Breast Cancer Epidemiology in China

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I Will Discuss…

- What are the basic facts and epi trends for breast cancer (BC)?
- What are the risk factors for BC?
- What are features of BC in China?
- What should be done for controlling BC?

I Will Discuss…

- What are the basic facts and epi trends for breast cancer (BC)?

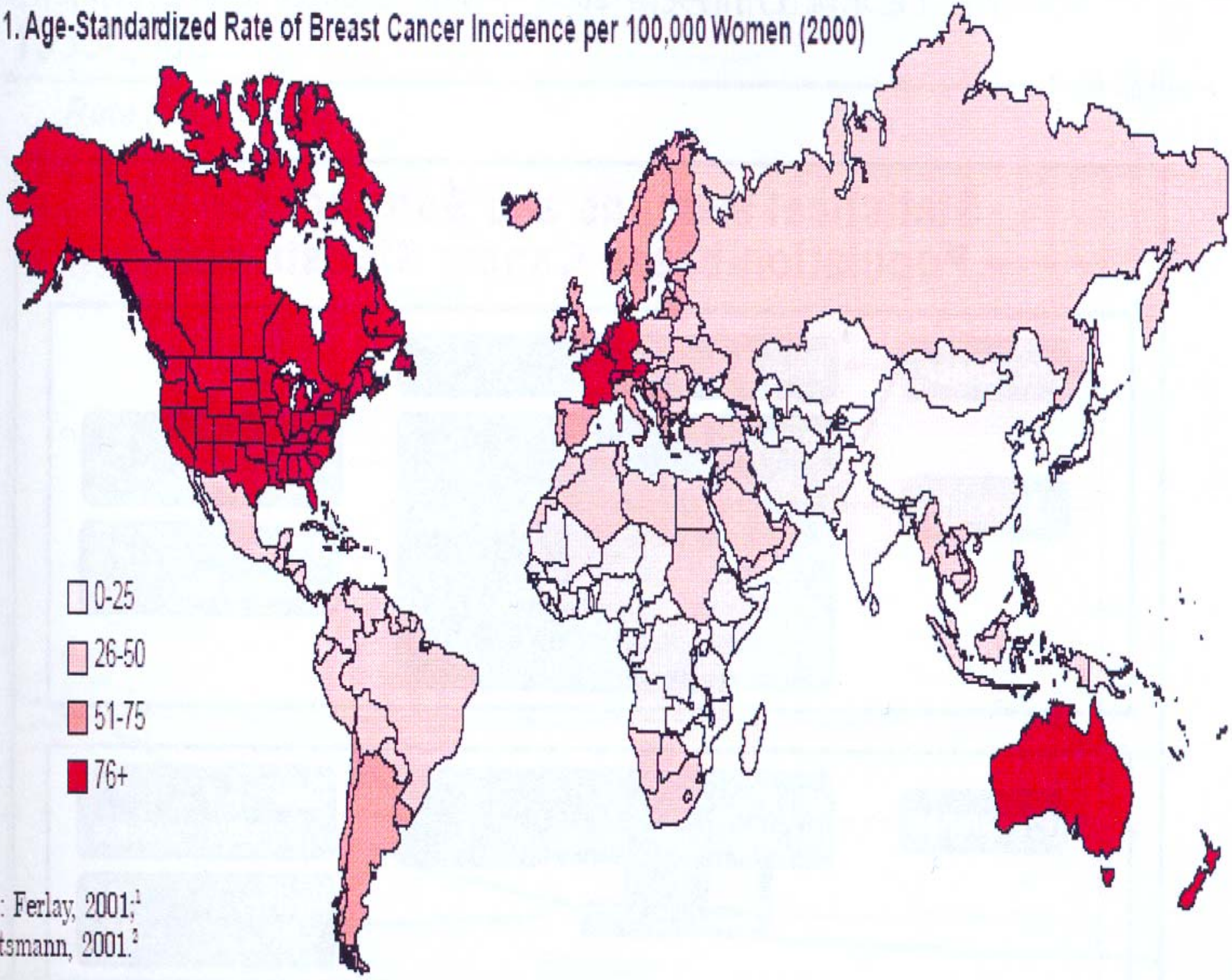
Breast cancer

- Malignant tumor developed in the breast
- In about 10% of cases, tumors developed in both breasts
- The most common cancer in women, developed in about 1 of every 9 women in the U.S., most in their 40s and 50s
- The second leading cause of cancer death in women, after lung cancer.

Breast Cancer Worldwide

- Leading cancer in women (23% of all new cases)
- Leading cause of cancer death in women (14% of all cases)
- 1.2 mi. new cases and 500,000 death every year with an increasing trend.

Figure 1. Age-Standardized Rate of Breast Cancer Incidence per 100,000 Women (2000)



Sources: Ferlay, 2001;[1]
Schwartsmann, 2001.[2]

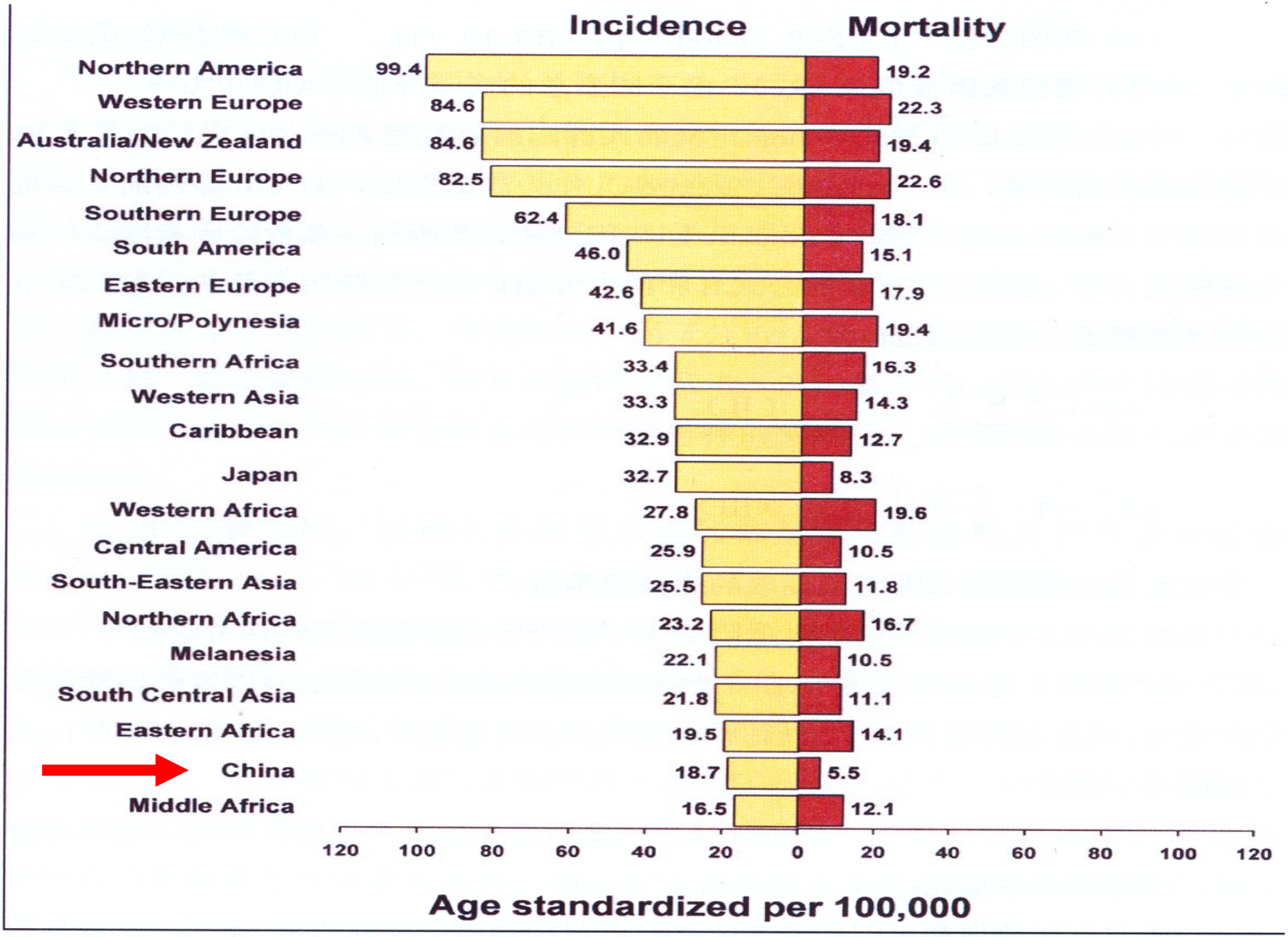
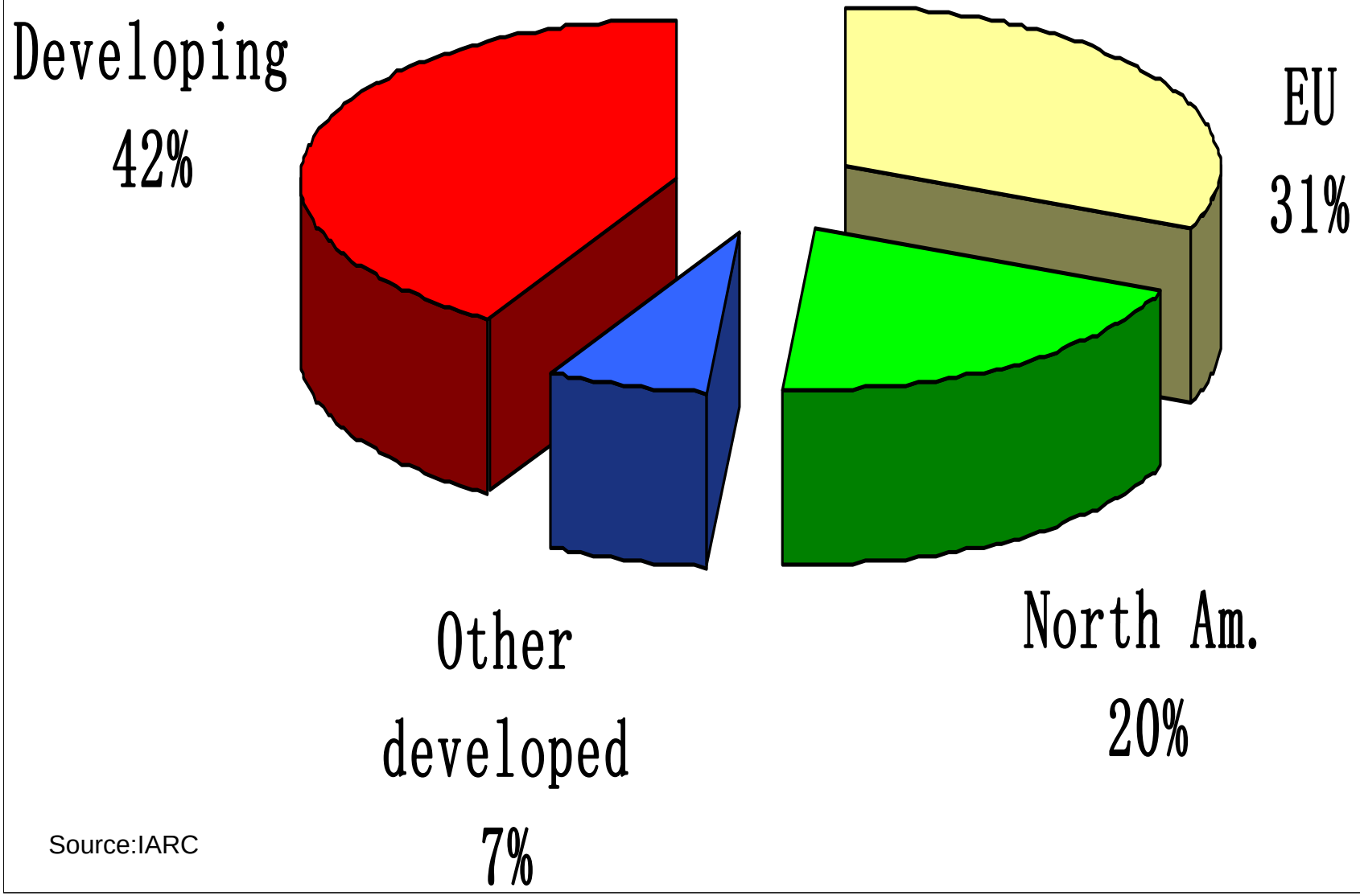


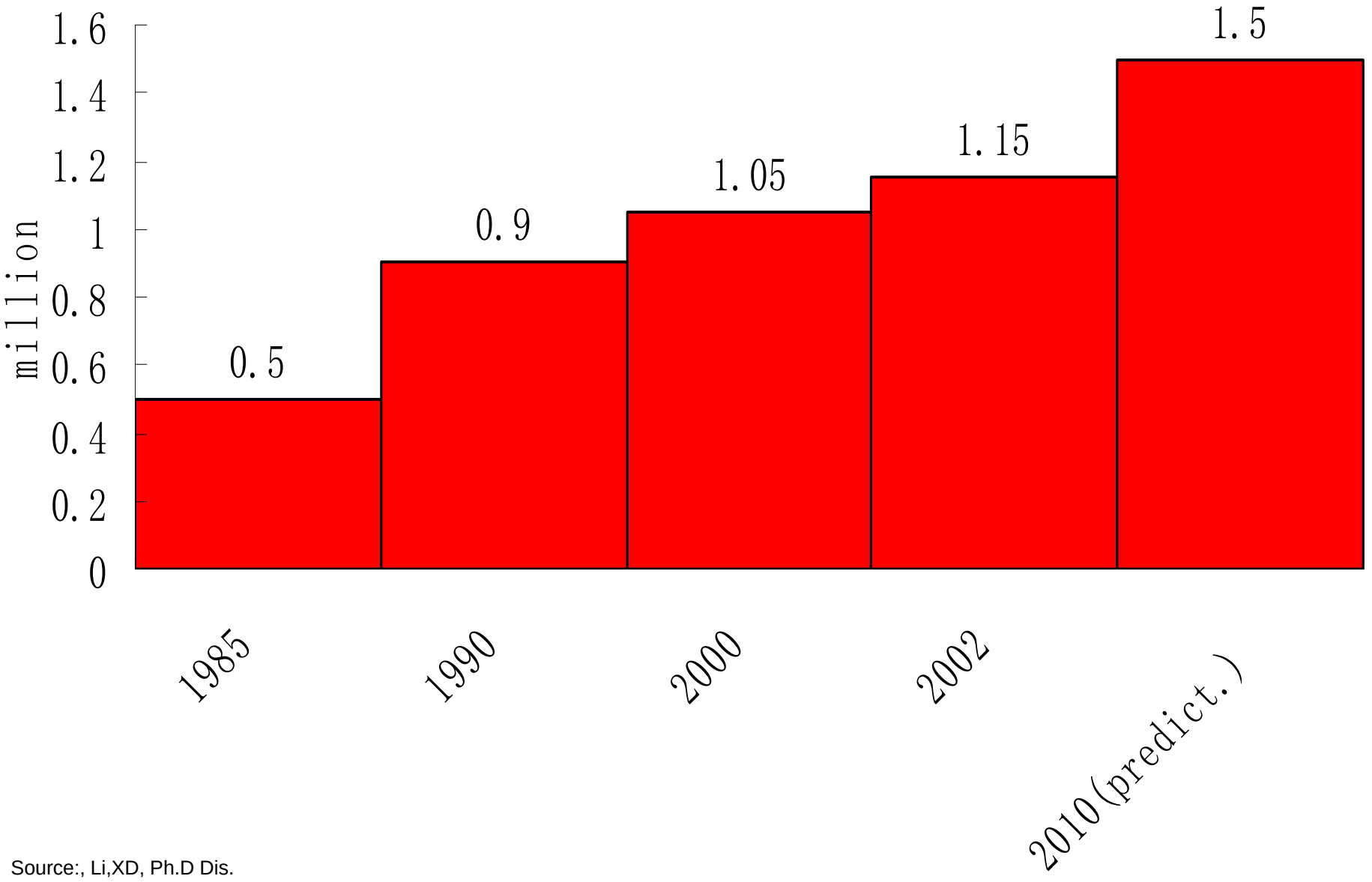
图 1　　全球 2002 年乳腺癌地区发病率分布(Parkin2005)

Breast Cancer, New Cases, 2002



Source:IARC

Breast Cancer Incidence, Worldwide,1985-2010



Source:, Li,XD, Ph.D Dis.

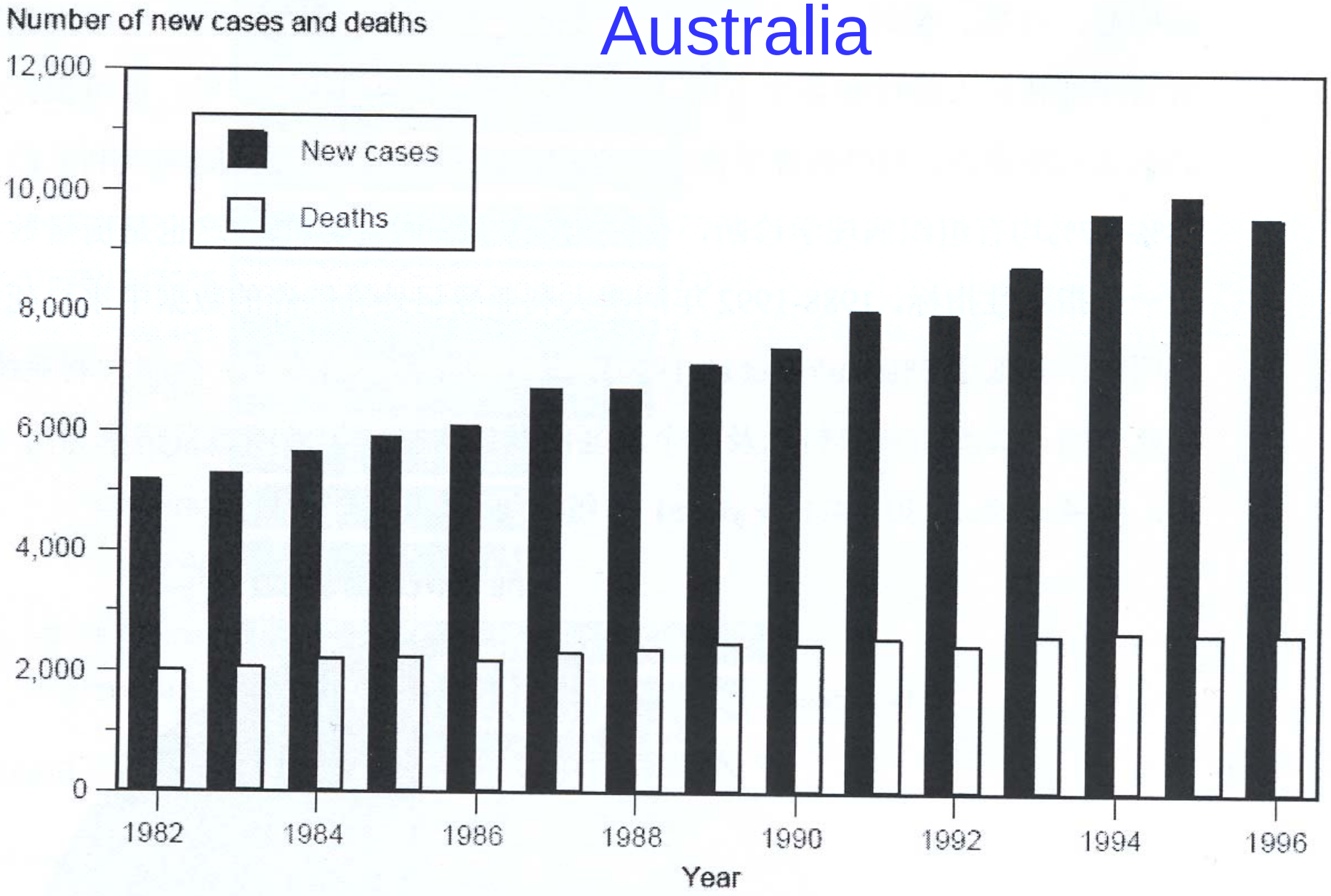
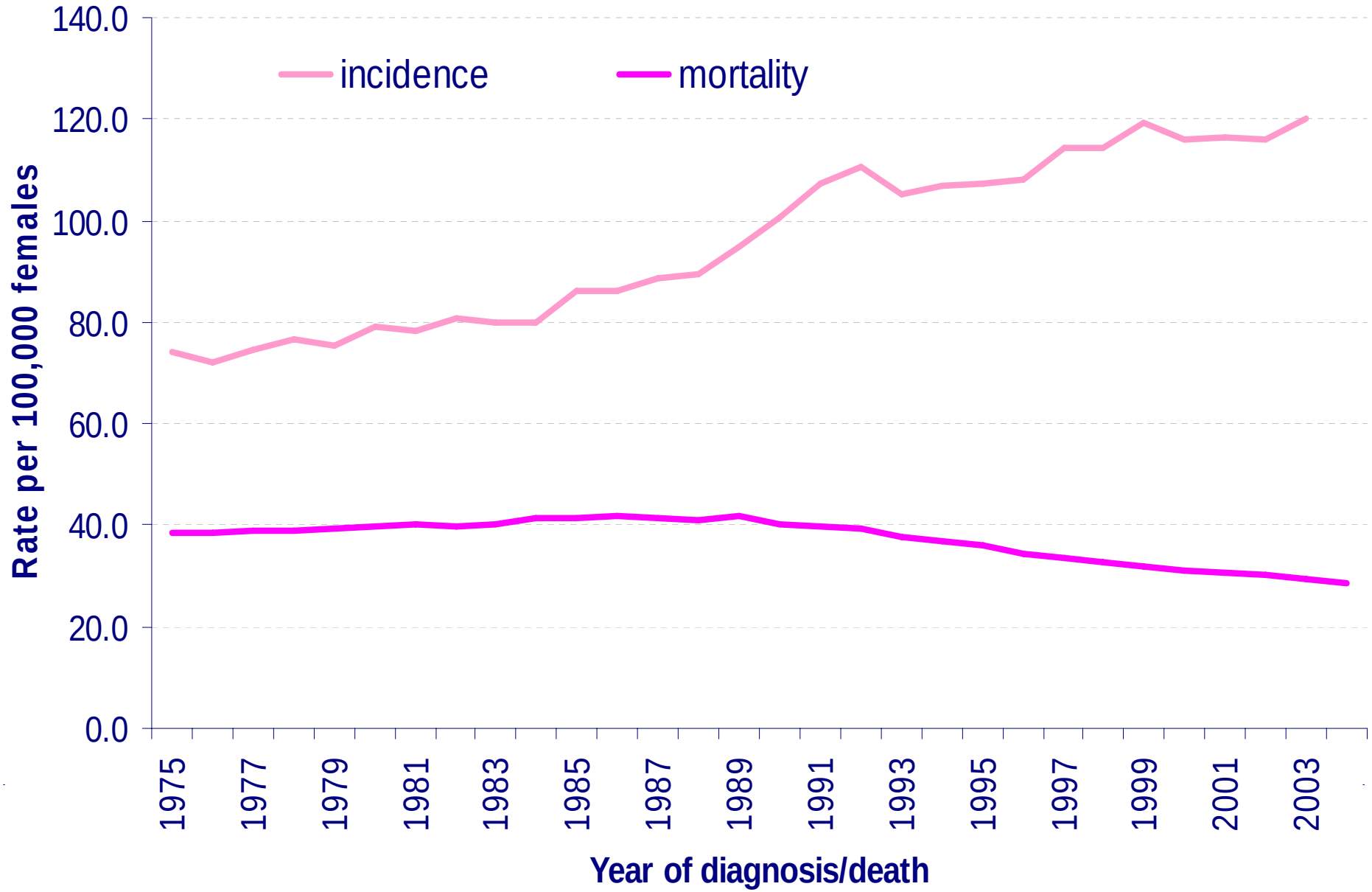
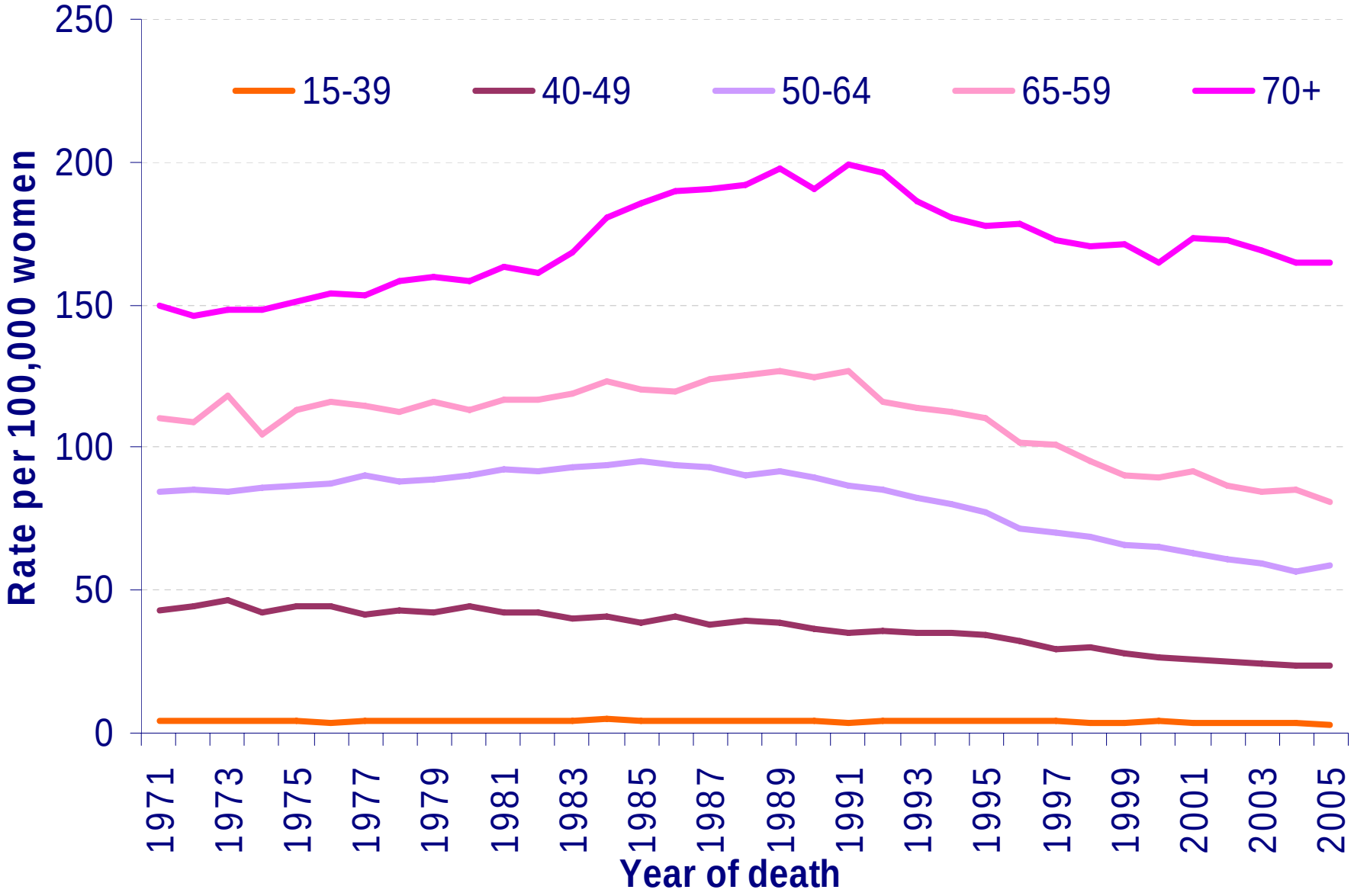


图 14　1982-1996 年间澳大利亚乳腺癌发病和死亡例数

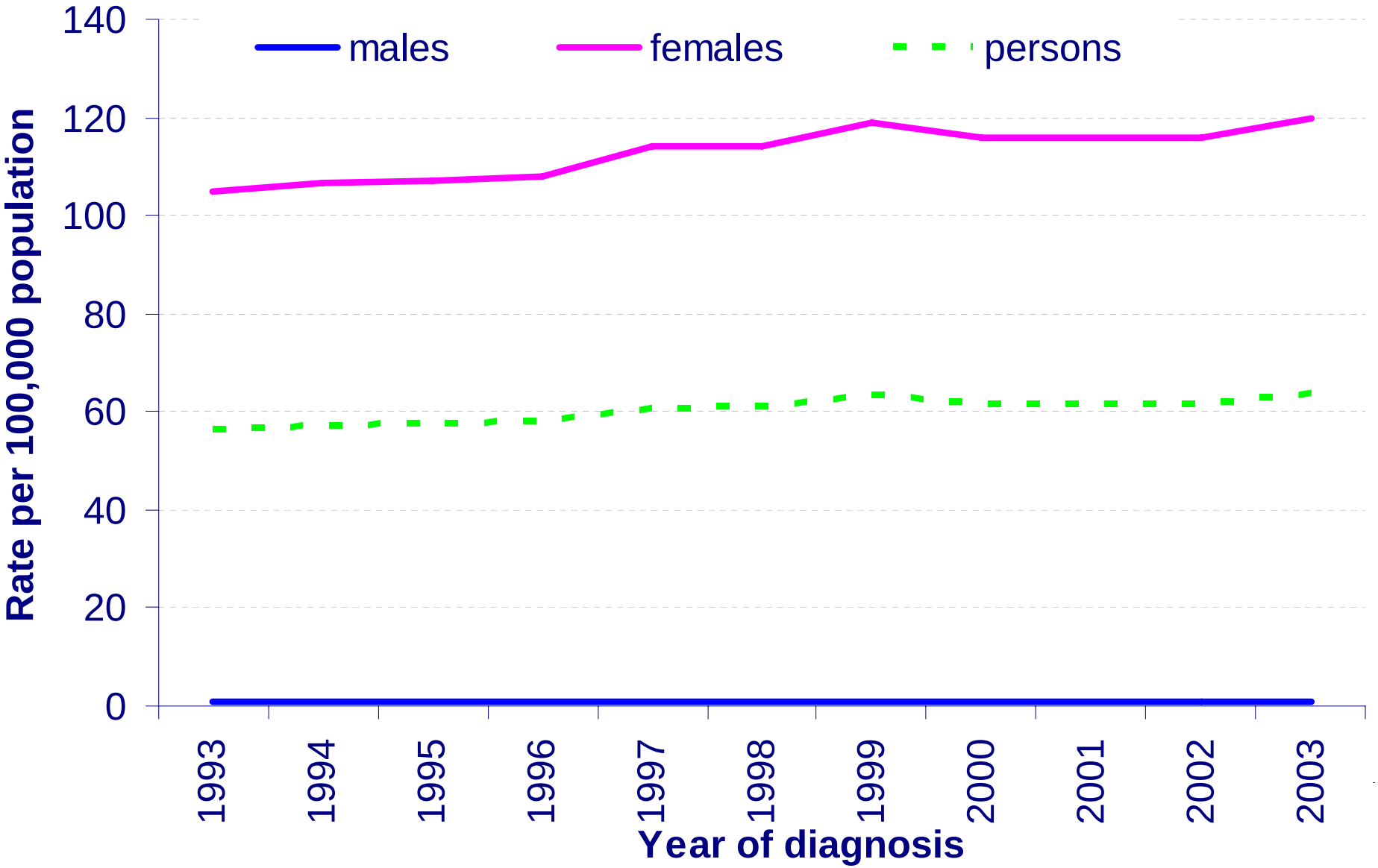
Age standardised (European) incidence and mortality rates, female breast cancer, UK, 1975-2004



Age-specific mortality rates, breast cancer, females, UK, 1971 - 2005



Age standardised (European) incidence rates, breast cancer, by sex, UK, 1993-2003



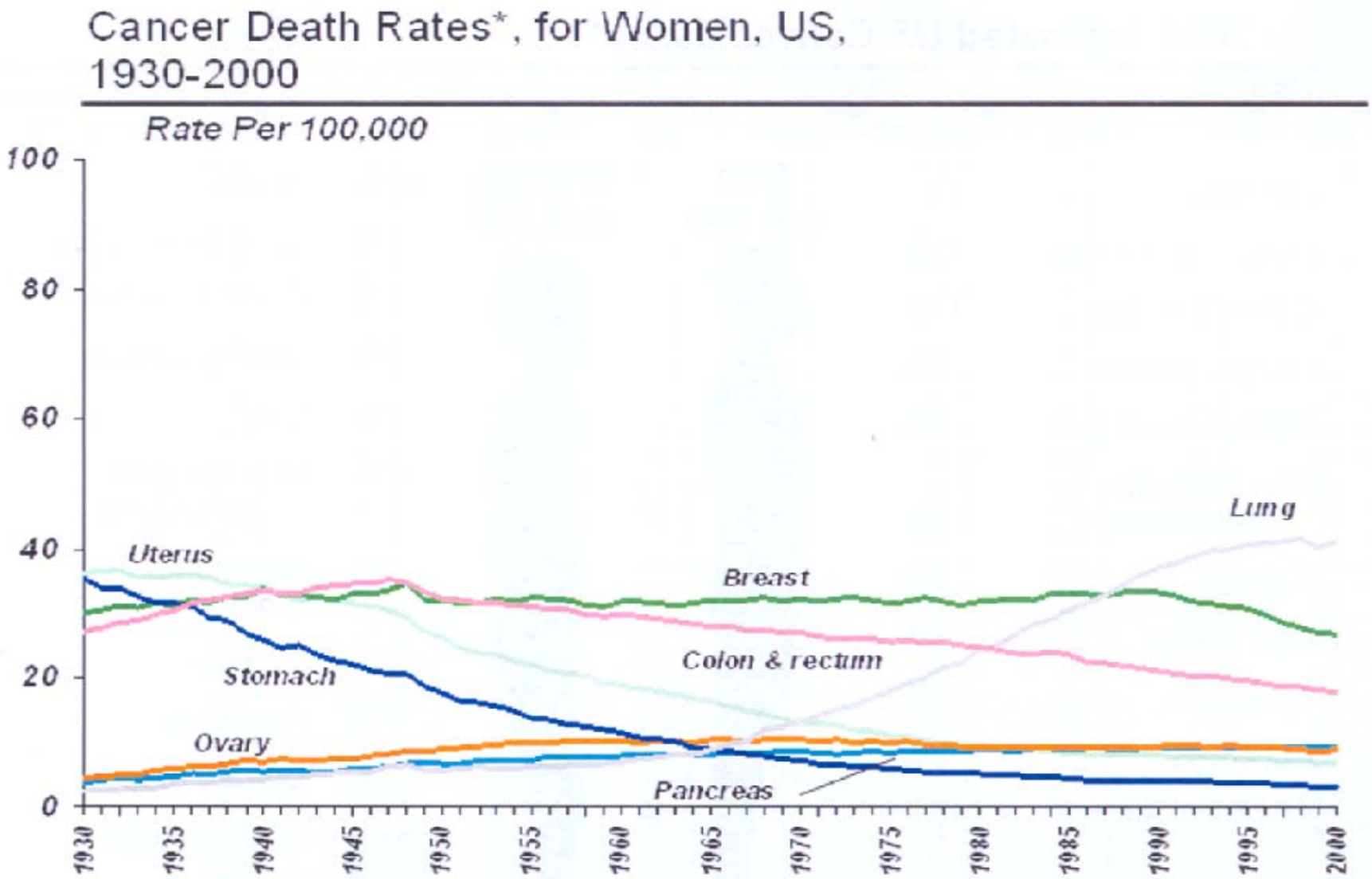


图 4　　美国女性主要恶性肿瘤的死亡率变化趋势 1930-2000

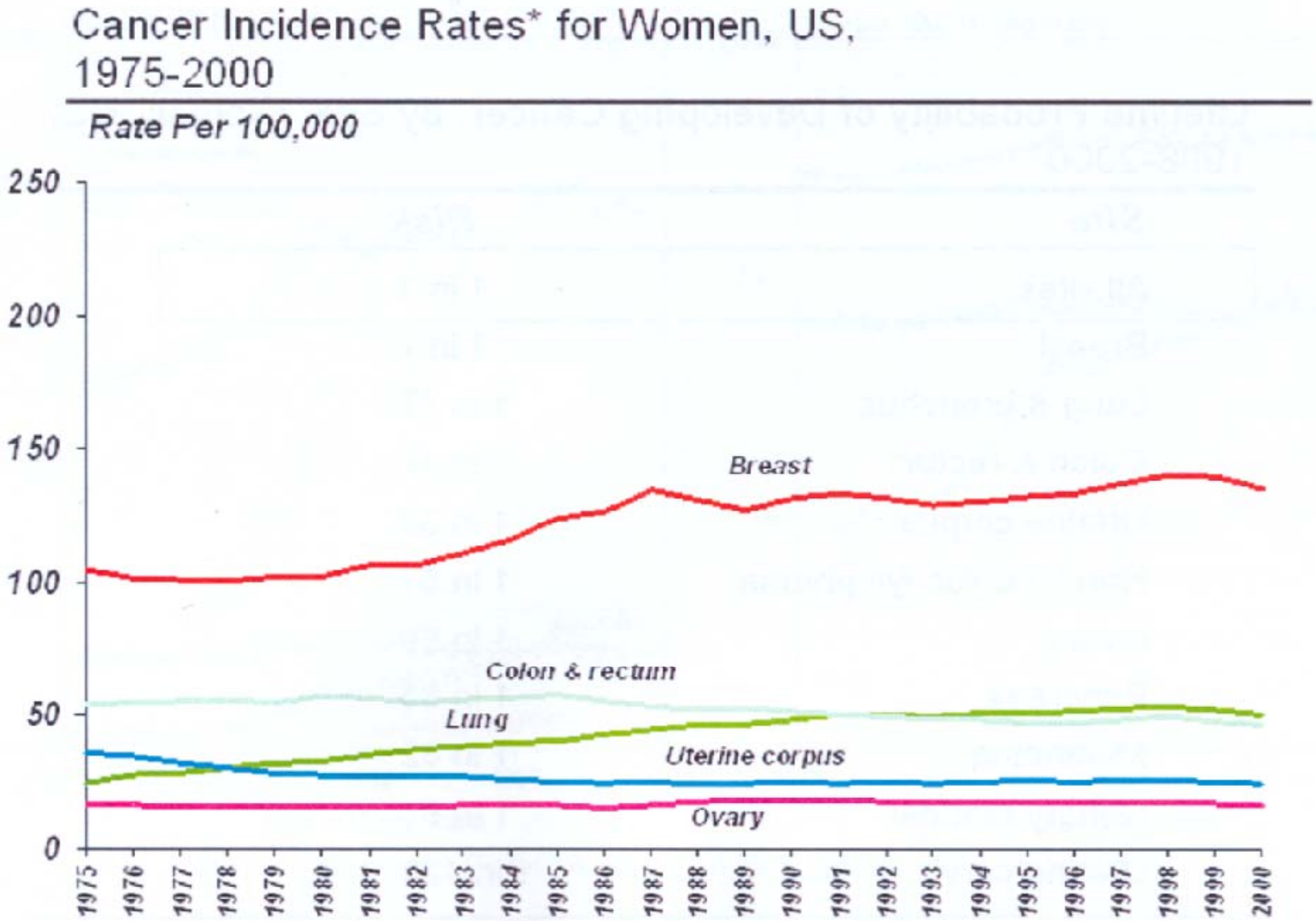
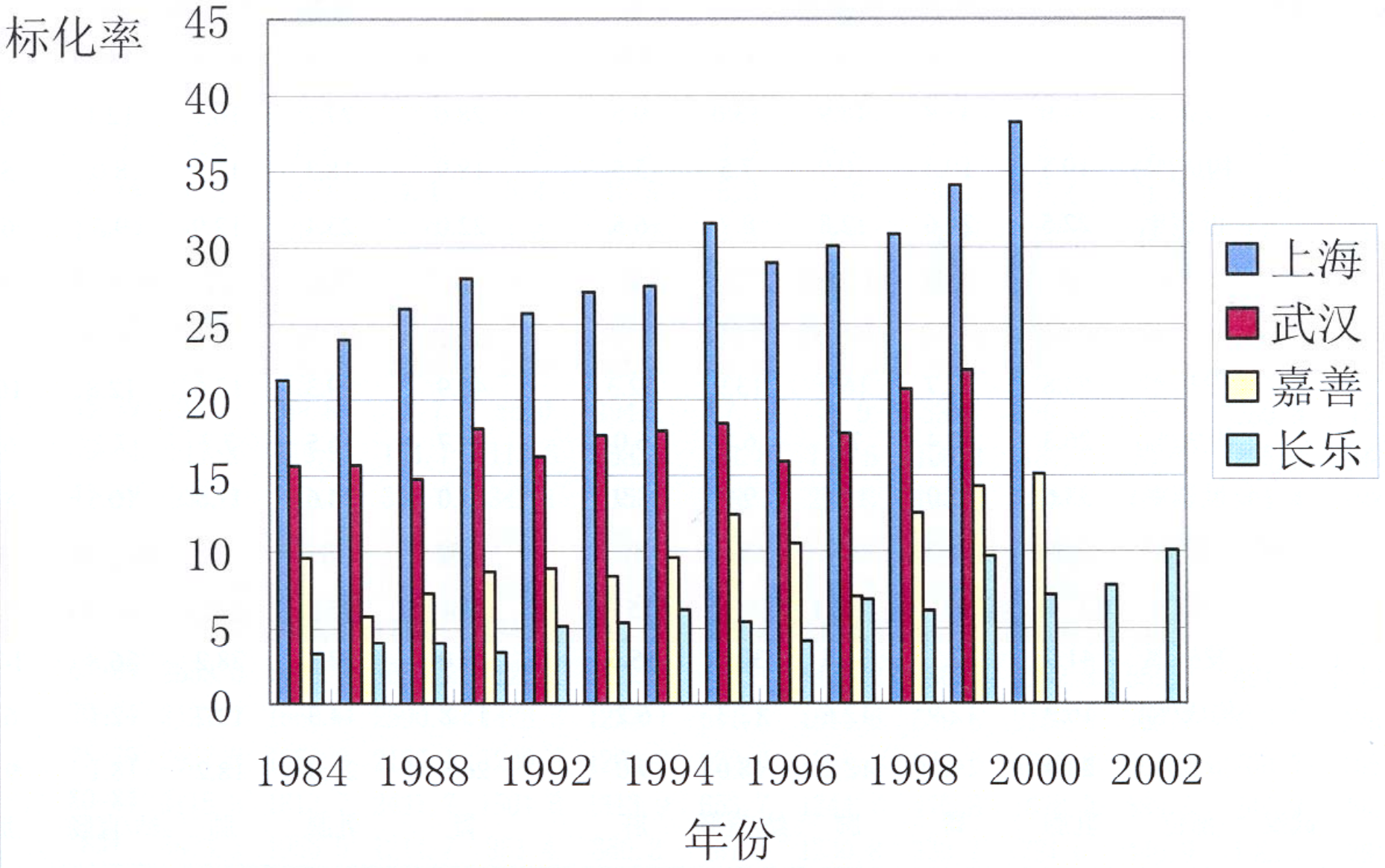


图 5　美国女性主要恶性肿瘤的发病率变化趋势 1930-2000

Standardized Breast Cancer Incidence in 4 cities in China, 1984-2002



I Will Discuss…

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- What are the risk factors for BC?

Genomic medicine tells us

- Diseases are the results of gene and environment interaction.
- Chronic diseases have multi-factorial etiology, i.e., they are caused by many factors.
- We call these factors risk factors

Breast Cancer Risk Factors

- Gender: F:M 1:100
- Age: Increased with age
- Weight, height, body mass index, and weight change
- Physical activity
- Reproductive factors: delayed childbirth
- Diet: fat? Vege.? Vitamin? Alcohol
- Exogenous estrogen use: oral contraceptive use, hormone replacement therapy,
- Benign breast disease
- Heredity: *Major inherited susceptibility (*BRCA1, BRCA2,P53)
- Socio-economic status: higher SES and education
- Race and immigration

Breast Cancer Risk Factors

- Gender: F:M 1:100
- Age: Increased with age
- Socio-economic status: higher SES and education
- Race and immigration
- Family history
- Gene: BRCA1, BRCA2,P53
- Reproductive factors: early menarche

Female Breast Cancer

- The chance of a woman having invasive breast cancer some time during her life is about 1 in 8.
- The chance of dying from breast cancer is about 1 in 33.
- Breast cancer death rates are going down in the U.S. This decline is probably the result of finding the cancer earlier and improved treatment.

Male Breast Cancer

- Male breast cancer is rare.
- The lifetime risk of being diagnosed with breast cancer in men is 0.11% compared with 13% in women.
- The etiology of breast cancer in men
  - genetic causes : Klinefelter syndrome, susceptibility genes BRCA1, BRCA2. ,a 6% lifetime risk of BC
  - Nongenetic causes: radiation exposure, liver disease, gynecomastia,obesity, and exposure to estrogen medication.

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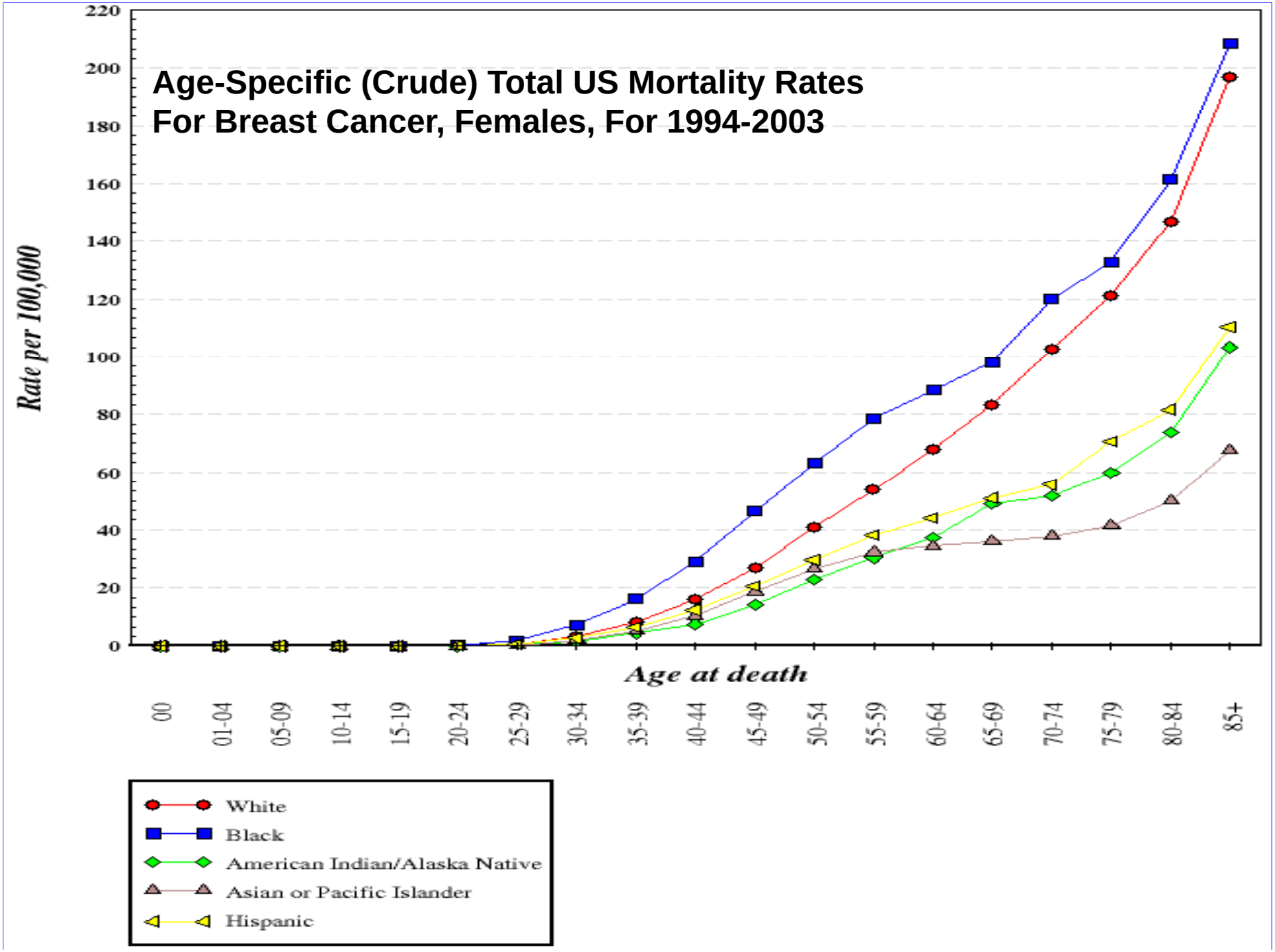
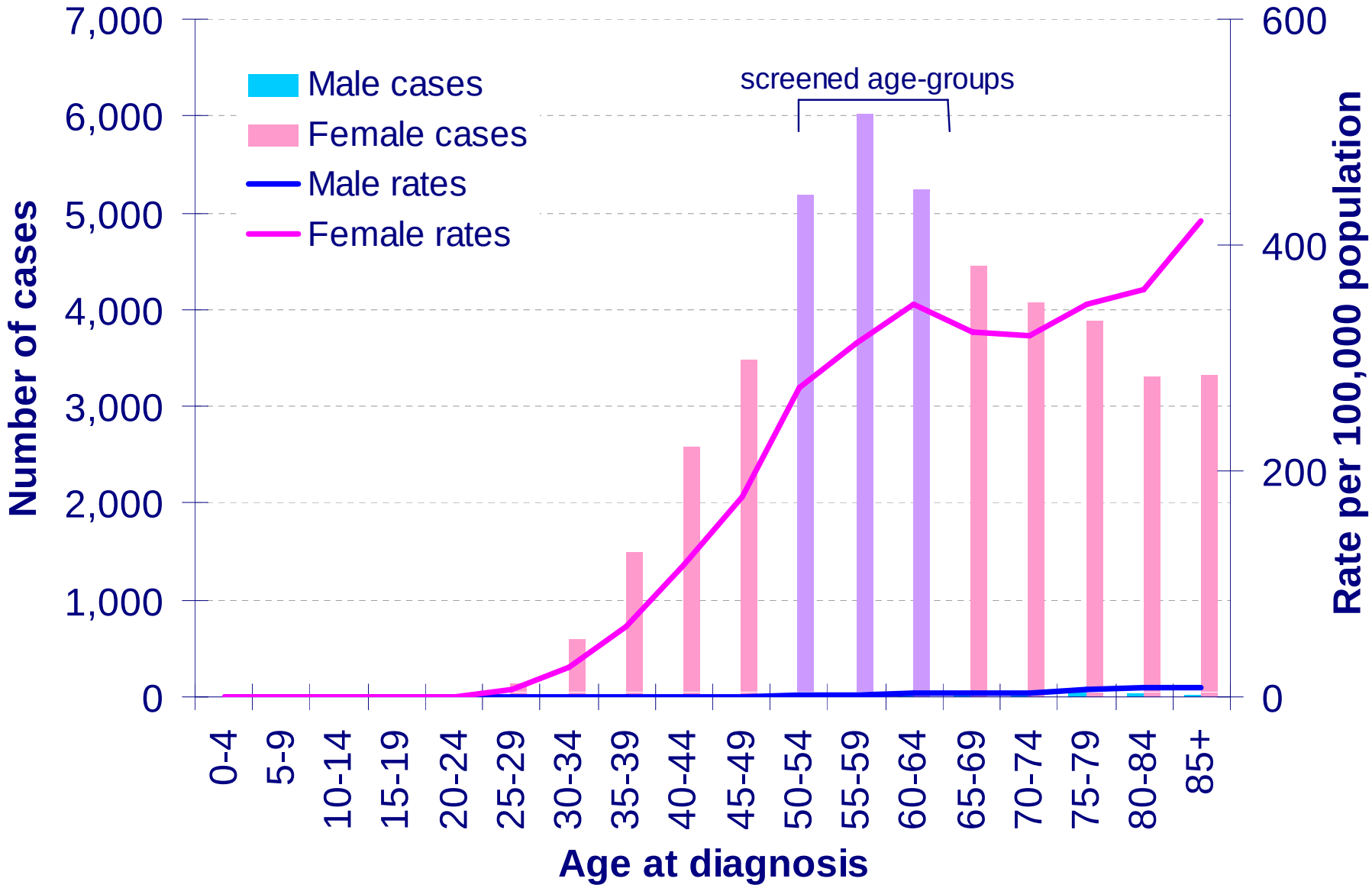
- 99% breast cancer occurred in women
- Most frequent age group:35-55 ys

Risk of developing breast cancer by age, females, England, 1996

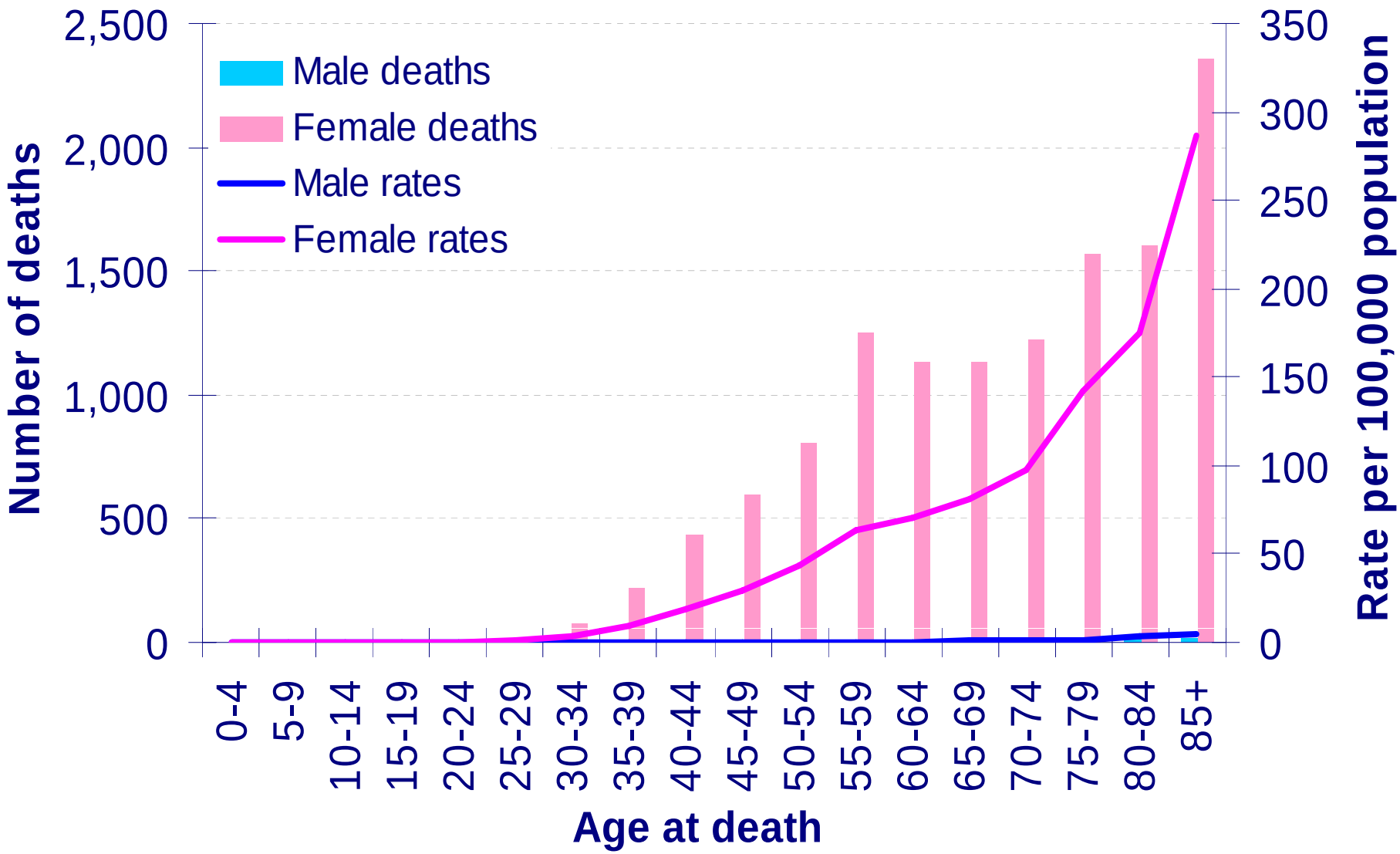
Risk up to age 25	1 in 15,000
Risk up to age 30	1 in 1,900
Risk up to age 40	1 in 200
Risk up to age 50	1 in 50
Risk up to age 60	1 in 23
Risk up to age 70	1 in 15
Risk up to age 80	1 in 11
Risk up to age 85	1 in 10
Lifetime risk (all ages)	1 in 9


Age-Specific (Crude) Total US Mortality Rates
For Breast Cancer, Females, For 1994-2003
Rate per 100,000
220
200
180
160
140
120
100
80
60
40
20
0
Age at death
00
01-04
05-09
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60-64
65-69
70-74
75-79
80-84
85+
White
Black
American Indian/Alaska Native
Asian or Pacific Islander
Hispanic

Numbers of new cases and age specific incidence rates, by sex, breast cancer, UK 2003



Number of deaths and age-specific mortality rates, breast cancer, by sex, UK, 2005



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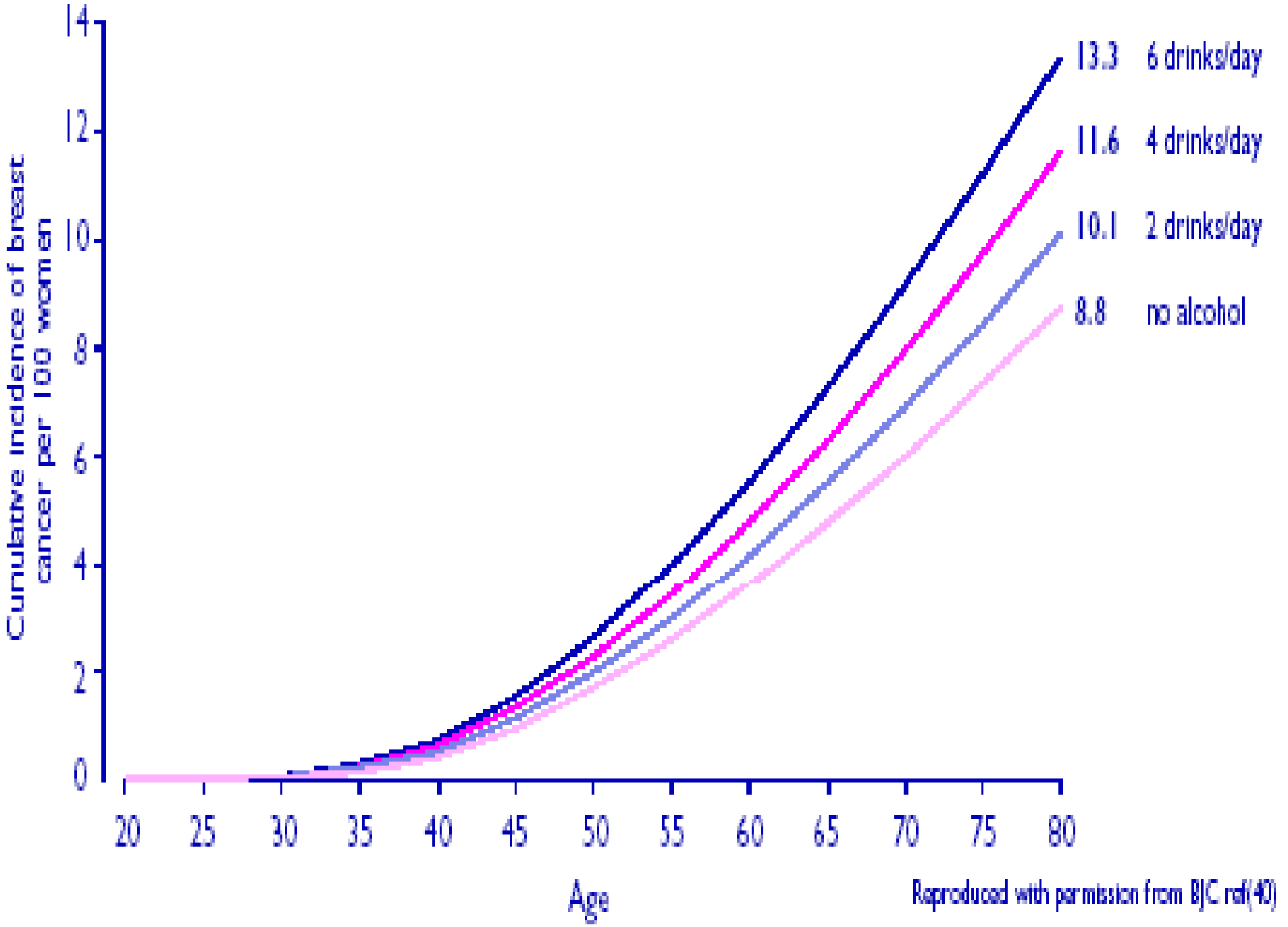
Cumulative incidence of breast cancer per 100 women
0
2
4
6
8
10
12
14
20
25
30
35
40
45
50
55
60
65
70
75
80
Age
13.3 6 drinks/day
11.6 4 drinks/day
10.1 2 drinks/day
8.8 no alcohol
Reproduced with permission from BJC ref(40)

Oral contraception and the relative risk of breast cancer

Oral contraceptive use	Relative risk (confidence interval)
Never users	1.0
Current users	1.24 (1.15-1.33)
1-4 years after stopping	1.16 (1.08-1.23)
5-9 years after stopping	1.07 (1.02-1.13)
10+ years after stopping	1.01 (0.96-1.05)

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Chinese Experienced Changes in 40 years that Westerner took 400 years to experienced

- **Changes in city's dinner table （82-02）**
  - **Meat: ⇧ 62g-104g）fish（22-45）**
  - **Rice：⇩ 70g- 47g**
  - **% Fat: ⇧（25%-35.4%）**

Chronic diseases are increasing rapidly

高血压患病率有较大幅度升高

2002年

18岁及以上居民高血压患病率 18.8%

比1991年上升31%

糖尿病患者增加

2002年

大城市20岁及以上居民糖尿病患病率 6.4%

1996年为4.6%

超重和肥胖患病率呈明显上升趋势

2002年

成人超重率 22.8% 比1992年上升39%

成人肥胖率 7.1% 比1992年上升97%

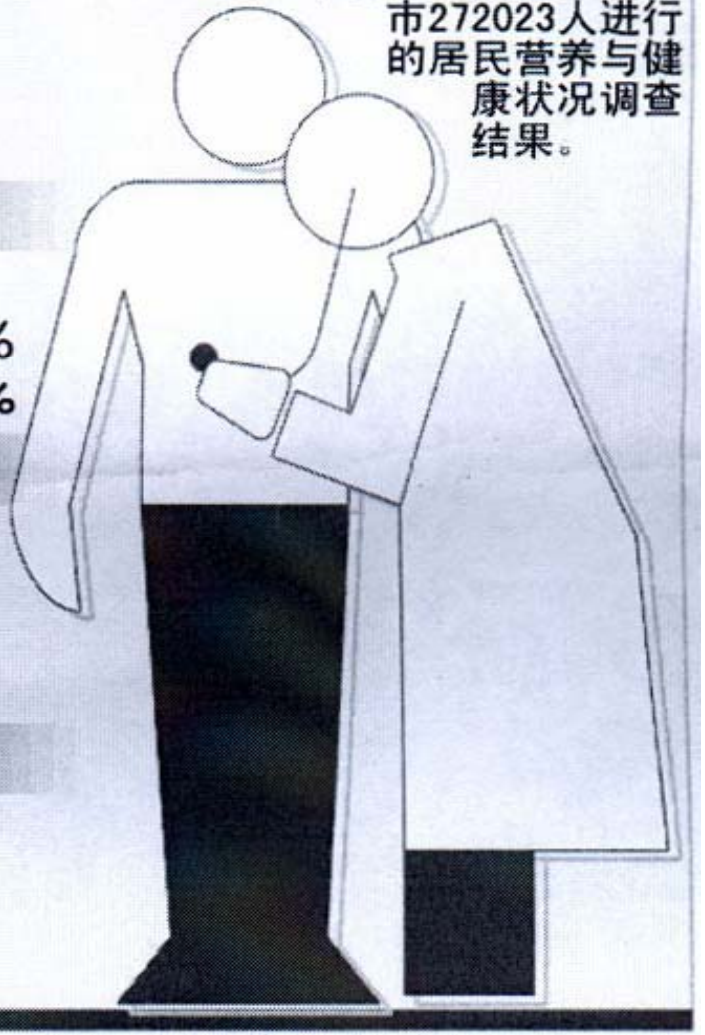
血脂异常值得关注

2002年

成人血脂异常患病率 18.6%

估计全国血脂异常现患人数 1.6亿

根据卫生部、科技部和国家统计局2002年对全国31个省、自治区、直辖市272023人进行的居民营养与健康状况调查结果。



刘宇 熊德 编制（新华社11月5日发）

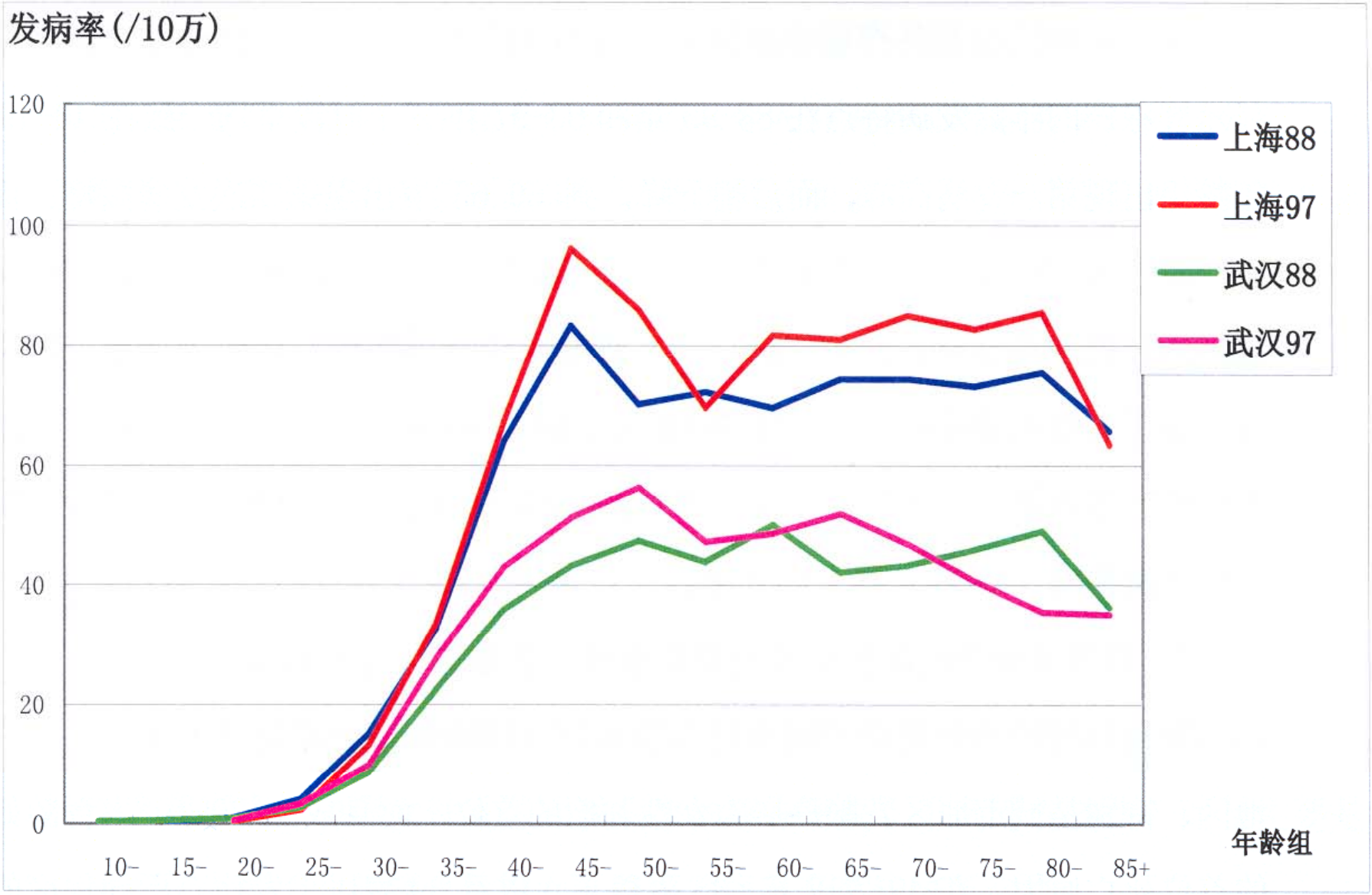


图 20　1988-1997 年不同经济发达城市乳腺癌年龄别发病率变化趋势

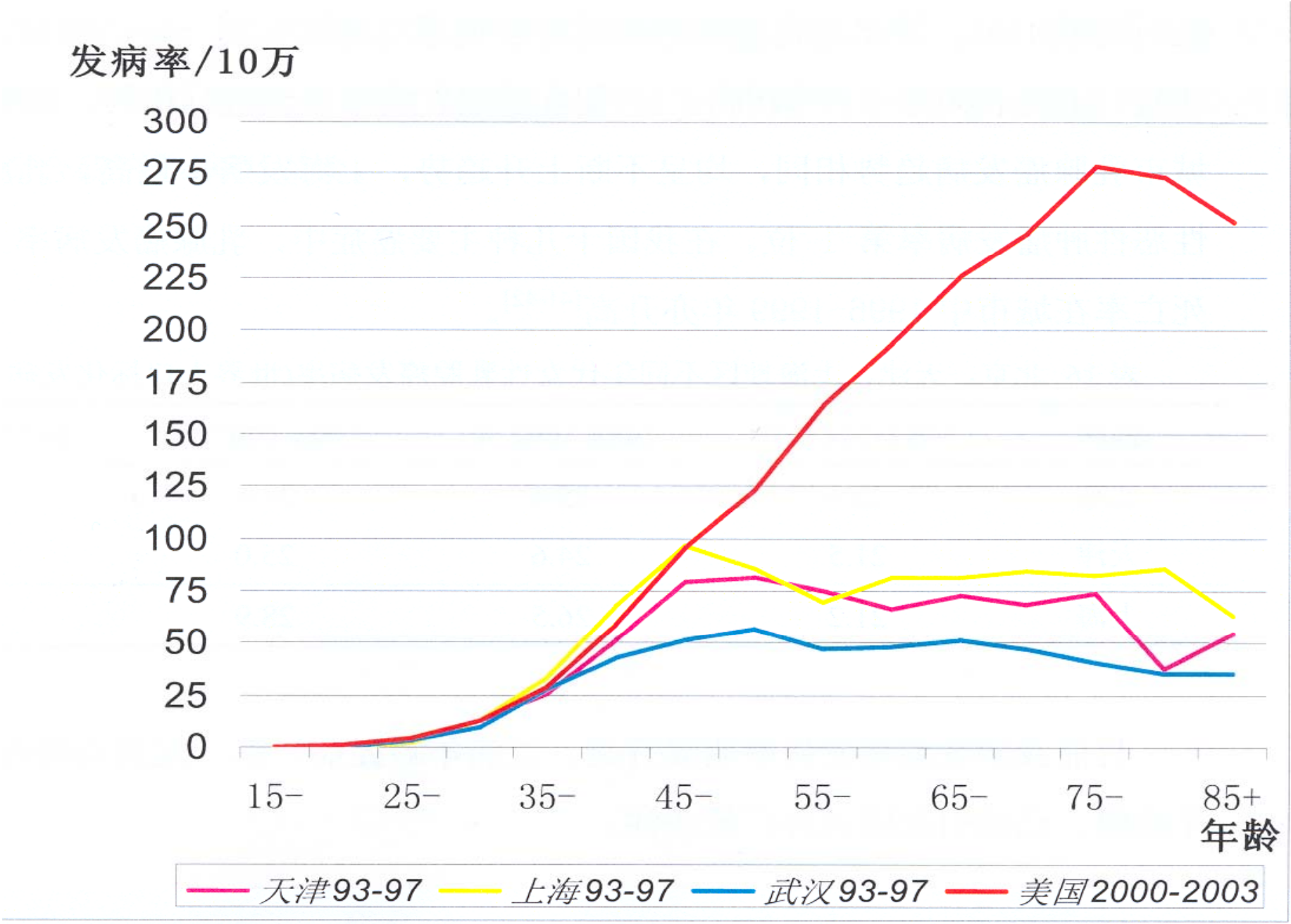
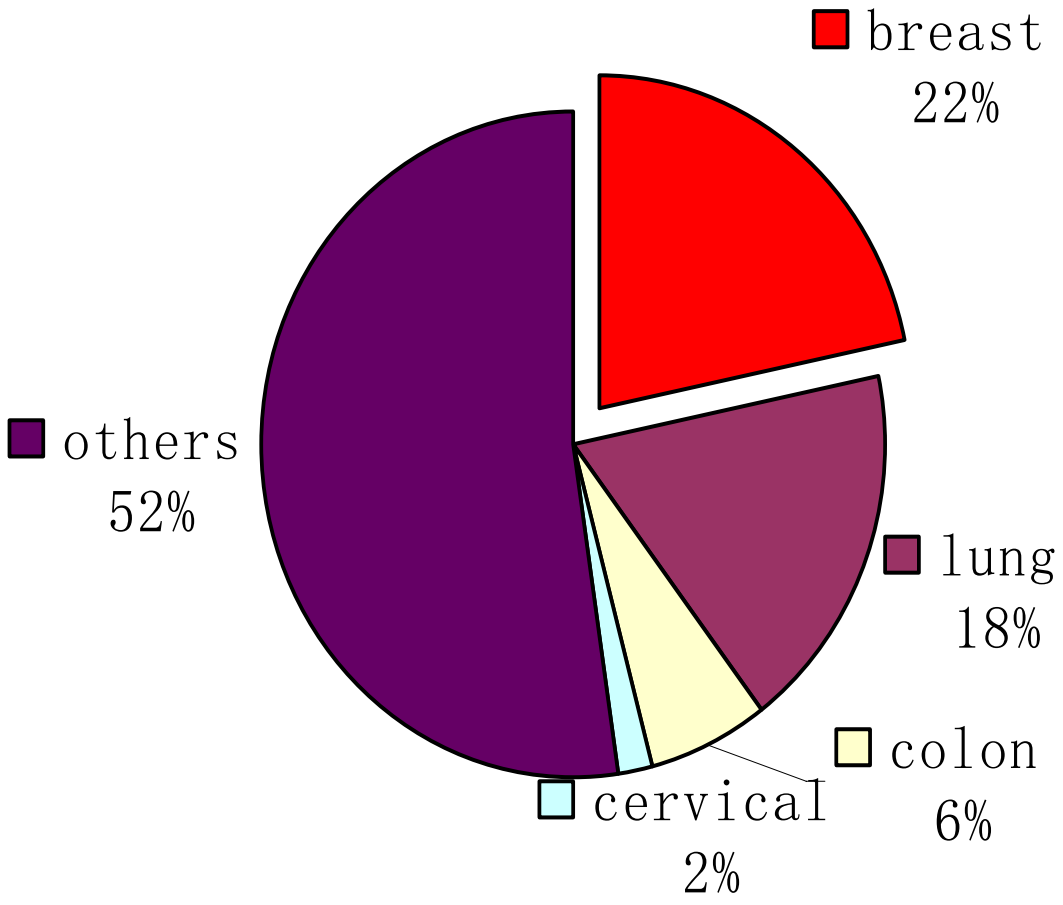
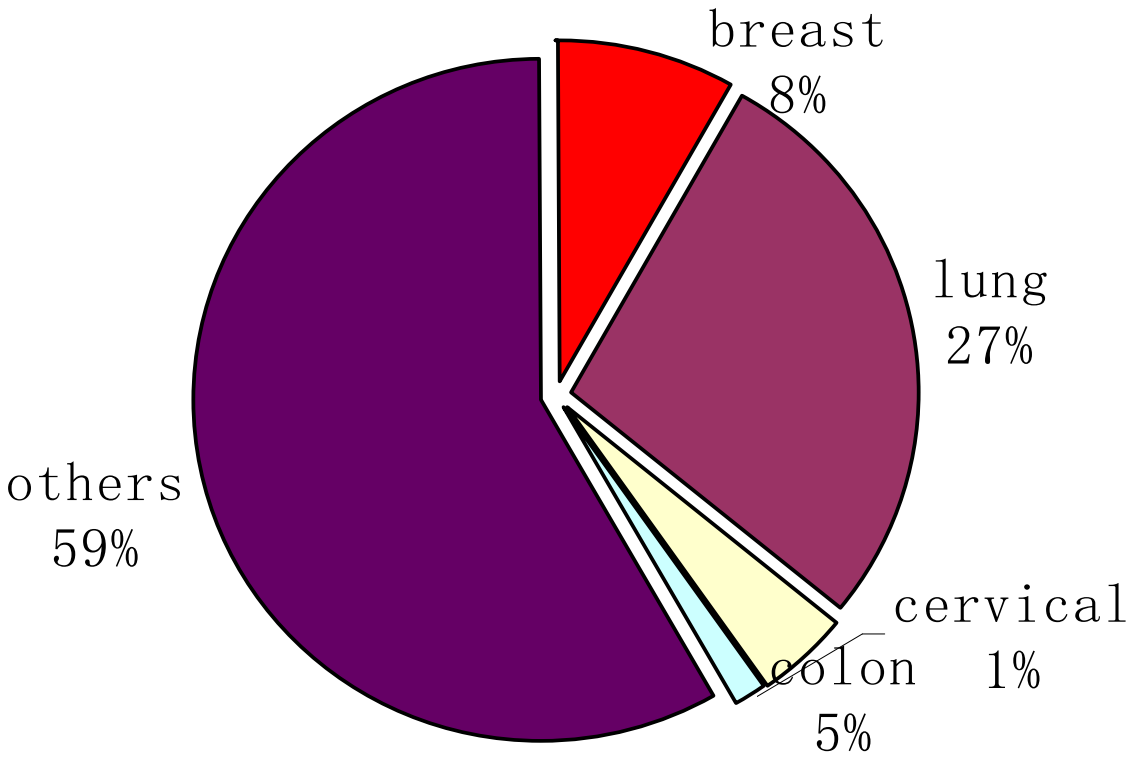


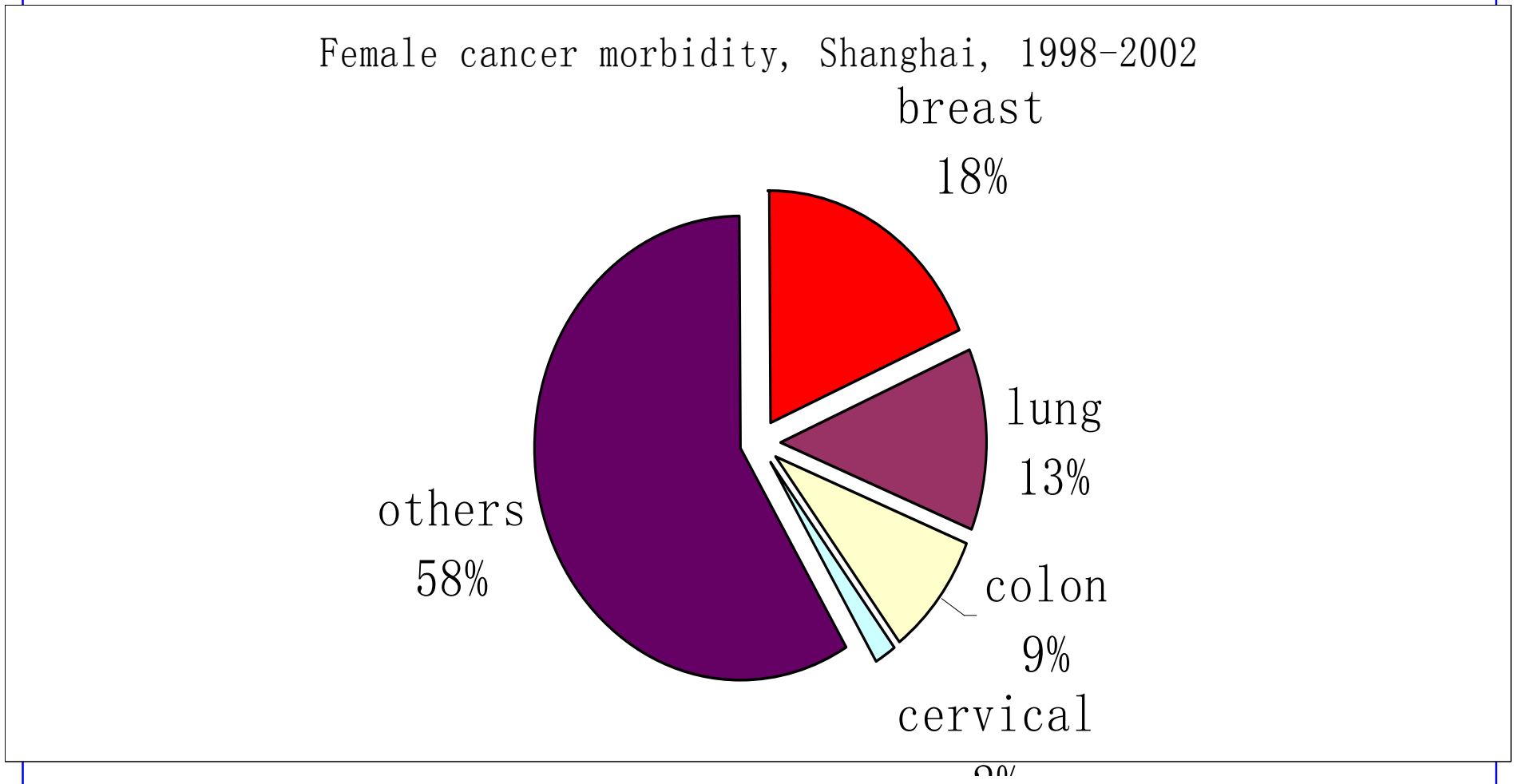
图 21　1997-2000 中美乳腺癌年龄别发病率比较

Female Cancer Morbidity, Beijing, China, 1998-2002

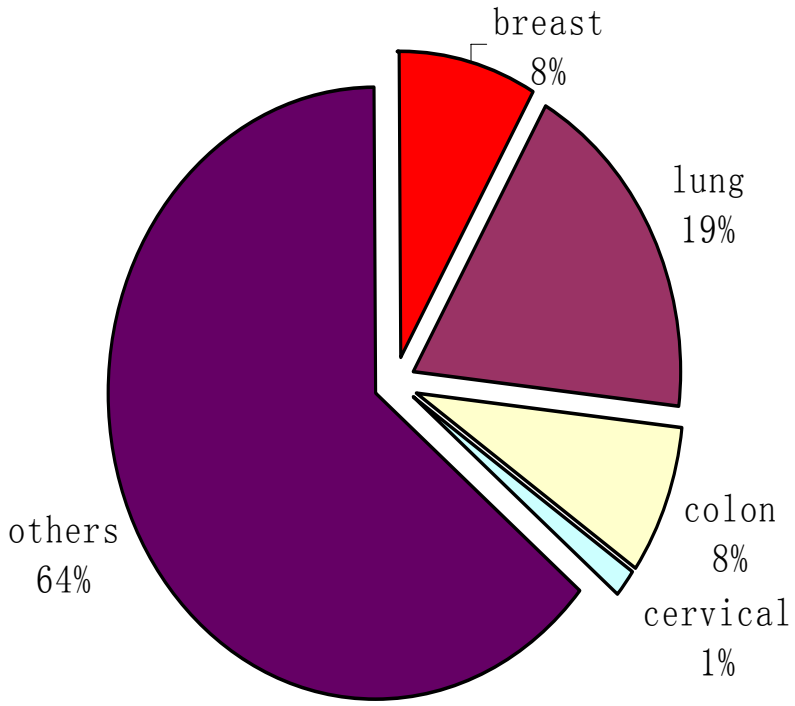


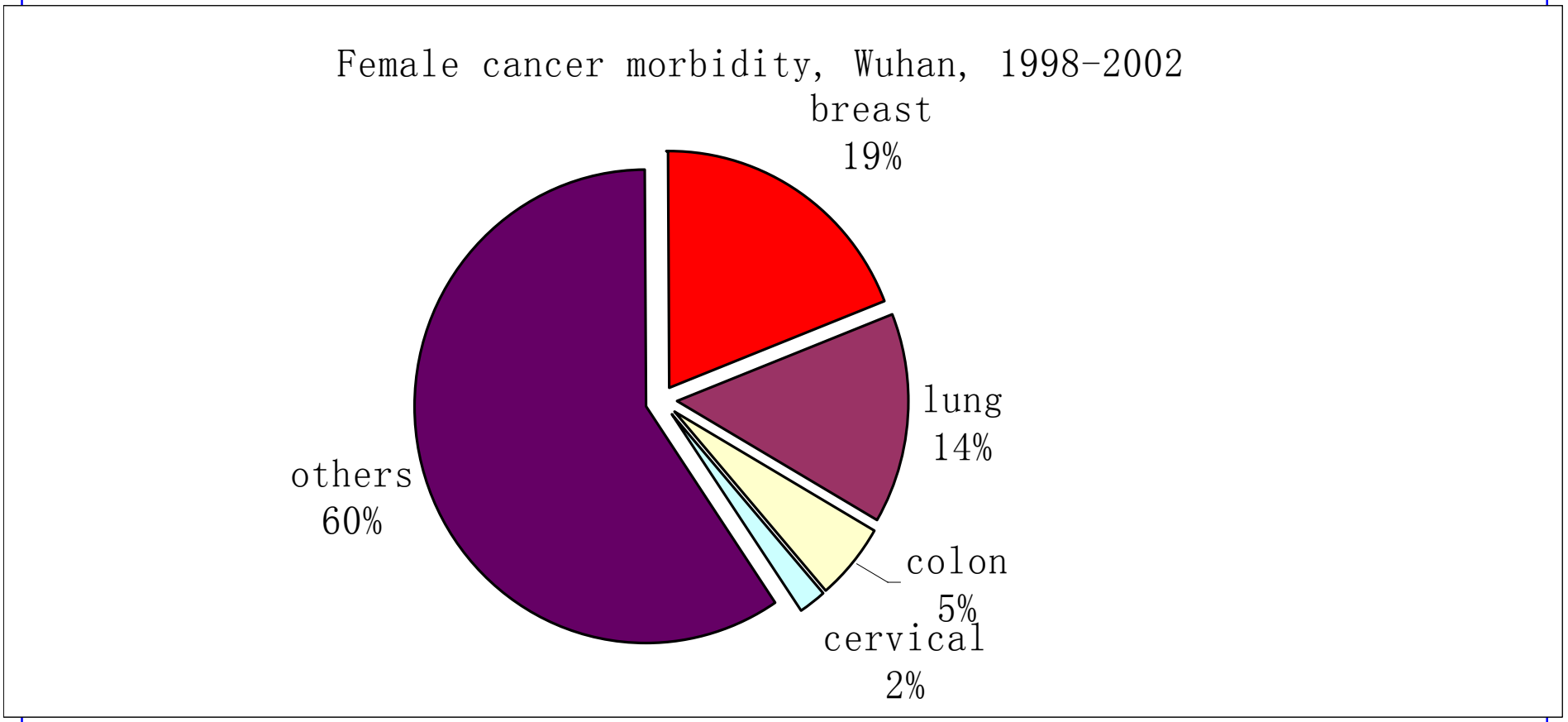
Female cancer mortality, Beijing, 1998-2002

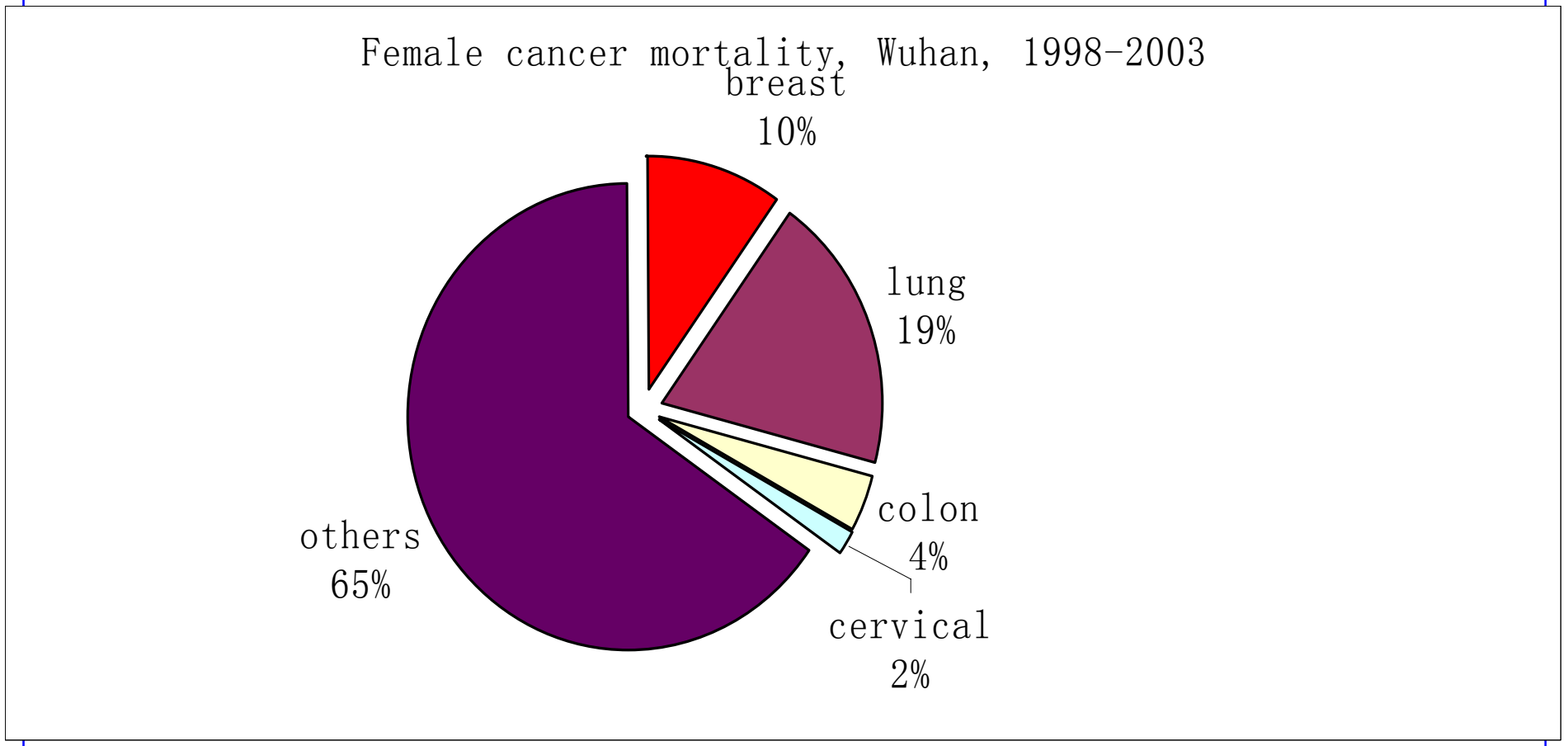



Female cancer morbidity, Shanghai, 1998-2002
breast
18%
lung
13%
colon
9%
cervical
others
58%

Female cancer mortality, Shanghai, 1998-2002




Female cancer morbidity, Wuhan, 1998-2002
breast
19%
lung
14%
colon
5%
cervical
2%
others
60%


Female cancer mortality, Wuhan, 1998-2003
breast
10%
lung
19%
colon
4%
cervical
2%
others
65%

shanghai

- High intake of meat, age 40-49,high education, style of working, late age of first full term pregnancy, often eat deep-fry food, early drinking tea, and soy product intake.
- 1990-1996,1996-1999 survey

Wuhan

- Oral contraceptive, style of working, ovariotomy, education, SES, dysmenorrhea, menopause, smoke-dried food, passive smoking.

Breast Cancer in China

- BC in China is increasing rapidly
- This increase results mainly from metropolitan female at reproductive age
- Highest risk age group at 40-49, which is earlier than that in developed countries (50-79 ys)

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Breast Cancer in China

- Highest risk age group's characteristics:
  - High education level
  - Engaging in scientific research
  - Depress
  - High BMI
  - High protein intake
  - Disharmonious marital life/divorce

Breast Cancer in China

- Highest risk age group's characteristics (cont'):
  - Induced abortion
  - Late age at first pregnancy
  - Oral contraceptive use
  - Lack of lactation
  - Benign breast disease
  - Family history of BC
  - Late menopause
  - Passive smoking

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Controlling Strategies

- Women's health management
  - Improve mental health
  - Suitable age to get marriage and pregnancy
  - Reduce induce abortion
  - Encourage breastfeeding and prolong lactation period

Controlling Strategies

- Women's health management
  - Plan based food not animal based food
  - Exercise
  - No smoking/less drinking
  - Early detection

Acknowledgement

- Abenaa brewster and kathy helzlsouer, breast cancer epidemiology, prevention, and early detection, current opinion in oncology 2001, 13:420–425
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Thank You

Q & A