24,683 | 0.341 (0.332-0.351) | <0.001 |
| Thyroid | 625 | 2,459 | 0.278 (0.253-0.306) | <0.001 | | 6,096 | 23,839 | 0.303 (0.294-0.312) | <0.001 |
| Other Endocrine including Thymus | 103 | 87 | 1.138 (0.829-1.570) | 0.45 | | 1,006 | 844 | 1.342 (1.221-1.475) | <0.001 |
| **Lymphoma** | 2,346 | 2,097 | 1.212 (1.136-1.293) | <0.001 | | 14,273 | 12,343 | 1.408 (1.373-1.444) | <0.001 |
| Hodgkin Lymphoma | 353 | 253 | 1.428 (1.196-1.709) | <0.001 | | 1,707 | 1,348 | 1.407 (1.307-1.516) | <0.001 |
| Nodal | 344 | 249 | 1.397 (1.168-1.673) | <0.001 | | 1,656 | 1,317 | 1.399 (1.298-1.508) | <0.001 |
| Extranodal | -- | -- | -- | -- | | 51 | 31 | 1.784 (1.106-2.921) | 0.02 |
| Non-Hodgkin Lymphoma | 1,993 | 1,844 | 1.190 (1.110-1.275) | <0.001 | | 12,566 | 10,995 | 1.408 (1.371-1.446) | <0.001 |
| Nodal | 1,360 | 1,187 | 1.265 (1.161-1.378) | <0.001 | | 7,606 | 6,392 | 1.459 (1.409-1.510) | <0.001 |
| Extranodal | 633 | 657 | 1.054 (0.933-1.189) | 0.41 | | 4,960 | 4,603 | 1.337 (1.283-1.395) | <0.001 |
| **Myeloma** | 726 | 694 | 1.186 (1.059-1.329) | 0.003 | | 3,410 | 2,836 | 1.511 (1.434-1.591) | <0.001 |
| **Leukemia** | 1,548 | 1,212 | 1.426 (1.311-1.551) | <0.001 | | 7,816 | 5,987 | 1.550 (1.497-1.605) | <0.001 |
| Lymphocytic Leukemia | 781 | 520 | 1.688 (1.490-1.914) | <0.001 | | 3,126 | 2,224 | 1.585 (1.498-1.676) | <0.001 |
| Acute Lymphocytic Leukemia | 391 | 301 | 1.241 (1.057-1.459) | 0.008 | | 1,794 | 1,442 | 1.273 (1.186-1.367) | <0.001 |
| Chronic Lymphocytic Leukemia | 353 | 200 | 2.097 (1.735-2.539) | <0.001 | | 1,116 | 700 | 2.016 (1.827-2.225) | <0.001 |
| Other Lymphocytic Leukemia | 37 | 19 | 1.812 (0.996-3.435) | 0.05 | | 216 | 82 | 3.034 (2.328-3.989) | <0.001 |
| Myeloid and Monocytic Leukemia | 693 | 632 | 1.237 (1.097-1.395) | <0.001 | | 4,393 | 3,533 | 1.526 (1.457-1.598) | <0.001 |
| Acute Myeloid Leukemia | 414 | 378 | 1.266 (1.082-1.480) | 0.003 | | 2,843 | 2,515 | 1.410 (1.333-1.491) | <0.001 |
| Acute Monocytic Leukemia | 38 | 35 | 1.294 (0.753-2.207) | 0.38 | | 150 | 140 | 1.310 (1.024-1.674) | 0.03 |
| Chronic Myeloid Leukemia | 227 | 204 | 1.180 (0.956-1.456) | 0.13 | | 1,322 | 811 | 1.928 (1.760-2.113) | <0.001 |
| Other Myeloid/Monocytic Leukemia | -- | -- | -- | -- | | 78 | 67 | 1.524 (1.072-2.166) | 0.02 |
| Other Leukemia | 74 | 60 | 1.297 (0.883-1.911) | 0.19 | | 297 | 230 | 1.590 (1.325-1.909) | <0.001 |
| Other Acute Leukemia | 31 | 23 | 1.349 (0.718-2.567) | 0.39 | | 139 | 109 | 1.515 (1.16-1.982) | 0.002 |
| Aleukemic, Subleukemic and NOS | 43 | 37 | 1.267 (0.770-2.089) | 0.38 | | 158 | 121 | 1.657 (1.287-2.135) | <0.001 |
| **Mesothelioma** | 100 | 49 | 2.715 (1.870-3.991) | <0.001 | | 352 | 137 | 3.581 (2.916-4.418) | <0.001 |
| **Kaposi Sarcoma** | 97 | -- | -- | -- | | 337 | 29 | 10.973 (7.488-16.776) | <0.001 |
| **Miscellaneous** | 1,035 | 972 | 1.184 (1.076-1.304) | <0.001 | | 3,672 | 3,640 | 1.286 (1.226-1.348) | <0.001 |

a Rates are per 100,000 and age-adjusted to the 2000 US standard population.

-- Counts are not presented when fewer than 16 cases were reported for the specific site.

Abbreviations: SEER, Surveillance, Epidemiology, and End Results program; ICD-O-3/WHO 2008, International Classification of Diseases for Oncology, 3rd Edition, 2000. World Health Organization, Geneva, Switzerland; CI, confidence interval; NOS, not otherwise specified; AIAN, American Indian Alaskan Native; API, Asian Pacific Islander.

**Supplementary Table 2. Frequency and Incidence Rate Ratiosa by Sex and Age Groups in SEER Site Recode ICD-O-3/WHO 2008 Sites, 2001-2016, National Program of Cancer Registries and Surveillance, Epidemiology, and End Results SEER\*Stat Database: NPCR and SEER Incidence – U.S. Cancer Statistics Public Use Research Database, Nov 2018 Submission (2001-2016).**

|  | **0-14 Years** | | | | **15-39 Years** | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value |
| **All Sites** | 78,225 | 66,604 | 1.125 (1.113-1.136) | <0.001 | 321,649 | 547,526 | 0.811 (0.808-0.815) | <0.001 |
| **Oral Cavity and Pharynx** | 689 | 726 | 0.907 (0.816-1.008) | 0.07 | 11,859 | 9,269 | 1.292 (1.257-1.327) | <0.001 |
| Lip | -- | -- | -- | -- | 720 | 239 | 3.051 (2.631-3.548) | <0.001 |
| Tongue | 37 | 32 | 1.107 (0.671-1.836) | 0.76 | 3,337 | 2,407 | 1.391 (1.319-1.466) | <0.001 |
| Salivary Gland | 214 | 322 | 0.635 (0.532-0.757) | <0.001 | 2,360 | 3,334 | 0.704 (0.668-0.743) | <0.001 |
| Floor of Mouth | -- | -- | -- | -- | 216 | 132 | 1.666 (1.336-2.086) | <0.001 |
| Gum and Other Mouth | 107 | 145 | 0.706 (0.544-0.912) | 0.01 | 1,326 | 1,409 | 0.949 (0.879-1.024) | 0.18 |
| Nasopharynx | 273 | 188 | 1.387 (1.147-1.679) | <0.001 | 2,174 | 1,057 | 2.034 (1.888-2.192) | <0.001 |
| Tonsil | -- | -- | -- | -- | 1,322 | 494 | 2.735 (2.465-3.040) | <0.001 |
| Oropharynx | -- | -- | -- | -- | 186 | 69 | 2.751 (2.077-3.682) | <0.001 |
| Hypopharynx | -- | -- | -- | -- | 113 | 70 | 1.588 (1.168-2.171) | 0.003 |
| Other Oral Cavity and Pharynx | 22 | 17 | 1.241 (0.629-2.490) | 0.61 | 105 | 58 | 1.824 (1.311-2.561) | <0.001 |
| **Digestive System** | 3,026 | 2,590 | 1.116 (1.059-1.177) | <0.001 | 47,359 | 43,510 | 1.087 (1.073-1.101) | <0.001 |
| Esophagus | -- | -- | -- | -- | 1,748 | 415 | 4.264 (3.829-4.759) | <0.001 |
| Stomach | 33 | 52 | 0.604 (0.378-0.953) | 0.03 | 5,230 | 4,881 | 1.072 (1.031-1.115) | <0.001 |
| Small Intestine | 27 | 20 | 1.288 (0.696-2.422) | 0.48 | 1,960 | 1,855 | 1.058 (0.992-1.128) | 0.09 |
| Colon and Rectum | 266 | 337 | 0.755 (0.640-0.889) | <0.001 | 28,741 | 27,862 | 1.028 (1.011-1.045) | 0.001 |
| *Colon excluding Rectum* | 251 | 326 | 0.736 (0.622-0.871) | <0.001 | 17,868 | 18,279 | 0.973 (0.953-0.993) | 0.01 |
| Cecum | -- | -- | -- | -- | 2,387 | 1,963 | 1.213 (1.142-1.289) | <0.001 |
| Appendix | 196 | 287 | 0.653 (0.542-0.786) | <0.001 | 3,057 | 4,173 | 0.722 (0.689-0.757) | <0.001 |
| Ascending Colon | -- | -- | -- | -- | 2,145 | 1,650 | 1.285 (1.205-1.372) | <0.001 |
| Hepatic Flexure | -- | -- | -- | -- | 744 | 507 | 1.454 (1.297-1.632) | <0.001 |
| Transverse Colon | -- | -- | -- | -- | 1,451 | 1,258 | 1.152 (1.067-1.244) | <0.001 |
| Splenic Flexure | -- | -- | -- | -- | 680 | 574 | 1.171 (1.046-1.312) | 0.006 |
| Descending Colon | -- | -- | -- | -- | 1,229 | 1,331 | 0.916 (0.847-0.991) | 0.03 |
| Sigmoid Colon | -- | -- | -- | -- | 5,050 | 5,788 | 0.869 (0.836-0.903) | <0.001 |
| Large Intestine, NOS | -- | -- | -- | -- | 1,125 | 1,035 | 1.076 (0.987-1.172) | 0.10 |
| *Rectum and Rectosigmoid Junction* | -- | -- | -- | -- | 10,873 | 9,583 | 1.133 (1.102-1.164) | <0.001 |
| Rectosigmoid Junction | -- | -- | -- | -- | 2,436 | 2,246 | 1.081 (1.020-1.145) | 0.009 |
| Rectum | -- | -- | -- | -- | 8,437 | 7,337 | 1.149 (1.113-1.185) | <0.001 |
| Anus, Anal Canal and Anorectum | -- | -- | -- | -- | 1,580 | 1,168 | 1.340 (1.242-1.447) | <0.001 |
| Liver and Intrahepatic Bile Duct | 1,740 | 1,179 | 1.410 (1.309-1.520) | <0.001 | 3,281 | 2,015 | 1.634 (1.545-1.728) | <0.001 |
| Liver | 1,736 | 1,172 | 1.416 (1.314-1.526) | <0.001 | 2,907 | 1,622 | 1.805 (1.697-1.919) | <0.001 |
| Intrahepatic Bile Duct | -- | -- | -- | -- | 374 | 393 | 0.951 (0.823-1.099) | 0.51 |
| Gallbladder | -- | -- | -- | -- | 206 | 410 | 0.492 (0.414-0.583) | <0.001 |
| Other Biliary | 21 | -- | -- | -- | 572 | 450 | 1.277 (1.127-1.449) | <0.001 |
| Pancreas | 66 | 110 | 0.574 (0.417-0.786) | <0.001 | 2,891 | 3,111 | 0.944 (0.897-0.993) | 0.03 |
| Retroperitoneum | 789 | 805 | 0.937 (0.848-1.035) | 0.20 | 730 | 645 | 1.090 (0.979-1.214) | 0.12 |
| Peritoneum, Omentum and Mesentery | 68 | 46 | 1.416 (0.960-2.106) | 0.08 | 188 | 482 | 0.367 (0.308-0.436) | <0.001 |
| Other Digestive Organs | -- | 22 | -- | -- | 232 | 216 | 1.073 (0.887-1.298) | 0.49 |
| **Breast** | -- | 49 | -- | -- | 562 | 153,850 | 0.004 (0.003-0.004) | <.0001 |
| **Respiratory System** | 1,058 | 959 | 1.055 (0.966-1.152) | 0.24 | 12,257 | 10,200 | 1.180 (1.149-1.212) | <0.001 |
| Nose, Nasal Cavity and Middle Ear | 212 | 181 | 1.120 (0.914-1.373) | 0.29 | 1,307 | 938 | 1.377 (1.264-1.499) | <0.001 |
| Larynx | -- | -- | -- | -- | 1,244 | 723 | 1.757 (1.601-1.929) | <0.001 |
| Lung and Bronchus | 221 | 204 | 1.033 (0.850-1.256) | 0.77 | 7,804 | 8,264 | 0.939 (0.911-0.969) | <0.001 |
| Pleura | 20 | 23 | 0.832 (0.434-1.586) | 0.66 | 51 | 26 | 1.936 (1.184-3.239) | 0.007 |
| Trachea, Mediastinum and Other Respiratory Organs | 593 | 545 | 1.041 (0.925-1.172) | 0.52 | 1,851 | 249 | 7.051 (6.171-8.085) | <0.001 |
| **Bones and Joints** | 3,546 | 3,222 | 1.052 (1.002-1.103) | 0.04 | 8,132 | 5,542 | 1.417 (1.369-1.466) | <0.001 |
| **Soft Tissue including Heart** | 4,886 | 4,784 | 0.977 (0.939-1.017) | 0.27 | 12,943 | 10,767 | 1.181 (1.151-1.212) | <0.001 |
| **Skin excluding Basal and Squamous** | 1,260 | 1,260 | 0.955 (0.883-1.034) | 0.26 | 42,199 | 71,201 | 0.595 (0.588-0.603) | <0.001 |
| Melanoma of the Skin | 922 | 966 | 0.912 (0.832-0.999) | 0.05 | 38,754 | 67,305 | 0.579 (0.572-0.586) | <0.001 |
| Other Non-Epithelial Skin | 338 | 294 | 1.098 (0.936-1.288) | 0.26 | 3,445 | 3,896 | 0.875 (0.836-0.917) | <0.001 |
| **Urinary System** | 4,269 | 4,613 | 0.884 (0.848-0.922) | <0.001 | 23,832 | 15,442 | 1.552 (1.520-1.584) | <0.001 |
| Urinary Bladder | 189 | 107 | 1.692 (1.328-2.165) | <0.001 | 6,969 | 2,958 | 2.354 (2.254-2.458) | <0.001 |
| Kidney and Renal Pelvis | 4,073 | 4,503 | 0.864 (0.828-0.902) | <0.001 | 16,745 | 12,413 | 1.360 (1.329-1.393) | <0.001 |
| Ureter | -- | -- | -- | -- | 51 | 29 | 1.767 (1.100-2.890) | 0.02 |
| Other Urinary Organs | -- | -- | -- | -- | 67 | 42 | 1.591 (1.066-2.399) | 0.02 |
| **Eye and Orbit** | 2,068 | 1,961 | 1.010 (0.949-1.074) | 0.78 | 1,011 | 890 | 1.138 (1.038-1.247) | 0.006 |
| **Brain and Other Nervous System** | 17,767 | 15,438 | 1.101 (1.078-1.125) | <0.001 | 26,810 | 20,447 | 1.290 (1.267-1.314) | <0.001 |
| Brain | 15,455 | 13,109 | 1.128 (1.102-1.155) | <0.001 | 24,943 | 18,687 | 1.314 (1.289-1.339) | <0.001 |
| Cranial Nerves and Other Nervous System | 2,312 | 2,329 | 0.950 (0.896-1.006) | 0.08 | 1,867 | 1,760 | 1.040 (0.974-1.111) | 0.25 |
| **Endocrine System** | 4,509 | 4,771 | 0.903 (0.867-0.941) | <0.001 | 28,374 | 127,515 | 0.221 (0.218-0.224) | <0.001 |
| Thyroid | 684 | 1,982 | 0.331 (0.303-0.361) | <0.001 | 25,635 | 125,521 | 0.204 (0.201-0.206) | <0.001 |
| Other Endocrine including Thymus | 3,825 | 2,789 | 1.313 (1.250-1.379) | <0.001 | 2,739 | 1,994 | 1.329 (1.253-1.409) | <0.001 |
| **Lymphoma** | 9,304 | 4,904 | 1.819 (1.757-1.883) | <0.001 | 67,452 | 53,498 | 1.247 (1.233-1.261) | <0.001 |
| Hodgkin Lymphoma | 3,345 | 2,109 | 1.522 (1.441-1.608) | <0.001 | 31,793 | 29,841 | 1.048 (1.031-1.065) | <0.001 |
| Hodgkin - Nodal | 3,287 | 2,077 | 1.519 (1.437-1.605) | <0.001 | 31,149 | 29,200 | 1.049 (1.032-1.066) | <0.001 |
| Hodgkin - Extranodal | 58 | 32 | 1.728 (1.104-2.750) | 0.02 | 644 | 641 | 0.990 (0.886-1.107) | 0.88 |
| Non-Hodgkin Lymphoma | 5,959 | 2,795 | 2.041 (1.951-2.136) | <0.001 | 35,659 | 23,657 | 1.488 (1.463-1.512) | <0.001 |
| NHL - Nodal | 3,960 | 1,804 | 2.101 (1.987-2.223) | <0.001 | 23,279 | 14,704 | 1.560 (1.528-1.593) | <0.001 |
| NHL - Extranodal | 1,999 | 991 | 1.933 (1.790-2.088) | <0.001 | 12,380 | 8,953 | 1.367 (1.330-1.405) | <0.001 |
| **Myeloma** | -- | -- | -- | -- | 2,395 | 1,600 | 1.491 (1.398-1.589) | <0.001 |
| **Leukemia** | 24,936 | 20,561 | 1.160 (1.139-1.182) | <0.001 | 27,436 | 19,605 | 1.367 (1.342-1.393) | <0.001 |
| Lymphocytic Leukemia | 20,144 | 16,391 | 1.176 (1.152-1.201) | <0.001 | 11,049 | 5,618 | 1.911 (1.851-1.974) | <0.001 |
| Acute Lymphocytic Leukemia | 20,038 | 16,295 | 1.177 (1.153-1.201) | <0.001 | 9,213 | 4,792 | 1.852 (1.788-1.919) | <0.001 |
| Chronic Lymphocytic Leukemia | 25 | 24 | 1.001 (0.549-1.830) | >0.99 | 944 | 535 | 1.771 (1.591-1.973) | <0.001 |
| Other Lymphocytic Leukemia | 81 | 72 | 1.073 (0.772-1.496) | 0.72 | 892 | 291 | 3.082 (2.697-3.532) | <0.001 |
| Myeloid and Monocytic Leukemia | 4,278 | 3,766 | 1.086 (1.039-1.135) | <0.001 | 15,374 | 13,280 | 1.138 (1.111-1.164) | <0.001 |
| Acute Myeloid Leukemia | 3,176 | 2,879 | 1.055 (1.003-1.110) | 0.04 | 8,594 | 8,613 | 0.979 (0.950-1.009) | 0.17 |
| Acute Monocytic Leukemia | 347 | 351 | 0.945 (0.813-1.100) | 0.48 | 587 | 572 | 1.008 (0.896-1.133) | 0.92 |
| Chronic Myeloid Leukemia | 646 | 449 | 1.372 (1.214-1.551) | <0.001 | 5,803 | 3,807 | 1.496 (1.436-1.559) | <0.001 |
| Other Myeloid/Monocytic Leukemia | 109 | 87 | 1.204 (0.900-1.614) | 0.22 | 390 | 288 | 1.331 (1.140-1.557) | <0.001 |
| Other Leukemia | 514 | 404 | 1.216 (1.066-1.389) | 0.004 | 1,013 | 707 | 1.387 (1.258-1.529) | <0.001 |
| Other Acute Leukemia | 365 | 292 | 1.195 (1.022-1.399) | 0.03 | 488 | 319 | 1.478 (1.281-1.709) | <0.001 |
| Aleukemic, Subleukemic and NOS | 149 | 112 | 1.272 (0.989-1.640) | 0.06 | 525 | 388 | 1.313 (1.149-1.502) | <0.001 |
| **Mesothelioma** | -- | -- | -- | -- | 299 | 374 | 0.801 (0.685-0.935) | 0.005 |
| **Kaposi Sarcoma** | -- | -- | -- | -- | 5,617 | 242 | 22.935 (20.156-26.206) | <0.001 |
| **Miscellaneous** | 875 | 741 | 1.131 (1.024-1.249) | 0.02 | 3,674 | 3,574 | 1.017 (0.970-1.065) | 0.49 |

|  | **40-64 Years** | | | | | **65+ Years** | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value | | Male (n) | Female (n) | Male-to-Female IRR (95% CI) | p-value |
| **All Sites** | | 2,770,182 | 3,458,764 | 0.819 (0.817-0.82) | <.0001 | | 3,252,450 | 3,785,834 | 1.155 (1.154-1.157) | <.0001 |
| **Oral Cavity and Pharynx** | | 199691 | 61,636 | 3.367 (3.337-3.398) | <.0001 | | 113,333 | 61,881 | 2.404 (2.38-2.428) | <.0001 |
| Lip | | 8183 | 2,247 | 3.816 (3.64-4.003) | <.0001 | | 10786 | 4462 | 3.385 (3.268-3.508) | <.0001 |
| Tongue | | 61039 | 18,966 | 3.326 (3.271-3.381) | <.0001 | | 32,044 | 16,762 | 2.456 (2.41-2.503) | <.0001 |
| Salivary Gland | | 10978 | 8,404 | 1.337 (1.299-1.377) | <.0001 | | 13,898 | 8,352 | 2.315 (2.252-2.379) | <.0001 |
| Floor of Mouth | | 11500 | 3,710 | 3.254 (3.135-3.379) | <.0001 | | 5926 | 3595 | 2.101 (2.015-2.191) | <.0001 |
| Gum and Other Mouth | | 17116 | 9,174 | 1.946 (1.897-1.997) | <.0001 | | 14,857 | 15,914 | 1.271 (1.243-1.300) | <.0001 |
| Nasopharynx | | 10243 | 3,610 | 2.949 (2.837-3.065) | <.0001 | | 3,838 | 2,068 | 2.364 (2.239-2.496) | <.0001 |
| Tonsil | | 54644 | 9,495 | 6.054 (5.922-6.19) | <.0001 | | 15,405 | 5219 | 3.606 (3.493-3.722) | <.0001 |
| Oropharynx | | 9930 | 2,424 | 4.323 (4.133-4.523) | <.0001 | | 4951 | 2004 | 3.11 (2.951-3.278) | <.0001 |
| Hypopharynx | | 12009 | 2,627 | 4.784 (4.584-4.994) | <.0001 | | 8944 | 2374 | 4.836 (4.621-5.064) | <.0001 |
| Other Oral Cavity and Pharynx | | 4049 | 979 | 4.372 (4.073-4.696) | <.0001 | | 2684 | 1131 | 3.065 (2.857-3.29) | <.0001 |
| **Digestive System** | | 819,472 | 532,570 | 1.603 (1.597-1.609) | <.0001 | | 918,681 | 901,940 | 1.389 (1.385-1.394) | <.0001 |
| Esophagus | | 72177 | 13,968 | 5.455 (5.356-5.556) | <.0001 | | 80,407 | 26190 | 4.118 (4.06-4.176) | <.0001 |
| Stomach | | 70280 | 35,941 | 2.012 (1.986-2.038) | <.0001 | | 94,617 | 65,504 | 2 (1.98-2.02) | <.0001 |
| Small Intestine | | 22238 | 18,480 | 1.26 (1.235-1.285) | <.0001 | | 20,325 | 20,687 | 1.304 (1.279-1.33) | <.0001 |
| Colon and Rectum | | 418144 | 316,661 | 1.375 (1.369-1.381) | <.0001 | | 499,173 | 548,381 | 1.253 (1.249-1.258) | <.0001 |
| *Colon excluding Rectum* | | 255640 | 211,640 | 1.26 (1.253-1.268) | <.0001 | | 363,482 | 436,046 | 1.158 (1.153-1.163) | <.0001 |
| Cecum | | 44264 | 40,293 | 1.164 (1.149-1.18) | <.0001 | | 78,281 | 117,553 | 0.941 (0.933-0.95) | <.0001 |
| Appendix | | 9535 | 11,096 | 0.891 (0.867-0.916) | <.0001 | | 5,067 | 6,049 | 1.087 (1.047-1.129) | <.0001 |
| Ascending Colon | | 37619 | 33,367 | 1.195 (1.177-1.213) | <.0001 | | 72,419 | 101,498 | 1.003 (0.994-1.013) | 0.51 |
| Hepatic Flexure | | 10398 | 7,796 | 1.412 (1.371-1.455) | <.0001 | | 19590 | 23250 | 1.186 (1.164-1.209) | <.0001 |
| Transverse Colon | | 19672 | 16,092 | 1.283 (1.256-1.31) | <.0001 | | 32,254 | 41,475 | 1.089 (1.073-1.105) | <.0001 |
| Splenic Flexure | | 9004 | 6,733 | 1.393 (1.349-1.438) | <.0001 | | 11793 | 11604 | 1.406 (1.37-1.443) | <.0001 |
| Descending Colon | | 17581 | 13,807 | 1.311 (1.282-1.341) | <.0001 | | 21,398 | 19,653 | 1.484 (1.455-1.513) | <.0001 |
| Sigmoid Colon | | 92759 | 71,448 | 1.335 (1.322-1.348) | <.0001 | | 101,772 | 89,955 | 1.526 (1.513-1.54) | <.0001 |
| Large Intestine, NOS | | 14808 | 11,008 | 1.409 (1.375-1.445) | <.0001 | | 20,908 | 25,009 | 1.191 (1.169-1.213) | <.0001 |
| *Rectum and Rectosigmoid Junction* | | 162504 | 105,021 | 1.602 (1.59-1.615) | <.0001 | | 135,691 | 112,335 | 1.62 (1.607-1.633) | <.0001 |
| Rectosigmoid Junction | | 39480 | 26,989 | 1.515 (1.491-1.539) | <.0001 | | 37,309 | 32,753 | 1.526 (1.503-1.549) | <.0001 |
| Rectum | | 123024 | 78,032 | 1.632 (1.617-1.647) | <.0001 | | 98,382 | 79,582 | 1.659 (1.644-1.675) | <.0001 |
| Anus, Anal Canal and Anorectum | | 16507 | 26,127 | 0.68 (0.666-0.693) | <.0001 | | 8,549 | 17,954 | 0.629 (0.613-0.645) | <.0001 |
| Liver and Intrahepatic Bile Duct | | 114,326 | 29,637 | 4.065 (4.013-4.118) | <.0001 | | 73,954 | 40,905 | 2.35 (2.322-2.379) | <.0001 |
| Liver | | 108,076 | 24,386 | 4.68 (4.615-4.746) | <.0001 | | 66,706 | 32,801 | 2.638 (2.603-2.673) | <.0001 |
| Intrahepatic Bile Duct | | 6250 | 5,251 | 1.25 (1.205-1.298) | <.0001 | | 7248 | 8104 | 1.184 (1.146-1.222) | <.0001 |
| Gallbladder | | 4380 | 10,038 | 0.46 (0.444-0.477) | <.0001 | | 8997 | 21456 | 0.582 (0.568-0.597) | <.0001 |
| Other Biliary | | 11593 | 8,291 | 1.473 (1.431-1.515) | <.0001 | | 18480 | 17692 | 1.437 (1.407-1.467) | <.0001 |
| Pancreas | | 82707 | 59,267 | 1.476 (1.46-1.492) | <.0001 | | 106,471 | 123,223 | 1.17 (1.16-1.18) | <.0001 |
| Retroperitoneum | | 3219 | 3,559 | 0.938 (0.893-0.984) | 0.009 | | 2690 | 2989 | 1.174 (1.113-1.237) | <.0001 |
| Peritoneum, Omentum and Mesentery | | 721 | 7,860 | 0.101 (0.093-0.109) | <.0001 | | 686 | 11989 | 0.076 (0.07-0.082) | <.0001 |
| Other Digestive Organs | | 3180 | 2,741 | 1.214 (1.152-1.279) | <.0001 | | 4332 | 4970 | 1.205 (1.156-1.256) | <.0001 |
| **Breast** | | 10339 | 1,553,879 | 0.007 (0.007-0.007) | <.0001 | | 12602 | 1,144,114 | 0.015 (0.015-0.015) | <.0001 |
| **Respiratory System** | | 507,665 | 371,326 | 1.437 (1.431-1.443) | <.0001 | | 780,921 | 662,659 | 1.549 (1.544-1.554) | <.0001 |
| Nose, Nasal Cavity and Middle Ear | | 8406 | 4,430 | 1.975 (1.903-2.049) | <.0001 | | 6,868 | 5664 | 1.632 (1.575-1.692) | <.0001 |
| Larynx | | 66863 | 17,054 | 4.078 (4.009-4.148) | <.0001 | | 58,292 | 14043 | 5.336 (5.238-5.437) | <.0001 |
| Lung and Bronchus | | 430716 | 349,033 | 1.295 (1.29-1.301) | <.0001 | | 714,531 | 642,008 | 1.465 (1.46-1.47) | <.0001 |
| Pleura | | 172 | 123 | 1.462 (1.15-1.865) | 0.002 | | 345 | 218 | 2.252 (1.892-2.684) | <.0001 |
| Trachea, Mediastinum and Other Respiratory Organs | | 1508 | 686 | 2.37 (2.161-2.601) | <.0001 | | 885 | 726 | 1.621 (1.466-1.792) | <.0001 |
| **Bones and Joints** | | 6,566 | 5,187 | 1.308 (1.261-1.358) | <.0001 | | 3,624 | 3,305 | 1.469 (1.4-1.541) | <.0001 |
| **Soft Tissue including Heart** | | 28,707 | 22,453 | 1.33 (1.307-1.354) | <.0001 | | 24,588 | 20,390 | 1.656 (1.626-1.688) | <.0001 |
| **Skin excluding Basal and Squamous** | | 221,869 | 177,965 | 1.255 (1.247-1.263) | <.0001 | | 215,701 | 127,528 | 2.304 (2.288-2.32) | <.0001 |
| Melanoma of the Skin | | 210494 | 169,655 | 1.248 (1.24-1.256) | <.0001 | | 194,901 | 113,675 | 2.319 (2.302-2.336) | <.0001 |
| Other Non-Epithelial Skin | | 11375 | 8,310 | 1.403 (1.364-1.444) | <.0001 | | 20,800 | 13,853 | 2.181 (2.134-2.229) | <.0001 |
| **Urinary System** | | 399,088 | 167,397 | 2.488 (2.474-2.502) | <.0001 | | 584,337 | 264,784 | 3.006 (2.992-3.02) | <.0001 |
| Urinary Bladder | | 189675 | 57,327 | 3.474 (3.441-3.507) | <.0001 | | 413,415 | 142,234 | 4.049 (4.025-4.074) | <.0001 |
| Kidney and Renal Pelvis | | 205,286 | 107,714 | 1.998 (1.983-2.013) | <.0001 | | 160,563 | 114,983 | 1.815 (1.801-1.828) | <.0001 |
| Ureter | | 2563 | 1,299 | 2.103 (1.965-2.25) | <.0001 | | 7314 | 5623 | 1.799 (1.737-1.864) | <.0001 |
| Other Urinary Organs | | 1564 | 1,057 | 1.541 (1.423-1.669) | <.0001 | | 3045 | 1944 | 2.205 (2.082-2.337) | <.0001 |
| **Eye and Orbit** | | 6,283 | 4,546 | 1.44 (1.385-1.497) | <.0001 | | 5,556 | 4712 | 1.578 (1.517-1.642) | <.0001 |
| **Brain and Other Nervous System** | | 67,045 | 46,984 | 1.499 (1.481-1.517) | <.0001 | | 46,781 | 44,102 | 1.391 (1.373-1.409) | <.0001 |
| Brain | | 63,959 | 43,537 | 1.545 (1.526-1.564) | <.0001 | | 45,244 | 41,887 | 1.416 (1.397-1.435) | <.0001 |
| Cranial Nerves and Other Nervous System | | 3,086 | 3,447 | 0.933 (0.888-0.981) | 0.006 | | 1,537 | 2,215 | 0.919 (0.86-0.982) | 0.012 |
| **Endocrine System** | | 74,935 | 220,060 | 0.345 (0.342-0.348) | <.0001 | | 30,363 | 65,300 | 0.586 (0.578-0.594) | <.0001 |
| Thyroid | | 68653 | 214,213 | 0.325 (0.322-0.327) | <.0001 | | 26,851 | 61,340 | 0.551 (0.543-0.559) | <.0001 |
| Other Endocrine including Thymus | | 6,282 | 5,847 | 1.118 (1.079-1.16) | <.0001 | | 3,512 | 3,960 | 1.136 (1.085-1.19) | <.0001 |
| **Lymphoma** | | 201,019 | 145,917 | 1.458 (1.448-1.468) | <.0001 | | 203,781 | 208,014 | 1.326 (1.318-1.334) | <.0001 |
| Hodgkin Lymphoma | | 22,608 | 14,417 | 1.625 (1.591-1.66) | <.0001 | | 9,187 | 8,701 | 1.383 (1.342-1.424) | <.0001 |
| Hodgkin - Nodal | | 21,951 | 13,963 | 1.629 (1.594-1.664) | <.0001 | | 8,849 | 8,343 | 1.387 (1.345-1.429) | <.0001 |
| Hodgkin - Extranodal | | 657 | 454 | 1.523 (1.347-1.723) | <.0001 | | 338 | 358 | 1.294 (1.111-1.508) | 0.001 |
| Non-Hodgkin Lymphoma | | 178,411 | 131,500 | 1.438 (1.428-1.448) | <.0001 | | 194,594 | 199,313 | 1.323 (1.315-1.332) | <.0001 |
| NHL - Nodal | | 124,346 | 88,608 | 1.488 (1.475-1.501) | <.0001 | | 131,714 | 133,656 | 1.331 (1.321-1.342) | <.0001 |
| NHL - Extranodal | | 54,065 | 42,892 | 1.335 (1.318-1.352) | <.0001 | | 62,880 | 65,657 | 1.307 (1.292-1.321) | <.0001 |
| **Myeloma** | | 56446 | 41,511 | 1.436 (1.418-1.455) | <.0001 | | 73,094 | 66,887 | 1.455 (1.44-1.471) | <.0001 |
| **Leukemia** | | 97,105 | 61,669 | 1.639 (1.622-1.656) | <.0001 | | 125,467 | 97,524 | 1.769 (1.754-1.784) | <.0001 |
| Lymphocytic Leukemia | | 51,409 | 26,913 | 2.014 (1.984-2.044) | <.0001 | | 64,676 | 48,456 | 1.819 (1.797-1.841) | <.0001 |
| Acute Lymphocytic Leukemia | | 5,921 | 4,742 | 1.314 (1.264-1.366) | <.0001 | | 3,005 | 3,007 | 1.311 (1.245-1.38) | <.0001 |
| Chronic Lymphocytic Leukemia | | 38776 | 20,371 | 2.016 (1.982-2.051) | <.0001 | | 57205 | 43314 | 1.804 (1.781-1.827) | <.0001 |
| Other Lymphocytic Leukemia | | 6712 | 1,800 | 3.844 (3.647-4.055) | <.0001 | | 4466 | 2135 | 2.857 (2.712-3.011) | <.0001 |
| Myeloid and Monocytic Leukemia | | 43,009 | 32,803 | 1.358 (1.338-1.377) | <.0001 | | 56,157 | 44,823 | 1.733 (1.711-1.755) | <.0001 |
| Acute Myeloid Leukemia | | 25,404 | 19,943 | 1.314 (1.289-1.339) | <.0001 | | 36,286 | 29,319 | 1.711 (1.685-1.738) | <.0001 |
| Acute Monocytic Leukemia | | 1769 | 1,435 | 1.263 (1.176-1.356) | <.0001 | | 2131 | 1693 | 1.74 (1.631-1.857) | <.0001 |
| Chronic Myeloid Leukemia | | 14819 | 10,731 | 1.44 (1.404-1.477) | <.0001 | | 16,072 | 12,396 | 1.789 (1.747-1.832) | <.0001 |
| Other Myeloid/Monocytic Leukemia | | 1017 | 694 | 1.521 (1.378-1.68) | <.0001 | | 1668 | 1415 | 1.675 (1.558-1.8) | <.0001 |
| Other Leukemia | | 2687 | 1,953 | 1.438 (1.355-1.526) | <.0001 | | 4,634 | 4245 | 1.578 (1.513-1.646) | <.0001 |
| Other Acute Leukemia | | 1093 | 702 | 1.623 (1.473-1.789) | <.0001 | | 2142 | 1886 | 1.665 (1.564-1.774) | <.0001 |
| Aleukemic, Subleukemic and NOS | | 1594 | 1,251 | 1.334 (1.237-1.439) | <.0001 | | 2492 | 2359 | 1.509 (1.425-1.598) | <.0001 |
| **Mesothelioma** | | 6504 | 2,573 | 2.558 (2.442-2.68) | <.0001 | | 20031 | 5361 | 5.16 (5.005-5.32) | <.0001 |
| **Kaposi Sarcoma** | | 6742 | 387 | 18.58 (16.747-20.669) | <.0001 | | 2,585 | 1263 | 3.048 (2.846-3.265) | <.0001 |

a Rates are per 100,000 and age-adjusted to the 2000 US standard population.

-- Counts are not presented when fewer than 16 cases were reported for the specific site.

Abbreviations: SEER, Surveillance, Epidemiology, and End Results program; ICD-O-3/WHO 2008, International Classification of Diseases for Oncology, 3rd Edition, 2000. World Health Organization, Geneva, Switzerland; CI, confidence interval; NOS, not otherwise specified.

**Supplementary Table 3. Age-Adjusted Hazard Ratios (HRs) by Sex (Males:Females) by Site with 95% Confidence Intervals, 2001-2016, SEER\*Stat Database: Incidence – SEER 18 Registries + Hurricane Katrina Impacted Louisiana Cases, Nov 2018 Submission (1973-2016 varying).**

|  |  |  |
| --- | --- | --- |
| **Cancer Site** | **Male-to-female HR (95% CI)** | **p-value** |
| **All Sites** | **1.568 (1.564-1.573)** | **<0.001** |
| **Oral Cavity and Pharynx** | **1.176 (1.154-1.199)** | **<0.001** |
| Lip | 1.311 (1.199-1.433) | <0.001 |
| Tongue | 1.044 (1.008-1.082) | 0.02 |
| Salivary Gland | 1.610 (1.515-1.712) | <0.001 |
| Floor of Mouth | 1.351 (1.254-1.456) | <0.001 |
| Gum and Other Mouth | 1.323 (1.264-1.385) | <0.001 |
| Nasopharynx | 1.182 (1.096-1.274) | <0.001 |
| Tonsil | 0.963 (0.909-1.021) | 0.21 |
| Oropharynx | 0.878 (0.800-0.964) | 0.01 |
| Hypopharynx | 1.056 (0.980-1.137) | 0.15 |
| Other Oral Cavity and Pharynx | 0.877 (0.770-1.000) | 0.05 |
| **Digestive System** | **1.201 (1.195-1.208)** | **<0.001** |
| Esophagus | 1.032 (1.006-1.058) | 0.01 |
| Stomach | 1.143 (1.124-1.163) | <0.001 |
| Small Intestine | 1.111 (1.067-1.157) | <0.001 |
| Colon and Rectum | 1.124 (1.115-1.134) | <0.001 |
| *Colon excluding Rectum* | 1.112 (1.102-1.123) | <0.001 |
| Cecum | 1.138 (1.116-1.161) | <0.001 |
| Appendix | 1.040 (0.970-1.114) | 0.27 |
| Ascending Colon | 1.147 (1.121-1.173) | <0.001 |
| Hepatic Flexure | 1.138 (1.091-1.187) | <0.001 |
| Transverse Colon | 1.094 (1.059-1.130) | <0.001 |
| Splenic Flexure | 1.118 (1.061-1.179) | <0.001 |
| Descending Colon | 1.037 (0.996-1.080) | 0.08 |
| Sigmoid Colon | 1.116 (1.096-1.137) | <0.001 |
| Large Intestine, NOS | 1.026 (0.988-1.066) | 0.18 |
| *Rectum and Rectosigmoid Junction* | 1.163 (1.144-1.181) | <0.001 |
| Rectosigmoid Junction | 1.136 (1.103-1.170) | <0.001 |
| Rectum | 1.174 (1.152-1.196) | <0.001 |
| Anus, Anal Canal and Anorectum | 1.488 (1.421-1.558) | <0.001 |
| Liver and Intrahepatic Bile Duct | 1.100 (1.080-1.120) | <0.001 |
| Liver | 1.129 (1.107-1.152) | <0.001 |
| Intrahepatic Bile Duct | 1.159 (1.102-1.218) | <0.001 |
| Gallbladder | 1.066 (1.021-1.113) | 0.004 |
| Other Biliary | 0.968 (0.935-1.003) | 0.08 |
| Pancreas | 1.074 (1.060-1.089) | <0.001 |
| Retroperitoneum | 1.216 (1.119-1.322) | <0.001 |
| Peritoneum, Omentum and Mesentery | 0.972 (0.853-1.107) | 0.66 |
| Other Digestive Organs | 1.149 (1.084-1.217) | <0.001 |
| **Cancer Site** | **Male-to-female HR (95% CI)** | **p-value** |
| **Breast** | **1.540 (1.474-1.610)** | **<.0001** |
| **Respiratory System** | **1.145 (1.138-1.152)** | **<0.001** |
| Nose, Nasal Cavity and Middle Ear | 1.110 (1.040-1.184) | 0.002 |
| Larynx | 0.926 (0.894-0.960) | <0.001 |
| Lung and Bronchus | 1.255 (1.248-1.263) | <0.001 |
| Pleura | 0.992 (0.744-1.322) | 0.95 |
| Trachea, Mediastinum and Other Respiratory Organs | 1.062 (0.916-1.230) | 0.43 |
| **Bones and Joints** | **1.254 (1.175-1.339)** | **<0.001** |
| **Soft Tissue including Heart** | **1.099 (1.063-1.136)** | **<0.001** |
| **Skin excluding Basal and Squamous** | **1.398 (1.373-1.423)** | **<0.001** |
| Melanoma of the Skin | 1.410 (1.383-1.437) | <0.001 |
| Other Non-Epithelial Skin | 1.387 (1.318-1.460) | <0.001 |
| **Urinary System** | **1.035 (1.023-1.046)** | **<0.001** |
| Urinary Bladder | 1.014 (0.998-1.029) | 0.09 |
| Kidney and Renal Pelvis | 1.170 (1.151-1.190) | <0.001 |
| Ureter | 1.029 (0.948-1.116) | 0.50 |
| Other Urinary Organs | 0.894 (0.796-1.004) | 0.06 |
| **Eye and Orbit** | **1.144 (1.052-1.243)** | **0.002** |
| **Brain and Other Nervous System** | **1.126 (1.106-1.147)** | **<0.001** |
| Brain | 1.078 (1.059-1.098) | <0.001 |
| Cranial Nerves Other Nervous System | 1.434 (1.285-1.600) | <0.001 |
| **Endocrine System** | **1.980 (1.915-2.047)** | **<0.001** |
| Thyroid | 1.774 (1.707-1.845) | <0.001 |
| Other Endocrine including Thymus | 1.012 (0.946-1.083) | 0.73 |
| **Lymphoma** | **1.271 (1.255-1.288)** | **<0.001** |
| Hodgkin Lymphoma | 1.300 (1.237-1.367) | <0.001 |
| Hodgkin - Nodal | 1.304 (1.239-1.372) | <0.001 |
| Hodgkin - Extranodal | 1.199 (0.915-1.572) | 0.19 |
| Non-Hodgkin Lymphoma | 1.264 (1.247-1.281) | <0.001 |
| NHL - Nodal | 1.261 (1.241-1.282) | <0.001 |
| NHL - Extranodal | 1.266 (1.235-1.297) | <0.001 |
| **Myeloma** | **1.085 (1.063-1.108)** | **<0.001** |
| **Leukemia** | **1.038 (1.021-1.054)** | **<0.001** |
| Lymphocytic Leukemia | 1.108 (1.080-1.136) | <0.001 |
| Acute Lymphocytic Leukemia | 1.144 (1.088-1.202) | <0.001 |
| Chronic Lymphocytic Leukemia | 1.389 (1.346-1.433) | <0.001 |
| Other Lymphocytic Leukemia | 0.812 (0.721-0.914) | <0.001 |
| Myeloid and Monocytic Leukemia | 1.052 (1.030-1.075) | <0.001 |
| Acute Myeloid Leukemia | 1.051 (1.025-1.077) | <0.001 |
| Acute Monocytic Leukemia | 1.052 (0.961-1.152) | 0.27 |
| Chronic Myeloid Leukemia | 1.231 (1.175-1.291) | <0.001 |
| Other Myeloid/Monocytic Leukemia | 1.074 (0.941-1.227) | 0.29 |
| Other Leukemia | 1.076 (1.000-1.158) | 0.05 |
| Other Acute Leukemia | 1.030 (0.929-1.143) | 0.57 |
| Aleukemic, Subleukemic and NOS | 1.084 (0.977-1.203) | 0.13 |
| **Cancer Site** | **Male-to-female HR (95% CI)** | **p-value** |
| **Mesothelioma** | **1.251 (1.186-1.319)** | **<0.001** |
| **Kaposi Sarcoma** | **0.728 (0.634-0.835)** | **<0.001** |

Abbreviations: SEER, Surveillance, Epidemiology, and End Results program; ICD-O-3/WHO 2008, International Classification of Diseases for Oncology, 3rd Edition, 2000. World Health Organization, Geneva, Switzerland; NOS, not otherwise specified; CI, confidence interval.

**Supplementary Table 4. Frequency and Incidence Rate Ratiosa by Sex and Brain Histology 2001-2016, National Program of Cancer Registries and Surveillance, Epidemiology, and End Results SEER\*Stat Database: NPCR and SEER Incidence – U.S. Cancer Statistics Public Use Research Database, Nov 2018 Submission (2001-2016).**

|  |  |  |
| --- | --- | --- |
| **Brain Histology** | **Male-to-female HR (95% CI)** | **p-value** |
| Pilocytic Astrocytoma | 1.042 (1.009-1.075) | 0.011 |
| Diffuse Astrocytoma | 1.329 (1.295-1.363) | <0.001 |
| Anaplastic Astrocytoma | 1.373 (1.332-1.415) | <0.001 |
| Unique Astrocytoma Variants | 1.175 (1.073-1.288) | <0.001 |
| Glioblastoma | 1.554 (1.537-1.57) | <0.001 |
| Oligodendroglioma | 1.292 (1.246-1.339) | <0.001 |
| Anaplastic Oligodendroglioma | 1.312 (1.242-1.386) | <0.001 |
| Oligoastrocytic Tumors | 1.405 (1.343-1.47) | <0.001 |
| Ependymal Tumors | 1.113 (1.073-1.156) | <0.001 |
| Glioma Malignant, NOS | 1.079 (1.049-1.111) | <0.001 |
| Choroid Plexus Tumors | 1.126 (0.92-1.38) | 0.259 |
| Other Neuroepithelial Tumors | 0.425 (0.304-0.587) | <0.001 |
| Neuronal and Mixed Neuronal Glial Tumors | 1.492 (1.374-1.622) | <0.001 |
| Tumors of the Pineal Region | 1.002 (0.888-1.132) | 0.995 |
| Embryonal Tumors | 1.415 (1.362-1.471) | <0.001 |
| Nerve Sheath Tumors | 1.072 (0.92-1.25) | 0.384 |
| Meningioma | 0.731 (0.687-0.777) | <0.001 |
| Mesenchymal Tumors | 1.188 (1.072-1.318) | 0.001 |
| Primary Melanocytic Lesions | 1.099 (0.987-1.224) | 0.086 |
| Other Neoplasms Related to the Meninges | 1.316 (1.144-1.514) | <0.001 |
| Lymphoma | 1.293 (1.258-1.329) | <0.001 |
| Other Hematopoietic Neoplasms | 1.842 (1.54-2.206) | <0.001 |
| Germ Cell Tumors, Cysts and Heterotopias | 3.03 (2.798-3.284) | <0.001 |
| Tumors of the Pituitary | 1.442 (1.277-1.629) | <0.001 |
| Hemangioma | 1.42 (0.876-2.309) | 0.165 |

a Rates are per 100,000 and age-adjusted to the 2000 US standard population.

-- Counts are not presented when fewer than 16 cases were reported for the specific site.

Abbreviations: SEER, Surveillance, Epidemiology, and End Results program; ICD-O-3/WHO 2008, International Classification of Diseases for Oncology, 3rd Edition, 2000. World Health Organization, Geneva, Switzerland; CI, confidence interval; NOS, not otherwise specified.

**Supplementary Table 5. Age-Adjusted Hazard Ratios (HRs) by Sex (Males:Females) by Brain Histology with 95% Confidence Intervals, 2001-2016, SEER\*Stat Database: Incidence – SEER 18 Registries + Hurricane Katrina Impacted Louisiana Cases, Nov 2018 Submission (1973-2016 varying).**

|  |  |  |
| --- | --- | --- |
| **Brain Histology** | **Male-to-female HR (95% CI)** | **p-value** |
| Pilocytic Astrocytoma | 1.007 (0.798-1.269) | 0.956 |
| Diffuse Astrocytoma | 1.126 (1.051-1.206) | <0.001 |
| Anaplastic Astrocytoma | 1.044 (0.971-1.121) | 0.243 |
| Unique Astrocytoma Variants | 0.958 (0.732-1.255) | 0.757 |
| Glioblastoma | 1.036 (1.013-1.059) | 0.002 |
| Oligodendroglioma | 1.201 (1.059-1.362) | 0.004 |
| Anaplastic Oligodendroglioma | 1.057 (0.909-1.23) | 0.471 |
| Oligoastrocytic Tumors | 1.064 (0.937-1.207) | 0.338 |
| Ependymal Tumors | 1.302 (1.111-1.526) | 0.001 |
| Glioma Malignant, NOS | 1.006 (0.93-1.089) | 0.881 |
| Choroid Plexus Tumors | 1.256 (0.668-2.359) | 0.479 |
| Other Neuroepithelial Tumors | 1.688 (0.641-4.446) | 0.289 |
| Neuronal and Mixed Neuronal Glial Tumors | 1.457 (1.075-1.975) | 0.015 |
| Tumors of the Pineal Region | 1.212 (0.821-1.789) | 0.333 |
| Embryonal Tumors | 0.969 (0.863-1.089) | 0.599 |
| Nerve Sheath Tumors | 2.739 (1.589-4.72) | <0.001 |
| Meningioma | 1.488 (1.26-1.757) | <0.001 |
| Mesenchymal Tumors | 1.271 (0.941-1.717) | 0.118 |
| Primary Melanocytic Lesions | 1.081 (0.853-1.37) | 0.519 |
| Other Neoplasms Related to the Meninges | 1.859 (1.072-3.223) | 0.027 |
| Lymphoma | 1.148 (1.076-1.225) | <0.001 |
| Other Hematopoietic Neoplasms | 1.47 (0.842-2.565) | 0.175 |
| Germ Cell Tumors, Cysts and Heterotopias | 0.72 (0.526-0.985) | 0.04 |
| Tumors of the Pituitary | 1.454 (0.968-2.185) | 0.072 |
| Hemangioma | 0.958 (0.732-1.255) | 0.757 |

Abbreviations: SEER, Surveillance, Epidemiology, and End Results program; ICD-O-3/WHO 2008, International Classification of Diseases for Oncology, 3rd Edition, 2000. World Health Organization, Geneva, Switzerland; NOS, not otherwise specified; CI, confidence interval.