**Supplemental Table 1**: Mortality of cohort in comparison with Washington state population, and risk estimates from internal Cox regression analyses restricting to person-time with >1 year of employment. Cox regression internally compared the mortality experience by duration employed in a high exposed employment category (category 1) as: a) Ever vs never employed in employment category 1, b) duration employed in employment category 1 as a continuous variable and c) duration employed in employment category 1 as a 2-piece spline with a knot place at 10 years.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **External comparison** | |  | **Internal Comparison - Cox regressiona** | | | |
|  |  |  |  |  | **Ever Never** | **Log-Linearb** | **2 piece splineb,d** |
| **Outcome** | **Obse** | **SMR (95% CI)** |  | **Obse** | **RR (95% CI)** | **RRc (95% CI)** | **RRc (95% CI)** |
| *All Cancers* | 217 | 1.07 (0.93, 1.23) |  | 198 | 1.4 (1, 2) | 1 (1, 1.1) | 1.1 (1, 1.2) |
| MN trachea, bronchus, lung | 76 | 1.20 (0.95, 1.51) |  | 72 | 0.9 (0.5, 1.6) | 0.9 (0.7, 1) | 0.9 (0.7, 1.1) |
| MN lymphatic & hematopoietic | 18 | 0.85 (0.51, 1.35) |  | 16 | 1.5 (0.4, 5) | 1.2 (1, 1.3) | 1.4 (1.1, 1.7) |
| Non-Hodgkin's lymphoma | 5 | 0.60 (0.19, 1.40) |  | 5 | 0.3 (0, 3.2) | 1 (0.3, 1.4) | 1 (0.3, 1.7) |
| Multiple myeloma | 6 | 1.50 (0.55, 3.25) |  | 4 | 2.1 (0.1, 16.7) | 1.1 (0.5, 1.5) | 1.2 (0.5, 1.8) |
| Leukemia | 7 | 0.88 (0.35, 1.81) |  | 7 | 3.6 (0.5, 23.5) | 1.3 (1, 1.5) | 1.6 (1.2, 2.2) |

a – The Cox regression analyses removed persons employed in employment group 5 (Administrative). Regressions matched on attained age, gender, race, and birth date (+/- 2.5 years).

b – For analyses where duration was treated as a continuous variable, those currently employed during record collection had their person-time censored at 10/1/1978, when records were originally collected.

c – Results are presented as rate ratio (RR) per 1 year employment in a high exposed employment category.

d – Two piece linear spline with a knot placed at 10 years. The results represent the first piece of the spline.

e – Obs = observed number of deaths

f – DNC = did not converge

**Supplemental Table 2:** Mortality of cohort in comparison with Washington state population for all cancer outcomes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Full Cohort** | |  | **Person-time with >= 1 year employment** | |
| **Outcome** | **Obs** | **SMR (95% CI)** |  | **Obs** | **SMR (95% CI)** | |
| All Causes | 2111 | 1.19 (1.14, 1.24) |  | 728 | 0.99 (0.92, 1.06) | |
| All Cancers | 611 | 1.23 (1.13, 1.33) |  | 217 | 1.07 (0.93, 1.23) | |
| MN buccal & pharynx | 13 | 1.20 (0.64, 2.06) |  | <5 | 0.49 (0.06, 1.78) | |
| MN pharynx | 8 | 1.60 (0.69, 3.16) |  | <5 | 1.09 (0.13, 3.94) | |
| MN digestive & peritoneum | 150 | 1.19 (1.01, 1.40) |  | 47 | 0.95 (0.70, 1.27) | |
| MN esophagus | 21 | 1.18 (0.73, 1.80) |  | 7 | 1.06 (0.43, 2.19) | |
| MN stomach | 13 | 1.12 (0.60, 1.92) |  | <5 | 0.85 (0.23, 2.17) | |
| MN intestine | 43 | 1.25 (0.90, 1.68) |  | 10 | 0.69 (0.33, 1.27) | |
| MN rectum | 7 | 0.71 (0.29, 1.47) |  | <5 | 1.04 (0.28, 2.67) | |
| MN biliary, liver, gall bladder | 27 | 1.36 (0.89, 1.97) |  | 9 | 1.28 (0.59, 2.44) | |
| MN pancreas | 39 | 1.31 (0.93, 1.79) |  | 13 | 1.11 (0.59, 1.90) | |
| MN respiratory | 216 | 1.35 (1.18, 1.54) |  | 78 | 1.19 (0.94, 1.49) | |
| MN larynx | 3 | 0.72 (0.15, 2.10) |  | <5 | 0.61 (0.02, 3.39) | |
| MN trachea, bronchus, lung | 211 | 1.37 (1.19, 1.57) |  | 76 | 1.20 (0.95, 1.51) | |
| MN breast | 7 | 0.67 (0.27, 1.38) |  | 5 | 0.97 (0.32, 2.26) | |
| MN female genital organs | 11 | 1.70 (0.85, 3.05) |  | 6 | 1.86 (0.68, 4.04) | |
| MN ovary | 9 | 2.36 (1.08, 4.49) |  | 5 | 2.61 (0.85, 6.09) | |
| MN male genital organs | 50 | 1.37 (1.02, 1.80) |  | 23 | 1.35 (0.86, 2.03) | |
| MN prostate | 49 | 1.39 (1.03, 1.83) |  | 23 | 1.38 (0.87, 2.07) | |
| MN urinary | 33 | 1.17 (0.81, 1.65) |  | 17 | 1.49 (0.87, 2.39) | |
| MN kidney | 15 | 1.05 (0.59, 1.73) |  | 9 | 1.66 (0.76, 3.16) | |
| MN bladder & other urinary site | 18 | 1.30 (0.77, 2.06) |  | 8 | 1.34 (0.58, 2.65) | |
| MN other & unspecified site | 79 | 1.18 (0.93, 1.47) |  | 21 | 0.82 (0.51, 1.26) | |
| MN melanoma | 10 | 0.93 (0.45, 1.72) |  | <5 | 1.06 (0.29, 2.71) | |
| MN mesothelioma | 5 | 1.75 (0.57, 4.09) |  | <5 | 0.92 (0.02, 5.11) | |
| MN brain & other nervous | 21 | 1.16 (0.72, 1.77) |  | <5 | 0.62 (0.17, 1.58) | |
| MN lymphatic & hematopoietic | 52 | 0.99 (0.74, 1.30) |  | 18 | 0.85 (0.51, 1.35) | |
| Non-Hodgkin's lymphoma | 19 | 0.91 (0.55, 1.42) |  | 5 | 0.60 (0.19, 1.40) | |
| Multiple myeloma | 13 | 1.33 (0.71, 2.27) |  | 6 | 1.50 (0.55, 3.25) | |
| Leukemia | 18 | 0.91 (0.54, 1.45) |  | 7 | 0.88 (0.35, 1.81) | |

**Supplemental Table 3**: Mortality of cohort in comparison with general Washington state population, and risk estimates from internal Cox regression analyses. Cox regression internally compared the mortality experience by duration employed in a high exposed employment category (employment category 1) as: a) Ever vs never employed in employment category 1, b) duration employed in employment category 1 as a continuous variable and c) duration employed in employment category 1 as a 2-piece spline with a knot place at 10 years.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **External comparison** | |  | **Internal Comparison - Cox regressiona** | | | | |
|  |  |  |  |  | **Ever Never** | **Log-Linearb** | **2 piece splineb,d** |
| **Outcome** | **Obse** | **SMR (95% CI)** |  | **Obse** | **RR (95% CI)** | **RRc (95% CI)** | **RRc (95% CI)** |
| All Causes | 2111 | 1.19 (1.14, 1.24) |  | 2020 | 1.2 (1.1, 1.3) | 1.0 (1.0, 1.1) | 1.1 (1.0, 1.1) |
| All Cancers | 611 | 1.23 (1.13, 1.33) |  | 584 | 1.2 (1.0, 1.4) | 1.0 (1.0, 1.1) | 1.1 (1.0, 1.2) |
| Smoking-related: Solidf | 412 | 1.28 (1.16, 1.41) |  | 398 | 1.1 (0.9, 1.4) | 1.0 (0.9, 1.1) | 1.1 (1.0, 1.2) |
| Nonsmoking-related: Solidg | 147 | 1.19 (1.00, 1.40) |  | 137 | 1.3 (0.9, 2.0) | 1.1 (0.9, 1.2) | 1.0 (0.8, 1.2) |
| Specific cancer sites    MN buccal & pharynx | 13 | 1.20 (0.64, 2.06) |  | 13 | 0.9 (0.2, 3.1) | 1.1 (0.4, 1.7) | 1.2 (0.4, 1.9) |
| MN pharynx | 8 | 1.60 (0.69, 3.16) |  | 8 | 0.3 (0.0, 1.5) | 1.1 (0.4, 1.7) | 1.2 (0.4, 1.9) |
| MN digestive & peritoneum | 150 | 1.19 (1.01, 1.40) |  | 146 | 1.3 (0.9, 1.9) | 1.1 (0.9, 1.2) | 1.2 (1.0, 1.4) |
| MN esophagus | 21 | 1.18 (0.73, 1.80) |  | 21 | 0.9 (0.3, 2.5) | 1.2 (0.8, 1.6) | 1.3 (0.8, 1.7) |
| MN stomach | 13 | 1.12 (0.60, 1.92) |  | 12 | 2.1 (0.5, 7.4) | 0.6 (0.0, 3.2) | 0.6 (0.0, 3.2) |
| MN intestine | 43 | 1.25 (0.90, 1.68) |  | 42 | 1.8 (0.9, 3.5) | 1.2 (0.8, 1.5) | 1.3 (0.9, 1.9) |
| MN rectum | 7 | 0.71 (0.29, 1.47) |  | 7 | 0.7 (0.1, 4.0) | 0.6 (0.0, 1.5) | 0.6 (0.0, 1.5) |
| MN biliary, liver, gall bladder | 27 | 1.36 (0.89, 1.97) |  | 26 | 1.1 (0.4, 2.4) | 1.2 (0.9, 1.5) | 1.3 (1.0, 1.7) |
| MN pancreas | 39 | 1.31 (0.93, 1.79) |  | 38 | 1.3 (0.6, 2.6) | 1.0 (0.6, 1.2) | 1.0 (0.6, 1.4) |
| MN respiratory | 216 | 1.35 (1.18, 1.54) |  | 209 | 1.0 (0.7, 1.4) | 0.9 (0.7, 1.0) | 0.9 (0.8, 1.1) |
| MN trachea, bronchus, lung | 211 | 1.37 (1.19, 1.57) |  | 204 | 1.0 (0.7, 1.4) | 0.9 (0.7, 1.0) | 0.9 (0.8, 1.1) |
| MN breast | 7 | 0.67 (0.27, 1.38) |  | 6 | 2.2 (0.3, 51) | 0.3 (0.0, 69) | 0.3 (0.0, 69) |
| MN female genital organs | 11 | 1.70 (0.85, 3.05) |  | 10 | 0.9 (0.2, 6.4) | 0.8 (0.4, 1.2) | 1.0 (0.5, 2.0) |
| MN ovary | 9 | 2.36 (1.08, 4.49) |  | 8 | 0.7 (0.1, 4.6) | 0.8 (0.4, 1.3) | 1.0 (0.4, 2.2) |
| MN male genital organs | 50 | 1.37 (1.02, 1.80) |  | 45 | 2.8 (1.3, 5.6) | 1.2 (1.0, 1.4) | 1.1 (0.8, 1.4) |
| MN prostate | 49 | 1.39 (1.03, 1.83) |  | 44 | 2.6 (1.3, 5.4) | 1.2 (1.0, 1.4) | 1.1 (0.8, 1.4) |
| MN urinary | 33 | 1.17 (0.81, 1.65) |  | 30 | 1.2 (0.5, 2.8) | 1.1 (0.9, 1.3) | 1.3 (1.0, 1.6) |
| MN kidney | 15 | 1.05 (0.59, 1.73) |  | 15 | 1.0 (0.3, 3.3) | 1.1 (0.7, 1.3) | 1.2 (0.8, 1.6) |
| MN bladder & other urinary site | 18 | 1.30 (0.77, 2.06) |  | 15 | 1.4 (0.4, 4.7) | 1.2 (0.8, 1.5) | 1.5 (0.9, 2.2) |
| MN other & unspecified site | 79 | 1.18 (0.93, 1.47) |  | 76 | 0.9 (0.5, 1.5) | 0.8 (0.5, 1.2) | 0.8 (0.5, 1.2) |
| MN melanoma | 10 | 0.93 (0.45, 1.72) |  | 10 | 0.2 (0.0, 1.3) | 0.7 (0.1, 1.5) | 0.7 (0.1, 1.5) |
| MN mesothelioma | 5 | 1.75 (0.57, 4.09) |  | 5 | 2.5 (0.4, 20) | 0.9 (0.2, 2.2) | 0.9 (0.2, 2.2) |
| MN brain & other nervous | 21 | 1.16 (0.72, 1.77) |  | 19 | 1.3 (0.5, 3.6) | 1.1 (0.4, 1.8) | 1.1 (0.4, 1.8) |
| MN lymphatic & hematopoietic | 52 | 0.99 (0.74, 1.30) |  | 49 | 1.2 (0.6, 2.2) | 1.2 (1.0, 1.3) | 1.4 (1.1, 1.7) |
| Non-Hodgkin's lymphoma | 19 | 0.91 (0.55, 1.42) |  | 18 | 0.3 (0.1, 1.2) | 0.9 (0.2, 1.4) | 0.9 (0.2, 1.6) |
| Multiple myeloma | 13 | 1.33 (0.71, 2.27) |  | 11 | 2.0 (0.5, 7.0) | 1.1 (0.6, 1.5) | 1.3 (0.6, 1.9) |
| Leukemia | 18 | 0.91 (0.54, 1.45) |  | 18 | 1.6 (0.5, 4.5) | 1.3 (1.0, 1.5) | 1.6 (1.2, 2.2) |

a – Duration of employment in a high exposed employment category was lagged 10 years. The Cox regression analyses removed persons employed in employment group 5 (Administrative). Regressions matched on attained age, gender, race, birth date (+/- 2.5 years) and employment duration (<=1 yr or >1 yr).

b – For analyses where duration was treated as a continuous variable, those currently employed during record collection had their person-time censored at 10/1/1988, 10 years after records collection.

c – Results are presented as rate ratio (RR) per 1 year employment in a high exposed employment category.

d – Two piece linear spline with a knot placed at 10 years. The results represent the slope of the first piece of the spline.

e – Obs = observed number of deaths

f - Smoking-related solid cancers include: lip, tongue, other buccal, pharynx, esophagus, stomach, intestine, rectum, liver, pancreas, larynx, lung, cervix, kidney, bladder

g - Nonsmoking-related solid cancers include: peritoneum, pleura, other respiratory, breast, other uterus, ovary, other female genital organs, prostate, testis, bone, melanoma, other skin, mesothelioma, connective, brain, eye, thyroid, other/unspecified site.