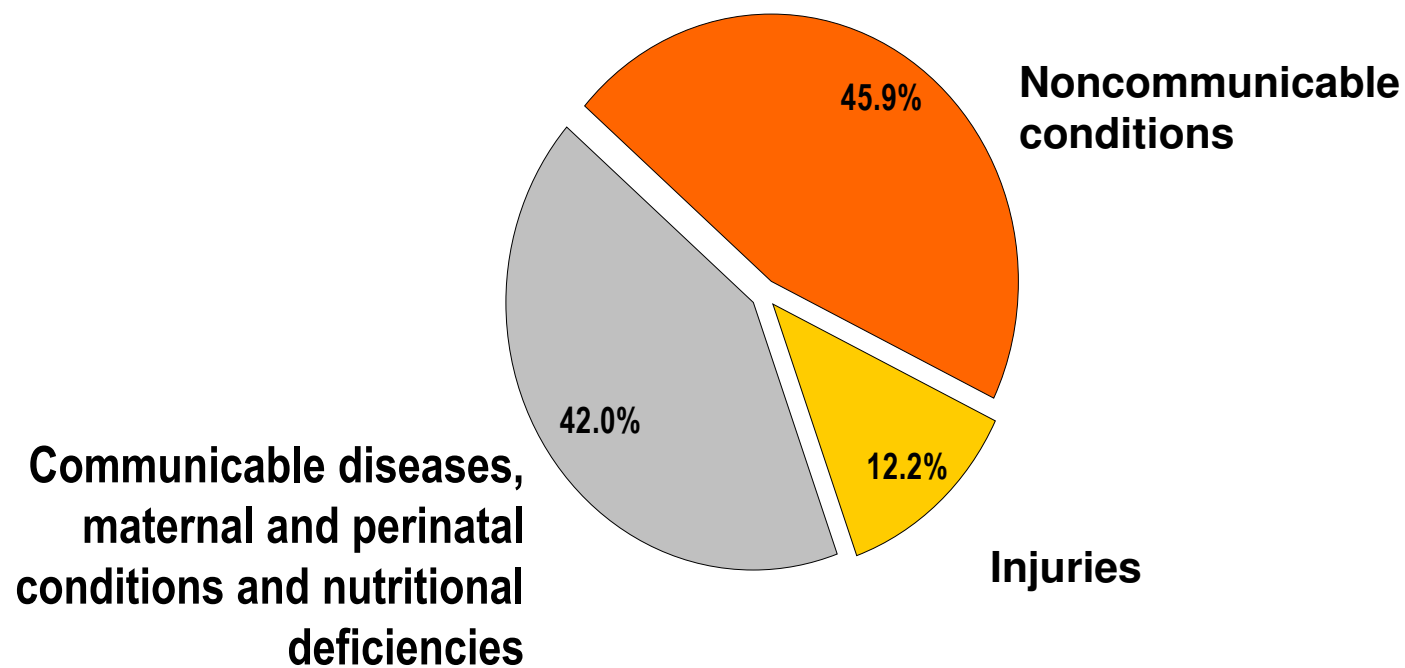


Burden of Disease: Non-communicable conditions and their risk factors

R.M.Pandey
Senior Program Consultant
INCLIN Trust International
New Delhi

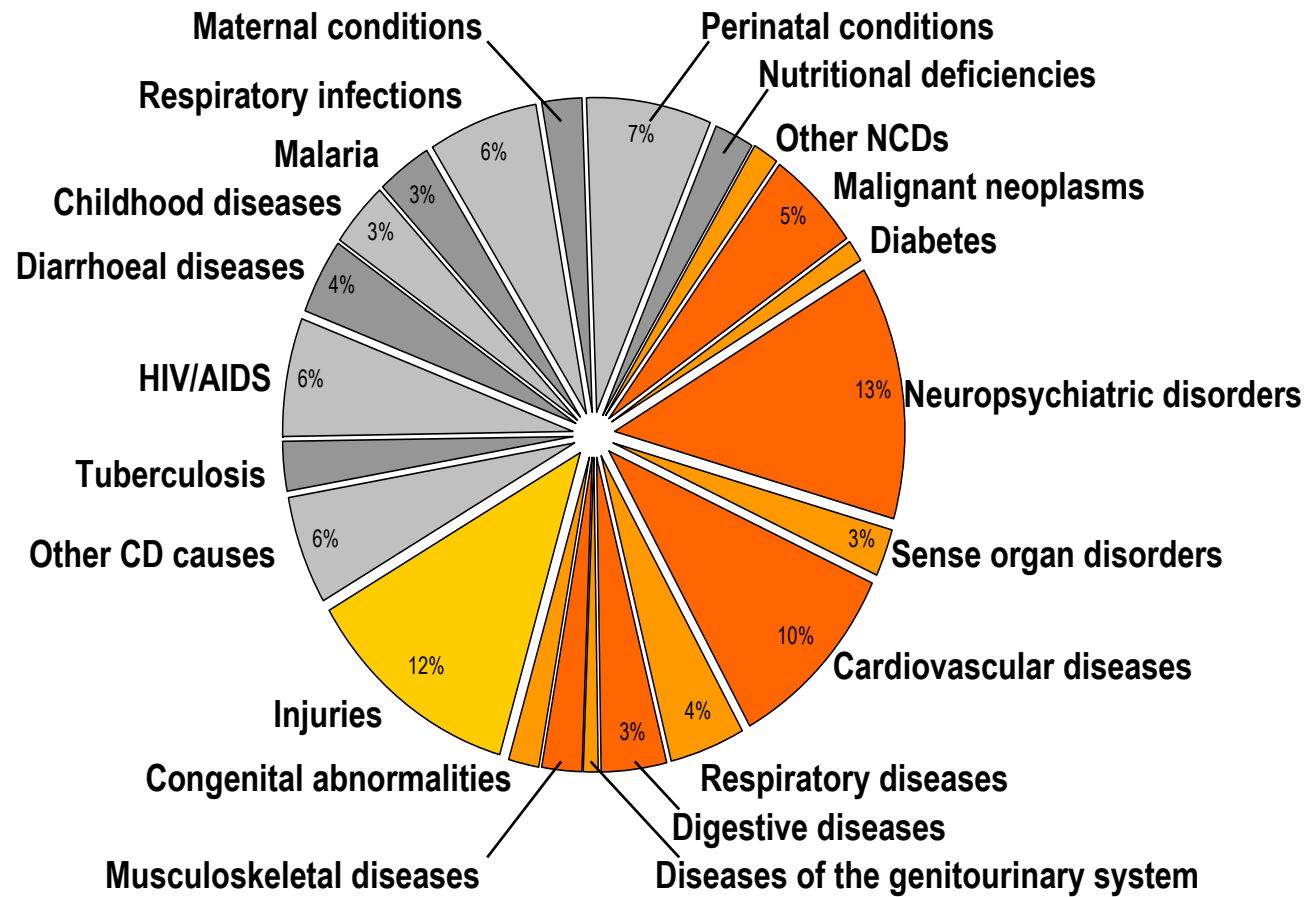
WORLD

Disease Burden (DALYs), by broad cause group, 2001

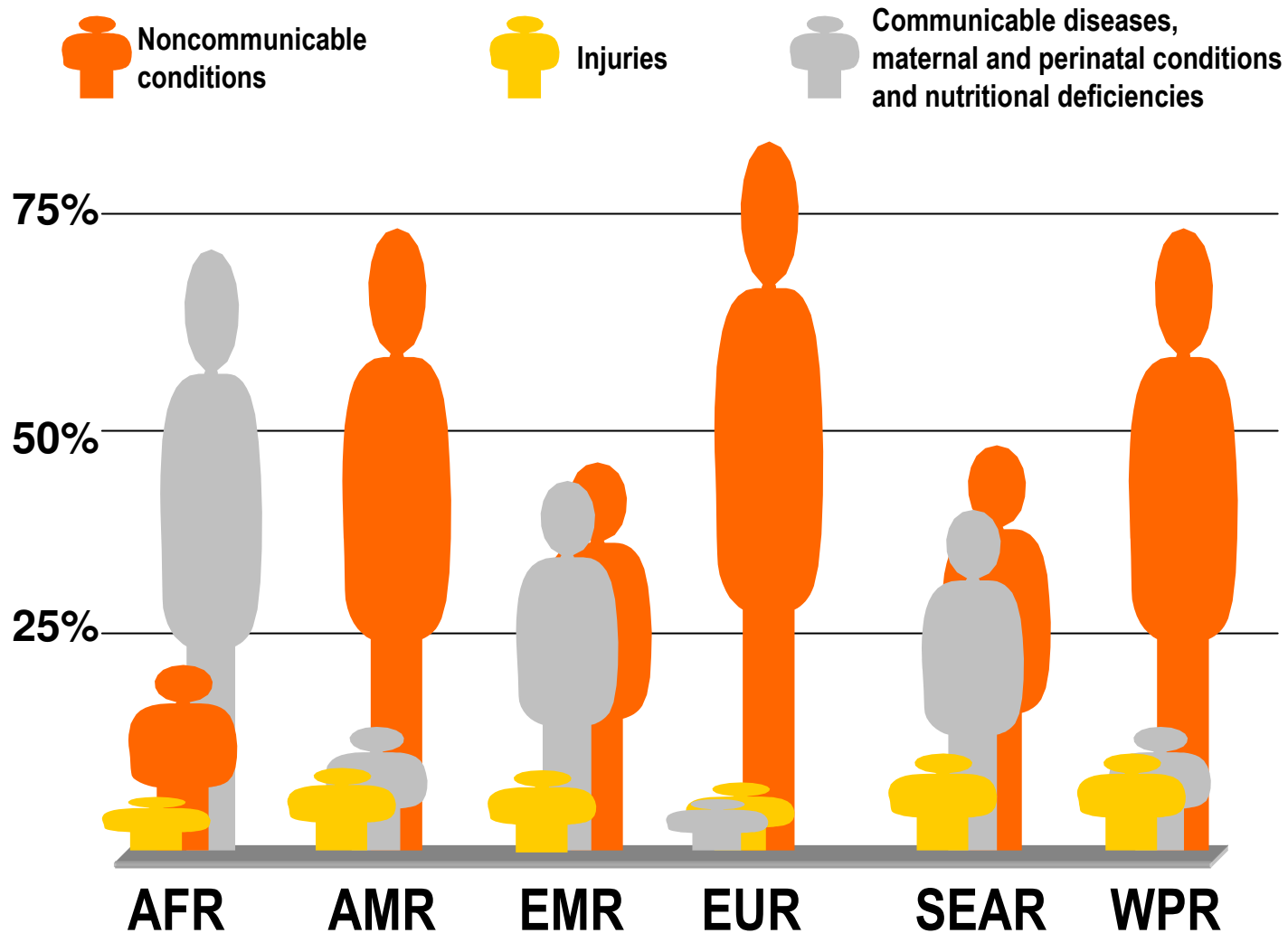


WORLD

Disease burden (DALYs), 2001



Deaths, by broad cause group and WHO Region, 2001



Source: WHR 2002

Risks quantified in WHR2002

Child & maternal under-nutrition

- Underweight
- Iron deficiency
- Vitamin A deficiency
- Zinc deficiency

• Other diet-related risks & inactivity

- Blood pressure
- Cholesterol
- High body mass index
- Inadequate fruit and vegetable intake
- Physical inactivity

• Sexual and reproductive health risks

- Unsafe sex
- Lack of contraception

• Addictive substances

- Smoking and oral tobacco
- Alcohol
- Illicit drugs

Environmental risks

- Unsafe water, sanitation, and hygiene
- Urban air pollution
- Indoor smoke from solid fuels
- Lead exposure
- Climate change

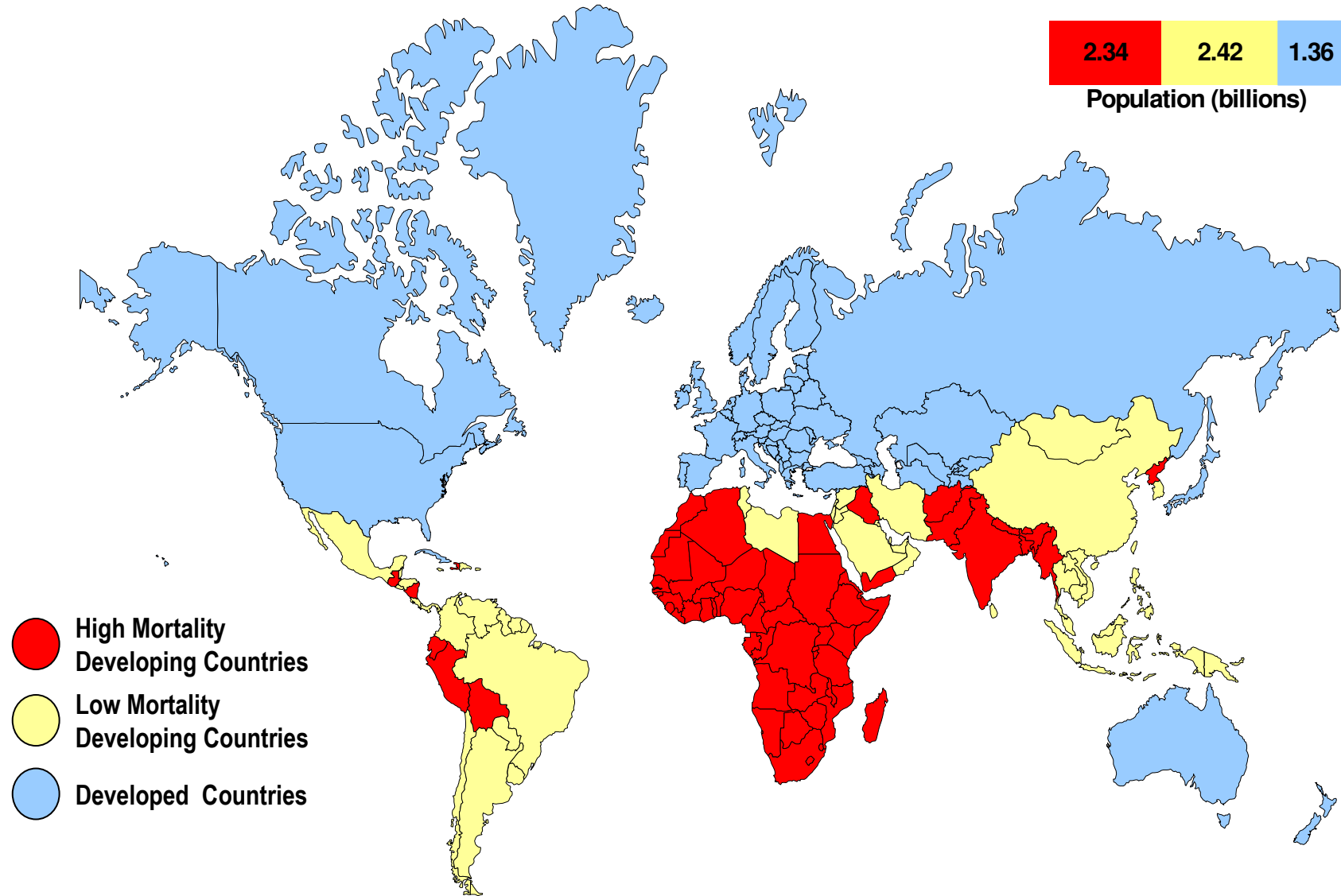
• Occupational risks

- Risk factors for injury
- Carcinogens
- Airborne particulates
- Ergonomic stressors
- Noise

• Other selected risks to health

- Unsafe health care injections
- Childhood sexual abuse

ubregions by economic and demographic development and mortality pattern



Immersed in a sea of risk

Leading 12 selected risk factors as causes of disease burden

■ = Major NCD risk factors

Developing countries

Developed countries

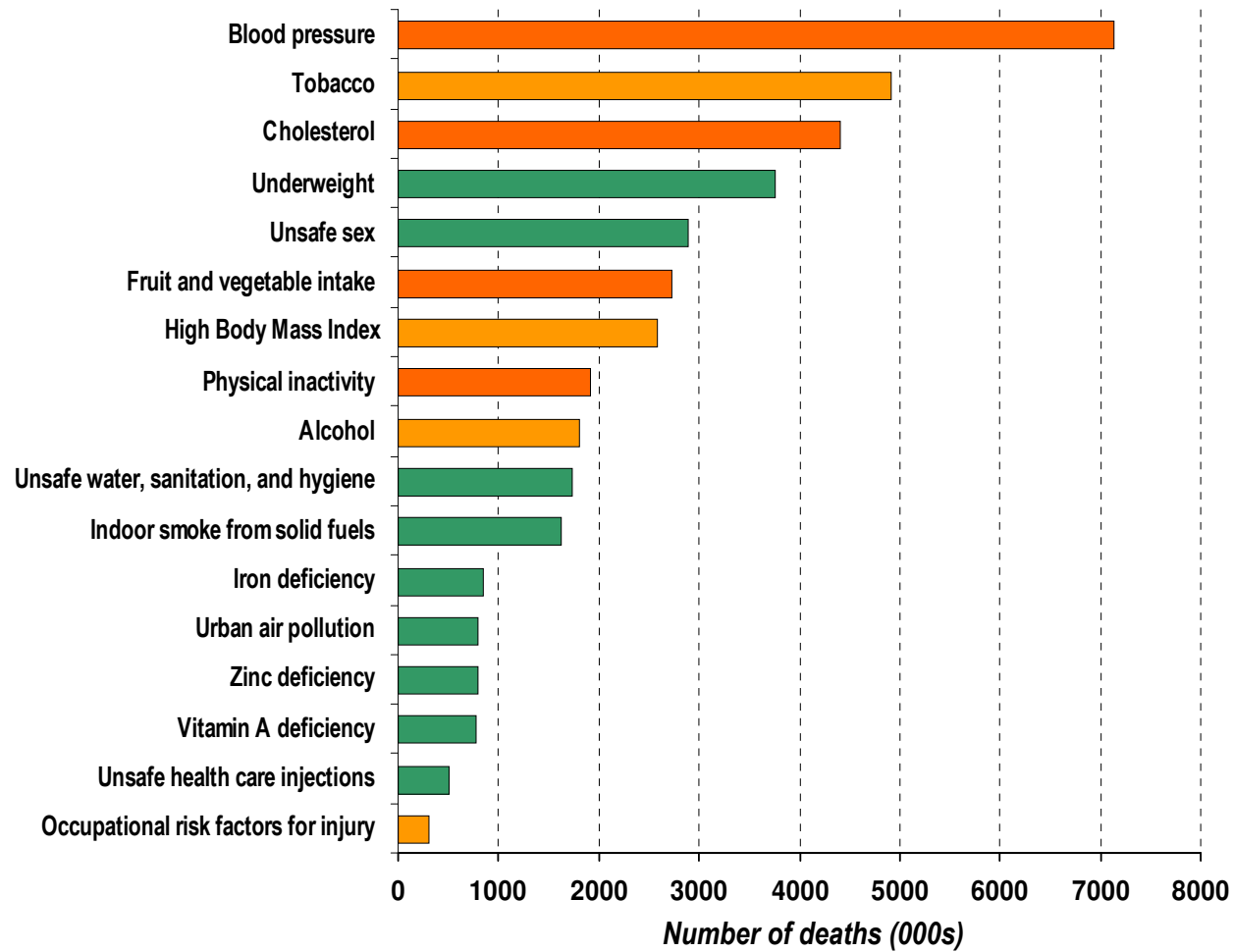
High Mortality

Low Mortality

1	Underweight	<u>Alcohol</u>	<u>Tobacco</u>
2	Unsafe sex	<u>Blood pressure</u>	<u>Blood pressure</u>
3	Unsafe water	<u>Tobacco</u>	<u>Alcohol</u>
4	Indoor smoke	Underweight	<u>Cholesterol</u>
5	Zinc deficiency	<u>Body mass index</u>	<u>Body mass index</u>
6	Iron deficiency	<u>Cholesterol</u>	<u>Low fruit & veg. intake</u>
7	Vitamin A deficiency	<u>Low fruit & veg intake</u>	<u>Physical inactivity</u>
8	<u>Blood pressure</u>	Indoor smoke - solid fuels	<u>Illicit drugs</u>
9	<u>Tobacco</u>	Iron deficiency	Unsafe sex
10	<u>Cholesterol</u>	Unsafe water	Iron deficiency
11	<u>Alcohol</u>	Unsafe sex	Lead exposure
12	<u>Low fruit & veg intake</u>	Lead exposure	Childhood sexual abuse

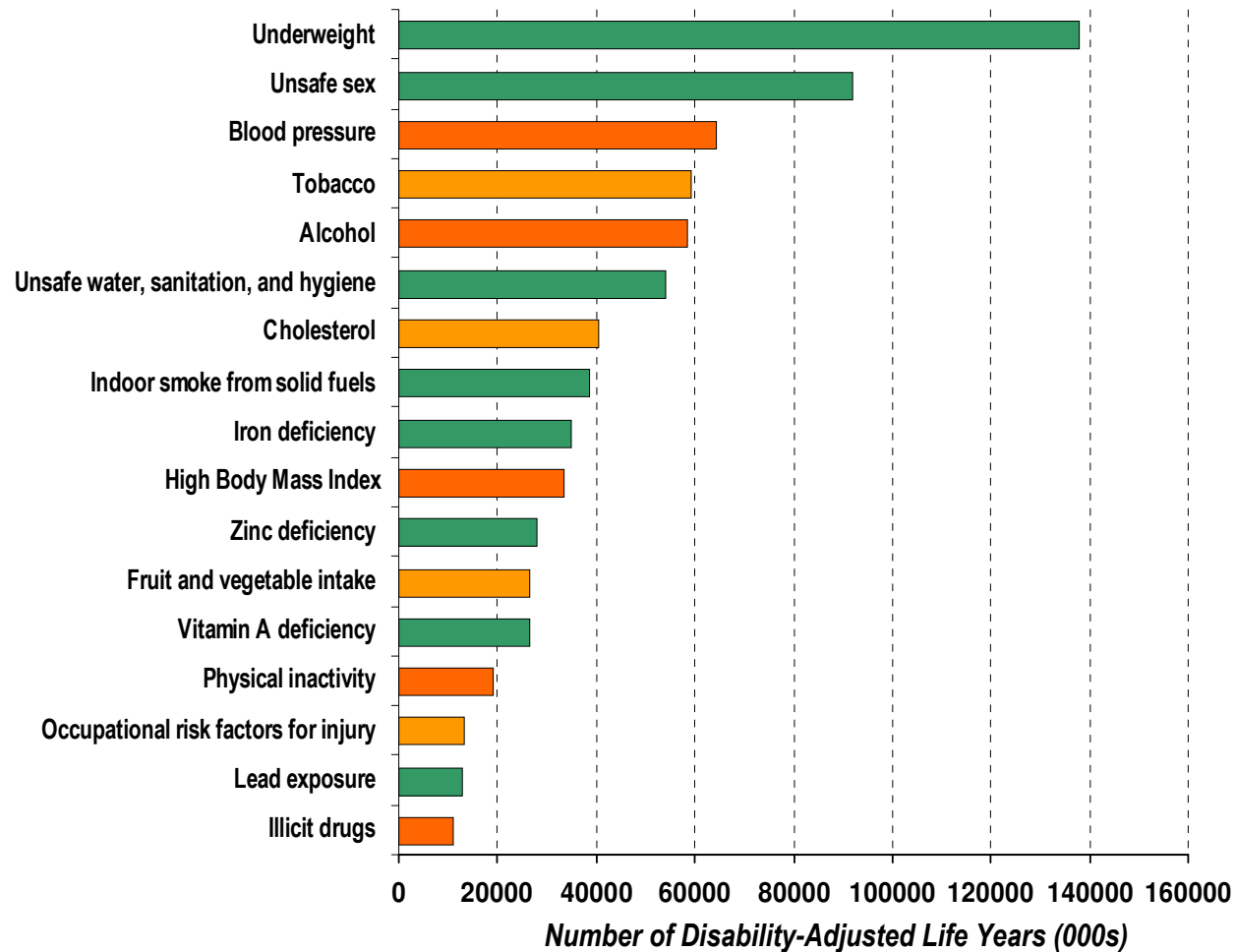
World

Deaths in 2000 attributable to selected leading risk factors



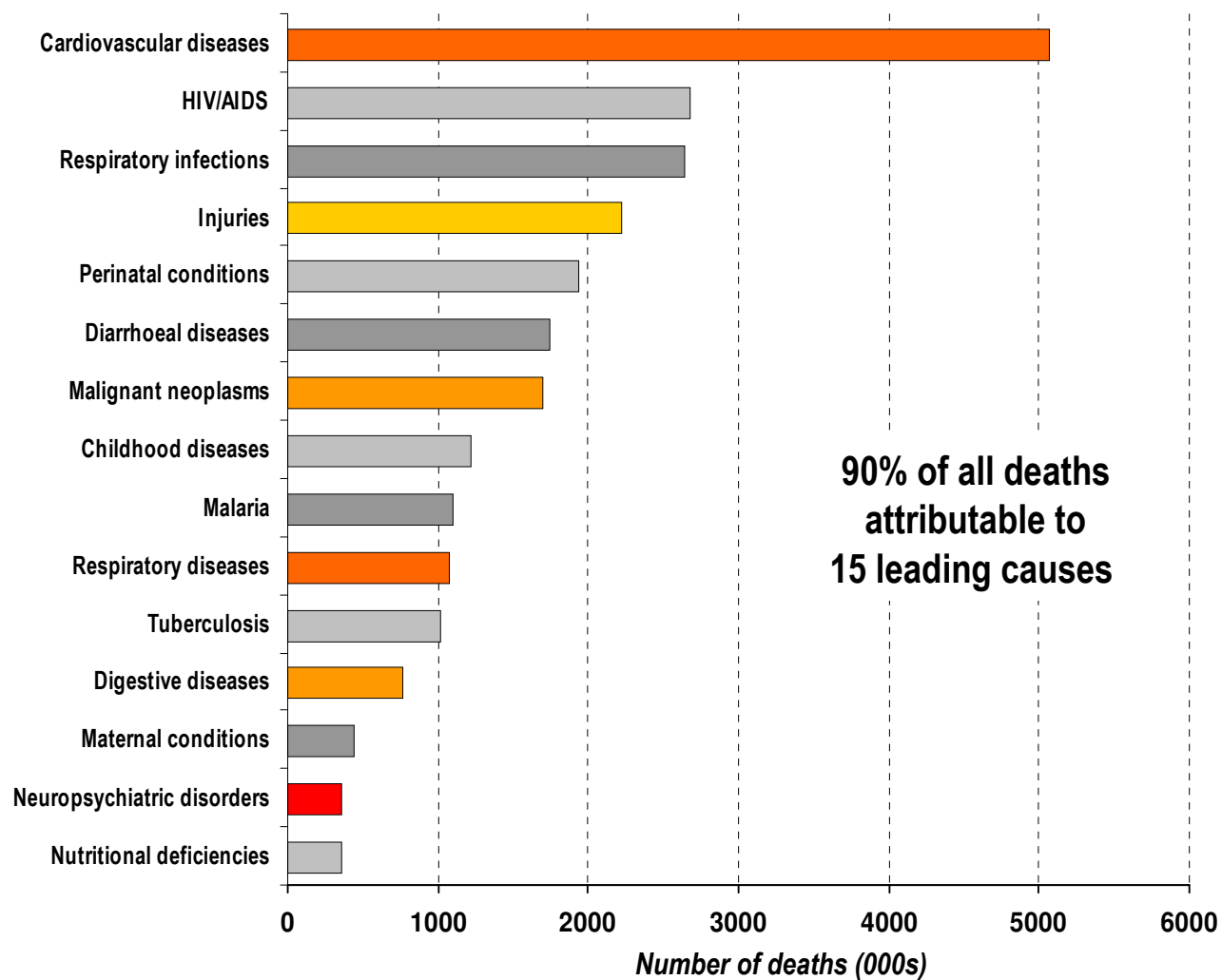
World

Disease burden (DALYs) in 2000 attributable to selected leading risk factors



High Mortality Developing Countries

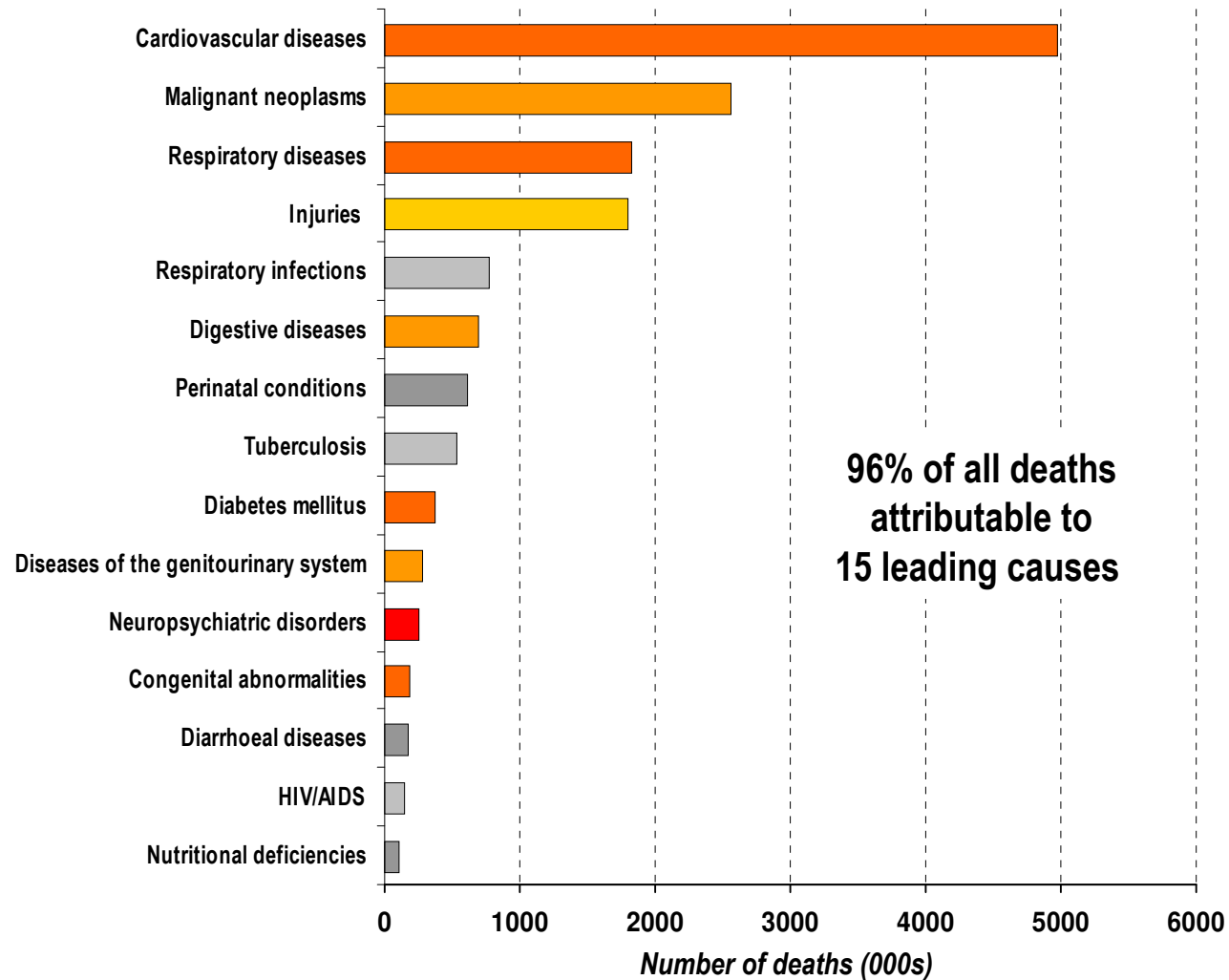
Deaths in 2001 attributable to 15 leading causes



Source: WHR 2002

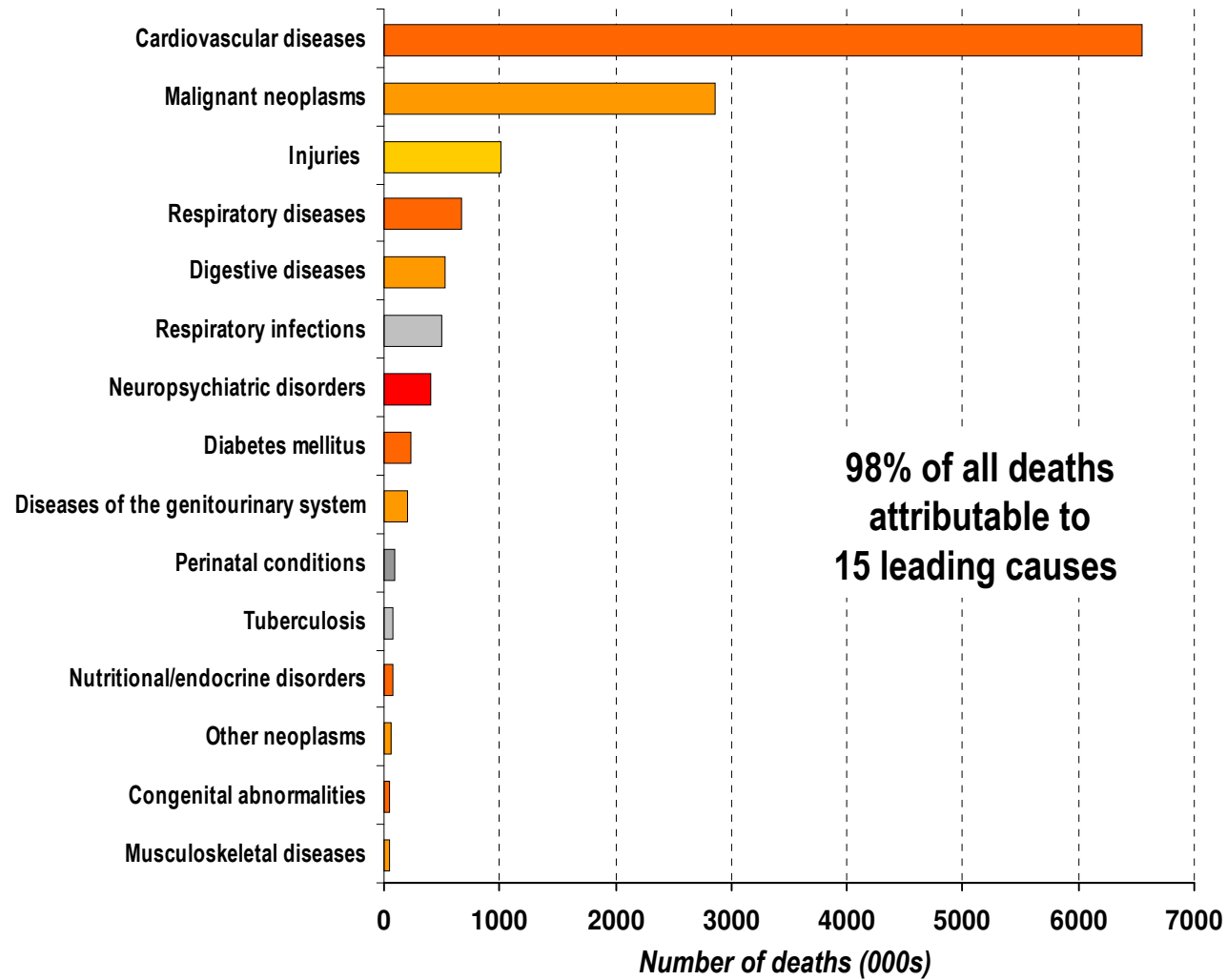
Low Mortality Developing Countries

Deaths in 2001 attributable to 15 leading causes



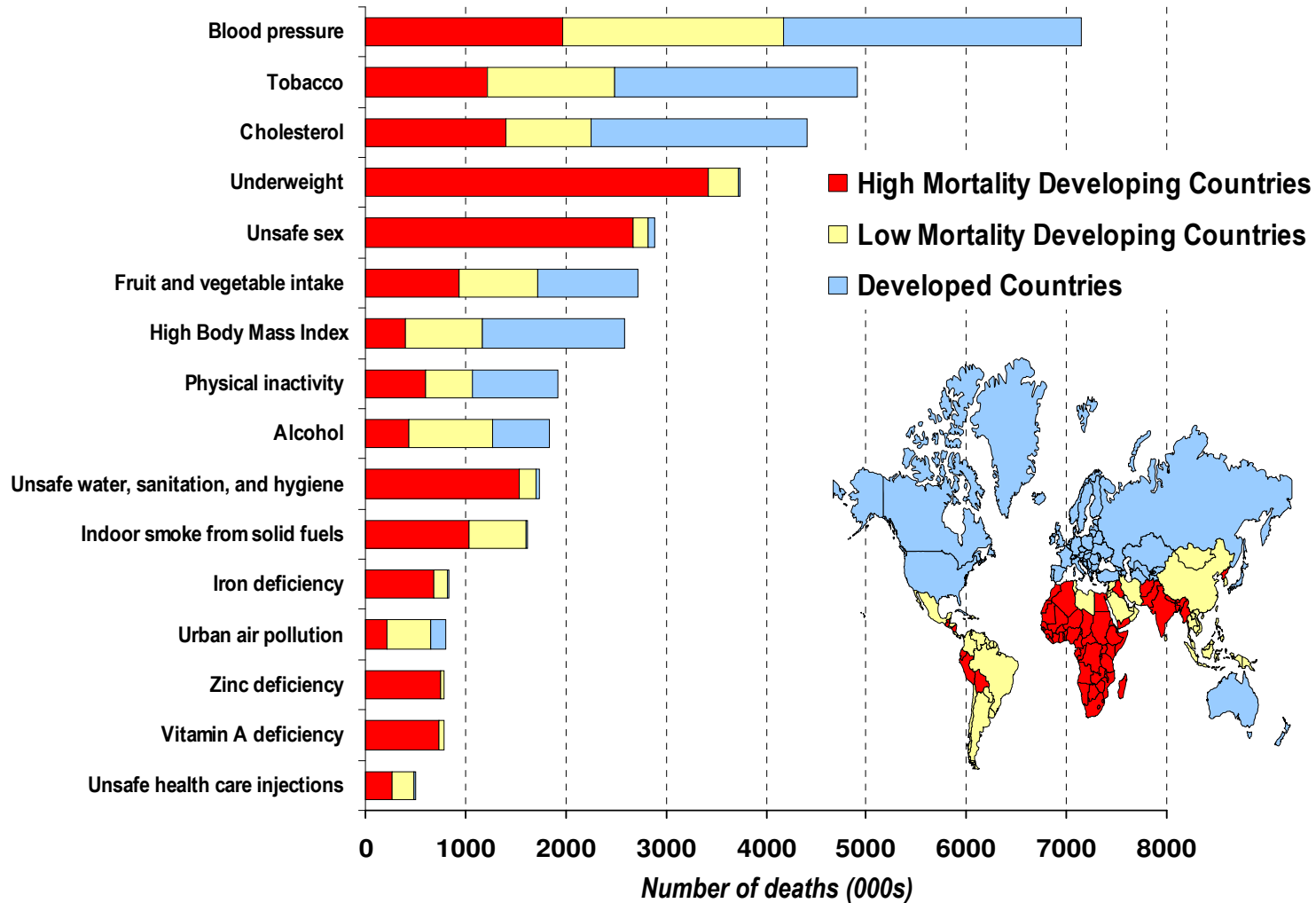
Developed Countries

Deaths in 2001 attributable to 15 leading causes



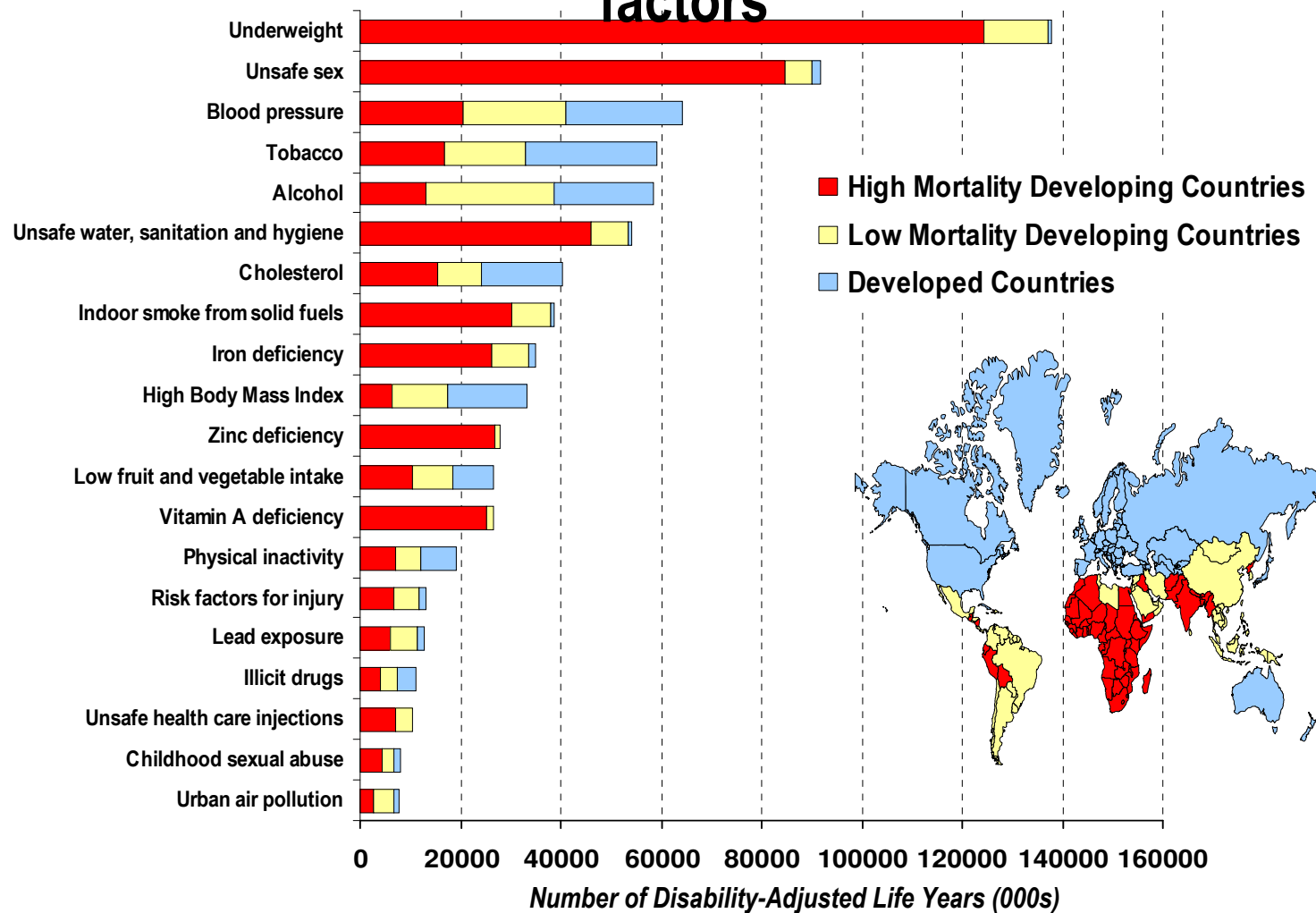
World

Deaths in 2000 attributable to selected leading risk factors



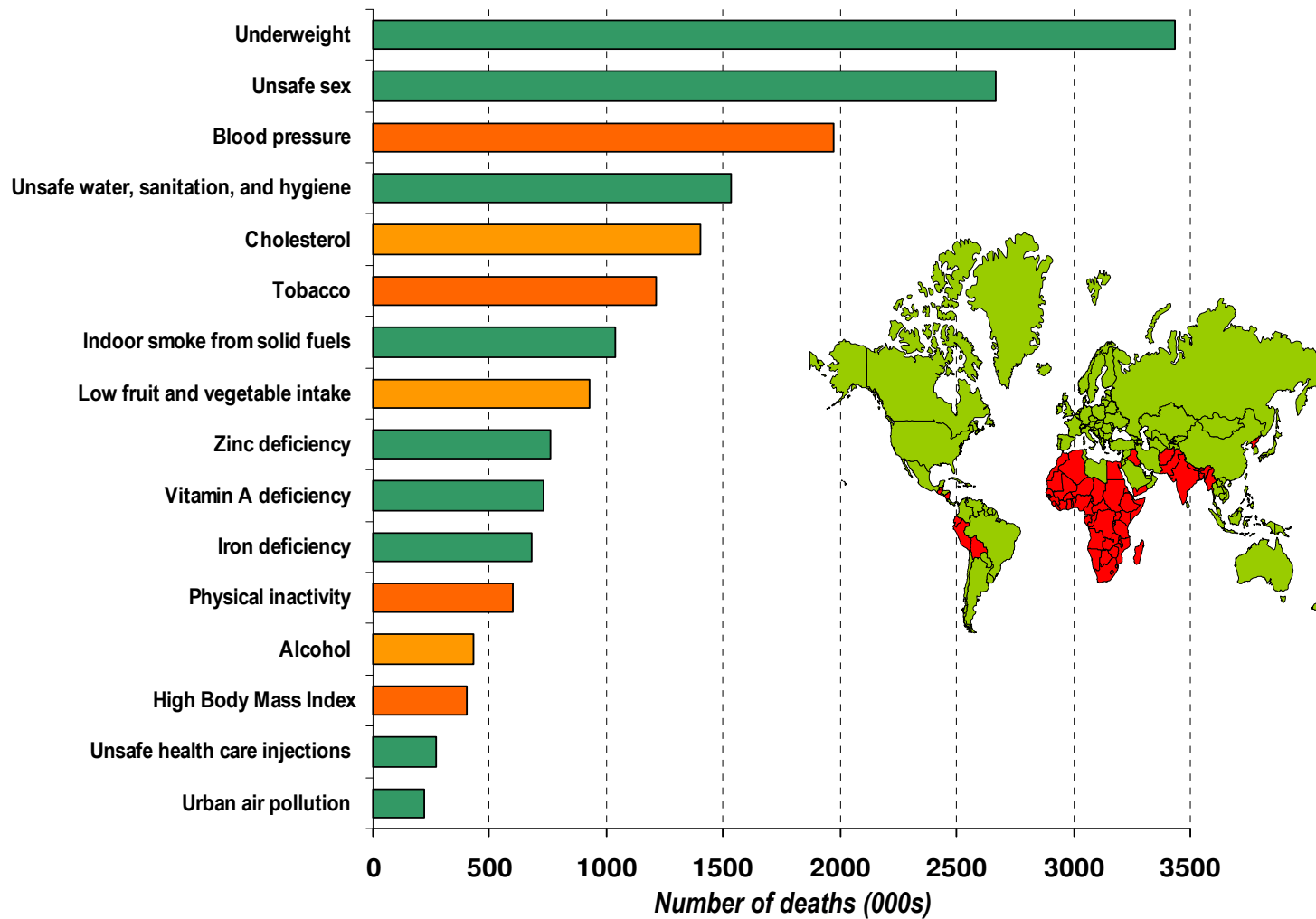
World

Disease burden (DALYs) in 2000 attributable to selected leading risk factors



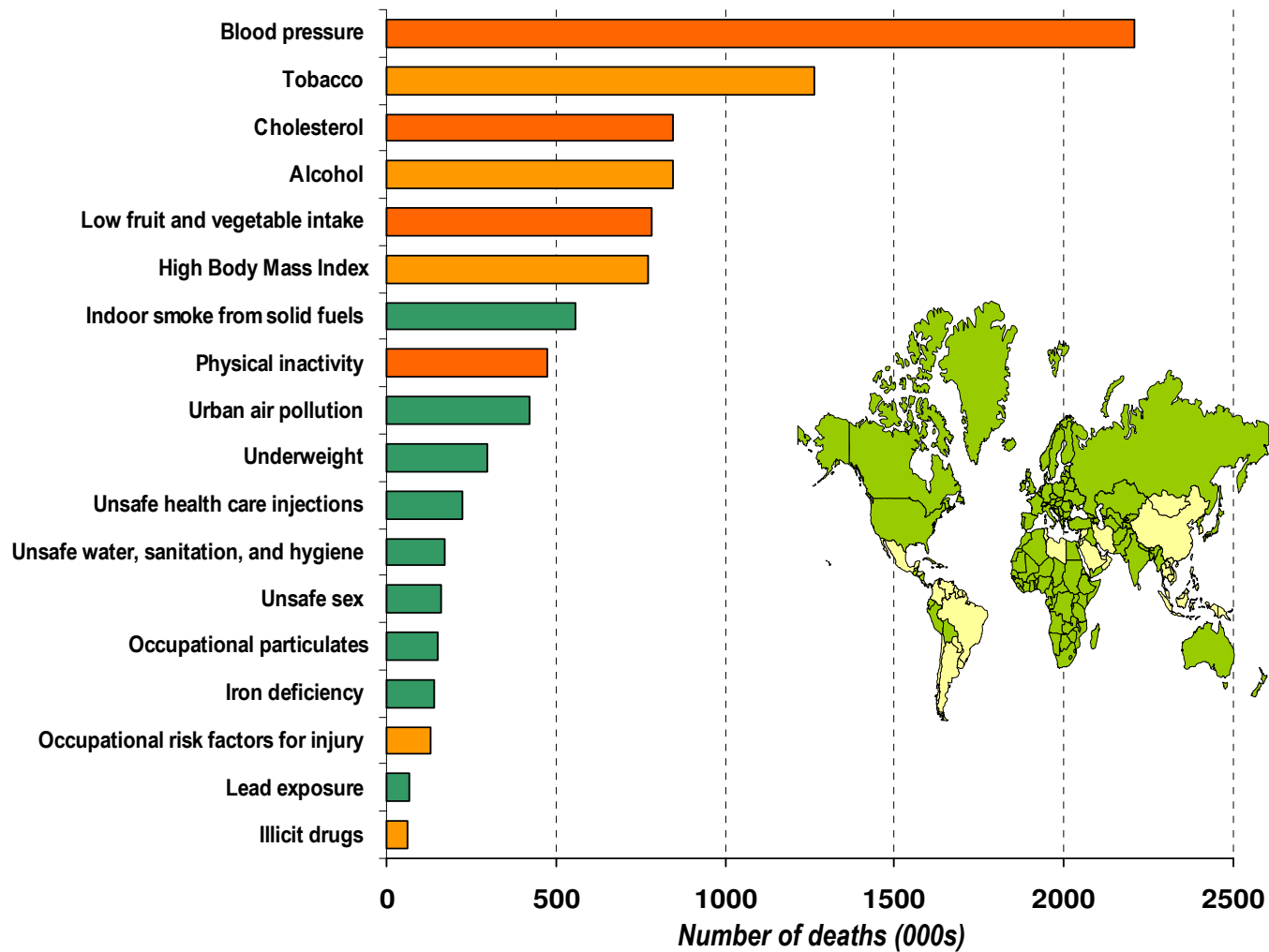
High Mortality Developing Countries

Deaths in 2000 attributable to selected leading risk factors



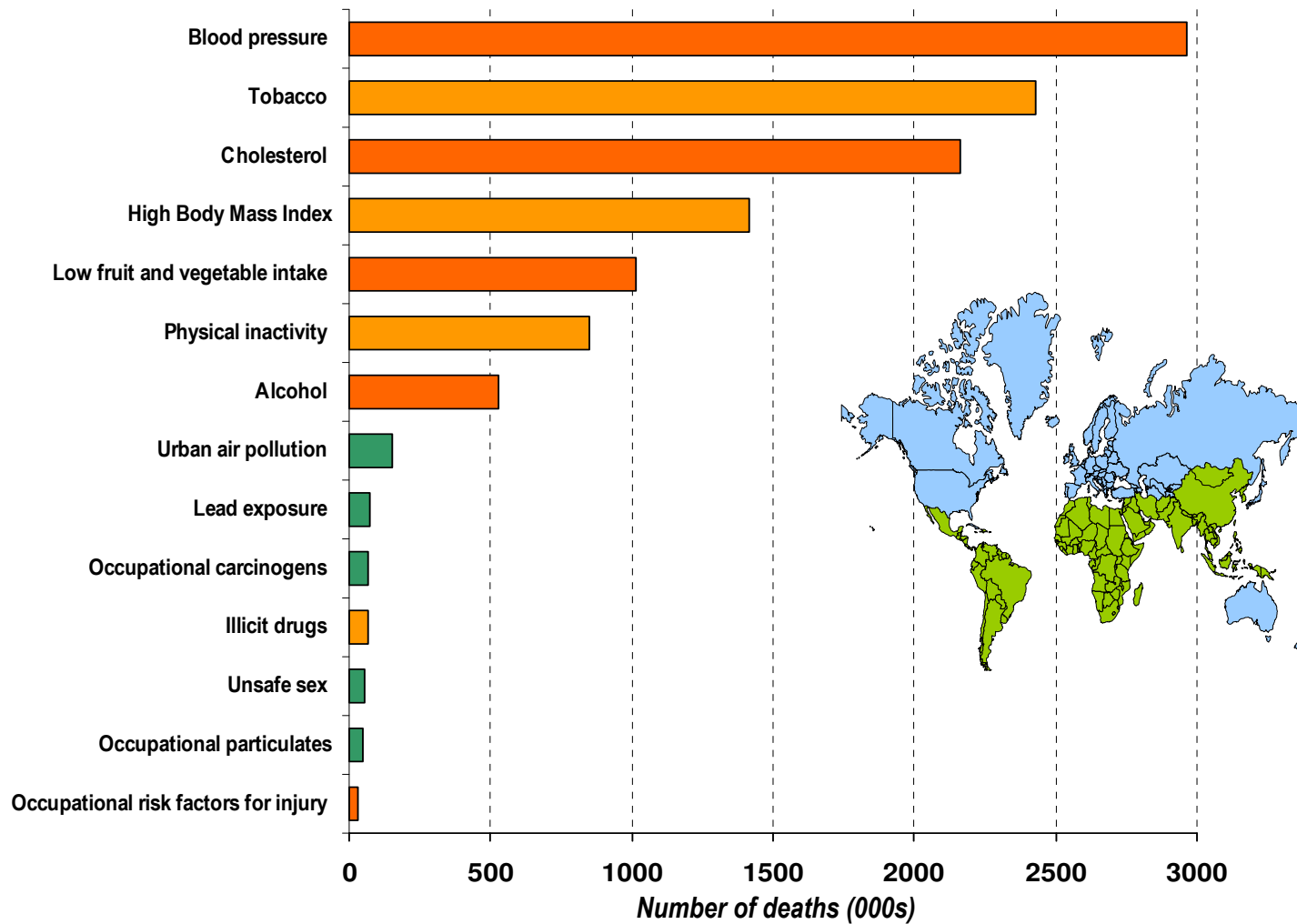
Low Mortality Developing Countries

Deaths in 2000 attributable to selected leading risk factors



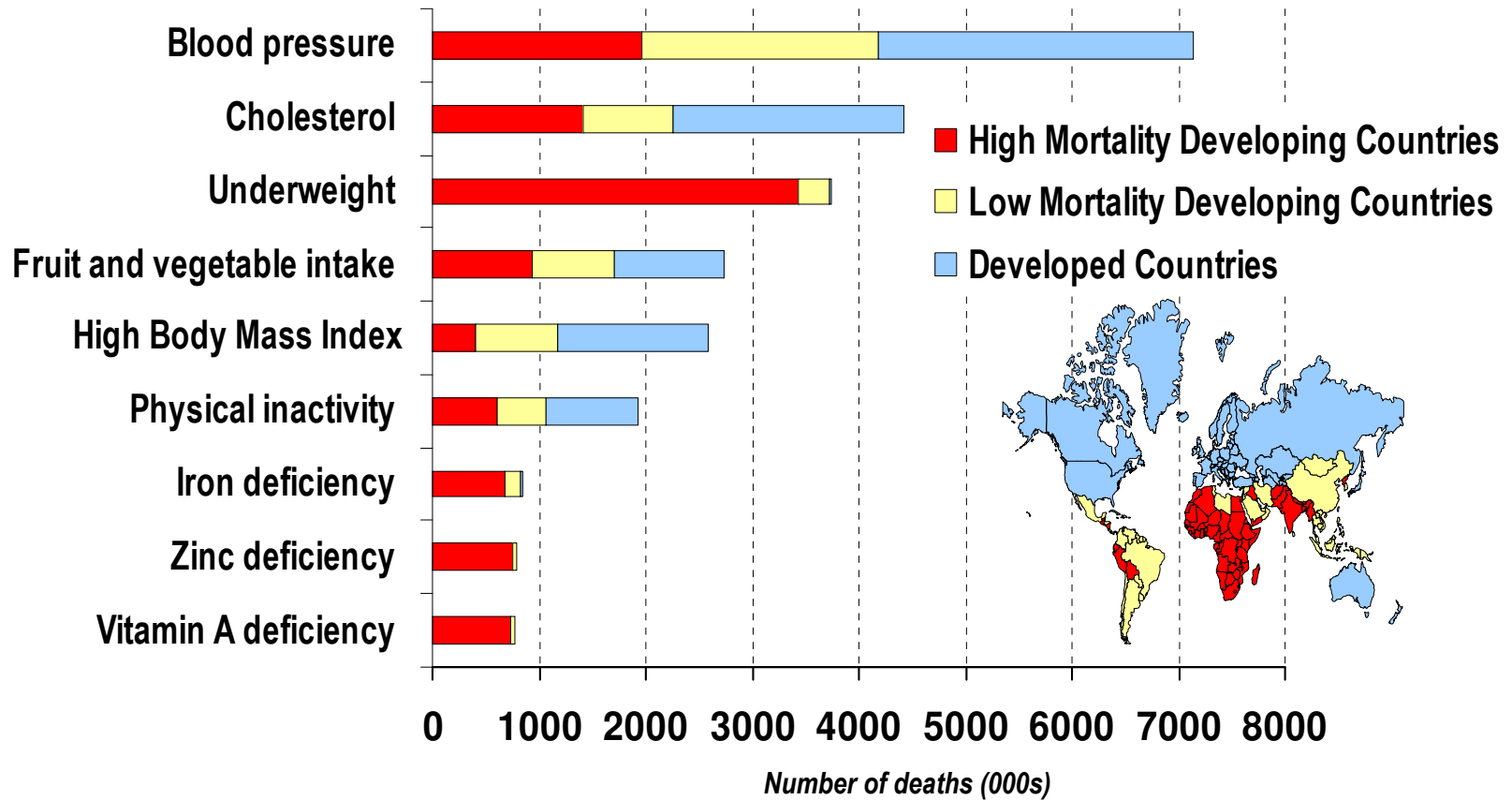
Developed Countries

Deaths in 2000 attributable to selected leading risk factors



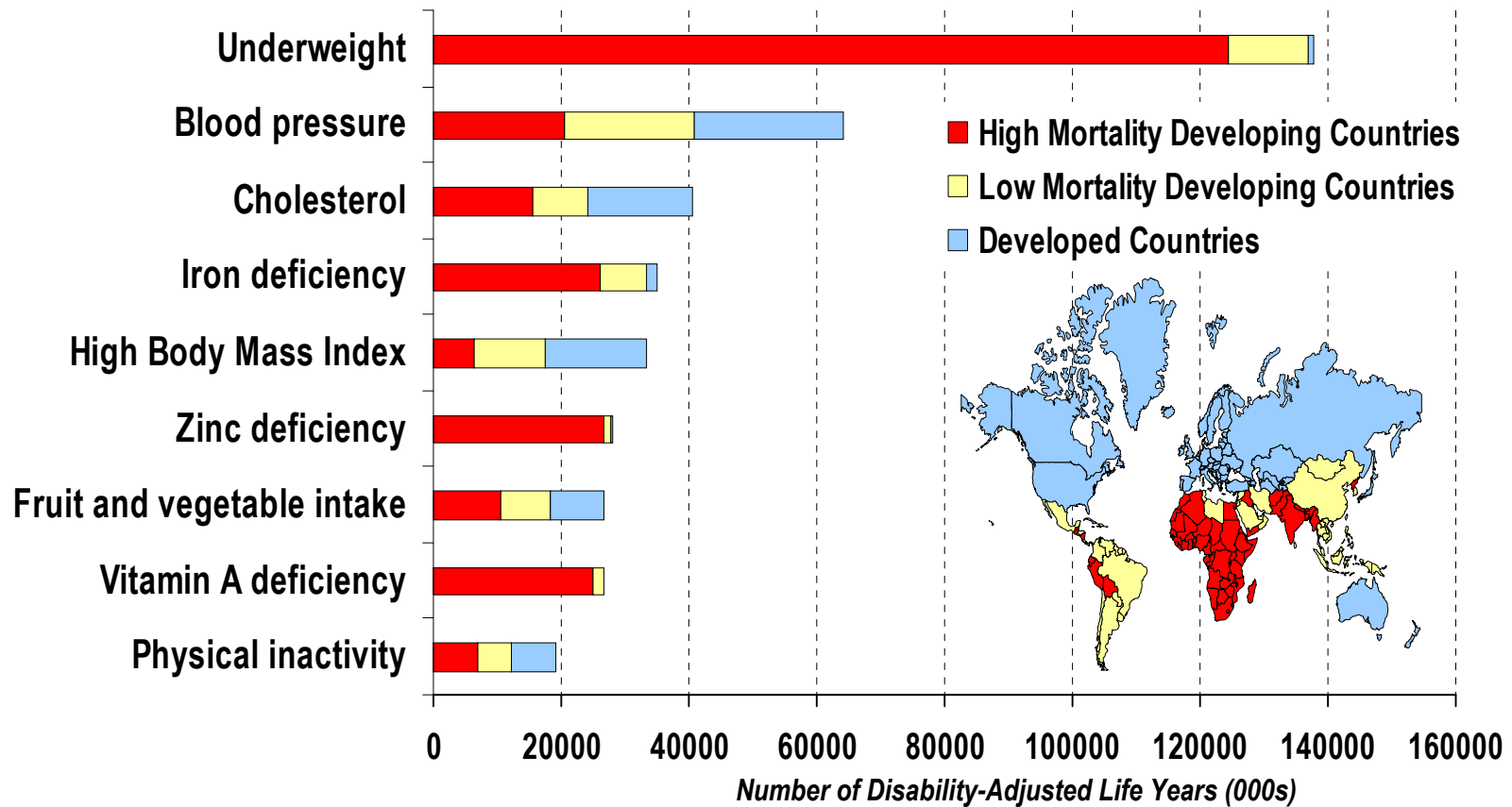
World

Deaths in 2000 attributable to Undernutrition and Diet-related Risks and Physical Inactivity



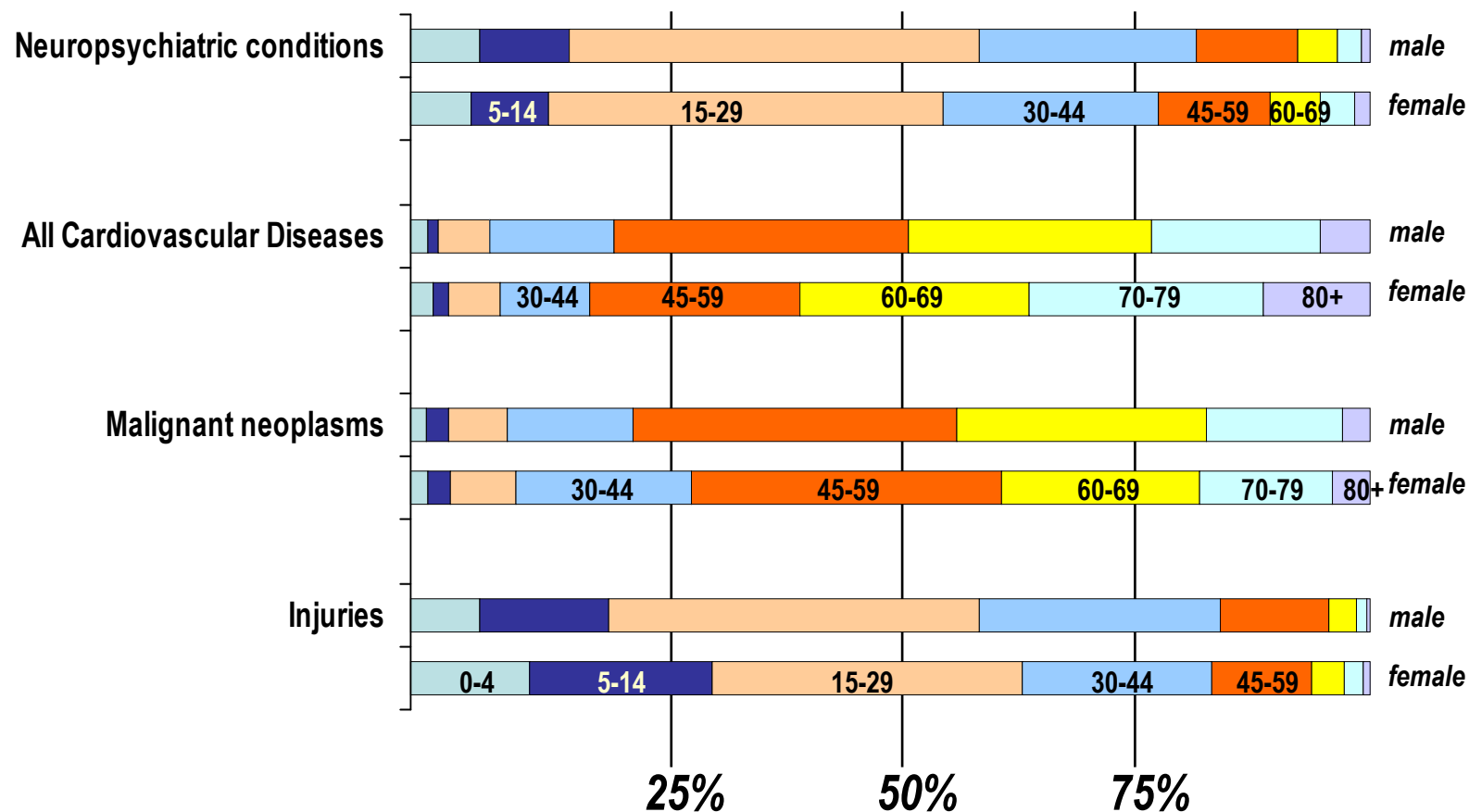
World

Disease Burden (DALYs) in 2000 attributable to Undernutrition and Diet-related Risks and Physical Inactivity



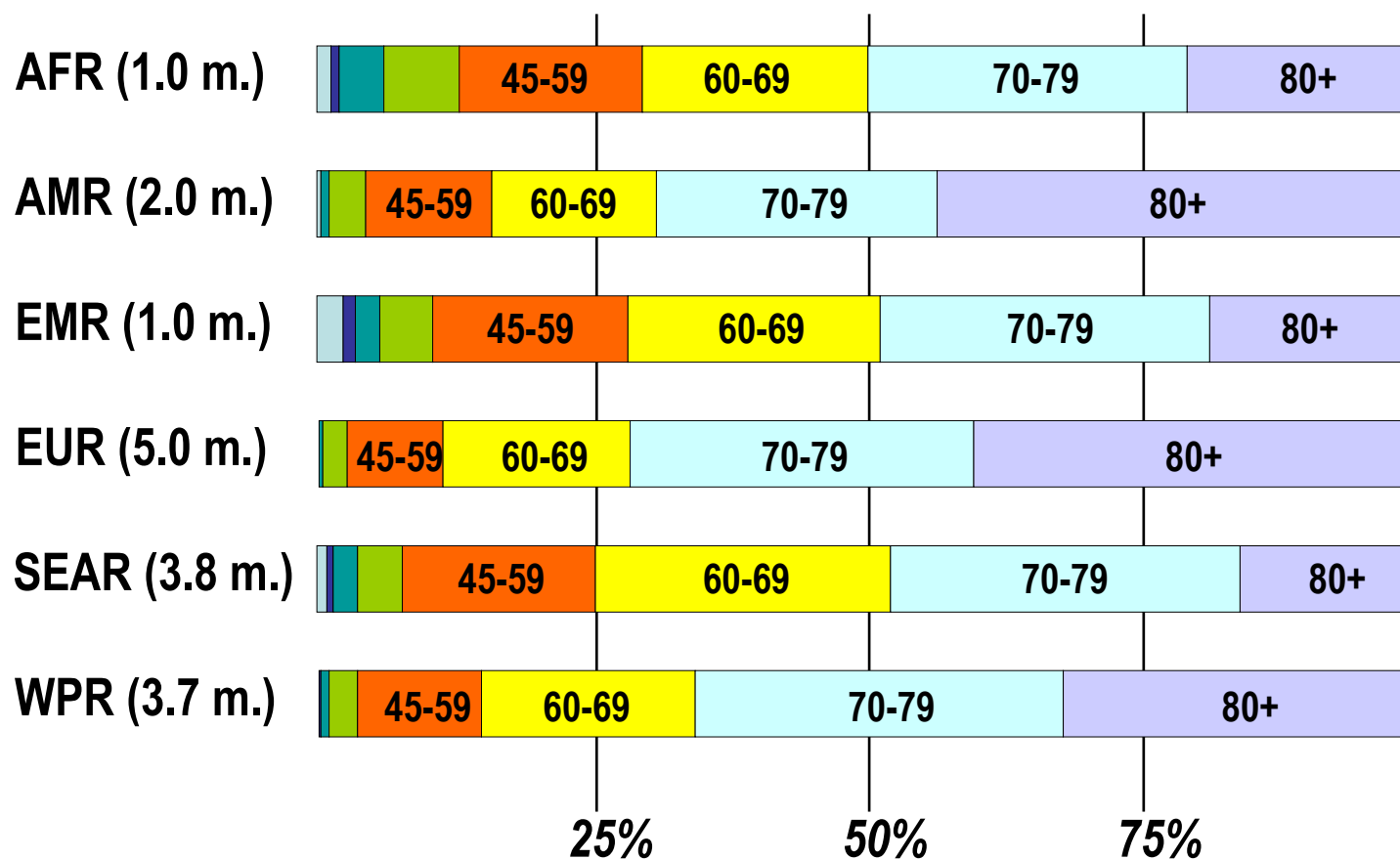
WORLD

DALYs in 2000 attributable to selected causes, by age and sex



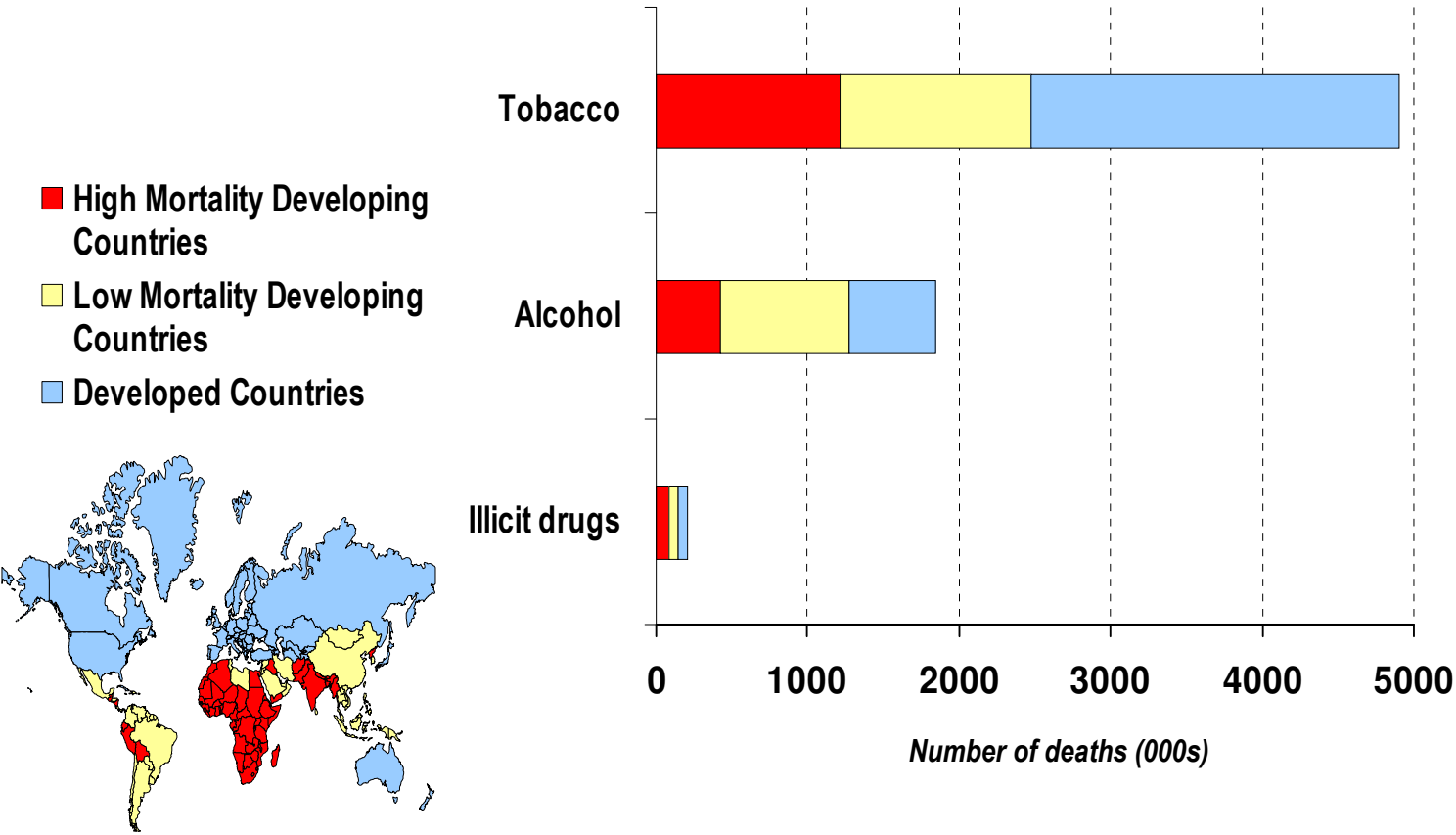
WHO Regions

Cardiovascular Diseases, deaths by age, 2000



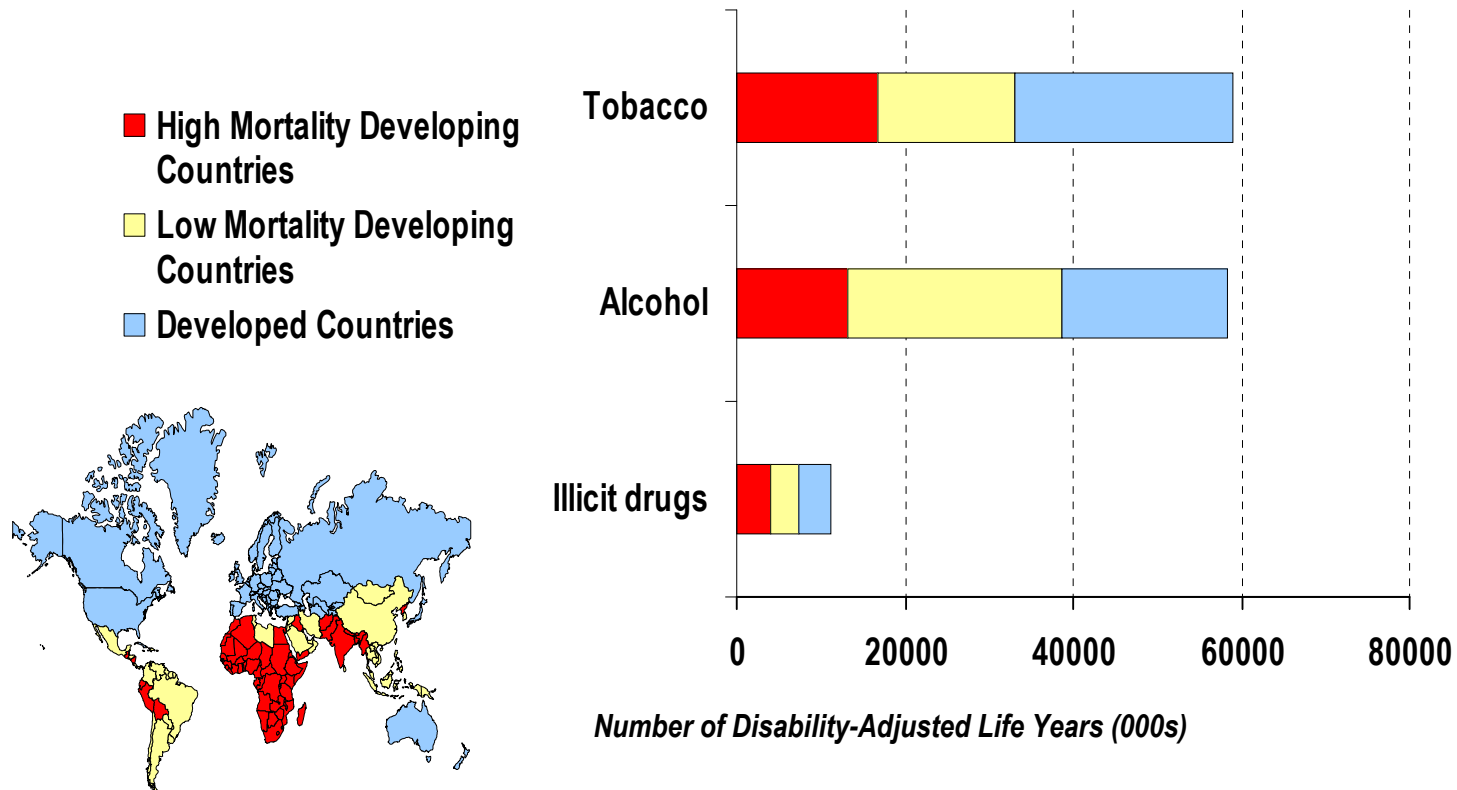
World

Deaths in 2000 attributable to Addictive Substances related Risks

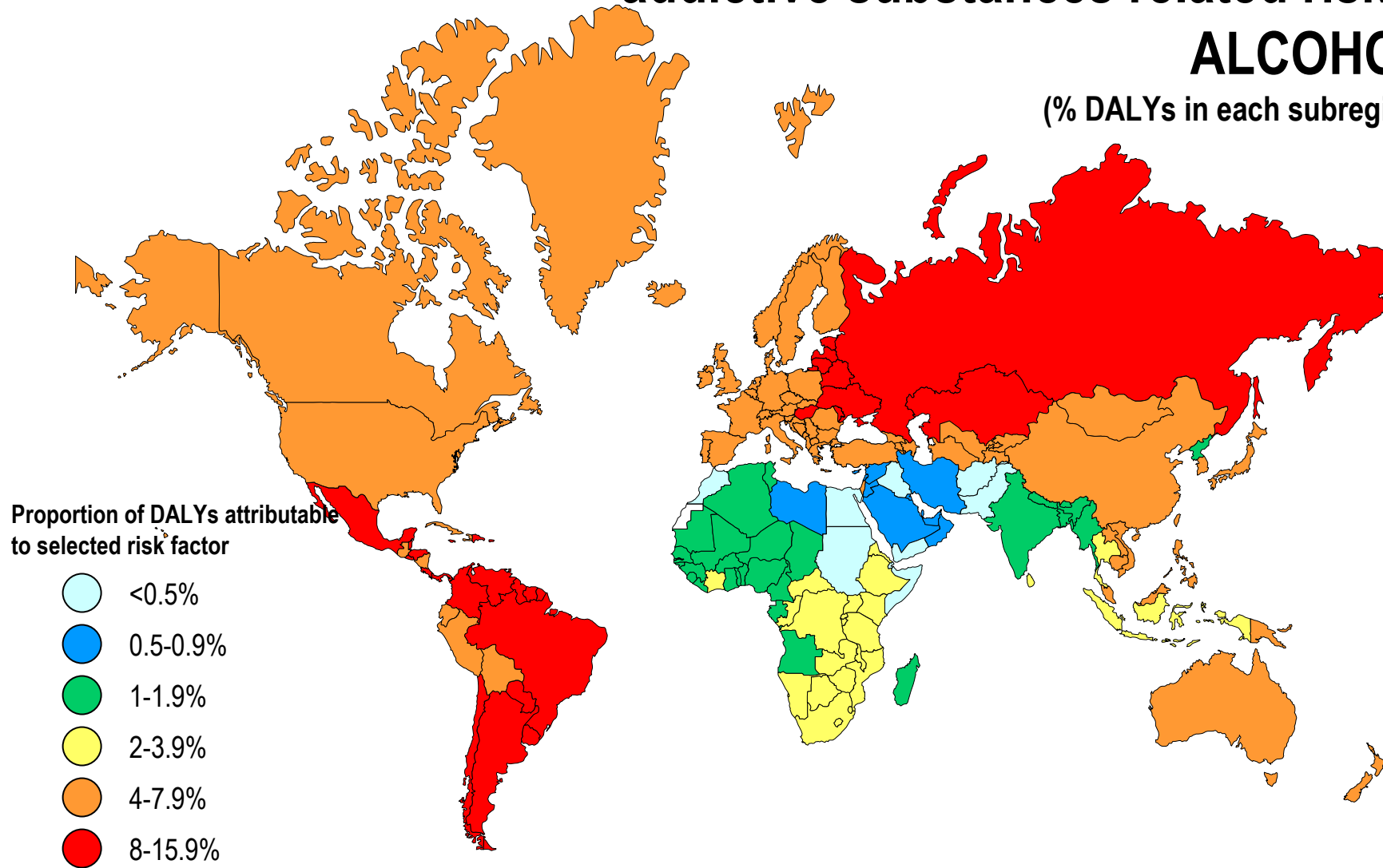


World

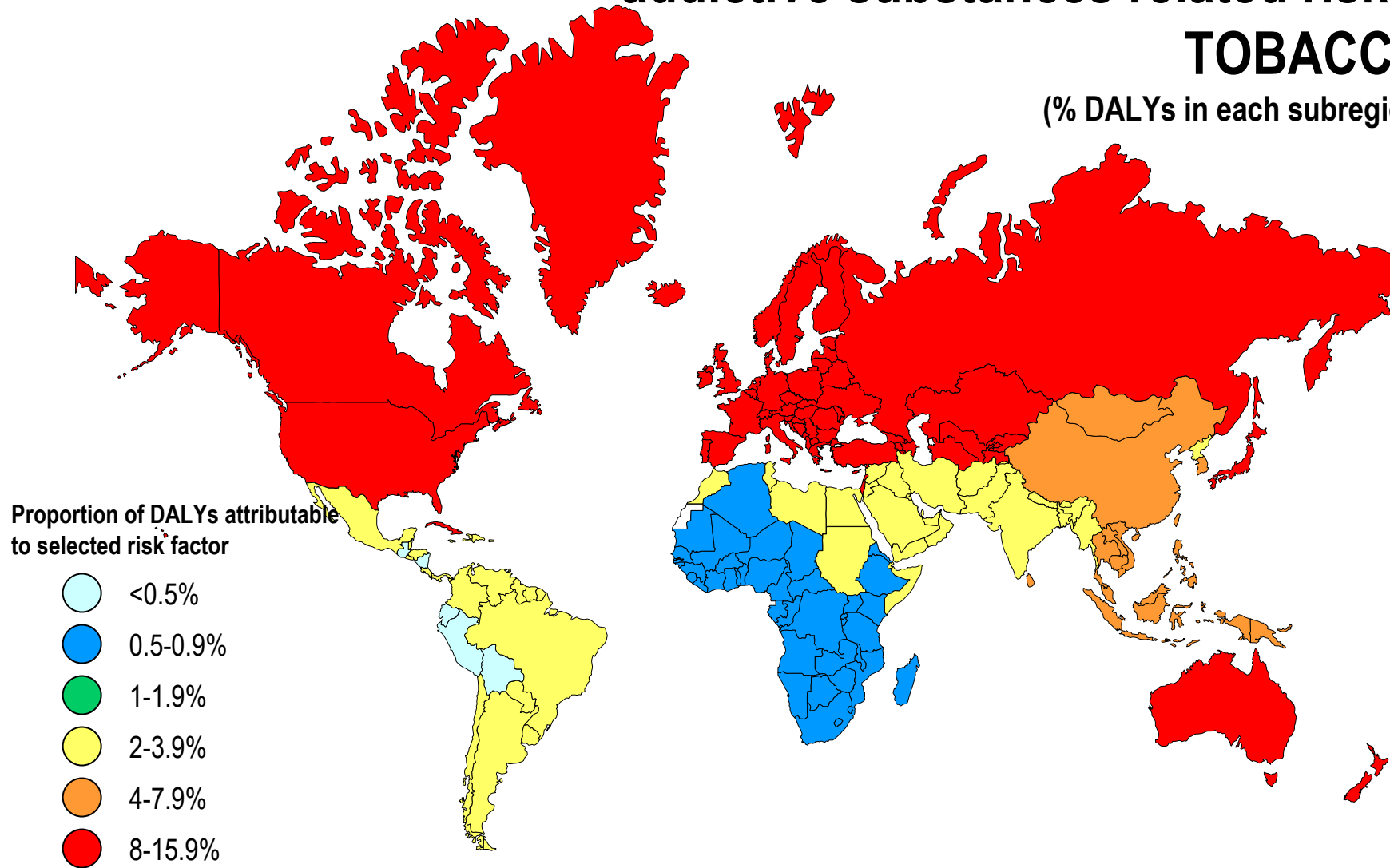
Disease burden (DALYs) in 2000 attributable to Addictive Substances related Risks



Burden of disease attributable to addictive substances related risks: **ALCOHOL** (% DALYs in each subregion)

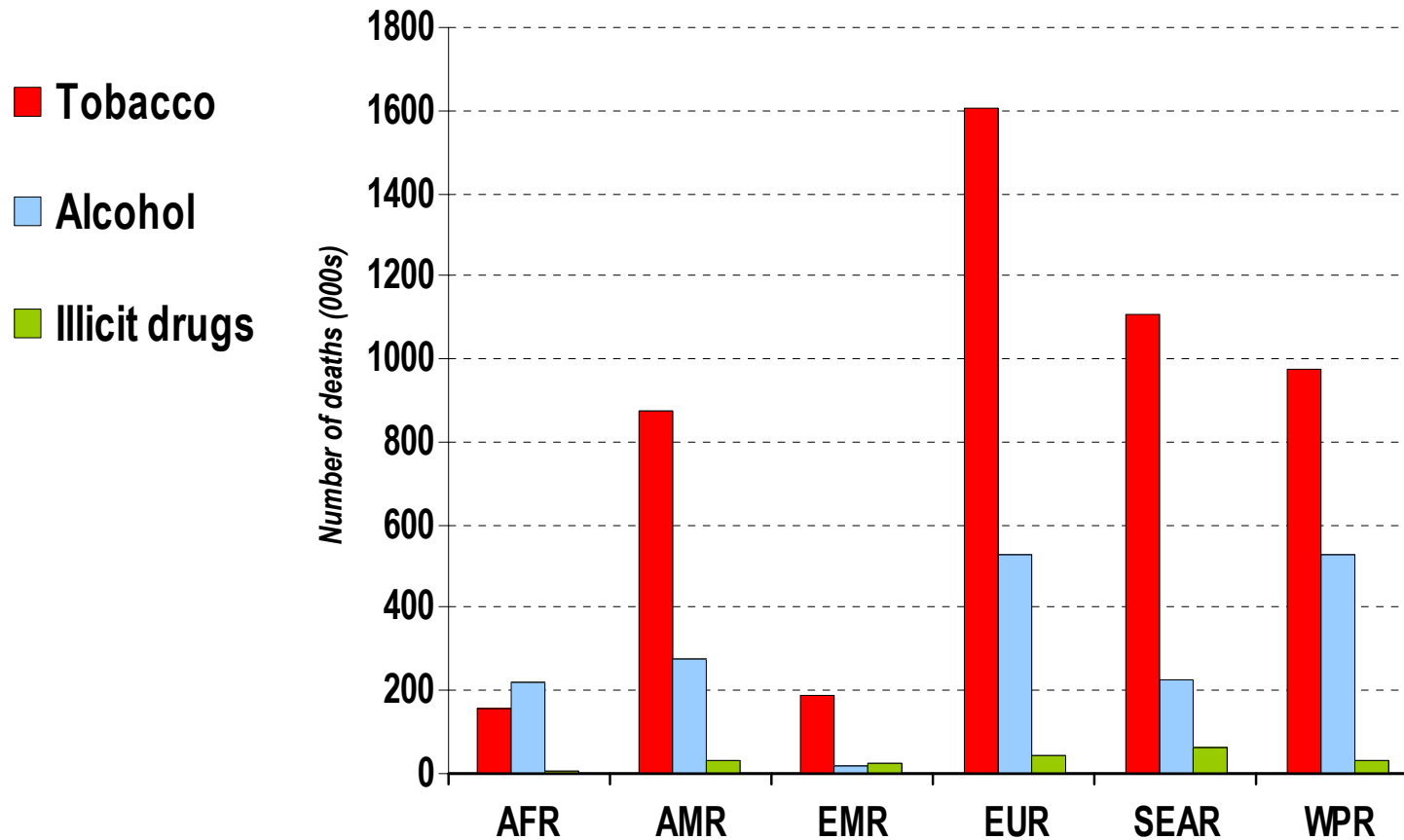


Burden of disease attributable to addictive substances related risks: **TOBACCO** (% DALYs in each subregion)



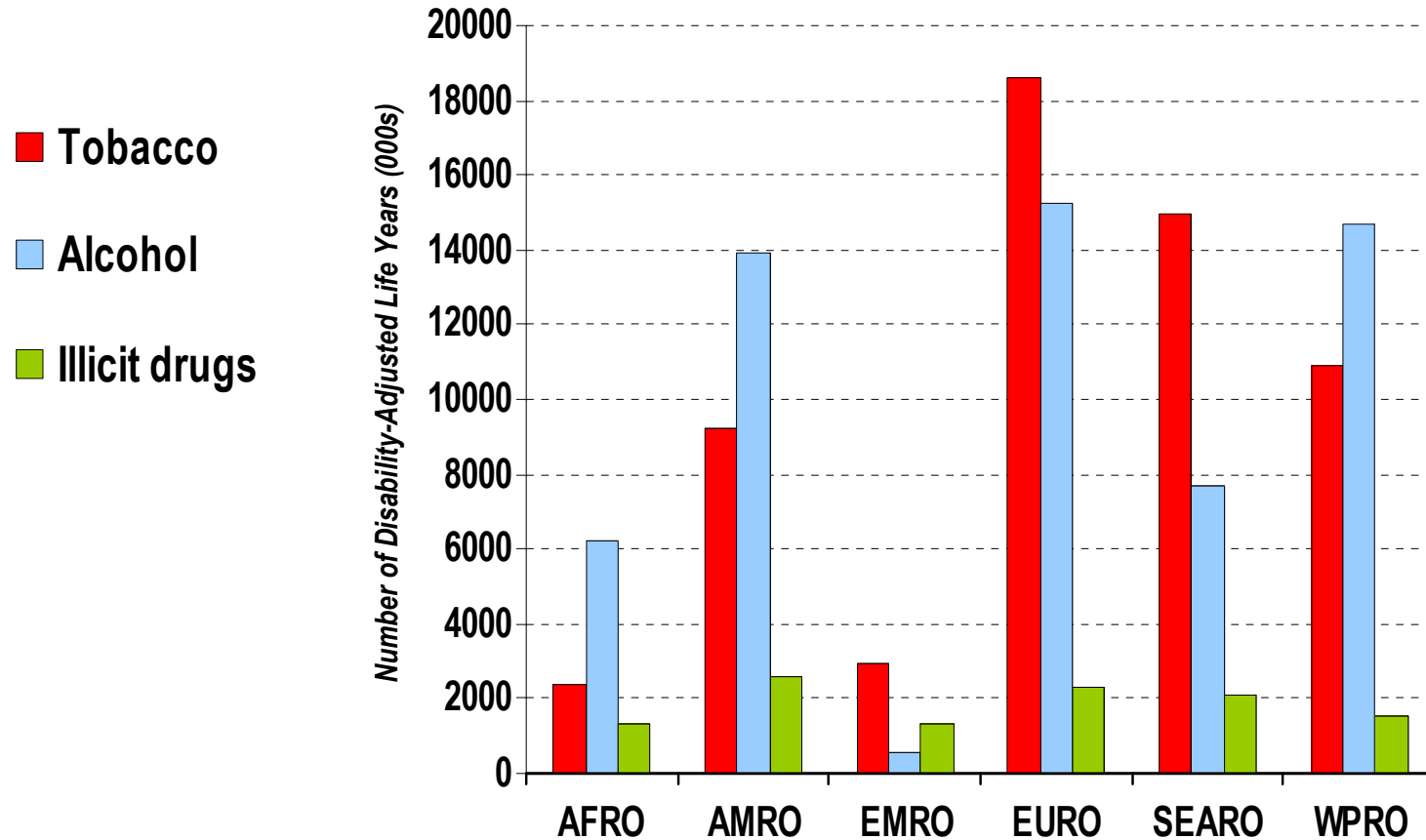
WHO Regions

Deaths in 2000 attributable to selected leading risk factors



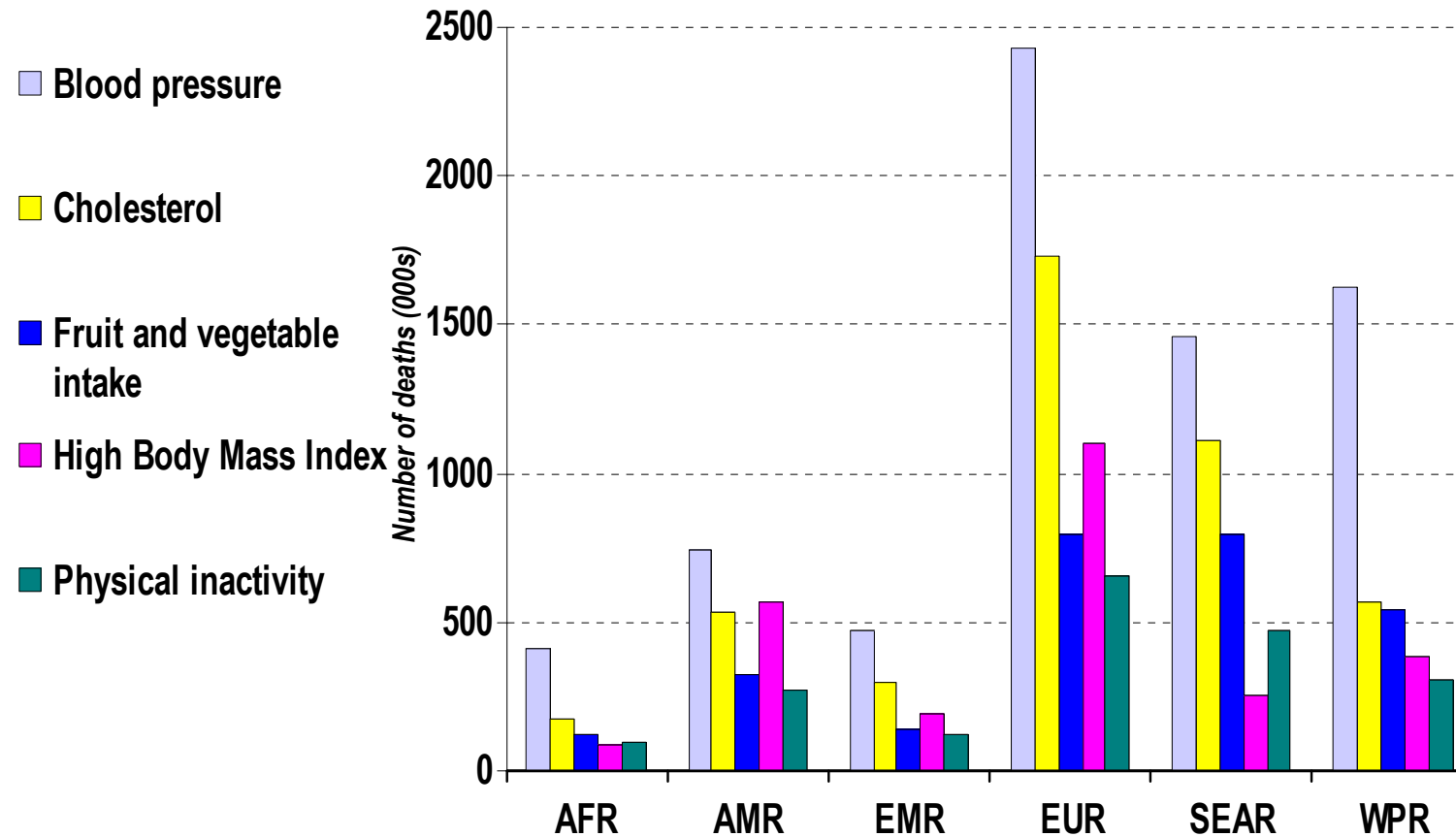
WHO Regions

Disease burden (DALYs) in 2000 attributable to selected leading risk factors



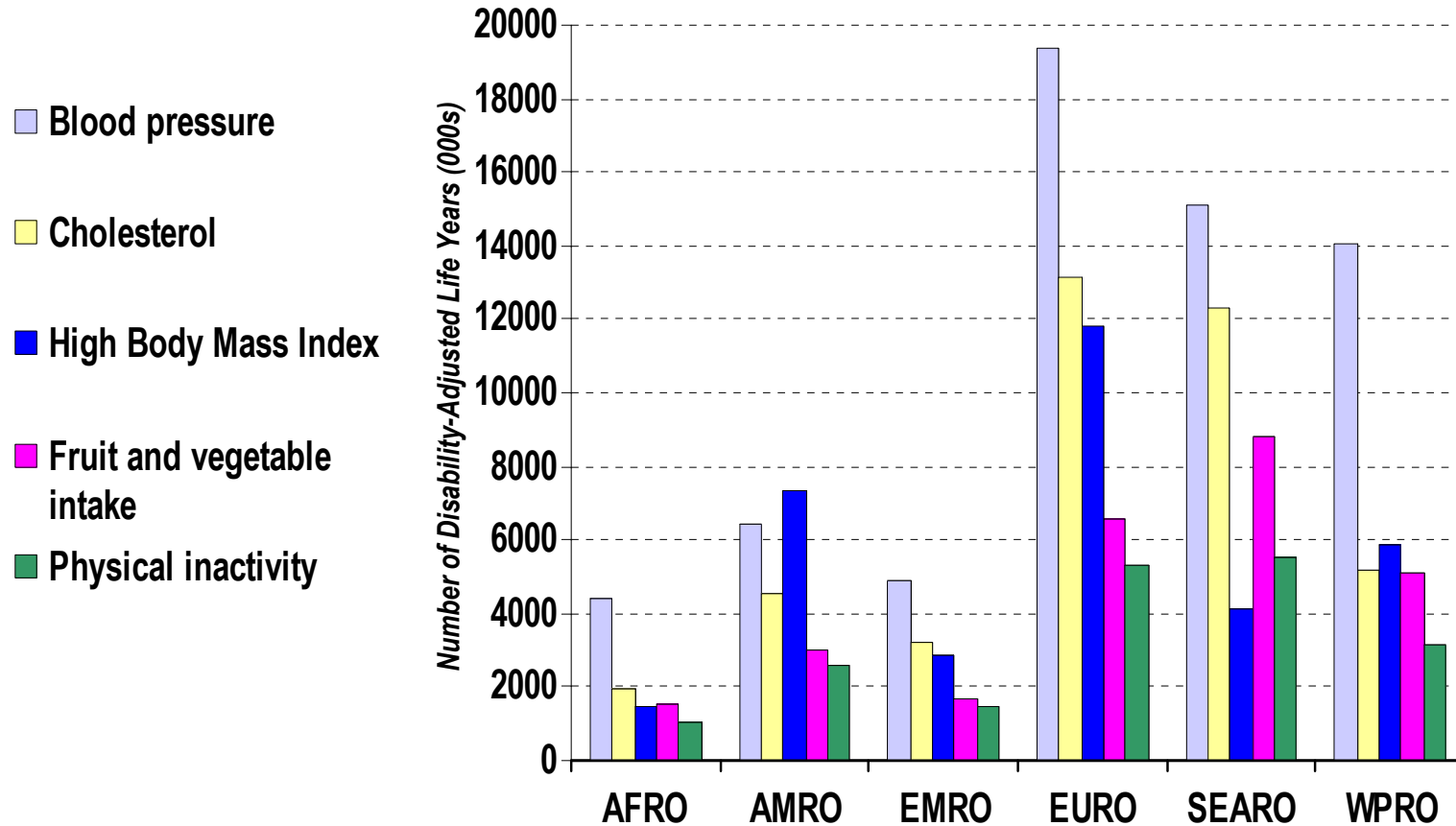
WHO Regions

Deaths in 2000 attributable to selected leading risk factors



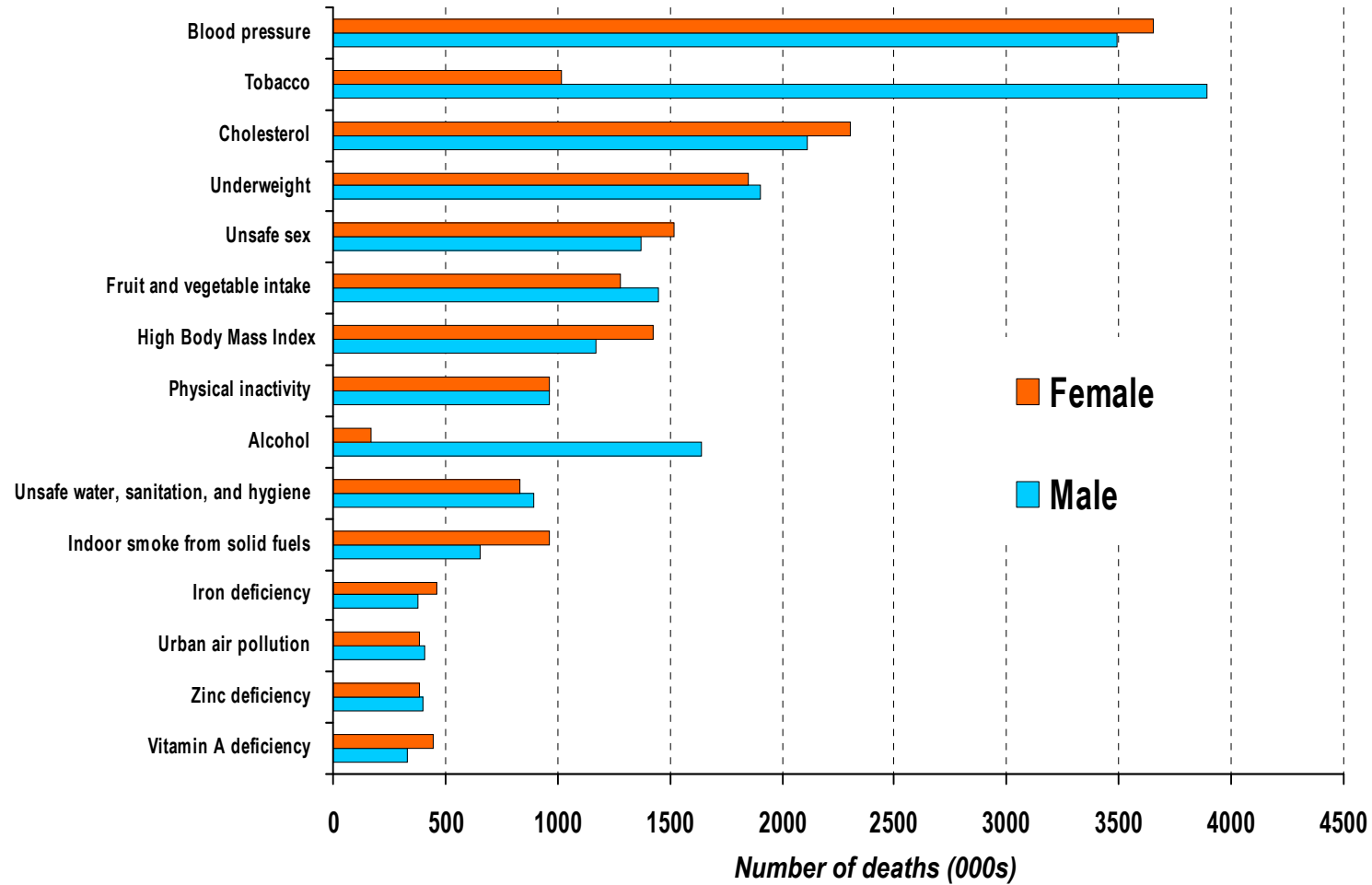
WHO Regions

Disease burden (DALYs) in 2000 attributable to selected leading risk factors



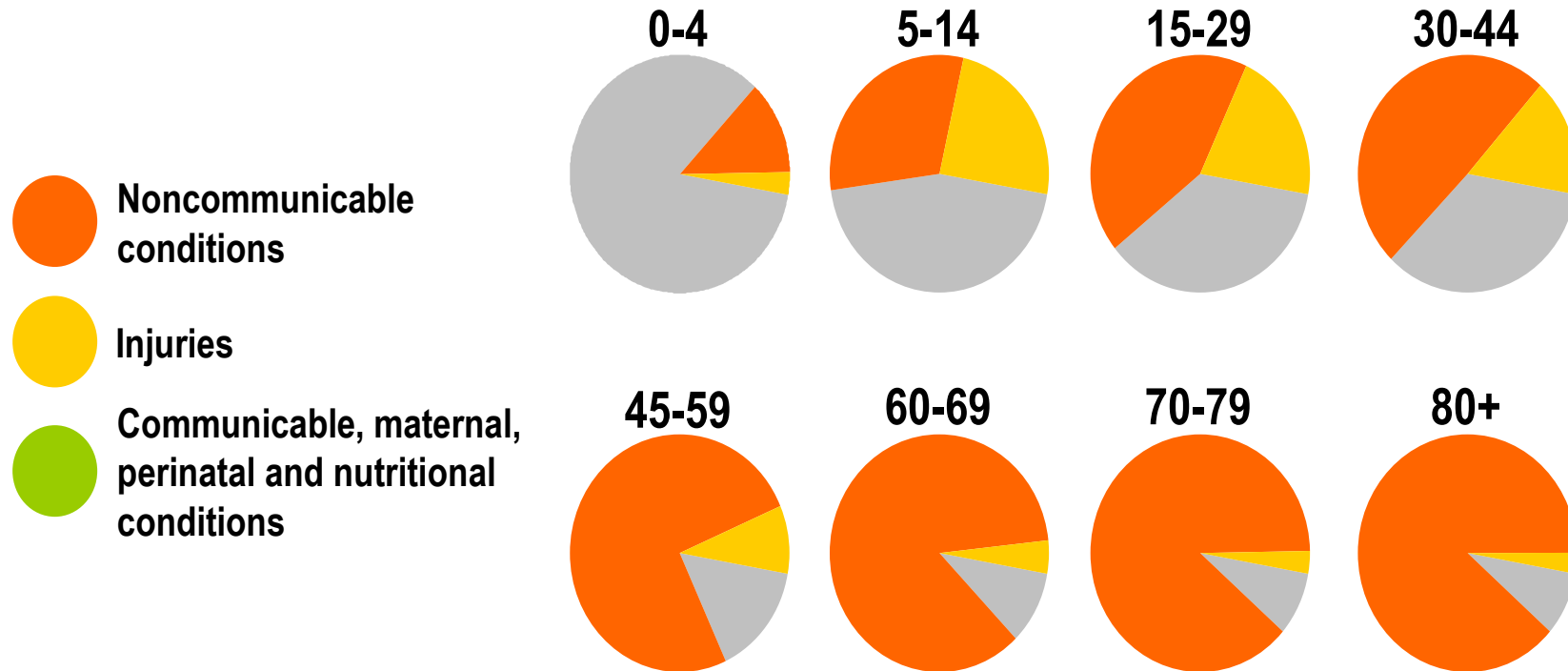
World

Deaths in 2000 attributable to selected leading risk factors, by sex



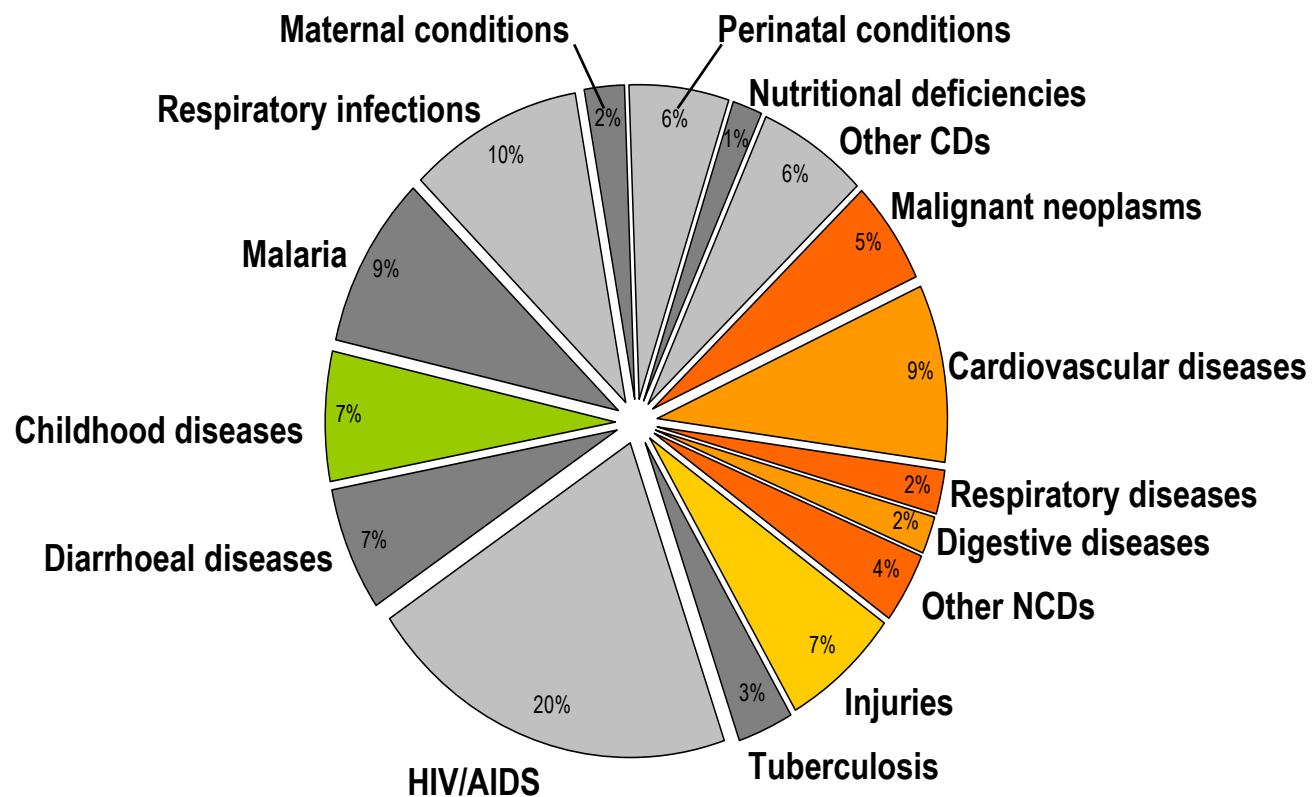
WORLD

DALYs, by broad cause group and by age, 2000



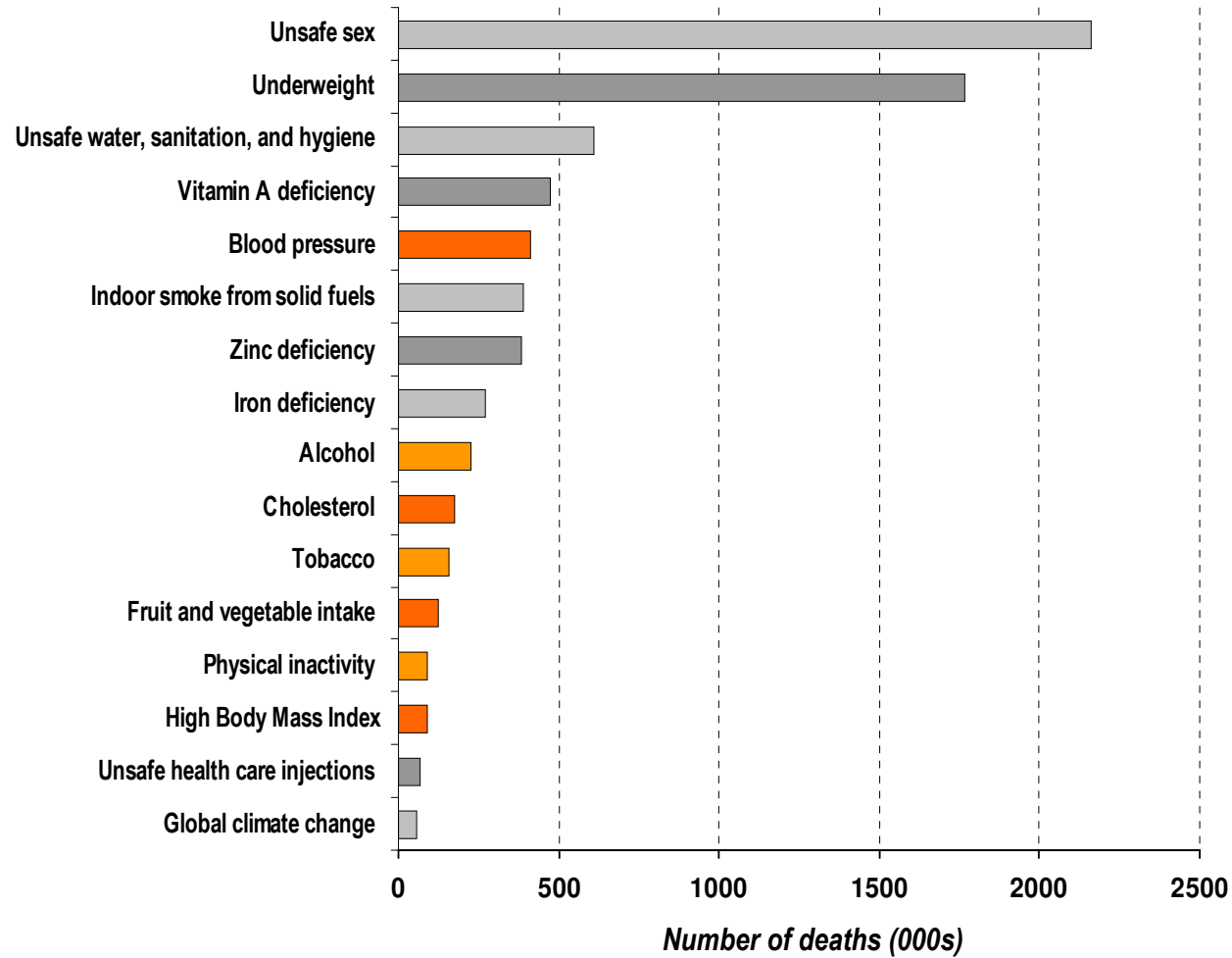
Distribution of causes of death in Africa, 2001

Total deaths: 10,644,000



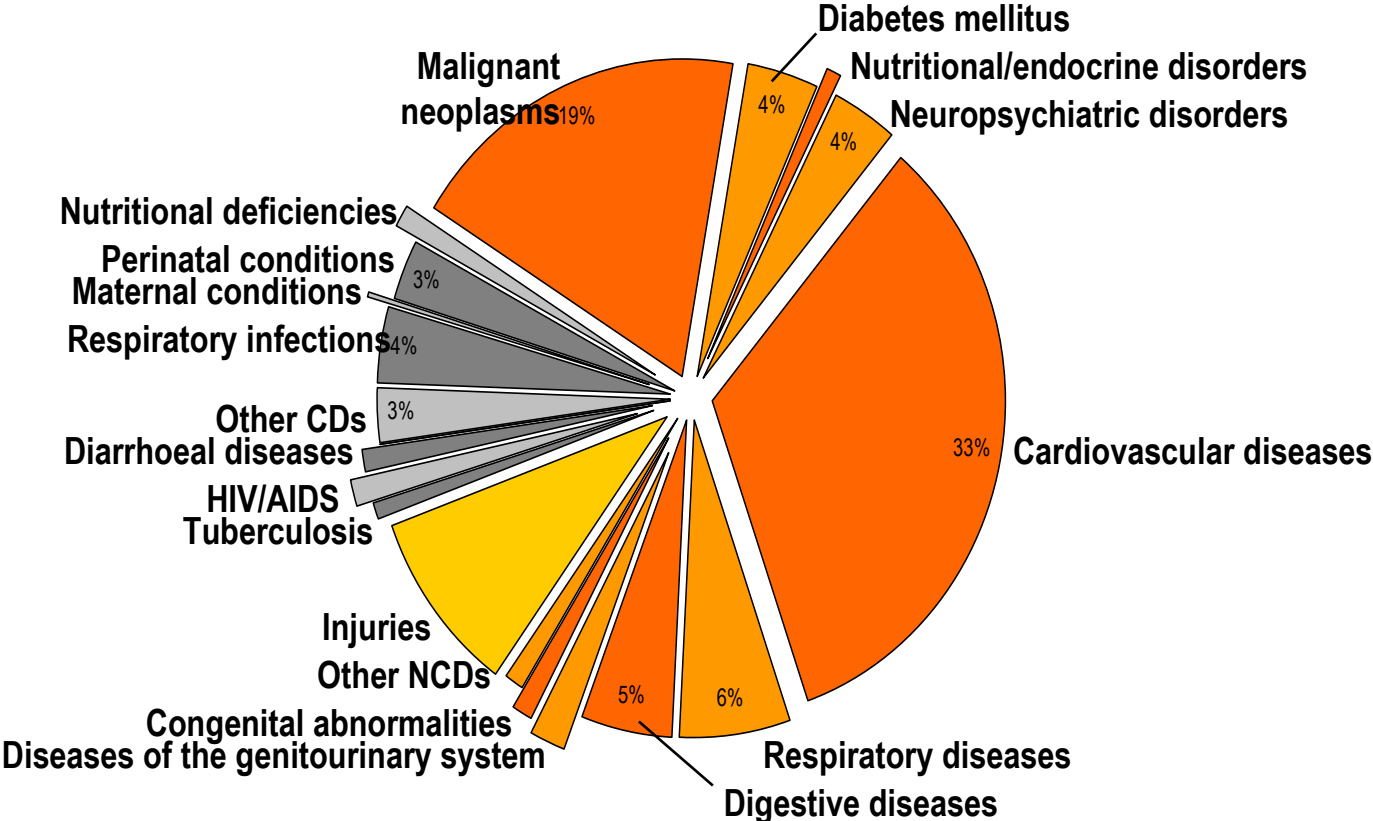
AFRICA

Deaths in 2000 attributable to selected leading risk factors



Distribution of causes of death in Americas, 2001

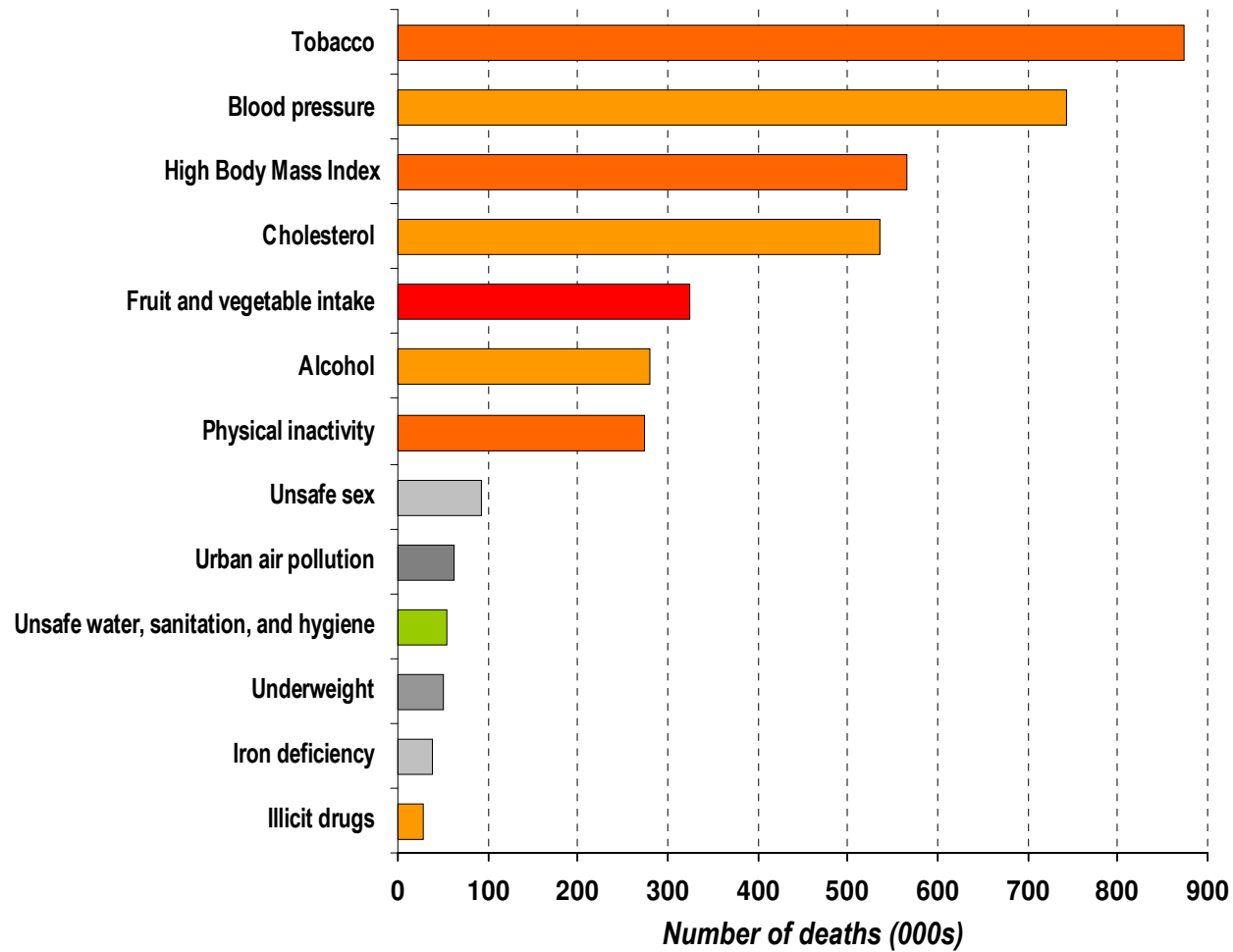
Total deaths: 5,910,000



Source: WHR 2002

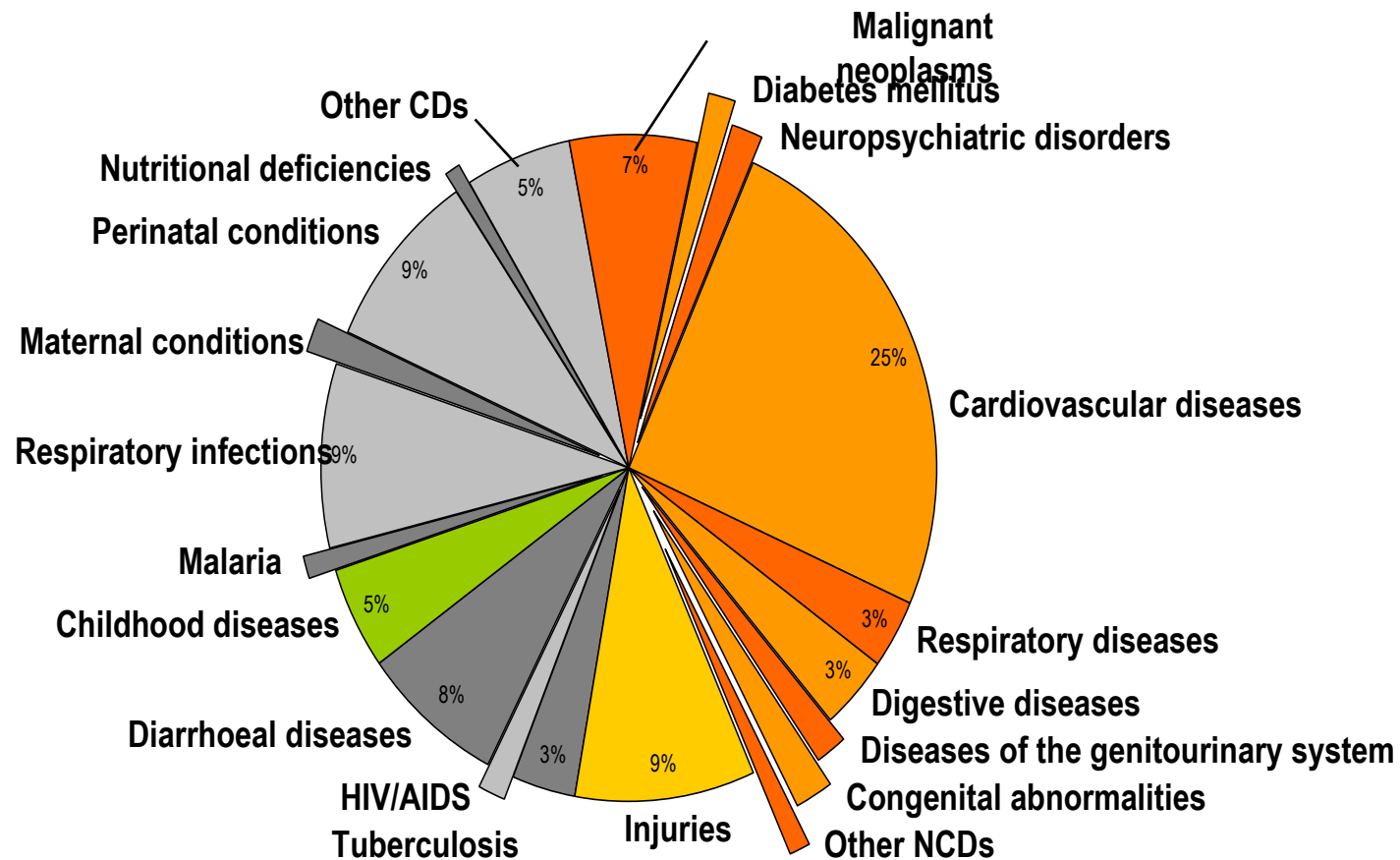
AMERICAS

Deaths in 2000 attributable to selected leading risk factors



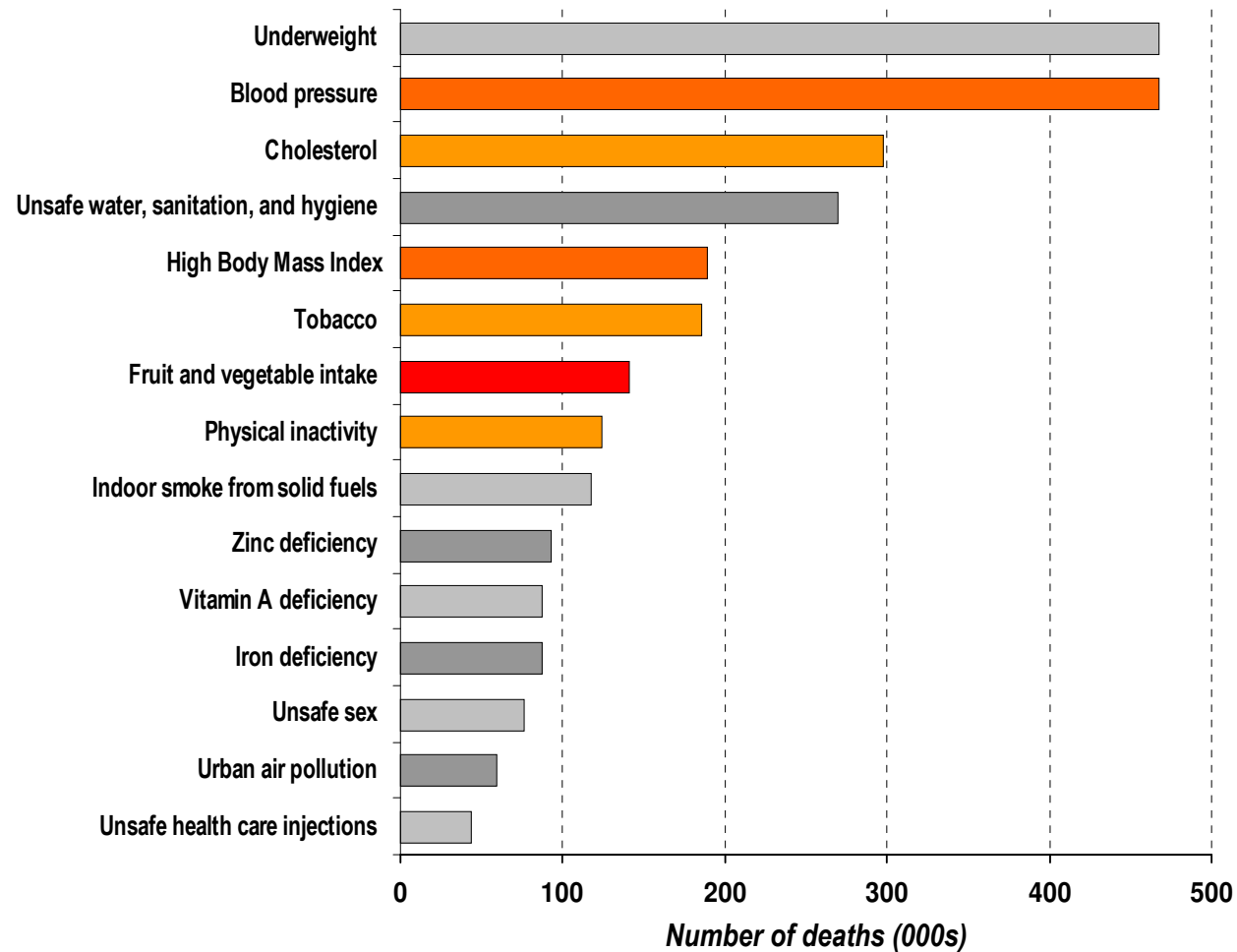
Distribution of causes of death in Eastern Mediterranean, 2001

Total deaths: 4,156,000



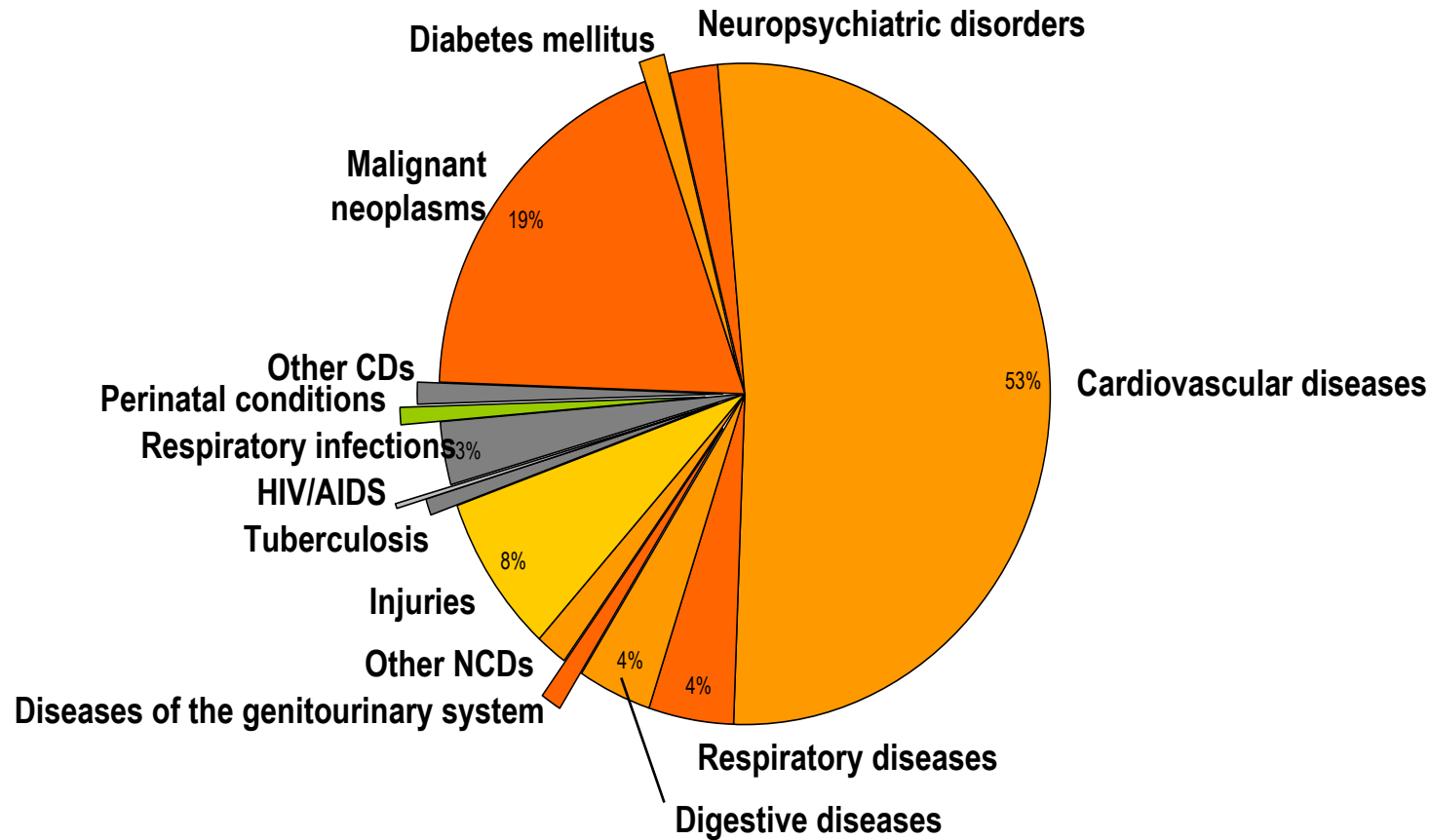
EASTERN MEDITERRANEAN

Deaths in 2000 attributable to selected leading risk factors



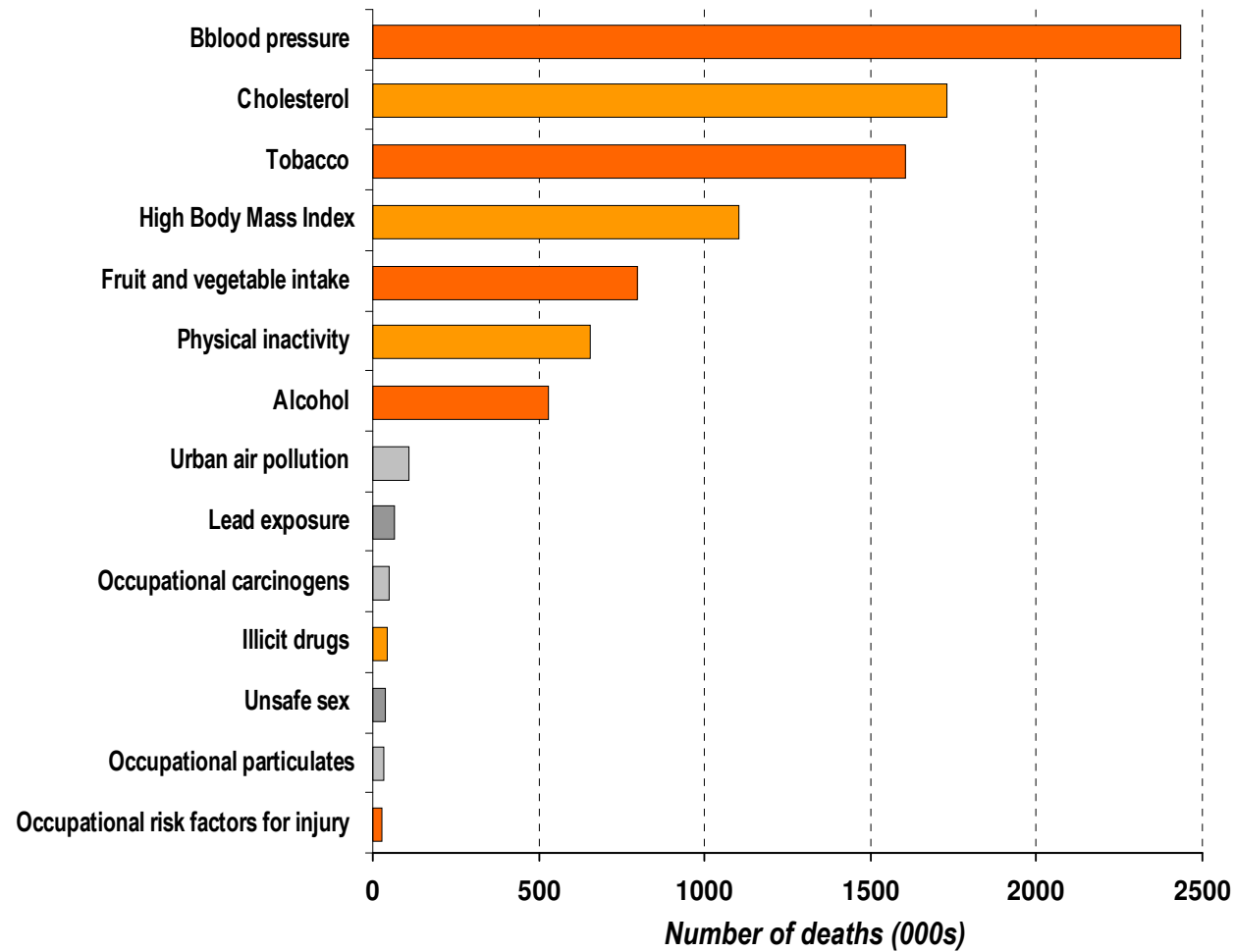
Distribution of causes of death in Europe, 2001

Total deaths: 9,699,000



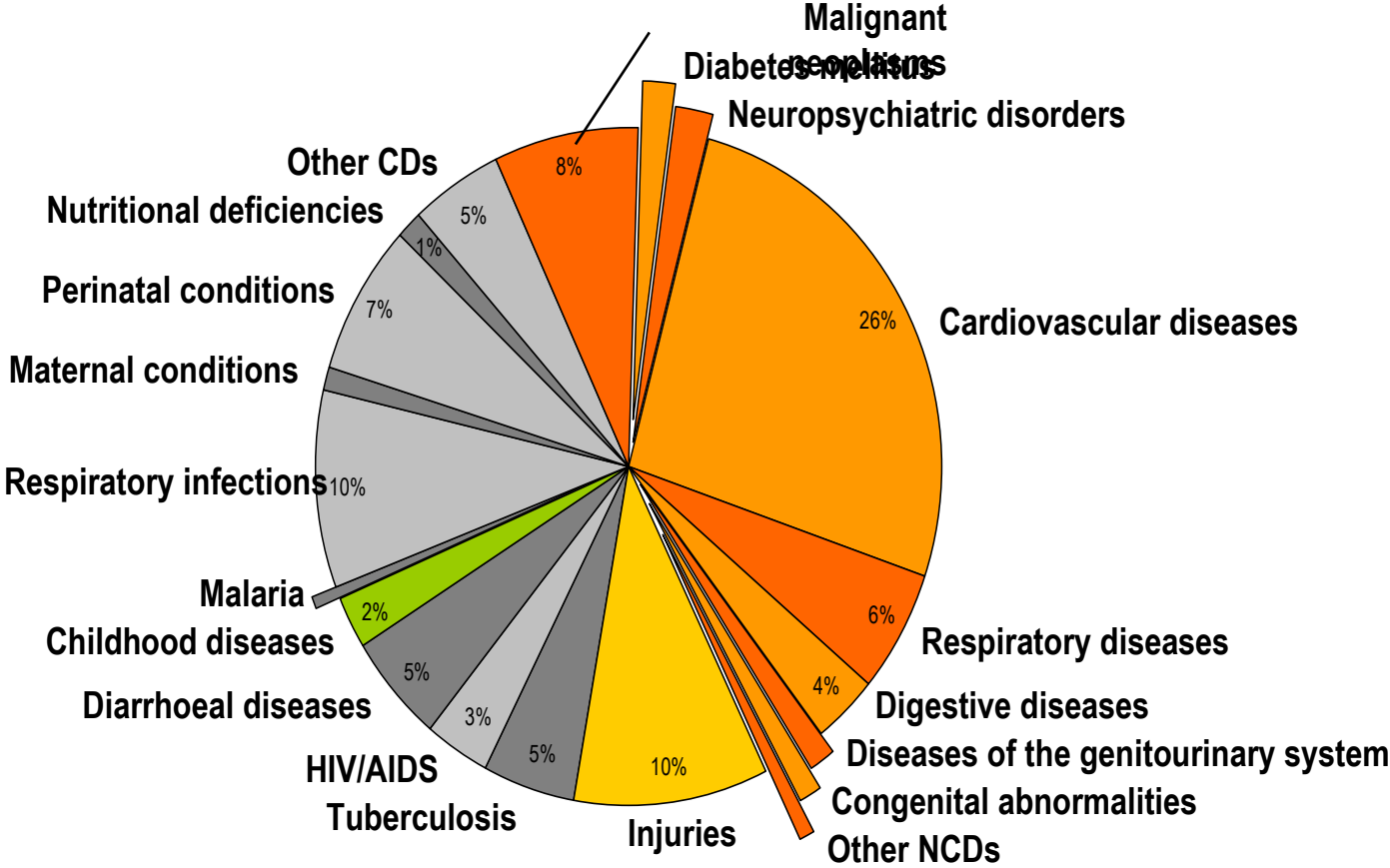
EUROPE

Deaths in 2000 attributable to selected leading risk factors



Distribution of causes of death in South-East Asia, 2001

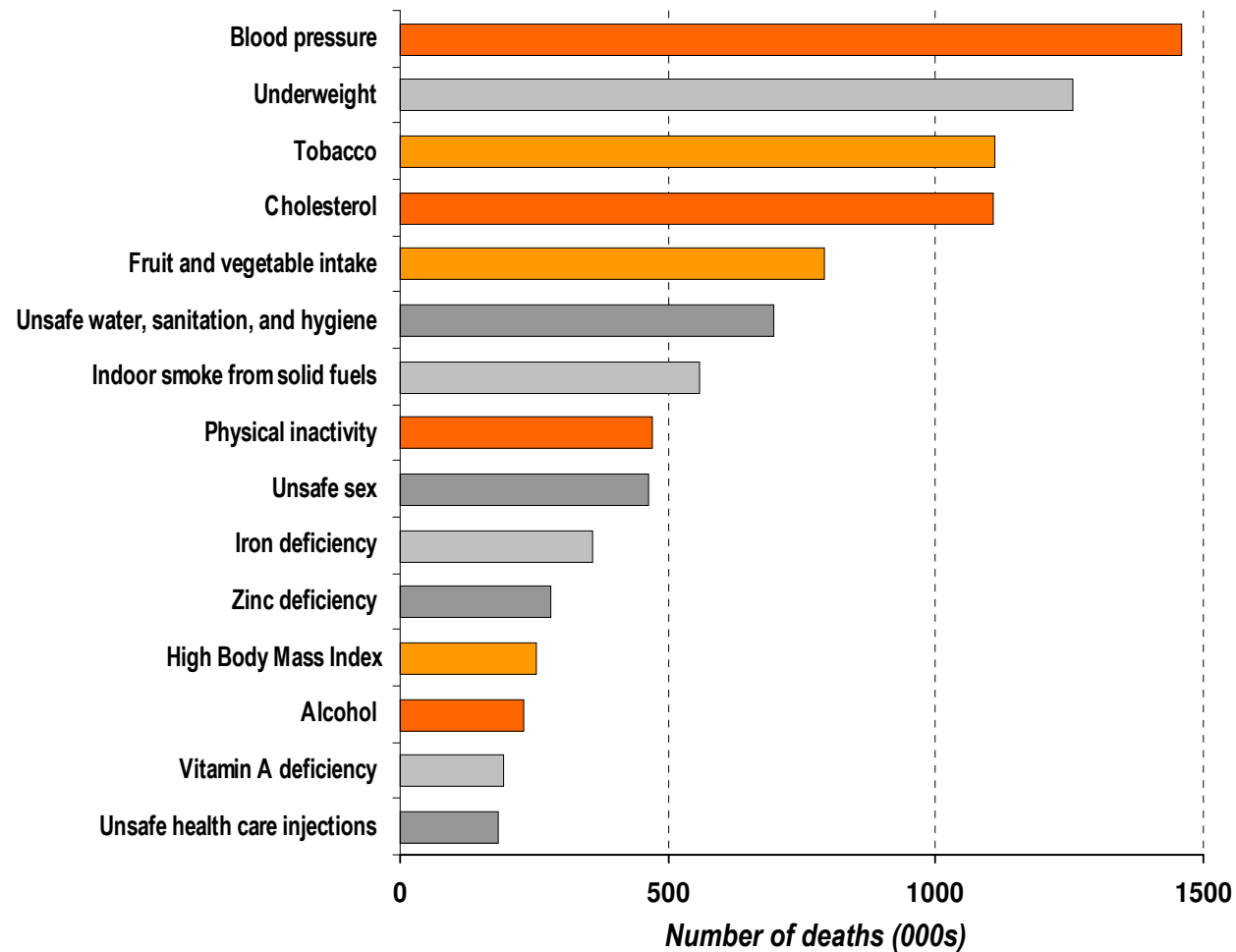
Total deaths: 14,467,000



Source: WHR 2002

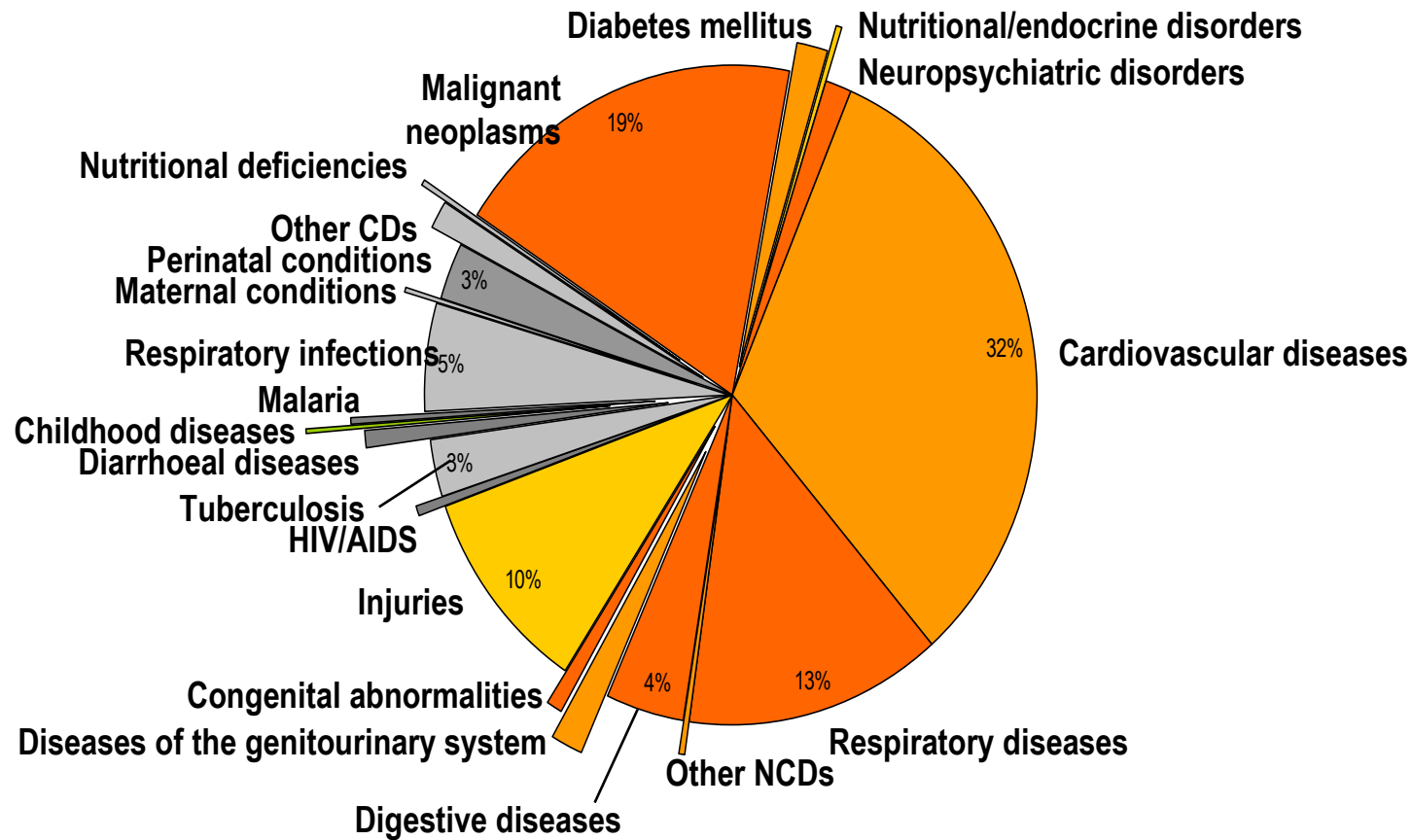
SOUTH-EAST ASIA

Deaths in 2000 attributable to selected leading risk factors



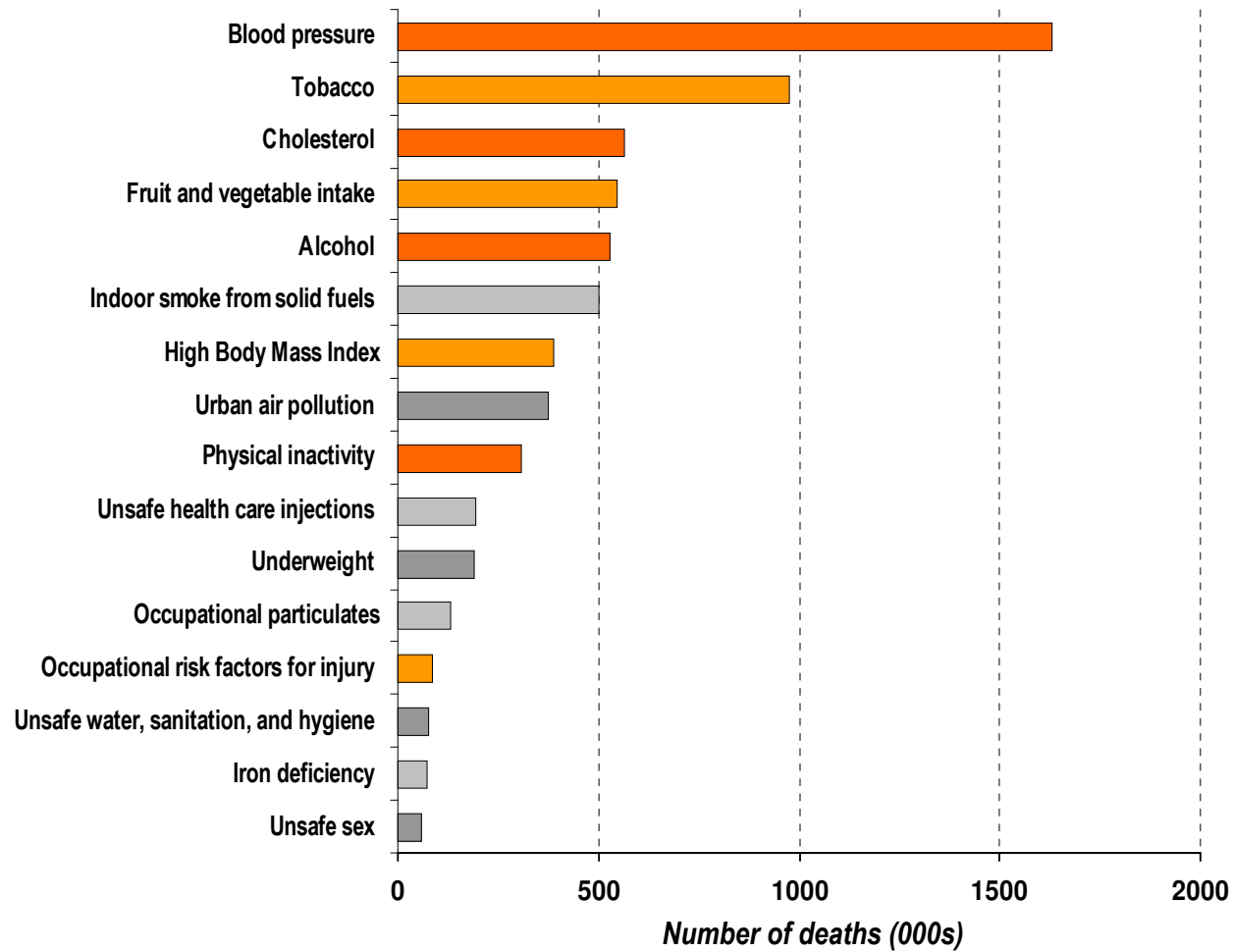
Distribution of causes of death in Western Pacific, 2001

Total deaths: 11,636,000

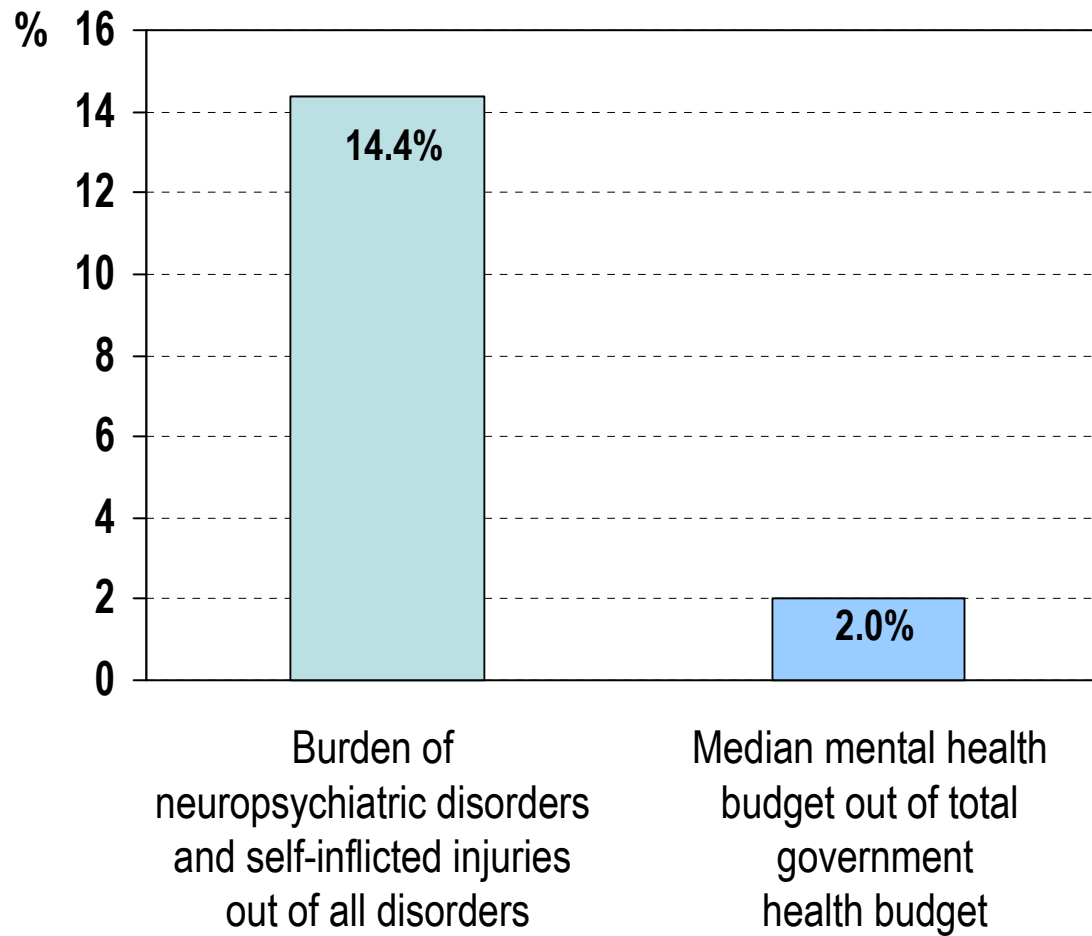


WESTERN PACIFIC

Deaths in 2000 attributable to selected leading risk factors



Burden of Neuropsychiatric Disorders and Self-Inflicted Injuries versus Budget



Project Atlas, WHO 2001

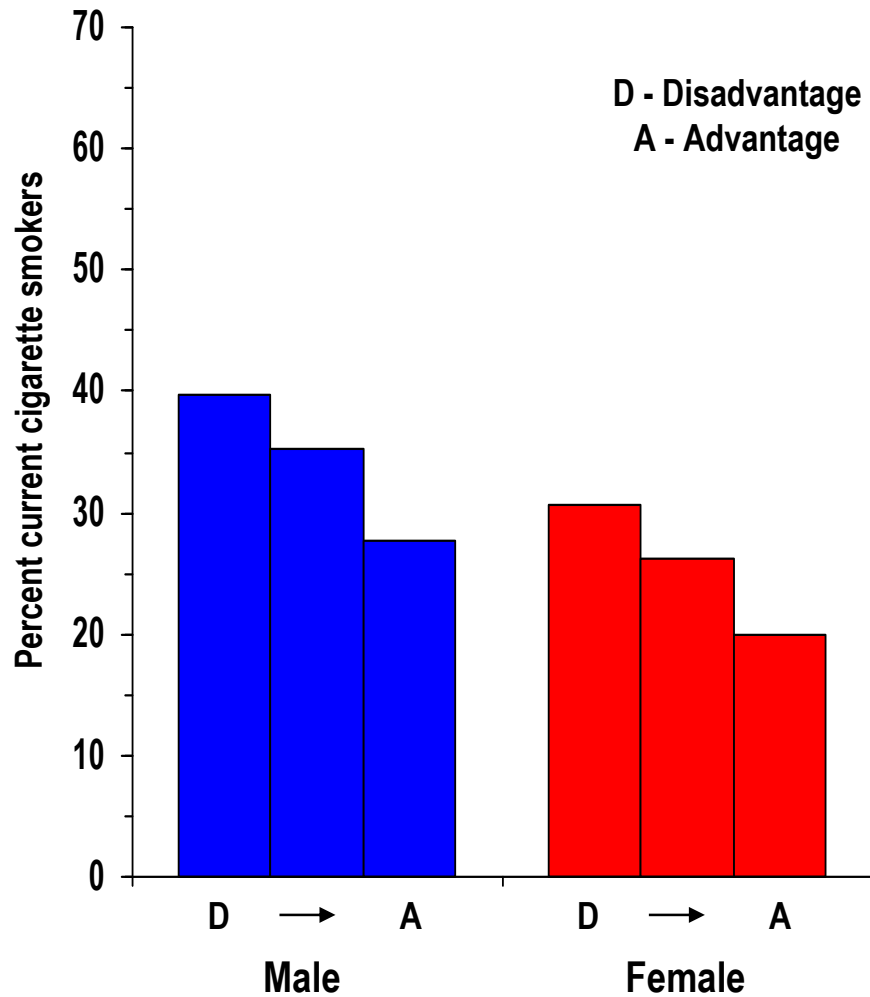
Country level and trends of major noncommunicable disease risk factors

- Many countries collecting data on risk factors for noncommunicable diseases include information on social class, income, education, and other determinants of health such as rural/urban status.

This information has been very useful in predicting the growing burden of chronic disease in many low and middle income countries where the trends and risk factors are increasing.

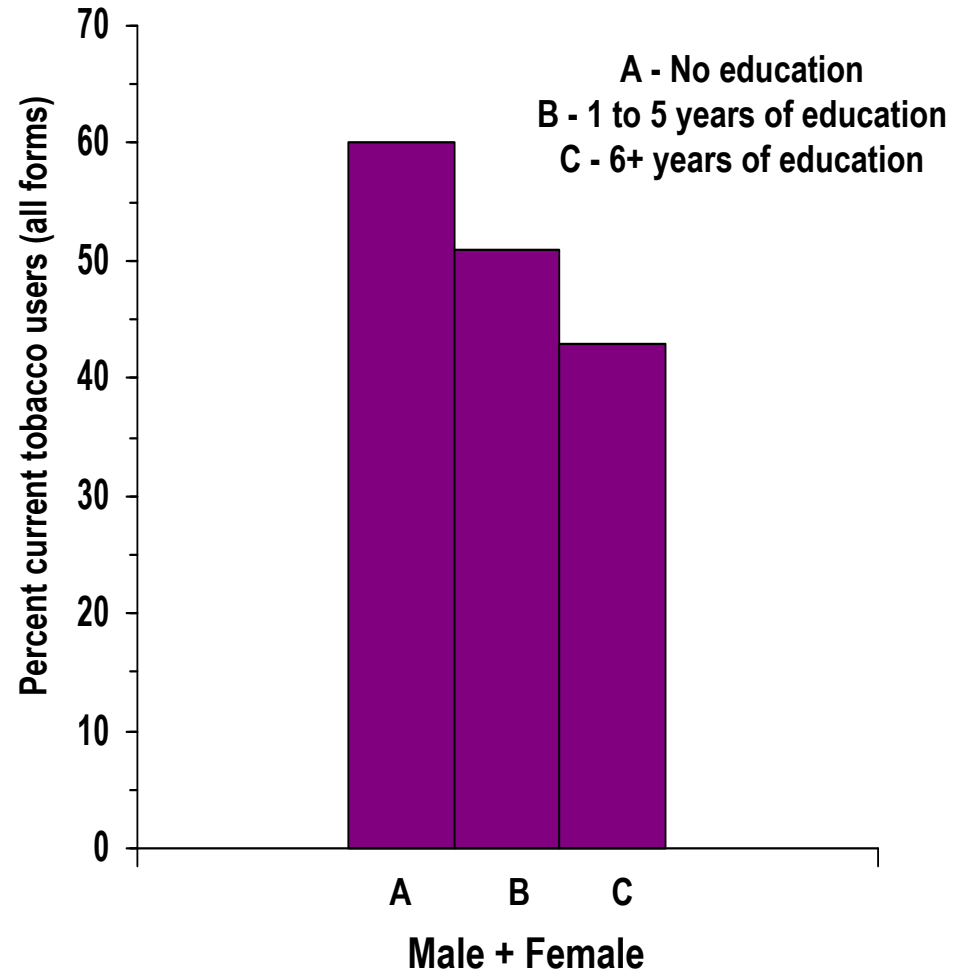
Such information also helps in designing and implementing context-specific interventions and policies.

Tobacco use in adults by social class; Australia and India



Australia (25-64 years)

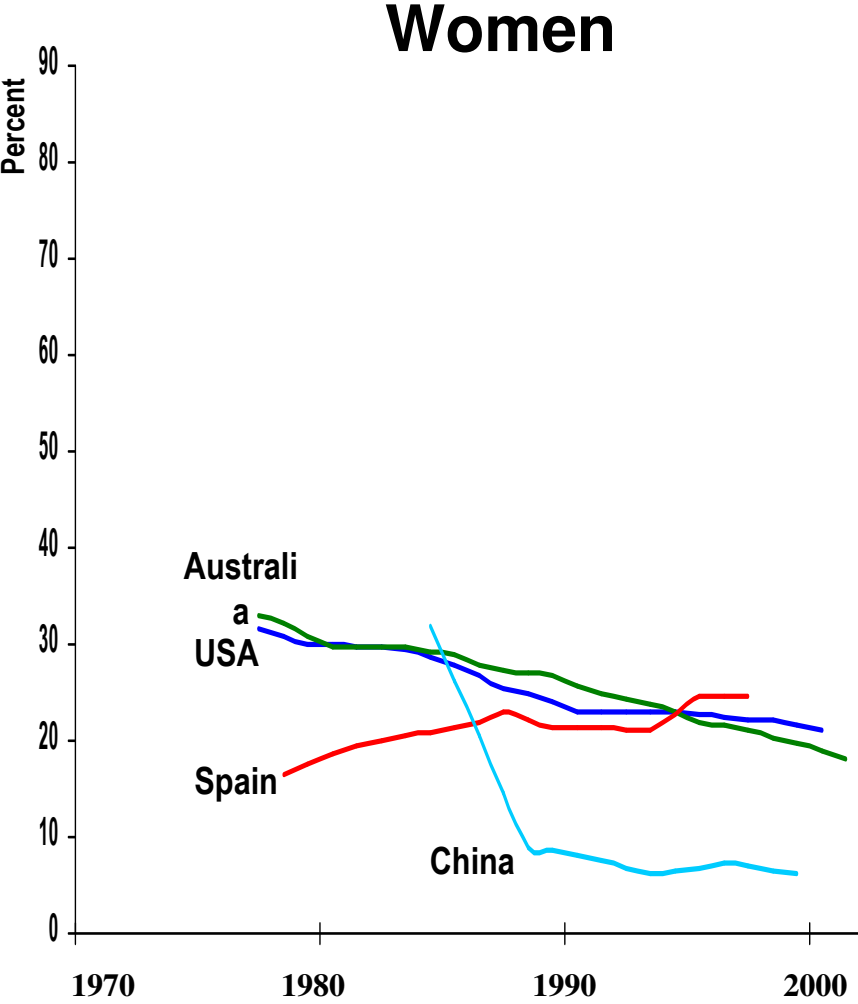
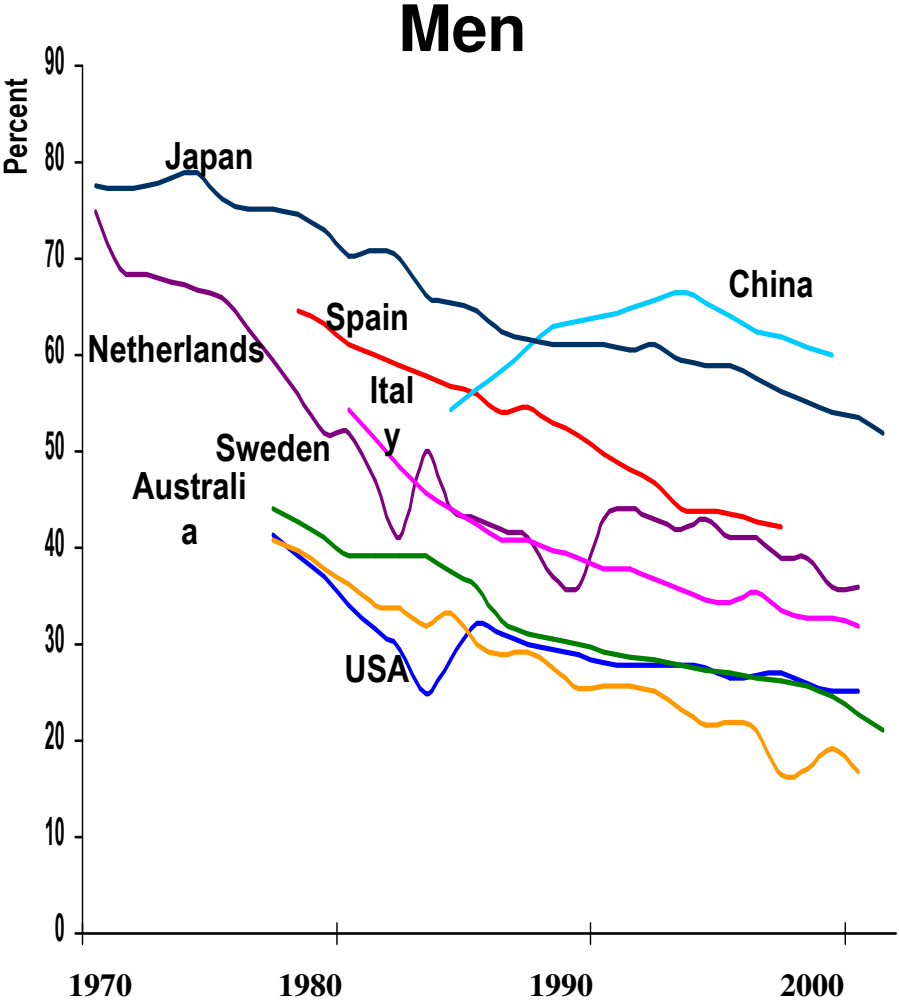
Source: Mathers 1994



India (20+ years)

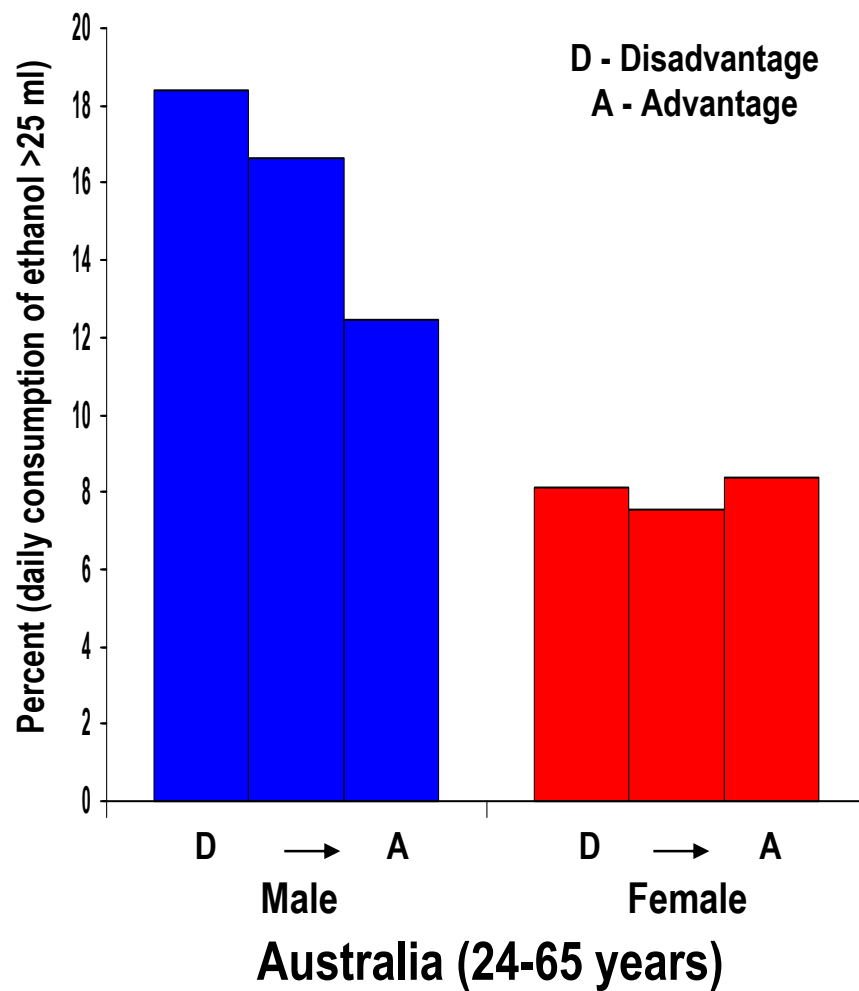
Source: Gupta et al. 1991

Trends in tobacco use in adults, selected countries

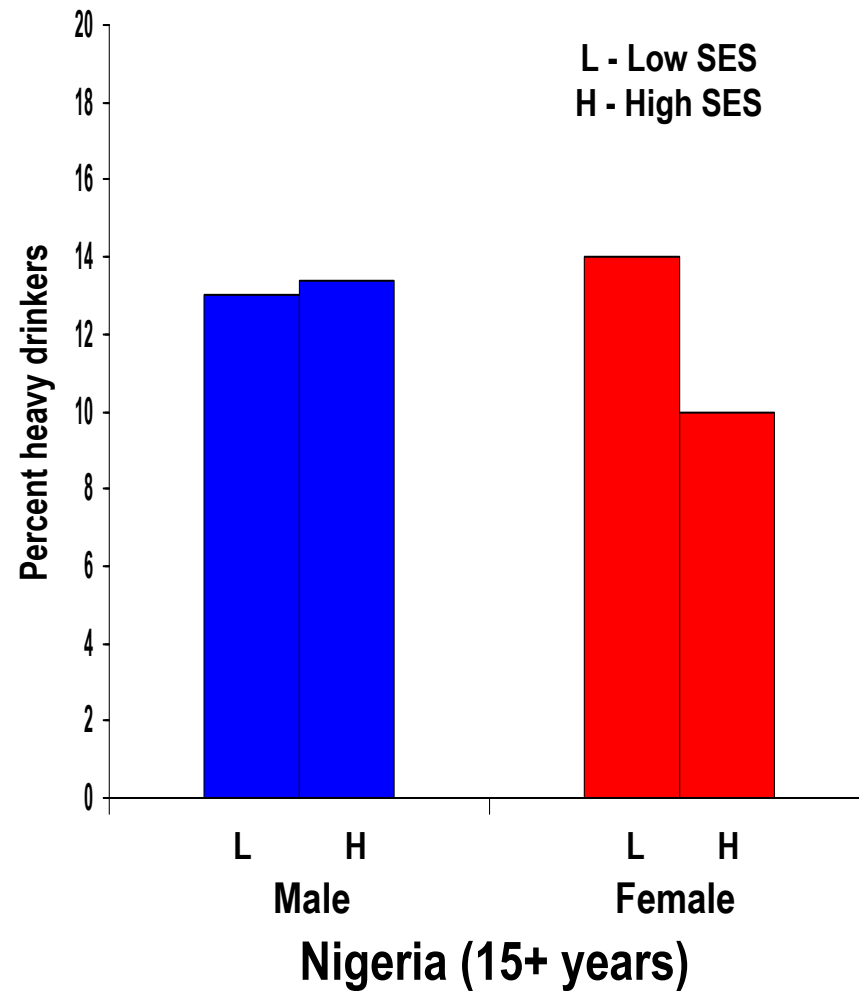


Source: WHO Global NCD InfoBase

At risk alcohol drinking in adults by social class; Australia and Nigeria

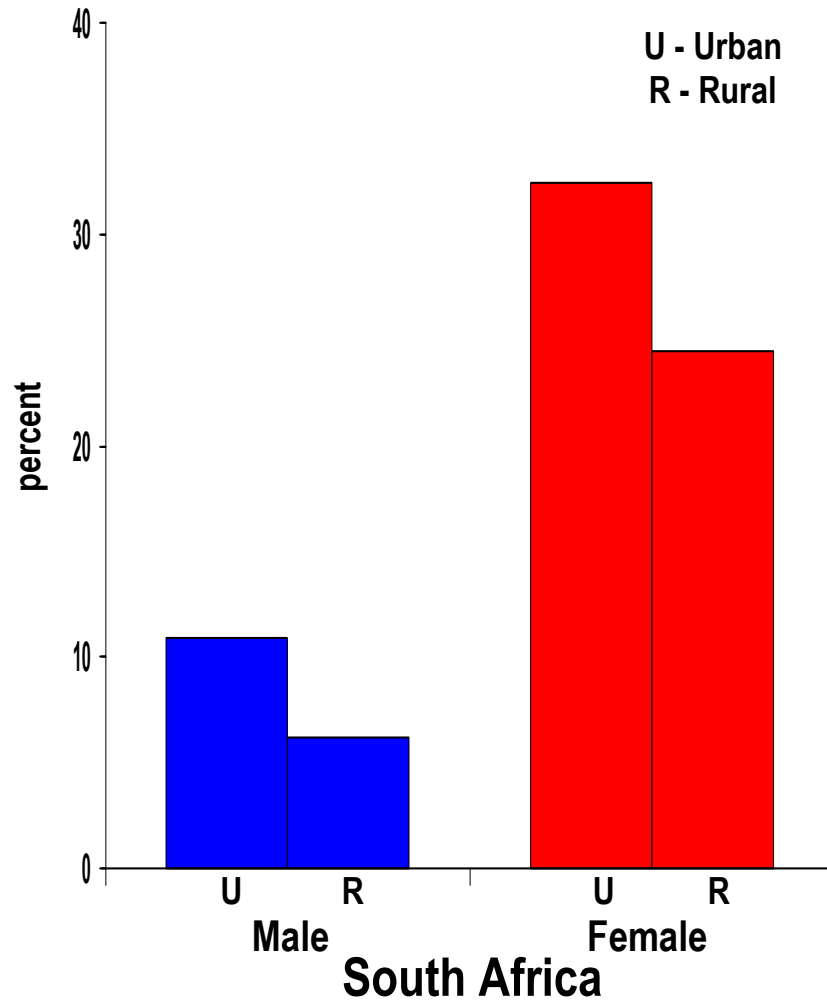


Source: Mathers 1994

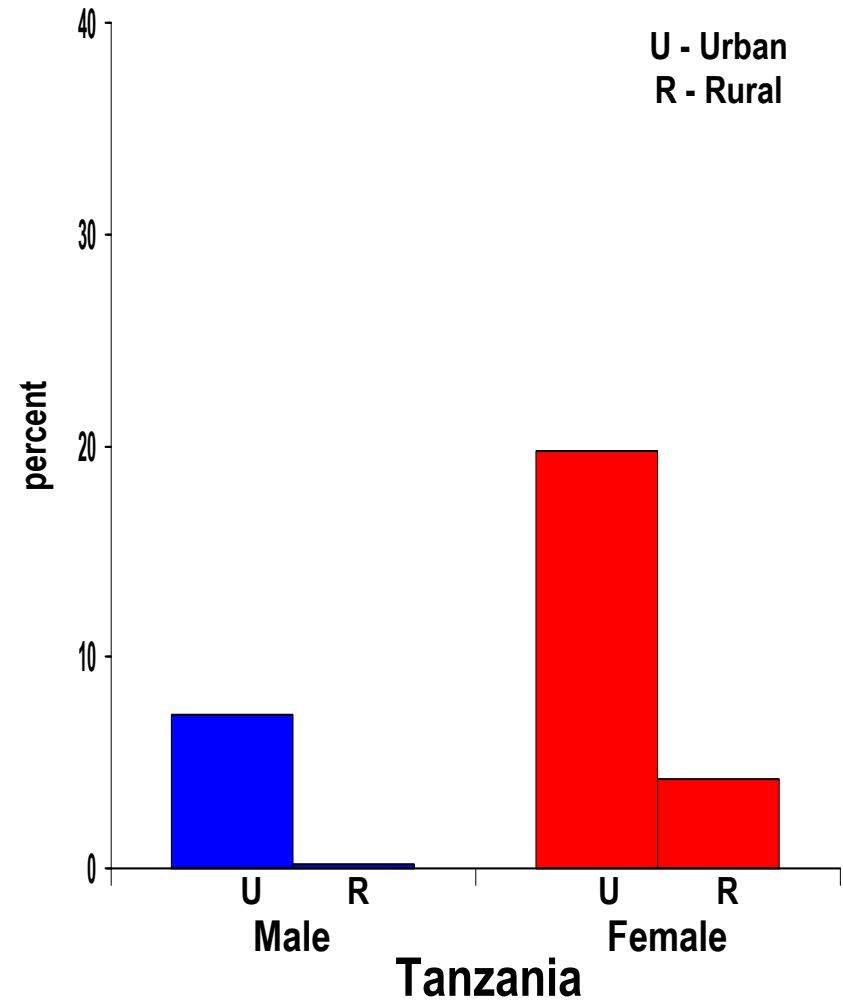


Source: Nigerian National Survey (published 1997)

Obesity (BMI ≥ 30) in adults (15+ years) by rural/urban, South Africa and Tanzania

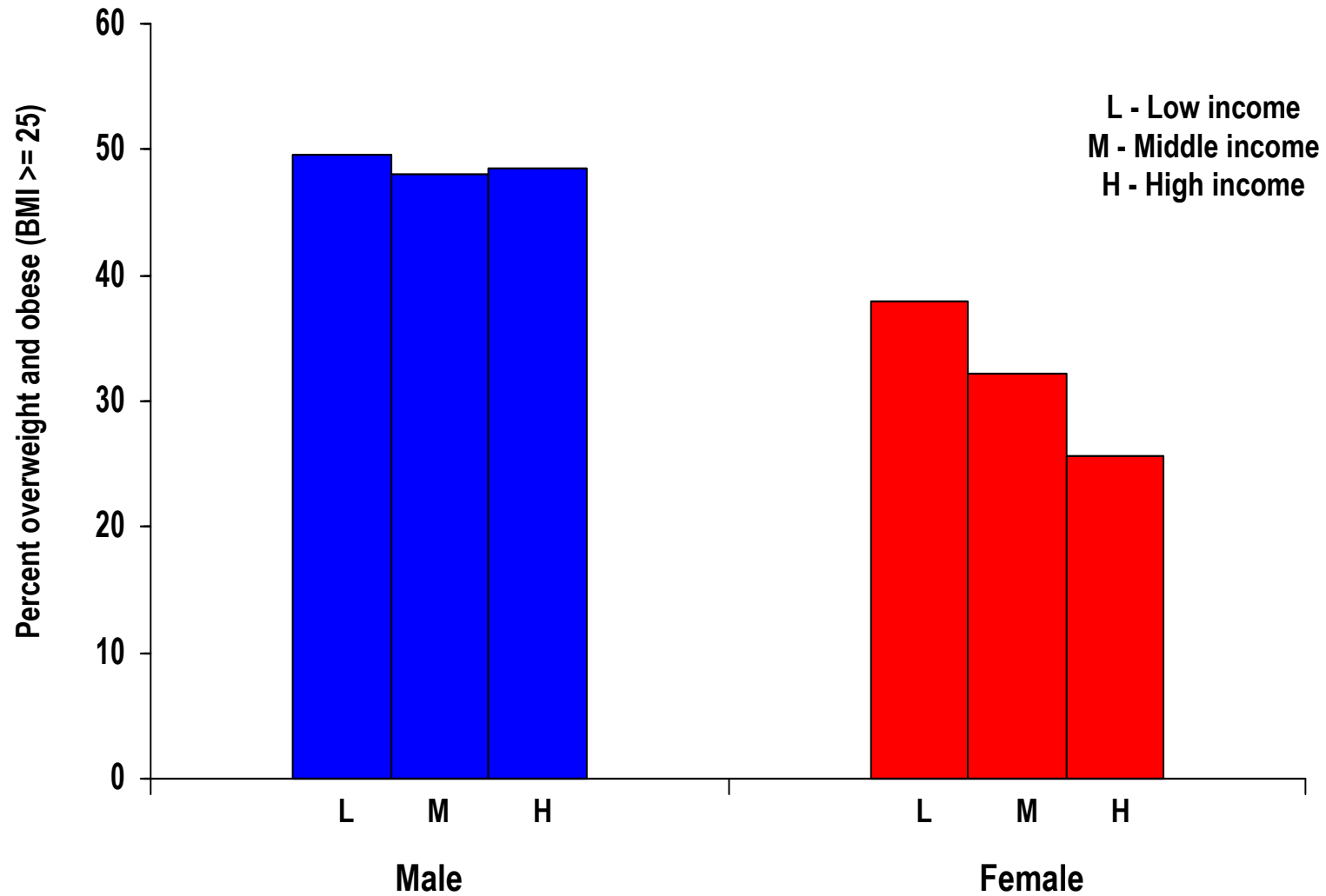


Source: SA Demographic Health Survey 1998



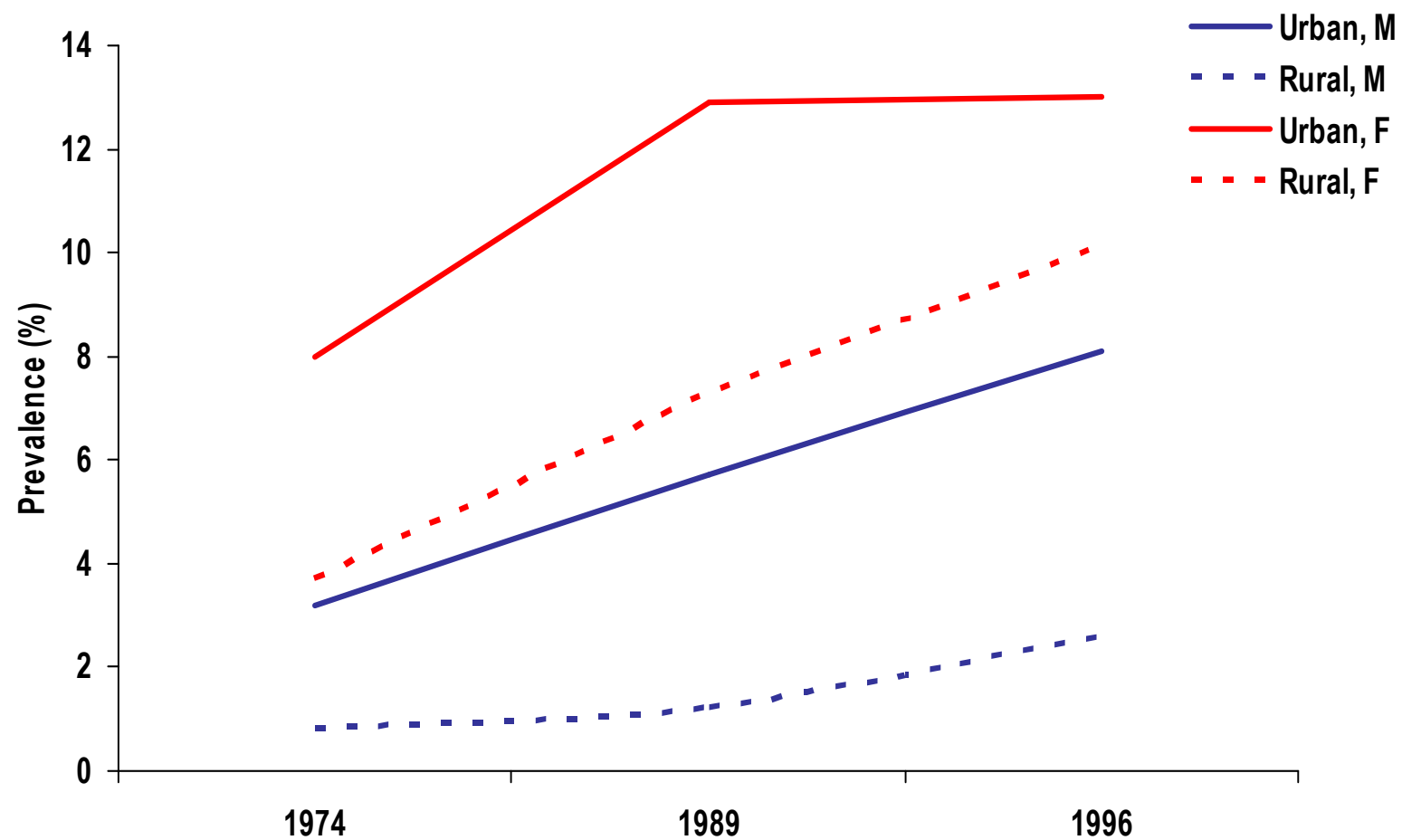
Source: Aspray T. J. et al. 2000.

Overweight and obesity (BMI ≥ 25) in adults (25-64 years) by social class; Australia



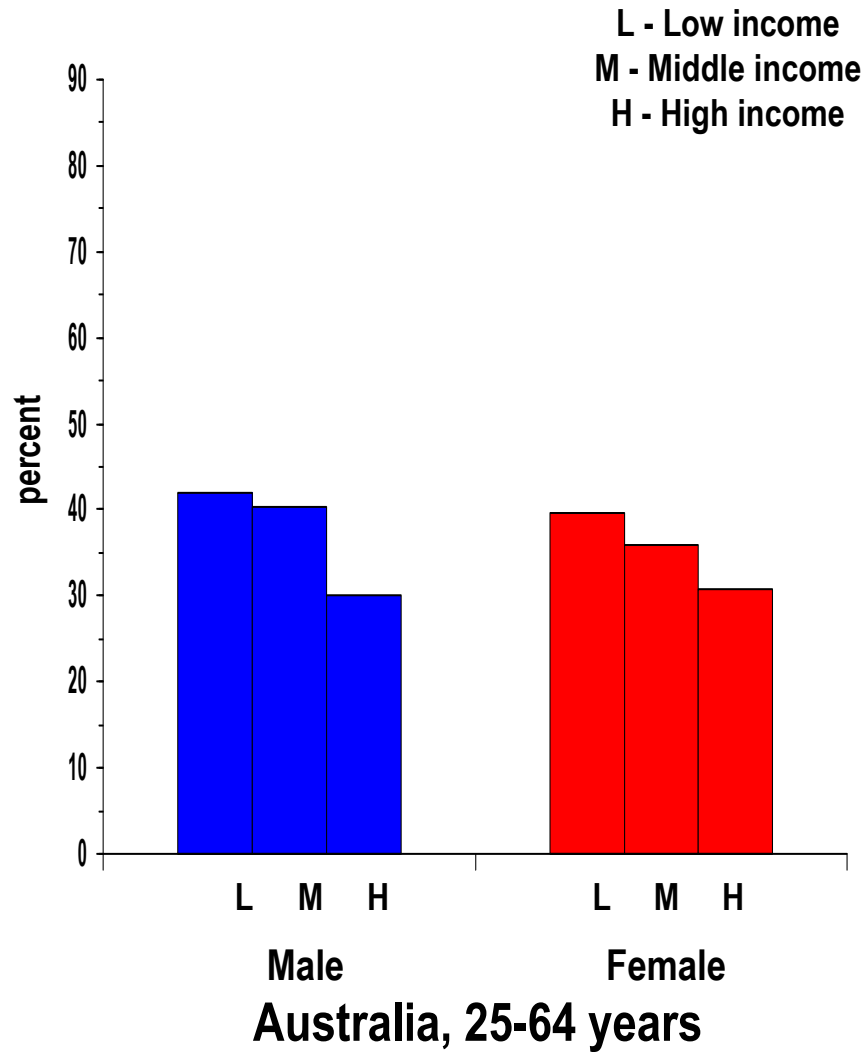
Source: Mathers 1994

Trends in obesity (BMI>30), Brazil 1974-1996

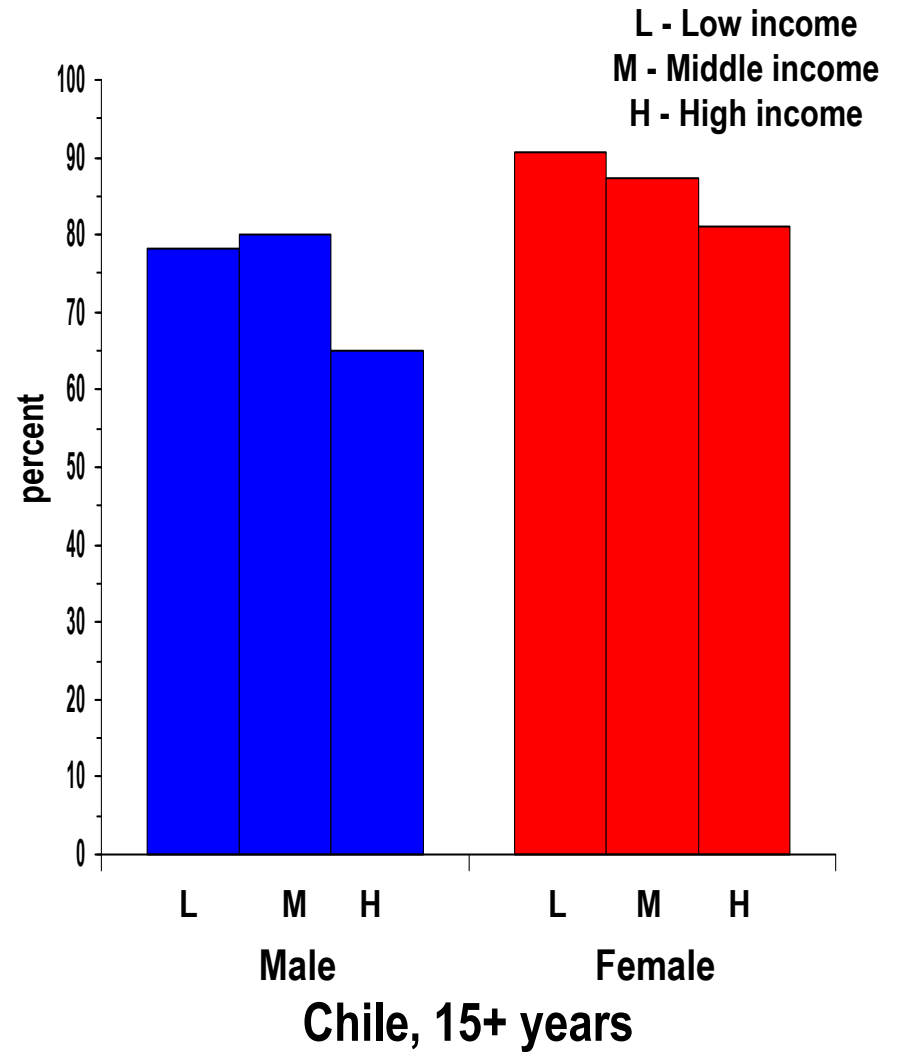


Source: Monterio CA. Et al. 2000

Physical inactivity in adults by social class, Australia and Chile

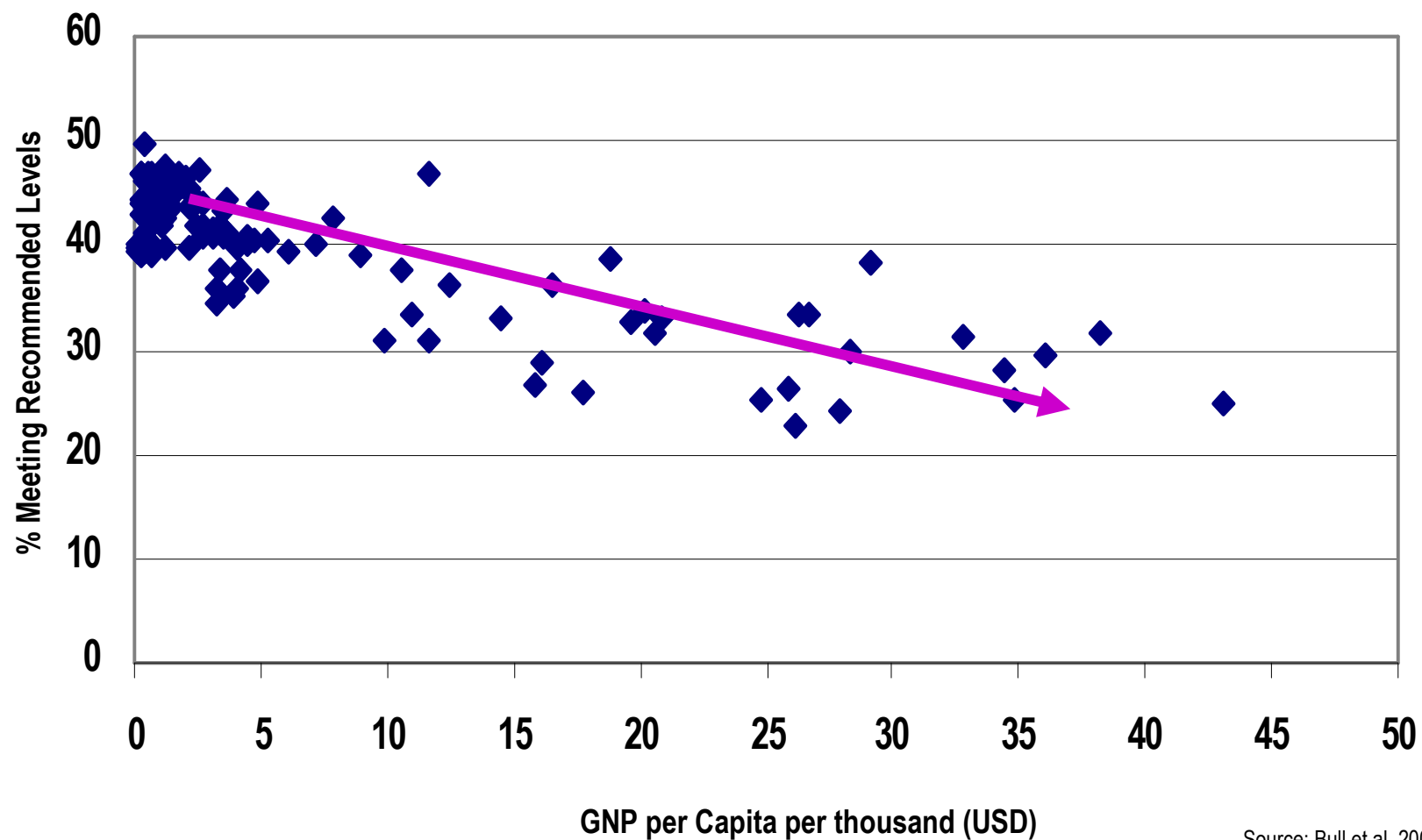


Source: Mathers 1994

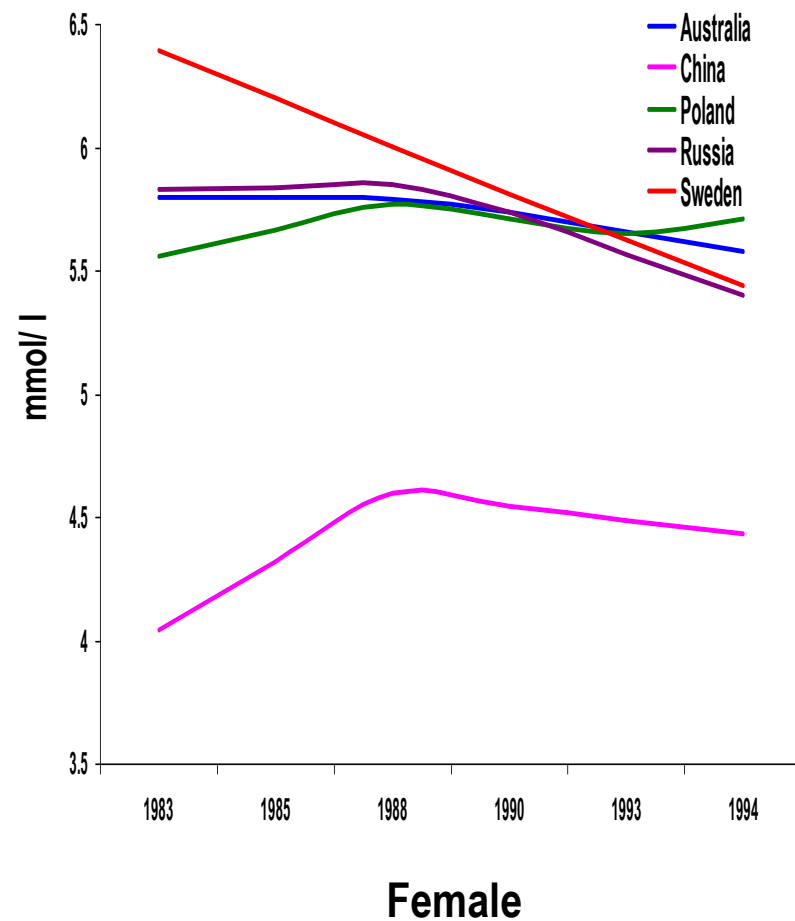
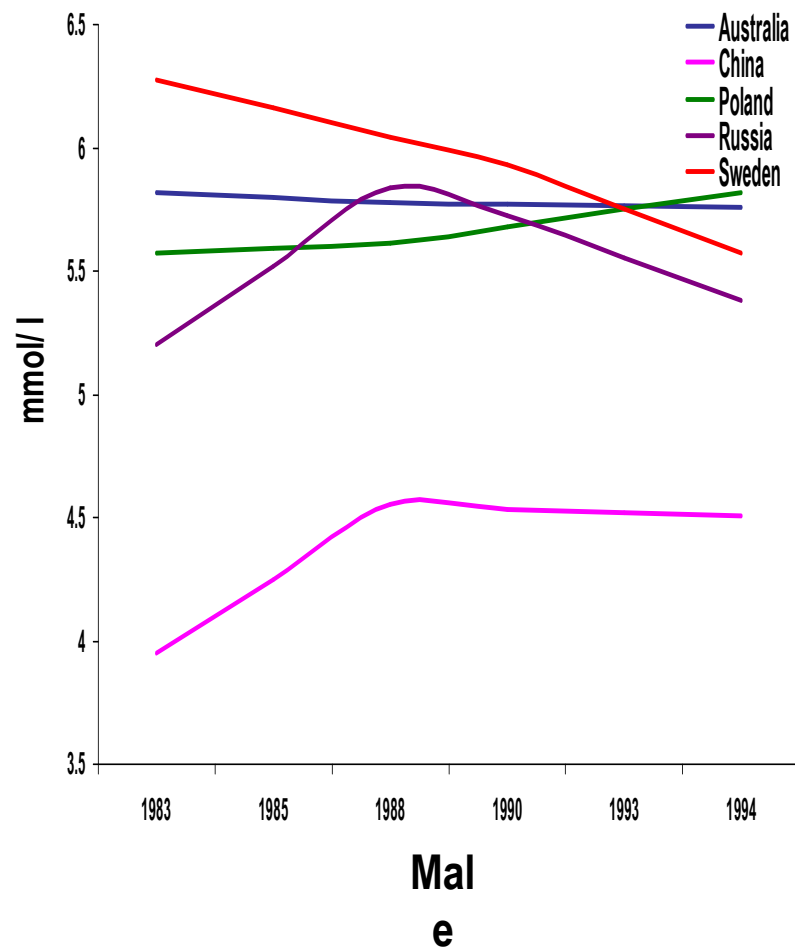


Source: Berrios C. et al. 1990

Trends in physical activity by GNP per capita

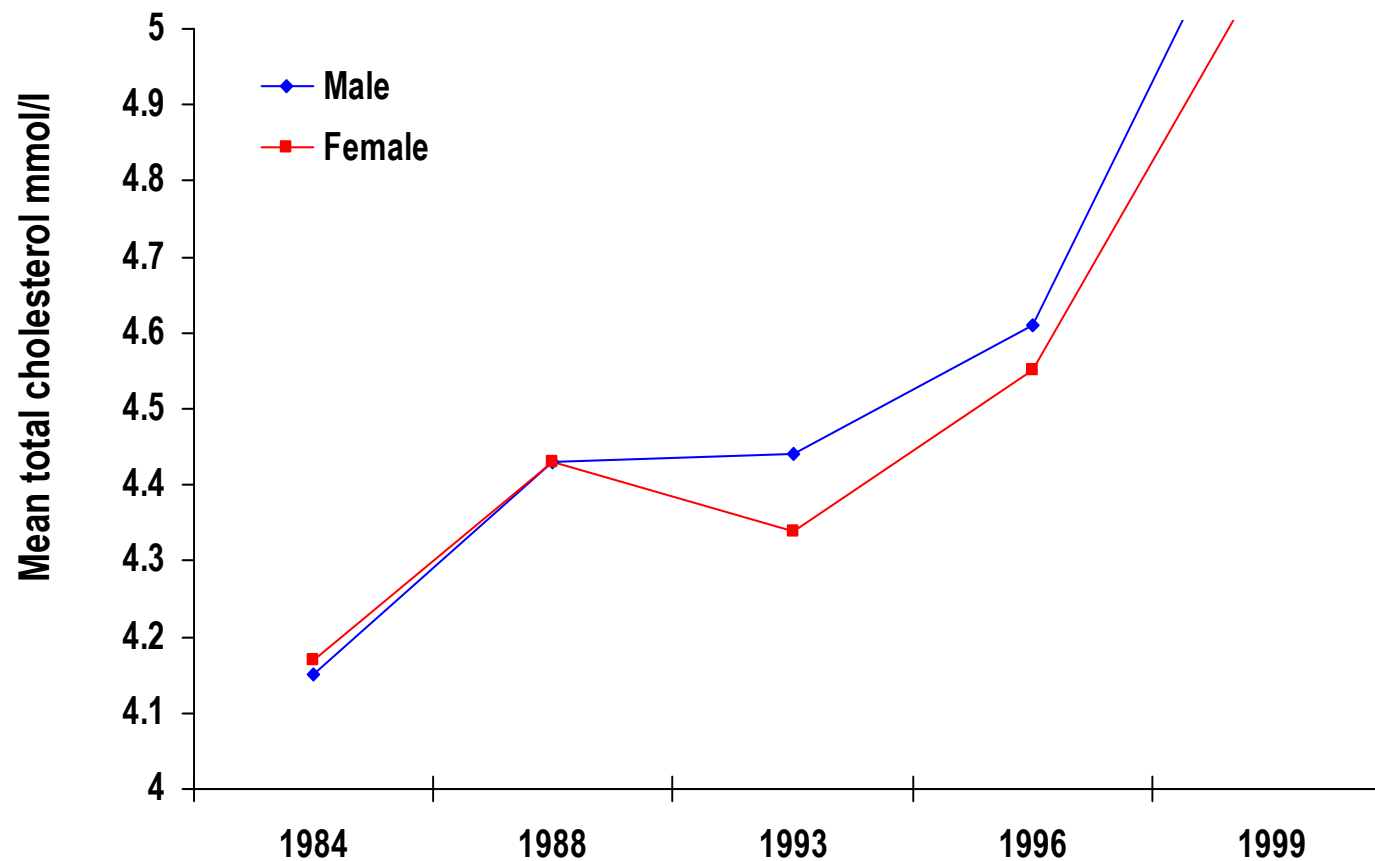


Trends in mean cholesterol in adults (35-64 years) for selected countries from the WHO MONICA Project



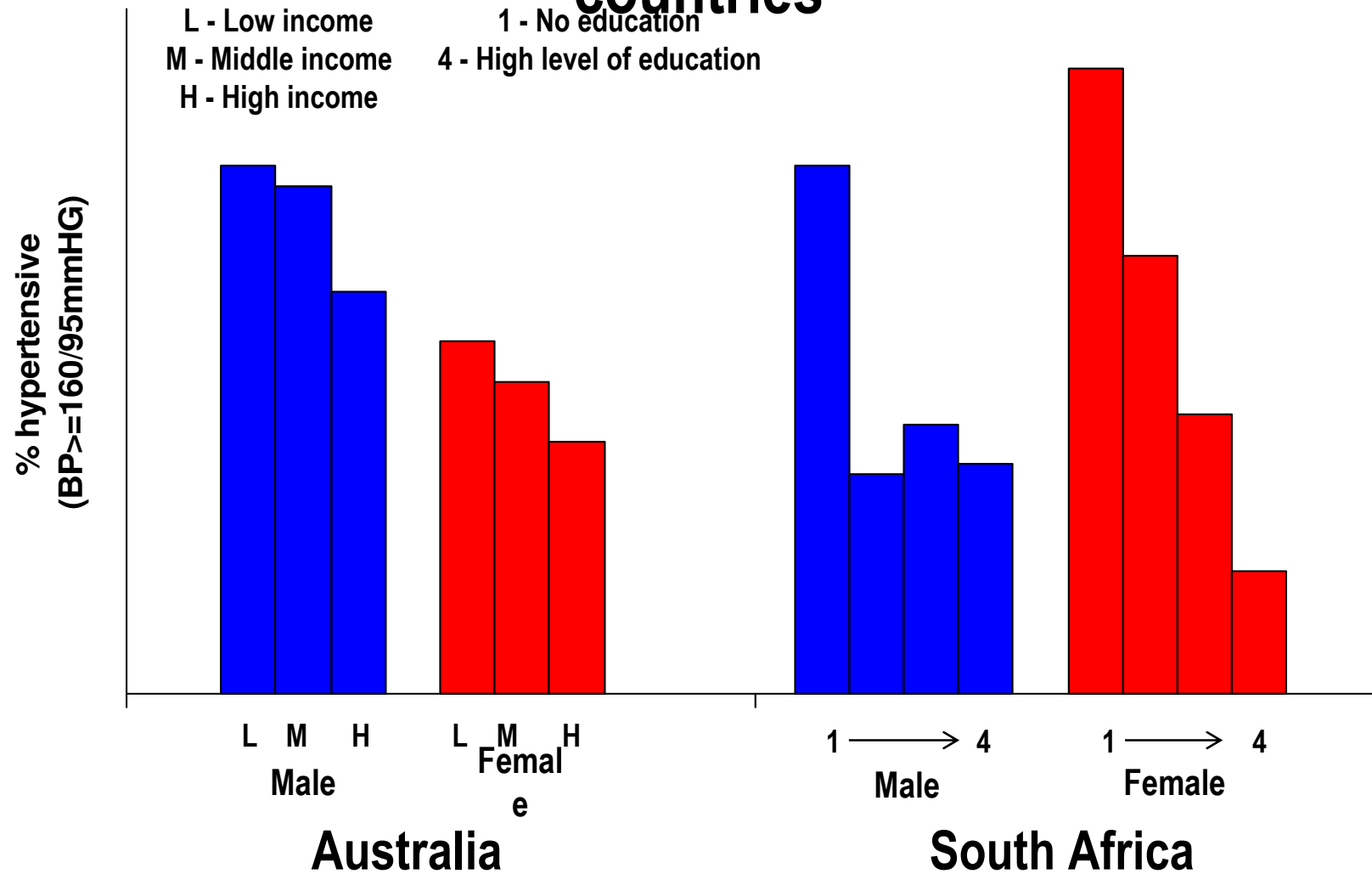
Source: WHO Global NCD Infobase

Trends in mean total cholesterol; Beijing China, 25-64



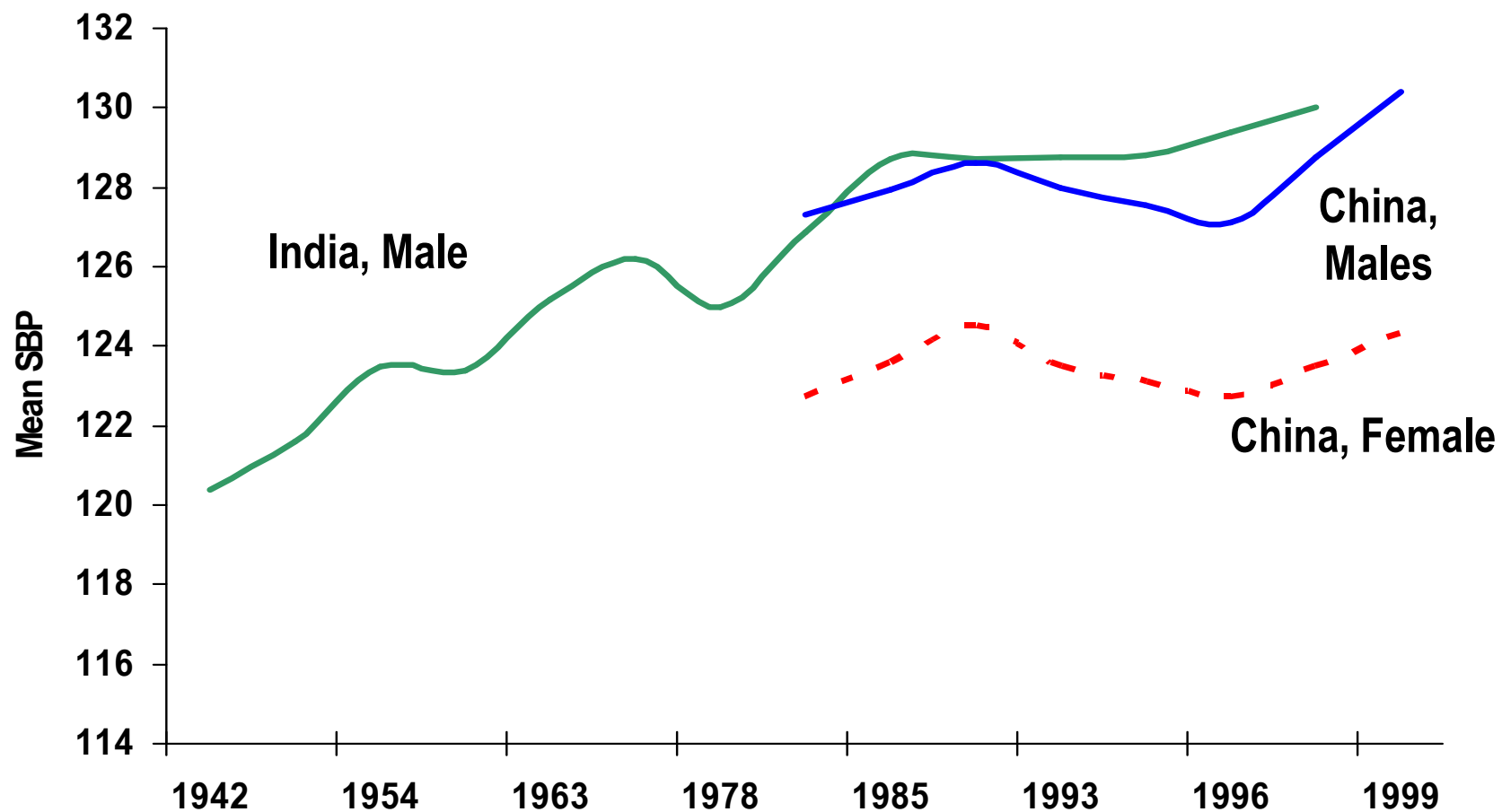
Source: Subnational, Beijing, MONICA

Blood pressure (>160/95) by social class in selected countries



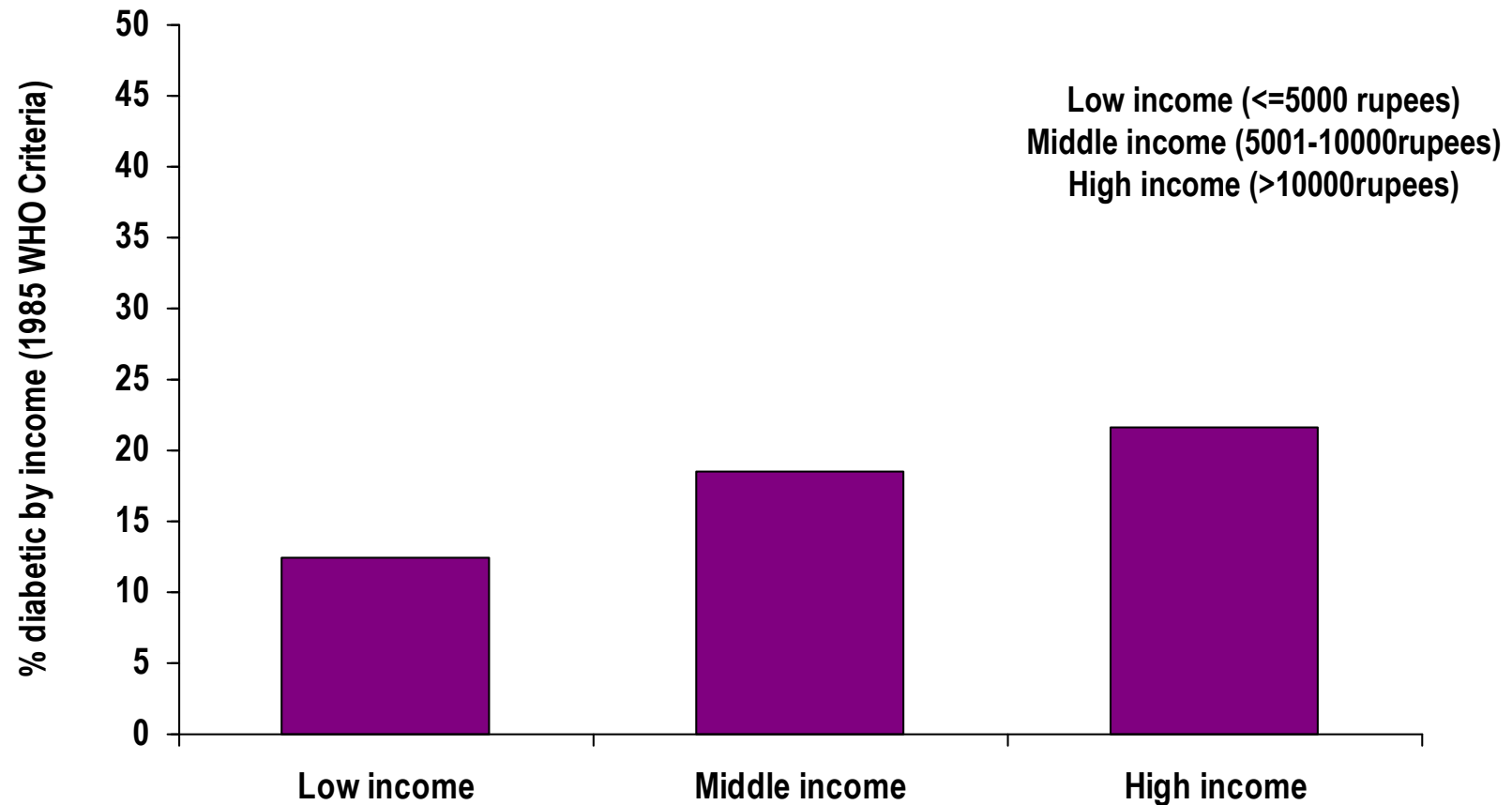
Source: 1998 Mathers 1994; SA Demographic Health Survey

Trends in mean systolic blood pressure; Urban India (40-49 years) and Urban China (25-64 years)



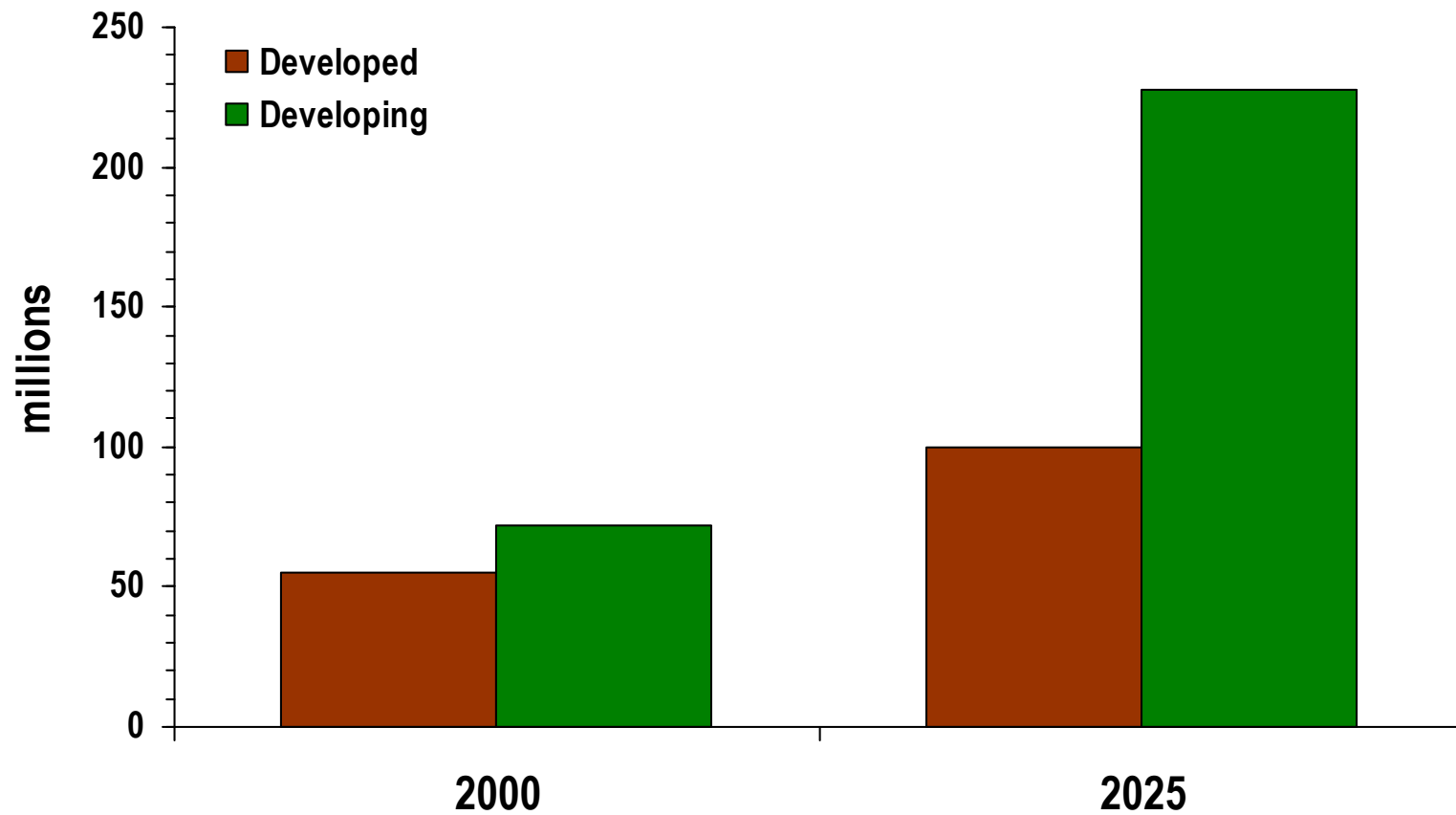
Source: Singh et al. 1997; Subnational, Beijing, MONICA

Diabetes by social class in adults, male and female combined, India



Source: National Urban Diabetes Survey, A. Ramachandran

Number of persons with diabetes: trends in developed vs. developing countries



Conclusions

- NCD´ share to total disease burden substantial
- Common risk factors for NCD´ s
- Known interventions
- Modifying risk factors cost beneficial in reducing overall disease burden