

Table S1 Comparison of incidence rates between men and women in human cancers based on SEER data from 1975 to 2015.

| ID | Cancer Type | Men* (Mean) | Women* (Mean) | Ratio (Mean) | Ratio (Max) | Ratio (Avg) | P-Value (Gamma) | P-Value (Poisson) | P-Value (ANOVA) | P-Value (T-Test) | Category |
|----|--|----------------|------------------|-----------------|----------------|----------------|--------------------|----------------------|--------------------|---------------------|---------------------|
| 1 | Kaposi Sarcoma | 2.77 | 0.05 | 52.63 | 100.21 | 35.79 | 1.11E-05 | 3.87E-45 | 4.32E-08 | 3.27E-07 | |
| 2 | Cancer of the Larynx | 5.99 | 1.21 | 4.93 | 6.84 | 4.93 | 1.44E-17 | 1.15E-41 | 1.34E-32 | 5.40E-25 | |
| 3 | Mesothelioma | 1.23 | 0.28 | 4.34 | 6.17 | 4.38 | 6.39E-15 | 2.66E-52 | 5.98E-43 | 4.74E-29 | |
| 4 | Urinary Bladder Cancer | 25.12 | 6.48 | 3.88 | 4.27 | 3.88 | 3.34E-16 | 9.52E-57 | 8.49E-88 | 4.11E-54 | |
| 5 | Esophageal Cancer | 5.62 | 1.51 | 3.73 | 4.94 | 3.78 | 4.88E-09 | 3.70E-62 | 2.18E-70 | 2.06E-40 | |
| 6 | Liver Cancer | 6.01 | 2.11 | 2.85 | 3.24 | 2.79 | 9.00E-20 | 1.80E-27 | 1.13E-13 | 4.58E-16 | |
| 7 | Oral Cavity and Pharynx | 14.11 | 5.46 | 2.59 | 2.91 | 2.59 | 2.23E-15 | 2.86E-40 | 1.08E-50 | 2.02E-38 | |
| 8 | Stomach Cancer | 9.09 | 4.18 | 2.18 | 2.48 | 2.17 | 4.90E-18 | 4.20E-30 | 3.37E-27 | 5.20E-27 | |
| 9 | Cancer of the Kidney and Renal Pelvis | 12.34 | 6.10 | 2.02 | 2.40 | 2.04 | 3.03E-16 | 7.68E-26 | 1.32E-20 | 2.93E-29 | |
| 10 | Thyroid Cancer | 3.71 | 10.62 | -2.86 | -2.17 | -2.78 | 7.53E-19 | 7.14E-29 | 3.70E-12 | 1.13E-14 | |
| 11 | Chronic Lymphocytic Leukemia | 4.64 | 2.37 | 1.96 | 2.31 | 1.96 | 2.88E-10 | 1.81E-31 | 1.28E-42 | 6.15E-38 | Sex- dimorphic |
| 12 | Non-Small Cell Lung Cancer | 53.60 | 28.48 | 1.88 | 3.60 | 1.98 | 1.68E-07 | 1.28E-06 | 1.56E-26 | 3.40E-16 | |
| 13 | Chronic Myeloid Leukemia | 1.74 | 1.04 | 1.68 | 2.12 | 1.69 | 3.12E-06 | 3.71E-15 | 3.94E-41 | 9.76E-28 | |
| 14 | Small Cell lung Cancer | 8.48 | 5.44 | 1.56 | 2.73 | 1.59 | 3.04E-10 | 4.76E-13 | 1.07E-10 | 3.72E-11 | |
| 15 | Rectal Cancer | 10.00 | 5.90 | 1.70 | 1.90 | 1.70 | 4.81E-13 | 9.36E-35 | 2.91E-36 | 9.69E-35 | |
| 16 | Myeloma | 5.13 | 3.43 | 1.50 | 1.71 | 1.50 | 3.63E-11 | 7.29E-26 | 6.36E-25 | 2.25E-28 | |
| 17 | Acute Myeloid Leukemia | 3.26 | 2.32 | 1.40 | 1.67 | 1.41 | 7.98E-03 | 1.26E-22 | 1.08E-22 | 2.96E-29 | |
| 18 | Non-Hodgkin Lymphoma | 16.35 | 11.00 | 1.49 | 1.69 | 1.48 | 2.05E-14 | 3.77E-20 | 1.87E-14 | 4.00E-24 | |
| 19 | Brain Cancer | 6.37 | 4.46 | 1.43 | 1.56 | 1.43 | 7.68E-04 | 2.72E-32 | 3.77E-47 | 5.33E-36 | |
| 20 | Melanoma of the Skin | 15.82 | 11.88 | 1.33 | 1.46 | 1.31 | 1.58E-18 | 1.07E-18 | 6.83E-05 | 3.41E-15 | |
| 21 | Acute Lymphocytic Leukemia | 1.69 | 1.29 | 1.32 | 1.70 | 1.33 | 8.12E-01 | 8.03E-10 | 5.92E-13 | 8.71E-19 | |
| 22 | Hodgkin Lymphoma | 3.18 | 2.45 | 1.30 | 1.79 | 1.31 | 1.34E-03 | 5.16E-35 | 4.70E-26 | 4.31E-18 | |
| 23 | Pancreatic Cancer | 9.68 | 7.14 | 1.36 | 1.72 | 1.36 | 1.01E-02 | 9.92E-29 | 4.67E-37 | 1.66E-28 | |
| 24 | Colon Cancer | 30.51 | 24.17 | 1.26 | 1.38 | 1.26 | 4.80E-11 | 7.29E-12 | 8.85E-09 | 2.41E-22 | |
| 25 | Breast Cancer | 0.78 | 98.66 | -125.74 | -156.98 | -126.49 | 1.07E-19 | 2.54E-64 | 9.54E-71 | 3.81E-42 | |
| 26 | Cancer of the Cervix Uteri | - | 8.03 | - | - | - | - | - | - | - | Female- specific |
| 27 | Cancer of the Corpus and Uterus, NOS | - | 21.12 | - | - | - | - | - | - | - | |
| 28 | Ovarian Cancer | - | 11.43 | - | - | - | - | - | - | - | |
| 29 | Prostate Cancer | 103.45 | - | - | - | - | - | - | - | - | Male- specific |
| 30 | Testis Cancer | 5.22 | - | - | - | - | - | - | - | - | |

*, The incidence rates are per 100,000 and are age-adjusted to the World Standard population (WHO 2000-2025). Ratio, men/women. Max, maximum ratio; Avg, average. -, data not available.

Table S2 Comparison of incidence rates between men and women in human cancers based on Swedish data from 1975 to 2015.

| ID | Cancer Type | Men* (Mean) | Women* (Mean) | Ratio (Mean) | Ratio (Max) | Ratio (Avg) | P-Value (Gamma) | P-Value (Poisson) | P-Value (ANOVA) | P-Value (T-Test) | Comment |
|----|---------------------------------------|----------------|------------------|-----------------|----------------|----------------|--------------------|----------------------|--------------------|---------------------|-----------------|
| 1 | Kaposi Sarcoma | 0.40 | 0.09 | 4.44 | 24.54 | 5.54 | 2.28E-15 | 0.00E+00 | 4.40E-15 | 1.09E-12 | |
| 2 | Cancer of the Larynx | 2.53 | 0.36 | 7.11 | 18.65 | 7.58 | 9.87E-17 | 3.84E-60 | 2.40E-43 | 2.35E-28 | |
| 3 | Mesothelioma | 1.06 | 0.19 | 5.49 | 13.26 | 5.93 | 9.63E-18 | 1.32E-77 | 2.12E-29 | 6.12E-23 | |
| 4 | Urinary Bladder Cancer | 19.50 | 5.43 | 3.59 | 4.33 | 3.59 | 1.37E-19 | 1.41E-43 | 1.14E-61 | 1.07E-42 | |
| 5 | Esophageal Cancer | 3.61 | 1.14 | 3.17 | 4.08 | 3.22 | 1.12E-09 | 9.26E-43 | 7.33E-69 | 3.04E-42 | |
| 6 | Liver Cancer | 5.62 | 5.03 | 1.12 | 1.83 | 1.18 | 8.55E-10 | 3.12E-05 | 2.94E-02 | 1.16E-04 | |
| 7 | Oral Cavity and Pharynx | 7.17 | 3.52 | 2.03 | 3.19 | 2.11 | 6.66E-04 | 2.29E-21 | 5.50E-45 | 1.43E-31 | |
| 8 | Stomach Cancer | 12.55 | 6.47 | 1.94 | 2.28 | 1.93 | 5.78E-21 | 2.68E-23 | 4.85E-09 | 2.18E-18 | |
| 9 | Cancer of the Kidney and Renal Pelvis | 10.55 | 6.23 | 1.69 | 1.96 | 1.69 | 1.17E-11 | 3.35E-30 | 1.59E-31 | 1.77E-34 | |
| 10 | Thyroid Cancer | 1.74 | 4.53 | -2.61 | -3.32 | -2.61 | 1.91E-18 | 1.20E-32 | 2.27E-26 | 4.25E-25 | |
| 11 | Chronic Lymphocytic Leukemia | 3.45 | 1.72 | 2.01 | 2.75 | 2.03 | 1.39E-08 | 6.99E-31 | 2.36E-38 | 4.44E-36 | Sex-dimorphic |
| 12 | Non-Small Cell Lung Cancer | 22.42 | 11.23 | 2.00 | 4.39 | 2.34 | 3.03E-01 | 1.29E-02 | 3.19E-23 | 2.00E-13 | |
| 13 | Chronic Myeloid Leukemia | 1.01 | 0.70 | 1.44 | 2.19 | 1.48 | 2.54E-04 | 1.10E-29 | 3.82E-11 | 3.31E-12 | |
| | Small Cell lung Cancer | 2.36 | 1.60 | 1.48 | 4.68 | 1.52 | 2.70E-03 | 7.47E-09 | 2.15E-02 | 1.47E-05 | |
| 14 | Rectal Cancer | 13.59 | 8.46 | 1.61 | 1.84 | 1.61 | 8.54E-05 | 1.50E-37 | 1.92E-56 | 1.14E-41 | |
| 15 | Myeloma | 4.25 | 2.87 | 1.48 | 1.83 | 1.49 | 5.45E-04 | 1.54E-35 | 2.83E-44 | 2.99E-29 | |
| 16 | Acute Myeloid Leukemia | 2.07 | 1.76 | 1.17 | 1.57 | 1.19 | 9.74E-01 | 1.99E-17 | 2.55E-08 | 1.16E-11 | |
| 17 | Non-Hodgkin Lymphoma | 8.17 | 5.54 | 1.47 | 2.03 | 1.53 | 5.13E-15 | 9.49E-11 | 6.75E-05 | 3.74E-22 | |
| 18 | Brain Cancer | 0.99 | 0.88 | 1.13 | 1.60 | 1.17 | 3.75E-01 | 1.04E-17 | 1.48E-04 | 2.07E-04 | |
| 19 | Melanoma of the Skin | 12.76 | 13.14 | 0.97 | 1.12 | 0.96 | 7.75E-02 | 8.13E-01 | 7.31E-01 | 1.23E-03 | |
| 20 | Acute Lymphocytic Leukemia | 1.56 | 1.27 | 1.24 | 1.88 | 1.27 | 3.36E-01 | 1.34E-05 | 2.28E-07 | 5.98E-09 | |
| 21 | Hodgkin Lymphoma | 2.44 | 1.77 | 1.38 | 2.17 | 1.39 | 2.55E-12 | 4.25E-19 | 1.23E-11 | 1.41E-11 | |
| 22 | Pancreatic Cancer | 7.94 | 6.29 | 1.26 | 1.66 | 1.25 | 3.22E-16 | 3.53E-16 | 4.66E-07 | 6.36E-13 | |
| 23 | Colon Cancer | 21.44 | 18.93 | 1.13 | 1.26 | 1.13 | 9.39E-08 | 3.15E-13 | 2.11E-12 | 1.30E-21 | |
| 24 | Breast Cancer | 0.51 | 83.08 | -164.45 | -237.15 | -168.40 | 5.49E-24 | 1.04E-73 | 1.52E-51 | 5.99E-33 | Female-specific |
| 25 | Cancer of the Cervix Uteri | - | 9.72 | - | - | - | - | - | - | - | |
| 26 | Cancer of the Corpus and Uterus, NOS | - | 14.79 | - | - | - | - | - | - | - | |
| 27 | Ovarian Cancer | - | 13.26 | - | - | - | - | - | - | - | |
| 28 | Prostate Cancer | 81.43 | - | - | - | - | - | - | - | - | Male-specific |
| 29 | Testis Cancer | 5.35 | - | - | - | - | - | - | - | - | |

*, The incidence rates are per 100,000 and are age-adjusted to the World Standard population (WHO 2000-2025).. Ratio, men/women. Max, maximum ratio; Avg, average. -, data not available.

Table S3 Comparison of registry cases between men and women in human cancers based on Mayo Clinic data from 1970 to 2015.

| ID | Cancer Type | Men* (Mean) | Women* (Mean) | Ratio (Mean) | Ratio (Max) | Ratio (Avg) | P-Value (Gamma) | P-Value (Poisson) | P-Value (ANOVA) | P-Value (T-Test) | Comment |
|----|---------------------------------------|----------------|------------------|-----------------|----------------|----------------|--------------------|----------------------|--------------------|---------------------|-----------------|
| 1 | Kaposi Sarcoma | 3.76 | 0.71 | 5.28 | 8.00 | 2.79 | - | 1.19E-11 | 3.73E-14 | 5.22E-13 | |
| 2 | Cancer of the Larynx | 85.57 | 15.96 | 5.36 | 14.60 | 6.38 | 4.08E-12 | 1.69E-04 | 6.73E-38 | 9.83E-31 | |
| 3 | Mesothelioma | 30.46 | 10.26 | 2.97 | 16.00 | 3.54 | 1.01E-12 | 7.34E-07 | 5.85E-11 | 4.89E-19 | |
| 4 | Urinary Bladder Cancer | 345.93 | 83.83 | 4.13 | 6.32 | 4.25 | 1.12E-18 | 2.09E-02 | 3.37E-18 | 2.83E-15 | |
| 5 | Esophageal Cancer | 133.35 | 32.65 | 4.08 | 6.89 | 3.72 | 7.13E-18 | 2.85E-03 | 5.97E-08 | 1.07E-09 | |
| 6 | Liver Cancer | 122.48 | 59.33 | 2.06 | 4.50 | 1.95 | 9.34E-12 | 2.19E-02 | 1.92E-03 | 9.21E-08 | |
| 7 | Oral Cavity and Pharynx | 216.65 | 112.89 | 1.92 | 2.60 | 1.86 | 6.50E-19 | 1.70E-04 | 1.23E-08 | 4.55E-14 | |
| 8 | Stomach Cancer | 137.15 | 64.76 | 2.12 | 4.41 | 2.32 | 1.42E-07 | 2.88E-01 | 3.23E-17 | 9.97E-23 | |
| 9 | Cancer of the Kidney and Renal Pelvis | 260.33 | 118.74 | 2.19 | 2.74 | 2.17 | 6.46E-18 | 1.25E-02 | 5.93E-06 | 4.52E-12 | |
| 10 | Thyroid Cancer | 88.02 | 151.48 | -1.72 | -2.88 | -1.81 | 5.28E-16 | 3.50E-02 | 2.50E-03 | 6.39E-08 | |
| 11 | Chronic Lymphocytic Leukemia | 115.96 | 58.84 | 1.97 | 2.90 | 2.01 | 1.24E-15 | 2.70E-01 | 7.34E-07 | 5.69E-15 | |
| 12 | Non-Small Cell Lung Cancer | 543.93 | 354.80 | 1.53 | 4.54 | 1.92 | 8.44E-01 | 1.78E-01 | 8.86E-05 | 3.56E-15 | Sex-dimorphic |
| 13 | Chronic Myeloid Leukemia | 24.83 | 18.09 | 1.37 | 5.00 | 1.47 | 1.36E-07 | 7.36E-02 | 1.43E-02 | 1.58E-08 | |
| 14 | Small Cell lung Cancer | 73.63 | 48.43 | 1.52 | 7.10 | 1.90 | 6.08E-02 | 4.44E-02 | 1.95E-06 | 4.82E-11 | |
| 15 | Rectal Cancer | 169.30 | 102.15 | 1.66 | 2.25 | 1.66 | 1.59E-14 | 5.05E-04 | 5.86E-09 | 2.47E-18 | |
| 16 | Myeloma | 148.07 | 103.26 | 1.43 | 2.14 | 1.50 | 6.55E-16 | 5.87E-01 | 3.48E-02 | 1.07E-10 | |
| 17 | Acute Myeloid Leukemia | 58.11 | 40.22 | 1.44 | 4.60 | 1.58 | 3.18E-12 | 1.72E-01 | 2.72E-02 | 3.55E-11 | |
| 18 | Non-Hodgkin Lymphoma | 257.63 | 193.59 | 1.33 | 1.80 | 1.31 | 1.04E-14 | 9.16E-01 | 6.22E-02 | 3.55E-10 | |
| 19 | Brain Cancer | 272.11 | 270.39 | 1.01 | 1.56 | 1.05 | 8.02E-05 | 3.04E-01 | 9.50E-01 | 7.29E-01 | |
| 20 | Melanoma of the Skin | 287.52 | 176.13 | 1.63 | 2.20 | 1.48 | 8.10E-17 | 2.24E-01 | 7.68E-03 | 8.18E-08 | |
| 21 | Acute Lymphocytic Leukemia | 15.96 | 10.69 | 1.49 | 10.00 | 1.73 | 3.78E-04 | 1.55E-01 | 2.36E-04 | 1.23E-04 | |
| 22 | Hodgkin Lymphoma | 51.63 | 40.30 | 1.28 | 2.54 | 1.35 | 3.50E-03 | 6.41E-01 | 1.12E-03 | 9.77E-09 | |
| 23 | Pancreatic Cancer | 137.68 | 117.96 | 1.17 | 1.84 | 1.16 | 3.62E-03 | 8.24E-01 | 5.10E-01 | 5.10E-01 | |
| 24 | Colon Cancer | 338.52 | 287.65 | 1.18 | 1.46 | 1.19 | 1.56E-02 | 4.27E-01 | 1.66E-02 | 2.12E-15 | |
| 25 | Breast Cancer | 9.63 | 1212.35 | -125.89 | -352.50 | -139.11 | 2.18E-20 | 1.02E-12 | 2.15E-24 | 3.62E-18 | |
| 26 | Cancer of the Cervix Uteri | - | 121.59 | - | - | - | - | - | - | - | Female-specific |
| 27 | Cancer of the Corpus and Uterus, NOS | - | 224.02 | - | - | - | - | - | - | - | |
| 28 | Ovarian Cancer | - | 181.13 | - | - | - | - | - | - | - | |
| 29 | Prostate Cancer | 1648.61 | - | - | - | - | - | - | - | - | Male-specific |
| 30 | Testis Cancer | 51.54 | - | - | - | - | - | - | - | - | |

*, The cancer registry cases from Mayo Clinic include all clinical records of cancer patients at Mayo Clinic Hospitals for all three sites in the country, Rochester, MN, Scottsdale, AZ, and Jacksonville, FL. Ratio, men/women. Max, maximum ratio; Avg, average. -, data not available.

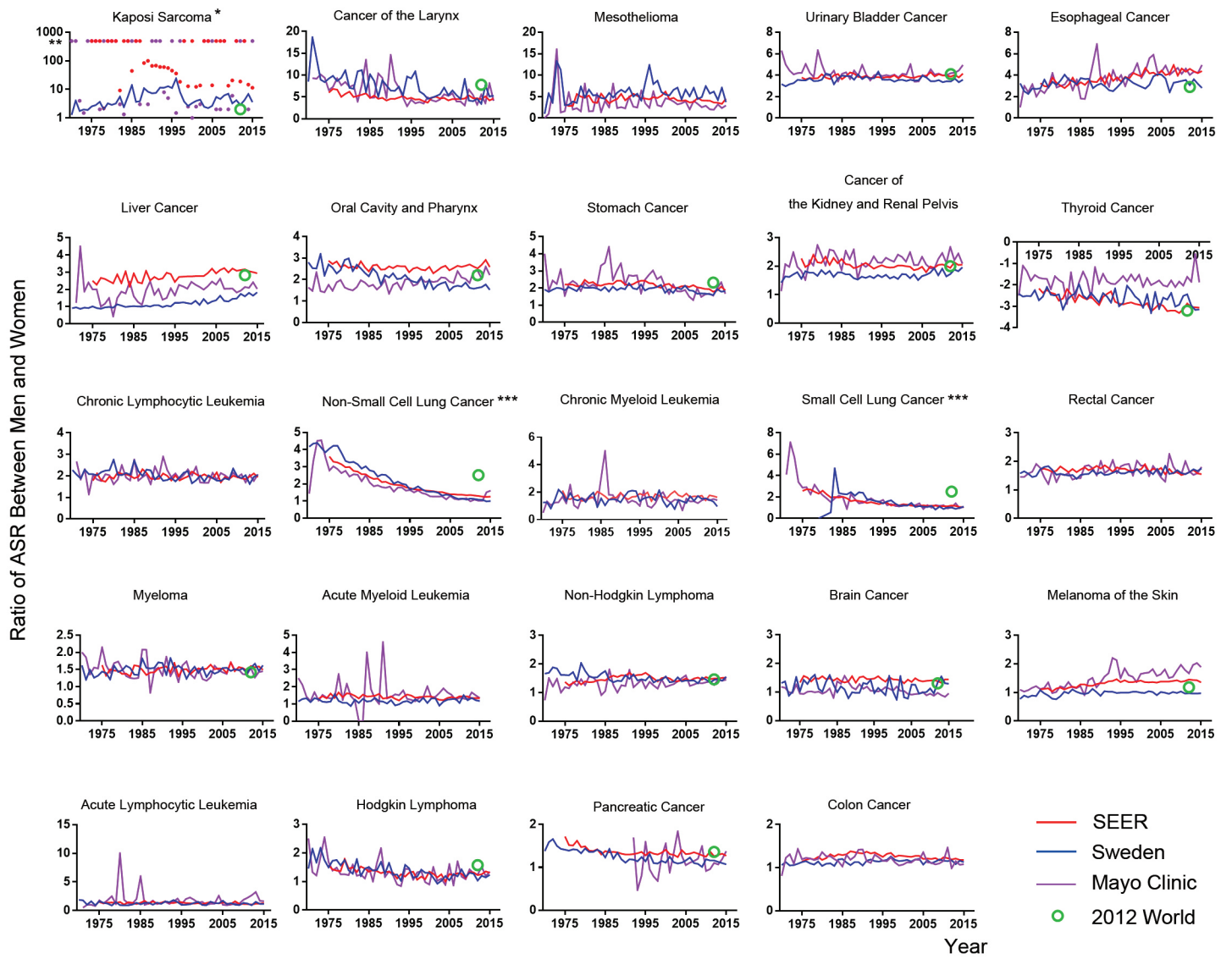


Figure s1

Numbers of Cancer Patient Cases at Mayo Clinic Hospitals

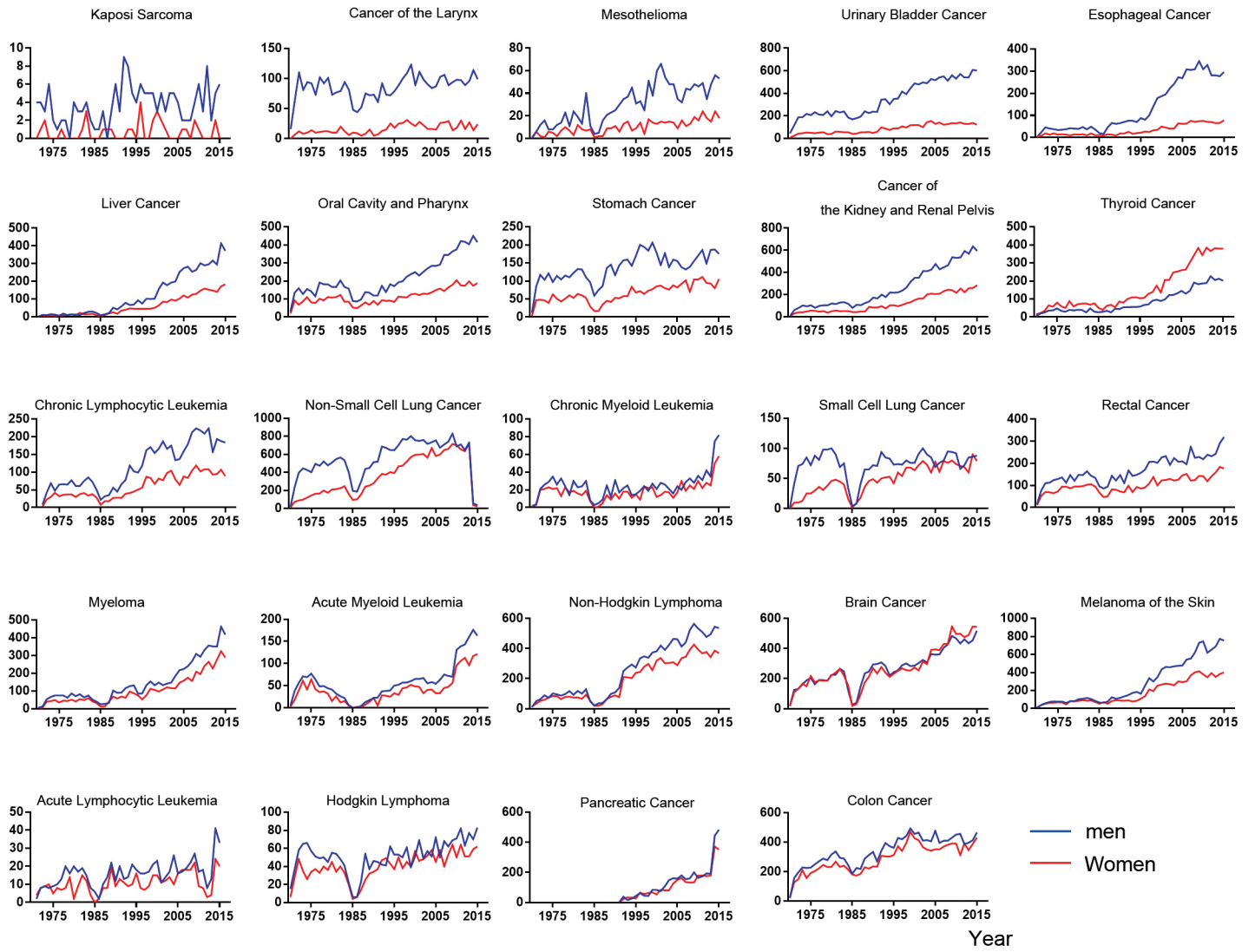


Figure S2