

# **National and International Childhood Cancer Incidence and Time Trends**

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**Childhood Cancer 2012**

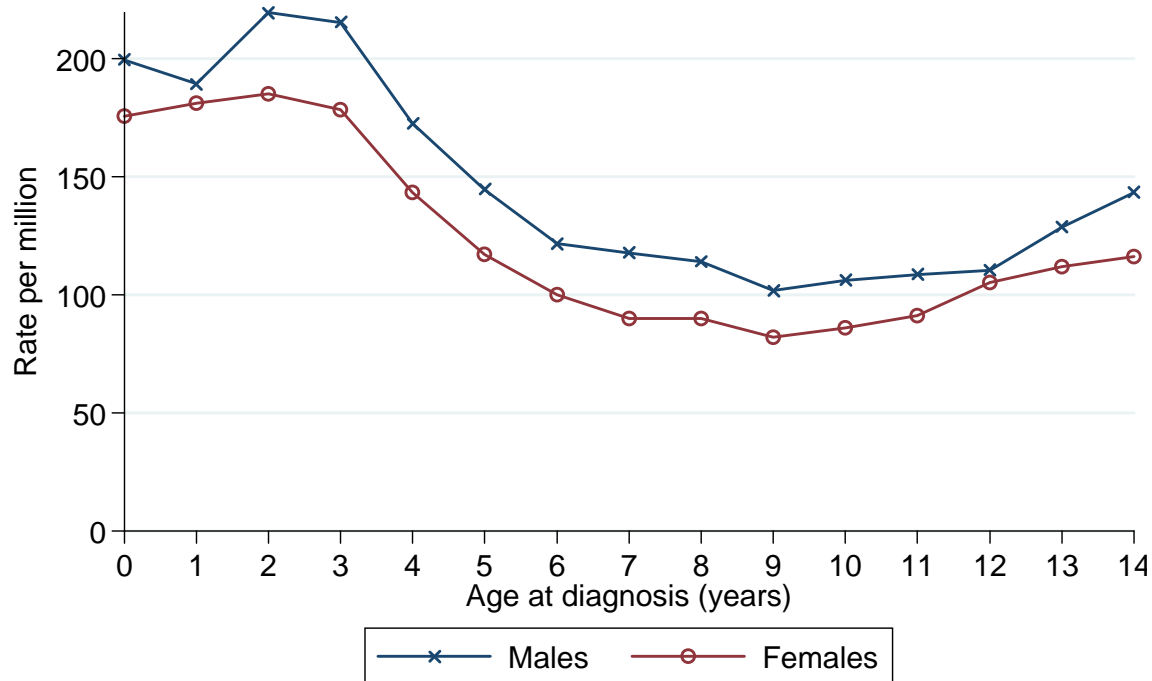
# **Childhood Cancer Incidence in the UK, 1996-2005**

<b>Age-standardized rate (ASR)</b>	<b>142 per million</b>
<b>Cumulative risk in first 15 years of life</b>	<b>1 in 484</b>
<b>Sex ratio (M/F)</b>	<b>1.2</b>

**Source: National Registry of Childhood Tumours**

# Annual Incidence by Single Year of Age All Cancers, Great Britain, 1991-2000

Fig 3.1 All cancers



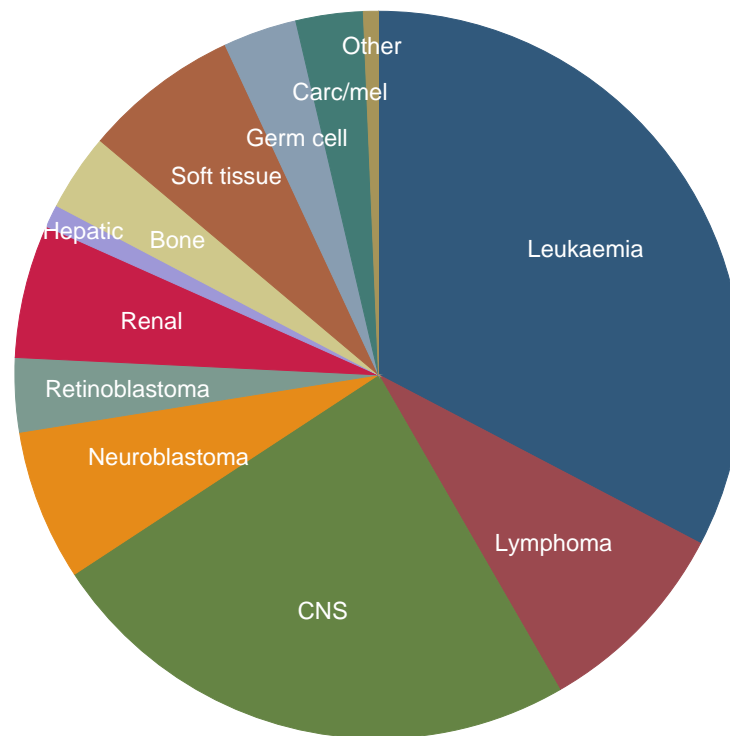
Britain 1991-2000

**Source: National Registry of Childhood Tumours**

Stiller C (ed.) *Childhood Cancer in Britain: Incidence, Survival, Mortality*. OUP, 2007

# Contributions of the 12 Main Groups of ICCC-3\* to Age-standardized Incidence, Great Britain, 1991-2000

Fig3.2 Age-standardised rate



Britain 1991-2000

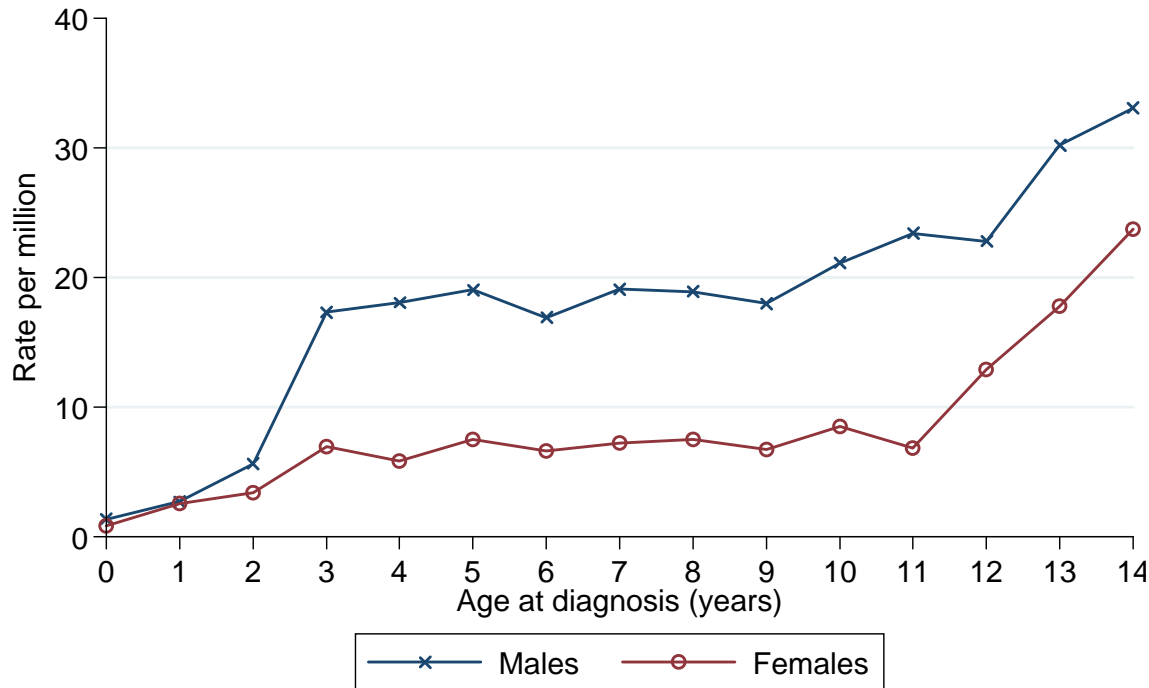
**\*International Incidence of Childhood Cancer, Third Edition**  
(Steliarova-Foucher E et al. *Cancer* 2005, **103**, 1457-1467)

**Source: National Registry of Childhood Tumours**

Stiller C (ed.) *Childhood Cancer in Britain: Incidence, Survival, Mortality*. OUP, 2007

# Annual Incidence by Single Year of Age Lymphomas (ICCC-3 Group II), Great Britain, 1991-2000

Fig 3.14 Lymphomas and reticuloendothelial neoplasms



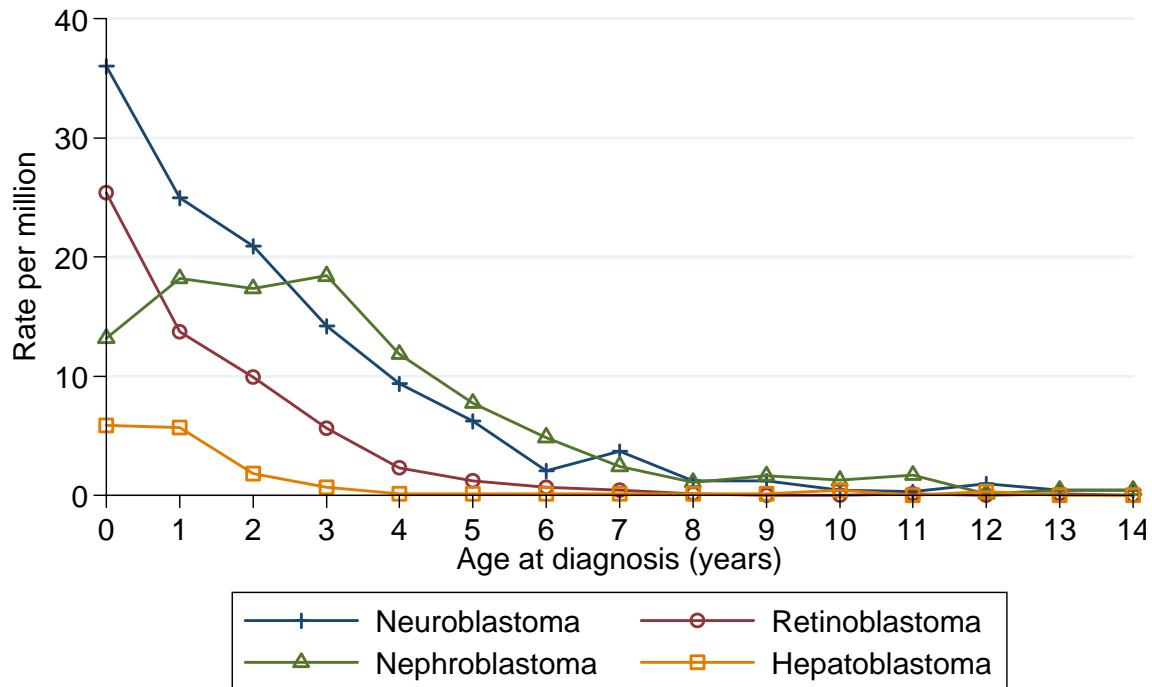
Britain 1991-2000

**Source: National Registry of Childhood Tumours**

Stiller C (ed.) *Childhood Cancer in Britain: Incidence, Survival, Mortality*. OUP, 2007

# Annual Incidence by Single Year of Age Principal Embryonal Tumours, Great Britain, 1991-2000

Fig 3.21 Embryonal tumours

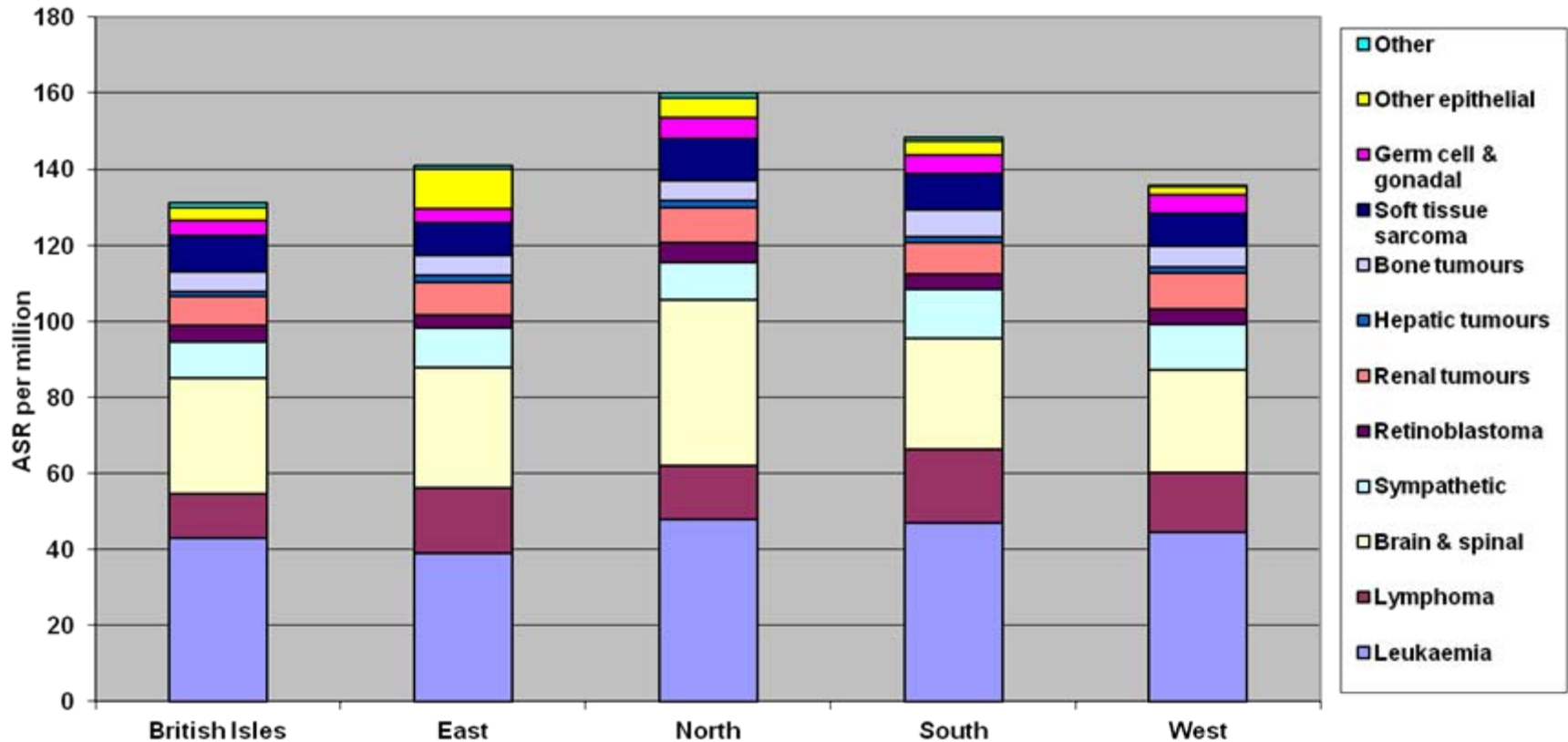


Britain 1991-2000

**Source: National Registry of Childhood Tumours**

Stiller C (ed.) *Childhood Cancer in Britain: Incidence, Survival, Mortality*. OUP, 2007

# Childhood Cancer Incidence in Europe, 1988-1997



**British Isles: Ireland, UK**

**East: Belarus, Estonia, Hungary, Slovakia**

**North: Denmark, Finland, Iceland, Norway**

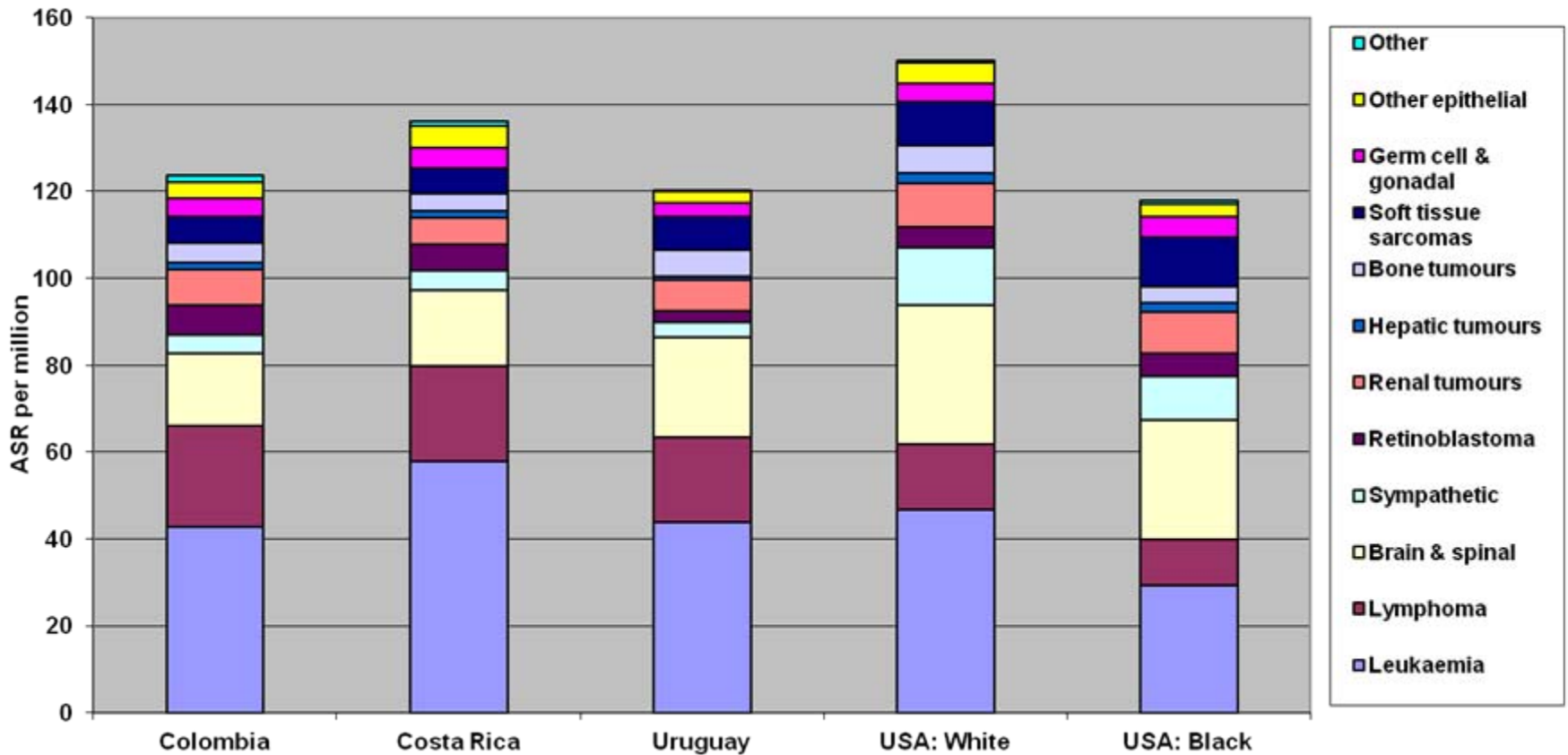
**South: Italy, Malta, Slovenia, Spain, Turkey**

**West: France, Germany, Netherlands, Switzerland**

**Source: Automated Childhood Cancer Information System (ACCIS)**

Stiller CA et al. *Eur J Cancer* 2006, **42**, 1952-1960.

# Childhood Cancer Incidence in the Americas in the 1980s



**Colombia: Cali**

**Costa Rica: national**

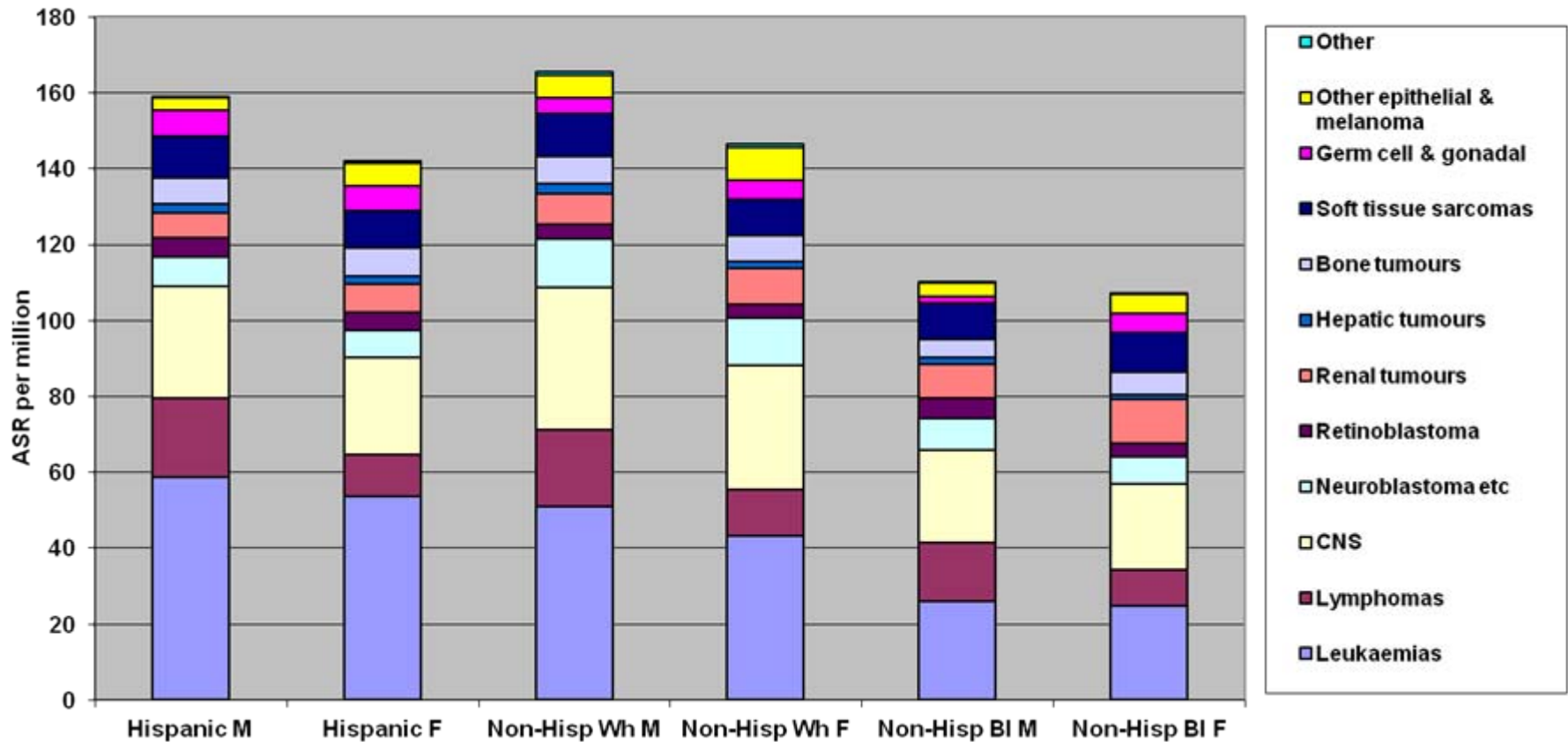
**Uruguay: national**

**USA: SEER registries**

Parkin DM et al. (eds.) *International Incidence of Childhood Cancer, Volume 2*. IARC, 1998.



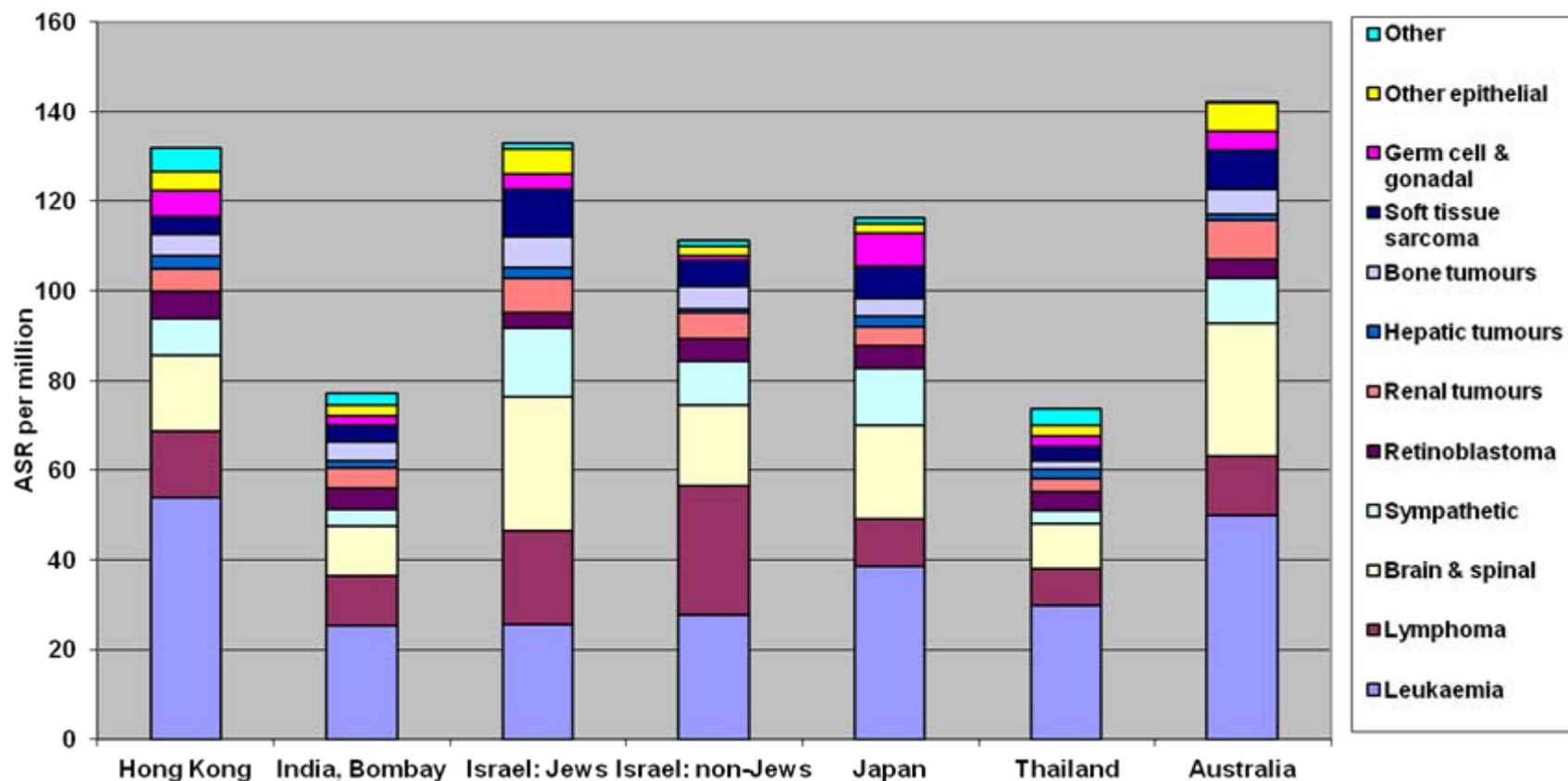
# Childhood Cancer Incidence in the USA, 1999-2003



Source: 38 SEER & NPCR registries

Howe HL et al. *Cancer* 2006, **107**, 1711-1742.

# Childhood Cancer Incidence in Asia & Oceania in the 1980s



**Hong Kong, Israel, Australia: National**

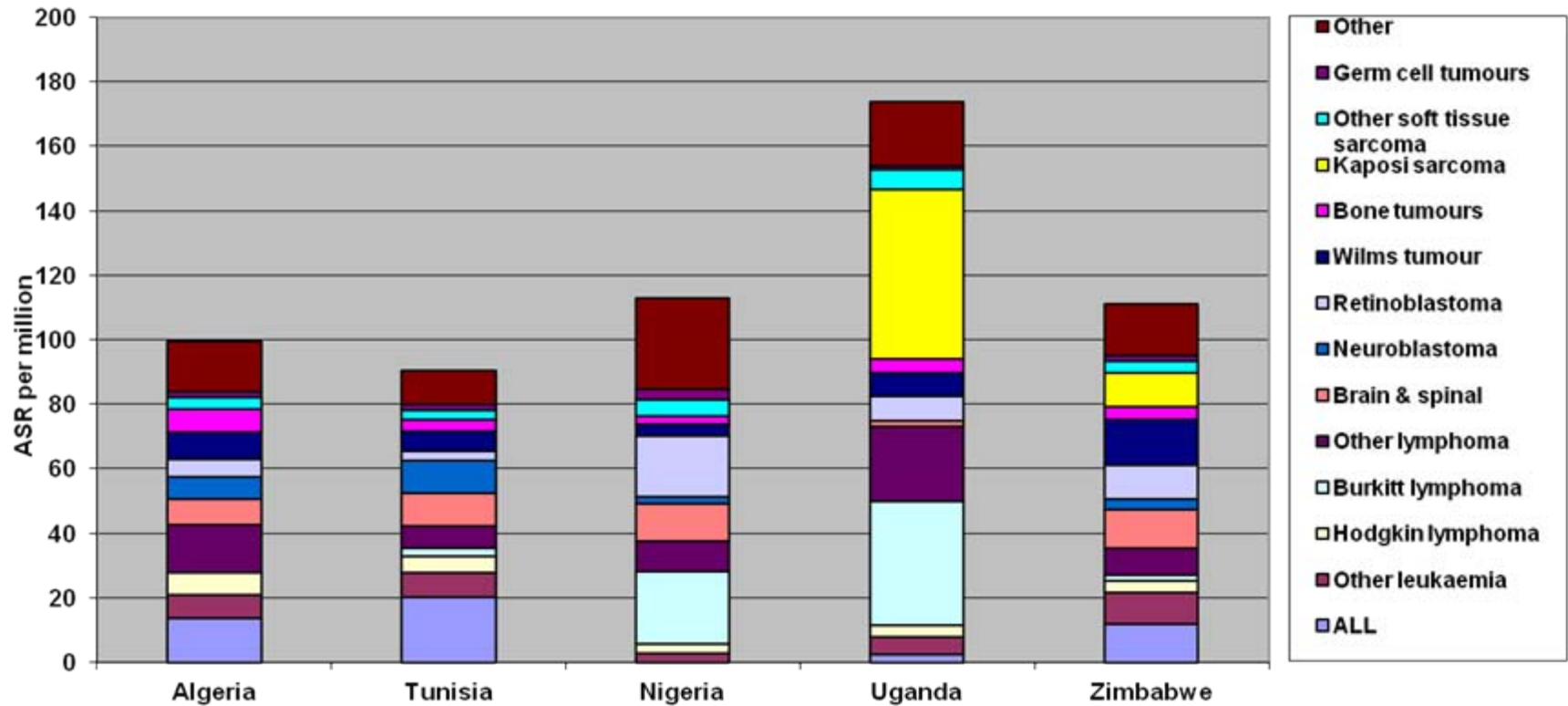
**India: Bombay**

**Japan: 5 registries**

**Thailand: 4 registries**

Parkin DM et al. (eds.) *International Incidence of Childhood Cancer, Volume 2*. IARC, 1998.

# Childhood Cancer Incidence in Africa in the 1990s



**Algeria: 4 registries**

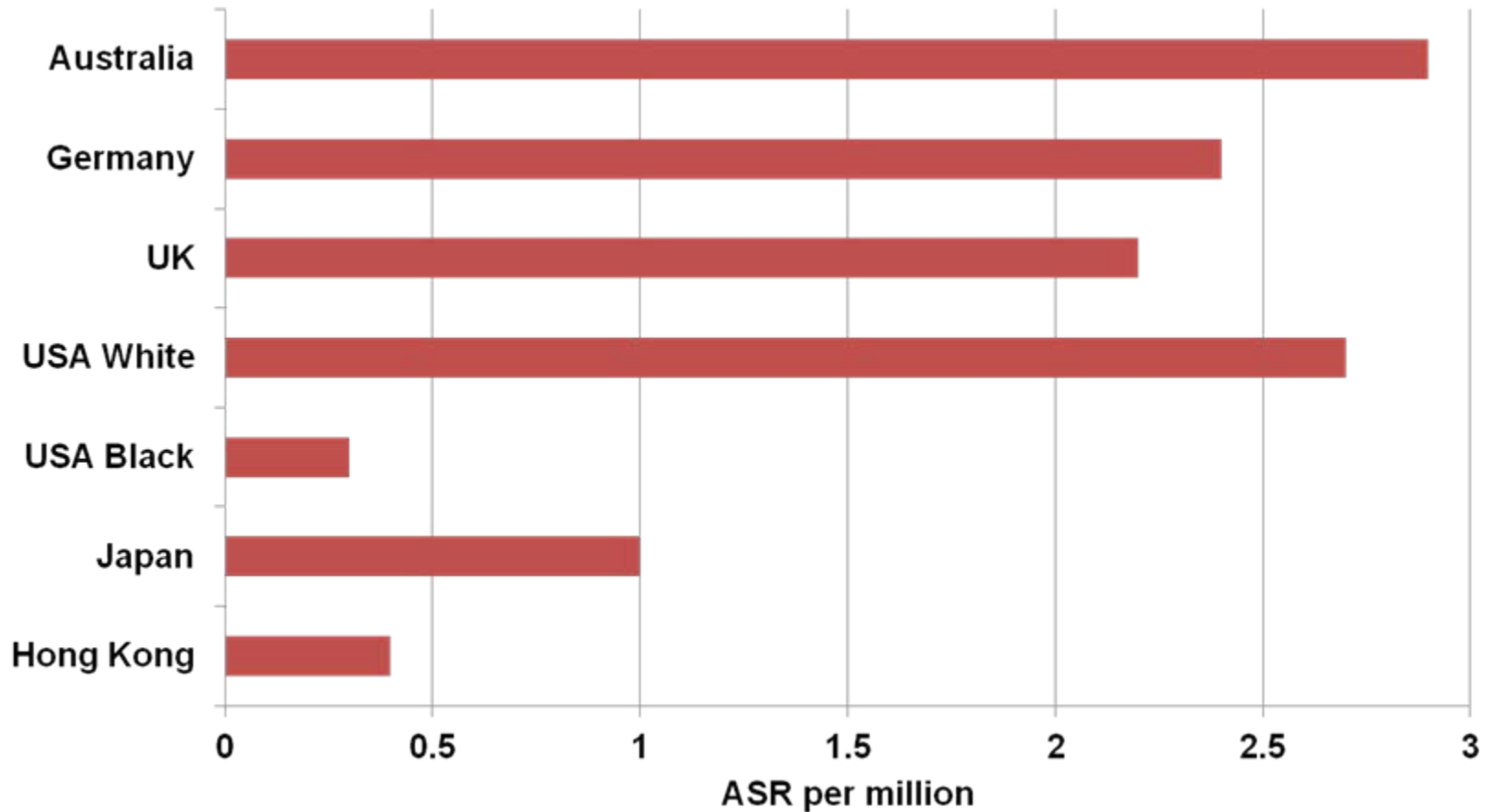
**Tunisia: 3 registries**

**Nigeria: Ibadan**

**Uganda: Kyadondo County**

**Zimbabwe: Harare (Africans)**

# Ewing Sarcoma of Bone: Incidence in the 1980s



**Australia, Germany, Hong Kong: National**

**UK: England & Wales**

**Japan: 5 registries**

**USA: SEER registries**

Parkin DM et al. (eds.) *International Incidence of Childhood Cancer, Volume 2*. IARC, 1998.

# Adrenocortical Carcinoma in Southern Brazil

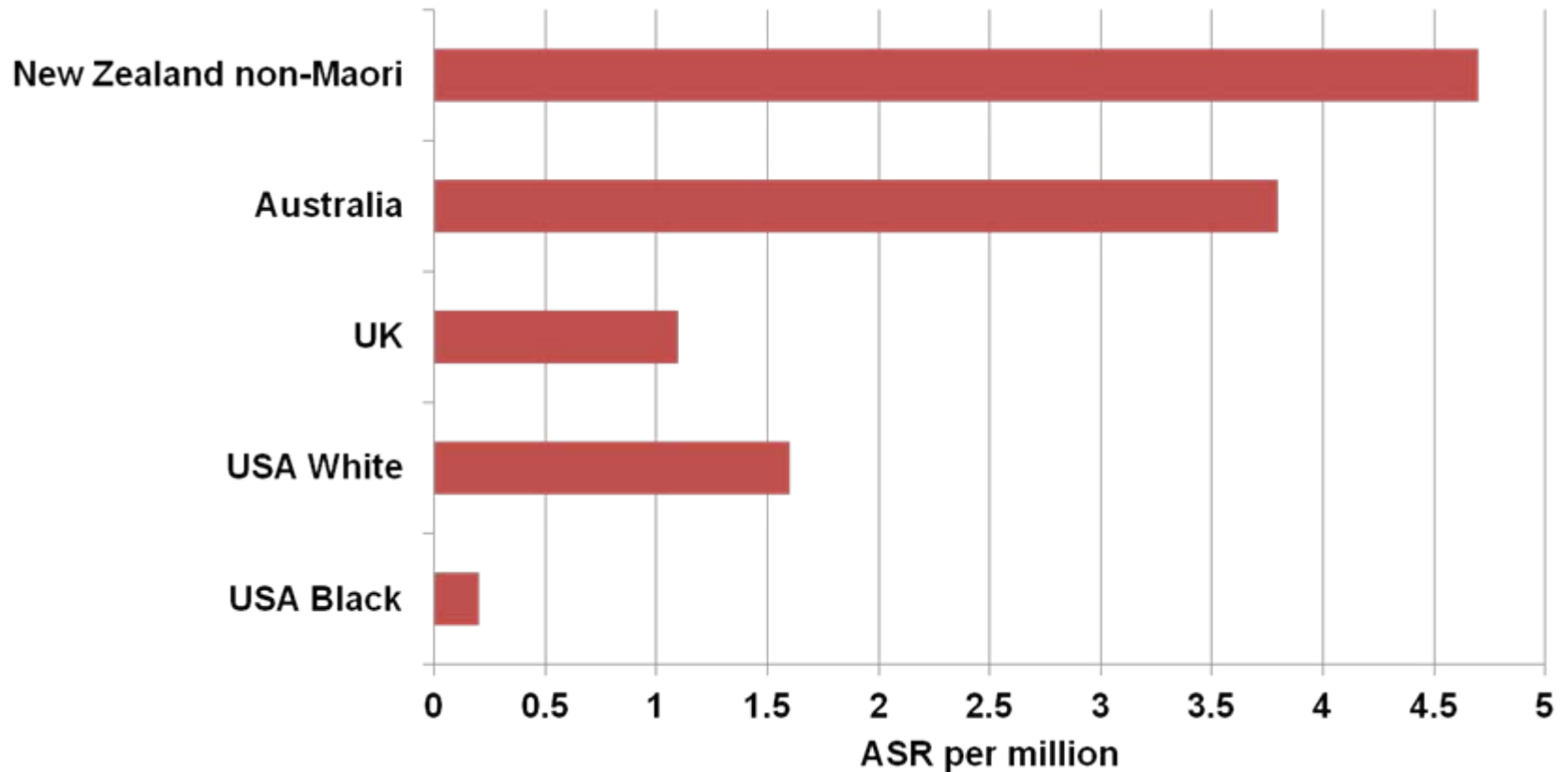
	ASR per million	
	Incidence	Mortality
São Paulo (1969-1978) <sup>1</sup>	1.5	
Goiânia (1989-1994) <sup>2</sup>	2.8	
Curitiba (1998-2003) <sup>3</sup>	3.5?	1.6
Other world regions <sup>2</sup>	<0.5	

1 Parkin DM et al. (eds.) *International Incidence of Childhood Cancer*. IARC, 1988.

2 Parkin DM et al. (eds.) *International Incidence of Childhood Cancer, Volume 2*. IARC, 1998.

3 Pianovski MAD et al. *Pediatr Blood Cancer* 2006,**47**,56-60

# Malignant Melanoma: Incidence in the 1980s



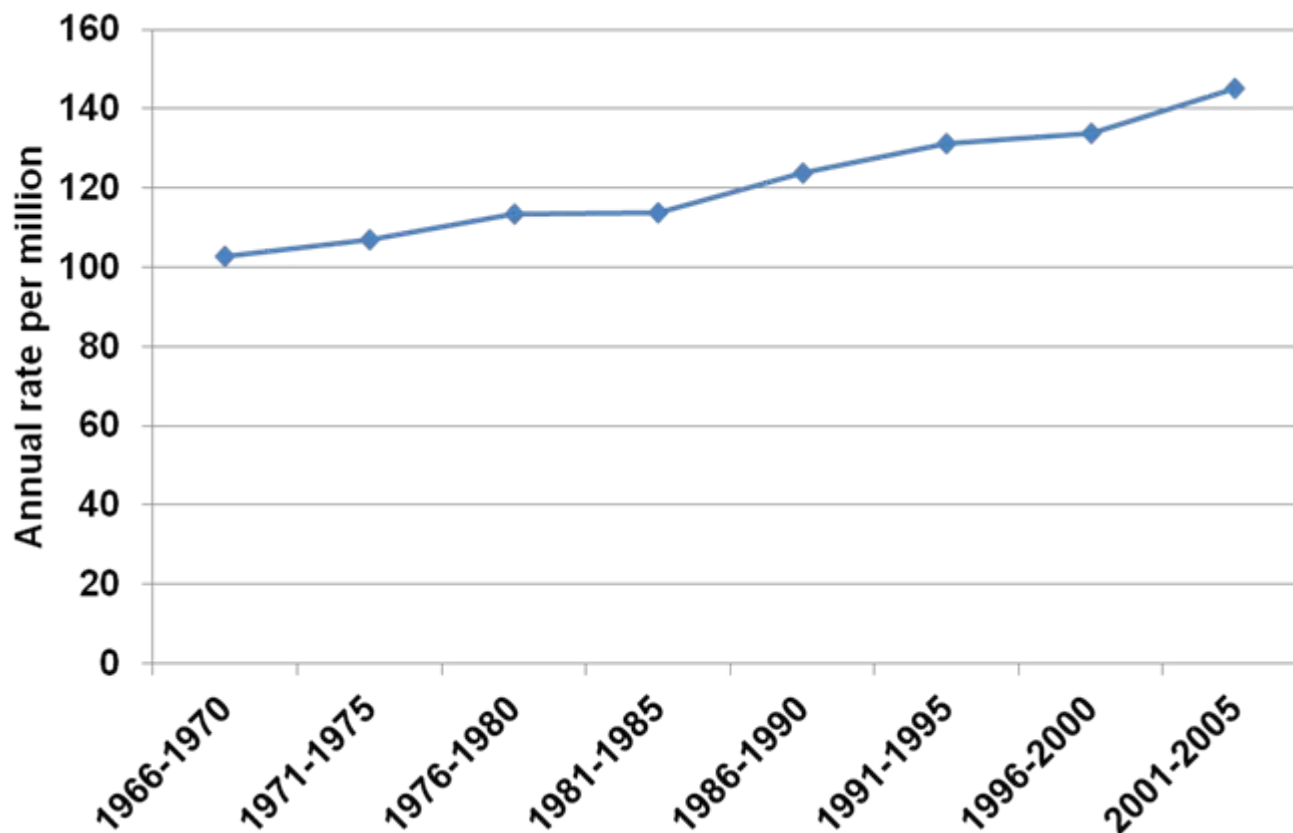
**Australia, New Zealand: National**

**UK: England & Wales**

**USA: SEER registries**

# All Childhood Cancer, Great Britain, 1966-2005

## Age-sex-standardized rates by 5-year period of diagnosis

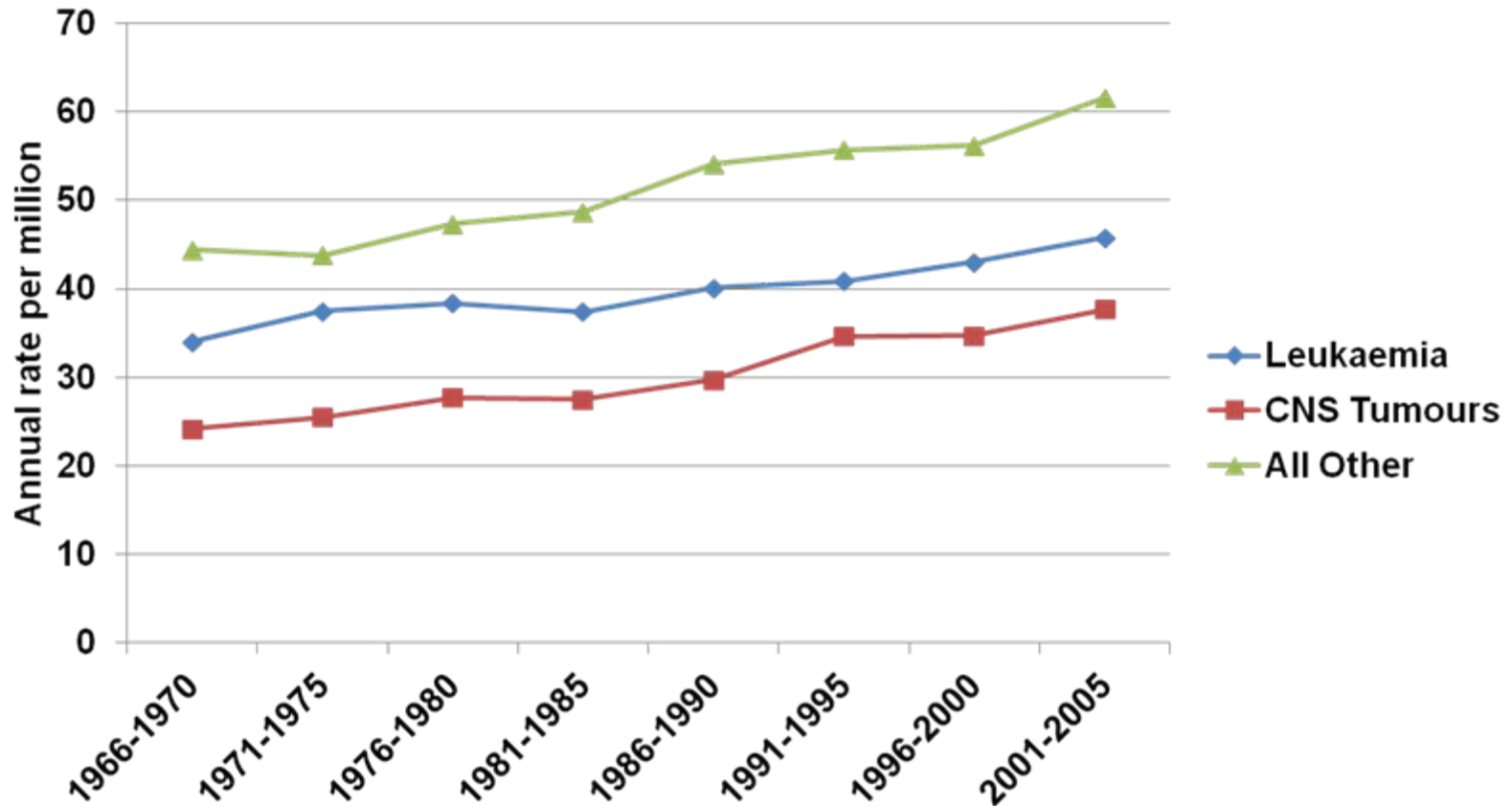


Annual average % change (95% CI)                      1.0 (0.9,1.1)

Source: National Registry of Childhood Tumours

# All Childhood Cancer, Great Britain, 1966-2005

## Age-sex-standardized rates by 5-year period of diagnosis



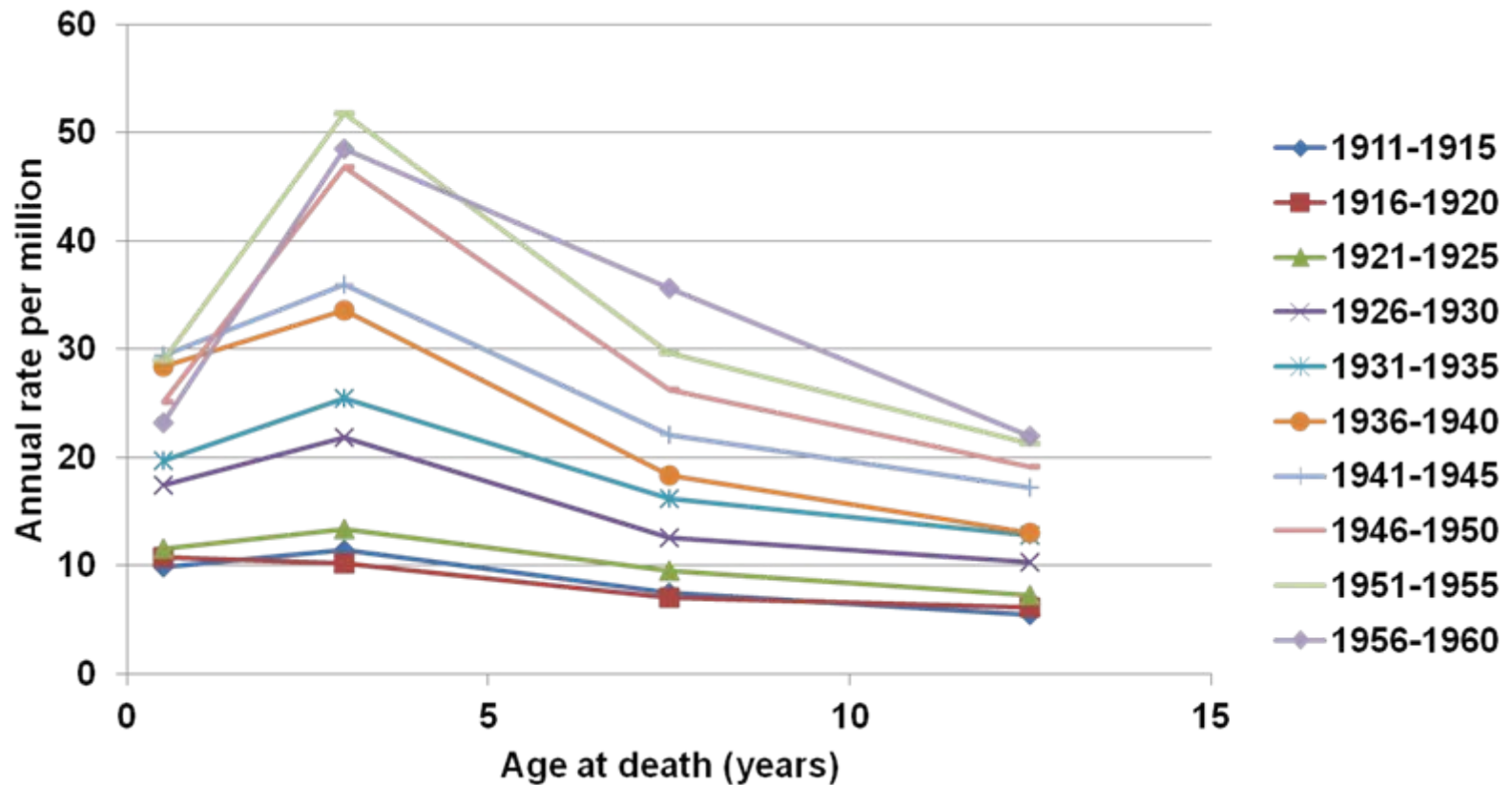
Annual average % change (95% CI)

Leukaemia (ICCC-3 I)	0.7 (0.6,0.9)
CNS tumours (ICCC-3 III, Xa)	1.3 (1.2,1.5)
All other childhood cancers	1.0 (0.9,1.1)

Source: National Registry of Childhood Tumours

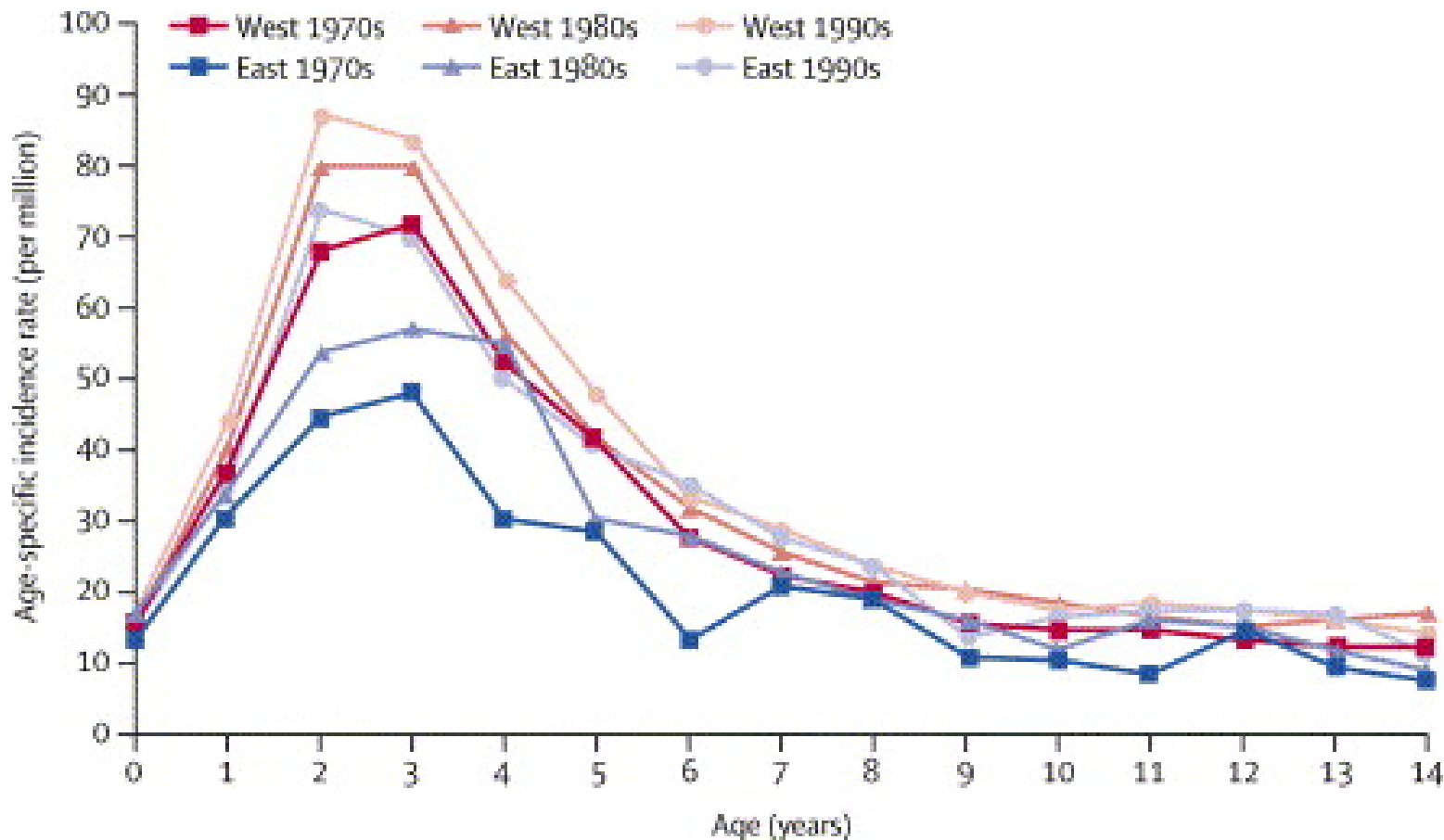


# Childhood Leukaemia in England and Wales, 1911-1960



## Mortality at age 0, 1-4, 5-9, 10-14

# Acute Lymphoblastic Leukaemia in Europe, 1970-1999



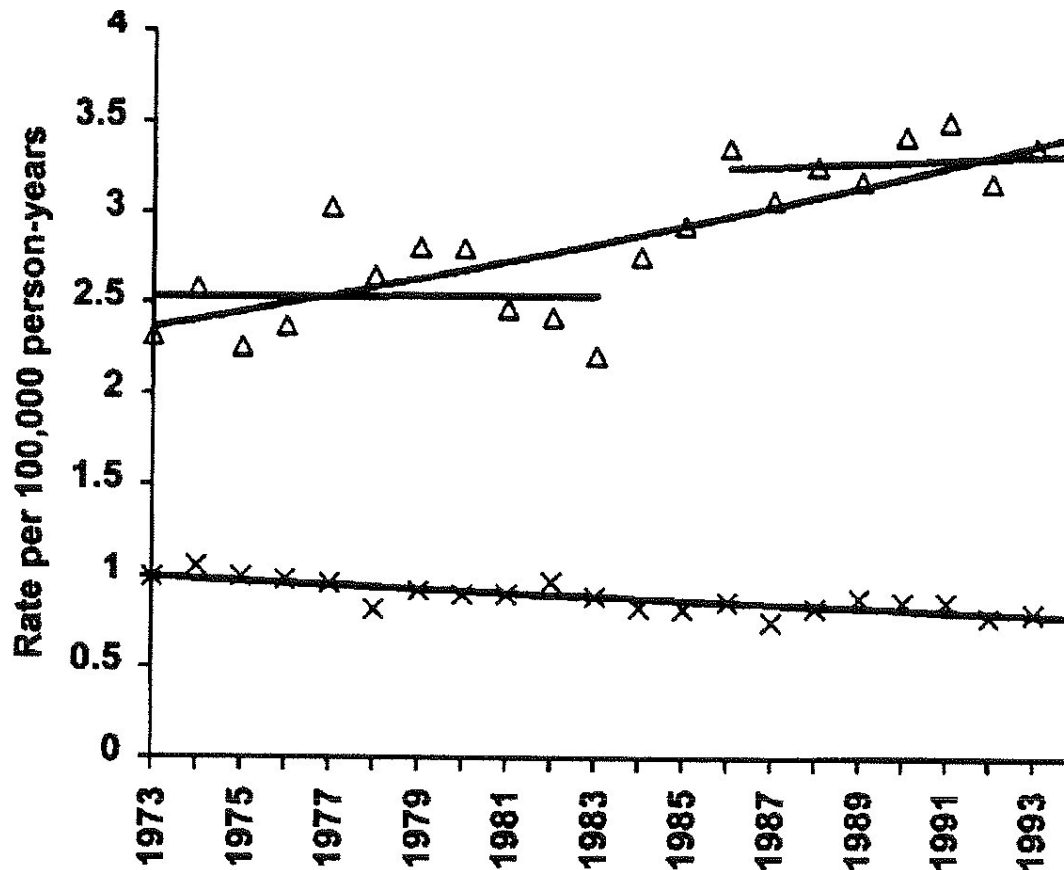
**West:** Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Malta, Netherlands, Norway, Spain, Switzerland, UK

**East:** Belarus, Estonia, Slovakia, Slovenia, Turkey

**Source:** ACCIS

Steliarova-Foucher E et al. *Lancet* 2004, **364**, 2097-2105

# Primary Malignant Brain Tumours in the USA, 1973-1994

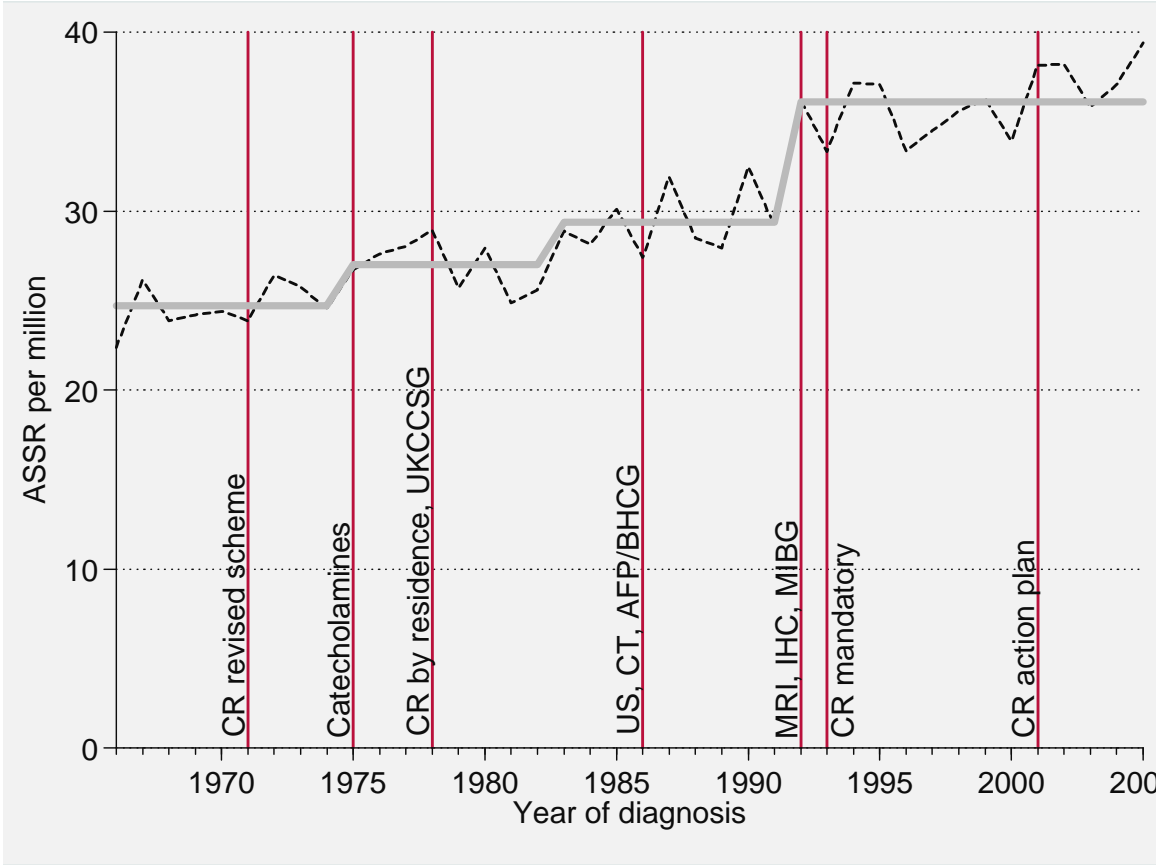


Age-standardized annual rates:	Δ Incidence		X Mortality		
	1973	1977	1982	1984	1985
No. of CT scanners	8	921			
No. of MRI units			10	108	371

Source: SEER Program

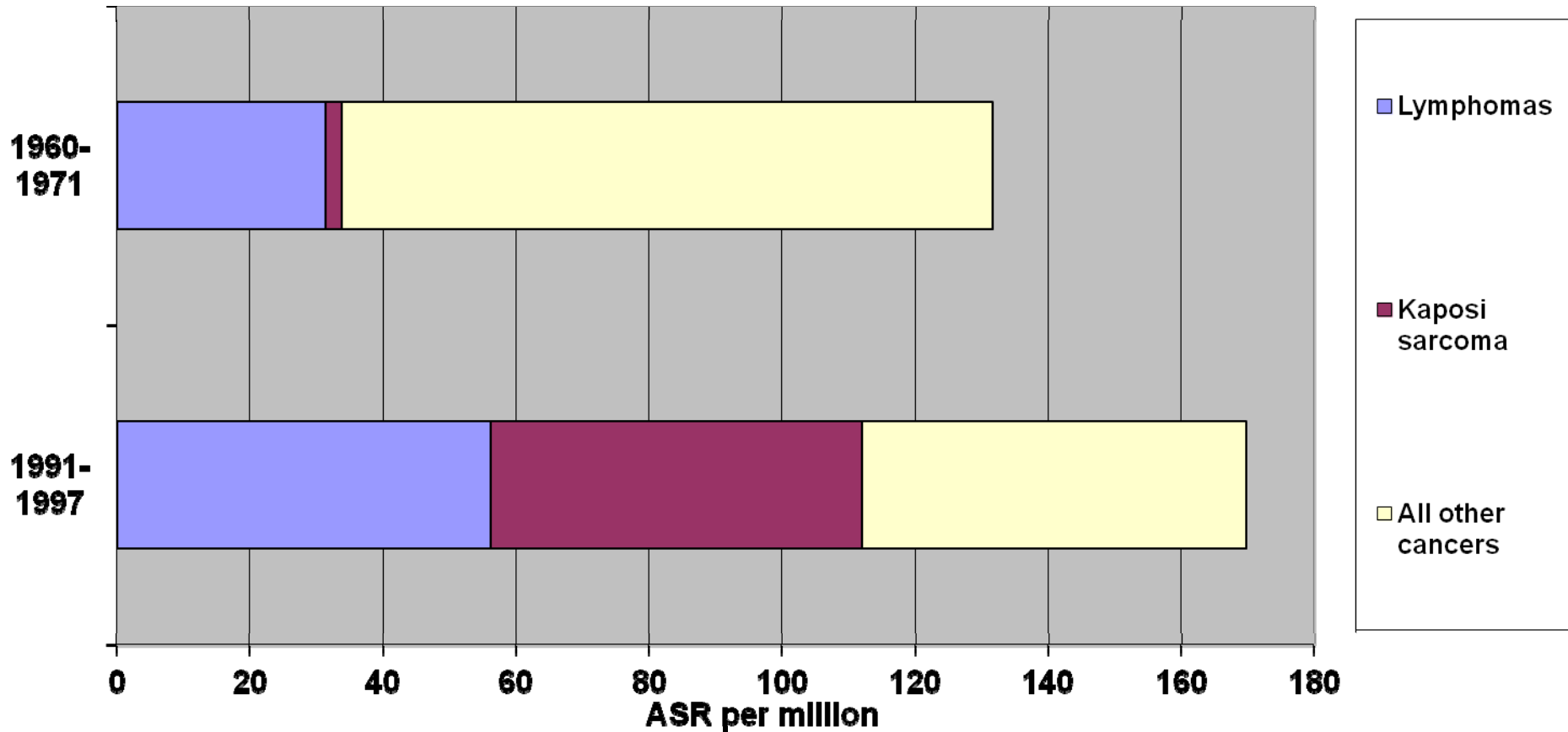
Smith MA et al. *J Natl Cancer Inst* 1998, **90**, 1269-1277

# Childhood CNS Tumours in Great Britain, 1966-2005



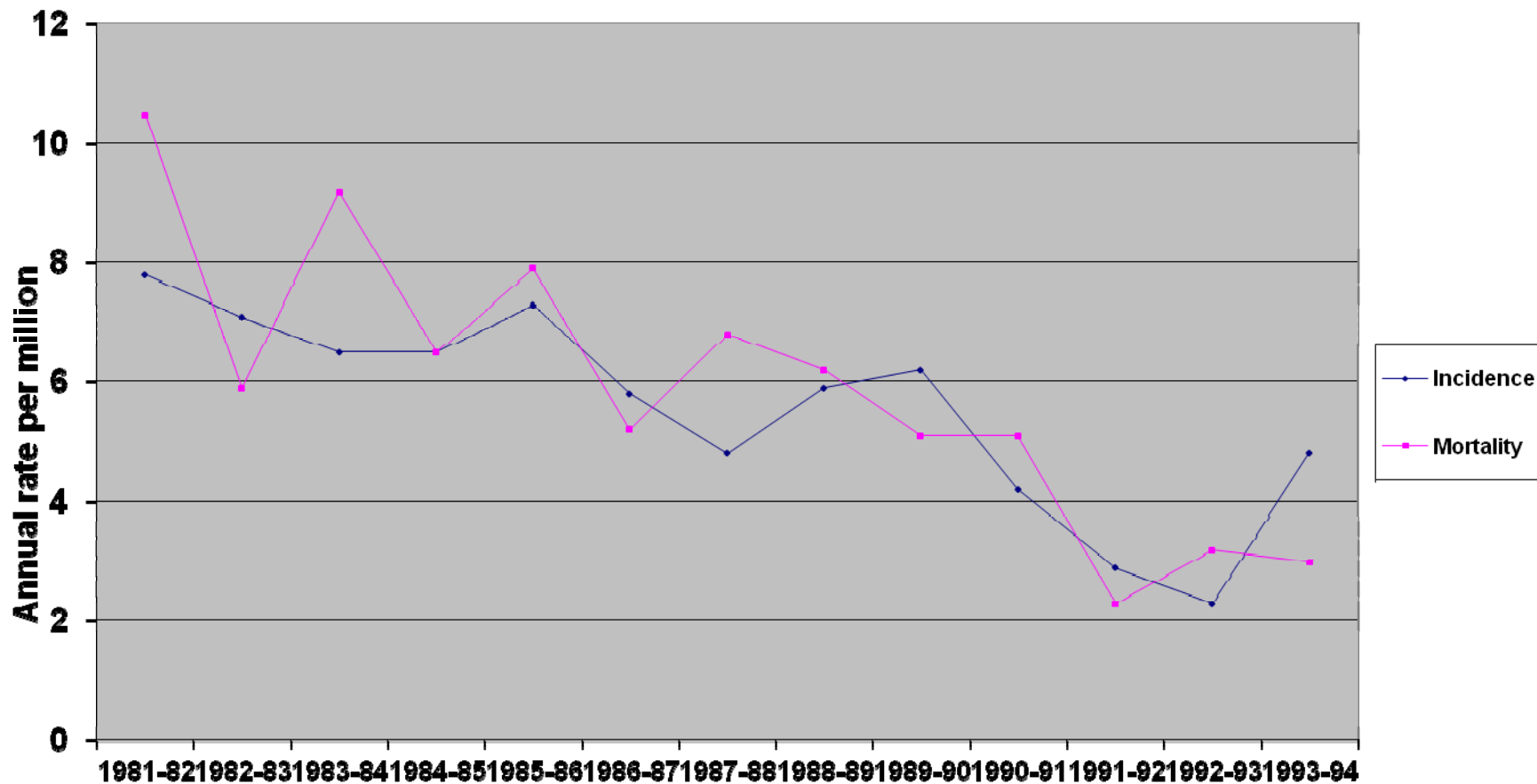
Source: National Registry of Childhood Tumours

# Childhood Cancer Incidence in Kyadondo County, Uganda 1960-1971 and 1991-1997



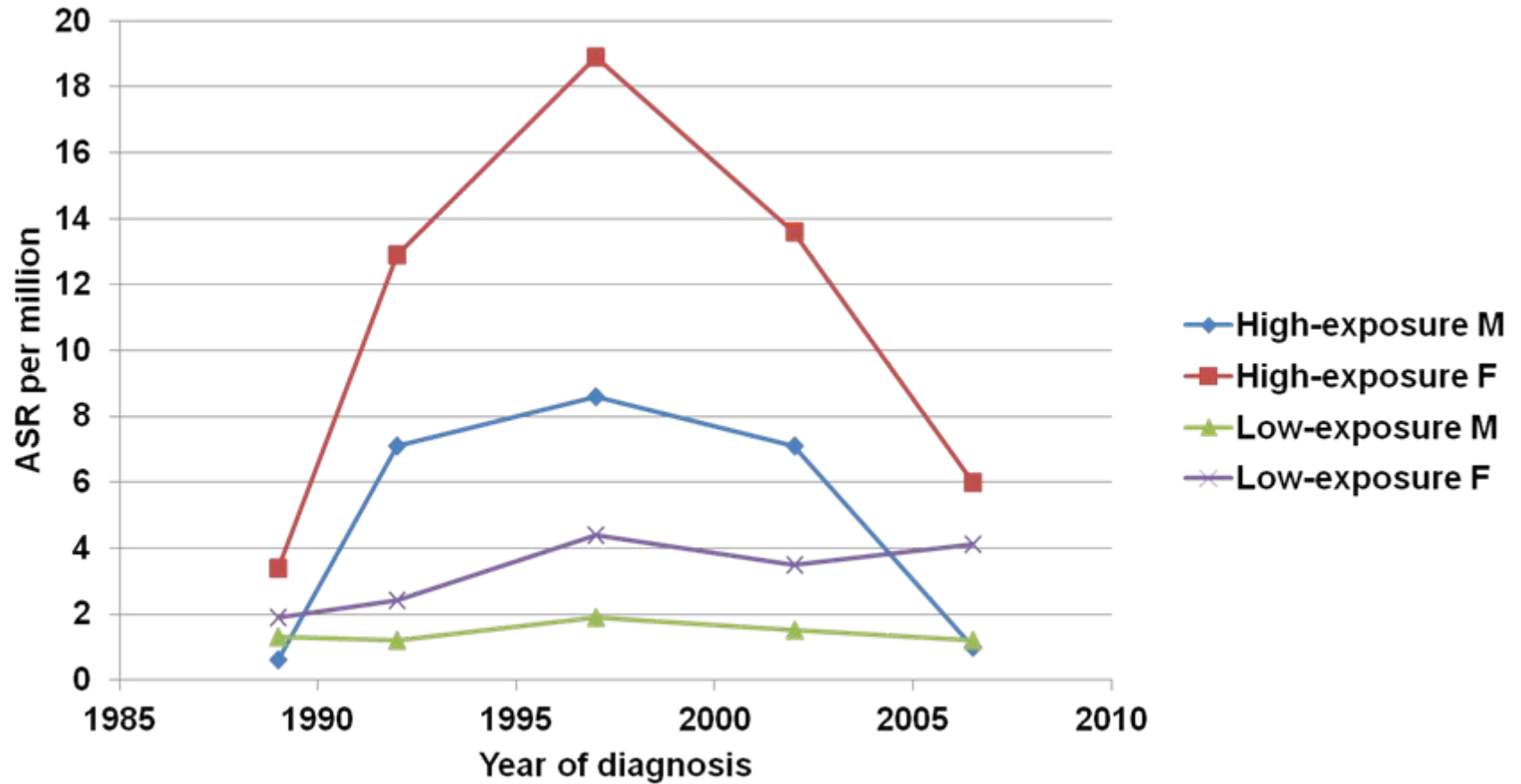
# Hepatocellular Carcinoma in Taiwan, 1981-1994

## Incidence & mortality (age 6-14)



**Hepatitis B mass vaccination began 1984**

# Thyroid Cancer Incidence in Children and Adolescents Ukraine, 1989-2008



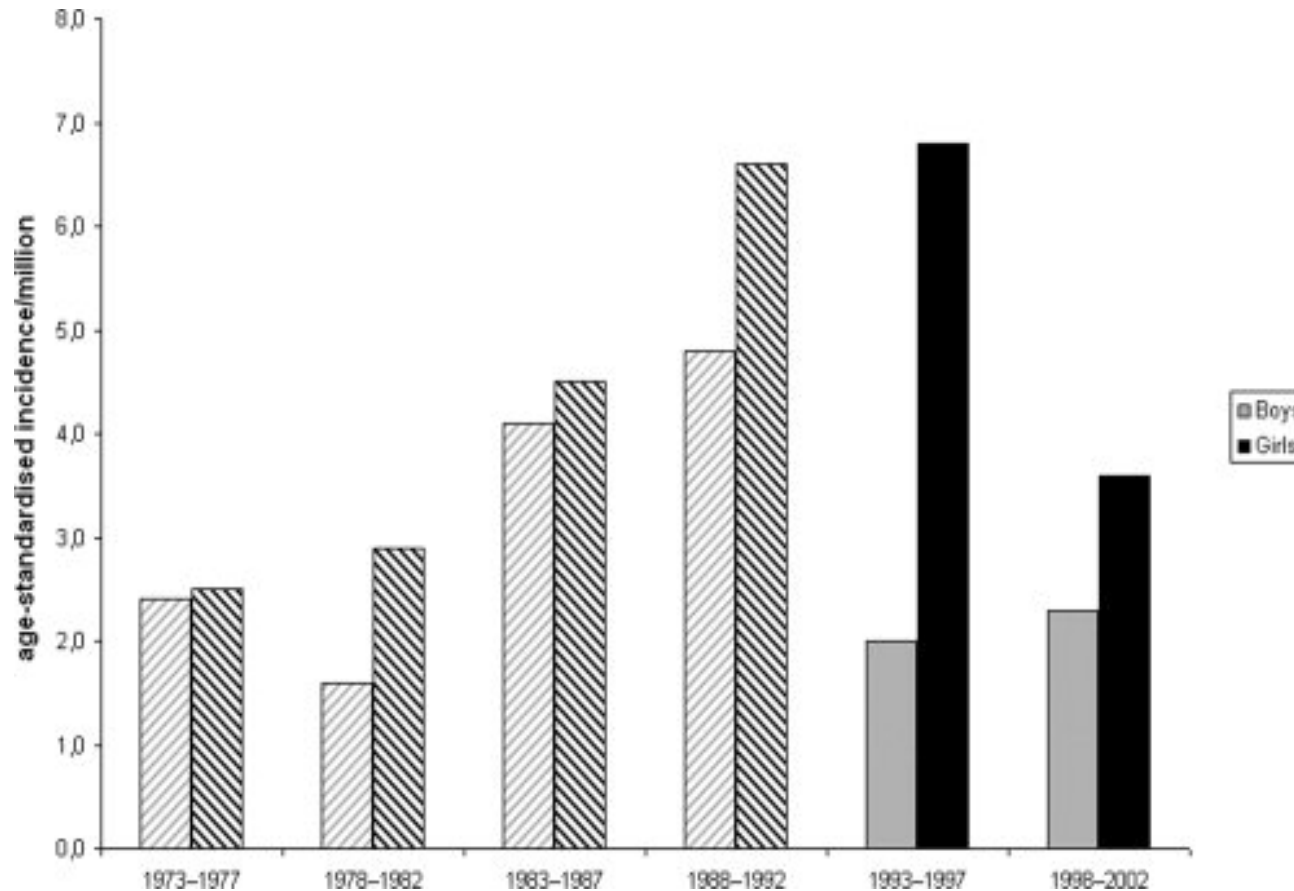
ASR at age 0-19 in 1989, 1990-1994, 1995-1999, 2000-2004, 2005-2008

Regions classified by reconstructed  $^{131}\text{I}$  thyroid dose

High exposure:  $>35$  mGy

Low exposure:  $\leq 35$  mGy

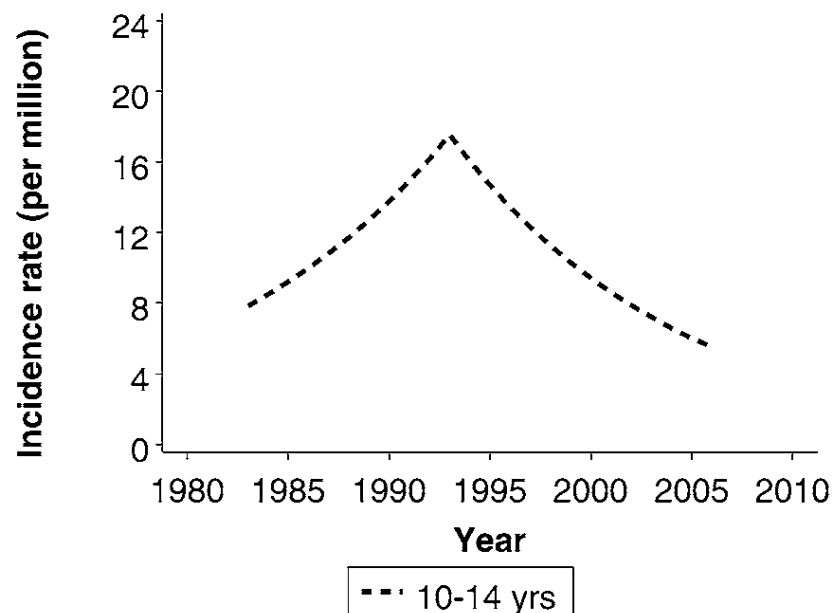
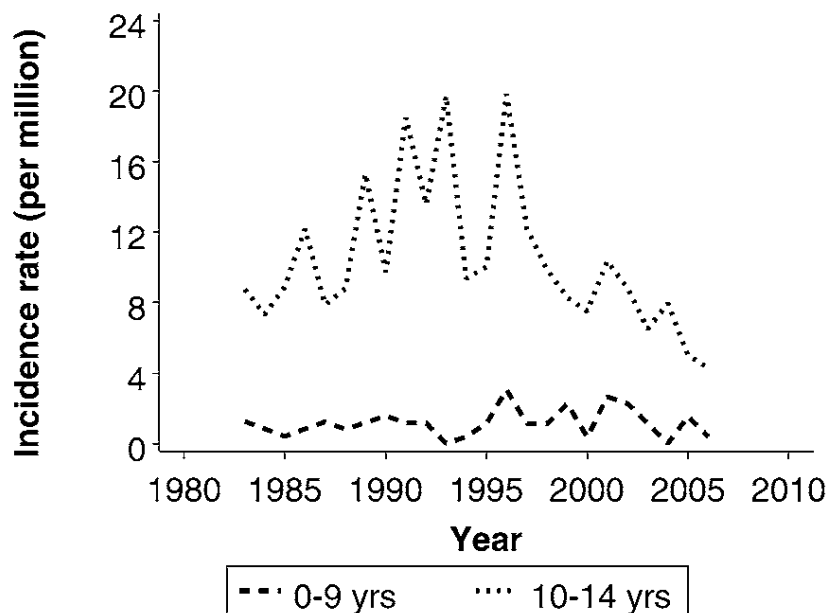
# Cutaneous Malignant Melanoma in Children & Adolescents Sweden, 1973-2002



## ASR at age 0-19



# Childhood Melanoma in Australia, 1983-2006



**Observed incidence by year of diagnosis**

**Underlying trends**

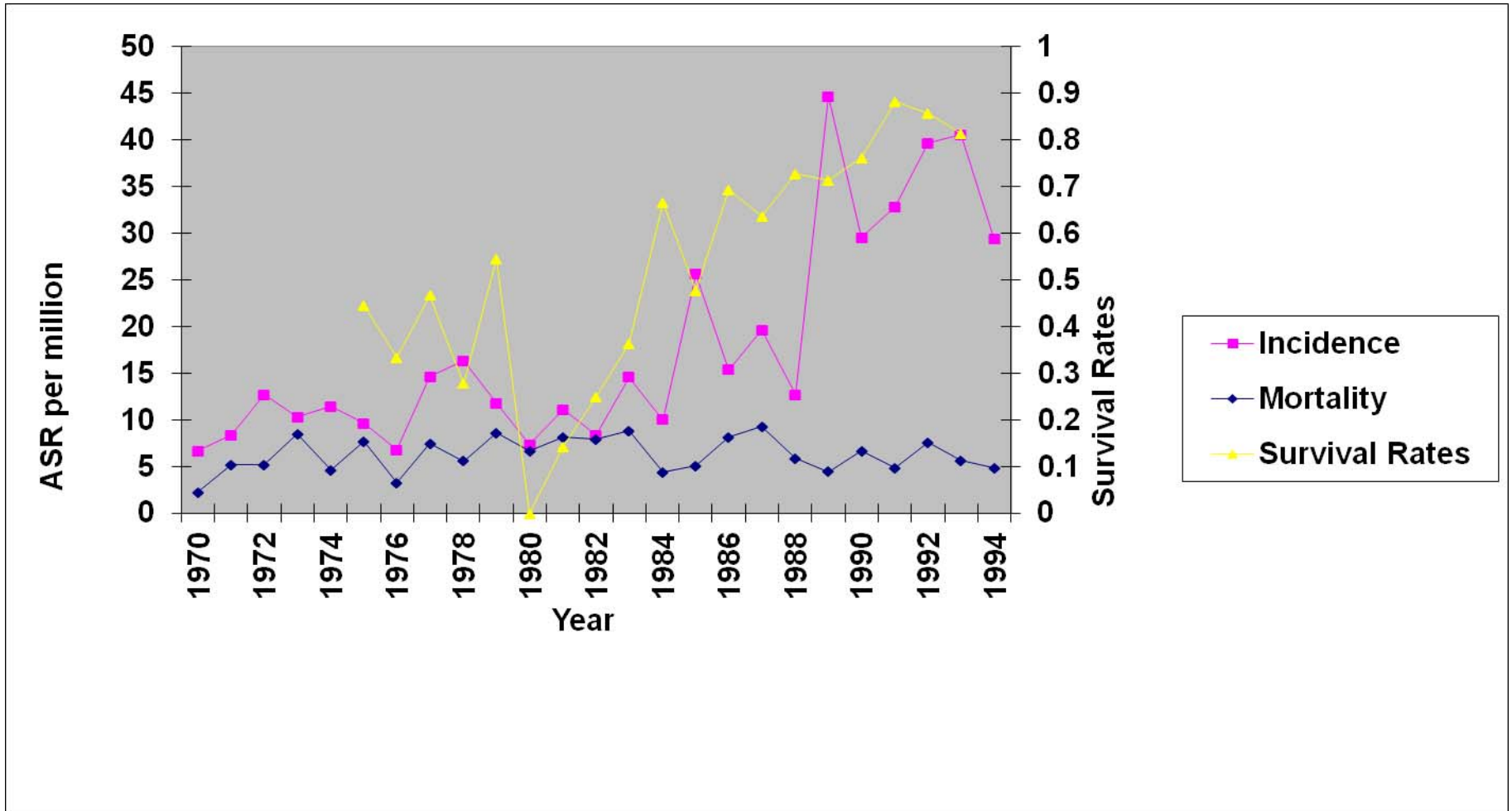
**1983-1993      +8.4% per year**

**1993-2006      -8.5% per year**

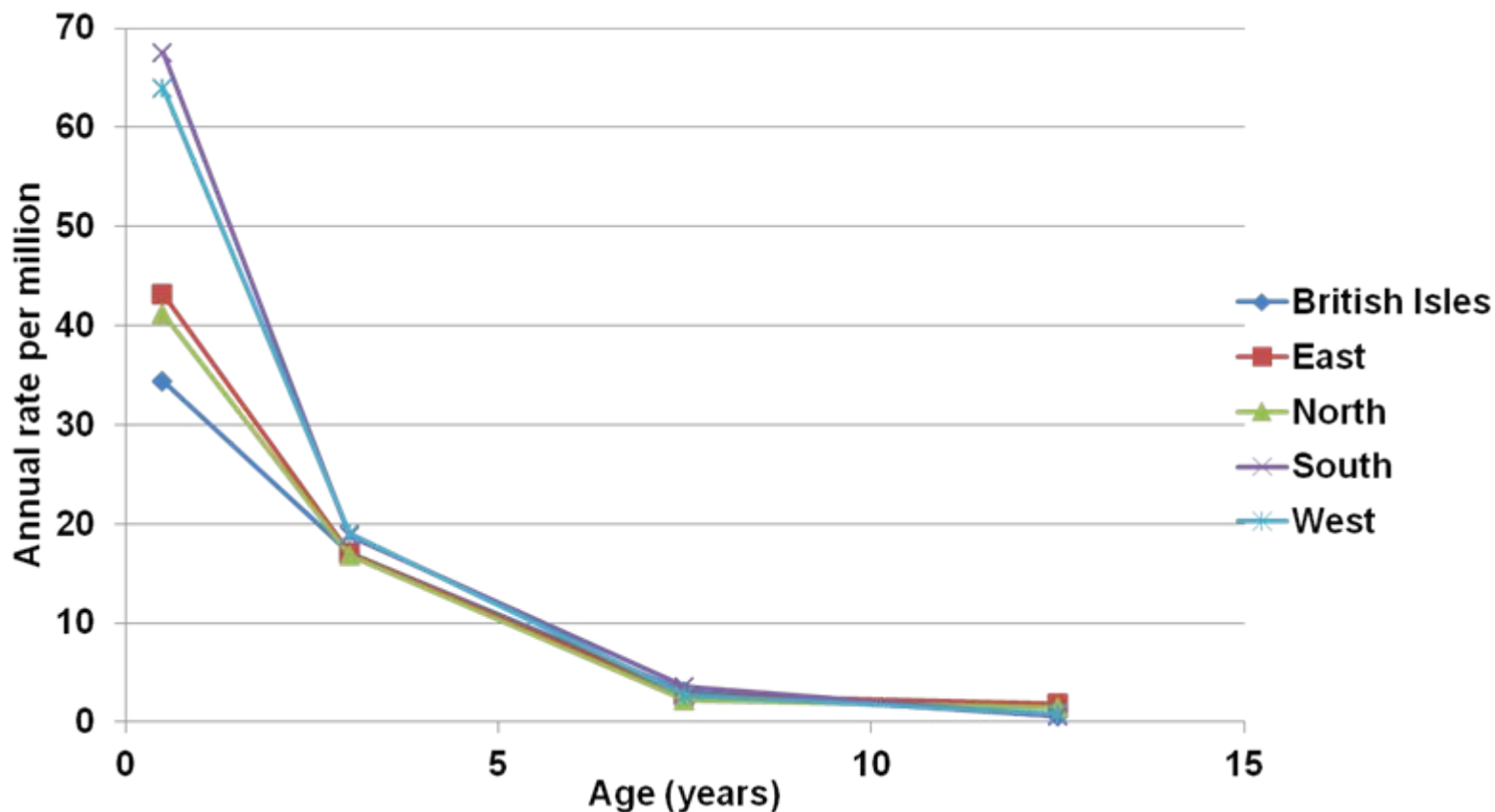
# Neuroblastoma in Japan

## Incidence, mortality and survival, 1970-1994

### Osaka Prefecture excluding Osaka City



# Neuroblastoma in Europe, 1988-1997



Incidence at age 0, 1-4, 5-9, 10-14

British Isles: Ireland, UK

East: Belarus, Estonia, Hungary, Slovakia

North: Denmark, Finland, Iceland, Norway

South: Italy, Malta, Slovenia, Spain, Turkey

West: France, Germany, Netherlands, Switzerland

Source: ACCIS

Spix C et al. *Eur J Cancer* 2006, **42**, 2081-2091.

# **Future Work**

## **International Incidence of Childhood Cancer, Volume 3 (IICC-3)**

### **ACCIS-2**

- **Calls for data have been issued**
- **Years of diagnosis to at least 2005**
- **Age 0-19 in both studies**
- **Increased geographical coverage, especially outside  
W Europe, N America and Australia / New Zealand**

# Future Trends

**Most marked trends will probably occur in lower income countries**

- **Kaposi sarcoma in areas of high HHV8 expected to rise and fall with childhood HIV**
- **Hepatocellular carcinoma in areas of moderately high incidence should decline with uptake of hepatitis B vaccination**
- **Burkitt lymphoma may increase if geographical range of holoendemic malaria widens with climate change**
- **Recorded incidence of many other cancers may rise as populations become more affluent and availability of facilities for diagnosis and treatment increases**