Population Trends, Health Outcomes, and Development

Presented at the 43rd Session of the UN Commission on Population and Development

New York,
April 12, 2010

Eduard Bos
Health, Nutrition, and Population
Human Development Network
The World Bank

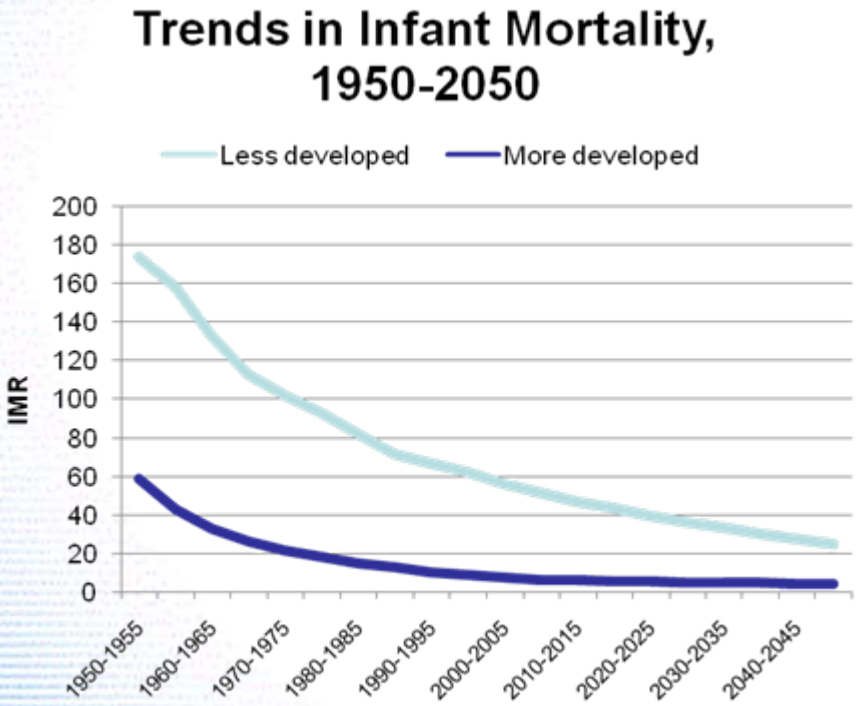
Overview of presentation

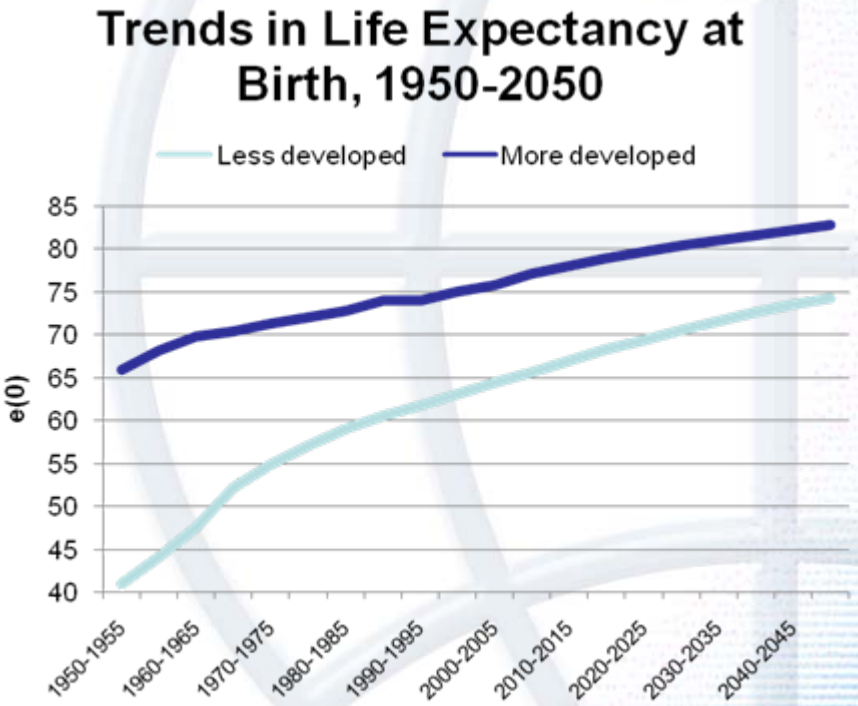
- Health outcomes and development
- Trends in causes of death
- Population trends
- Epidemiology meets demography
- Conclusion: prevent *and* prepare

Overview of presentation

- Health outcomes and development
- Trends in causes of death
- Population trends
- Epidemiology meets demography
- Conclusion: prevent *and* prepare

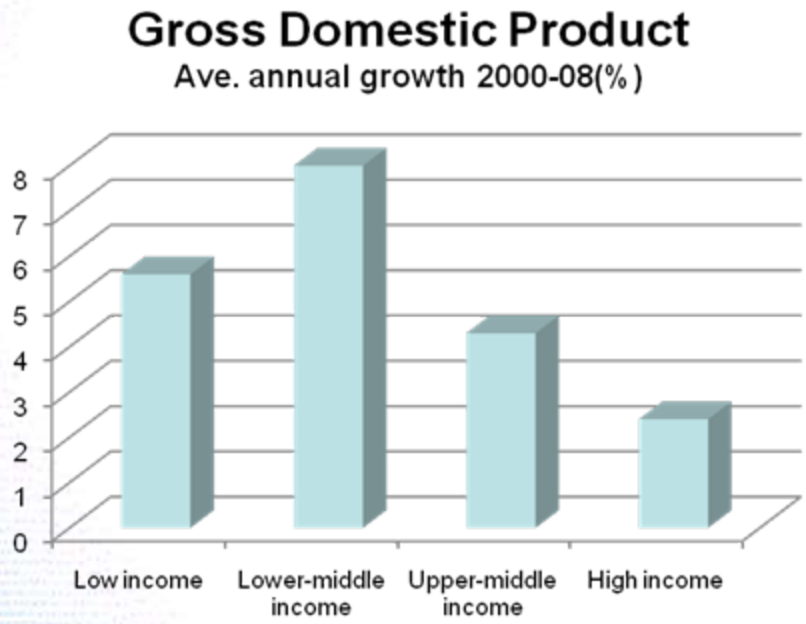
Trends in health outcomes – the long view

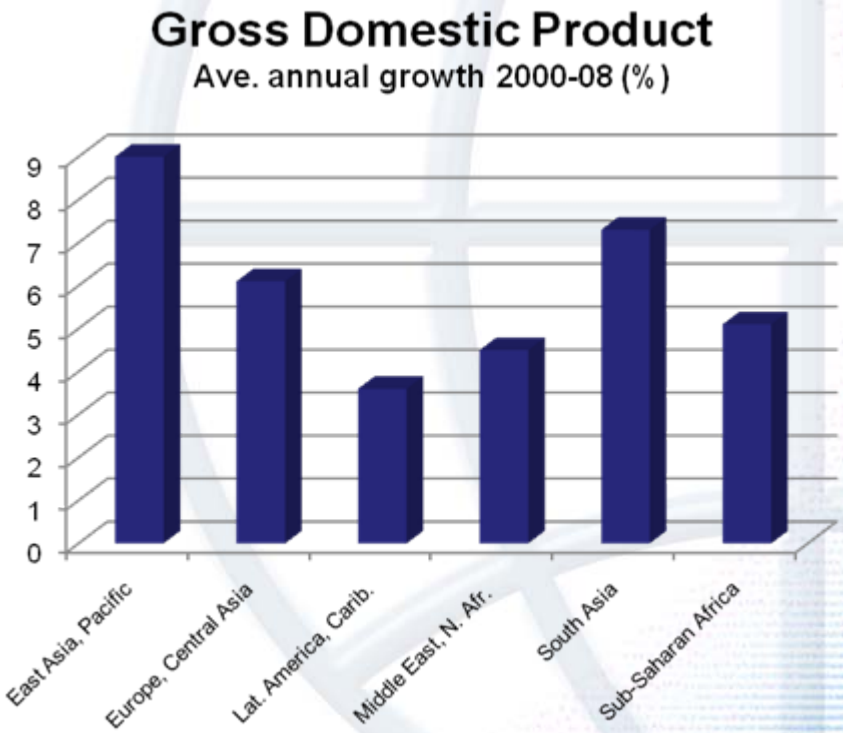




Source: United Nations Population Division, 2009

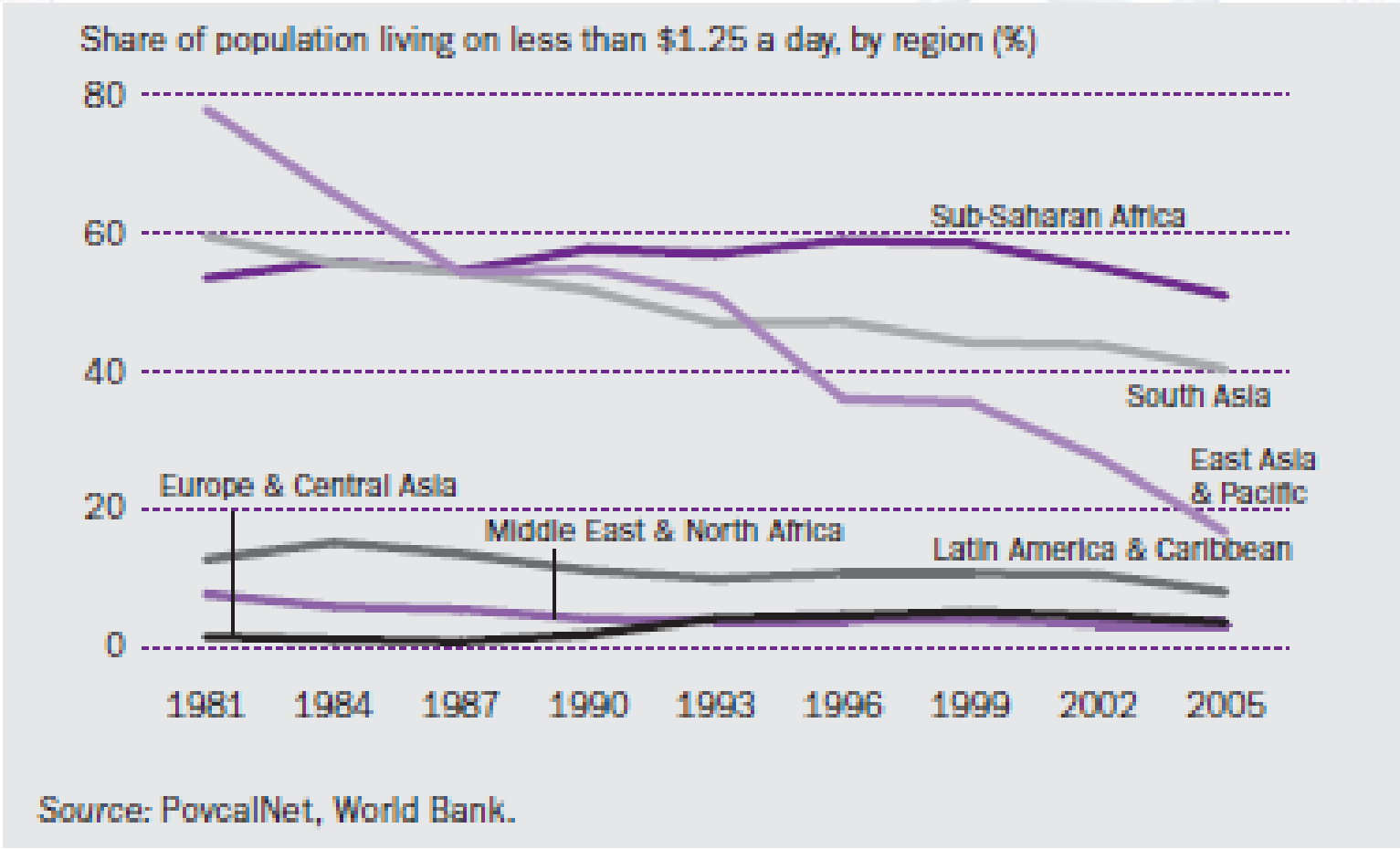
Economic Development: Trends in GDP





Source: World Bank, World Development Indicators 2010

Poverty rates have been declining

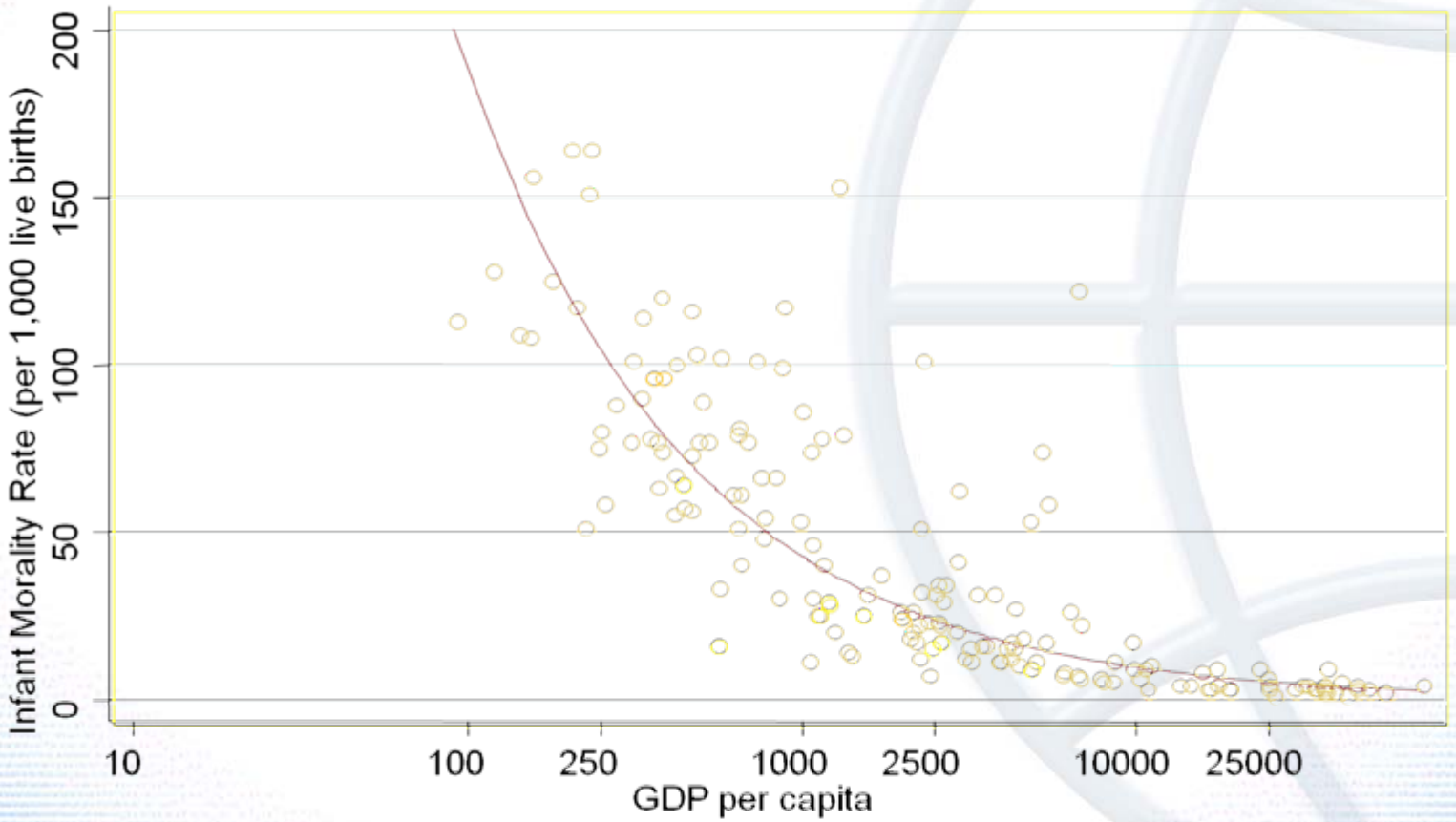


Source: PovcalNet, World Bank.

Wealthier is healthier

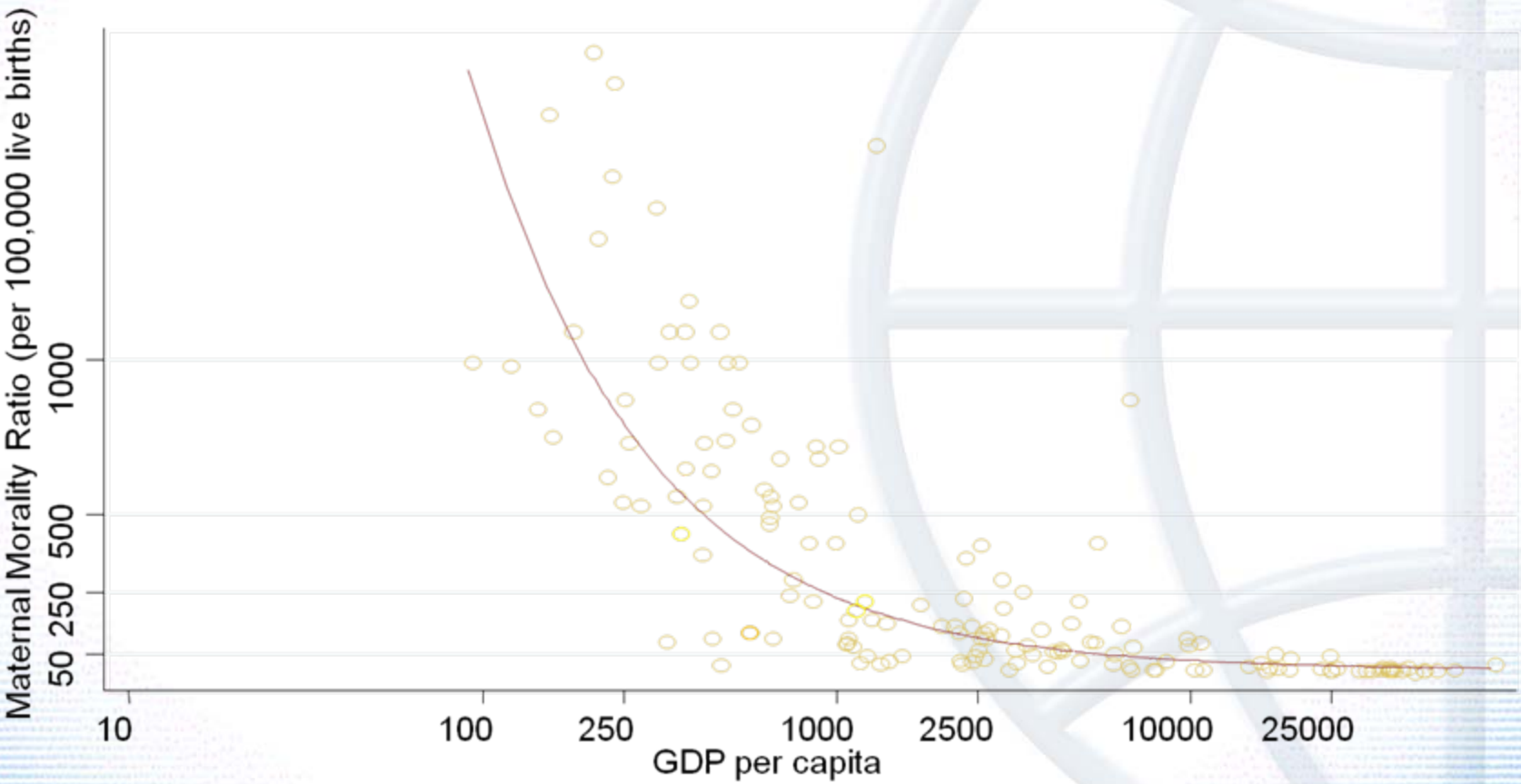
Source: G. Schieber 2007 based on World Development Indicators
Note: GDP per capita in current US$; Log scale

Income and Infant Mortality



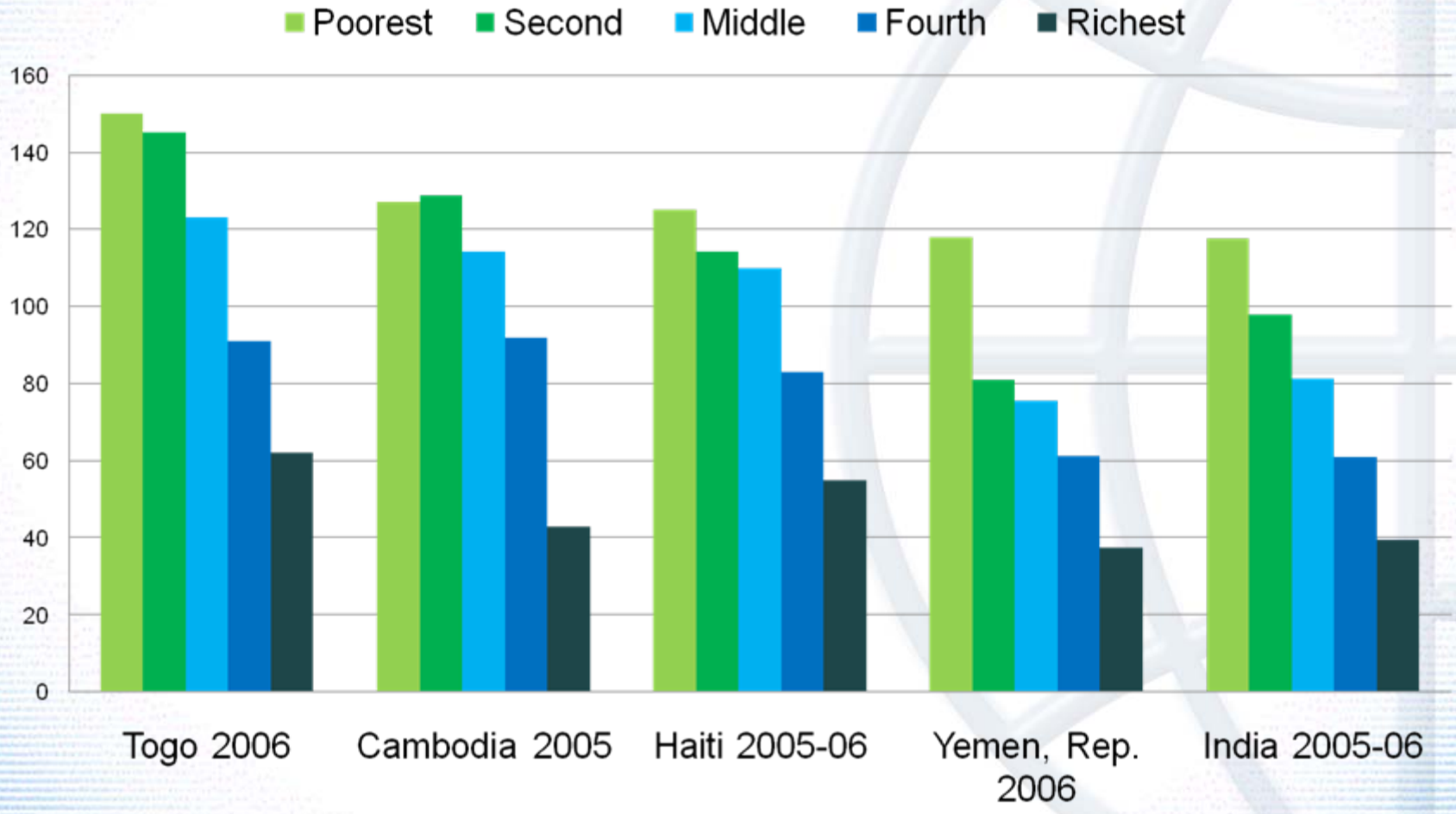
Source: G. Schieber,2007, based on World Development Indicators, WHO 2007
Note: GDP per capita in current US$; Log scale

Income and Maternal Mortality



Source: G. Schieber, 207 based onWorld Development Indicators
Note: GDP per capita in current US$; Log scale

Under-5 mortality rates by wealth quintile, within countries



Source: DHS, various years

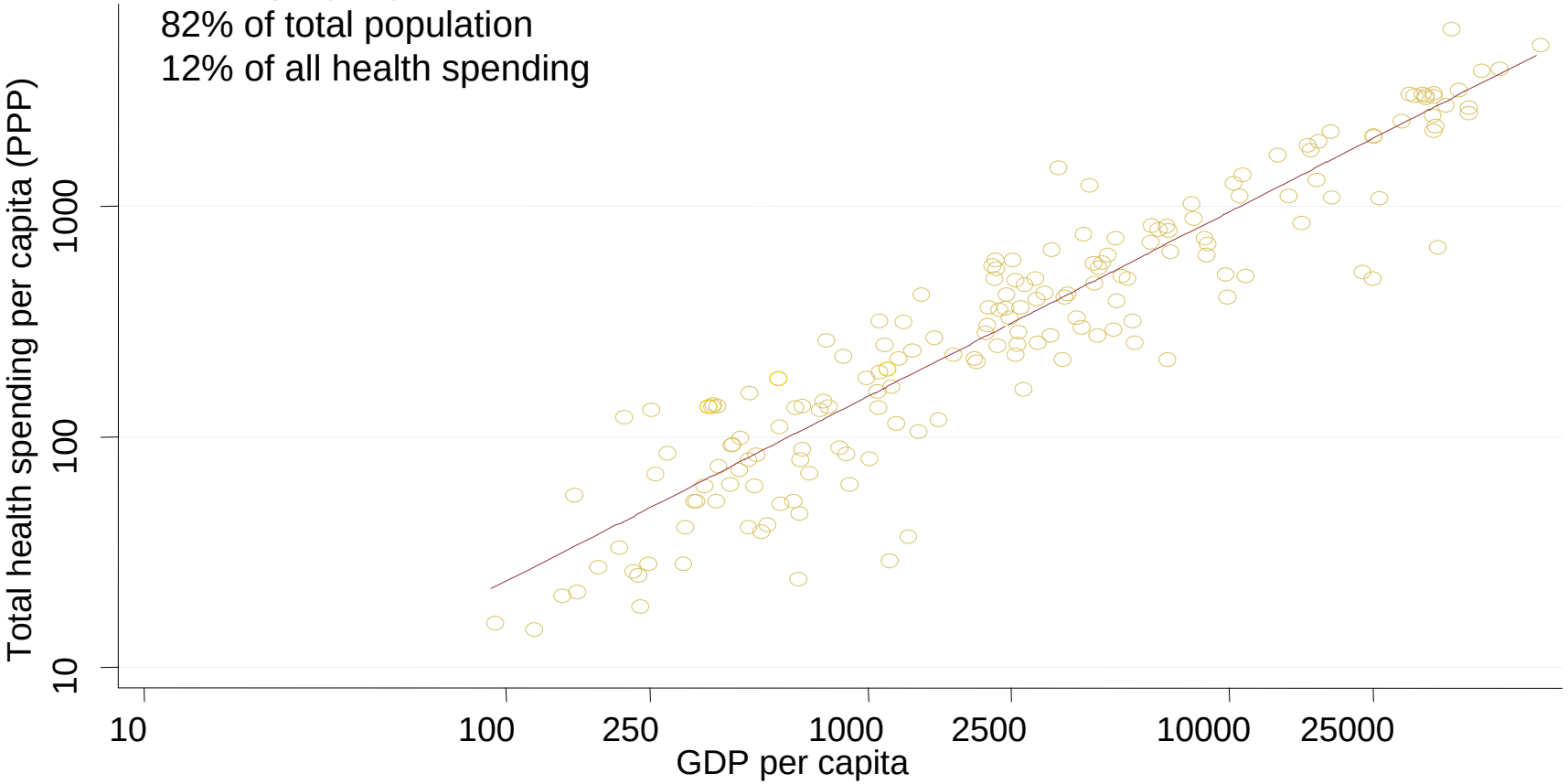
Wealthier is healthier

- Increased income is not the only measure of development – other social factors are also important determinants of health outcomes:
  - income distribution
  - educational attainment
  - infrastructure
  - medicine and public health

- Also: Healthier is wealthier - two-way relationship:
  - direct costs of illness, catastrophic expenditures
  - lost income
  - lost productivity
  - learning

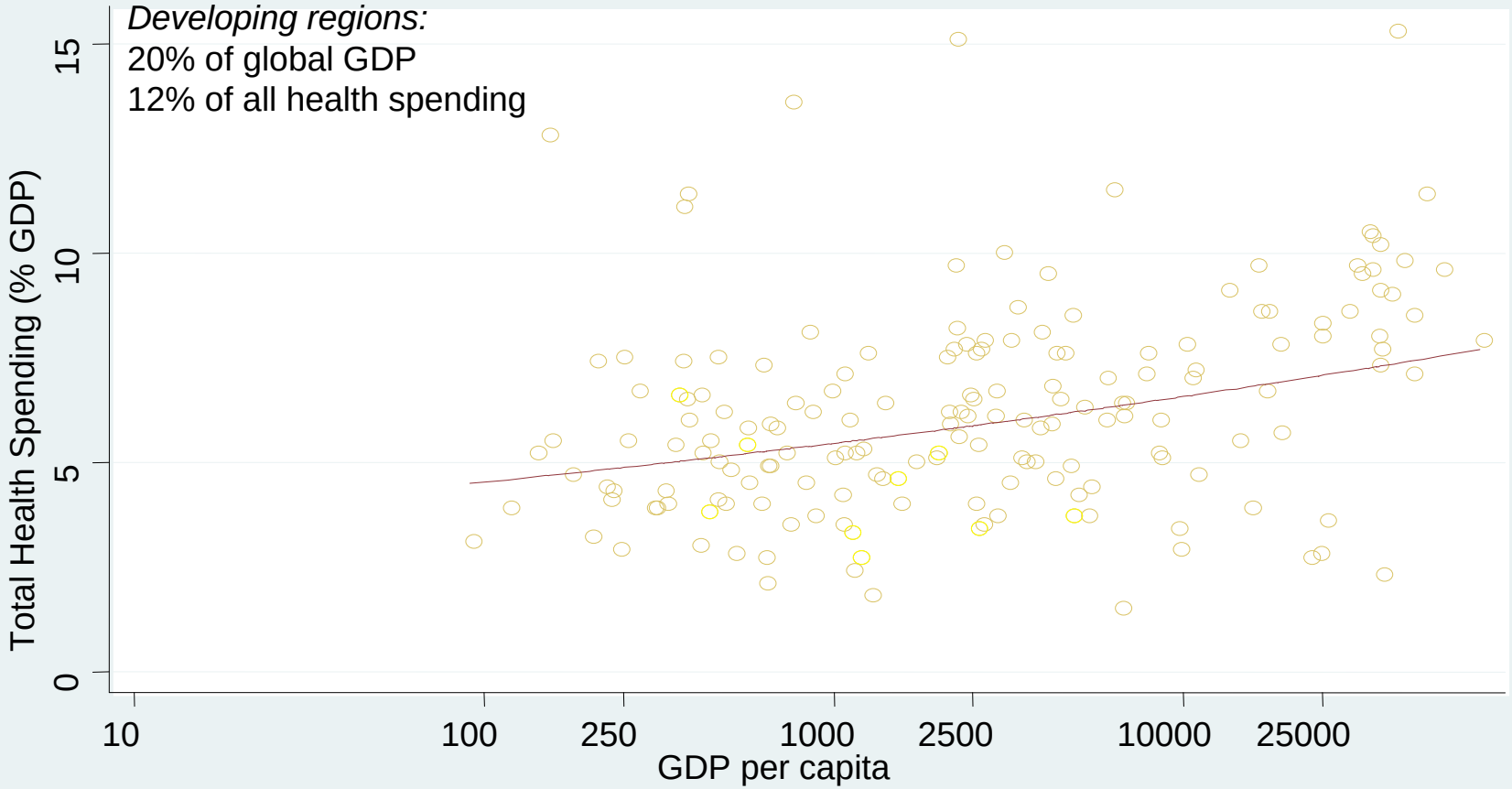
Richer countries spend more on health

Developing regions:
82% of total population
12% of all health spending



Source: G. Schiieber 2007, based on World Development Indicators
Note: GDP per capita in current US$; Log scale

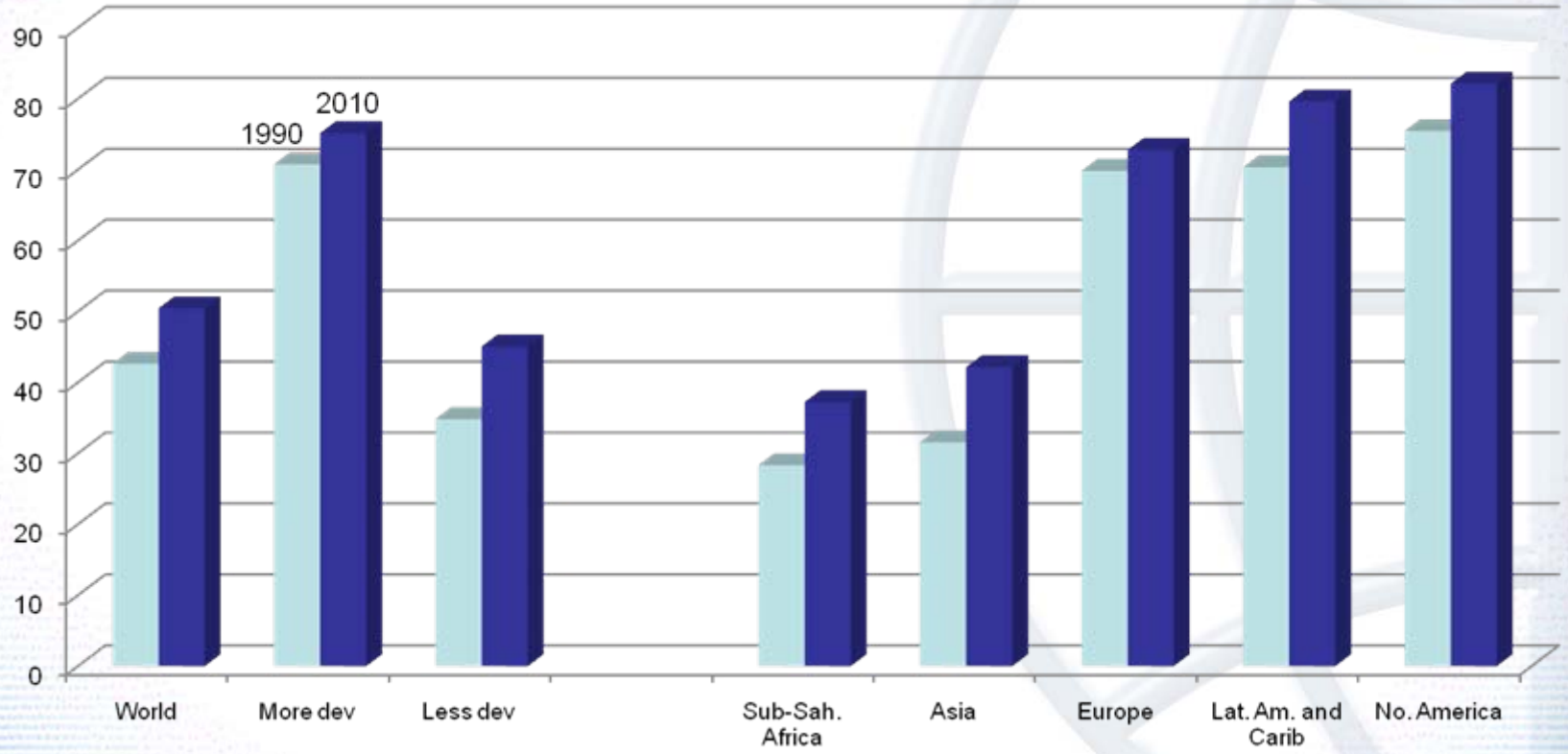
Richer countries spend more on health



Source: World Development Indicators
Note: GDP per capita in current US$; Log scale

Increase in urban population, 1990-2010

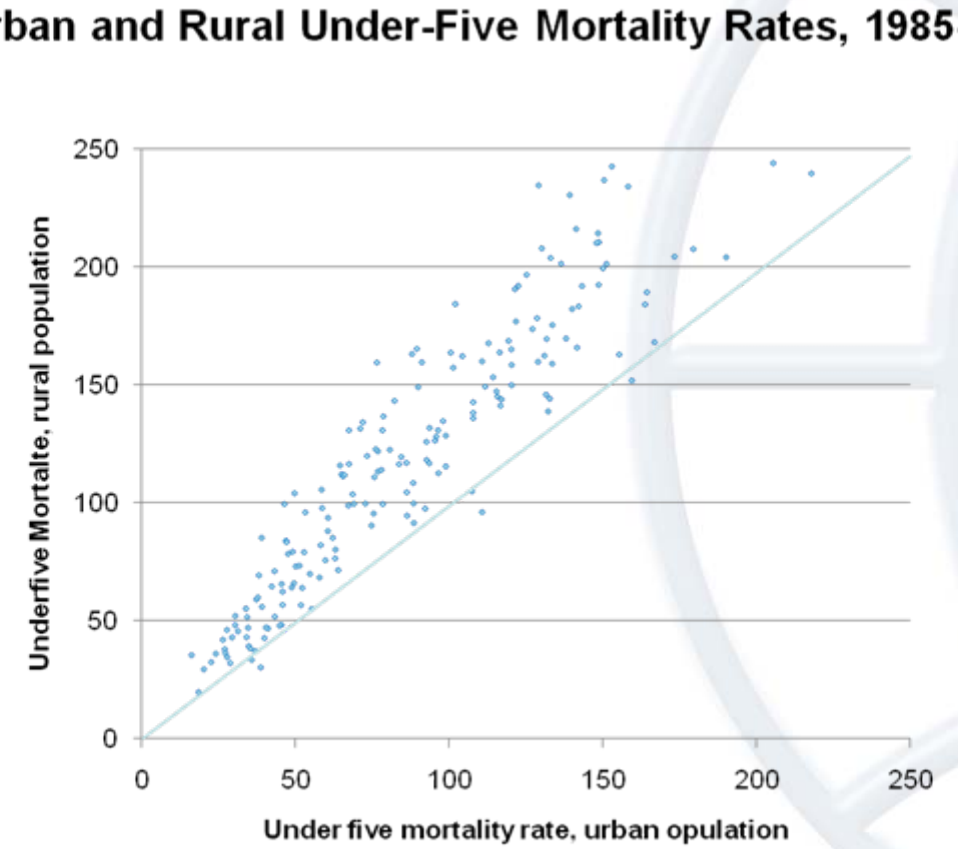
percent of population in urban areas



Source: United Nations Population Division, World Urbanization Prospects, 2009 Revision

Urban child mortality always lower

(almost always)

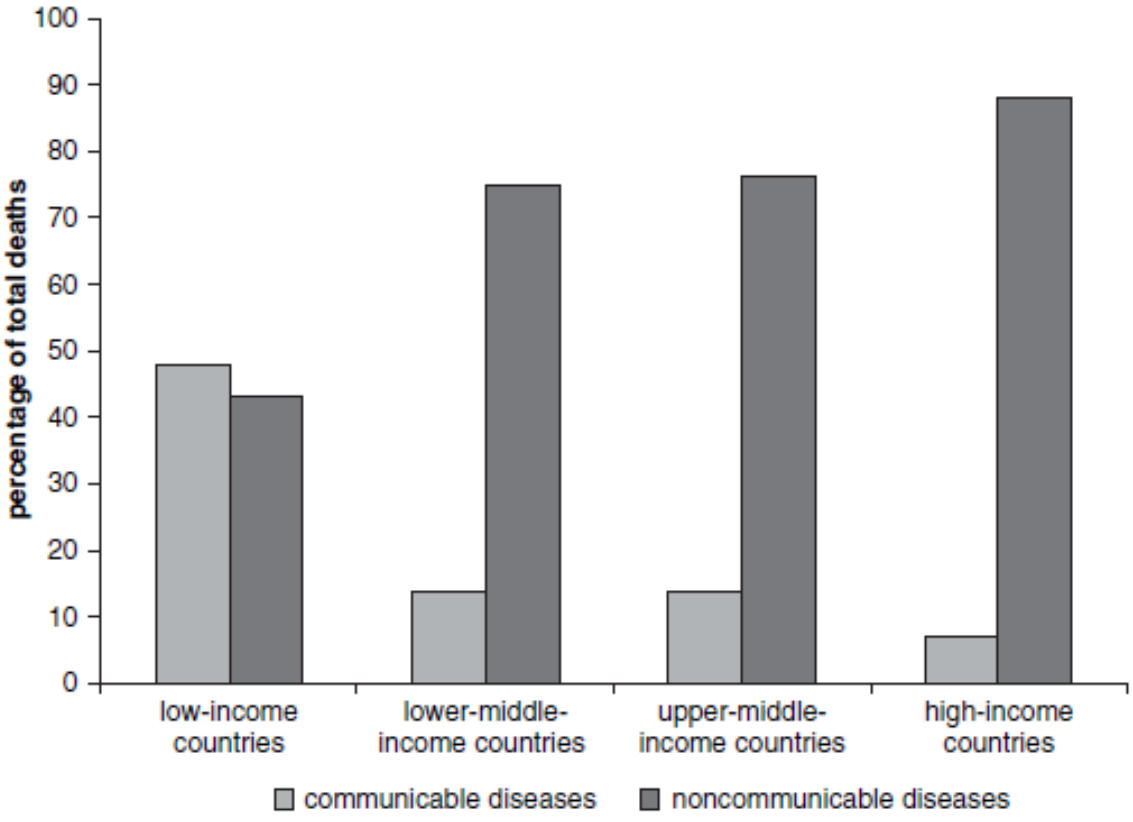


Source: DHS

- Health outcomes and development
- Trends in causes of death
- Population trends
- Epidemiology meets demography
- Conclusion: prevent *and* prepare

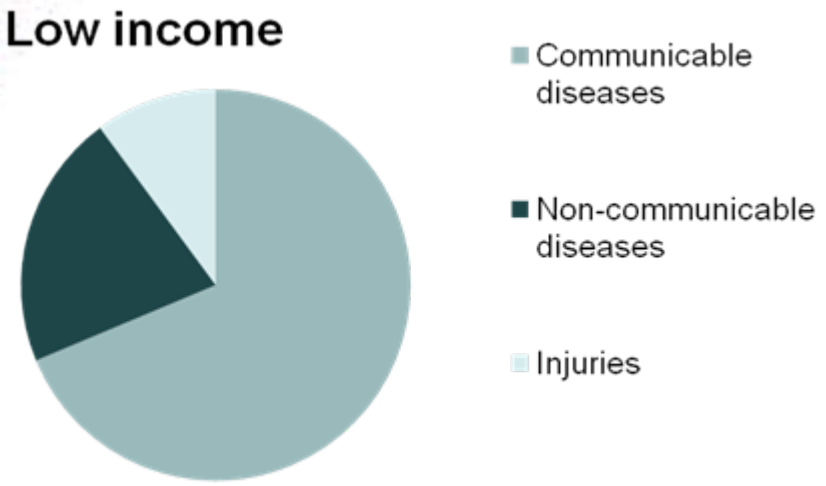
Different outcomes: Levels *and* Composition

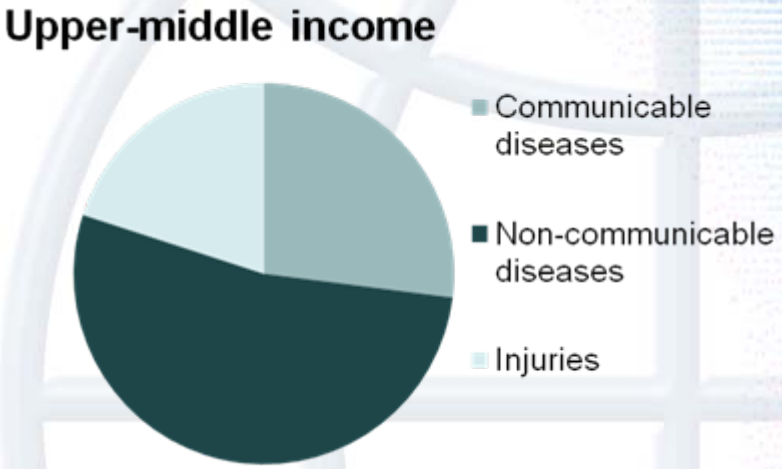
As overall health improves, cause of death structure changes

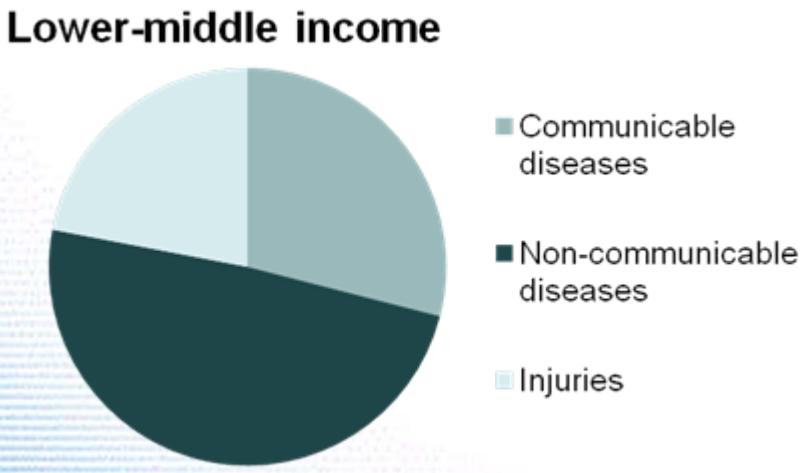


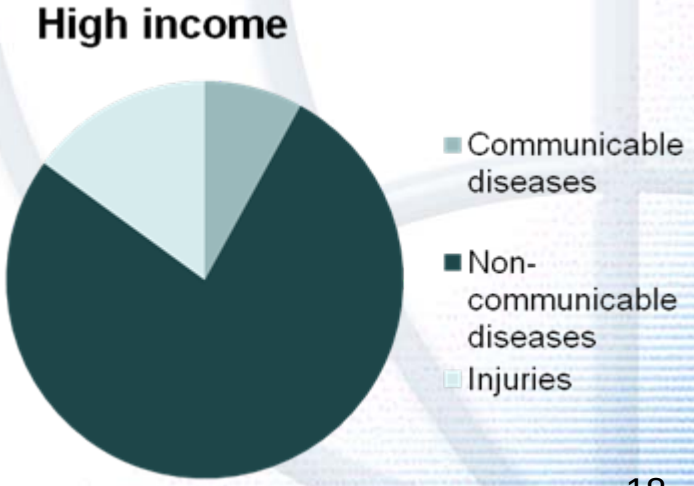
Source: Lopez and others 2006.

Different outcomes: Years of life lost by cause



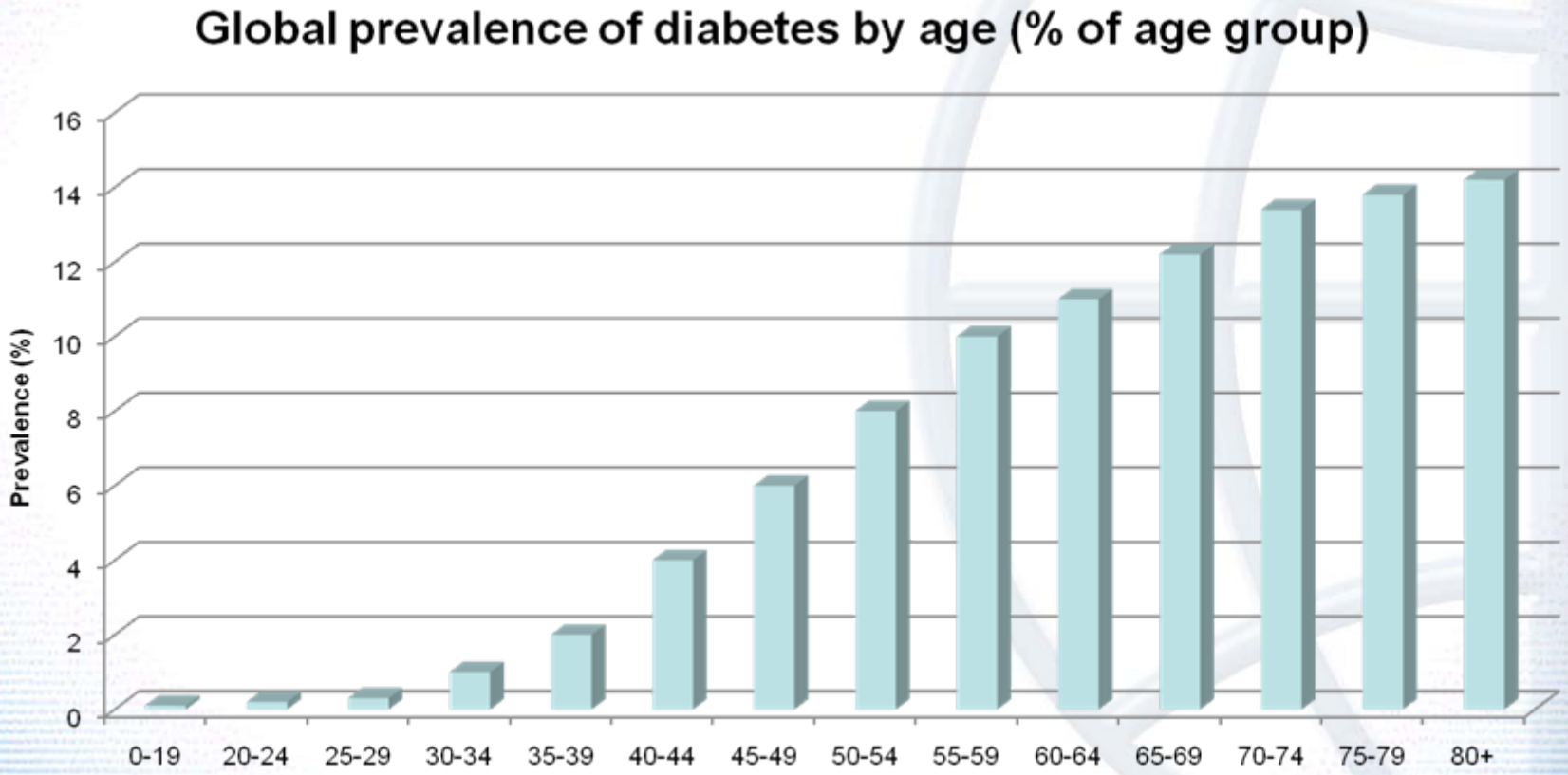






Source: WHO, 2009

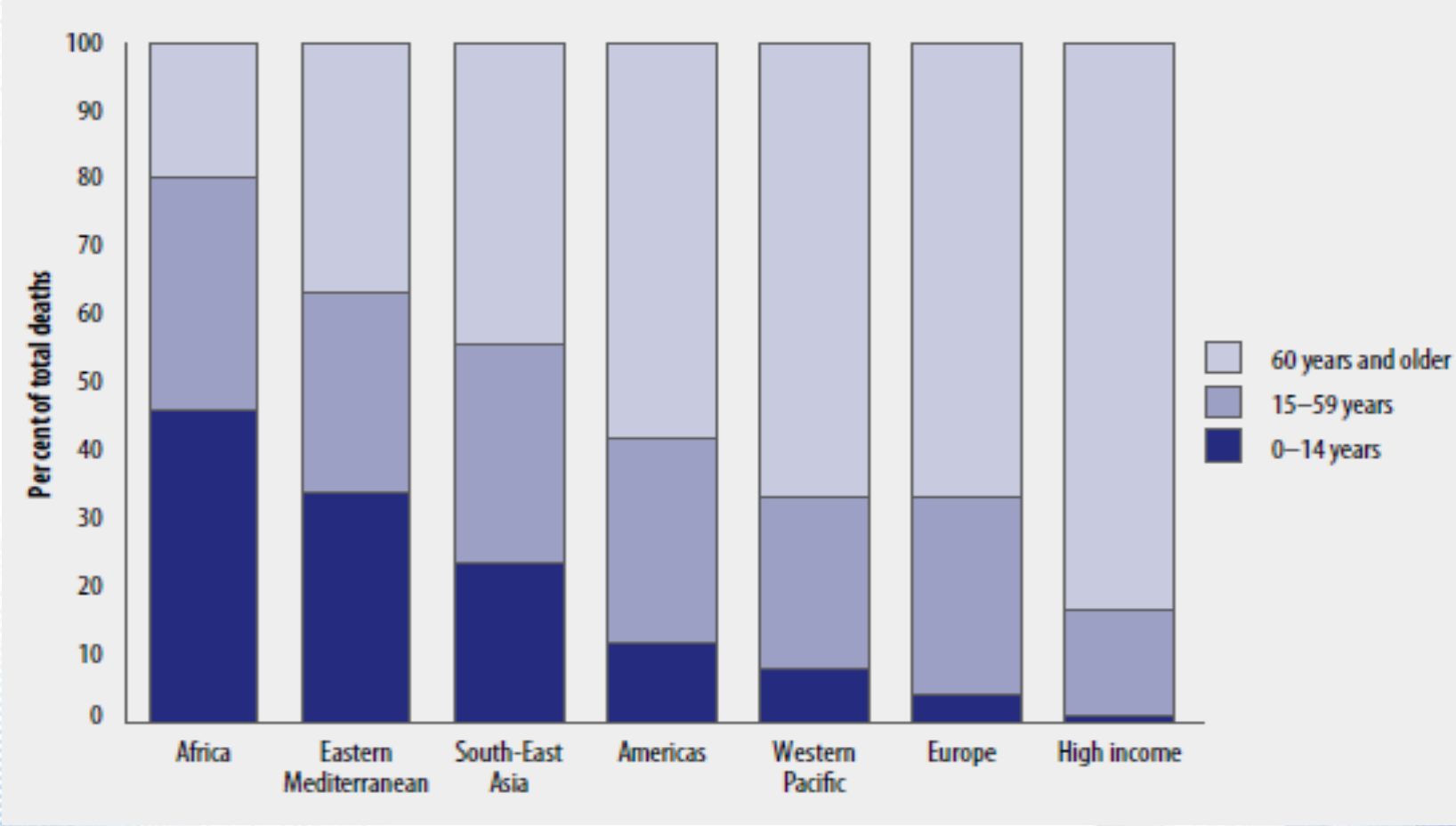
NCDs affect middle age and older population



Source: Wild et al 2004

Different outcomes: Levels and Composition

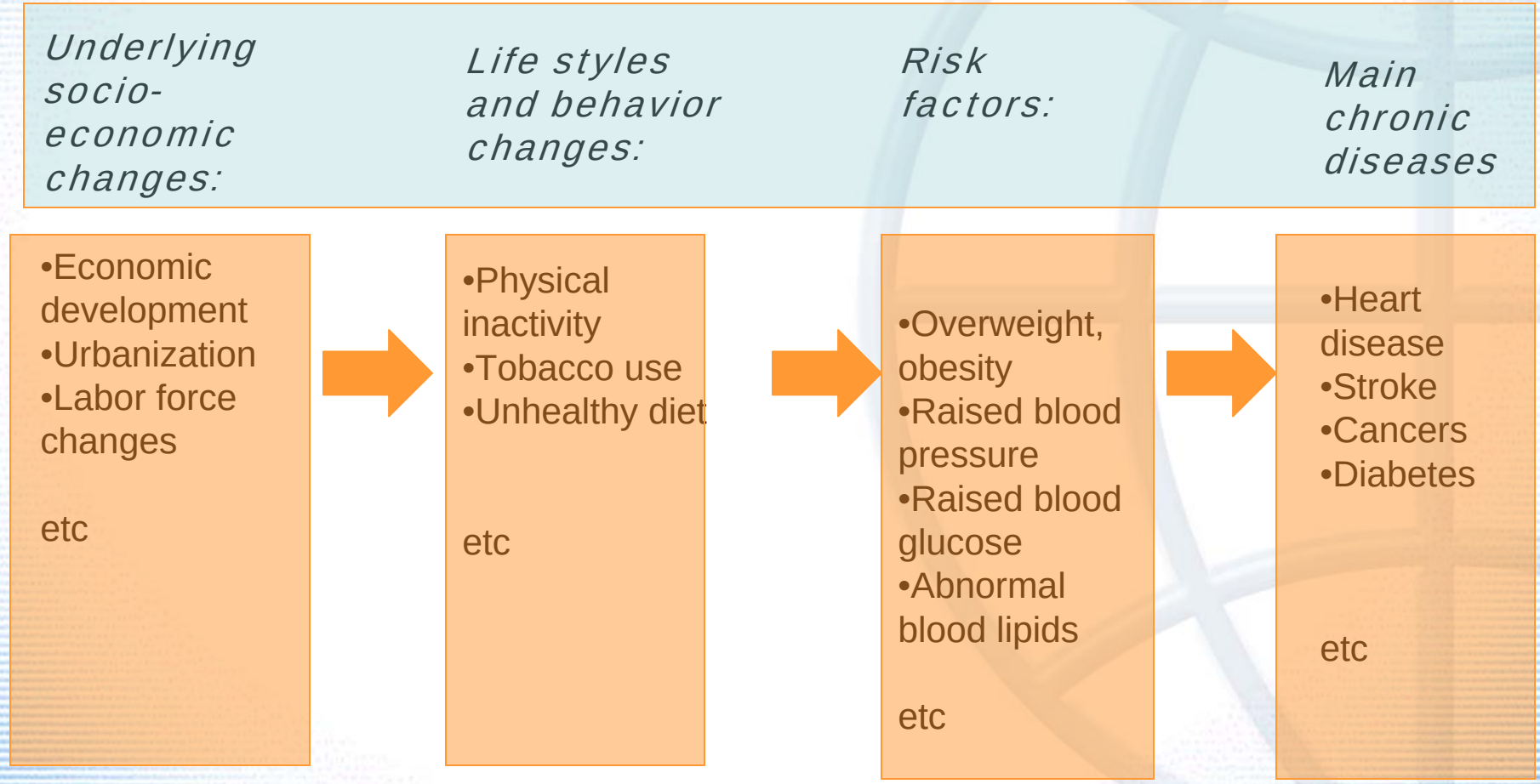
As overall health improves, age at death structure changes



Percent distribution of deaths by age, WHO region

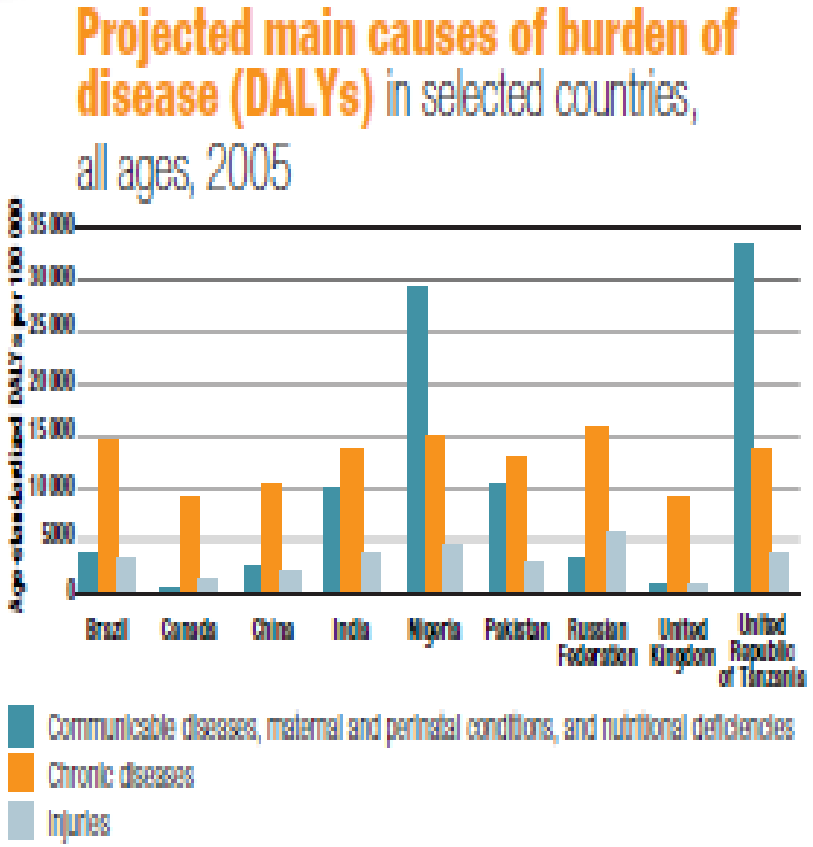
Source: WHO, 2008

Why mortality and disease change with development: causes of NCDs



Morbidity patterns – dual burden of disease

selected countries

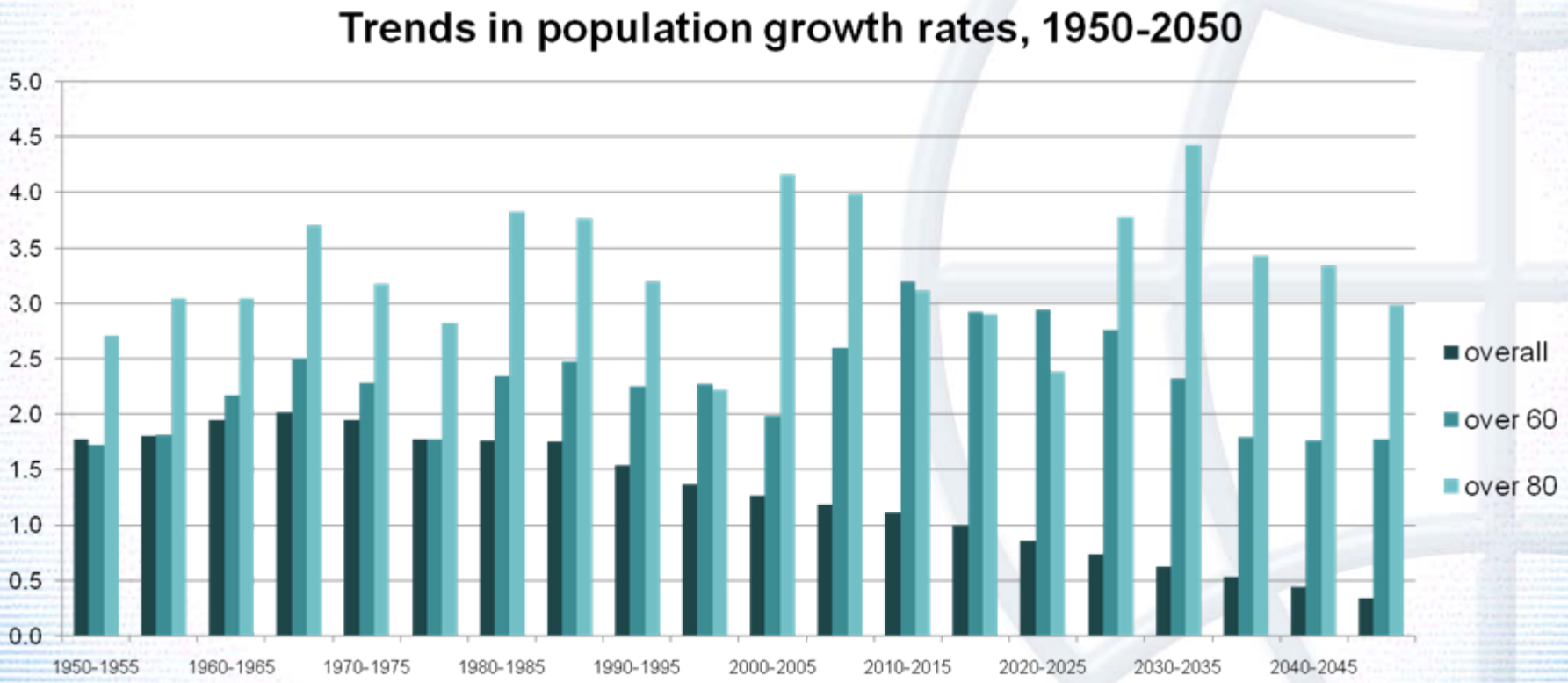


Dual burden of disease: persisting high rates of communicable diseases and increasing noncommunicable disease and mortality rates

Source: WHO, 2005

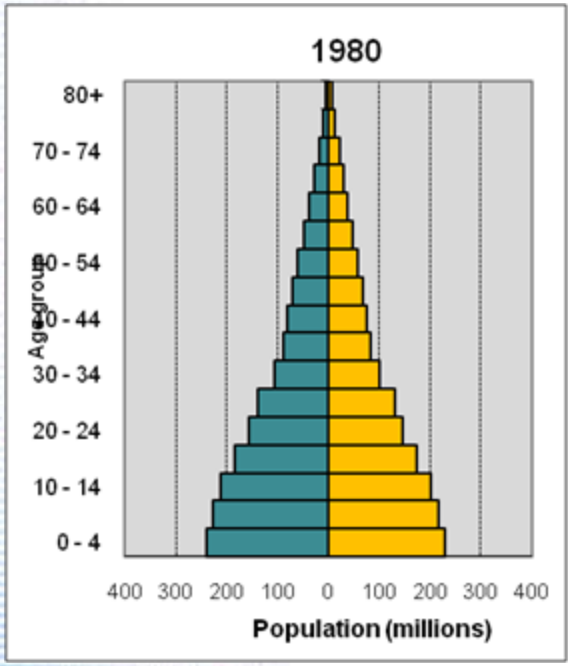
- Health outcomes and development
- Trends in causes of death
- Population trends
- Epidemiology meets demography
- Conclusion: prevent *and* prepare

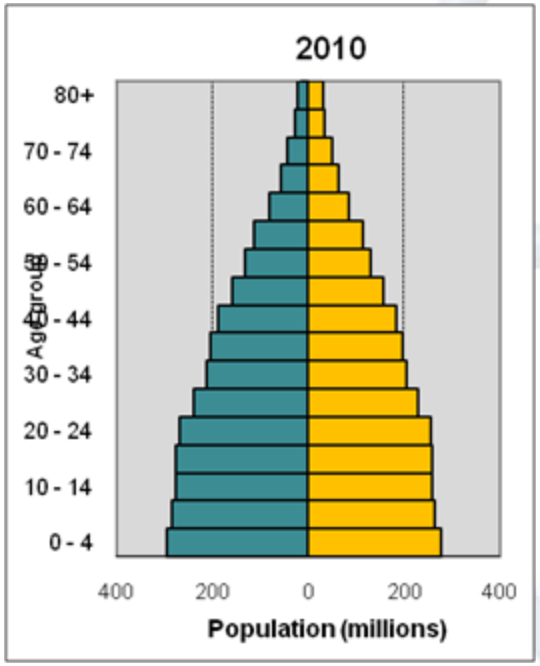
World Population trends

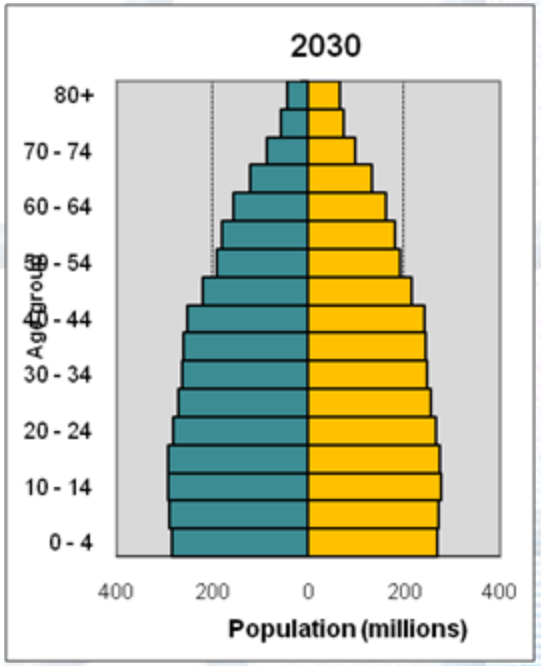


Source: UN Population Division, 2009

Age structure of developing regions



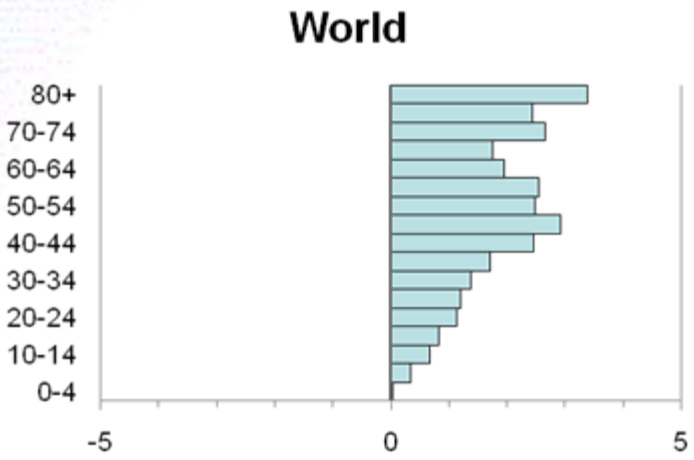


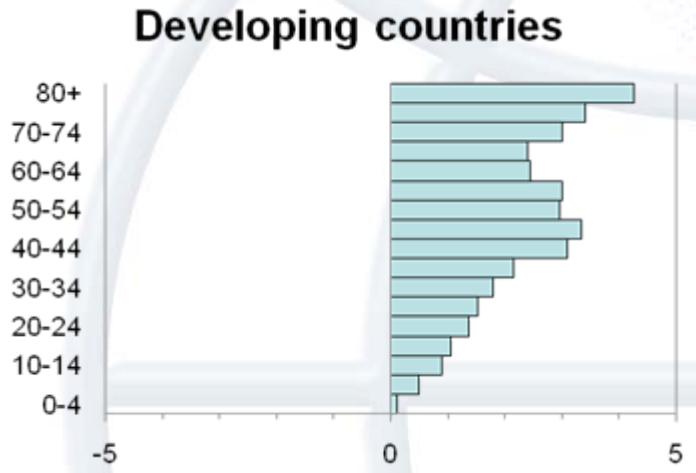


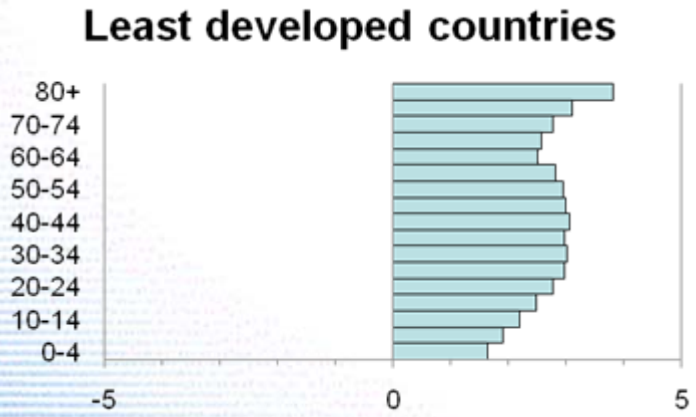
Source: United Nations, 2008

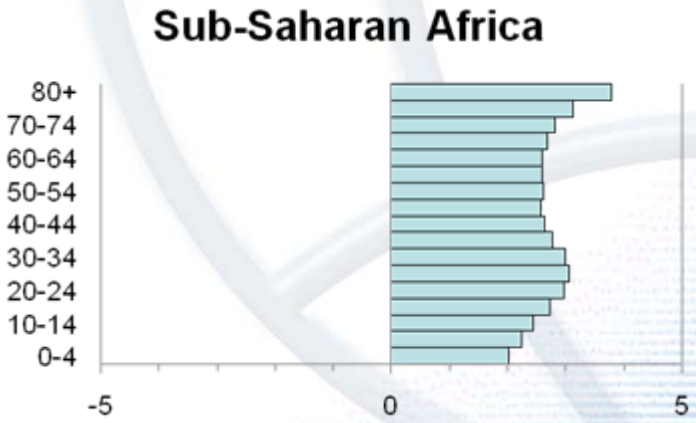
Change in Population Age Distribution

Average annual percentage change 1990-2010

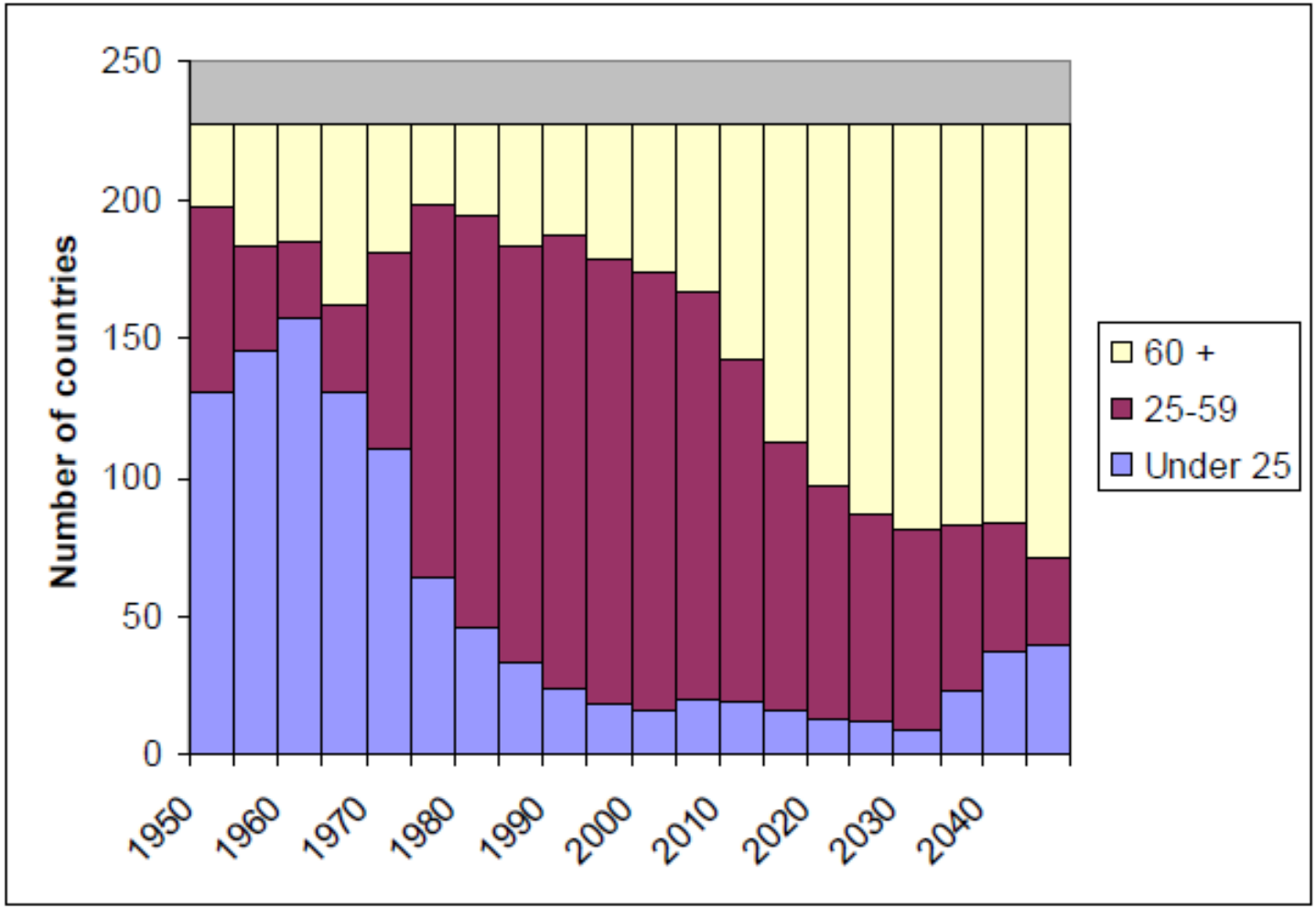






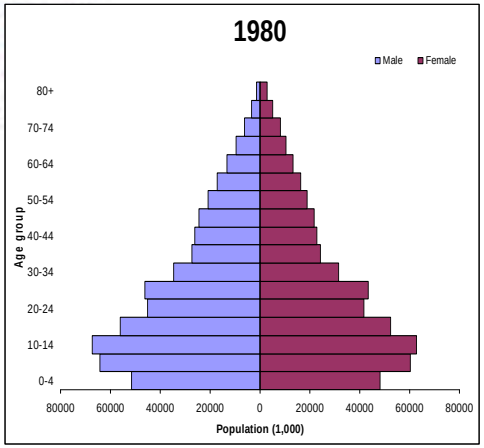


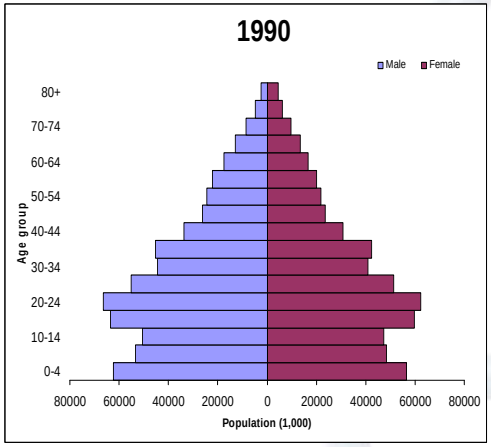
Countries grouped by fastest growing age group, 1950-2050

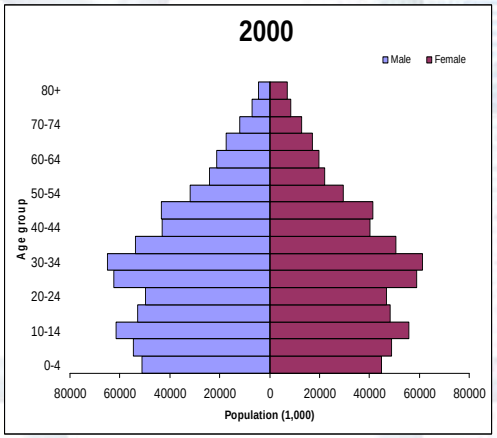


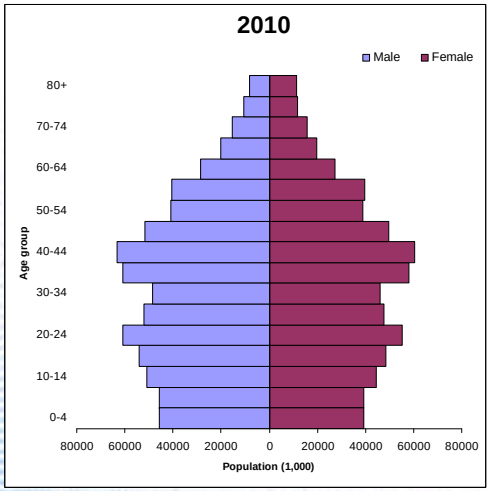
Source: Cotlear, Lee, and Mason (2010) based on UN 2009

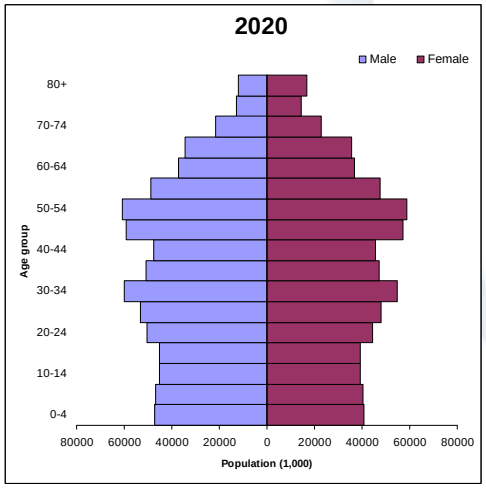
China: Changes in Age Structure, 1980-2030

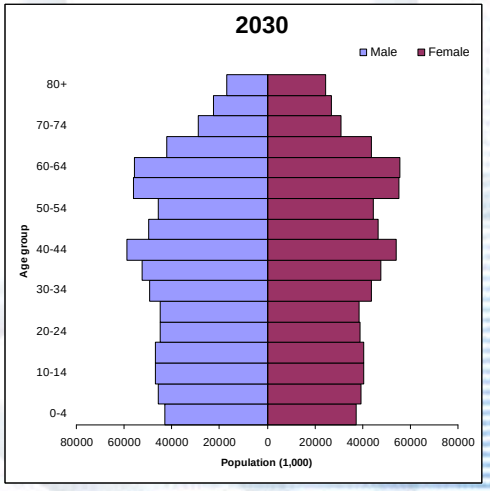




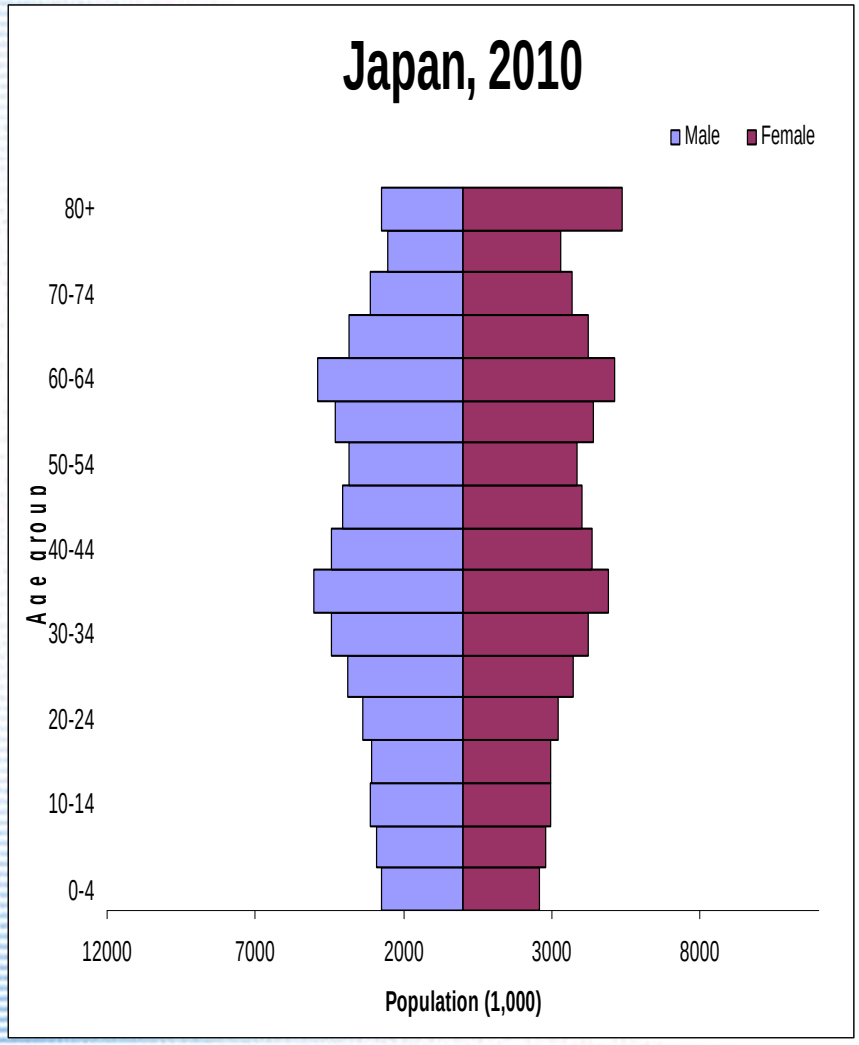


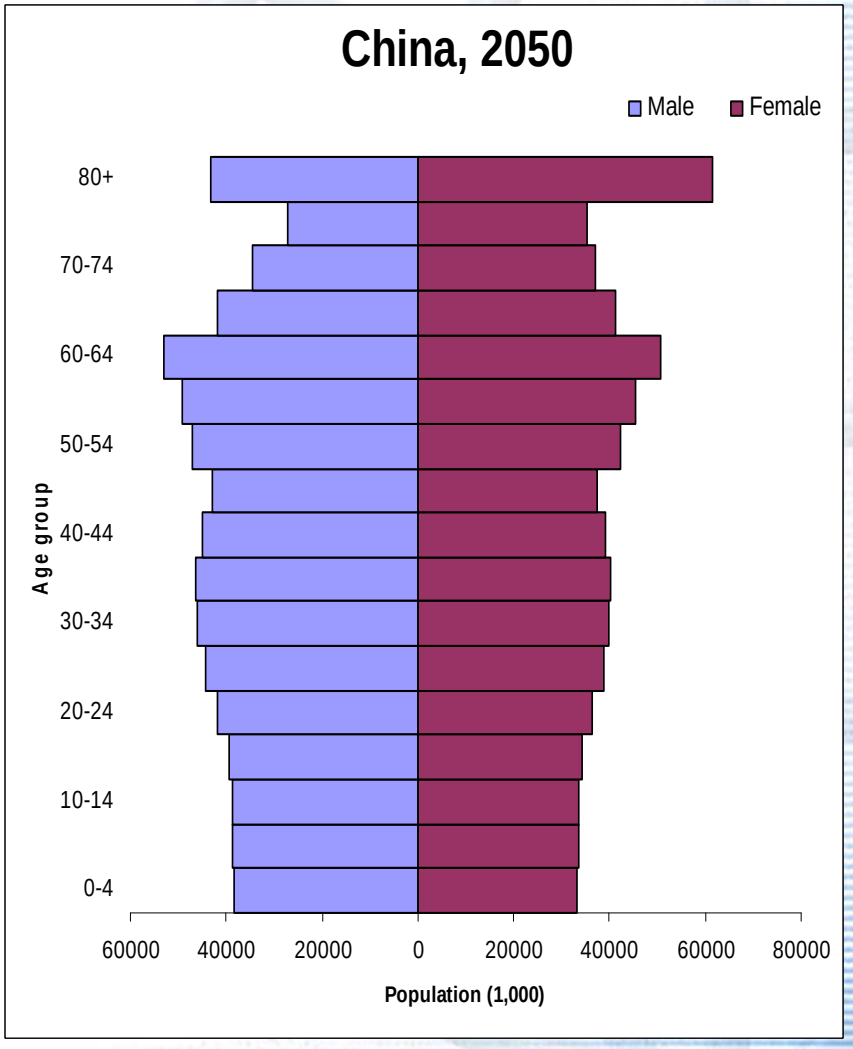






Age Structures: Japan, 2010 and China, 2050





Source: UN 2008

- Health outcomes and development
- Trends in causes of death
- Population trends
- Epidemiology meets demography
- Conclusion: prevent *and* prepare

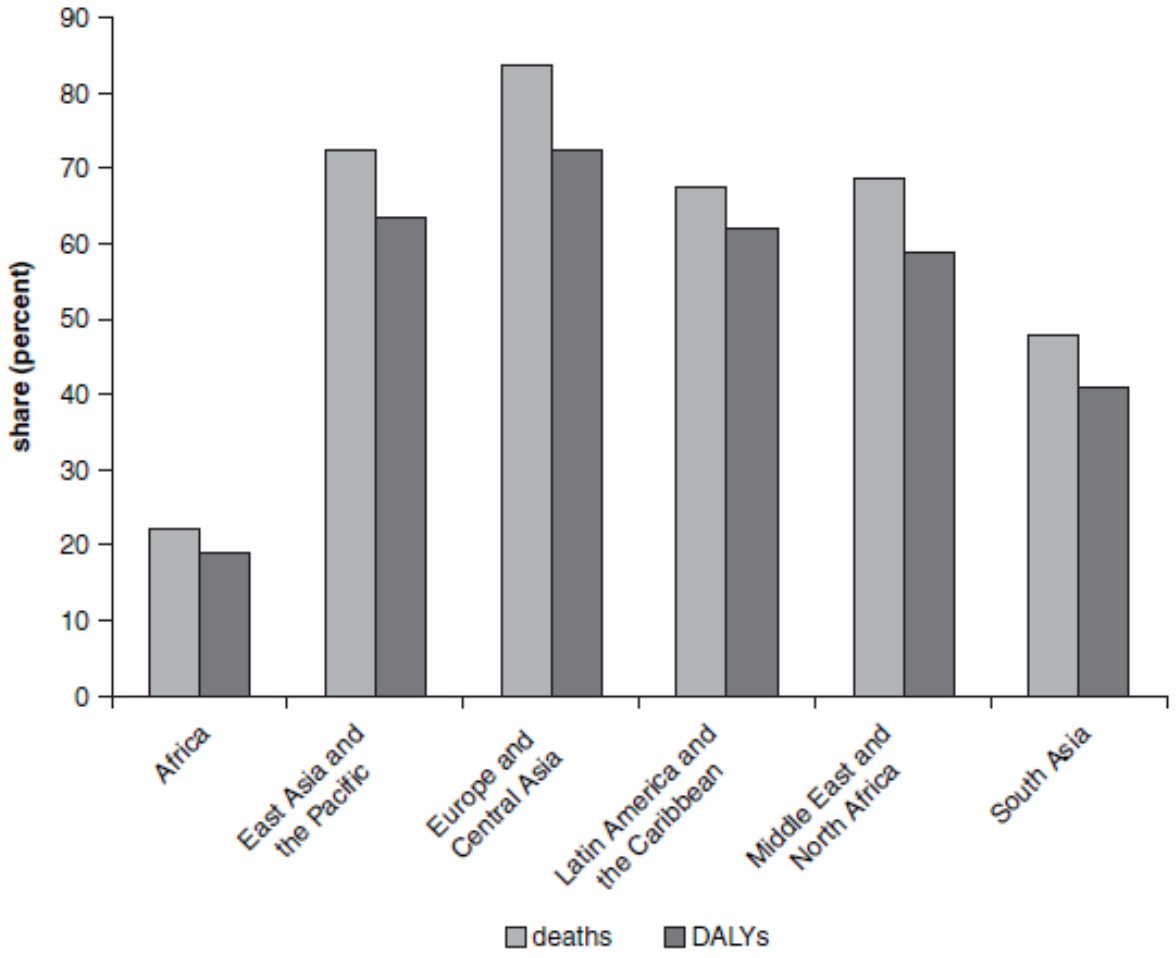
Epidemiology meets Demography

- Two trends:

  - changing causes of ill health and mortality
  - changes in age structure

- Combining these trends: explosive increase in share of NCDs in total burden of disease and mortality projected for coming decades

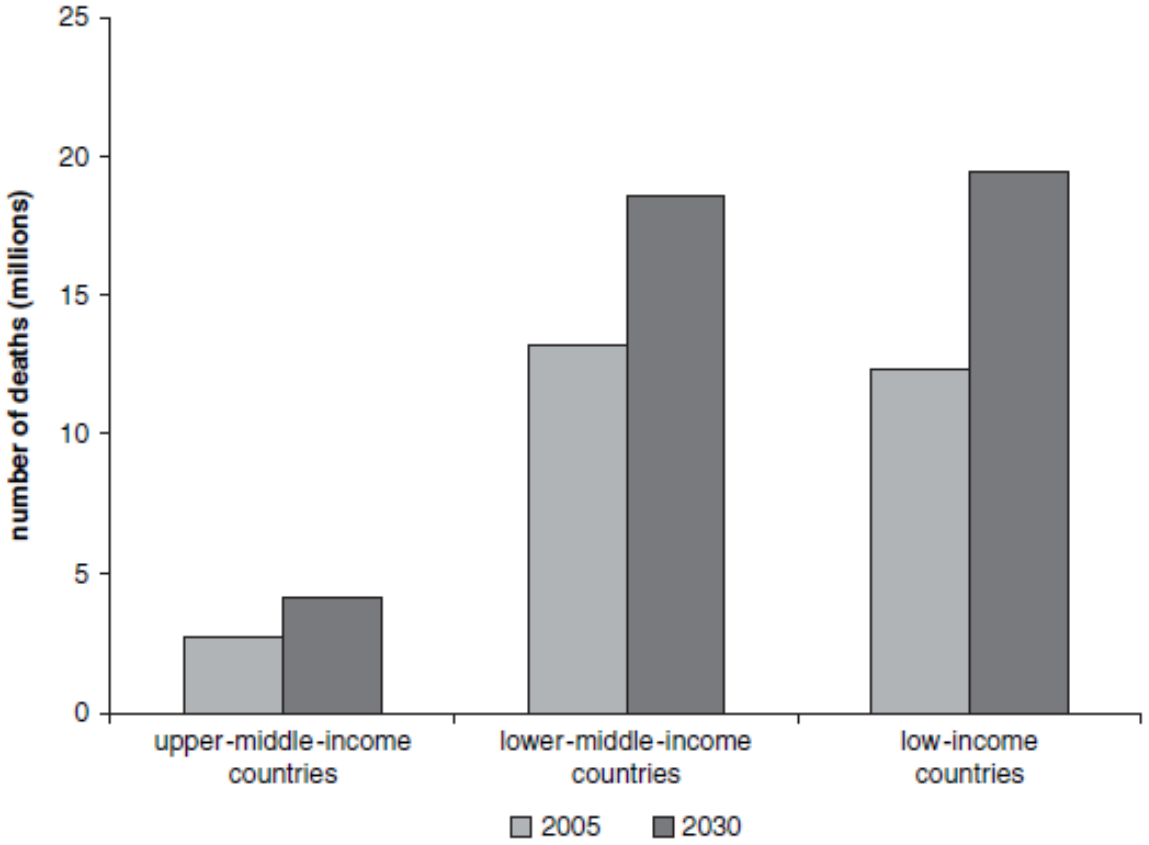
Share of mortality and disease burden attributable to NCDs, by World Bank Region



Source: WHO 2004, annex table 4.

Projected trends in NCDs:

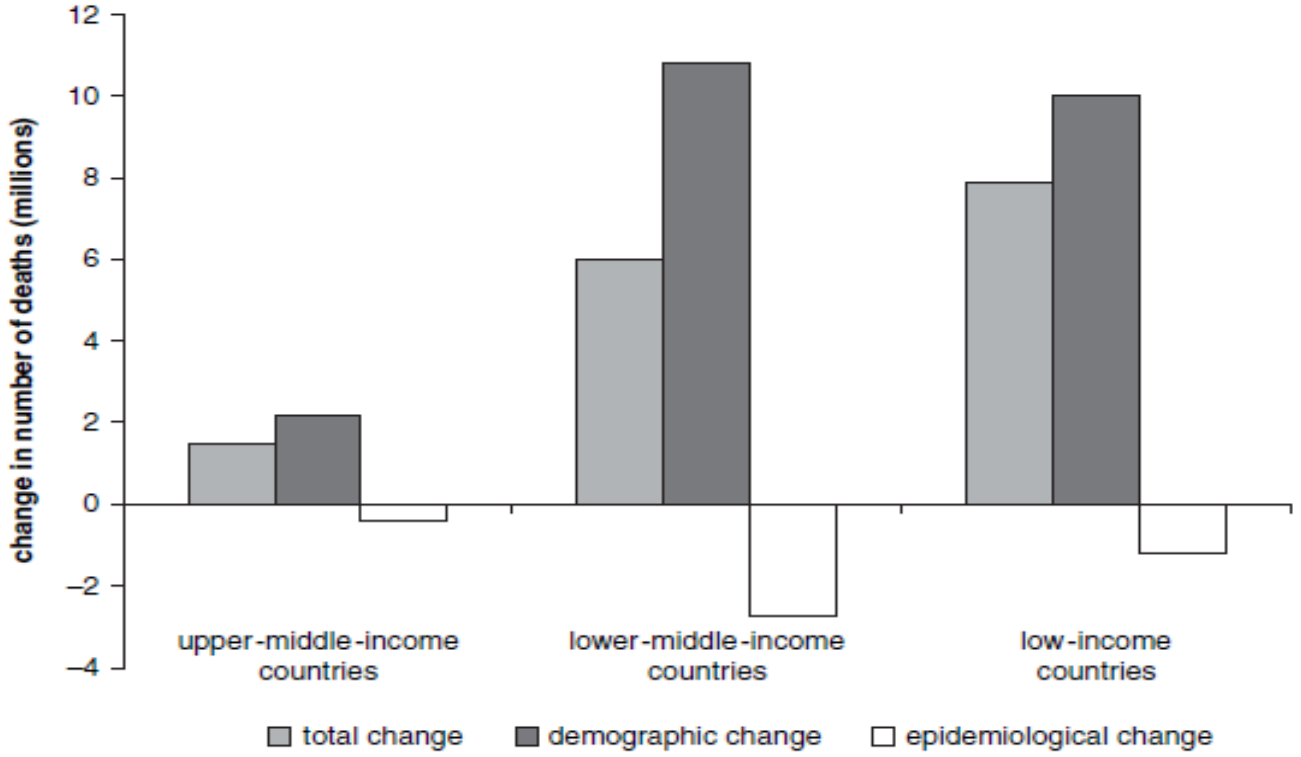
sharp increase in NCD deaths between 2005 and 2030, in context of overall improvement in health and life expectancy



Source: Lopez and others 2006.

Decomposing increase in NCDs

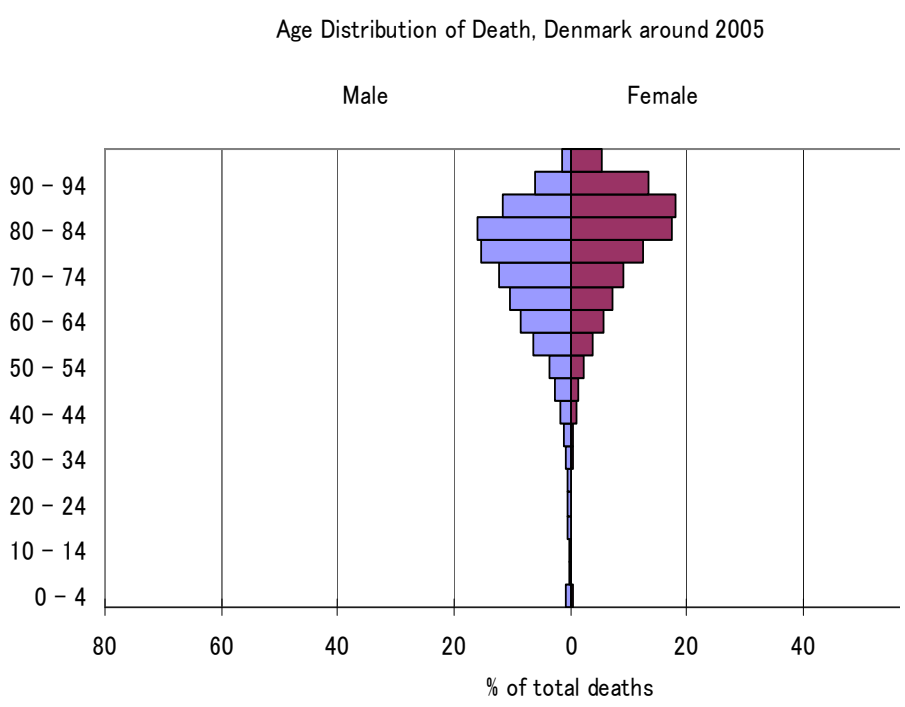
2002 to 2030

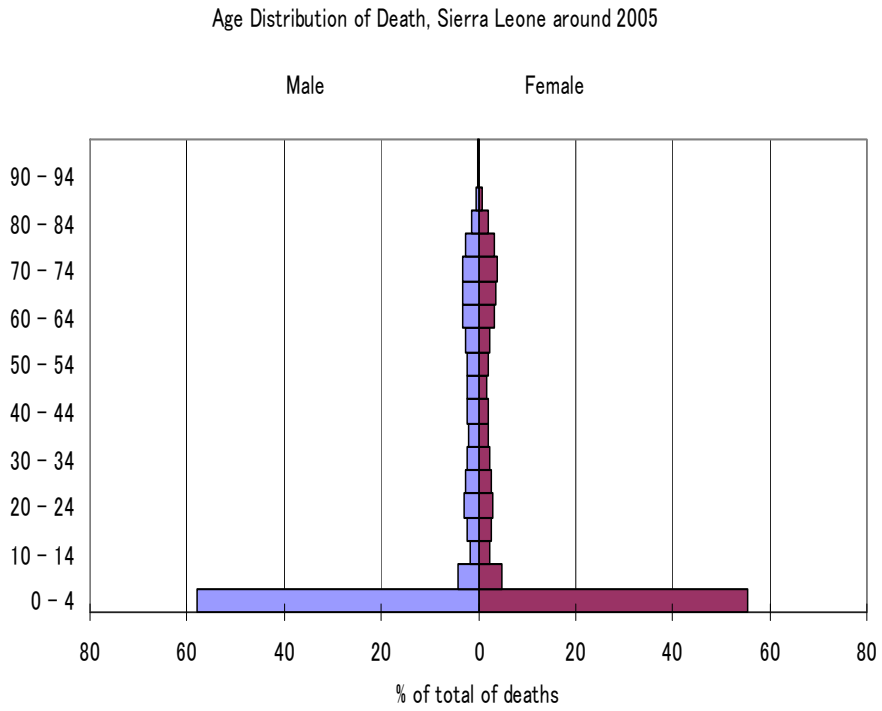


Source: Mathers and Loncar 2005.

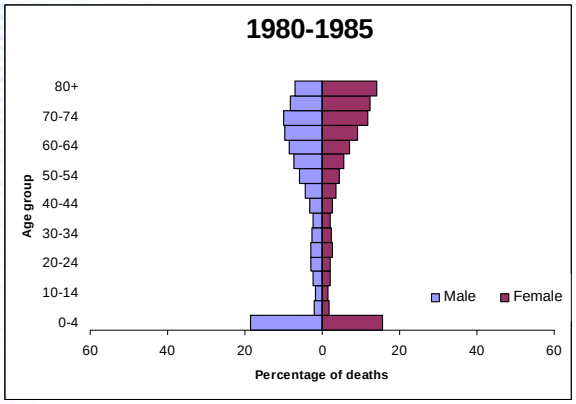
Death Structure Graphs

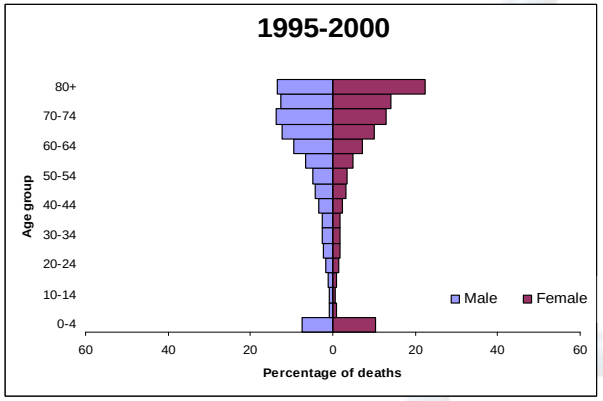
- Age at death graphs show the number of deaths occurring by age in a given year
- Death structure graphs combine levels of age-specific patterns of mortality with age structure

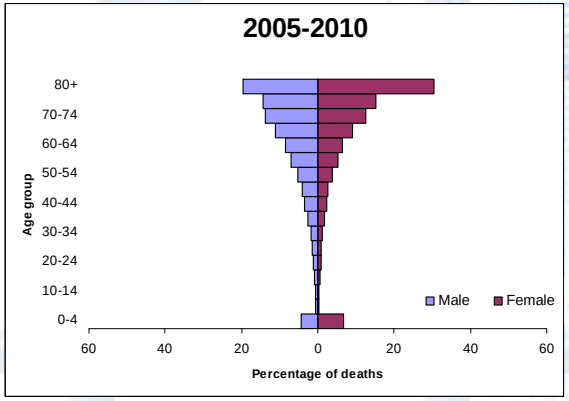


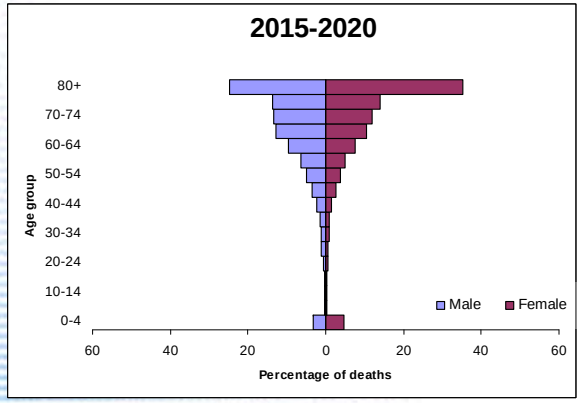


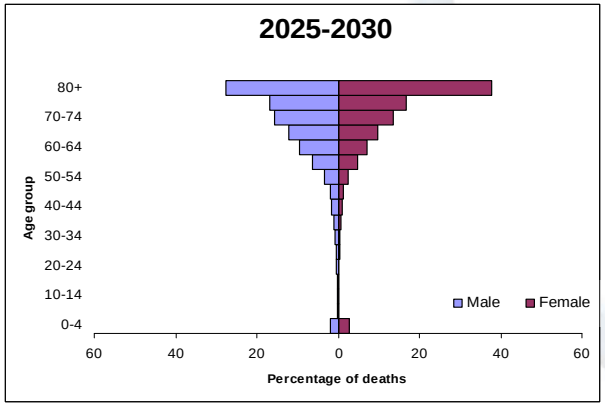
Trends in Age at Death Structure,
China, 1980-85 to 2035-40

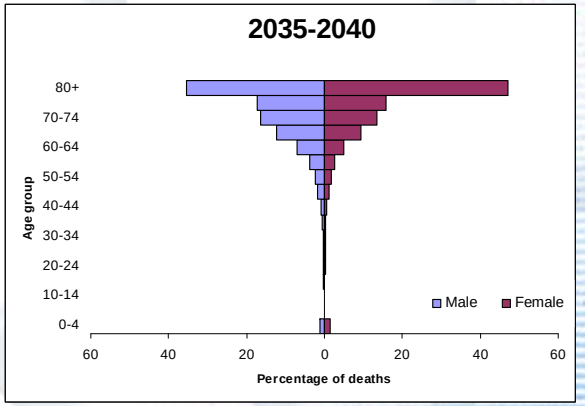










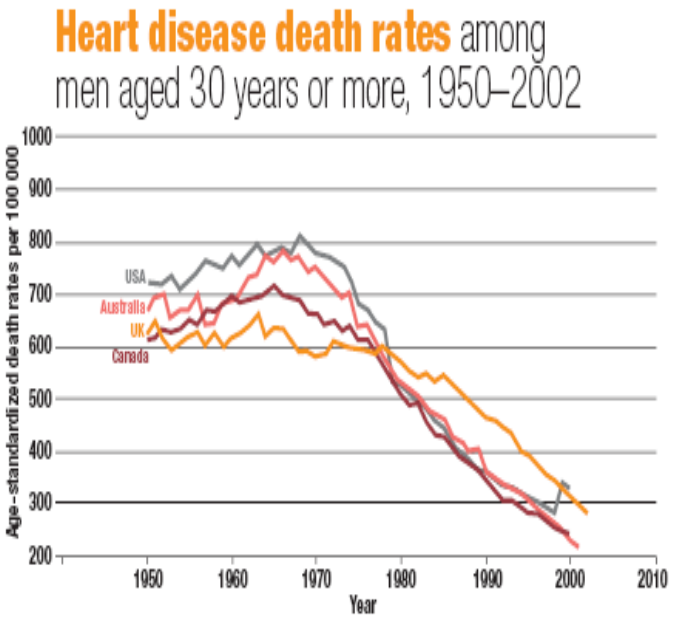


- Health outcomes and development
- Trends in causes of death
- Population trends
- Epidemiology meets demography
- Conclusion: prevent *and* prepare

Prevent and prepare

Prevent:

- NCD mortality reduction between 1-2 % per year have been typical; some countries have achieved 3 % per year in cardiovascular mortality



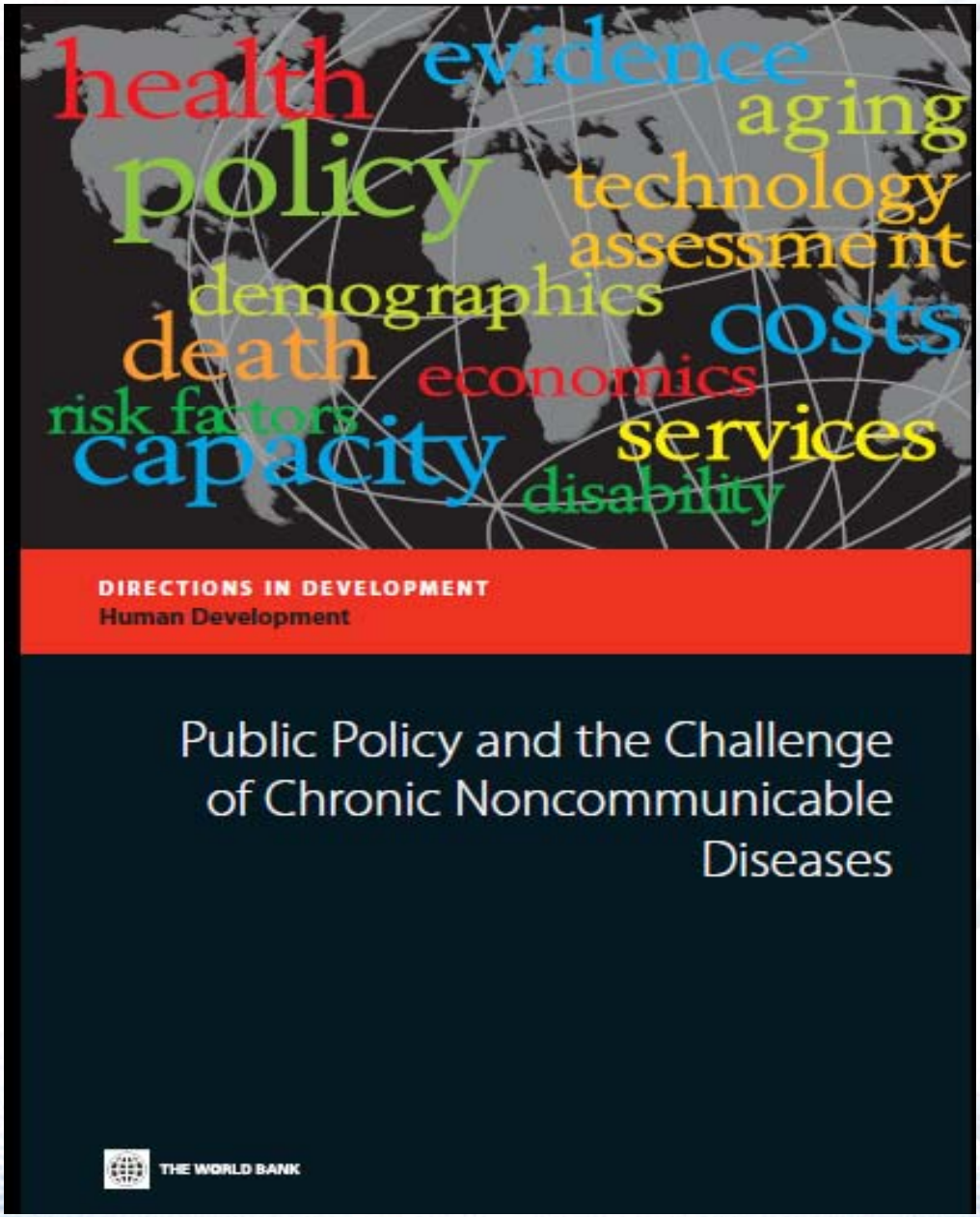
Prepare:

- Success with NCD interventions will slow down, but not reverse, the overall upward trend in NCD deaths, due to population aging
- Upward pressure on health interventions and costs, especially in low- and middle income countries

Conclusions

- Overall life expectancy and other health outcomes have been improving , reflecting economic growth, poverty reduction, and other trends in development
- NCDs are becoming a larger proportion of the burden of disease as a result of increased number of people in age groups at the greatest risk of NCDs and a faster decline in other causes of ill health and mortality
- Declining age-specific mortality rates from NCDs cannot offset the increase in the older age structure, resulting in more NCD deaths

Final thoughts

- Important to promote the inclusion of NCD prevention and control in the global health agenda
- Health system strengthening as a strategy to tackle NCDs in the health sector
- Include NCD indicators in the MDGs?

Publication