



Wittgenstein Centre

FOR DEMOGRAPHY AND
GLOBAL HUMAN CAPITAL



WORLD POPULATION & HUMAN CAPITAL IN THE TWENTY-FIRST CENTURY



International Institute for
Applied Systems Analysis
www.iiasa.ac.at



Two unique features of the book



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It gives the **most comprehensive scientific assessment** of what is known about the drivers of fertility, mortality and migration in all countries of the world over the rest of the century:

Basis:

- State of the art review chapters by 26 Lead Authors and 46 Contributing Authors
- Online questionnaire with over 150 arguments to be assessed in peer review manner (550 answers)
- Five Meta-expert meetings on five continents (with 68 participants)

Adding education to age and sex



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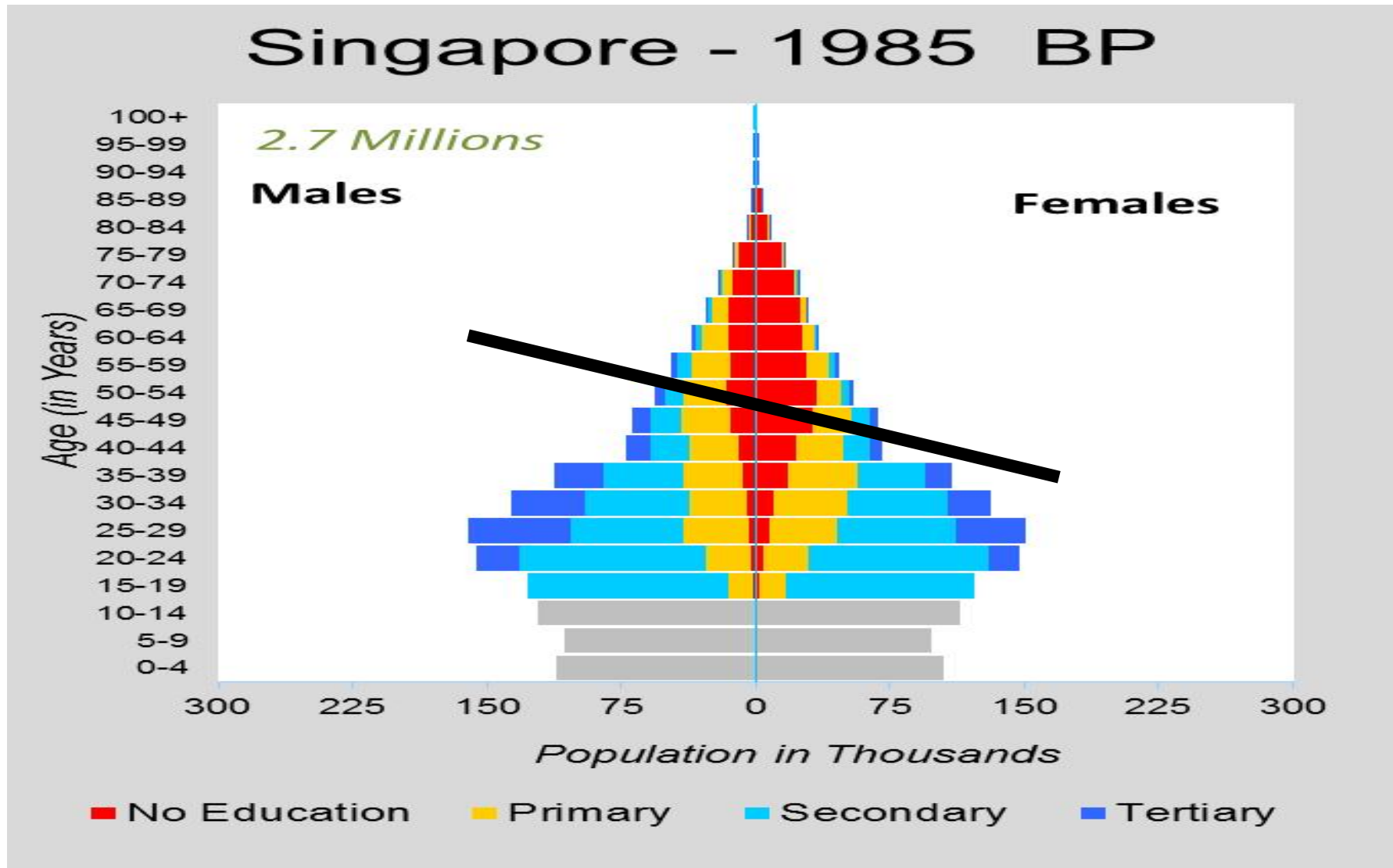
It gives the first set of **consistent projections by age, sex and level of education** for all countries of the world to 2100 and alternative scenarios.

This matters because:

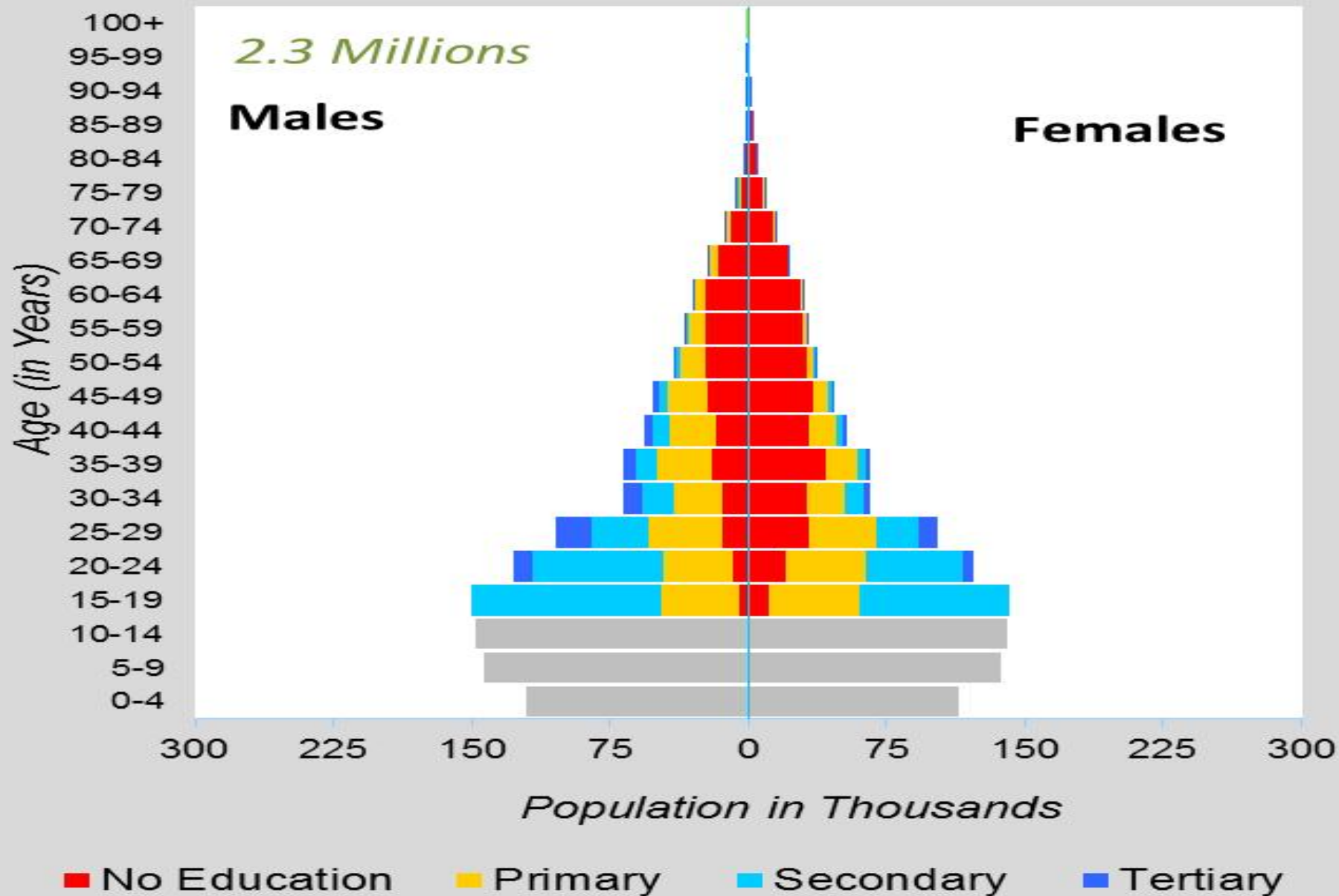
- Education is an important source of population heterogeneity. Almost universally more educated women have fewer children and lower child mortality and more educated adults live longer.
- Education is a crucial determinant of individual empowerment and human capital is a key driver of socio-economic development (public health, economic growth, quality of institutions and democracy, and adaptive capacity to climate change).

Singapore 1985: A society divided into two classes:

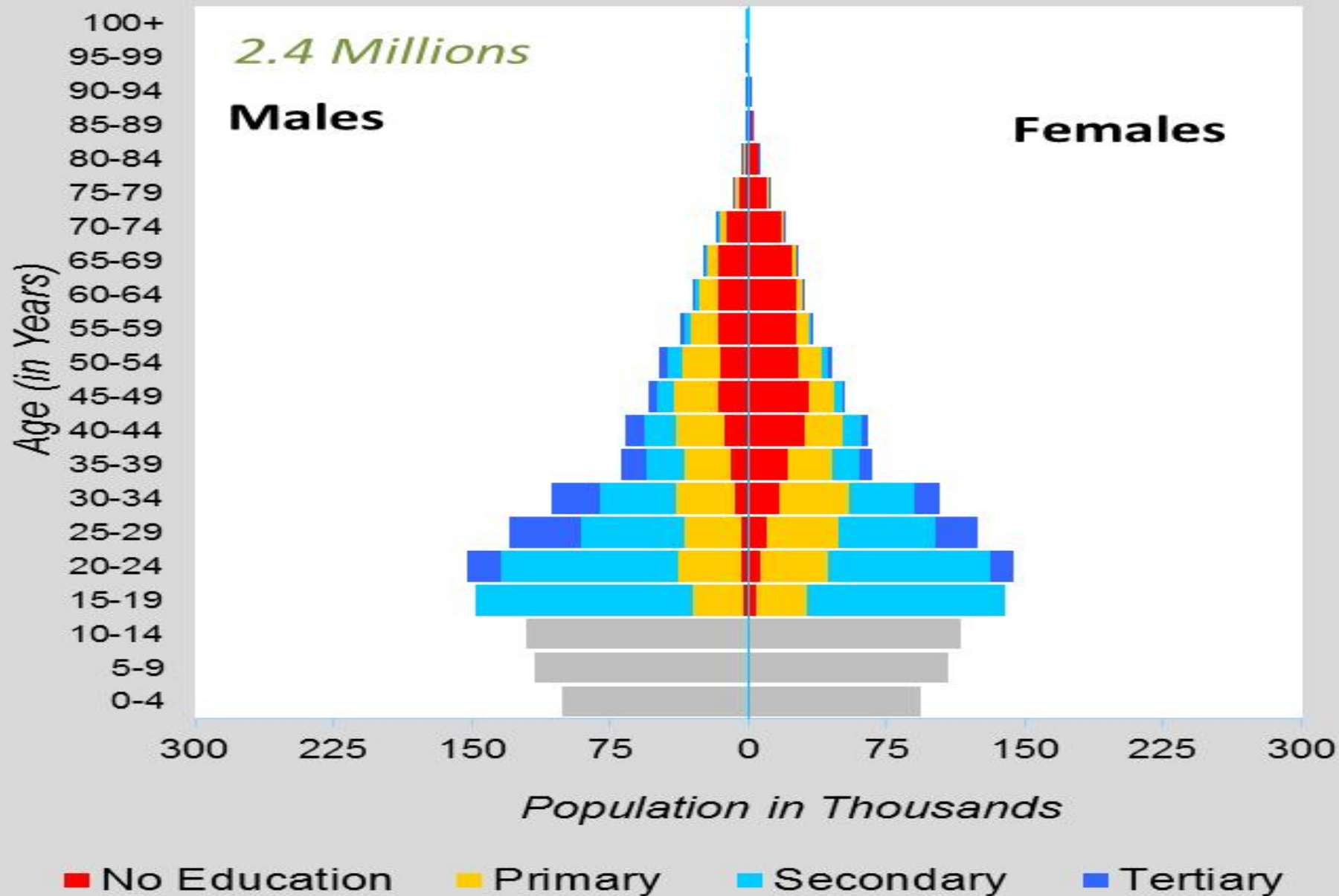
- * Modern highly educated and wealthy young
- * Uneducated and poor elderly



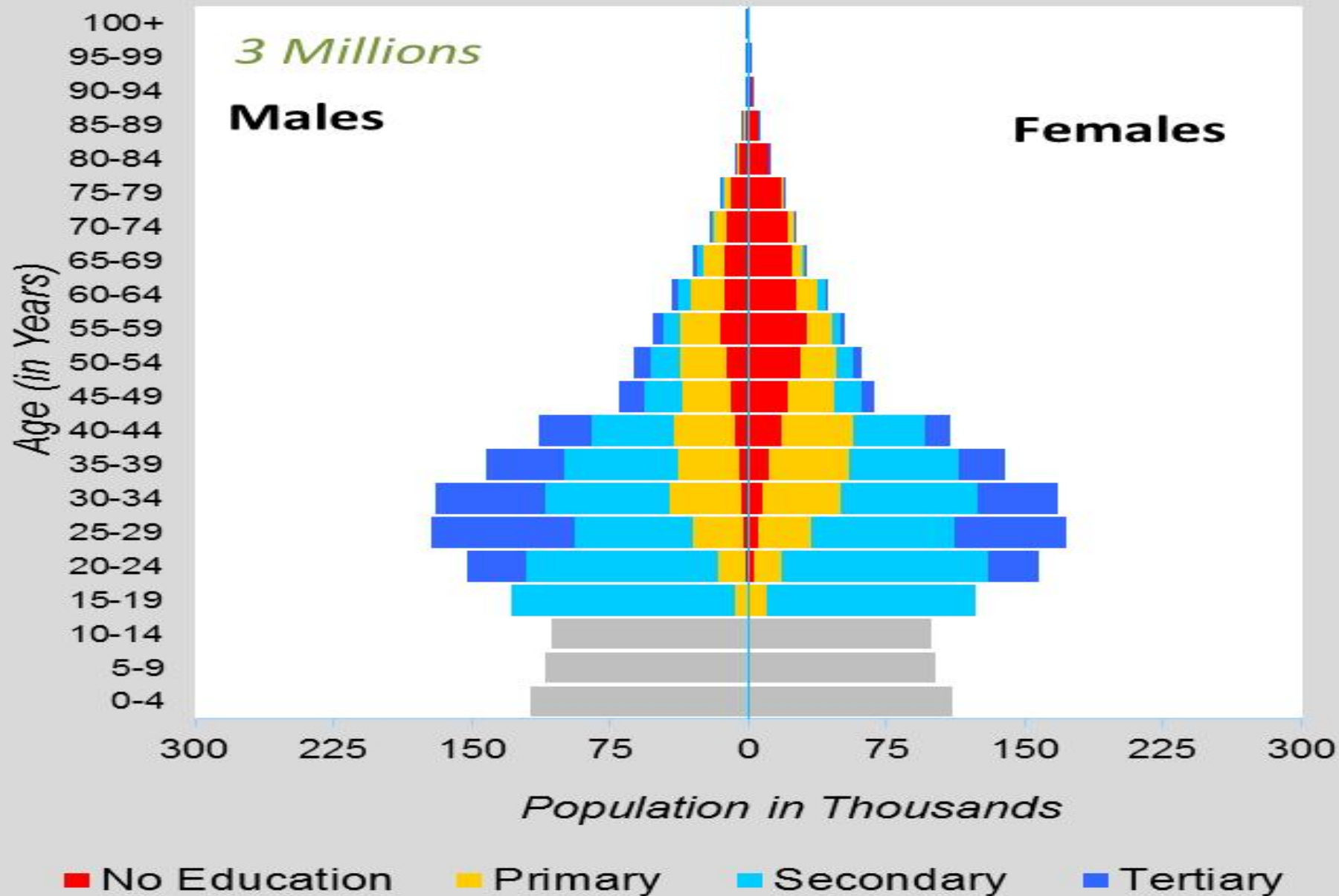
Singapore - 1970 BP



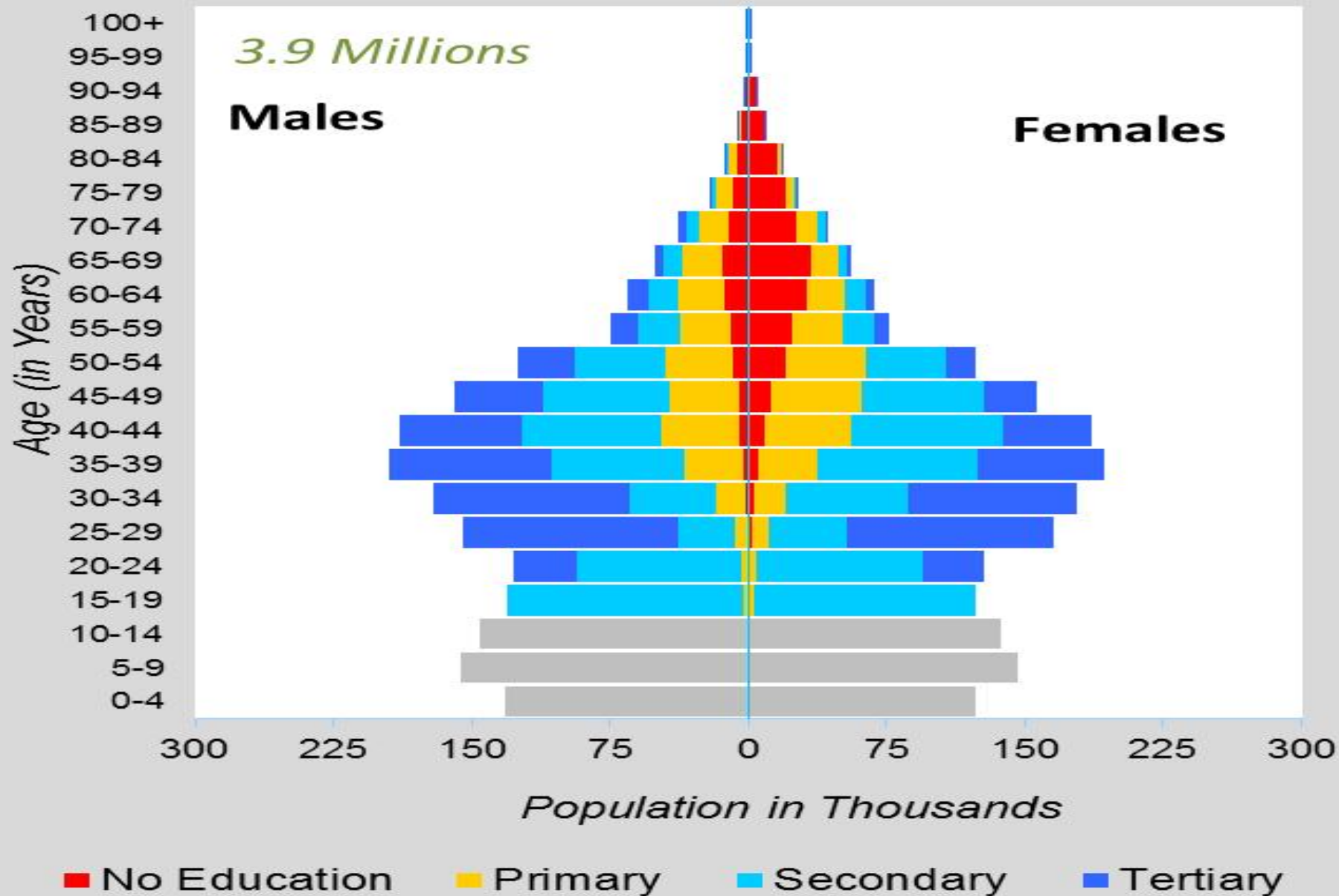
Singapore - 1980 BP



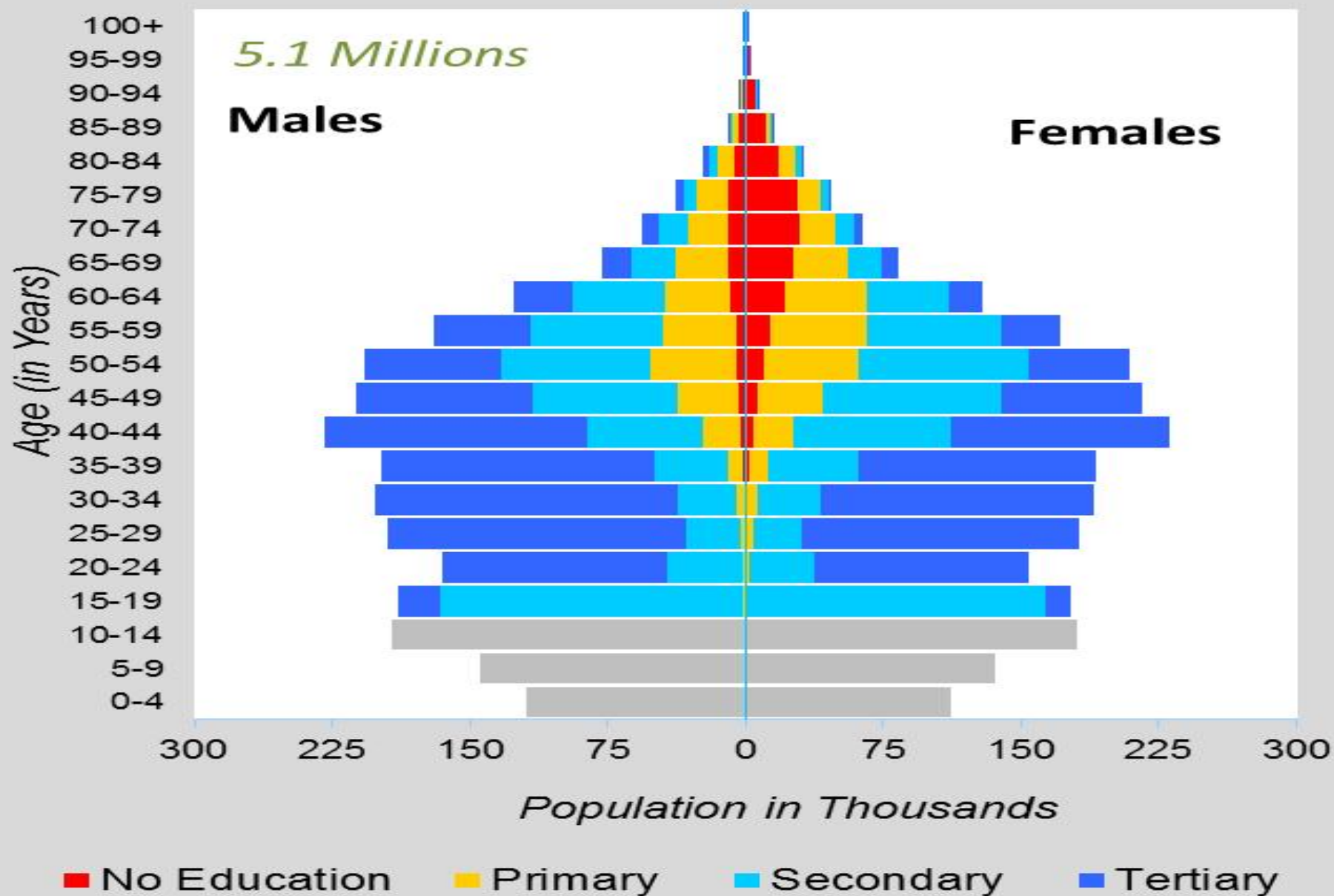
Singapore - 1990 BP



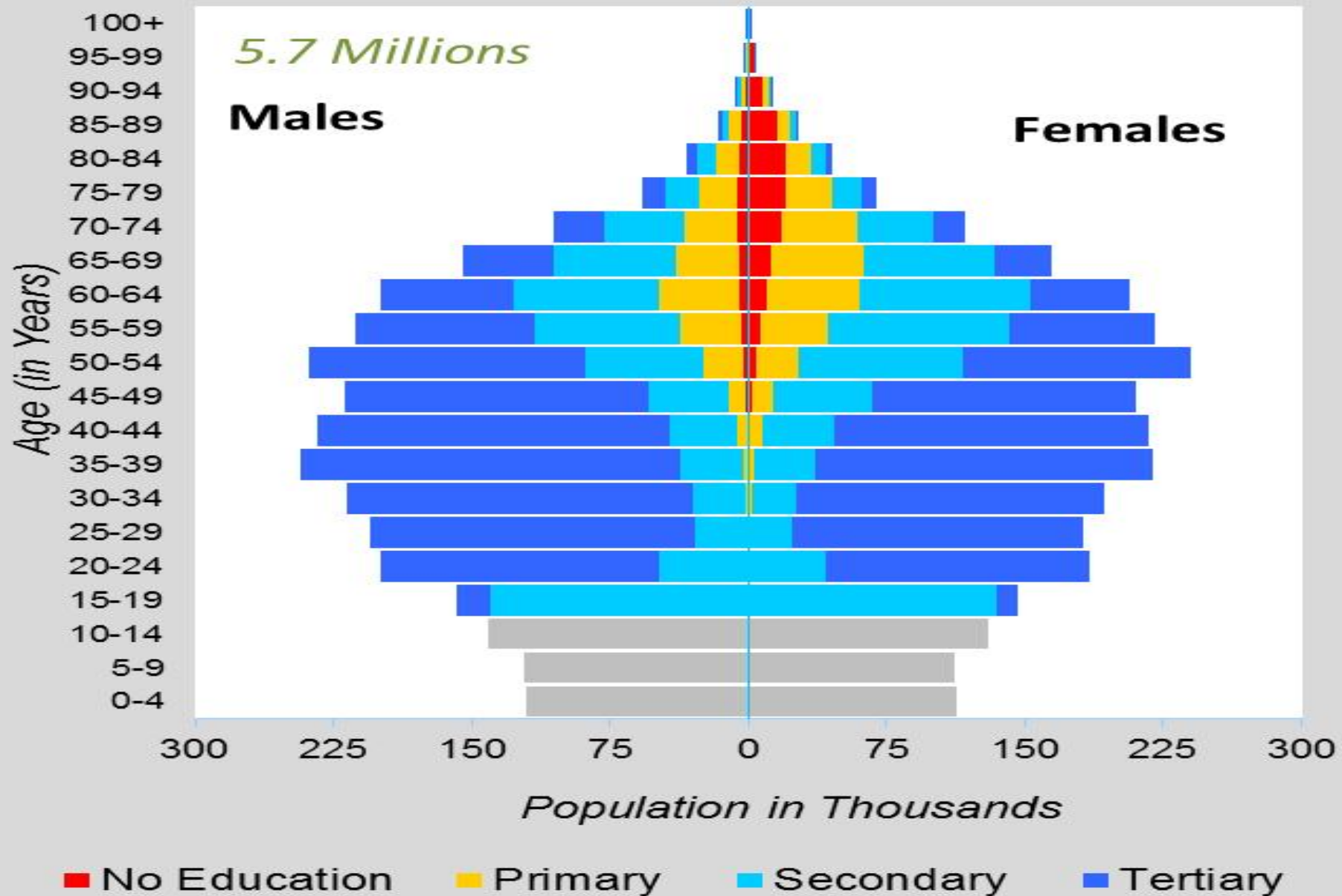
Singapore - 2000 BP



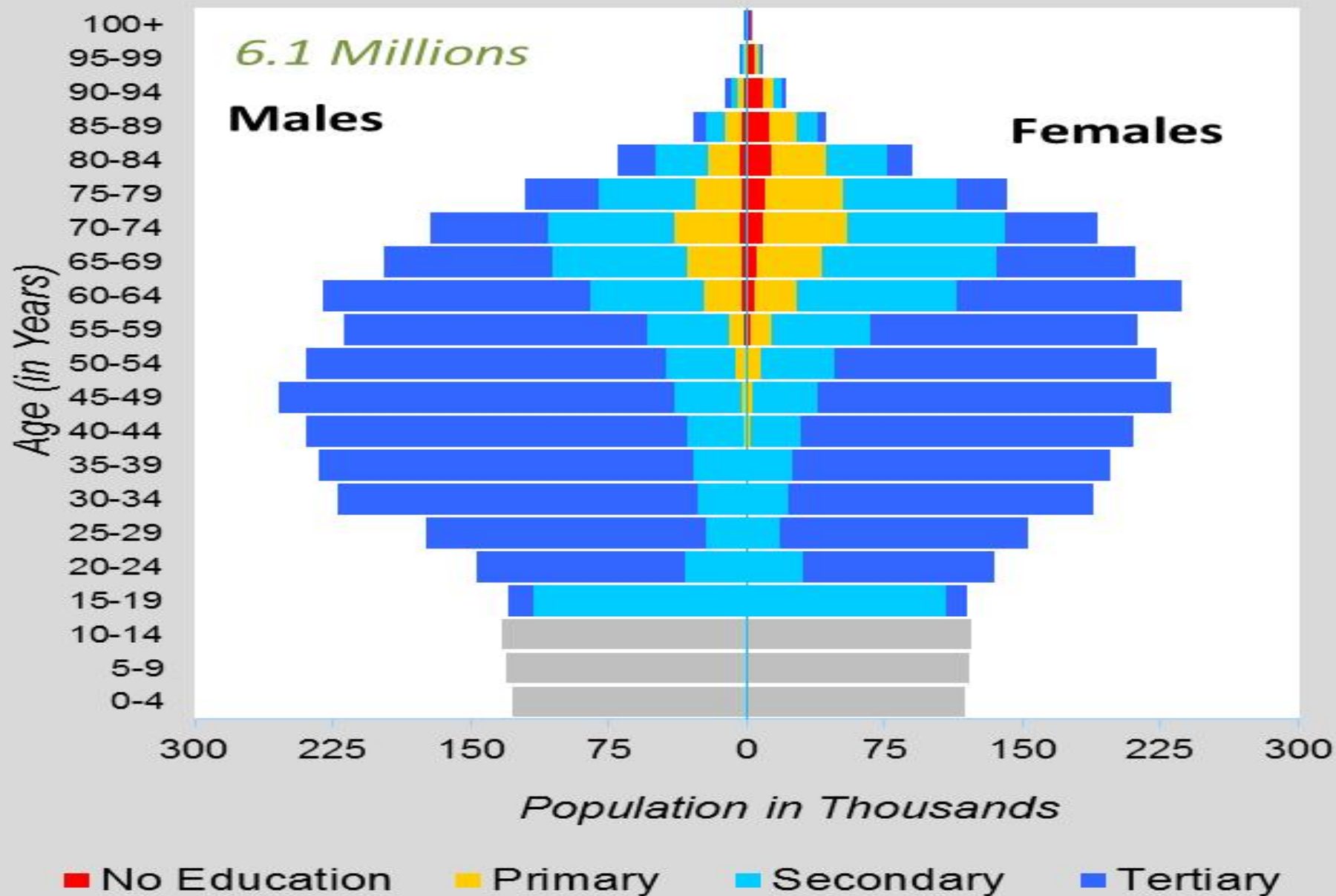
Singapore - 2010



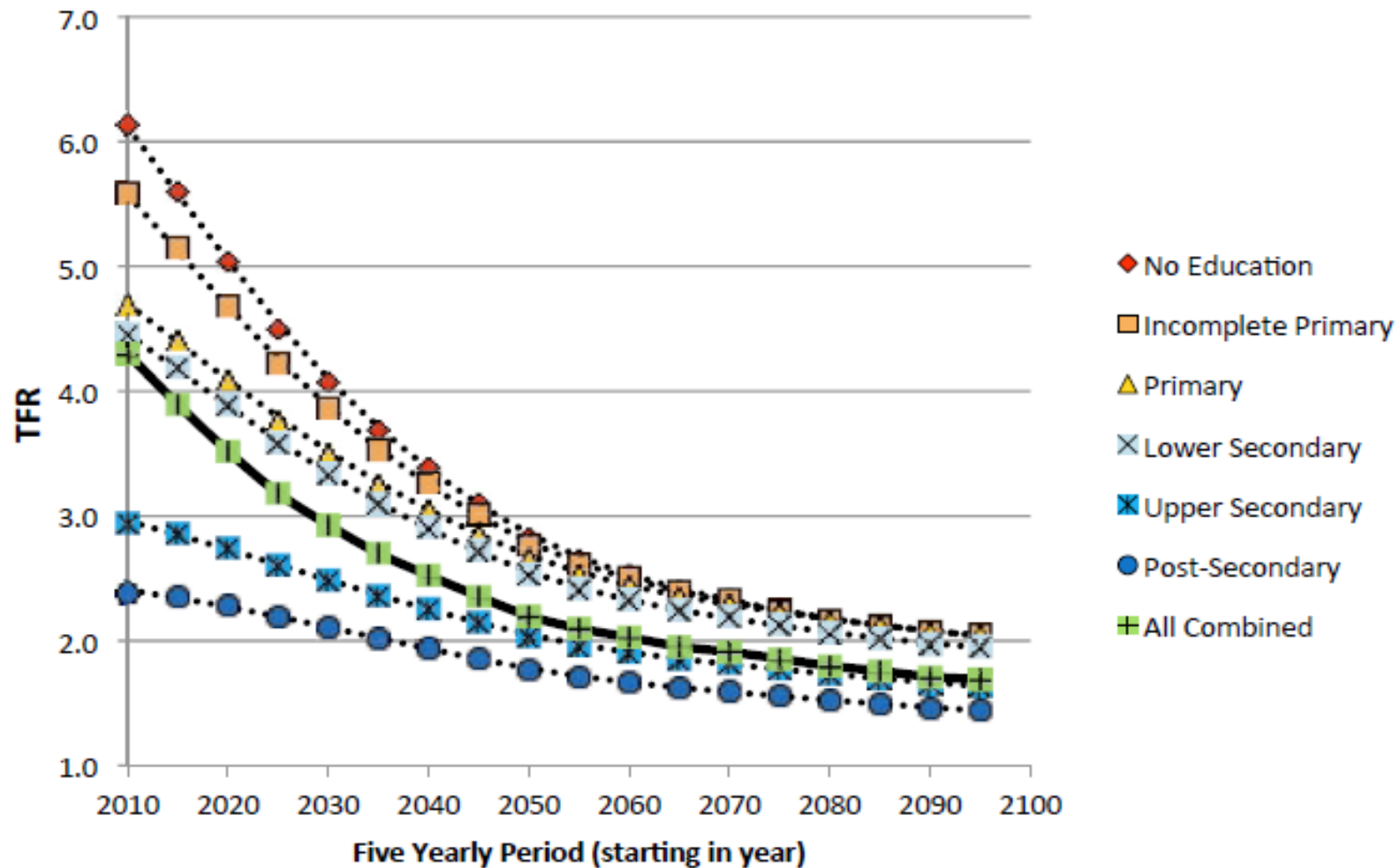
Singapore - 2020 SSP2



Singapore - 2030 SSP2



Fertility by Education in Kenya Empirical (2010) and Assumed





REVIEW

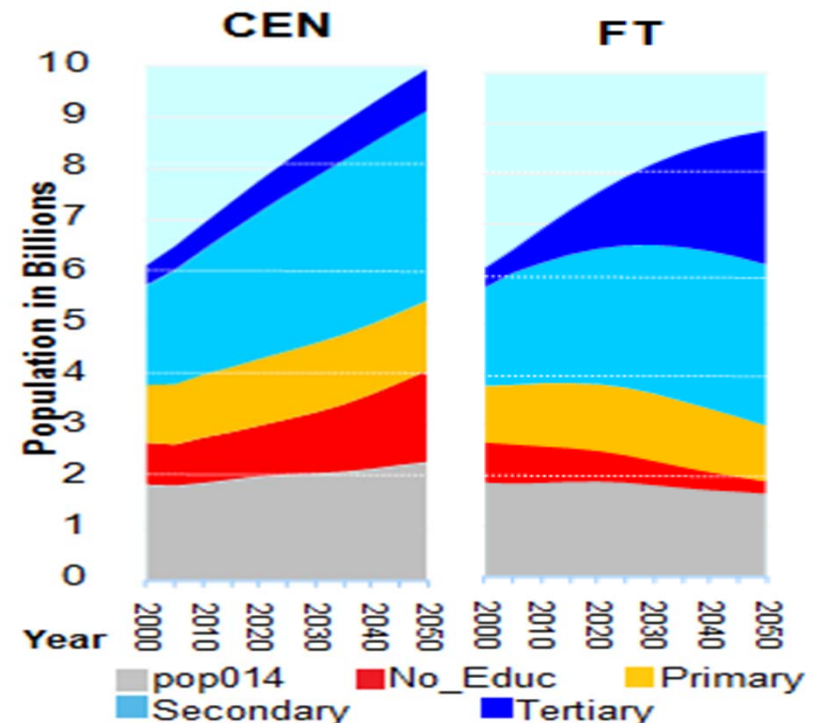
Global Human Capital: Integrating Education and Population

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



Adding Education to Age and Sex:

What is the education effect?



We have good reasons to assume “functional causality” from education to health and fertility. Education is not just a proxy for SES.

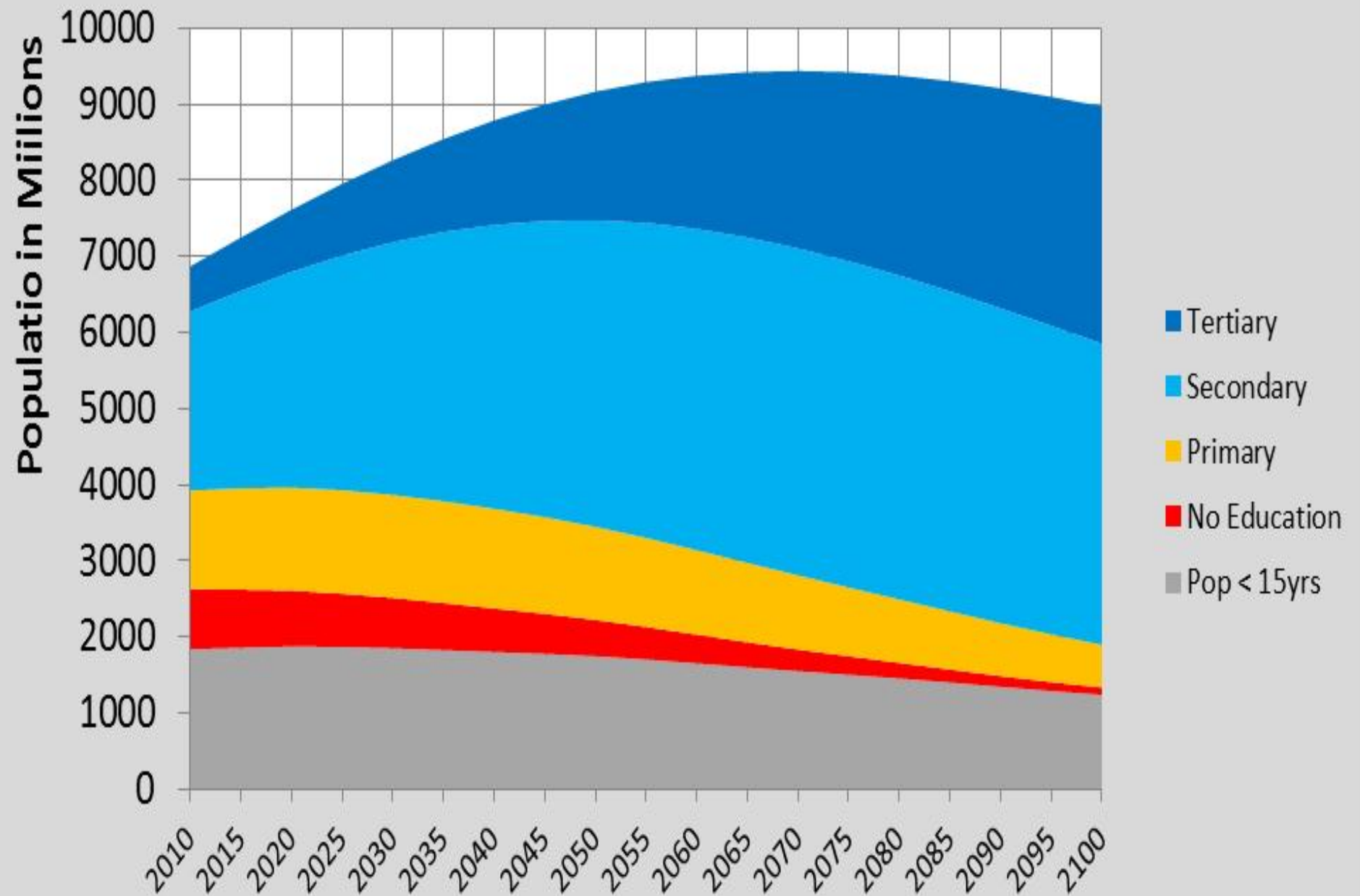
- Every learning experience builds new synapses in our brains and makes us “physiologically different” (Eric Kandel)
- Enhancement of cognitive skills
 - change risky behavior
 - extend personal planning horizon
 - learn from past damage
- Better access to relevant information
- Improvement of health and physical well-being
- Higher income at the individual and household level

New scenarios used by the global environmental change research community

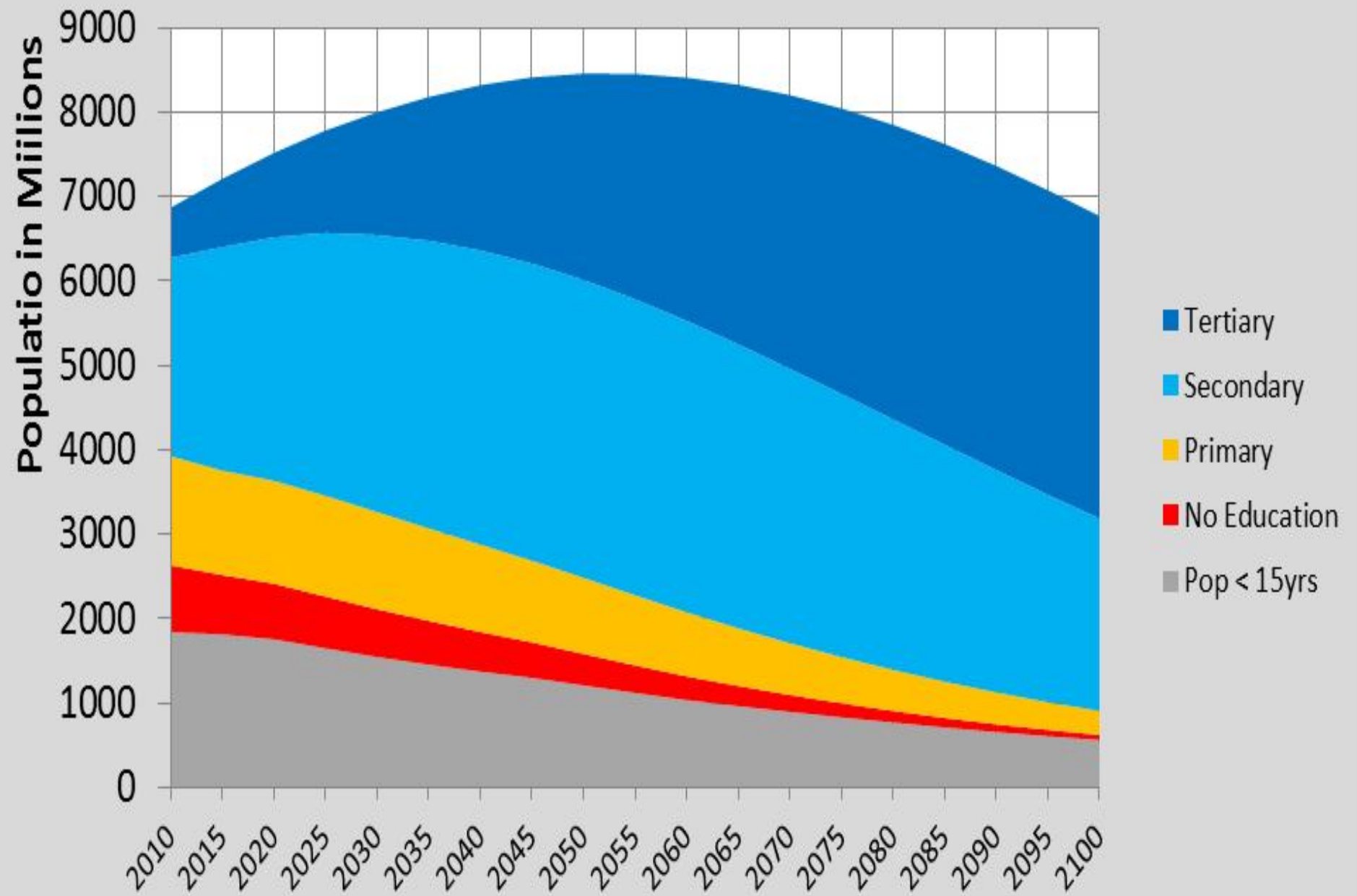


- **IPCC SRES-Scenarios** (2000 – group led by IIASA)
Only socio-economic variables used: Total population size and GDP. Pop serves as denominator.
- **SSPs (Shared Socio-economic Pathways)** 2013
Scenarios with the “human core” by age, sex and level of education produced by IIASA – identical to these new population scenarios.

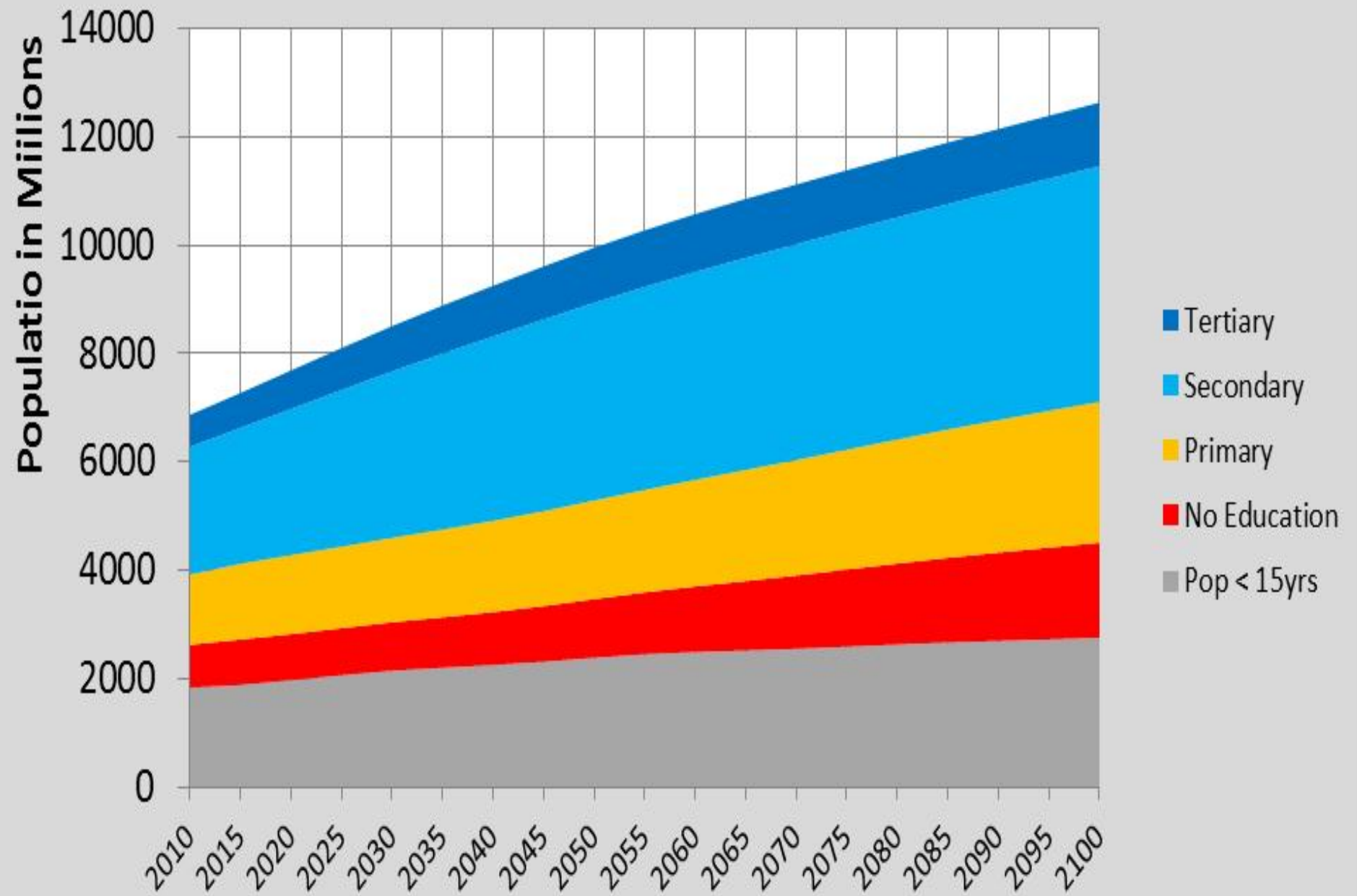
World SSP2



World SSP1



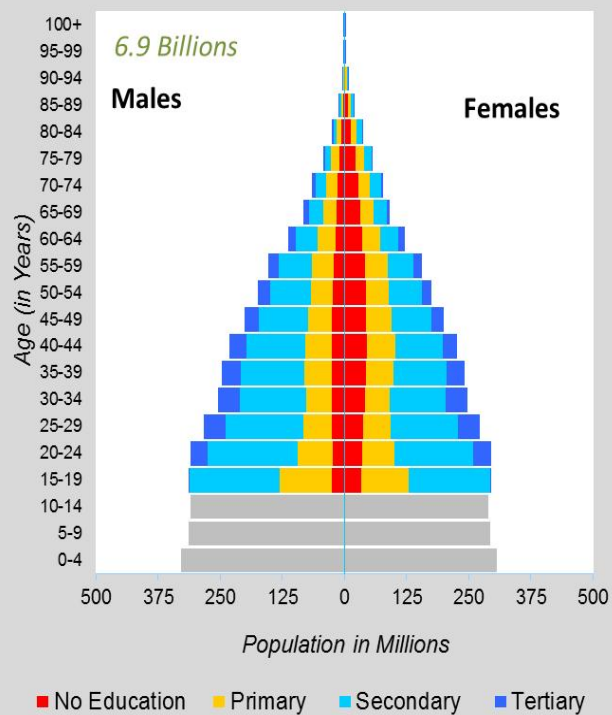
World SSP3



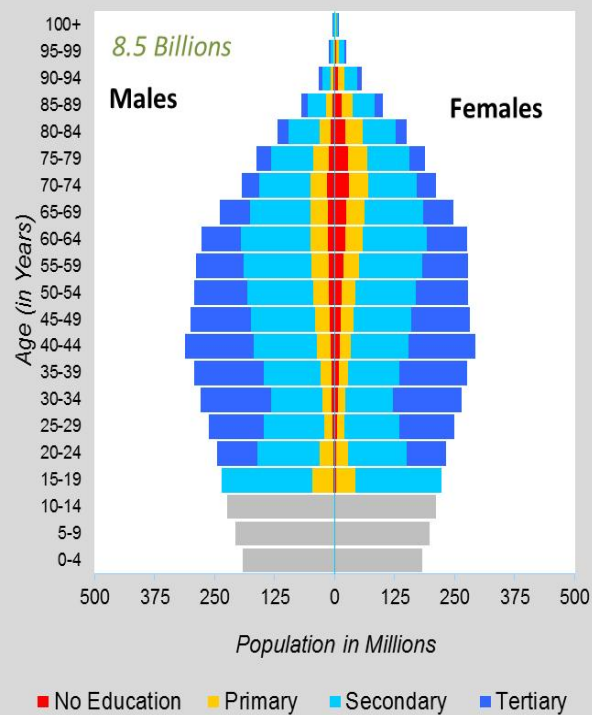


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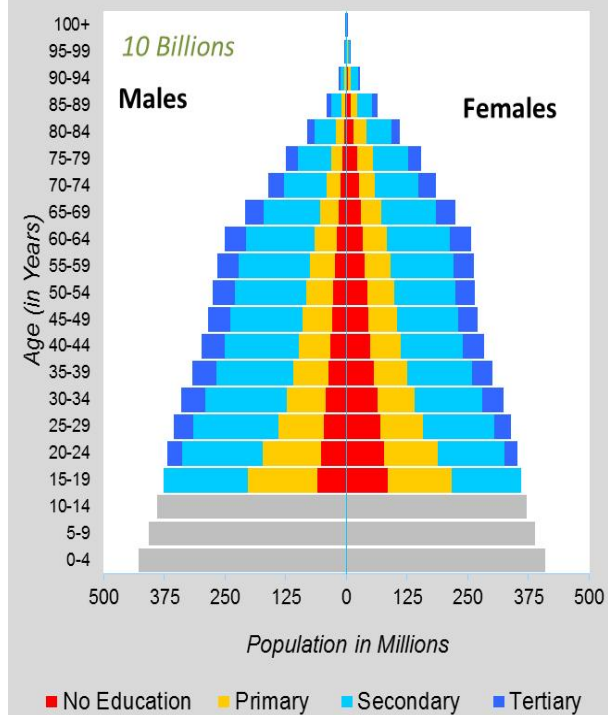
World - 2010



World - 2050 SSP1



World - 2050 SSP3



A 21st Century Population Policy Rationale:

National Human Resource Management for Sustainable Development



Focus on universal primary and secondary education and (basic) health.

- Valid for all countries in the world (poor and rich ones alike)
- Fully consistent with human rights
- At the heart of MDGs and SDGs

Specific focus on female education:

- Empower women within family and society to exercise their reproductive rights (want fewer and have fewer children)
- Moderate rapid population growth in high fertility countries
- Contribute to poverty reduction and economic growth
- Increase female labor force participation and productivity
- Contribute to quality of institutions and democracy