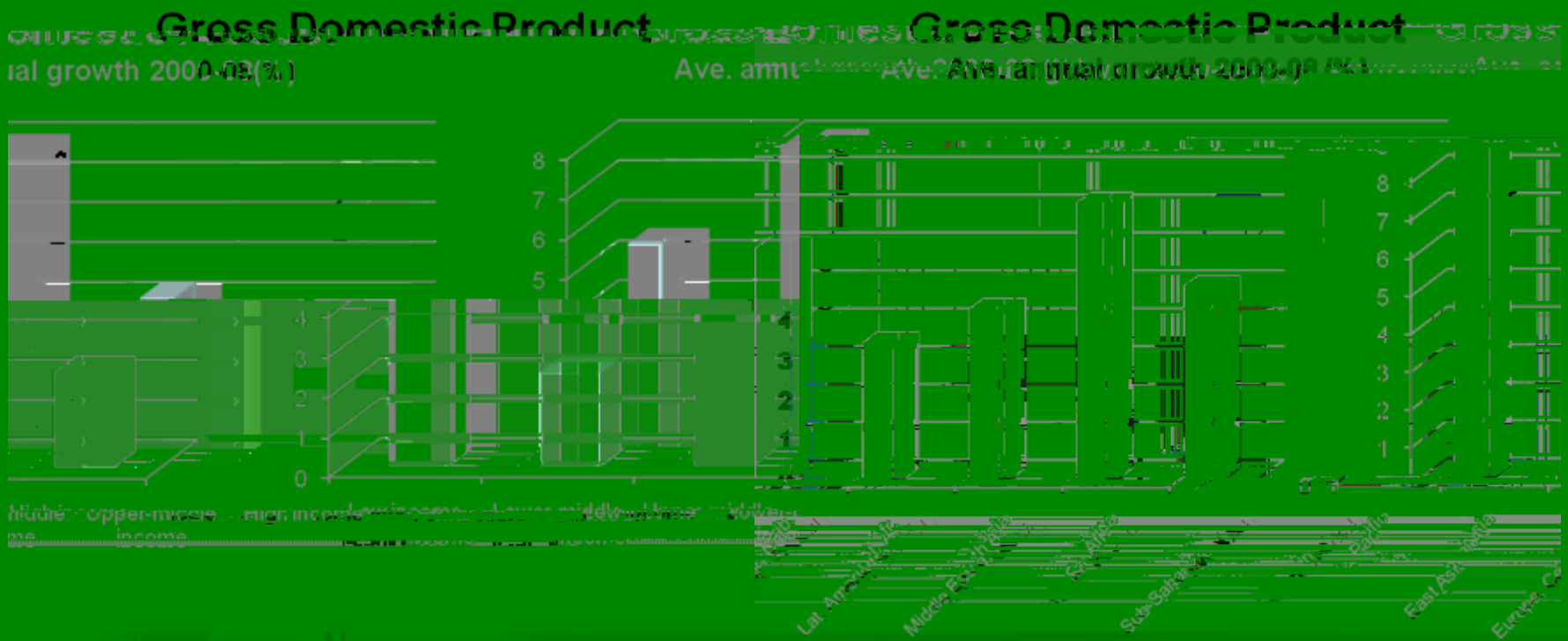
Overview of presentation

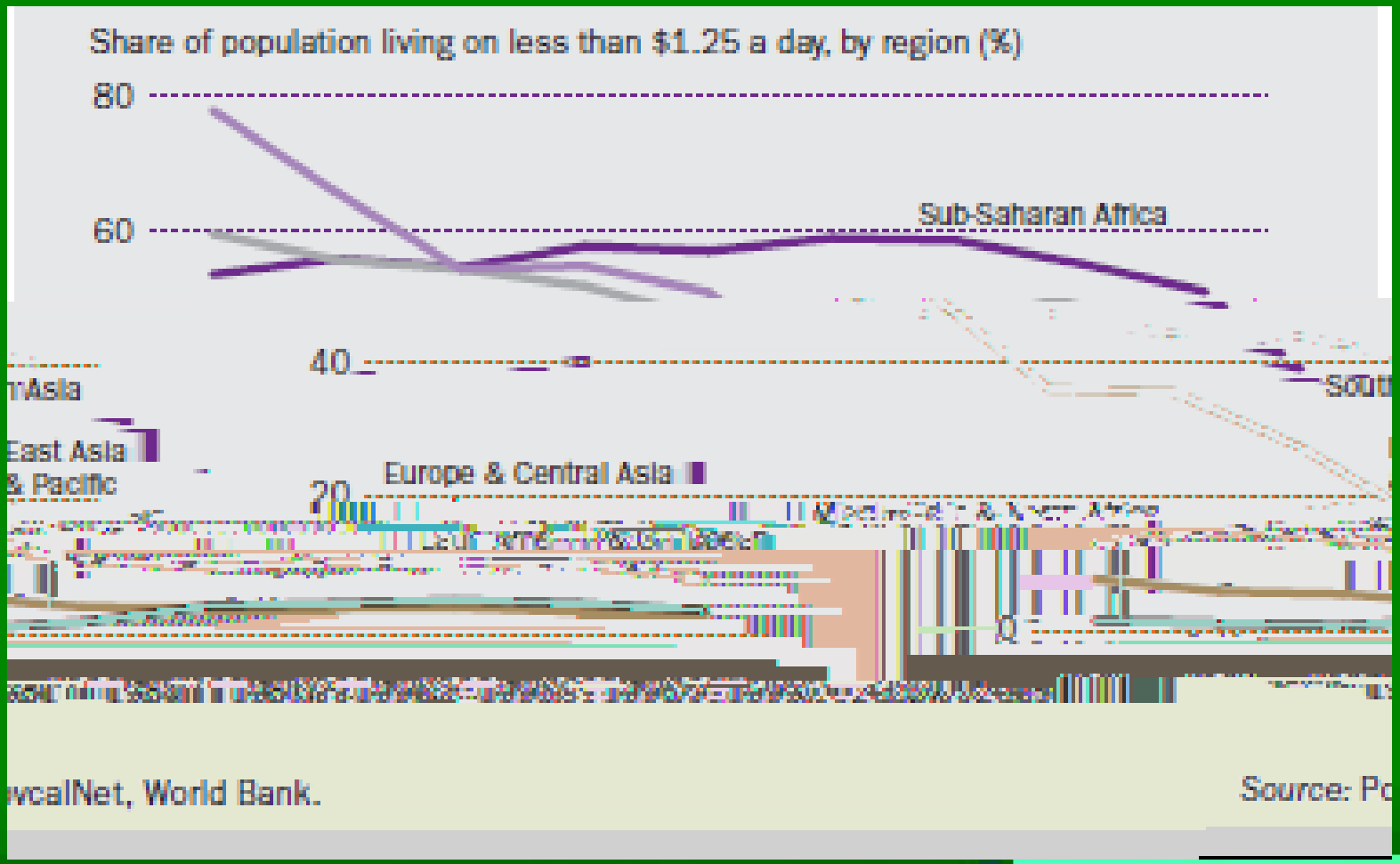
- Health outcomes and development
- Trends in causes of death
- Population trends
- Epidemiology meets demography
- Conclusion: prevent *and* prepare

Economic Development: Trends in GDP

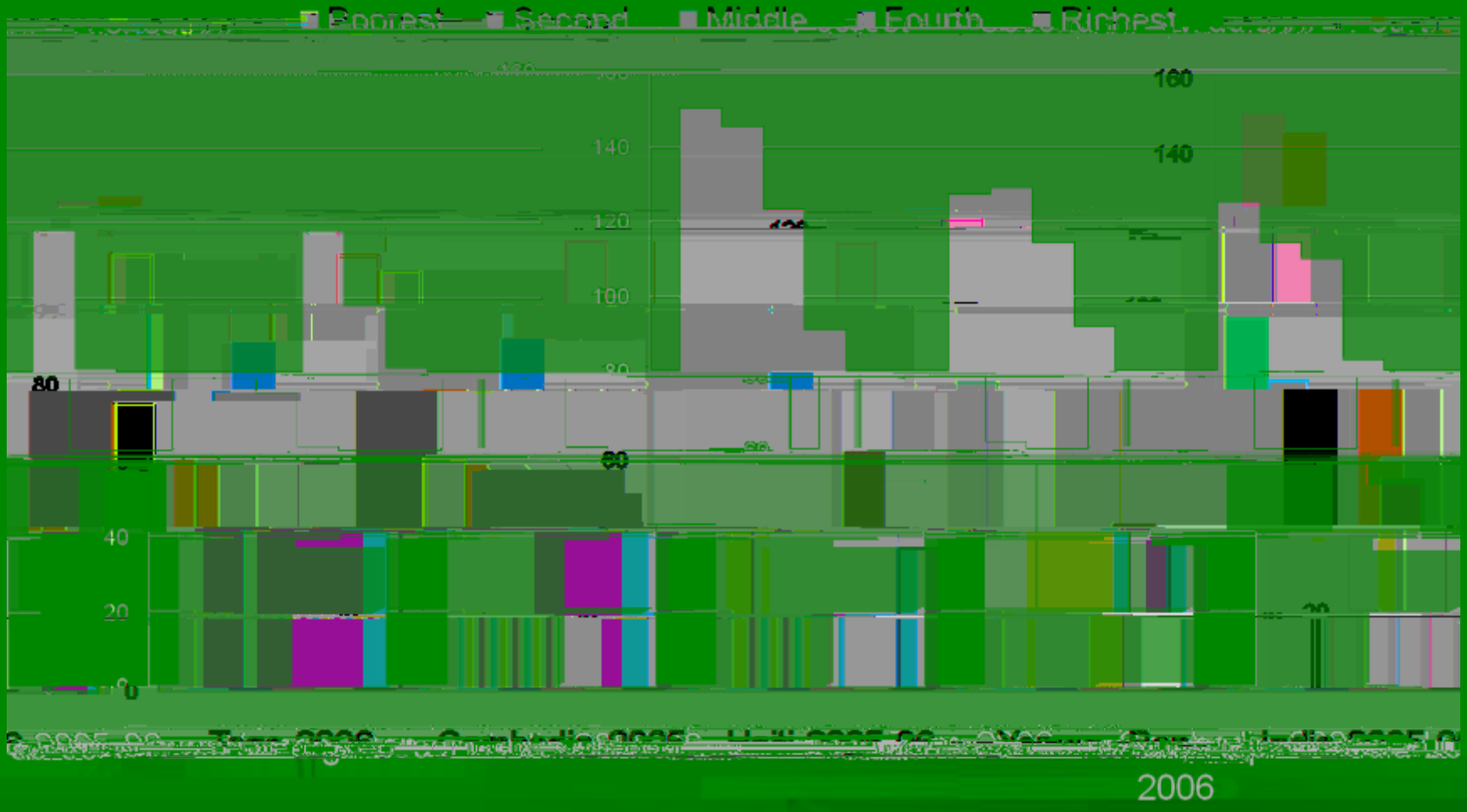


Source: World Bank, World Development Indicators 2010

Poverty rates have been declining

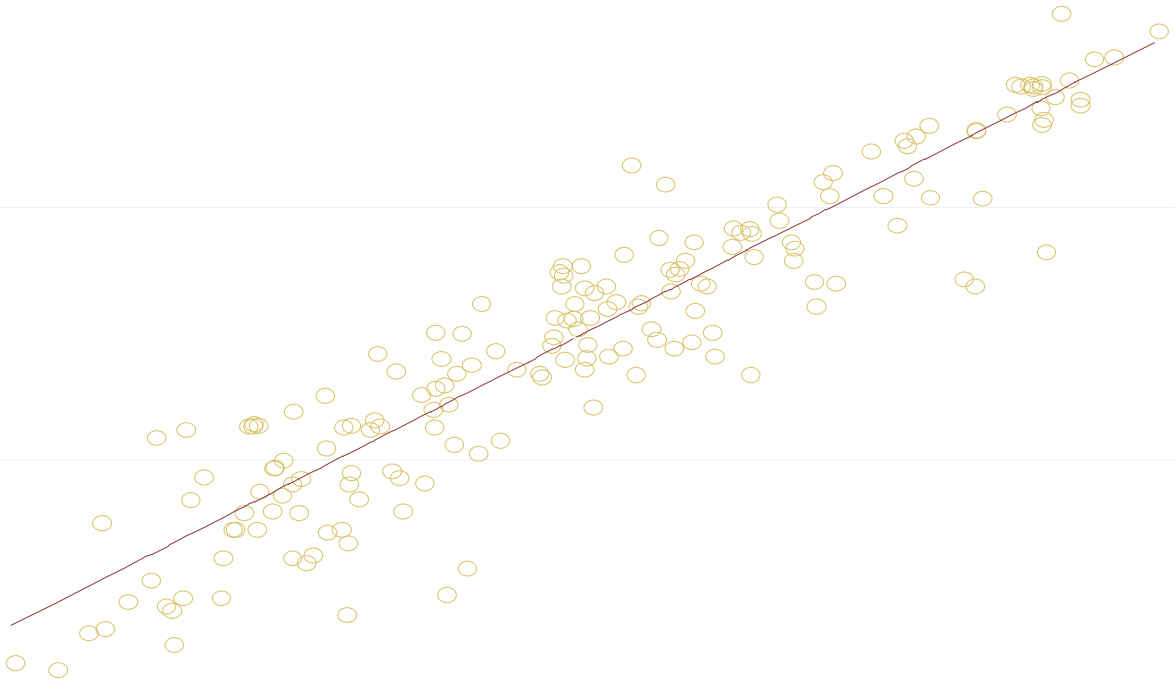


Under-5 mortality rates by wealth quintile, within countries



Source: DHS, various years

Richer countries spend more on health



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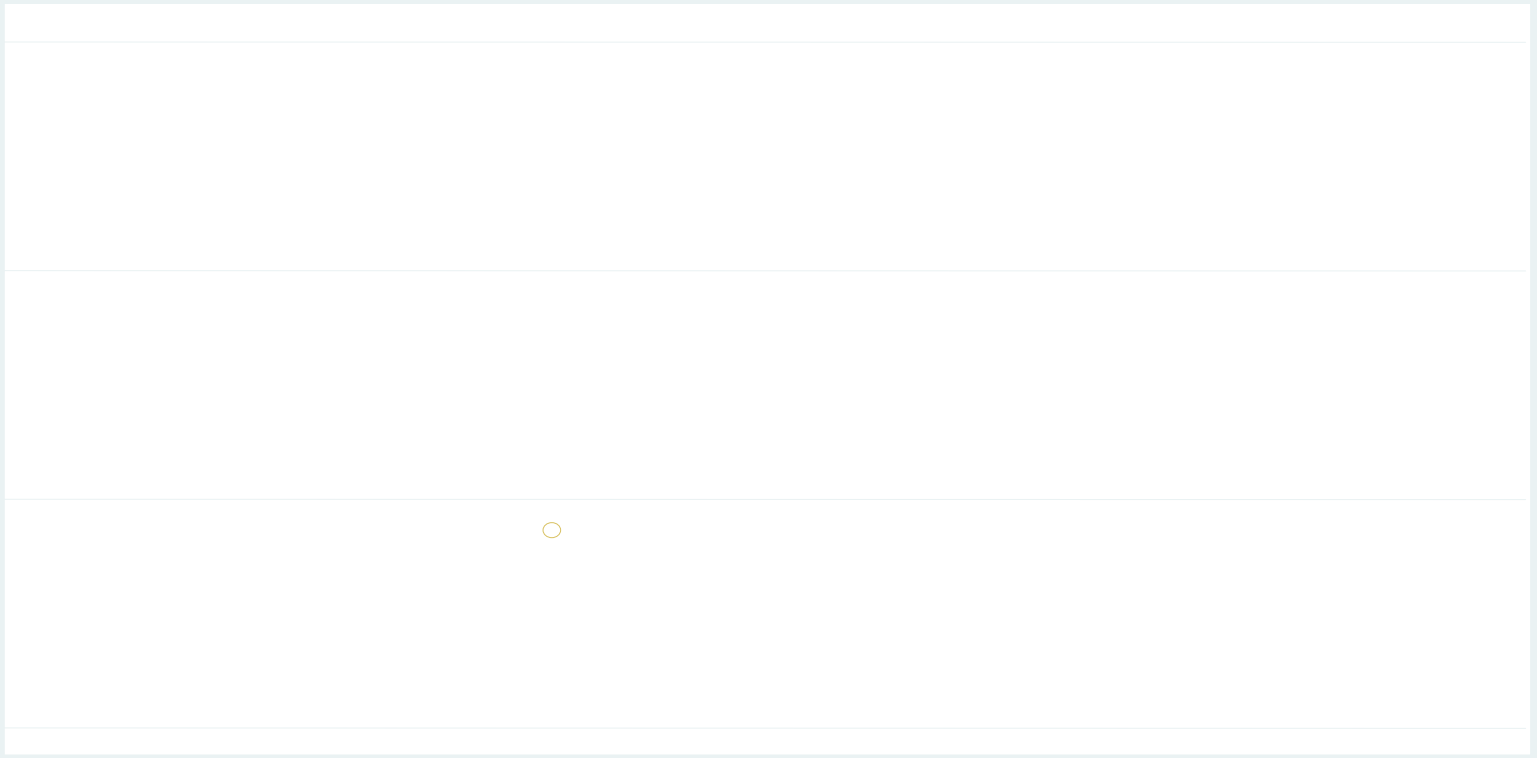
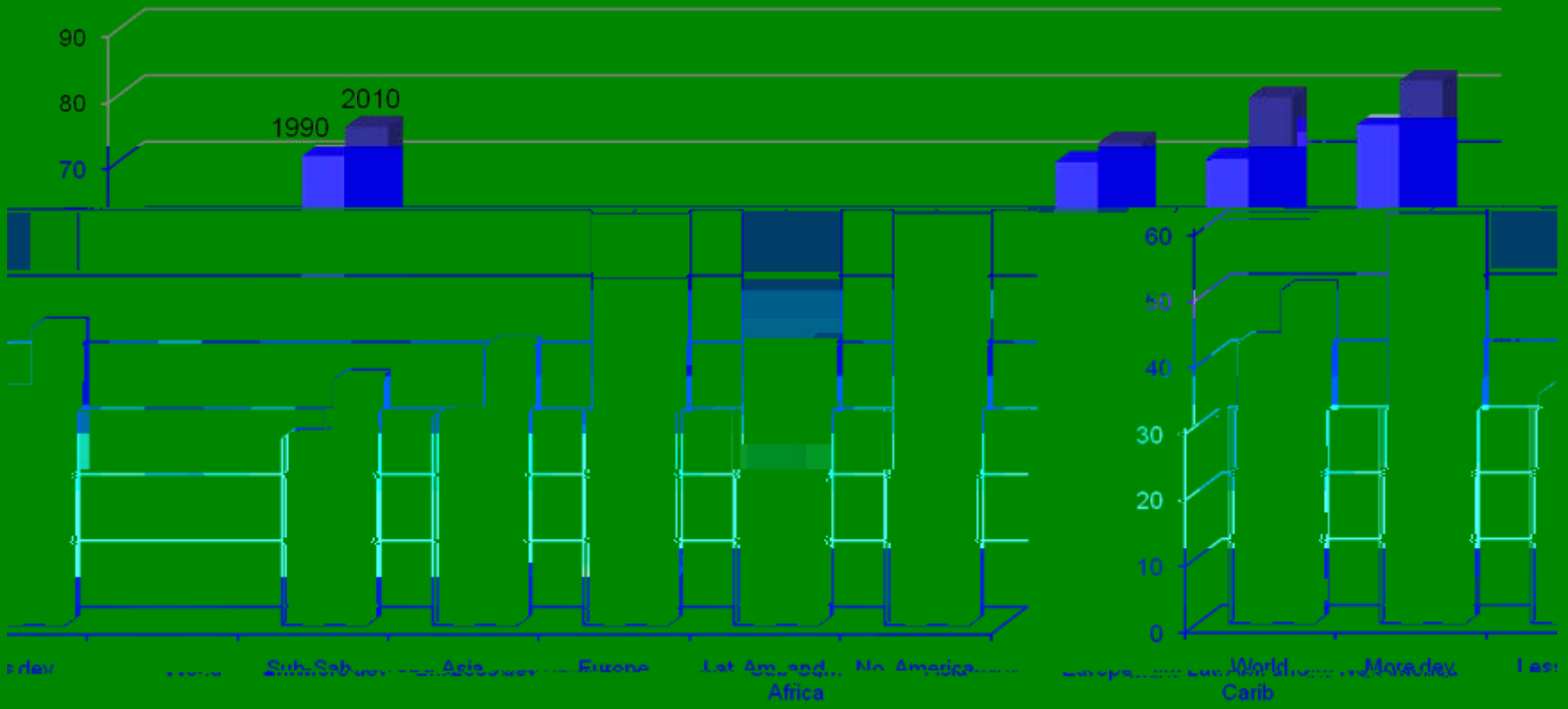


Increase in urban population, 1990-2010

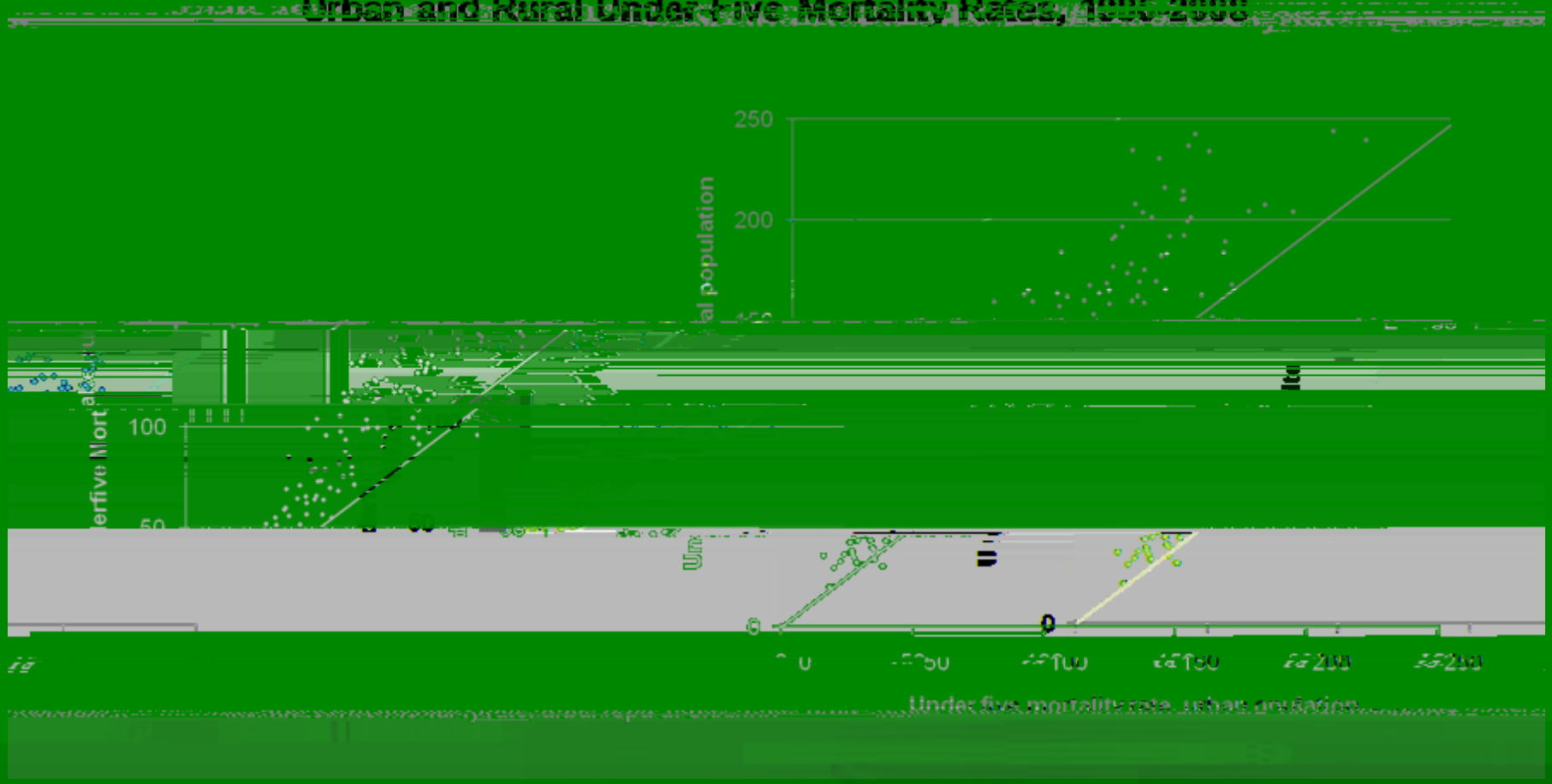
percent of population in urban areas



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

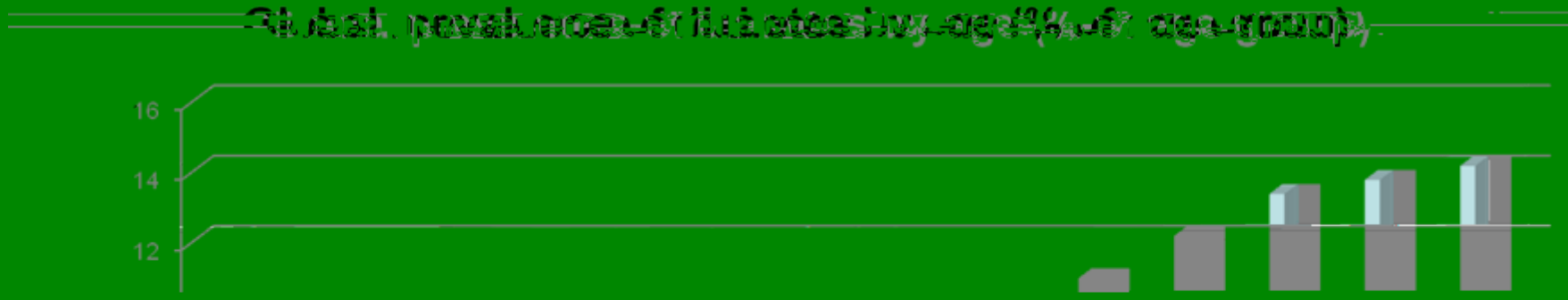
Urban child mortality always lower

(almost always)



Source: DHS

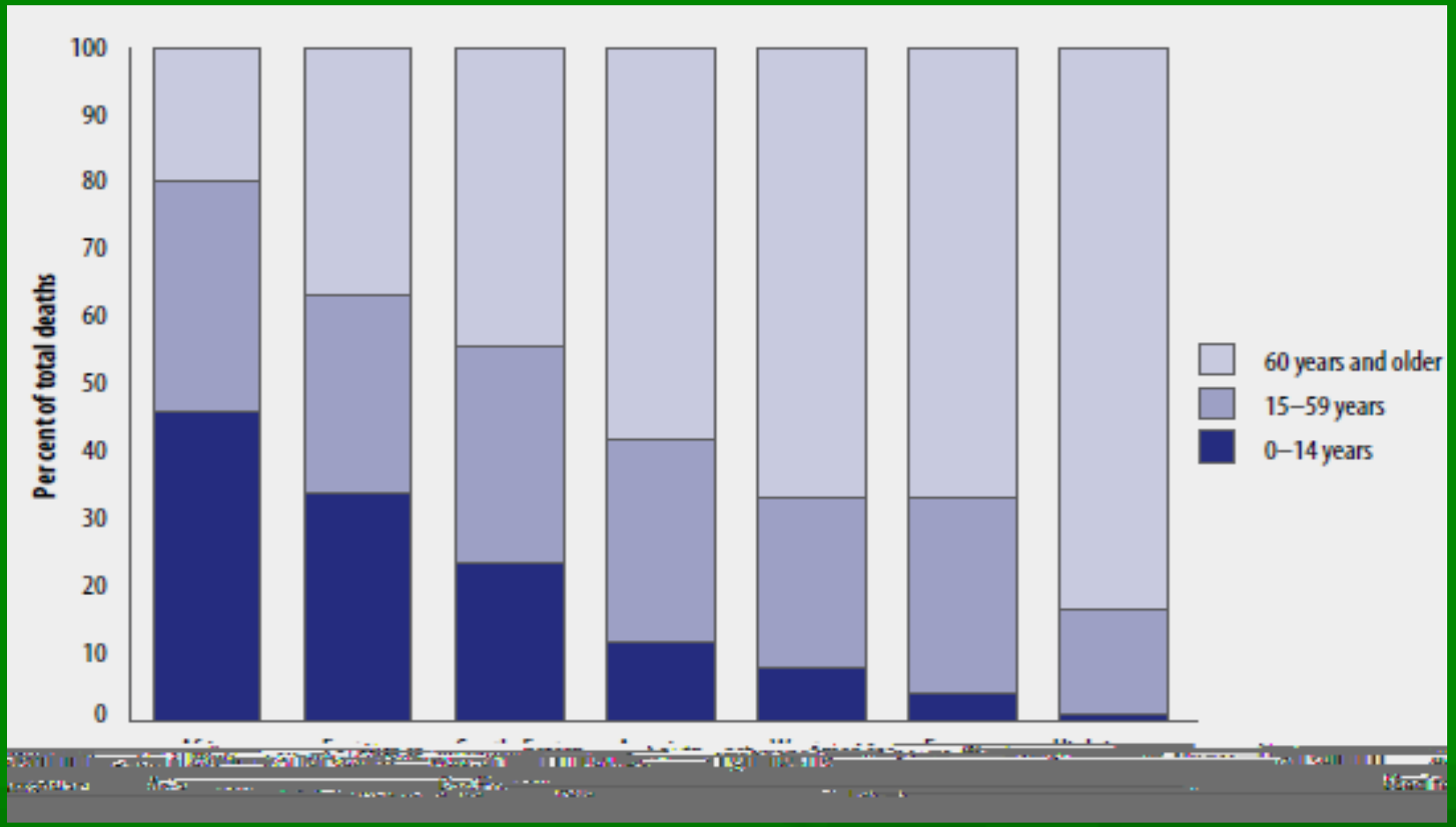
NCDs affect middle age and older population



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

Underlying socio-economic changes:	*Life styles and behavior changes:*	*Risk factors:*	*Main chronic diseases*
Economic development Urbanization Labor force changes etc	Physical inactivity Tobacco use Unhealthy diet etc	Overweight, obesity Raised blood pressure Raised blood glucose Abnormal blood lipids etc	Heart disease Stroke Cancers Diabetes etc

Health outcomes and development

Trends in causes of death

Population trends

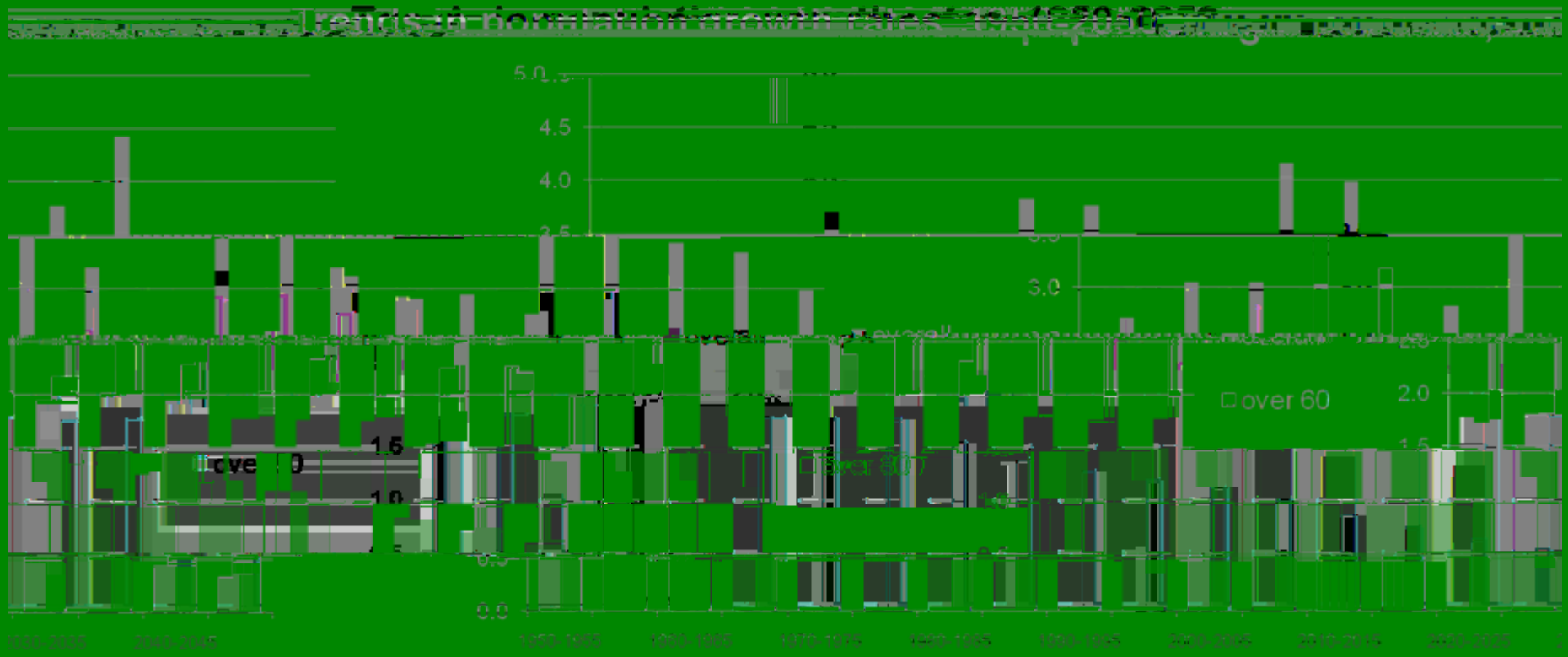
Epidemiological transition

Epidemiological measurement

Epidemiological research methods

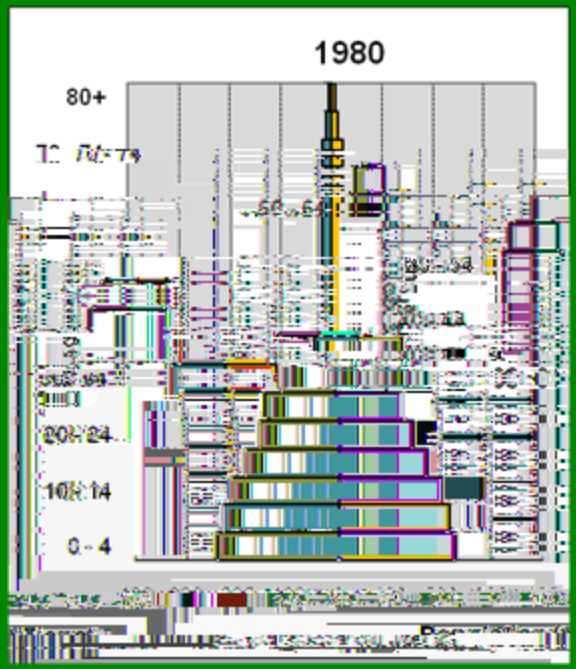
Quantitative methods

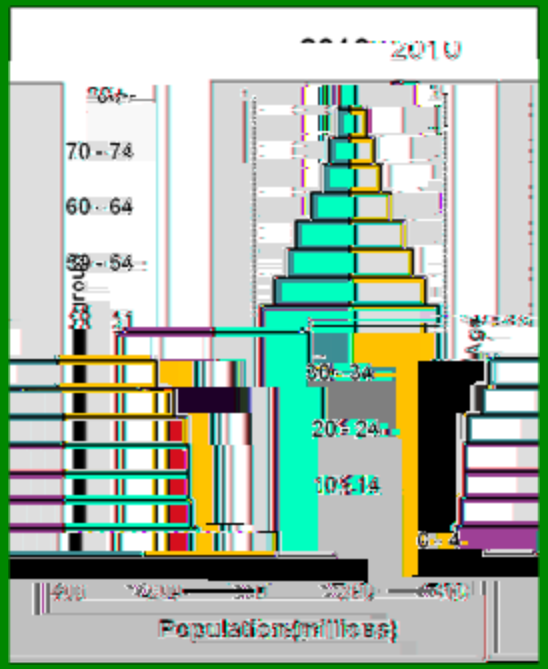
World Population trends

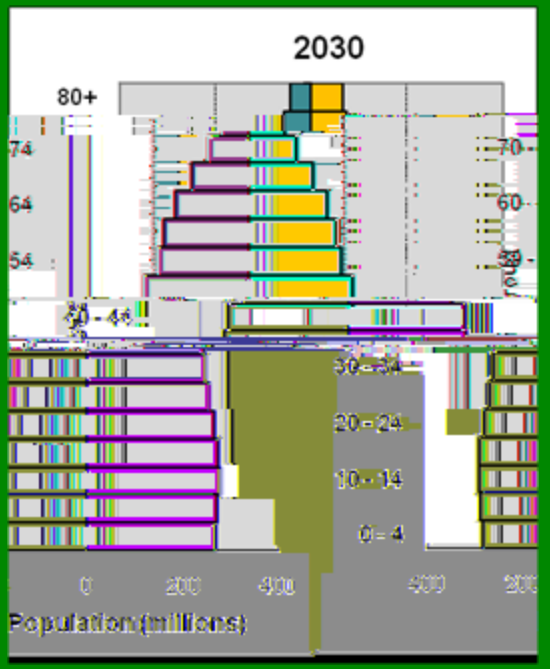


Source: UN Population Division, 2009

Age structure of developing regions

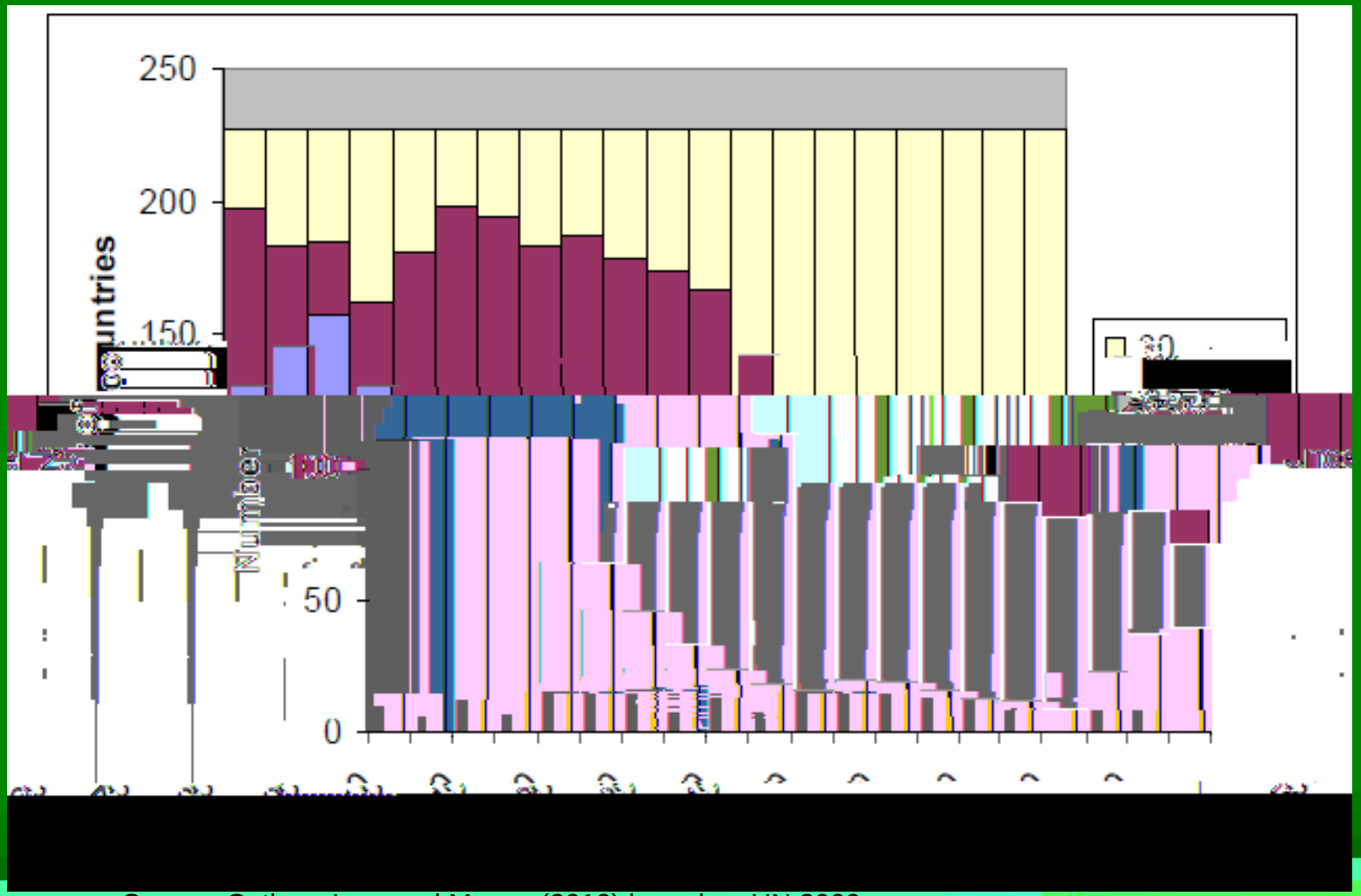






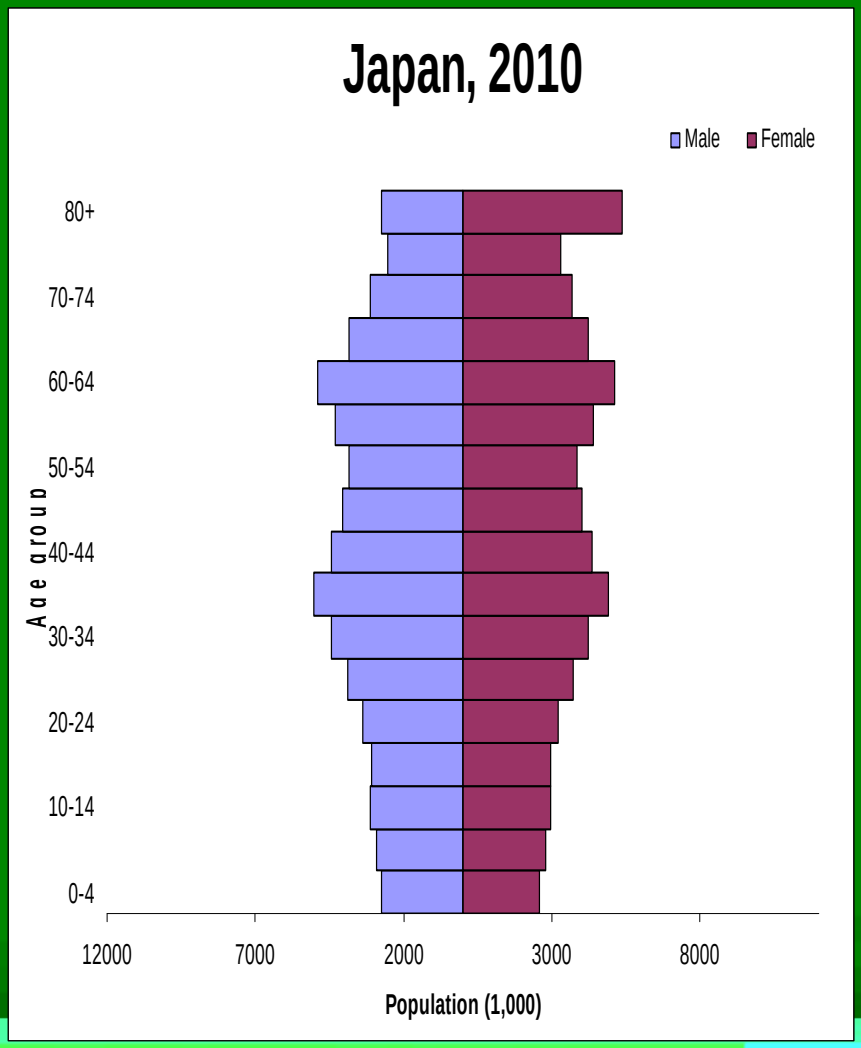
Source: United Nations, 2008

Countries grouped by fastest growing age group, 1950-2050



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

Age Structures: Japan, 2010 and China, 2050



meets demography

- Epidemiology

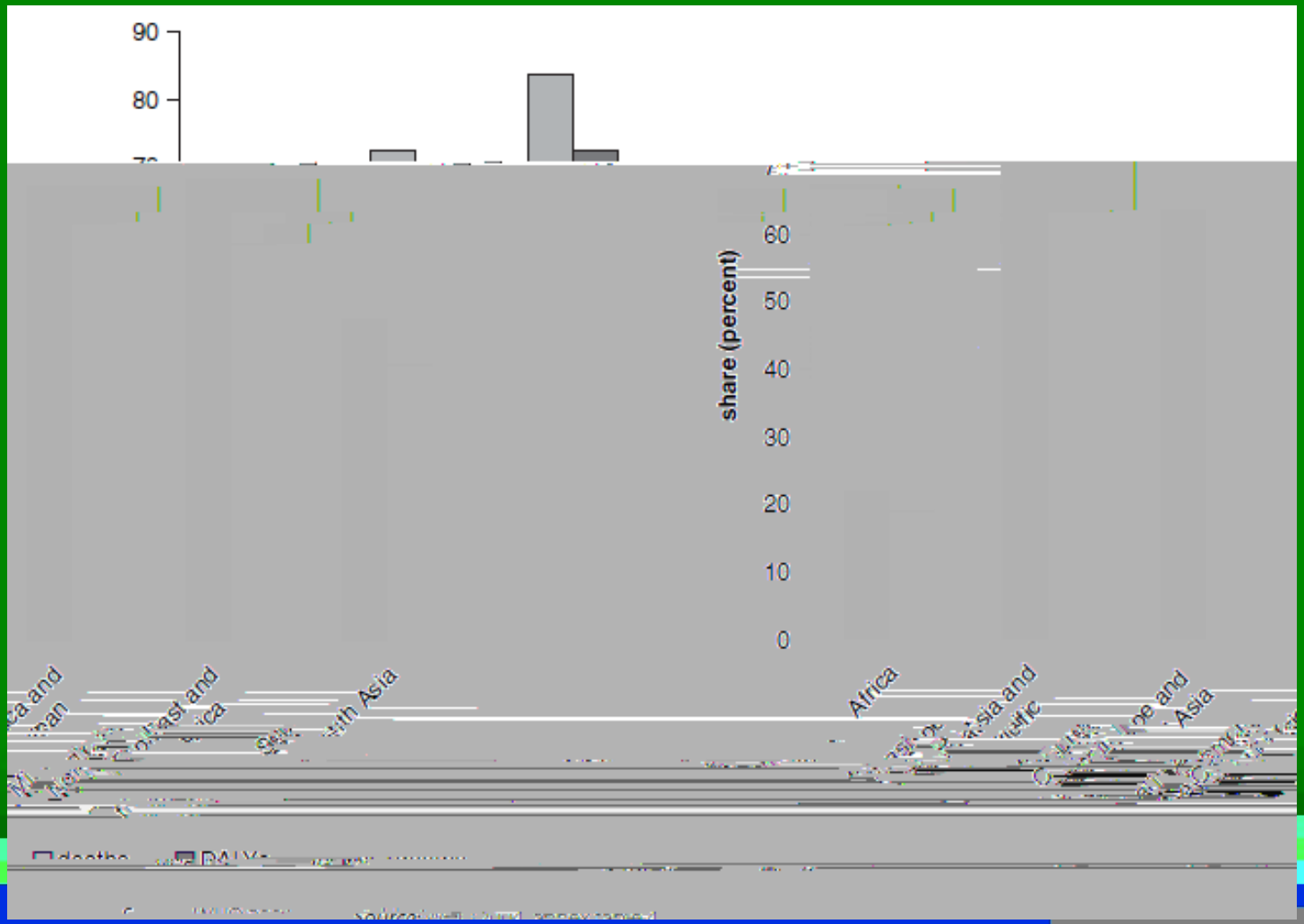
Epidemiology meets Demography

Two trends:

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

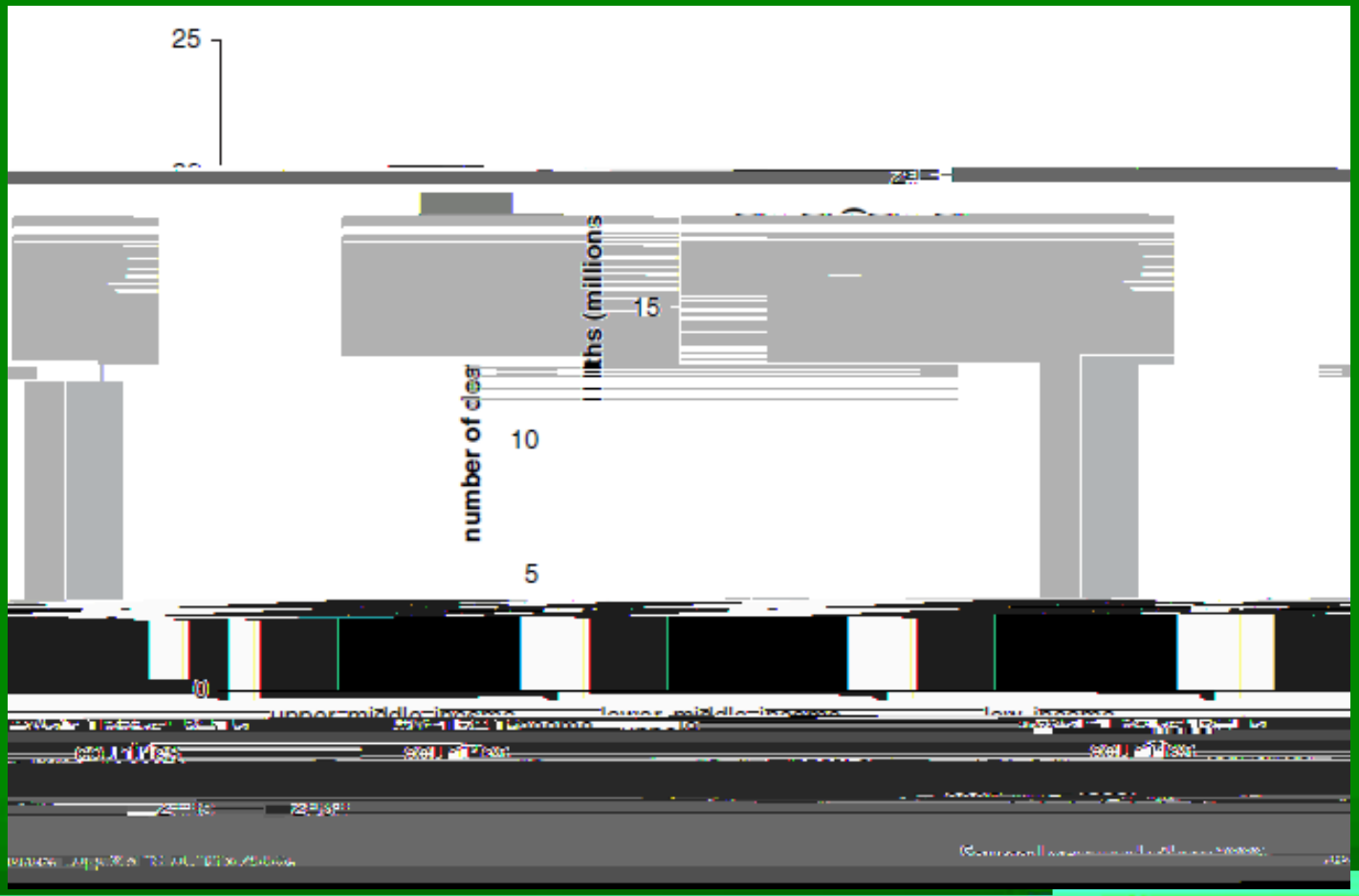
Combining these trends: explosive increase in share of NCDs in total burden of disease and mortality projected for coming decades

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



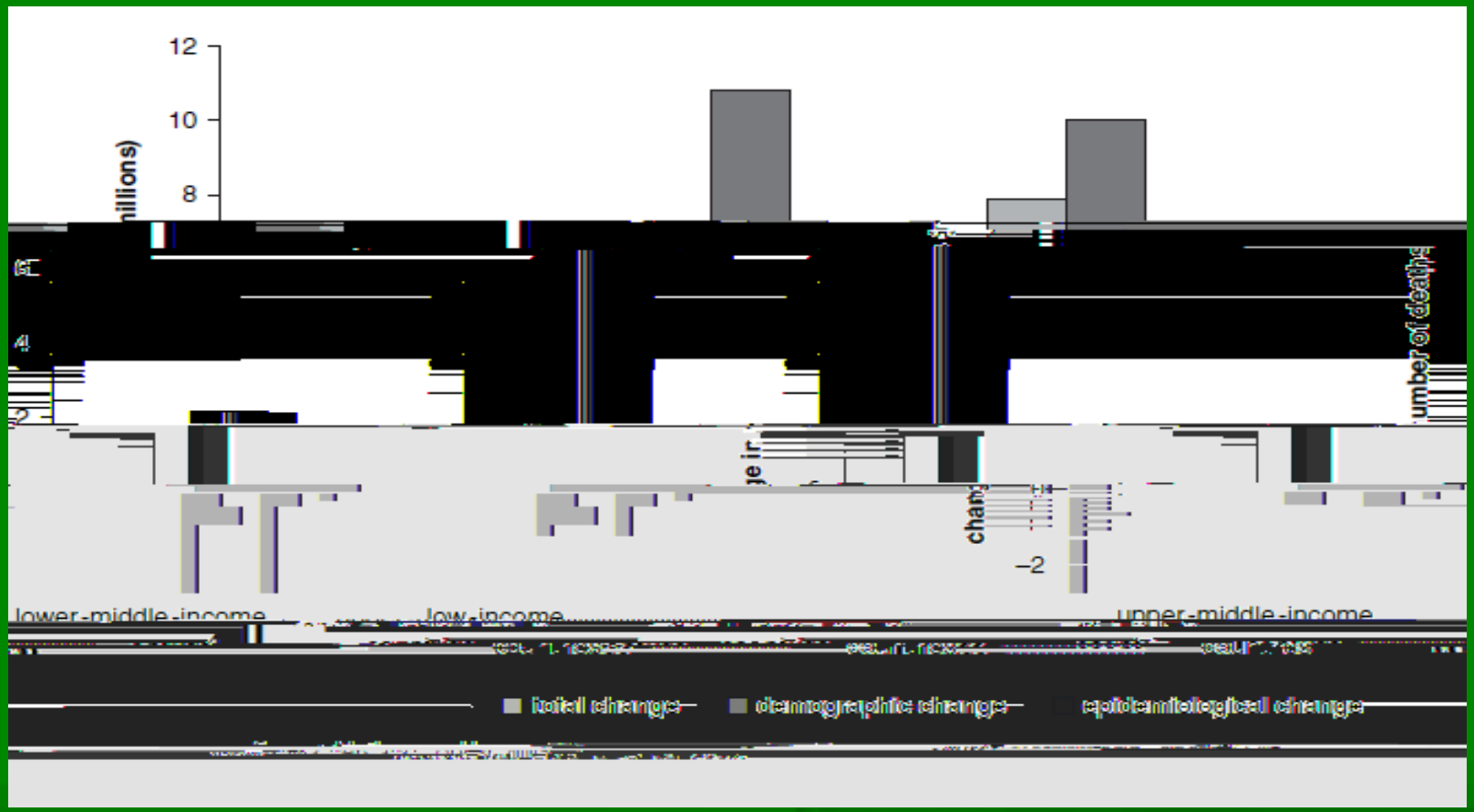
Projected trends in NCDs:

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



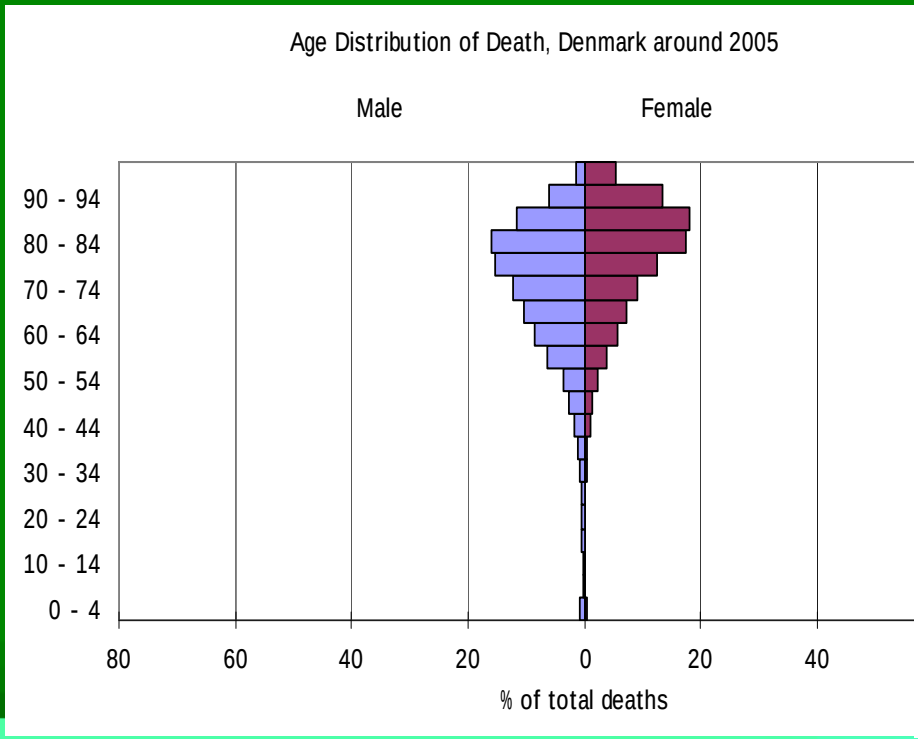
Decomposing increase in NCDs

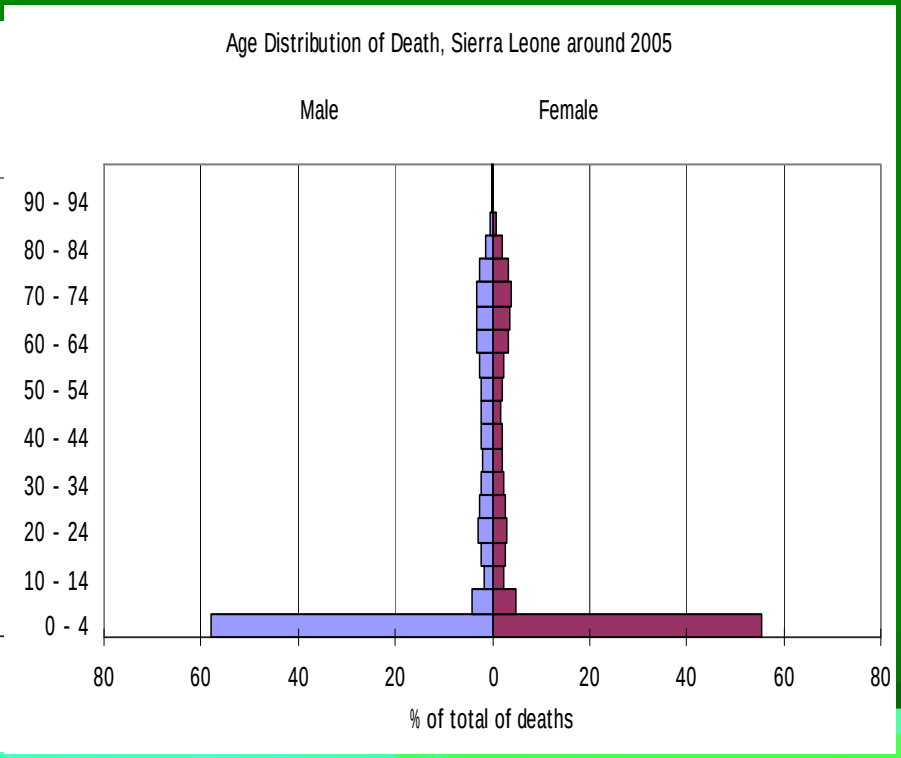
2002 to 2030



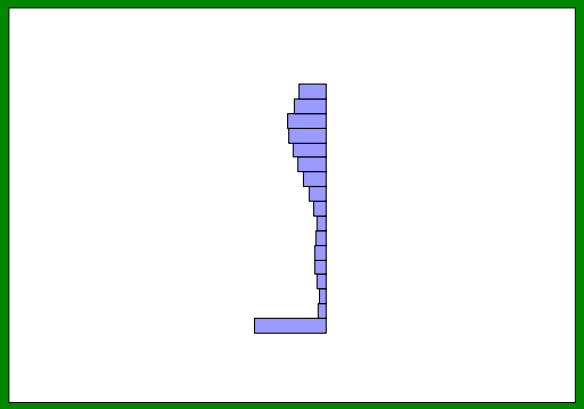
Death Structure Graphs

- 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



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
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Publication