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WIRTSCHAFTS
UNIVERSITÄT
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ECONOMICS
AND BUSINESS

science for global insight

Human Resources for Sustainable Development: Population, Education and Health

Wolfgang Lutz

IIASA Conference, 24 October 2012



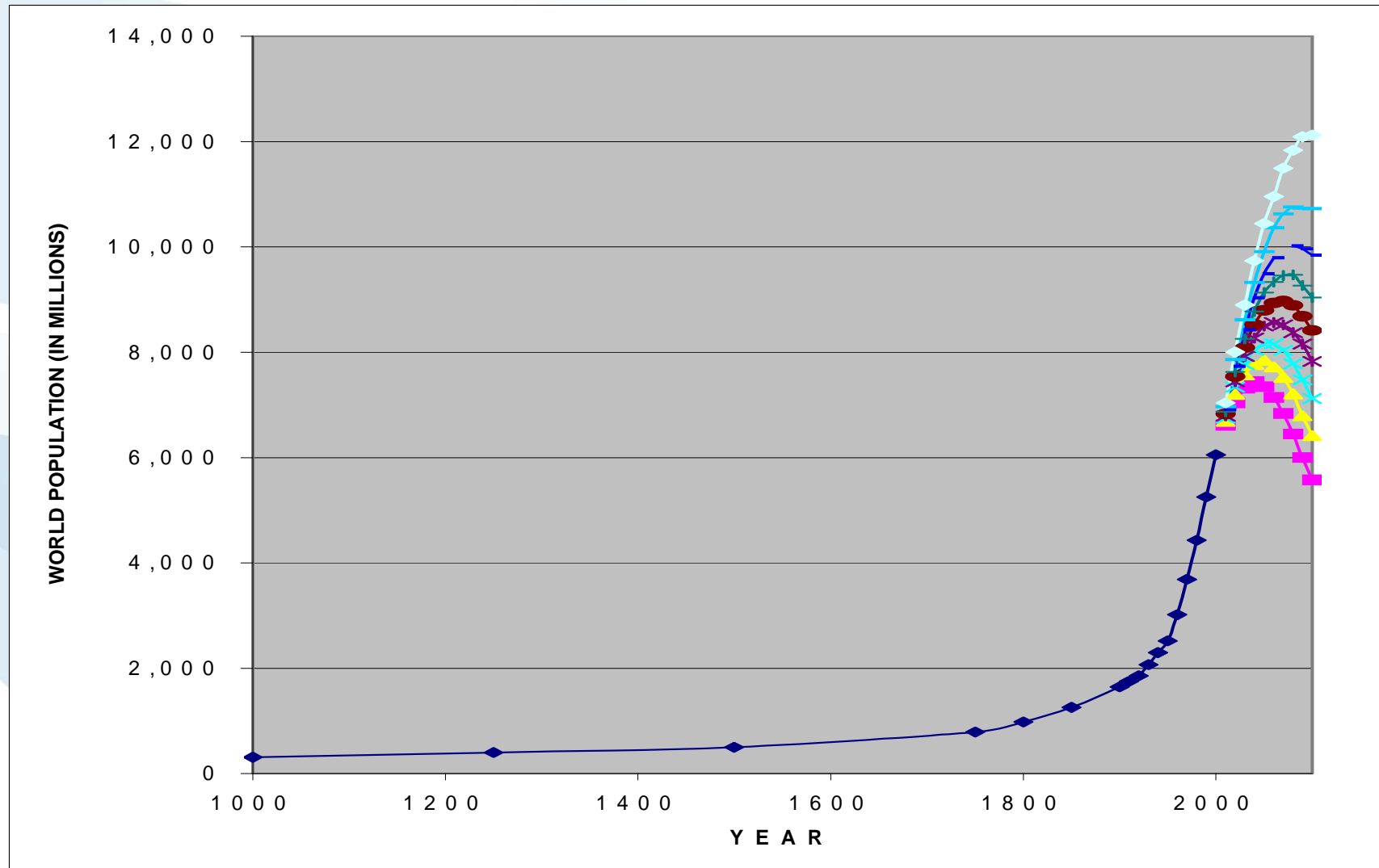
Wittgenstein Centre

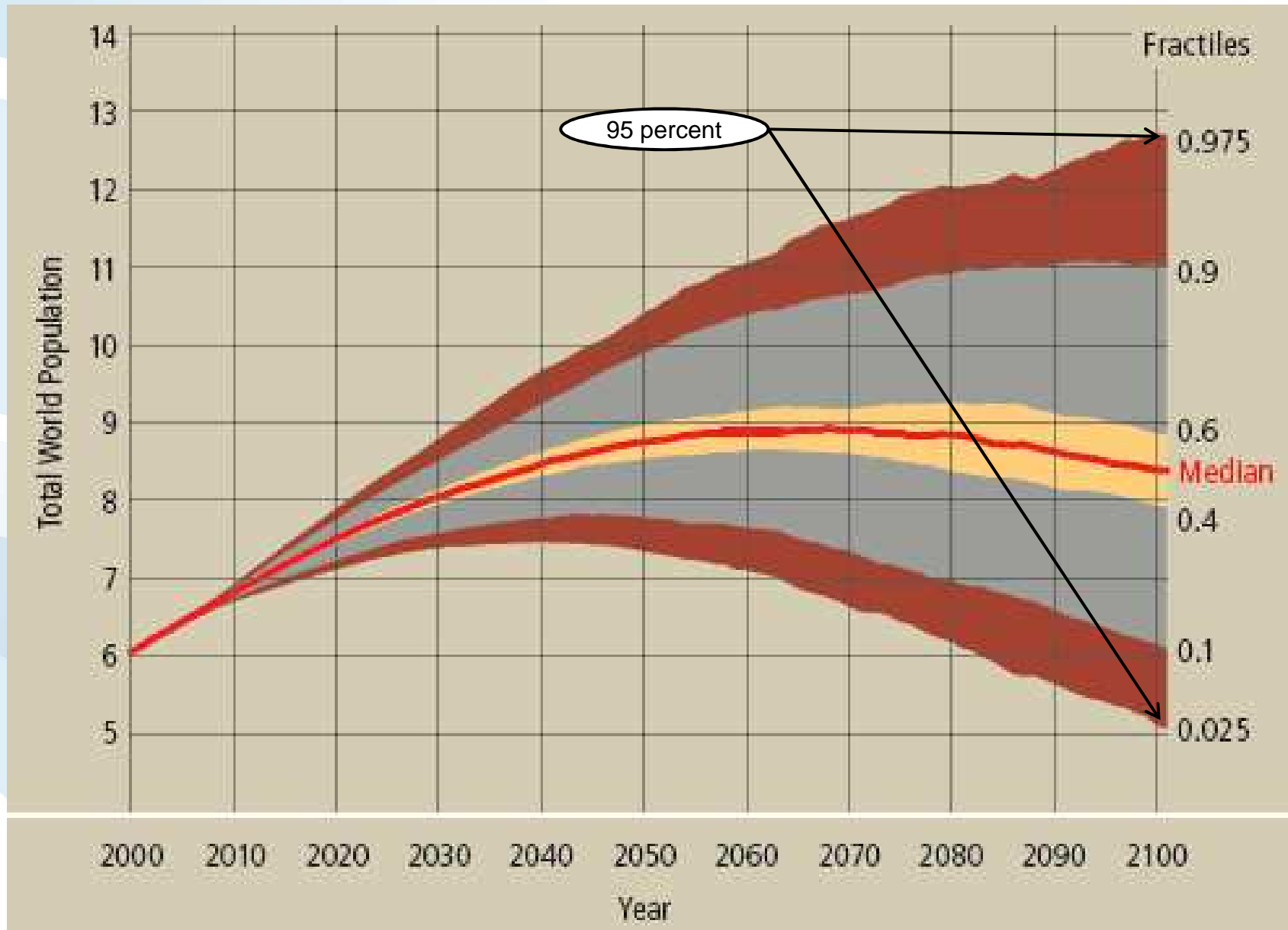
FOR DEMOGRAPHY AND
GLOBAL HUMAN CAPITAL



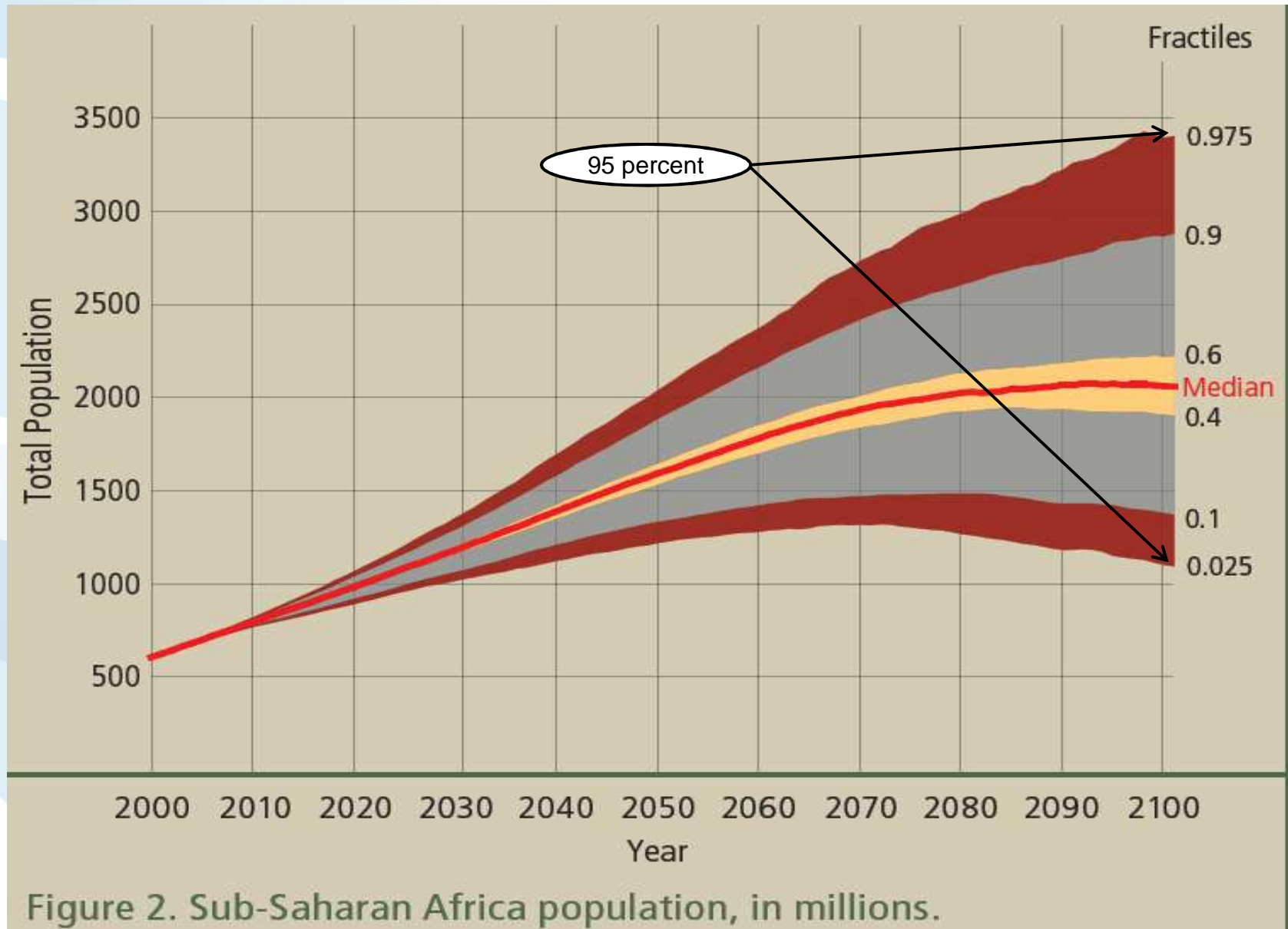
IIASA, International Institute for Applied Systems Analysis

World Population from the year 1000 to 2100





Source: Lutz et al. (Nature 451:716-719, 2008)



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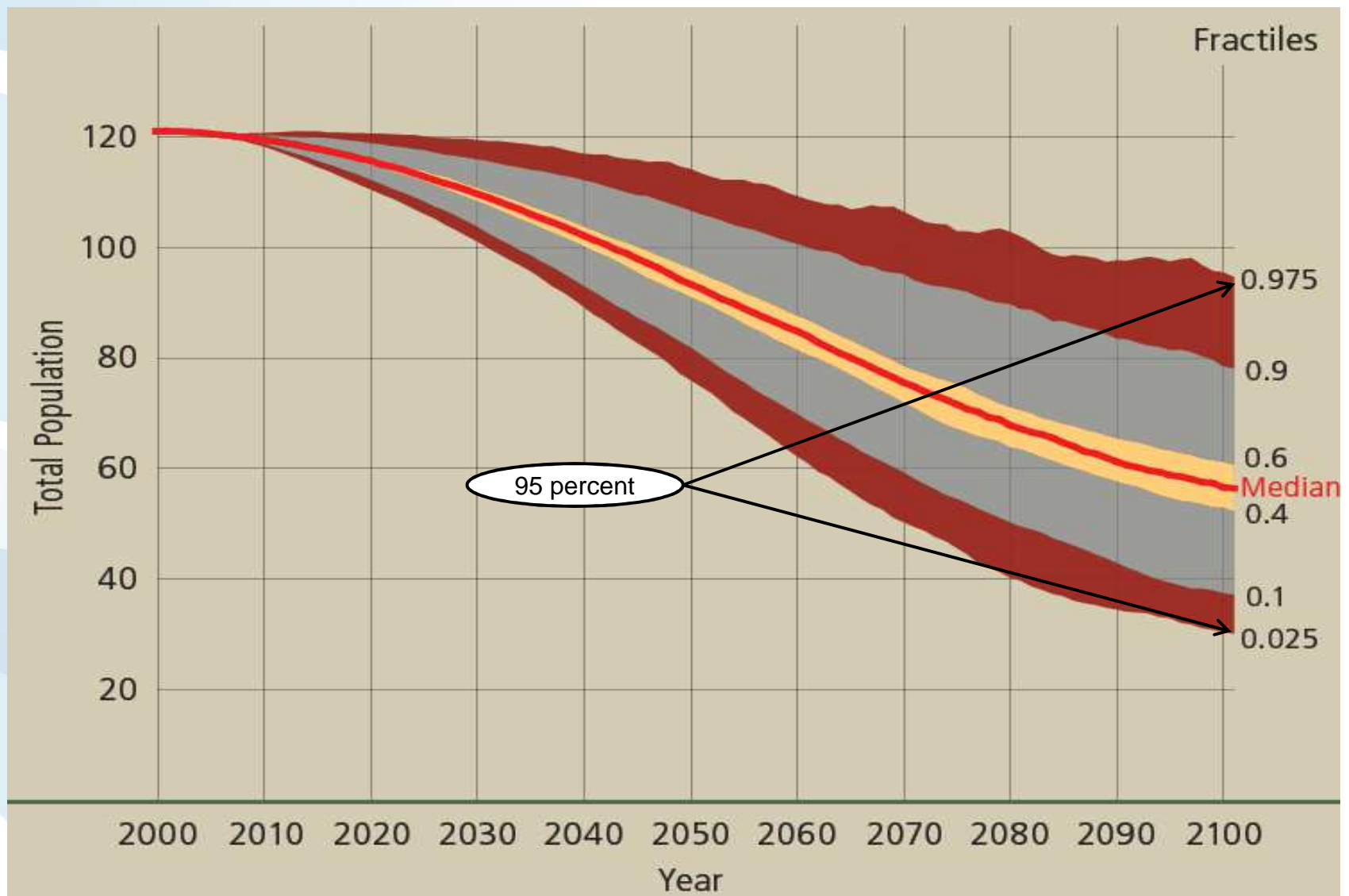
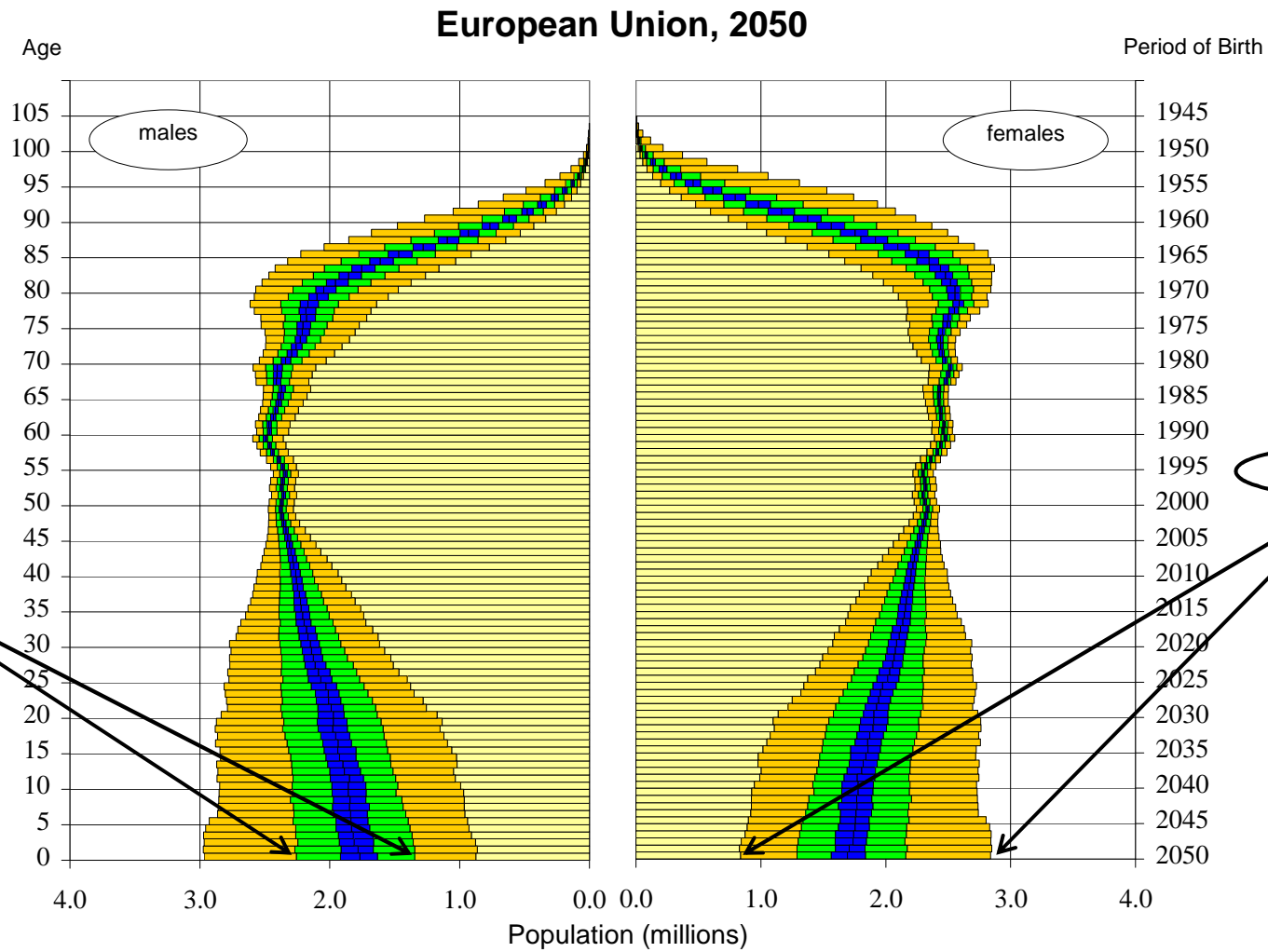


Figure 3. Eastern European population, in millions.

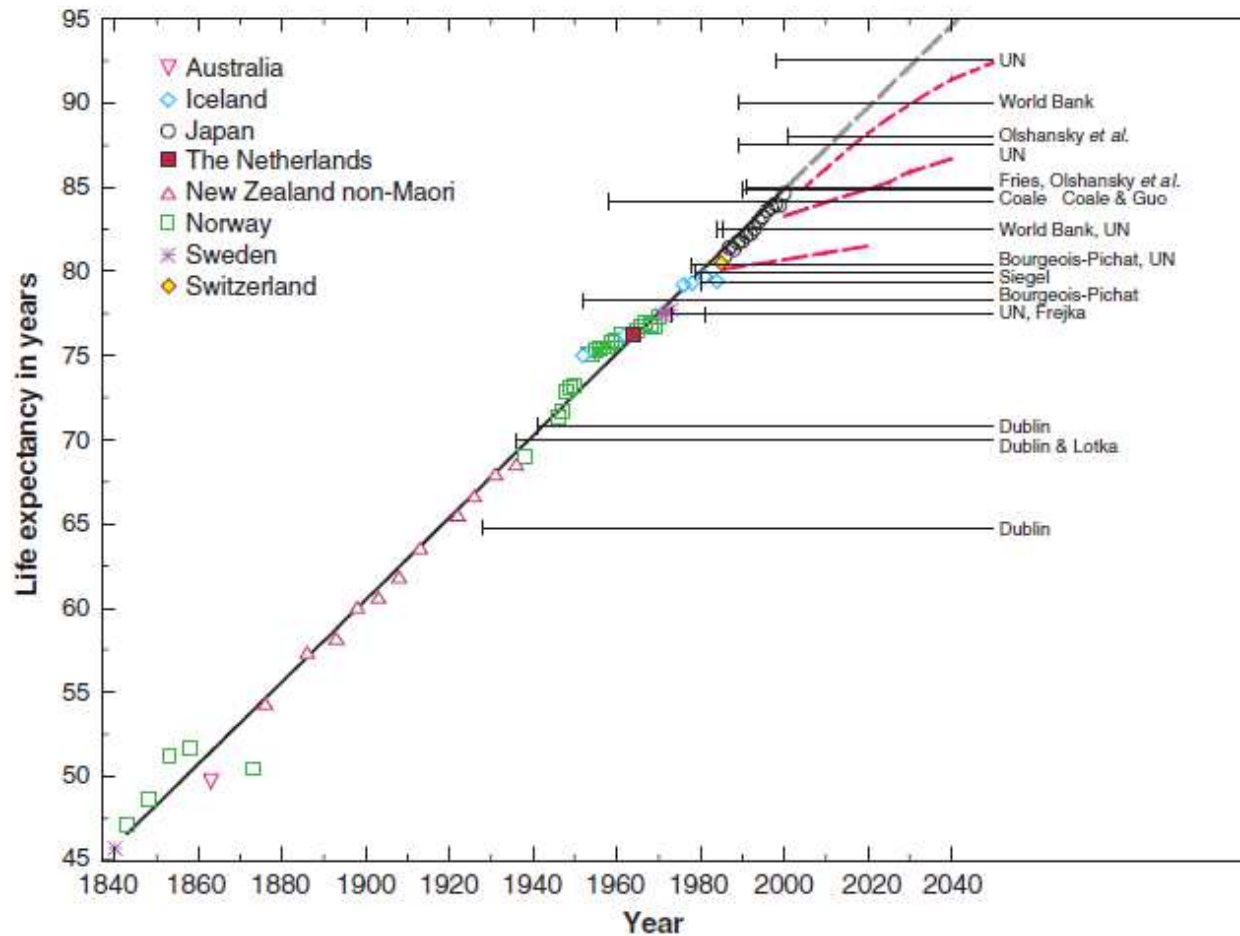
Source: Lutz et al. (Nature 451:716-719, 2008)

Probabilistic Population Pyramid



Sergei's DELL PIH, file: C:\Sergei\Current\Run\2002\EU\make_pyramid_to_file2_EU2.xls, 21-May-02 14:36

Is there a Limit to Human Life Expectancy?

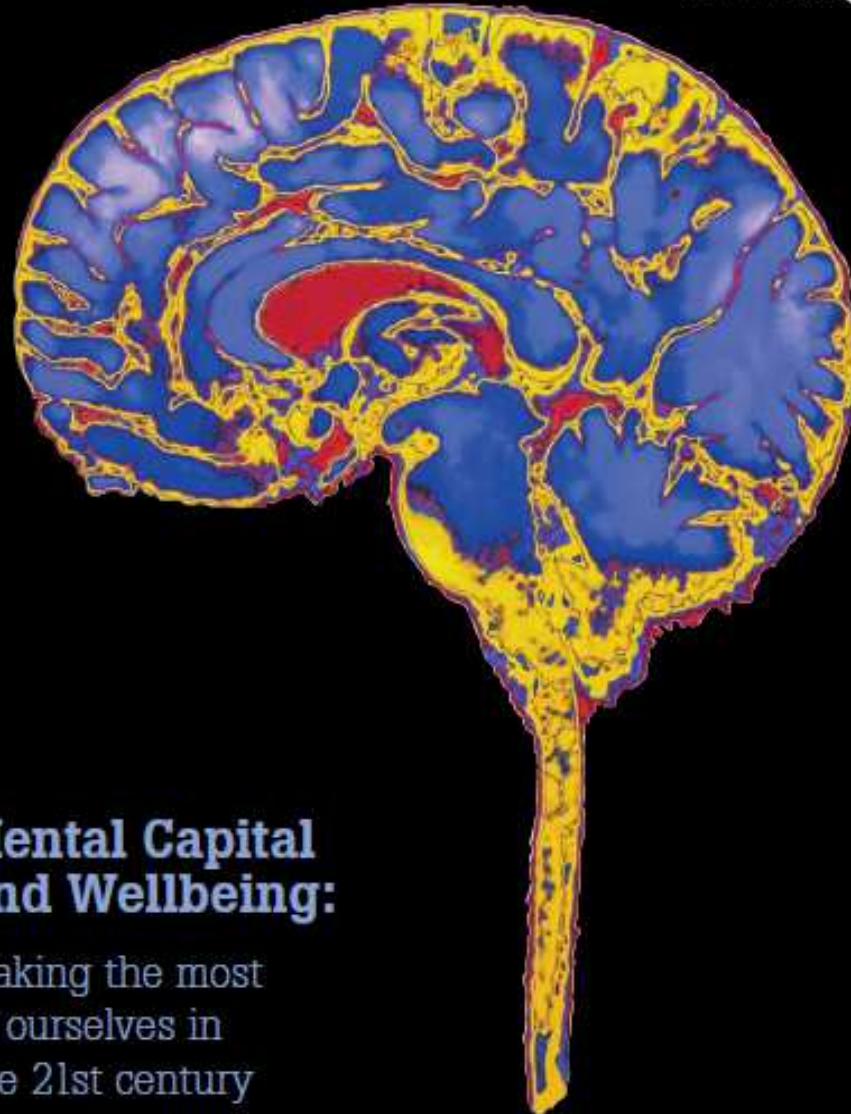


Oeppen und Vaupel 2002



Government
Office for
Science

Foresight



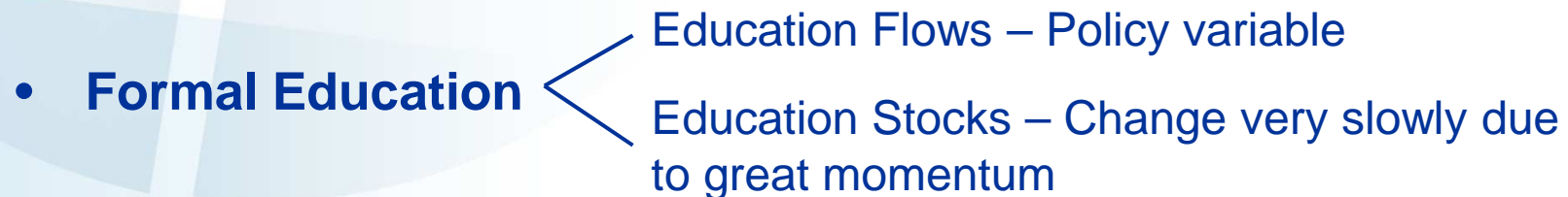
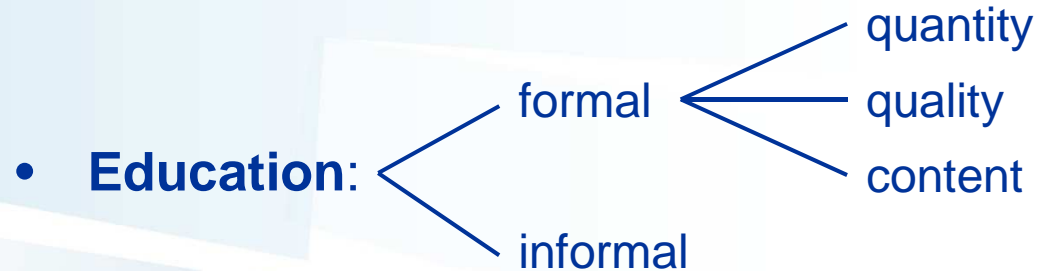
Mental Capital and Wellbeing:

Making the most
of ourselves in
the 21st century

Human Capital =

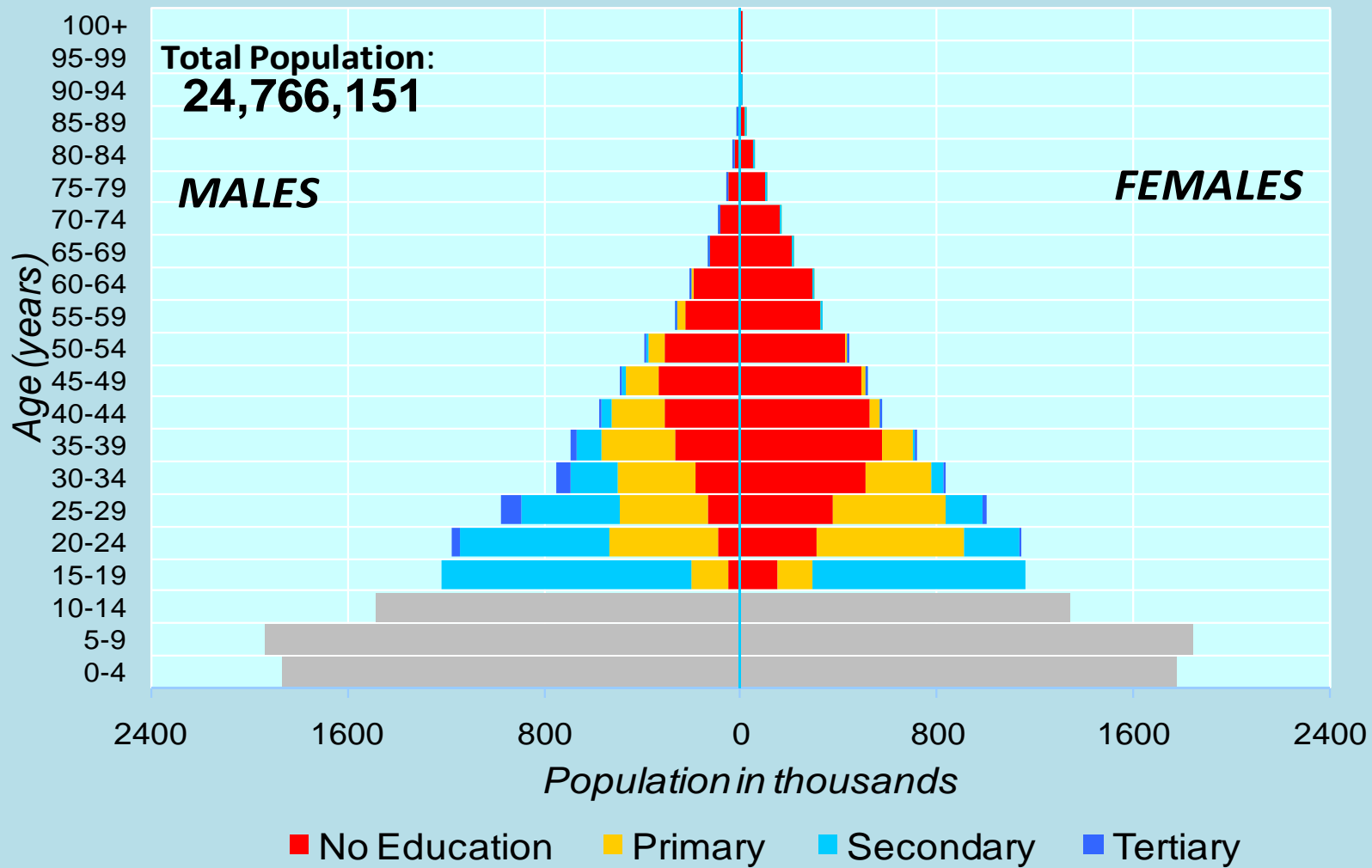
= The Human Resource Base for Sustainable Development

= Population x Education x Health

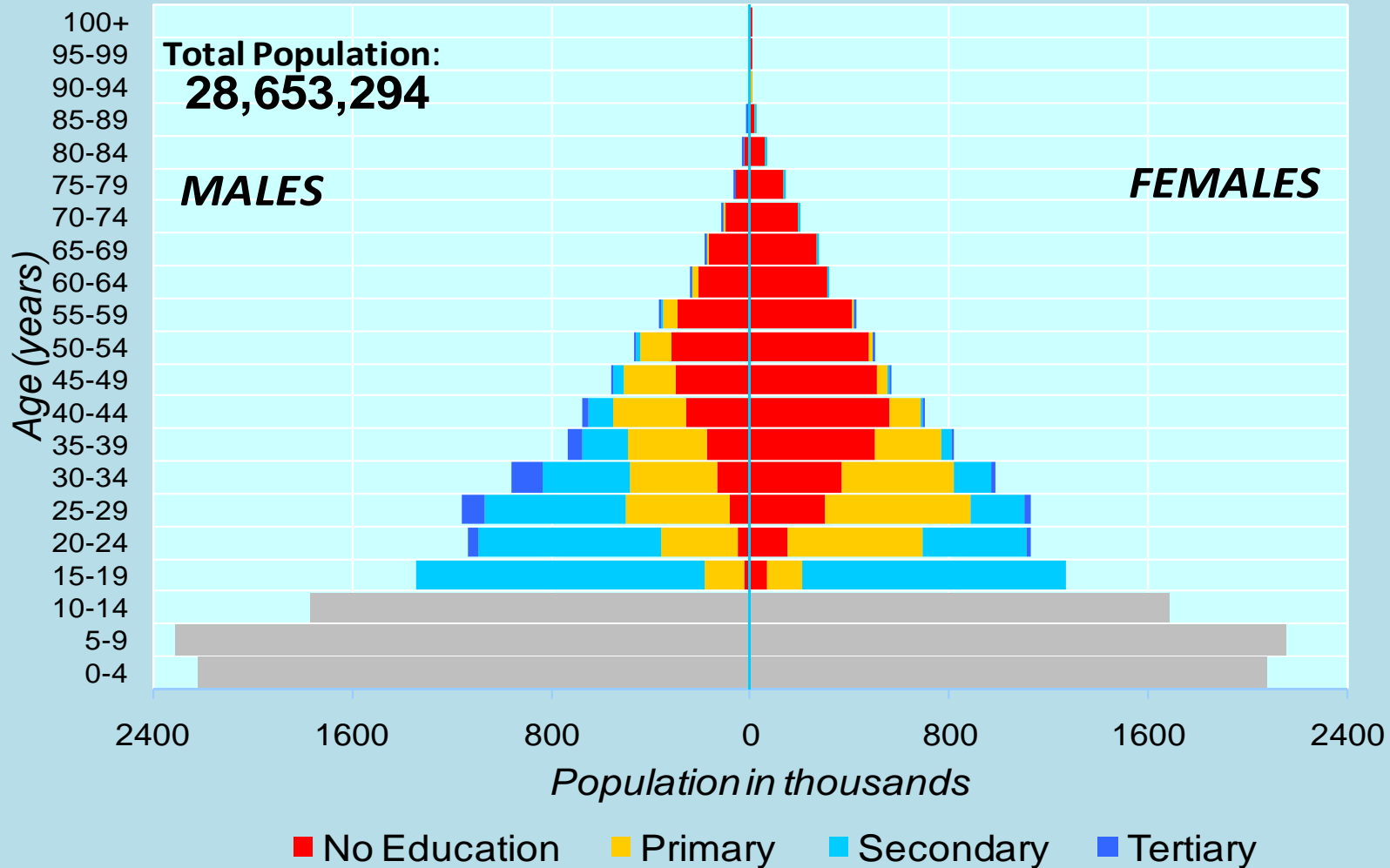


- Mean years of schooling
- Distribution by highest educational attainment

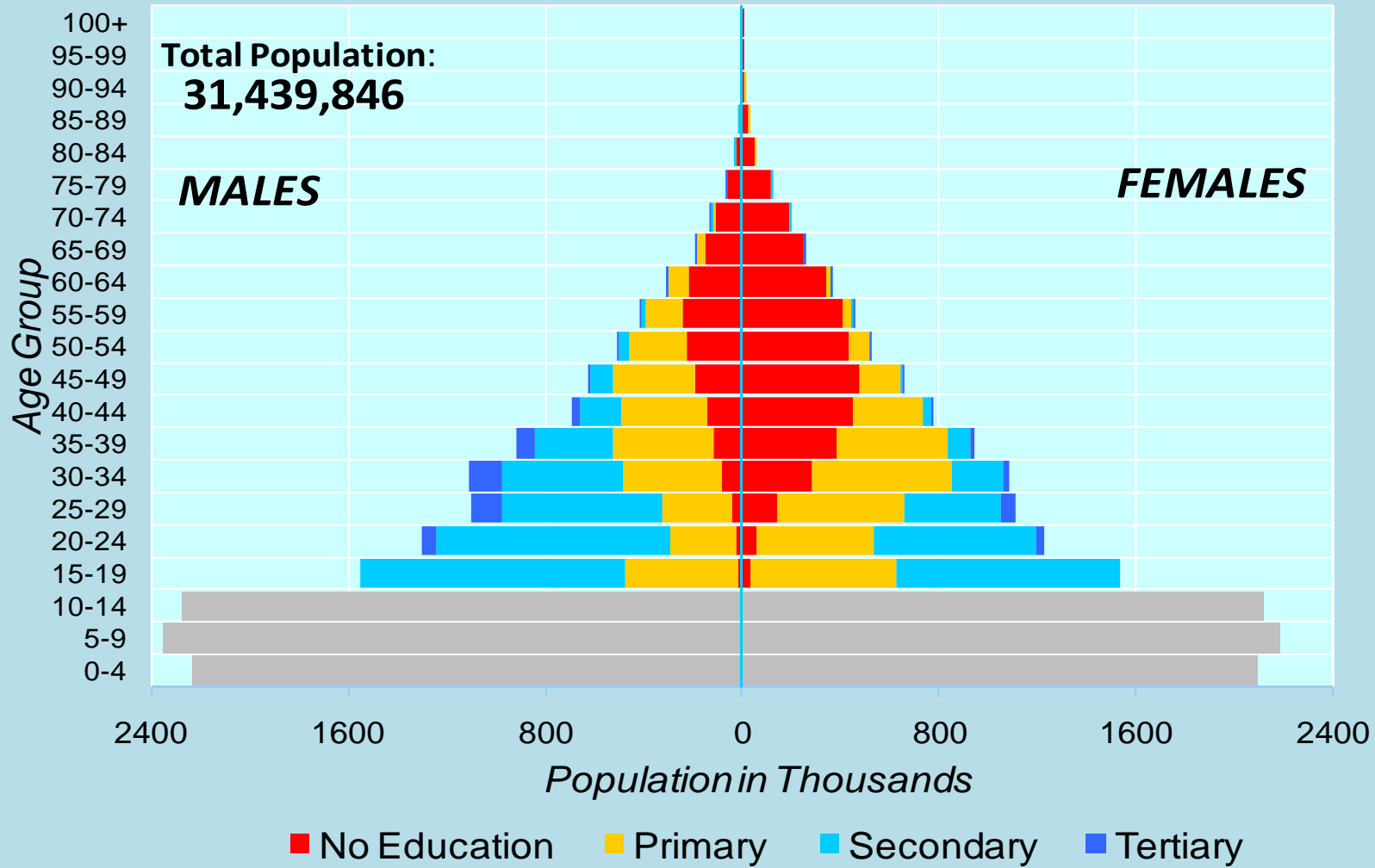
Republic of Korea-1960



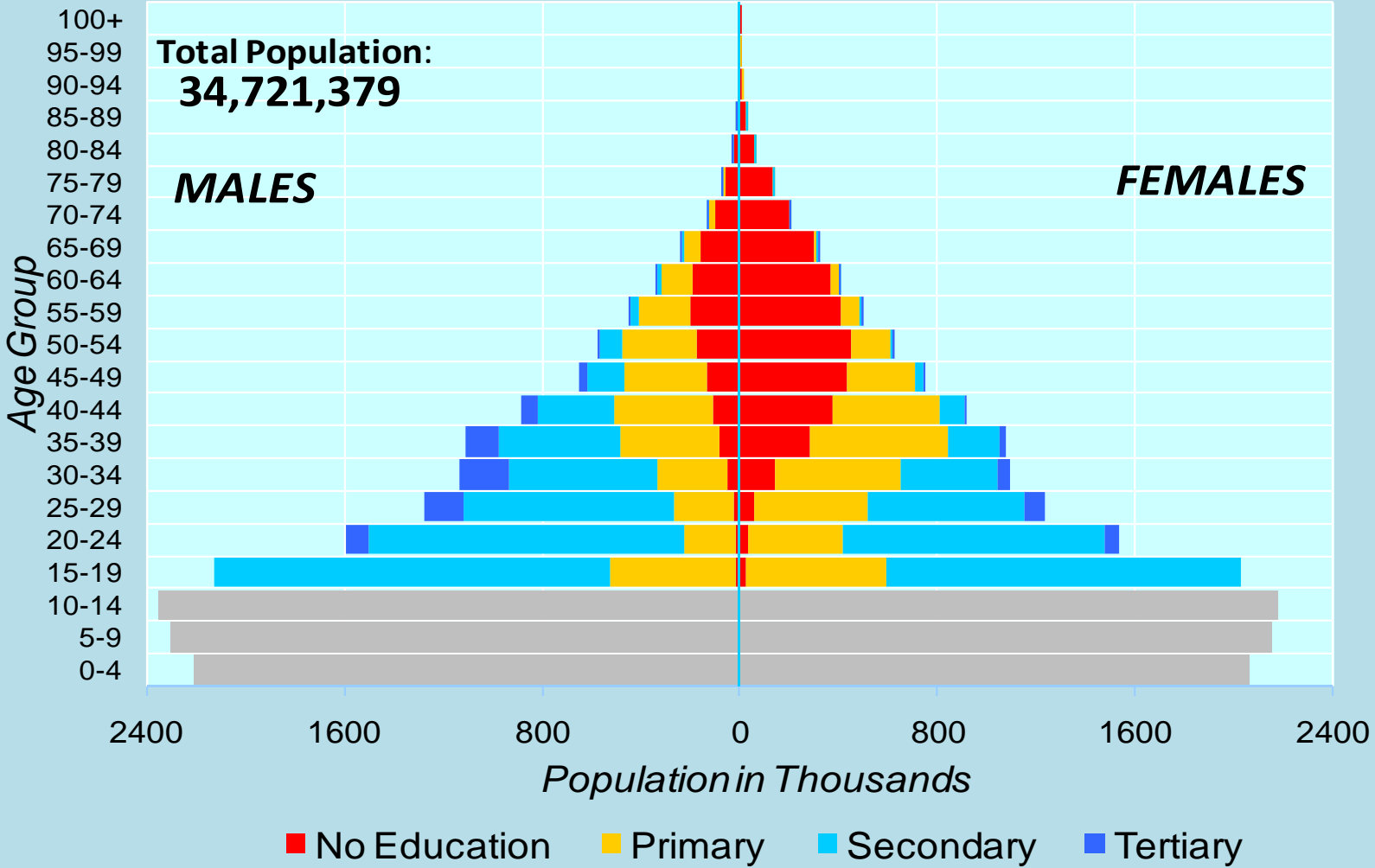
Republic of Korea-1965



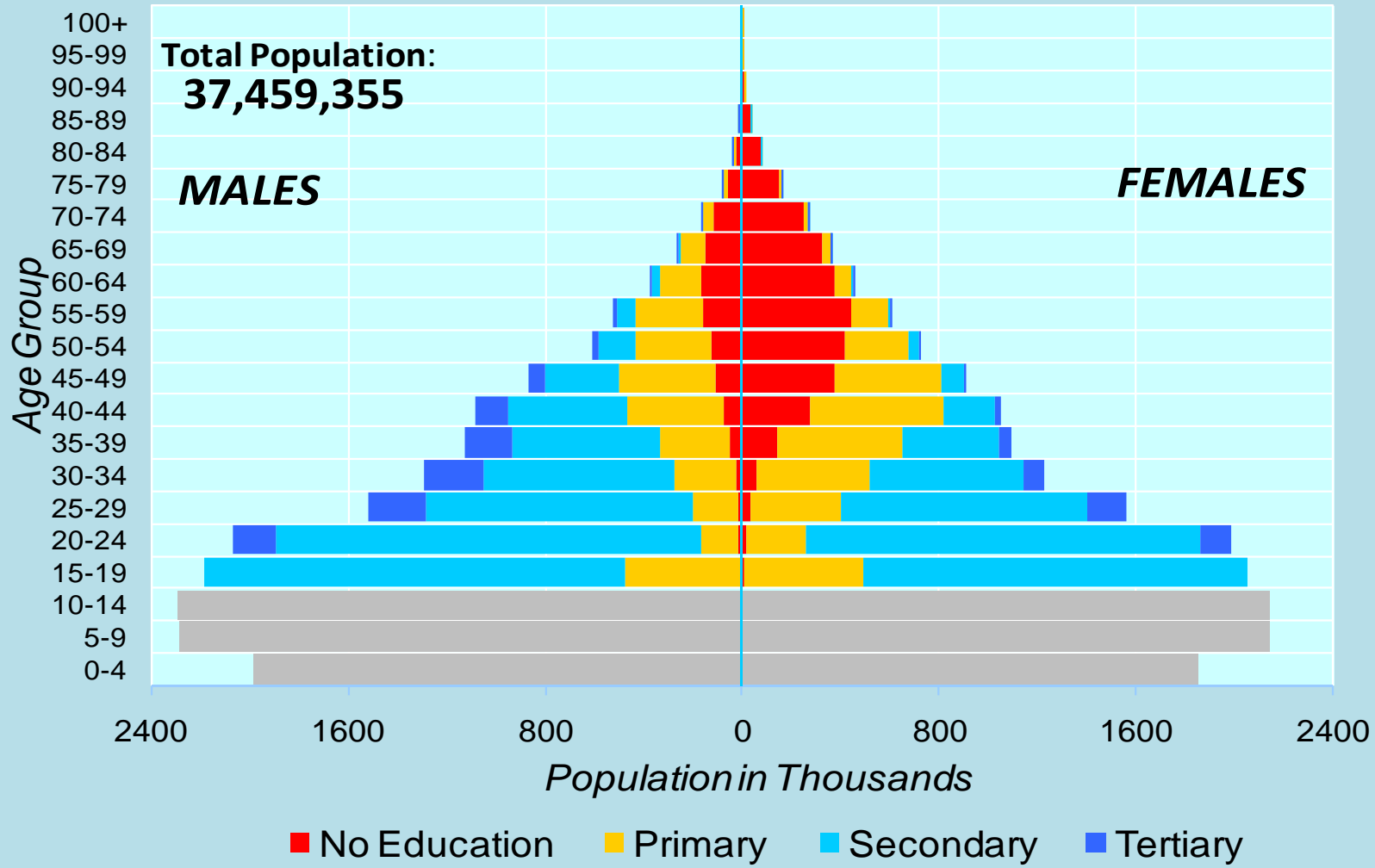
Republic of Korea-1970



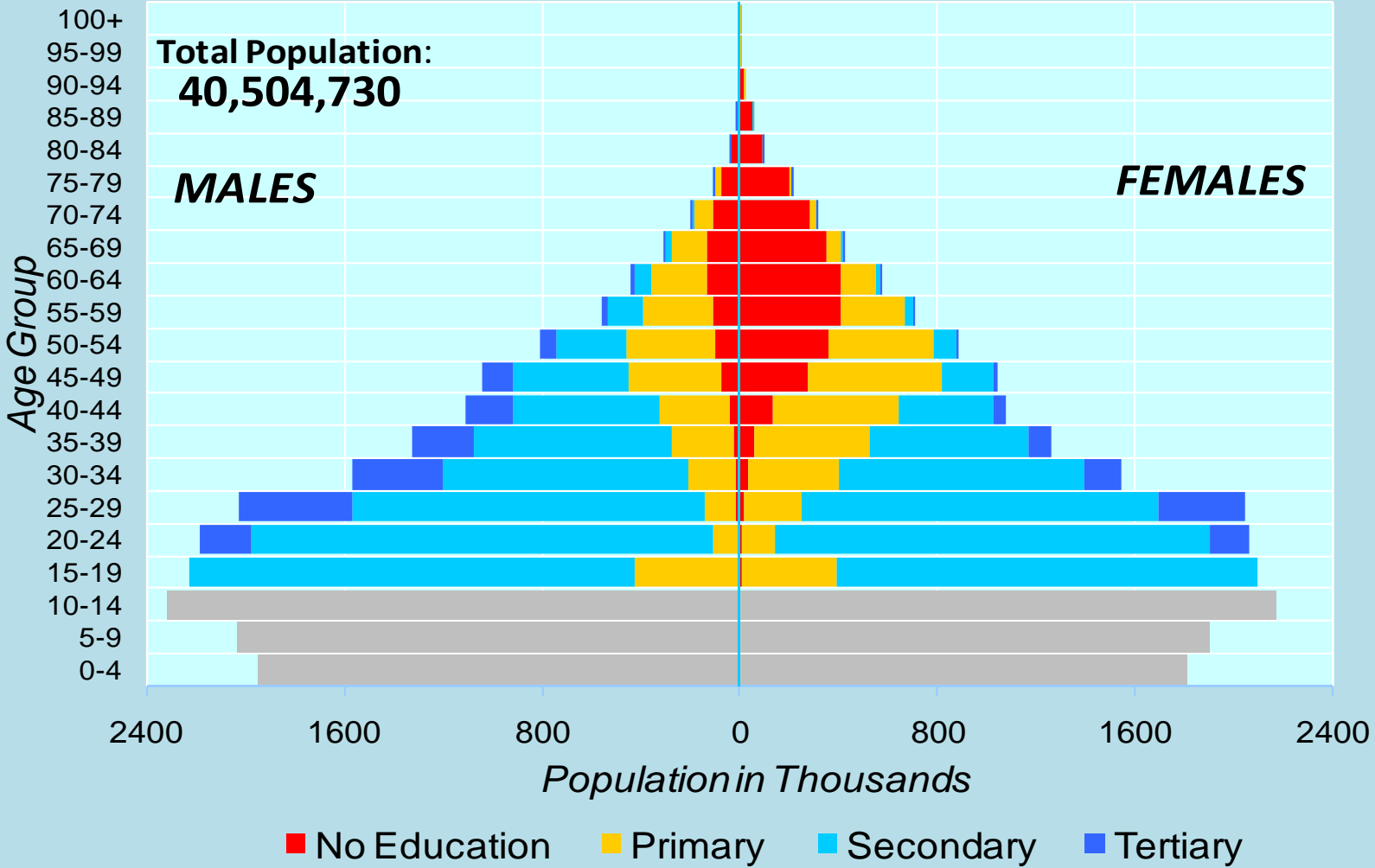
Republic of Korea-1975



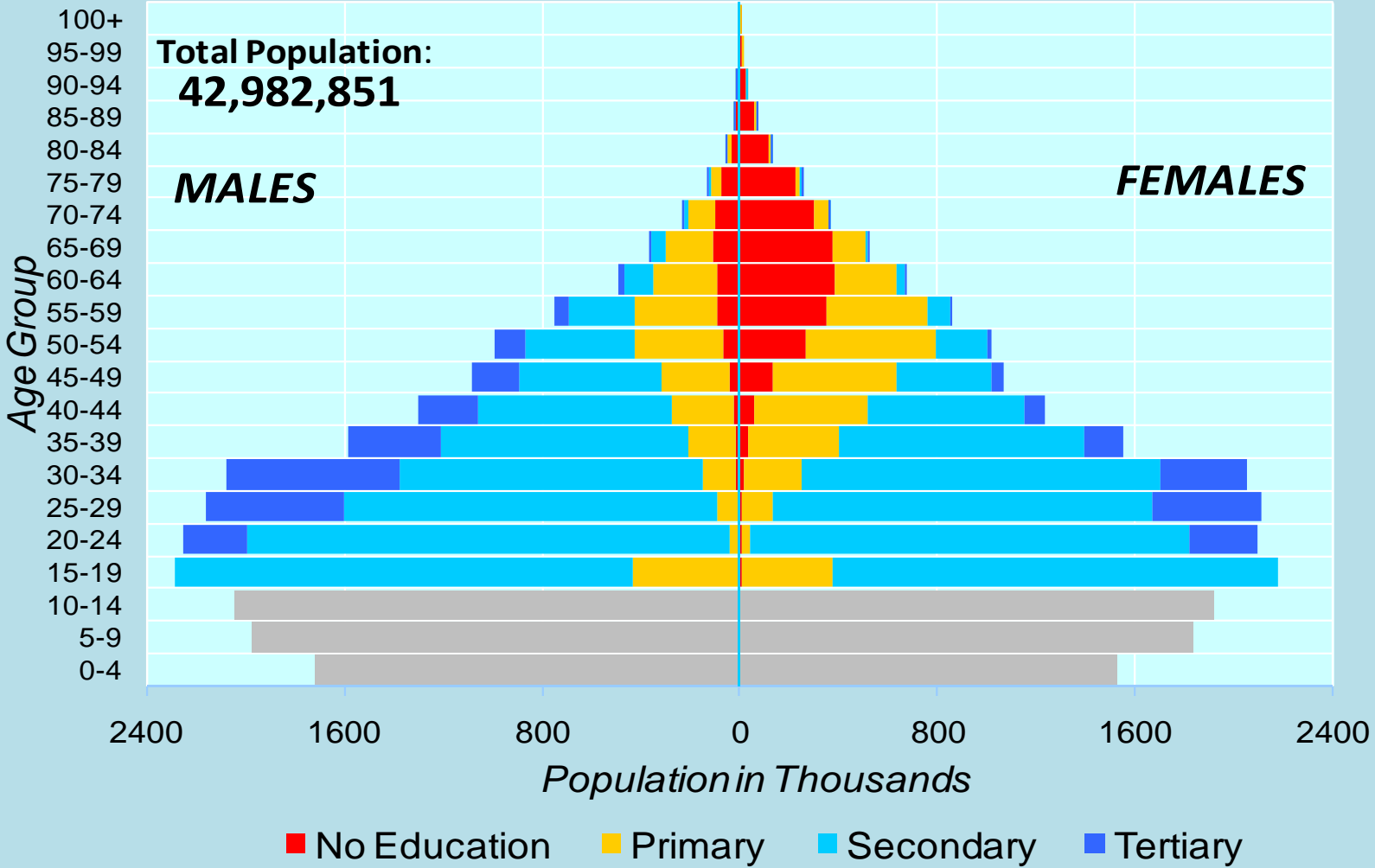
Republic of Korea-1980



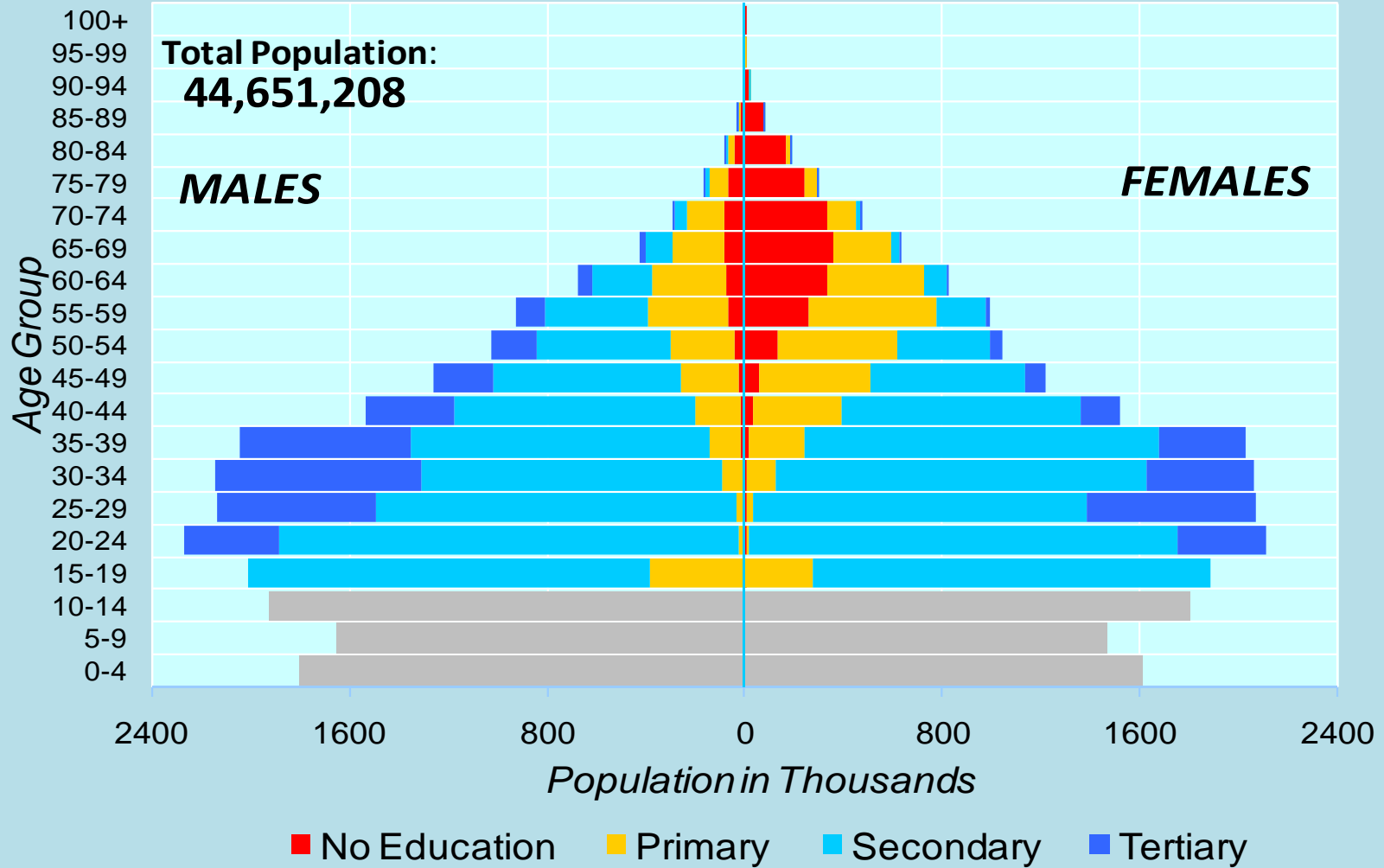
Republic of Korea-1985



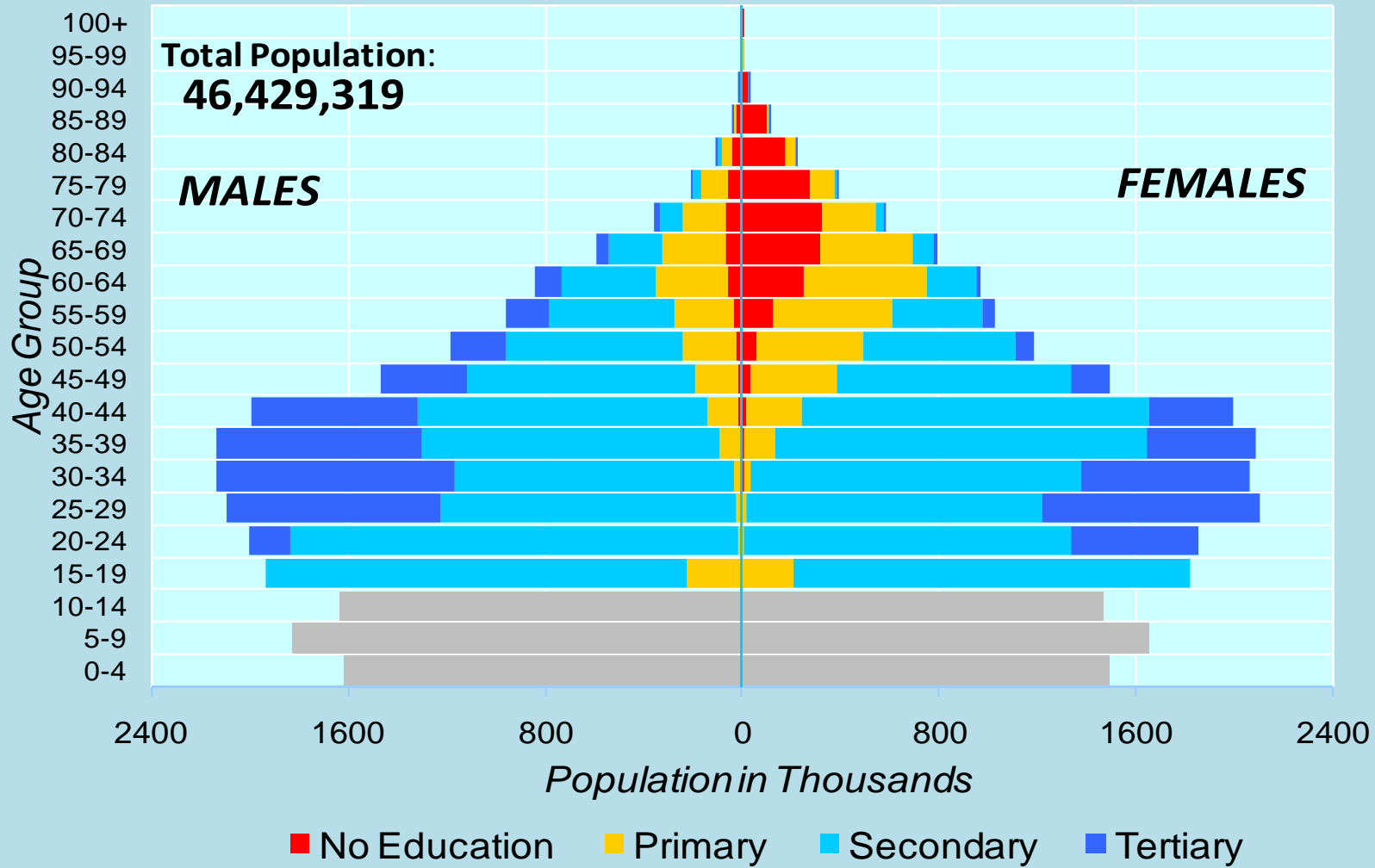
Republic of Korea-1990



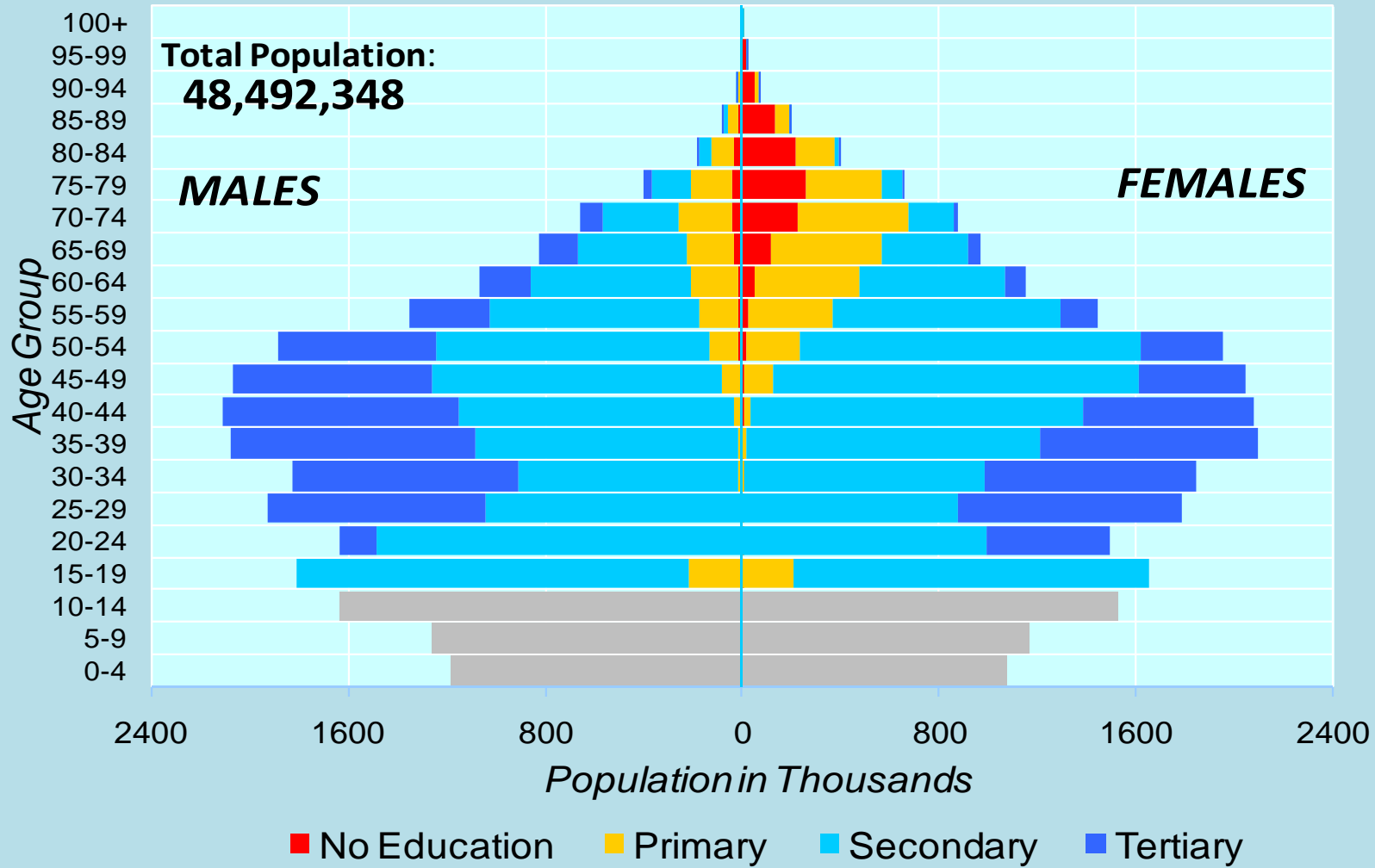
Republic of Korea-1995



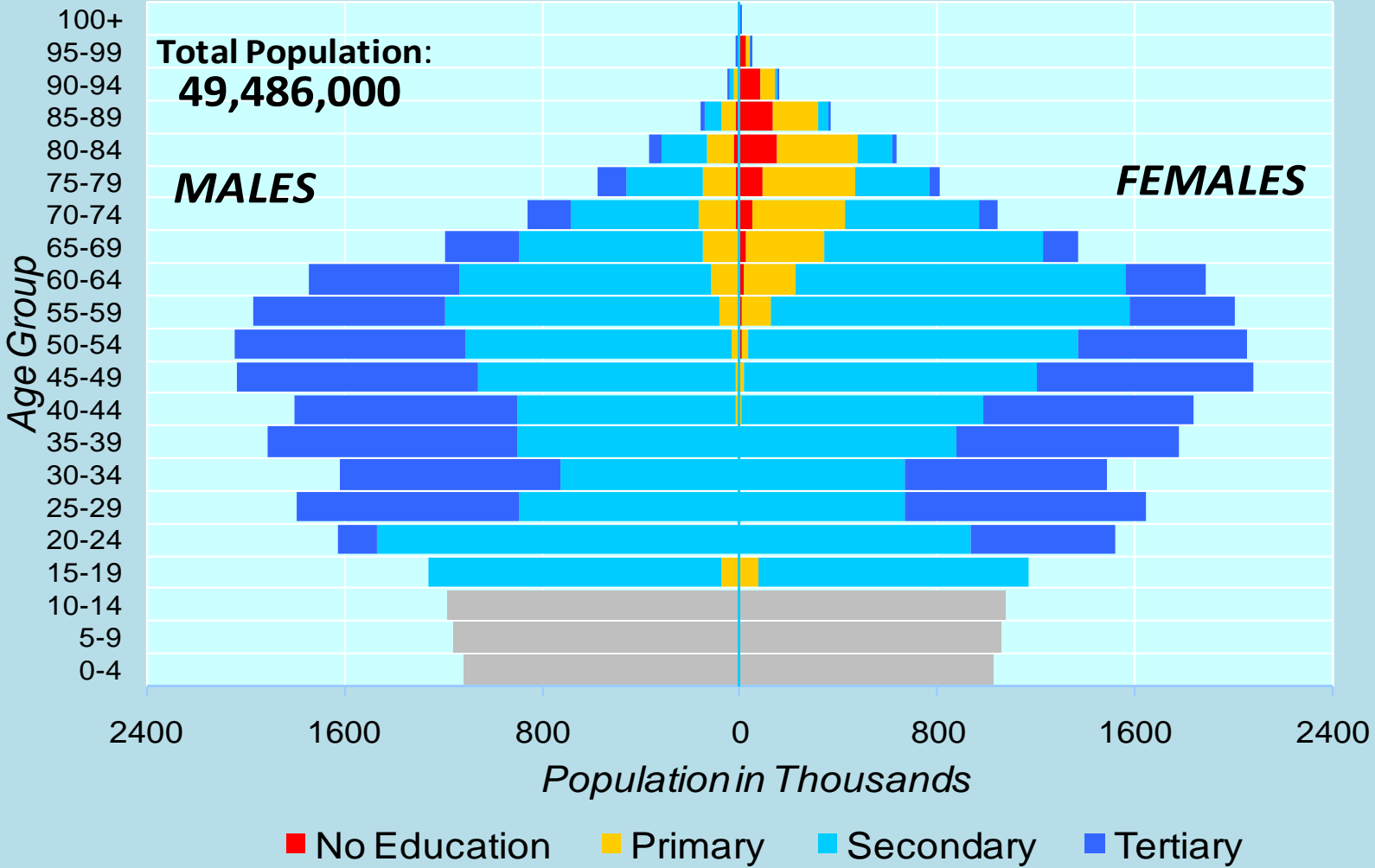
Republic of Korea-2000



Republic of Korea-2010



Republic of Korea-2020

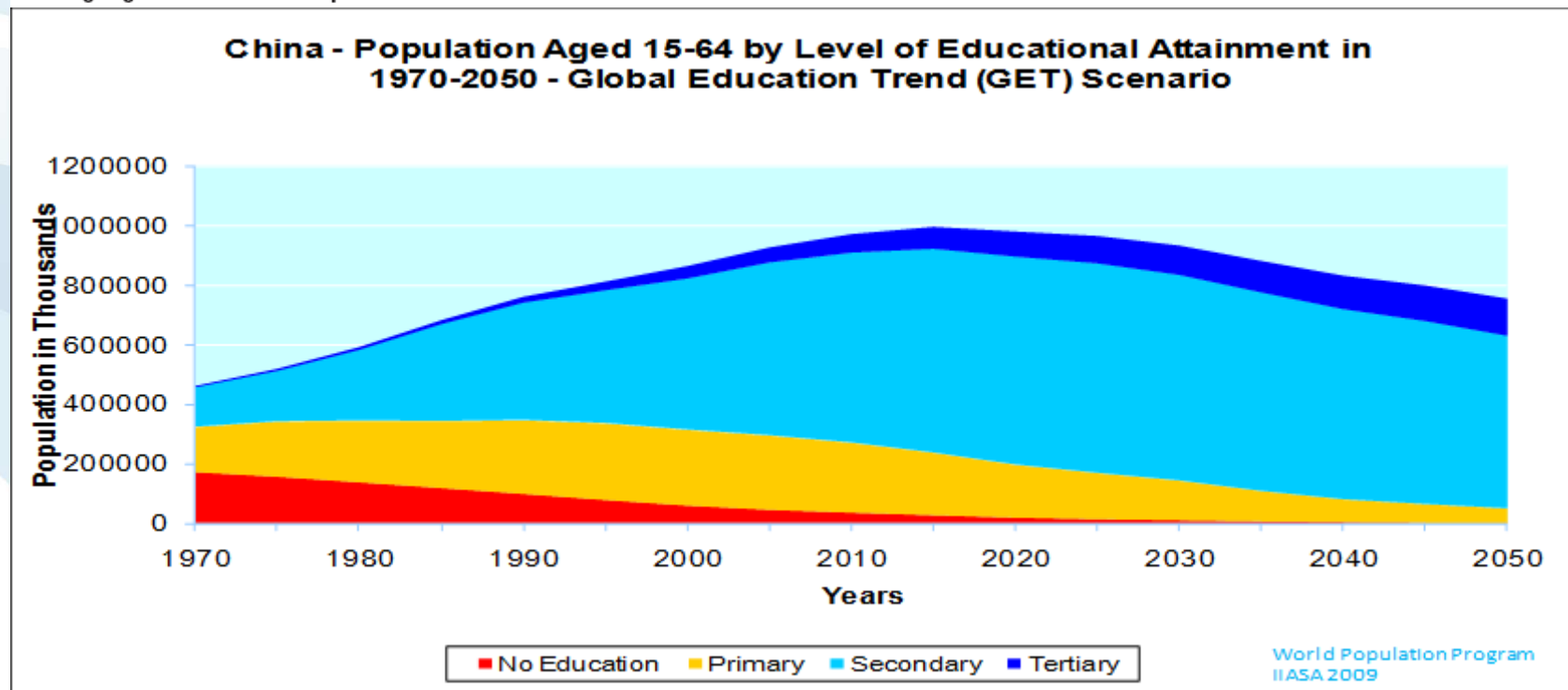


ECONOMICS

The Demography of Educational Attainment and Economic Growth

Complementing primary education with secondary education in broad segments of the population is likely to give a strong boost to economic growth.

Wolfgang Lutz,^{1*} Jesus Crespo Cuaresma,² Warren Sanderson³





REVIEW

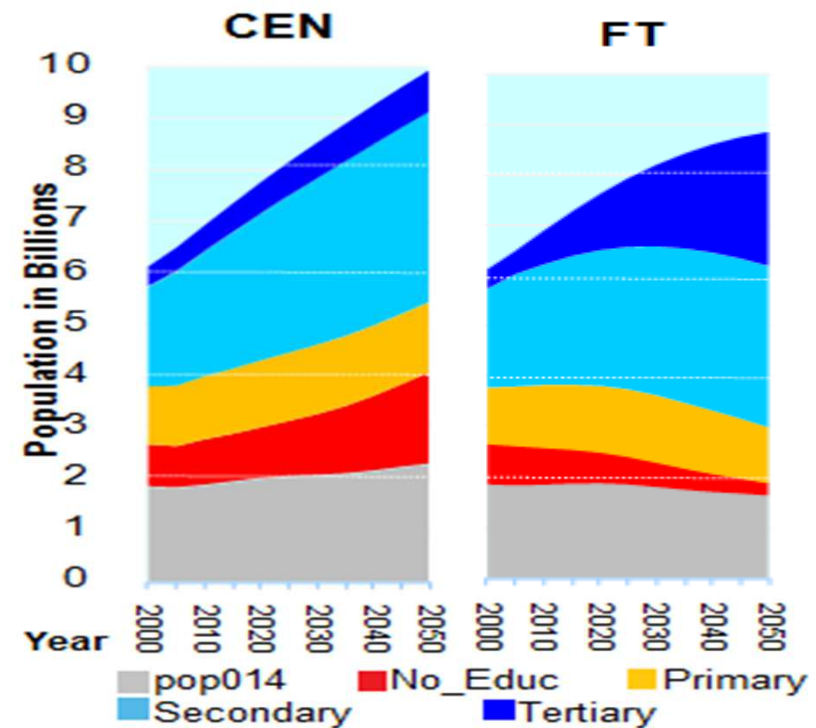
Global Human Capital: Integrating Education and Population

Wolfgang Lutz^{1,2,3,4*} and Samir KC^{1,2}

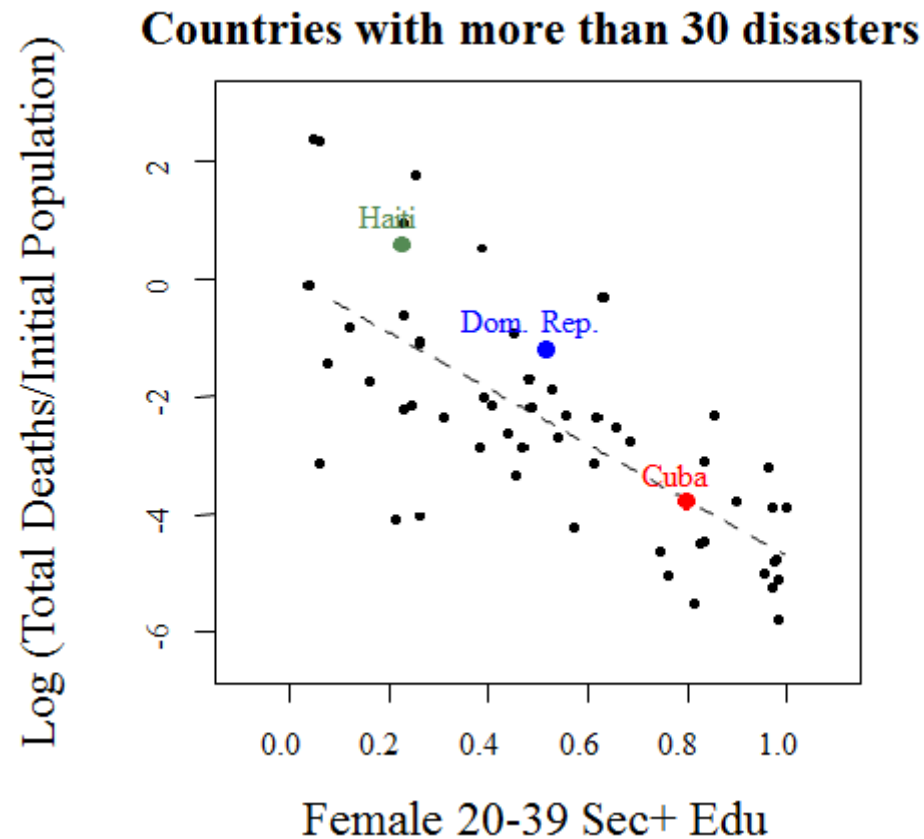
Almost universally, women with higher levels of education have fewer children. Better education is associated with lower mortality, better health, and different migration patterns. Hence, the global population outlook depends greatly on further progress in education, particularly of young women.

Assuming identical education-specific fertility trends different education scenarios make a difference of more than 1 billion people by 2050.

- CEN gives the world population trend according to the most pessimistic scenario assuming that no new schools will be built
- FT gives the most optimistic scenario assuming that countries can achieve the rapid education expansion that South Korea achieved

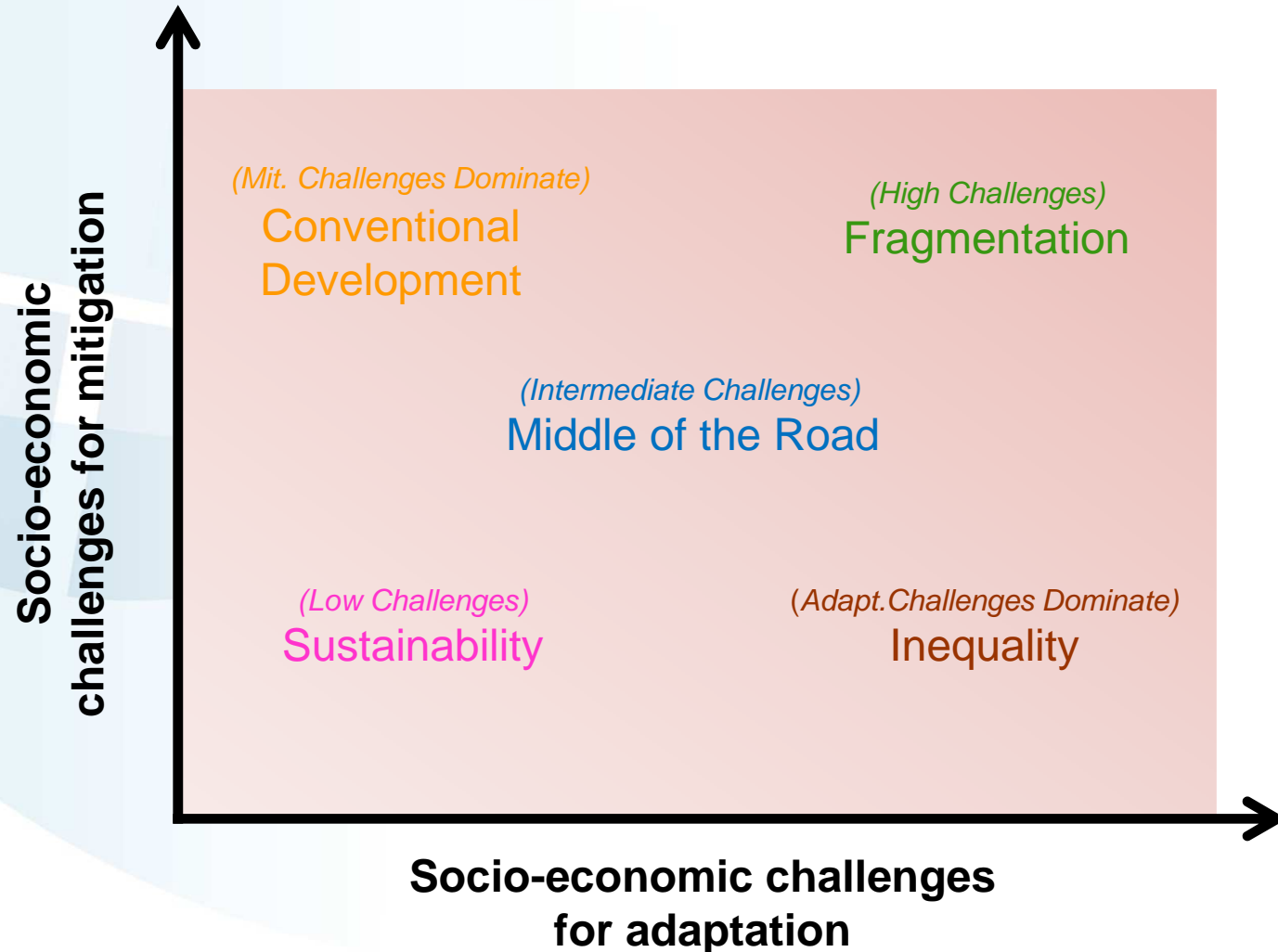


Education Reduces Vulnerability to Natural Disaster and Enhances Adaptive Capacity



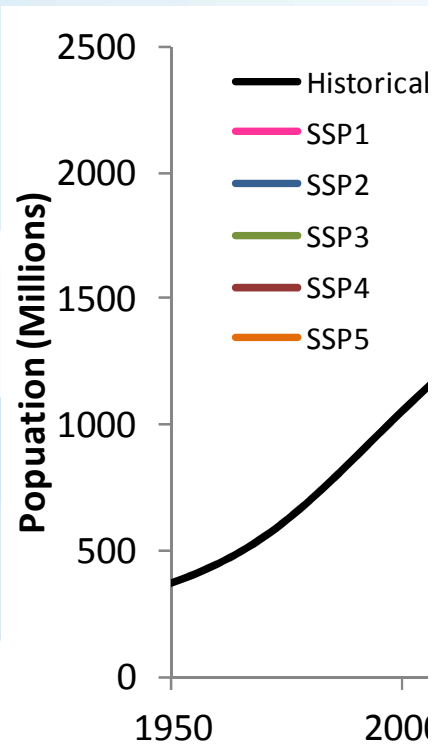
Source: Total number of deaths (1980 – 2010) is from the Emergency Events Database (EM-DAT) at the Centre for Research on the Epidemiology of Disasters (CRED).

In the Context of IPCC and IAMs the Research Community has Recently Agreed to the Definition of "Shared Socioeconomic Pathways" (SSP)



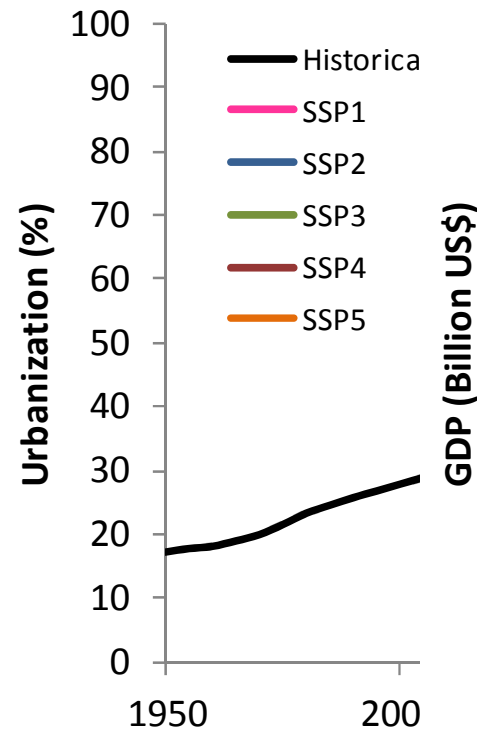
SSP Element Quantifications (e.g., India)

Population, Education



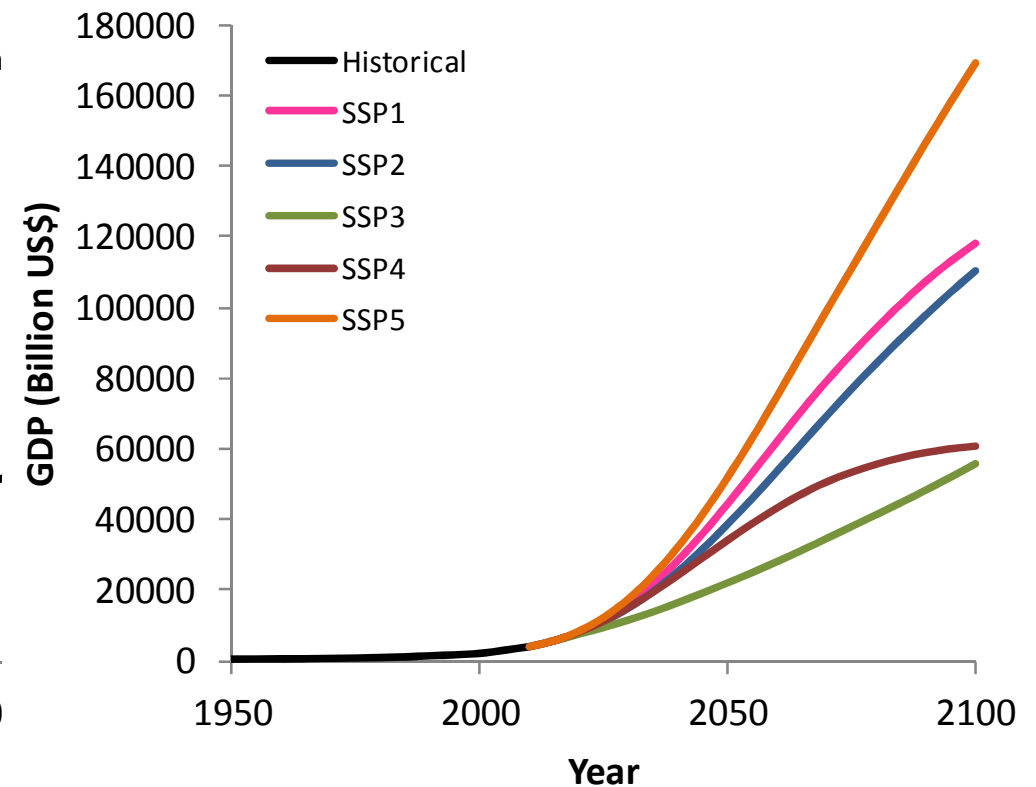
(IIASA)

Urbanization



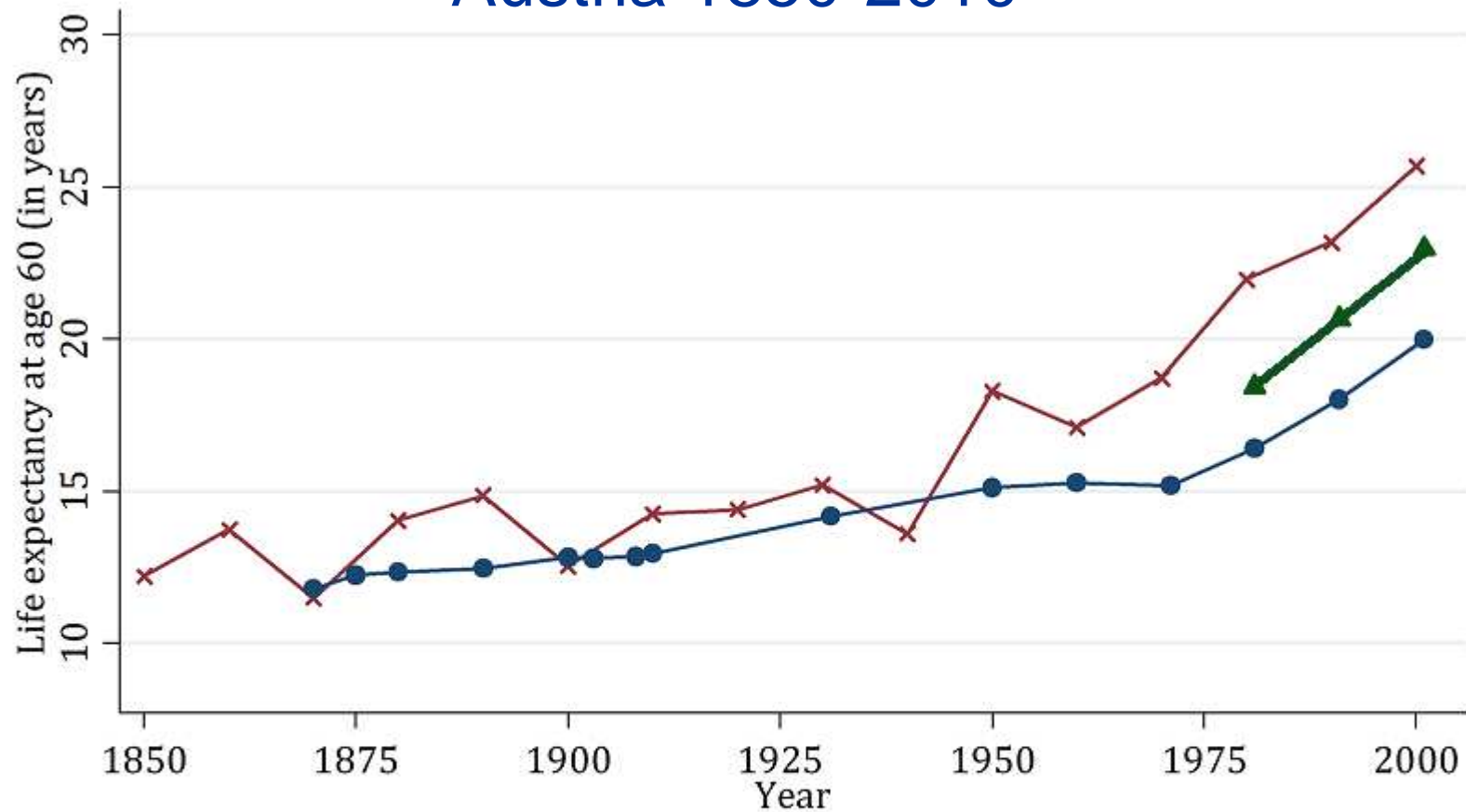
(NCAR)

GDP



(OECD, IIASA, PIK)

Remaining Life Expectancy at Age 60 Austria 1850-2010



Austrian life table:
—x— Academicians
● Total population
▲ Tertiary education

Source: Winkler-Dworak, VID