

Population Basics

Sources:

Gapminder.org (Hans Rosling) www.gapminder.org

United Nations Population Division http://esa.un.org/wpp/unpp/panel_population.htm

US Bureau of the Census: Thematic Maps:

<http://www.census.gov/geo/maps-data/maps/thematic.html>

US 210 Census by County

http://www2.census.gov/geo/maps/dc10_thematic/2010_Profile/2010_Profile_Map_Unit_ed_States.pdf

Population Reference Bureau

<http://www.prb.org/Publications/GraphicsBank/PopulationTrends.aspx>

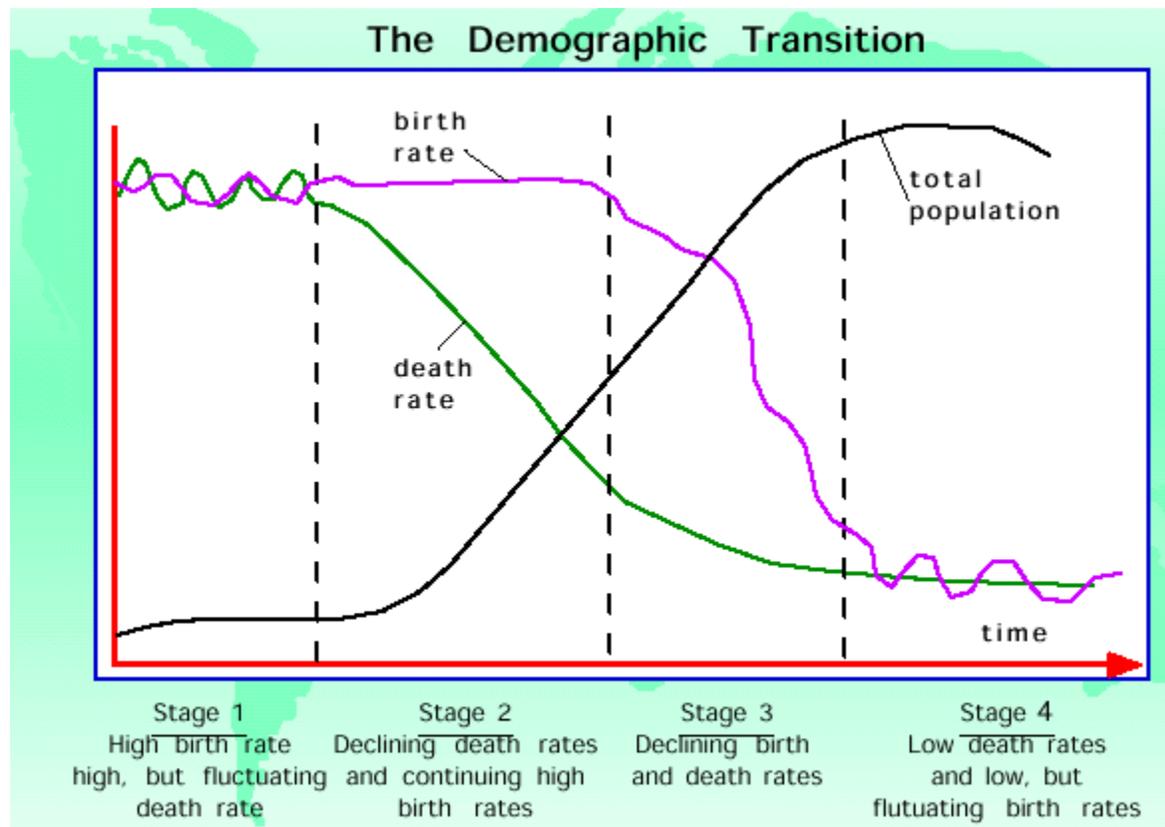
Population density varies enormously within nations and across nations.

Natural resource distribution and **public infrastructure distribution** also vary enormously.

Birth and death rates by wealth. Richer people live longer, healthier lives. They also choose to have smaller families, as George observed.

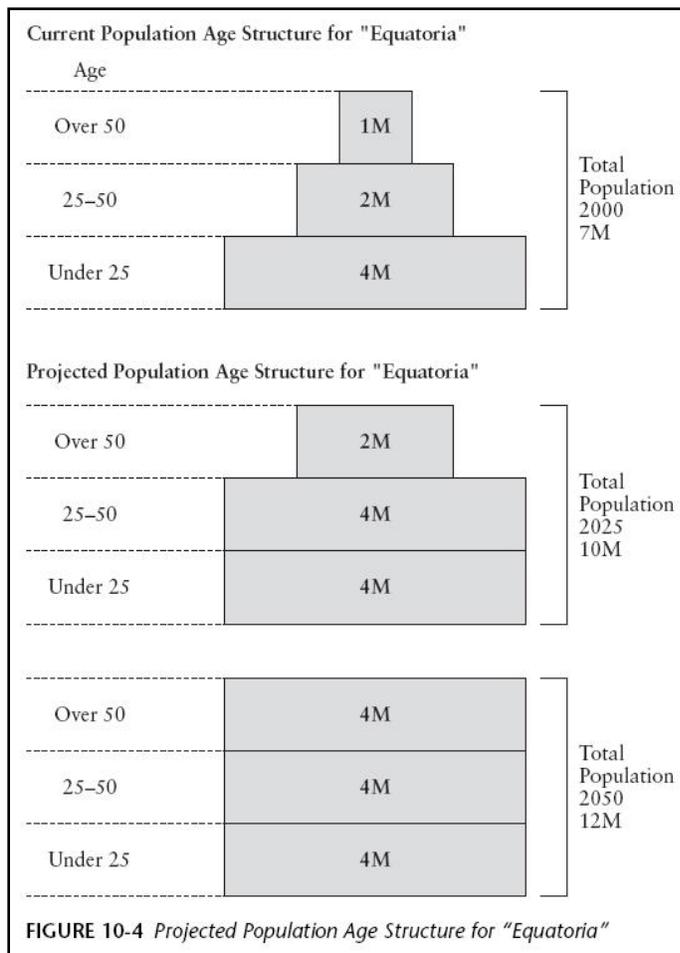
Birth and death rates vary enormously by country and region

[Demographic Transition from Global Change](#), U Michigan



Birth Rates: Birth rates are below replacement and falling in most of the world except sub-Saharan Africa. [World Total Fertility Rates 2015](#) from [Geobase](#)

However population is still increasing due to *population momentum*. That is, due to prior rapid population growth, a large part of the population is still at reproductive age.



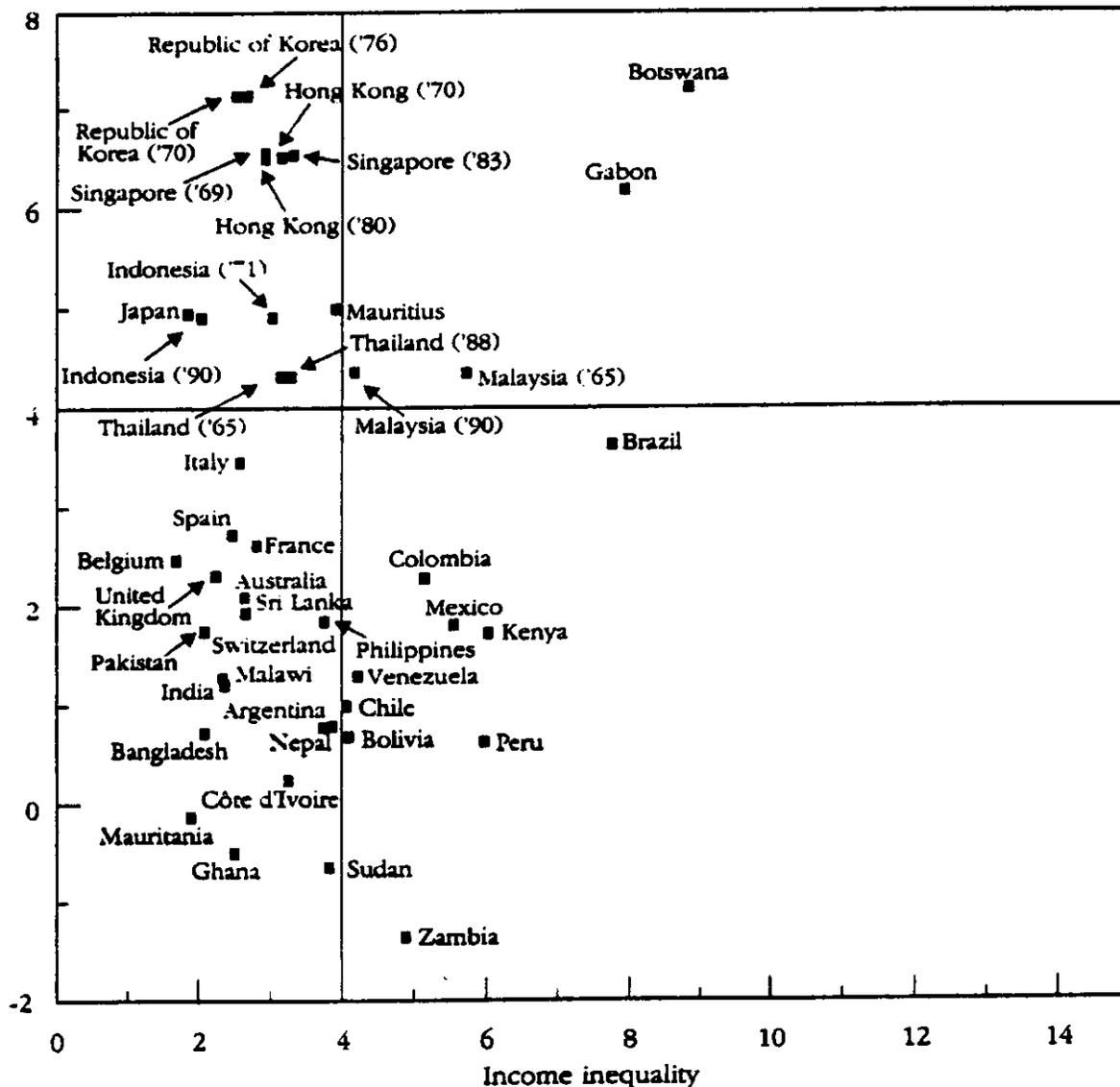
Modern problems of population growth in third world countries. There will be little reduction in poverty if population outstrips capital formation, as in badly governed third world countries, especially Africa. A high ratio of children to adults makes it hard to provide education. In addition, families depend on child labor, especially in agriculture; they may keep children from schools when schools are available. Families see children, boys especially, as old age insurance and a source of prestige. High population growth also often results in destruction of open access resources like fisheries or forests.

Virtuous Circle of policies to slow population growth, improve productivity and increase output. See Nancy Birdsall of the Center for Global Development Four basic policies of the virtuous circle are: Improved education, especially of women; improved healthcare with contraception included; improved nutrition, especially of pregnant women and children; and improved status and work opportunity for women. See [Nancy Birdsall: Inequality Matters/](#)

Inequality and Growth. Virtuous Circle policies are intrinsically equalizing. East Asian countries that have followed the virtuous circle have achieved much higher growth. Birdsall argues this isn't an accident.

Here's a graph from Birdsall's article, "Inequality and Growth Reconsidered," World Bank Economic Review, 1995, p 480.. (Note: Income inequality is measured as the ratio of the income

Growth of GDP per capita
(percent)



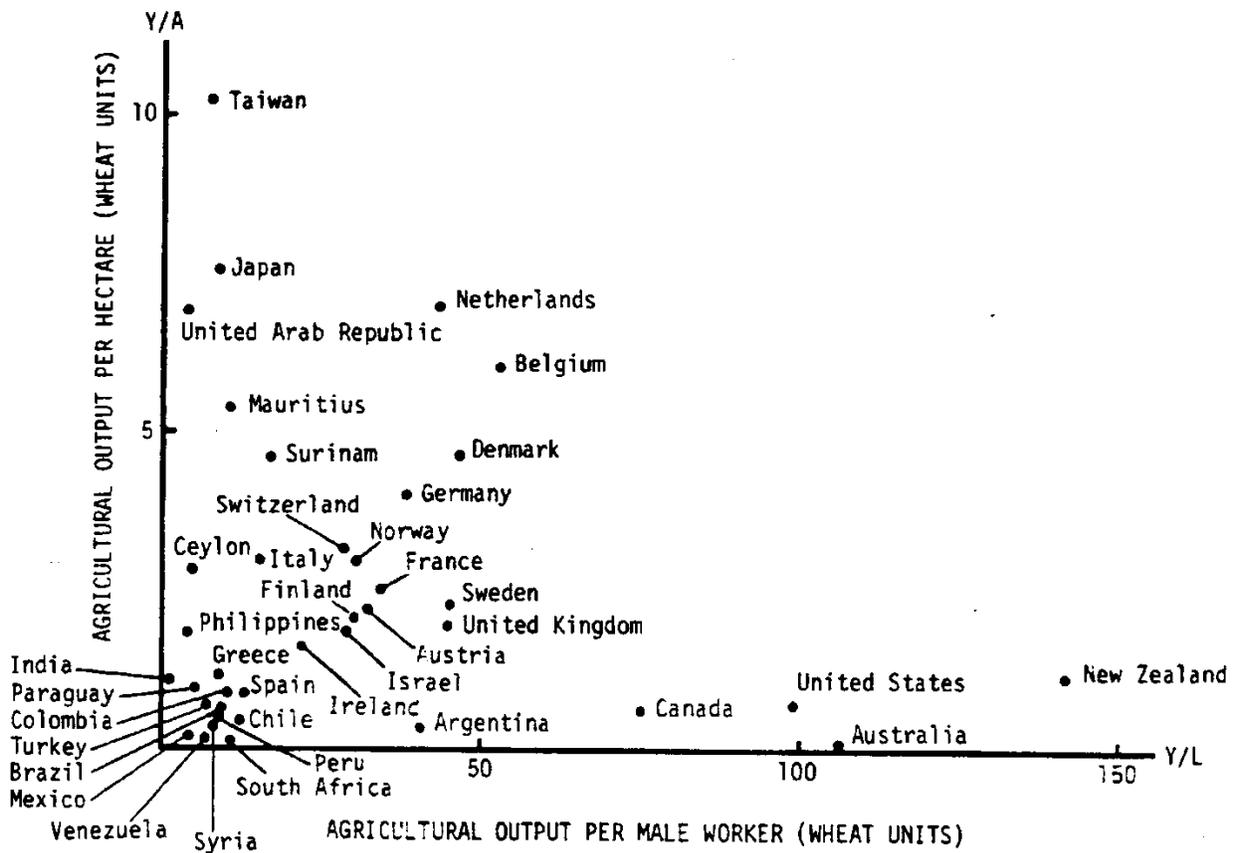
shares of the richest 20 percent to the poorest 40 percent of the population For the East Asian economies, the change in that ratio is shown using the earliest and the latest year for which that ratio is available. For all other economies, the average of that ratio is taken using all years in the period 1965-89 in which the ratio was available. Source: World Bank (1994).)

More equal societies do better on many social indicators, including health and longevity. (See the Spirit Level on U-tube <http://www.youtube.com/watch?v=4XEVkVCqinc>)

Two questions on food:

Is the world in danger of running out of suitable land for food production over the next 50 years? Absolutely not! There is enormous room for intensification of production on existing land

Does the expansion of agriculture threaten the environment? Yes! The US subsidizes wasteful, capital and land-intensive agriculture, which overuses water, fertilizer and pesticides. Inequality in third world countries drives small farmers onto fragile, marginal lands, creating erosion and deforestation.



Hayami and Ruttan on Agricultural Development.: the importance of factor proportions

Output per acre and per worker vary greatly between densely populated countries like Japan and lightly populated countries like the USA

Taiwan high per acre, low per worker. Eg. 11 units per hectare and 5 units per worker, workers per hectare = $11/5$

USA high per worker, low per acre. Eg. 1 per hectare & 100 per worker = 1 worker/100 hectares

Third world countries—output per acre and per worker low due to bad institutions and consequent lack of capital investment

Shows that it's possible to get much higher output per acre by using more labor