Supplementary Legends

Supplementary Figure 1. Incidence and mortality trends for individual countries

Supplementary Figure 2. Results of joinpoint regression for individual countries

Supplementary Figure 3. AAPC of incidence of leukaemia aged 50 years and older

Supplementary Figure 4. AAPC of incidence of leukaemia aged between 15-49 years old

Supplementary Figure 5. AAPC of incidence of leukaemia aged < 15 years old
Supplementary Figure 1: The plots of incidence and mortality trends for each country

**Male**

### Asia

**Bahrain: Male**

- Incidence male 0-85+
- Incidence male 0-14
- Incidence male 15-49
- Incidence male 50+
- Mortality male 0-85+

**China: Male**

- Incidence male 0-85+
- Incidence male 0-14
- Incidence male 15-49
- Incidence male 50+
- Mortality male 0-85+

**Hong Kong, SAR, China: Male**

- Incidence male 0-85+
- Incidence male 0-14
- Incidence male 15-49
- Incidence male 50+
- Mortality male 0-85+

**India: Male**

- Incidence male 0-85+
- Incidence male 0-14
- Incidence male 15-49
- Incidence male 50+

**Israel: Male**

- Incidence male 0-85+
- Incidence male 0-14
- Incidence male 15-49
- Incidence male 50+

**Japan: Male**

- Incidence male 0-85+
- Incidence male 0-14
- Incidence male 15-49
- Incidence male 50+
Western Europe
Uganda: Male

- Incidence male 0-85+
- Incidence male 0-14
- Incidence male 15-49
- Incidence male 50+
- Mortality male 0-85+

Africa
Oceania

Australia: Female

New Zealand: Female

Northern America

Canada: Female

USA: Female

Southern America
Northern Europe
Western Europe
Southern Europe
Supplementary Figure 2: The graphs of the joinpoint regression output

a.) Incidence male all ages
Oceania
Northern America

Southern America
Northern Europe
Western Europe
Eastern Europe
Africa
b.) Incidence female all ages

Asia
Oceania
Northern America

- Incidence 0-14y / Canada / Female: 1 Julipoints
- Incidence 0-14y / USA / Female: 1 Julipoints

Southern America

- Incidence 0-14y / Brazil / Female: 1 Julipoints
- Incidence 0-14y / Chile / Female: 1 Julipoints
Northern Europe
Western Europe
Southern Europe
Eastern Europe
Africa
c.) Incidence male below 40 years old

Asia

- [Image of graphs showing incidence rates for different countries in Asia, specifically for males below 40 years old, with trends and statistical notations.]
Northern America

Southern America
Northern Europe
Western Europe
Southern Europe

* Indicates that the Crude Percent Change (CPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 0 components.
Eastern Europe
Africa
d.) Incidence female below 15 years old
Oceania
Northern Europe

- Denmark / females / Incidence 0-14: Timepoints
- Estonia / females / Incidence 0-14: Timepoints
- Finland / females / Incidence 0-14: Timepoints
- Iceland / females / Incidence 0-14: Timepoints
- Lithuania / females / Incidence 0-14: Timepoints

* Indicates that the General Present Change (GPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 3 parameters.
Western Europe
Eastern Europe
Africa

Uganda / AnoVK / Incidence 0-14 / 10 Inhabitants

* indicates that the Logarithmic Change (LPC) is significantly different from zero at the alpha = 0.05 level.

Pooled Sensitivity & Specificity.
e.) Incidence male between 15-49 years old
Oceania
Northern Europe

Danish / male / Incidence 15-49: 0 Incipents

Estonian / male / Incidence 15-49: 0 Incipents

Hollander / male / Incidence 15-49: 0 Incipents

Icelandic / male / Incidence 15-49: 0 Incipents

Lithuanian / male / Incidence 15-49: 0 Incipents

* Indicates that the Current Period Change (CPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 3 Coefficients.
Western Europe
Southern Europe

Croatia / males / Incidence 15-49: 6 timepoints

Cyprus / males / Incidence 15-49: 6 timepoints

Italy / males / Incidence 15-49: 6 timepoints

Malta / males / Incidence 15-49: 6 timepoints

Spain / males / Incidence 15-49: 6 timepoints
Eastern Europe

- Turkey / male / Incidence 19-49: 1 Joinpoint
- Belarus / male / Incidence 19-49: 3 Joinpoints
- Belgium / male / Incidence 19-49: 0 Joinpoints
- Czech Republic / male / Incidence 19-49: 0 Joinpoints
- Poland / male / Incidence 19-49: 0 Joinpoints
- Slovak Republic / male / Incidence 19-49: 0 Joinpoints

* Indicates that the Current Percent Change (CPC) is significantly different from zero at the alpha = 0.05 level.

Final Selected Model: 1 Joinpoint.
f.) Incidence female between 15-49 years old

Asia

Graphs showing incidence of a disease in different countries in Asia for females aged 15-49 years old. Each graph includes a line graph with data points indicating changes over years, with annotations that indicate significant changes at the 0.05 level. The graphs show trends and comparisons between different regions.
Oceania
Northern America

Southern America
Northern Europe
Southern Europe
Eastern Europe

Turkey / Female / Incidence 15-49: 0 Jlinpoints

* Indicates the Crude Percent Change (CPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 2 components.

Bulgaria / Female / Incidence 15-49: 0 Jlinpoints

* Indicates the Crude Percent Change (CPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 2 components.

Czech Republic / Female / Incidence 15-49: 0 Jlinpoints

* Indicates the Crude Percent Change (CPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 2 components.

Poland / Female / Incidence 15-49: 0 Jlinpoints

* Indicates the Crude Percent Change (CPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 2 components.

Slovakia / Female / Incidence 15-49: 0 Jlinpoints

* Indicates the Crude Percent Change (CPC) is significantly different from zero at the alpha = 0.05 level.
Final Selected Model: 2 components.
Africa
g.) Incidence male above 50 years old

Asia
Oceania
Northern America

Southern America
Northern Europe

* Indicates that the long-term trend change (RTC) is significantly different from zero at the alpha = 0.05 level.
* Final Selected Model: 0 components.

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**Incidence M0+ / Denmark / Male: 0 components**

* Indicates that the long-term trend change (RTC) is significantly different from zero at the alpha = 0.05 level.
* Final Selected Model: 0 components.

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**Incidence M0+ / Finland / Male: 0 components**

* Indicates that the long-term trend change (RTC) is significantly different from zero at the alpha = 0.05 level.
* Final Selected Model: 0 components.

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**Incidence M0+ / Iceland / Male: 0 components**

* Indicates that the long-term trend change (RTC) is significantly different from zero at the alpha = 0.05 level.
* Final Selected Model: 0 components.

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**Incidence M0+ / Norway / Male: 0 components**

* Indicates that the long-term trend change (RTC) is significantly different from zero at the alpha = 0.05 level.
* Final Selected Model: 0 components.
Southern Europe
Eastern Europe
Africa
h.) Incidence female above 50 years old
Oceania
Northern America

Southern America
Northern Europe

Southern Europe
Eastern Europe
Africa
i.) Mortality male all ages

Asia
Oceania
Northern America

Southern America
Northern Europe
Southern Europe
Eastern Europe
j.) Mortality female all ages
Oceania
Northern Europe
Western Europe
Southern Europe
Eastern Europe
Supplementary Figure 3. AAPC of incidence of leukaemia aged 50 years and older

| Male Incidence (≥50 years old) | Female Incidence (≥50 years old) |
|--------------------------------|----------------------------------|
| **Asia**                      | **Asia**                         |
| India                          | South Korea                      |
| Kuwait                         | Japan                            |
| Thailand                       | Thailand                         |
| South Korea                    | Mainland China                   |
| Japan                          | Kuwait                            |
| Hong Kong, China               | Israel                            |
| Mainland China                 | Hong Kong, China                 |
| Israel                         | Bahrain                           |
| Philippines                    | Bahrain                           |
| Bahrain                        | Australia                         |
| Oceania                        | New Zealand                       |
| Australia                      | Canada                            |
| New Zealand                    | USA Black                         |
| Northern America               | USA White                         |
| Canada                         | USA                               |
| USA Black                      | USA White                         |
| USA                            | Canada                            |
| Ecuador                        | Colombia                          |
| Southern America               | Costa Rica                        |
| Colombia                       | Brazil                            |
| Costa Rica                     | Chile                             |
| Brazil                         | Chile                             |
| Northern Europe                | Northern Europe                   |
| United Kingdom                 | Iceland                           |
| Faroe Islands                  | Norway                            |
| Lithuania                      | Sweden                            |
| Norway                         | Denmark                           |
| Denmark                        | Norway                            |
| Sweden                         | Denmark                           |
| Finland                        | Ireland                           |
| Finland                        | Estonia                           |
| Ireland                        | Estonia                           |
| Estonia                        | Iceland                           |
| Iceland                        | Iceland                           |
| Western Europe                 | Western Europe                    |
| Germany                        | Germany                           |
| Netherlands                    | France                            |
| Switzerland                    | Austria                           |
| France                         | Austria                           |
| Austria                        | Faroe Islands                     |
| Southern Europe                | Southern Europe                   |
| Malta                          | Turkey                            |
| Turkey                         | Slovenia                          |
| Slovenia                       | Spain                             |
| Spain                          | Italy                             |
| Italy                          | Spain                             |
| Austria                        | Spain                             |
| Cyprus                         | Italy                             |
| Cyprus                         | Spain                             |
| Eastern Europe                 | Eastern Europe                    |
| Slovakia                       | Bulgaria                          |
| Slovakia                       | Poland                            |
| Bulgaria                       | Czech Republic                    |
| Poland                         | Belarus                           |
| Czech Republic                 | Belarus                           |
| Belarus                        | Czech Republic                    |
| Africa                         | Uganda                            |

AAPC, annual percentage change; *p values less than 0.05.
**Supplementary Figure 4.** AAPC of incidence of leukaemia aged < 40 years old

### Male Incidence (15-49 years old)

| Region        | Country          | AAPC (40-49 years old) |
|---------------|------------------|-------------------------|
| Asia          | Thailand         | 1.89                    |
|               | Japan            | 1.69                    |
|               | Korea            | 1.50                    |
|               | India            | 1.36                    |
|               | Bahrain          | 0.51                    |
|               | Israel           | -1.29                   |
|               | Hong Kong, China | -1.42                   |
|               | Kuwait           | -1.98                   |
|               | China            | -2.70*                  |
|               | Philippines      | -5.87                   |
| Oceania       | Australia        | 1.35                    |
|               | New Zealand      | -2.21                   |
| Northern      | USA              | 1.93                    |
| America       | Canada           | 1.01                    |
| Southern      | Ecuador          | 3.89                    |
| America       | Colombia         | -6.45                   |
|               | Chile            | -1.42                   |
|               | Costa Rica       | -9.19*                  |
|               | Brazil           | -17.70*                 |
| Northern      | Sweden           | 3.58                    |
| Europe        | Norway           | 3.16                    |
|               | Estonia          | 2.61                    |
|               | United Kingdom   | 0.55                    |
|               | Finland          | 0.08                    |
|               | Denmark          | 0.00                    |
|               | Ireland          | -3.68                   |
|               | Lithuania        | -4.73                   |
|               | Iceland          | -6.06                   |
| Western       | Germany          | 2.98                    |
| Europe        | Switzerland      | 1.95                    |
|               | Netherlands      | 0.53                    |
|               | France           | -1.15                   |
|               | Austria          | -1.78                   |
| Southern      | Cyprus           | 0.11                    |
| Europe        | Spain            | 5.34                    |
|               | Turkey           | -0.35                   |
|               | Italy            | -1.75                   |
|               | Slovenia         | -4.16                   |
|               | Croatia          | -4.33*                  |
|               | Malta            | -11.10                  |
| Eastern       | Czech Republic   | 0.69                    |
| Europe        | Slovakia         | 0.67                    |
|               | Poland           | 0.61                    |
|               | Bulgaria         | -1.12                   |
|               | Belarus          | -3.27                   |
| Africa        | Uganda           | 5.79                    |

### Female Incidence (15-49 years old)

| Region        | Country          | AAPC (40-49 years old) |
|---------------|------------------|-------------------------|
| Asia          | Bahrain          | 6.43                    |
|               | India            | 2.29                    |
|               | Hong Kong, China | 1.90                    |
|               | Korea            | 0.93                    |
|               | Japan            | 0.51                    |
|               | China            | -1.47                   |
|               | Thailand         | -1.67                   |
|               | Israel           | -3.38*                  |
|               | Kuwait           | -4.66                   |
|               | China            | -5.69*                  |
| Oceania       | Australia        | 1.08                    |
|               | New Zealand      | -1.47                   |
| Northern      | Canada           | 1.61*                   |
| America       | USA              | 0.88                    |
| Southern      | Colombia         | 3.29                    |
| America       | Ecuador          | -2.17                   |
|               | Chile            | -3.36                   |
|               | Costa Rica       | -18.76*                 |
|               | Brazil           | -6.15*                  |
| Northern      | Lithuania        | 7.91*                   |
| Europe        | Ireland          | 5.08*                   |
|               | Norway           | 3.58                    |
|               | Denmark          | 2.68                    |
|               | Estonia          | 2.04                    |
|               | Sweden           | 1.31                    |
|               | United Kingdom   | 0.85                    |
|               | Iceland          | -1.45                   |
|               | Finland          | -1.49                   |
| Western       | Germany          | 0.05                    |
| Europe        | Netherlands      | -0.27                   |
|               | France           | -2.18                   |
|               | Austria          | -2.93                   |
|               | Switzerland      | -3.63                   |
| Southern      | Slovenia         | 3.38                    |
| Europe        | Turkey           | 2.37                    |
|               | Cyprus           | 0.96                    |
|               | Spain            | -0.02                   |
|               | Italy            | -1.70                   |
|               | Malta            | -2.76                   |
|               | Croatia          | -6.80                   |
| Eastern       | Slovakia         | 2.14                    |
| Europe        | Bulgaria         | 1.42                    |
|               | Belarus          | -0.37                   |
|               | Czech Republic   | -0.87                   |
|               | Poland           | -2.68                   |
| Africa        | Uganda           | 9.12*                   |

AAPC, annual percentage change; *p values less than 0.05.
**Supplementary Figure 5.** AAPC of incidence of leukaemia aged < 15 years old

### Male Incidence (<15 years old)

| Region        | Country      | AAPC 2000-2018 (95% CI) |
|---------------|--------------|--------------------------|
| Asia          | Bahrain      | 11.99 (9.19, 14.80)      |
|               | Japan        | 11.90 (10.10, 13.70)     |
|               | Korea        | 3.47 (2.27, 4.66)        |
|               | Thailand     | 2.94 (1.74, 4.14)        |
|               | China        | 1.34 (0.14, 2.53)        |
|               | India        | 0.25 (0.05, 0.45)        |
|               | Hong Kong, China | -0.35 (0.02, -0.68) |
|               | Israel       | -1.18 (0.92, -1.43)      |
|               | Philippines  | -4.64 (-5.85, -3.43)     |
| Oceania       | New Zealand  | 0.46 (0.17, 0.76)        |
|               | Australia    | 0.92 (0.62, 1.22)        |
| Northern America | USA        | 1.13 (0.83, 1.44)        |
|               | Canada       | 0.92 (0.63, 1.21)        |
| Southern America | Costa Rica | 4.50 (3.20, 5.80)        |
|               | Ecuador      | 2.85 (1.55, 4.15)        |
|               | Colombia     | 1.54 (0.24, 2.85)        |
|               | Chile        | 1.53 (0.22, 2.84)        |
|               | Brazil       | -8.96 (-10.66, -7.26)    |
| Northern Europe | Lithuania | 3.46 (2.16, 4.74)        |
|               | Estonia      | 2.17 (0.87, 3.47)        |
|               | Norway       | 0.09 (0.00, 0.23)        |
|               | Finland      | -0.62 (-1.32, 0.08)      |
|               | United Kingdom | -1.28 (0.98, -1.58) |
|               | Ireland      | -1.34 (-2.04, -0.64)     |
|               | Sweden       | -2.12 (-2.82, -1.42)     |
|               | Denmark      | 0.09 (0.00, 0.23)        |
|               | Iceland      | -4.10 (-4.80, -3.40)     |
| Western Europe | Switzerland | 6.17 (4.86, 7.48)        |
|               | France       | 3.16 (2.86, 3.46)        |
|               | Austria      | 3.15 (2.85, 3.45)        |
|               | Netherlands  | -1.50 (-2.10, -0.90)     |
|               | Germany      | -4.32 (-5.02, -3.62)     |
| Southern Europe | Turkey    | 2.34 (1.94, 2.74)        |
|               | Spain        | 1.52 (1.12, 1.92)        |
|               | Slovenia     | 0.54 (0.14, 0.95)        |
|               | Italy        | -0.17 (-0.77, 0.43)      |
|               | Croatia      | -0.93 (-1.53, -0.33)     |
|               | Cyprus       | -2.01 (-2.61, -1.41)     |
|               | Malta        | -9.18 (-10.88, -7.48)    |
| Eastern Europe | Czech Republic | 12.69 (11.39, 13.99) |
|               | Slovakia     | 4.40 (4.00, 4.80)        |
|               | Poland       | 3.88 (3.48, 4.28)        |
|               | Belarus      | 0.14 (0.04, 0.24)        |
|               | Bulgaria     | -3.02 (-3.72, -2.32)     |
| Africa        | Uganda       | 0.03 (0.01, 0.06)        |

### Female Incidence (<15 years old)

| Region        | Country      | AAPC 2000-2018 (95% CI) |
|---------------|--------------|--------------------------|
| Asia          | Hong Kong, China | 2.89 (2.59, 3.19)       |
|               | Japan        | 2.89 (2.59, 3.19)        |
|               | Kuwait       | 2.54 (2.24, 2.84)        |
|               | Thailand     | 1.80 (1.50, 2.10)        |
|               | China        | 1.10 (0.80, 1.40)        |
|               | Philippines  | 0.29 (0.00, 0.59)        |
|               | Korea        | -1.57 (-2.27, -0.87)     |
|               | Israel       | -3.28 (-4.08, -2.48)     |
|               | India        | -4.68 (-5.48, -3.88)     |
|               | Bahrain      | -11.87 (-13.57, -10.17)  |
| Oceania       | Australia    | -1.05 (-1.75, -0.35)     |
|               | New Zealand  | -4.17 (-4.87, -3.47)     |
| Northern America | Canada     | 2.35 (2.05, 2.65)        |
|               | USA          | 1.07 (0.77, 1.37)        |
| Southern America | Chile    | 3.77 (3.47, 4.07)        |
|               | Costa Rica   | 0.88 (0.58, 1.18)        |
|               | Colombia     | -2.21 (-2.91, -1.51)     |
|               | Ecuador      | -4.34 (-5.04, -3.64)     |
|               | Brazil       | -12.40 (-14.10, -10.70)  |
| Northern Europe | Ireland   | 1.31 (0.91, 1.71)        |
|               | Norway       | -0.26 (-0.96, 0.44)      |
|               | Finland      | -0.80 (-1.50, -0.10)     |
|               | Denmark      | -1.13 (-1.83, -0.43)     |
|               | Lithuania    | -1.30 (-2.00, -0.60)     |
|               | Estonia      | -1.71 (-2.41, -1.01)     |
|               | Iceland      | -3.34 (-4.04, -2.64)     |
|               | Sweden       | -7.74 (-9.44, -6.04)     |
| Western Europe | Germany     | 14.75 (13.45, 16.05)     |
|               | Switzerland  | 4.86 (4.56, 5.16)        |
|               | Austria      | 1.24 (0.94, 1.54)        |
|               | Netherlands  | -2.68 (-3.38, -2.00)     |
|               | France       | 4.93 (4.63, 5.23)        |
| Southern Europe | Italy     | 4.93 (4.63, 5.23)        |
|               | Spain        | 1.76 (1.46, 2.06)        |
|               | Turkey       | 1.42 (1.12, 1.72)        |
|               | Slovenia     | 0.80 (0.50, 1.10)        |
|               | Croatia      | -1.13 (-1.83, -0.43)     |
|               | Malta        | -1.92 (-2.62, -1.22)     |
|               | Cyprus       | -12.45 (-14.15, -10.75)  |
| Eastern Europe | Czech Republic | 10.99 (10.69, 11.29)    |
|               | Belarus      | 5.71* (5.41, 6.01)       |
|               | Poland       | 2.20 (1.90, 2.50)        |
|               | Slovakia     | -3.43 (-4.13, -2.73)     |
|               | Bulgaria     | -3.82 (-4.52, -3.12)     |
| Africa        | Uganda       | -4.57 (-5.27, -3.87)     |

AAPC, annual percentage change; *p values less than 0.05.