**Supplemental File**

**Supplementary File 1a. Relative risks of the same type of early-onset cancer with the proband among siblings and mothers by ethnic group, 1989 to 2015, California, USA.**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Overall | | | Non-Latino White | | | Latino all races | | |  |
| Cancer of the proband † | No. of Probands | No. of affected relatives § | SIR (95% CI) | No. of Probands | No. of relatives § | SIR (95% CI) | No. of Probands | No. of affected relatives § | SIR (95% CI) | p-value ‡ |
| Hematologic cancers¶ | 11404 | 22 | 2.68\*  (1.68, 4.06) | 2702 | 6 | 2.64  (0.97, 5.76) | 5484 | 7 | 1.56  (0.63, 3.21) | 0.505 |
| Solid cancers¶ | 17849 | 112 | 6.78\*  (5.58, 8.16) | 5471 | 31 | 4.41\*  (2.99, 6.25) | 7323 | 50 | 7.94\*  (5.89, 10.47) | 0.012 |
| Leukemias | 8500 | 11 | 2.48\*  (1.24, 4.45) | 1646 | ≦5 | 2.19  (0.27, 7.91) | 4374 | ≦5 | 1.45  (0.4, 3.72) | 0.996 |
| Lymphomas | 2928 | ≦5 | 5.9\*  (1.61, 15.11) | 1060 | ≦5 | 9.04\*  (1.86, 26.41) | 1121 | 0 |  | NA |
| CNS tumors | 5739 | 11 | 6.19\*  (3.09, 11.08) | 1728 | ≦5 | 5.07\*  (1.38, 12.98) | 2242 | ≦5 | 4.66  (0.96, 13.61) | 0.788 |
| Neuroblastoma | 1445 | ≦5 | 10.31  (0.26, 57.44) | 367 | 0 | NA | 490 | 0 |  | NA |
| Retinoblastoma | 718 | 10 | 454.55\*  (217.97, 835.93) | 126 | ≦5 | 200\*  (5.06, 1114.32) | 327 | 7 | 636.36\*  (255.85, 1311.15) | 0.446 |
| Renal tumors | 1069 | ≦5 | 15.87  (0.4, 88.44) | 209 | 0 | NA | 442 | ≦5 | 38.46  (0.97, 214.29) | NA |
| Hepatic tumors | 414 | 0 | NA | 74 | 0 | NA | 200 | 0 |  | NA |
| Malignant bone tumors | 249 | 0 | NA | 73 | 0 | NA | 121 | 0 |  | NA |
| Sarcomas | 2915 | 10 | 31.45\*  (15.08, 57.83) | 816 | ≦5 | 18.87\*  (2.28, 68.16) | 1259 | ≦5 | 35.97\*  (11.68, 83.94) | 0.687 |
| GCT | 2423 | ≦5 | 7.71\*  (1.59, 22.54) | 672 | 0 | NA | 1270 | ≦5 | 8.62\*  (1.04, 31.14) | NA |
| Epithelial neoplasms | 3050 | 24 | 40.68\*  (26.06, 60.53) | 1458 | 9 | 21.33\*  (9.75, 40.49) | 1046 | 9 | 55.56\*  (25.4, 105.46) | 0.065 |
| Other | 255 | 0 | NA | 79 | 0 | NA | 90 | 0 | NA | NA |

† Cancers were classified into subgroups as defined by the International Classification of Childhood Cancer, Third edition (ICCC-3, November 2012) (<https://seer.cancer.gov/iccc/iccc3.html>).

§ Affected relatives include mother and siblings of the proband diagnosed with early-onset cancer under 26 years of age.

‡ p-value comparing the SIRs between non-Latino White and Latino all races using an approximate Chi-squared test.

¶ Hematologic cancers include group 1, leukemias, myeloproliferative diseases, and myelodysplastic diseases; group 2, lymphomas and reticuloendothelial neoplasms. Solid cancers include I group 3, CNS and miscellaneous intracranial and intraspinal neoplasms; group 4, neuroblastoma and other peripheral nervous cell tumors; group 5, retinoblastoma; group 6, renal tumors; group 7, hepatic tumors; group 8, malignant bone tumors; group 9, soft tissue and other extraosseous sarcomas; group 10, germ cell tumors, trophoblastic tumors, and neoplasms of gonads; group 11, other malignant epithelial neoplasms and malignant melanomas; group 12, other and unspecified malignant neoplasms.

SIR, Standardized incidence ratio. CI, confidence interval.

\* Statistically significant standardized incidence ratio with p<0.05 assuming a Poisson distribution.

**Supplemental File 1b. Relative risks of siblings and mothers for a specific type of early-onset cancer (diagnosed 0 to 26 years of age) given a proband with cancer, 1989 to 2015, California, USA.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Cancer of the proband** † | **Cancer of the relative** § | **No. of affected relatives** § | **SIR (95% CI)** |
|  |  |  |  |
| **Leukemias** | Leukemias | 11 | 2.48\* (1.24, 4.45) |
| Lymphomas | 6 | 2.46 (0.9, 5.35) |
| CNS tumors | 6 | 2.02 (0.74, 4.4) |
| Hepatic tumors | ≦5 | 0.41 (0.01, 2.28) |
| Sarcomas | 8 | 7.36\* (3.18, 14.5) |
| GCT | 6 | 3.51\* (1.29, 7.64) |
| Epithelial neoplasms | 13 | 5.37\* (2.86, 9.18) |
| **Lymphomas** | Leukemias | 7 | 7.47\* (3, 15.39) |
| Lymphomas | ≦5 | 5.9\* (1.61, 15.11) |
| CNS tumors | ≦5 | 2.89 (0.35, 10.46) |
| Neuroblastoma | ≦5 | 15.38 (0.39, 85.72) |
| Retinoblastoma | ≦5 | 40\* (1.01, 222.86) |
| Renal tumors | ≦5 | 12.99 (0.33, 72.36) |
| Sarcomas | ≦5 | 7.07 (0.86, 25.53) |
| GCT | ≦5 | 1.93 (0.05, 10.78) |
| Epithelial neoplasms | ≦5 | 2.67 (0.32, 9.65) |
| **CNS tumors** | Leukemias | ≦5 | 1.94 (0.63, 4.53) |
| Lymphomas | ≦5 | 1.31 (0.16, 4.72) |
| CNS tumors | 11 | 6.19\* (3.09, 11.08) |
| Renal tumors | ≦5 | 4.29 (0.11, 23.91) |
| Sarcomas | 6 | 8.97\* (3.29, 19.52) |
| GCT | ≦5 | 1.81 (0.22, 6.55) |
| Epithelial neoplasms | 10 | 6.37\* (3.05, 11.71) |
| Other | ≦5 | 0.65 (0.02, 3.64) |
| **Neuroblastoma** | Lymphomas | ≦5 | 2.23 (0.06, 12.41) |
| Neuroblastoma | ≦5 | 10.31 (0.26, 57.44) |
| Sarcomas | ≦5 | 4.78 (0.12, 26.66) |
| GCT | ≦5 | 3.33 (0.08, 18.57) |
| Epithelial neoplasms | ≦5 | 5.09 (0.62, 18.38) |
| Other | ≦5 | 2.23 (0.06, 12.41) |
| **Retinoblastoma** | Lymphomas | ≦5 | 4.5 (0.11, 25.1) |
| Retinoblastoma | 10 | 454.55\* (217.97, 835.93) |
| Malignant bone tumors | ≦5 | 4.5 (0.11, 25.1) |
| Sarcomas | ≦5 | 9.52 (0.24, 53.06) |
| Epithelial neoplasms | ≦5 | 5.24 (0.13, 29.17) |
| **Renal tumors** | Lymphomas | ≦5 | 3.02 (0.08, 16.83) |
| CNS tumors | ≦5 | 2.37 (0.06, 13.2) |
| Renal tumors | ≦5 | 15.87 (0.4, 88.44) |
| Sarcomas | ≦5 | 13.33\* (1.61, 48.16) |
| GCT | ≦5 | 4.42 (0.11, 24.65) |
| Epithelial neoplasms | ≦5 | 9.17\* (1.89, 26.81) |
| **Hepatic tumors** | Leukemias | ≦5 | 4.08 (0.1, 22.74) |
| Epithelial neoplasms | ≦5 | 9.52 (0.24, 53.06) |
| **Malignant bone tumors** | Leukemias | ≦5 | 14.49 (0.37, 80.75) |
| Epithelial neoplasms | ≦5 | 16.39 (0.41, 91.34) |
| **Sarcomas** | Leukemias | 8 | 7.01\* (3.03, 13.82) |
| Lymphomas | ≦5 | 1.37 (0.03, 7.61) |
| CNS tumors | 7 | 8.62\* (3.47, 17.76) |
| Neuroblastoma | ≦5 | 11.11 (0.28, 61.91) |
| Renal tumors | ≦5 | 19.8\* (2.4, 71.53) |
| Sarcomas | 10 | 31.45\* (15.08, 57.83) |
| GCT | ≦5 | 7.41\* (2.02, 18.97) |
| Epithelial neoplasms | 6 | 7.56\* (2.77, 16.45) |
| Other | ≦5 | 1.37 (0.03, 7.61) |
| **GCT** | Leukemias | ≦5 | 5.81\* (1.58, 14.89) |
| Lymphomas | ≦5 | 4.06 (0.49, 14.65) |
| CNS tumors | ≦5 | 5.93\* (1.22, 17.33) |
| Neuroblastoma | ≦5 | 19.23 (0.49, 107.15) |
| Renal tumors | ≦5 | 16.67 (0.42, 92.86) |
| Sarcomas | ≦5 | 9.66\* (1.17, 34.9) |
| GCT | ≦5 | 7.71\* (1.59, 22.54) |
| Epithelial neoplasms | ≦5 | 6.92\* (1.89, 17.72) |
| **Epithelial neoplasms** | Leukemias | ≦5 | 8.39\* (2.28, 21.47) |
| Lymphomas | ≦5 | 2.19 (0.06, 12.22) |
| CNS tumors | ≦5 | 7.56\* (1.56, 22.08) |
| Neuroblastoma | ≦5 | 41.67\* (1.05, 232.15) |
| Sarcomas | ≦5 | 10.99\* (1.33, 39.7) |
| GCT | ≦5 | 2.63 (0.07, 14.66) |
| Epithelial neoplasms | 24 | 40.68\* (26.06, 60.53) |
| **Other** | Lymphomas | ≦5 | 16.39 (0.41, 91.34) |
| CNS tumors | ≦5 | 14.29 (0.36, 79.59) |
| Neuroblastoma | ≦5 | 125\* (3.16, 696.45) |
| Sarcomas | ≦5 | 37.04 (0.94, 206.36) |

† Cancers were classified into subgroups as defined by the International Classification of Childhood Cancer, Third edition (ICCC-3, November 2012) (<https://seer.cancer.gov/iccc/iccc3.html>).

§ Affected relatives include mother and siblings of the proband diagnosed with early-onset cancer under 26 years of age.

SIR, Standardized incidence ratio. CI, confidence interval.

\* Statistically significant standardized incidence ratio with p<0.05 assuming a Poisson distribution.

**Supplemental File 1c. Relative risks of any early-onset cancer (diagnosed at 0 to 26 years of age) for siblings and mothers of the same type of cancer with the proband given a proband with cancer by subgroups, 1989 to 2015, California, USA.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **All cancers** | | **The same type of cancer** | |
| **Cancer of the proband** † | **No. of probands** | **No. of affected relatives** § | **SIR**  **(95% CI)** | **No. of affected relatives** § | **SIR**  **(95% CI)** |
| **Lymphoid leukemias** | 6705 | 25 | 2.7\* (1.91, 3.7) | ≦5 | 1.86 (0.6, 4.34) |
| **Acute myeloid leukemias** | 1317 | 9 | 4.61\* (2.46, 7.89) | ≦5 | 27.27\* (5.62, 79.7) |
| **Hodgkin lymphomas** | 1399 | 9 | 7.12\* (3.79, 12.17) | ≦5 | 10.53\* (1.27, 38.02) |
| **Non-Hodgkin lymphomas (except Burkitt lymphoma)** | 985 | ≦5 | 4.02\* (1.48, 8.75) | ≦5 | 11.11 (0.28, 61.91) |
| **Ependymomas and choroid plexus tumor** | 561 | ≦5 | 2.46 (0.51, 7.19) | 0 | NA |
| **Astrocytomas** | 1965 | 11 | 3.6\* (1.97, 6.03) | ≦5 | 7.69 (0.93, 27.79) |
| **Intracranial and intraspinal embryonal tumors** | 1010 | 6 | 2.67\* (1.07, 5.5) | ≦5 | 11.11 (0.28, 61.91) |
| **Other gliomas** | 815 | 8 | 5.34\* (2.31, 10.53) | ≦5 | 66.67\* (8.07, 240.82) |
| **Other specified intracranial and intraspinal neoplasms** | 1470 | ≦5 | 5.48\* (2.5, 10.4) | ≦5 | 22.22\* (2.69, 80.27) |
| **Neuroblastoma and ganglioneuroblastoma** | 1409 | 6 | 2.06 (0.83, 4.25) | ≦5 | 9.09 (0.23, 50.65) |
| **Nephroblastoma and other nonepithelial renal tumors** | 1032 | 6 | 3.67\* (1.68, 6.97) | ≦5 | 16.67 (0.42, 92.86) |
| **Rhabdomyosarcomas** | 719 | 11 | 8.46\* (4.63, 14.2) | 0 | NA |
| **Fibrosarcomas to peripheral nerve sheath tumors to and other fibrous neoplasms** | 434 | 7 | 10.46\* (4.21, 21.56) | ≦5 | 200\* (24.22, 722.47) |
| **Other specified soft tissue sarcomas** | 1624 | 11 | 7.57\* (4.56, 11.82) | ≦5 | 55.56\* (18.04, 129.65) |
| **Malignant gonadal germ cell tumors** | 1030 | 12 | 5.44\* (3.05, 8.97) | ≦5 | 6.67 (0.81, 24.08) |
| **Malignant melanomas** | 788 | ≦5 | 3.65 (0.75, 10.68) | ≦5 | 25 (0.63, 139.29) |
| **Other and unspecified carcinomas** | 1845 | 20 | 18.11\* (12.13, 26.01) | 17 | 113.33\* (66.02, 181.46) |

†Cancers were classified into subgroups as defined by the International Classification of Childhood Cancer, Third edition (ICCC-3, November 2012) (<https://seer.cancer.gov/iccc/iccc3.html>).

§ Affected relatives include mother and siblings of the proband diagnosed with early-onset cancer under 26 years of age.

SIR, Standardized incidence ratio. CI, confidence interval.

\* Statistically significant standardized incidence ratio with p<0.05 assuming a Poisson distribution.

**Supplementary File 1d. Relative risks of any early-onset cancer (diagnosed 0 to 26 years of age) among siblings and mothers by ethnic group, 1989 to 2015, California, USA.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Non-Latino White | | | Latino all races | | | | Non-Latino API | | | | Non-Latino Black | | | |  |
| Cancer of the proband † | No. of Probands | No. of affected relatives § | SIR  (95% CI) | No. of Probands | No. of affected relatives § | SIR (95% CI) | p-value ‡ | No. of Probands | No. of affected relatives § | SIR (95% CI) | p-value ‡ | No. of Probands | No. of affected relatives § | SIR (95% CI) | p-value ‡ |  |
| Overall | 8119 | 50 | 2.6\*  (1.93, 3.43) | 12736 | 78 | 3.36\* (  2.66, 4.19) | 0.183 | 1677 | 11 | 4.58\*  (2.29, 8.2) | 0.128 | 1102 | 13 | 6.96\*  (3.71, 11.91) | 0.002 |
| Hematologic cancers¶ | 2702 | 19 | 2.69\*  (1.62, 4.2) | 5484 | 27 | 2.48\*  (1.64, 3.61) | 0.910 | 679 | 8 | 7.56\*  (3.26, 14.9) | 0.023 | 391 | ≦5 | 6.14\*  (1.67, 15.73) | 0.242 |
| Solid cancers¶ | 5471 | 37 | 3.02\*  (2.12, 4.16) | 7323 | 62 | 4.98\*  (3.82, 6.39) | 0.019 | 1021 | 7 | 5.07\*  (2.04, 10.44) | 0.306 | 719 | 9 | 7.35\*  (3.36, 13.95) | 0.026 |
| Leukemias | 1646 | 11 | 2.11\*  (1.05, 3.77) | 4374 | 21 | 2.35\*  (1.45, 3.59) | 0.911 | 457 | 6 | 6.94\*  (2.55, 15.12) | 0.032 | 205 | ≦5 | 6.58\*  (1.36, 19.22) | 0.176 |
| Lymphomas | 1060 | 8 | 4.32\*  (1.87, 8.52) | 1121 | 8 | 4.09\*  (1.77, 8.07) | 0.887 | 226 | ≦5 | 20.3\*  (5.53, 51.98) | 0.022 | 187 | ≦5 | 5.13  (0.13, 28.53) | 0.685 |
| CNS tumors | 1728 | 12 | 2.63\*  (1.36, 4.59) | 2242 | 12 | 2.86\*  (1.48, 4.99) | 0.999 | 311 | ≦5 | 7.14\*  (1.47, 20.87) | 0.250 | 239 | ≦5 | 7.56\*  (1.56, 22.08) | 0.216 |
| Neuroblastoma | 367 | ≦5 | 0.7  (0.02, 3.92) | 490 | ≦5 | 1.7  (0.21, 6.13) | 0.871 | 51 | ≦5 | 6.54  (0.17, 36.37) | 0.466 | 48 | 0 | NA | NA |
| Retinoblastoma | 126 | ≦5 | 3.65  (0.44, 13.18) | 327 | 9 | 12.31\*  (5.63, 23.37) | 0.178 | 35 | 0 | NA | NA | 30 | ≦5 | 11.49  (0.29, 63.95) | 0.881 |
| Renal tumors | 209 | ≦5 | 2.64  (0.32, 9.54) | 442 | ≦5 | 2.91  (0.6, 8.5) | 0.728 | 28 | 0 | NA | NA | 53 | ≦5 | 8.85  (0.22, 49.24) | 0.850 |
| Hepatic tumors | 74 | 0 | NA | 200 | ≦5 | 2.43  (0.06, 13.52) | NA | 13 | 0 | NA | NA | 6 | 0 | NA | NA |
| Bone tumors | 73 | 0 | NA | 121 | ≦5 | 6.06  (0.15, 33.77) | NA | 13 | 0 | NA | NA | 17 | 0 | NA | NA |
| Sarcomas | 816 | 7 | 3.77\*  (1.51, 7.76) | 1259 | 20 | 9.05\*  (5.53, 13.98) | 0.062 | 160 | ≦5 | 4.46  (0.11, 24.84) | 0.681 | 132 | ≦5 | 10.68\*  (2.2, 31.19) | 0.267 |
| GCT | 672 | ≦5 | 3.42  (0.93, 8.77) | 1270 | 10 | 6.2\*  (2.97, 11.41) | 0.454 | 184 | ≦5 | 4.85  (0.12, 27.01) | 0.755 | 70 | 0 | NA | NA |
| Epithelial neoplasms | 1458 | 14 | 8.6\*  (4.7, 14.43) | 1046 | 15 | 15.15\*  (8.48, 24.99) | 0.176 | 239 | ≦5 | 13.25\*  (1.6, 47.82) | 0.899 | 122 | ≦5 | 22.47\*  (2.72, 81.13) | 0.450 |
| Other | 79 | ≦5 | 10.47\*  (1.27, 37.83) | 90 | ≦5 | 5.85  (0.15, 32.58) | 0.924 | 8 | 0 | NA | NA | 19 | 0 | NA | NA |

† Cancers were classified into subgroups as defined by the International Classification of Childhood Cancer, Third edition (ICCC-3, November 2012) (<https://seer.cancer.gov/iccc/iccc3.html>).

§ Affected relatives include mother and siblings of the proband diagnosed with early-onset cancer under 26 years of age.

‡ p-value comparing the SIRs between non-Latino White and Latino all races using an approximate Chi-squared test.

¶ Hematologic cancers include group 1, leukemias, myeloproliferative diseases, and myelodysplastic diseases; group 2, lymphomas and reticuloendothelial neoplasms. Solid cancers include I group 3, CNS and miscellaneous intracranial and intraspinal neoplasms; group 4, neuroblastoma and other peripheral nervous cell tumors; group 5, retinoblastoma; group 6, renal tumors; group 7, hepatic tumors; group 8, malignant bone tumors; group 9, soft tissue and other extraosseous sarcomas; group 10, germ cell tumors, trophoblastic tumors, and neoplasms of gonads; group 11, other malignant epithelial neoplasms and malignant melanomas; group 12, other and unspecified malignant neoplasms.

SIR, Standardized incidence ratio. CI, confidence interval.

\* Statistically significant standardized incidence ratio with p<0.05 assuming a Poisson distribution.

**Supplemental File 1e. Second primary malignancies in families exhibited familial risks and families did not exhibit familial risk.**

|  |  |  |
| --- | --- | --- |
|  | **Family exhibited familial risks** | **Family did not exhibit familial risk** |
| **No. of SPMs** | 14 | 373 |
| **Total No. of family members** | 2,432 | 119,136 |
| **No. of SPMs per family member** † | 0.58% | 0.31% |
| **Average family size** | 4.35 people/family | 4.17 people/family |
| **Average time between FPM and SPM diagnosis** | 6.69 years | 6.35 years |
| **Average time from FPM diagnosis to the end of study (2015)** | 12.23 years | 11.74 years |

FPM, first primary malignancy. SPM, second primary malignancy.

† No. of SPMs per family member was compared with a Chi-squared test. Families that exhibited familial risks have higher proportion of SPMs compared to families that did not exhibit familial risk (Chi2= 5.13; p= 0.023).

**Supplemental File 1f. Relative risks of second primary malignancies of the same type of early-onset cancer (diagnosed 0 to 26 years of age) with the first primary malignancy by ethnic groups, California, USA.**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Overall** | | | **Non-Latino White** | | | **Latino (all races)** | | |  |
| **Cancer of the proband** † | **No. of FPMs** | **No. of SPMs** | **SIR**  **(95% CI)** | **No. of FPMs** | **No. of SPMs** | **SIR**  **(95% CI)** | **No. of FPMs** | **No. of SPMs** | **SIR**  **(95% CI)** | **p-value ‡** |
| **Hematologic cancers¶** | 11,553 | 50 | 6.1\*  (4.53, 8.04) | 2,727 | 15 | 6.61\*  (3.7, 10.9) | 5,528 | 19 | 4.23\*  (2.55, 6.61) | 0.262 |
| **Solid cancers¶** | 18,893 | 30 | 1.82\*  (1.22, 2.59) | 5,673 | 13 | 1.85  (0.98, 3.16) | 7,551 | 13 | 2.06\*  (1.1, 3.53) | 0.938 |
| **Leukemias** | 8,543 | 41 | 9.26\*  (6.65, 12.56) | 1,649 | 11 | 12.05\*  (6.01, 21.56) | 4,385 | 16 | 5.82\*  (3.32, 9.44) | 0.094 |
| **Lymphomas** | 2,960 | 9 | 13.27\*  (6.07, 25.2) | 1,063 | ≦5 | 12.05\*  (3.28, 30.85) | 1,124 | ≦5 | NA | 0.768 |
| **CNS tumors** | 5,877 | 29 | 16.32\*  (10.93, 23.44) | 1,765 | 12 | 15.21\*  (7.86, 26.57) | 2,277 | 11 | 17.08\*  (8.53, 30.56) | 0.943 |
| **Neuroblastoma** | 1,450 | ≦5 | 20.62\*  (2.5, 74.48) | 369 | ≦5 | NA | 491 | 0 | NA | NA |
| **Retinoblastoma** | 728 | 0 | NA | 127 | 0 | NA | 334 | 0 | NA | NA |
| **Renal tumors** | 1,078 | 0 | NA | 209 | 0 | NA | 444 | 0 | NA | NA |
| **Hepatic tumors** | 417 | 0 | NA | 74 | 0 | NA | 200 | 0 | NA | NA |
| **Malignant bone tumors** | 250 | 0 | NA | 73 | 0 | NA | 121 | 0 | NA | NA |
| **Sarcomas** | 3,028 | 16 | 50.31\*  (28.76, 81.71) | 850 | ≦5 | 47.17\*  (15.32, 110.08) | 1,297 | 7 | 50.36\*  (20.25, 103.76) | 0.858 |
| **GCT** | 2,468 | ≦5 | 5.14  (0.62, 18.57) | 679 | 0 | NA | 1,287 | ≦5 | 8.62\*  (1.04, 31.14) | NA |
| **Epithelial neoplasms** | 3,479 | 10 | 16.95\*  (8.13, 31.17) | 1,489 | 6 | 14.22\*  (5.22, 30.95) | 1,057 | ≦5 | 24.69\*  (6.73, 63.22) | 0.605 |
| **Other** | 261 | 0 | NA | 79 | 0 | NA | 90 | 0 | NA | NA |

SIR, Standardized incidence ratio. CI, confidence interval. FPM, first primary malignancy. SPM, second primary malignancy.

† Cancers were classified into subgroups as defined by the International Classification of Childhood Cancer, Third edition (ICCC-3, November 2012) (<https://seer.cancer.gov/iccc/iccc3.html>).

‡ p-value comparing the SIRs between non-Latino White and Latino all races using an approximate Chi-squared test.

¶ Hematologic cancers include group 1, leukemias, myeloproliferative diseases, and myelodysplastic diseases; group 2, lymphomas and reticuloendothelial neoplasms. Solid cancers include I group 3, CNS and miscellaneous intracranial and intraspinal neoplasms; group 4, neuroblastoma and other peripheral nervous cell tumors; group 5, retinoblastoma; group 6, renal tumors; group 7, hepatic tumors; group 8, malignant bone tumors; group 9, soft tissue and other extraosseous sarcomas; group 10, germ cell tumors, trophoblastic tumors, and neoplasms of gonads; group 11, other malignant epithelial neoplasms and malignant melanomas; group 12, other and unspecified malignant neoplasms.

SIR, Standardized incidence ratio. CI, confidence interval. FPM, first primary malignancy. SPM, second primary malignancy.

\* Statistically significant standardized incidence ratio with p<0.05 assuming a Poisson distribution.