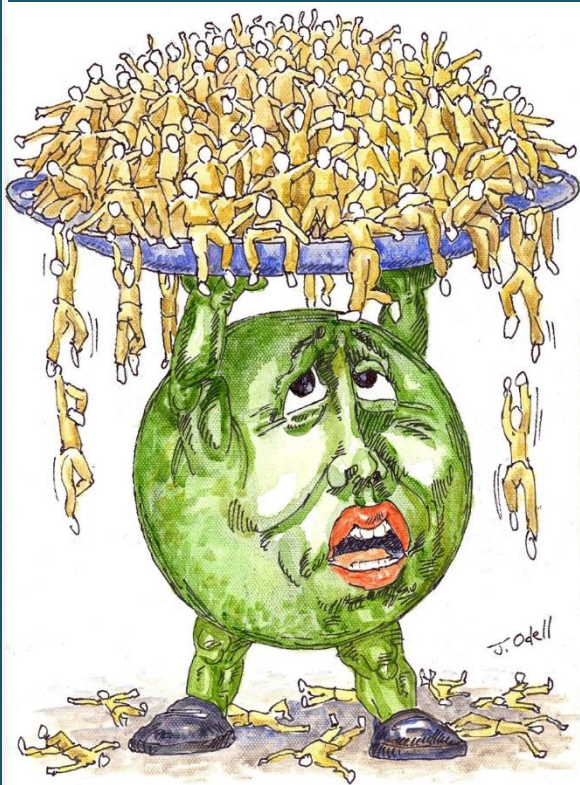


POPULATION REVIEW

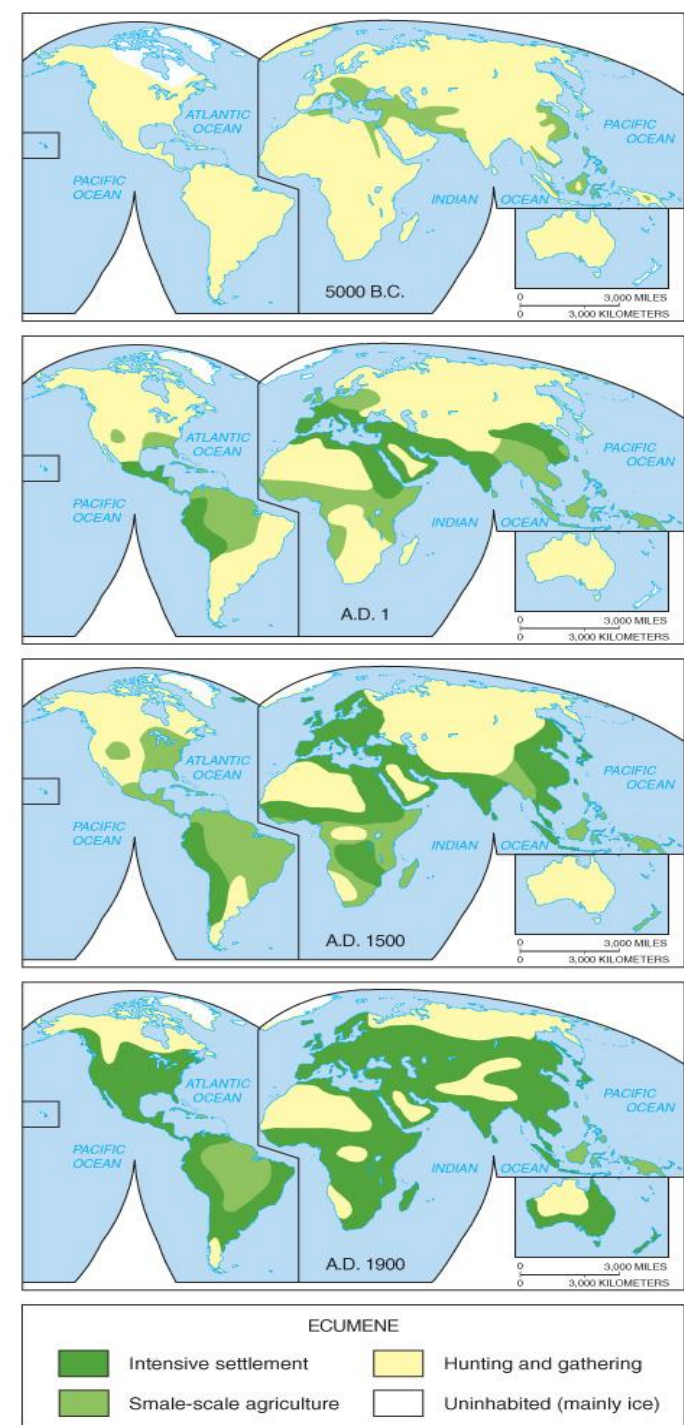


Population Big Ideas

- Density – Arithmetic, Physiological, & Agricultural
- Demographic Transition Model
- **Epidemiological Transition Model**
- Population patterns – fastest growing and negative growth countries
- Population pyramids – replacement rate, dependency ratio, demographic equation, sex ratio
- Malthus and Neo-Malthusians – carrying capacity
- Population policies

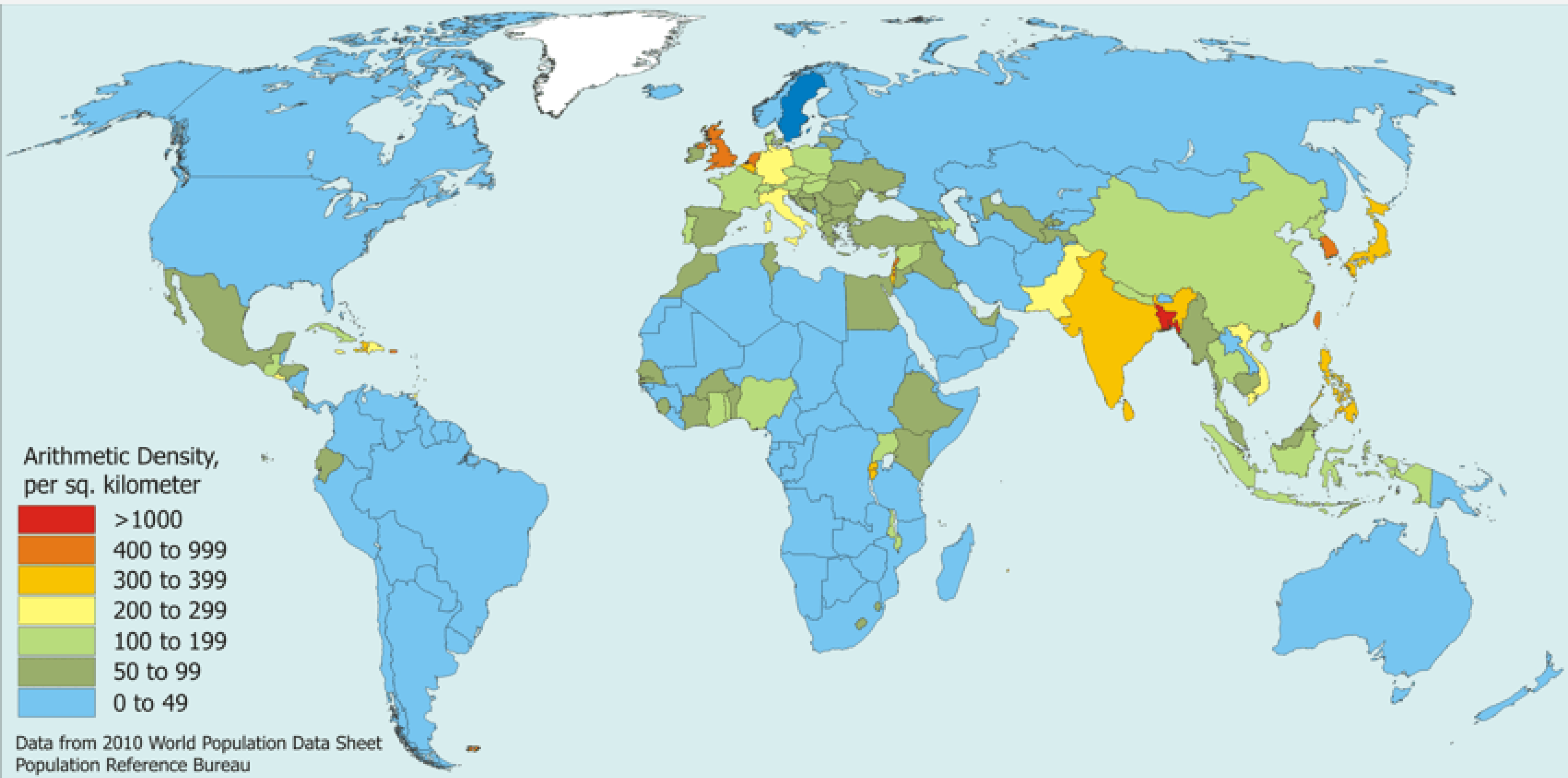
Ecumene

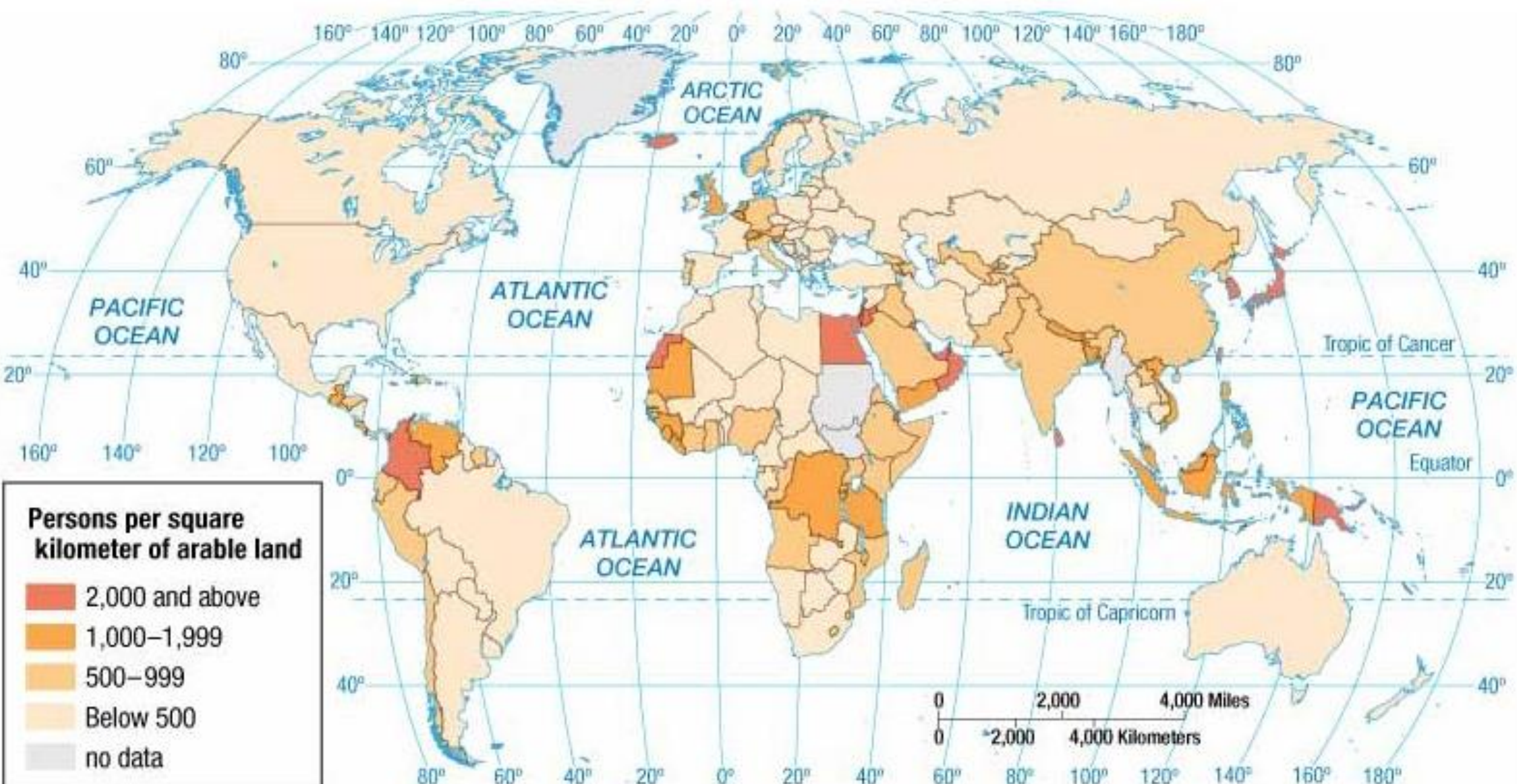
- The portion of the earth with permanent human settlement.
 - Has expanded to cover most of the world's land area



Population Density

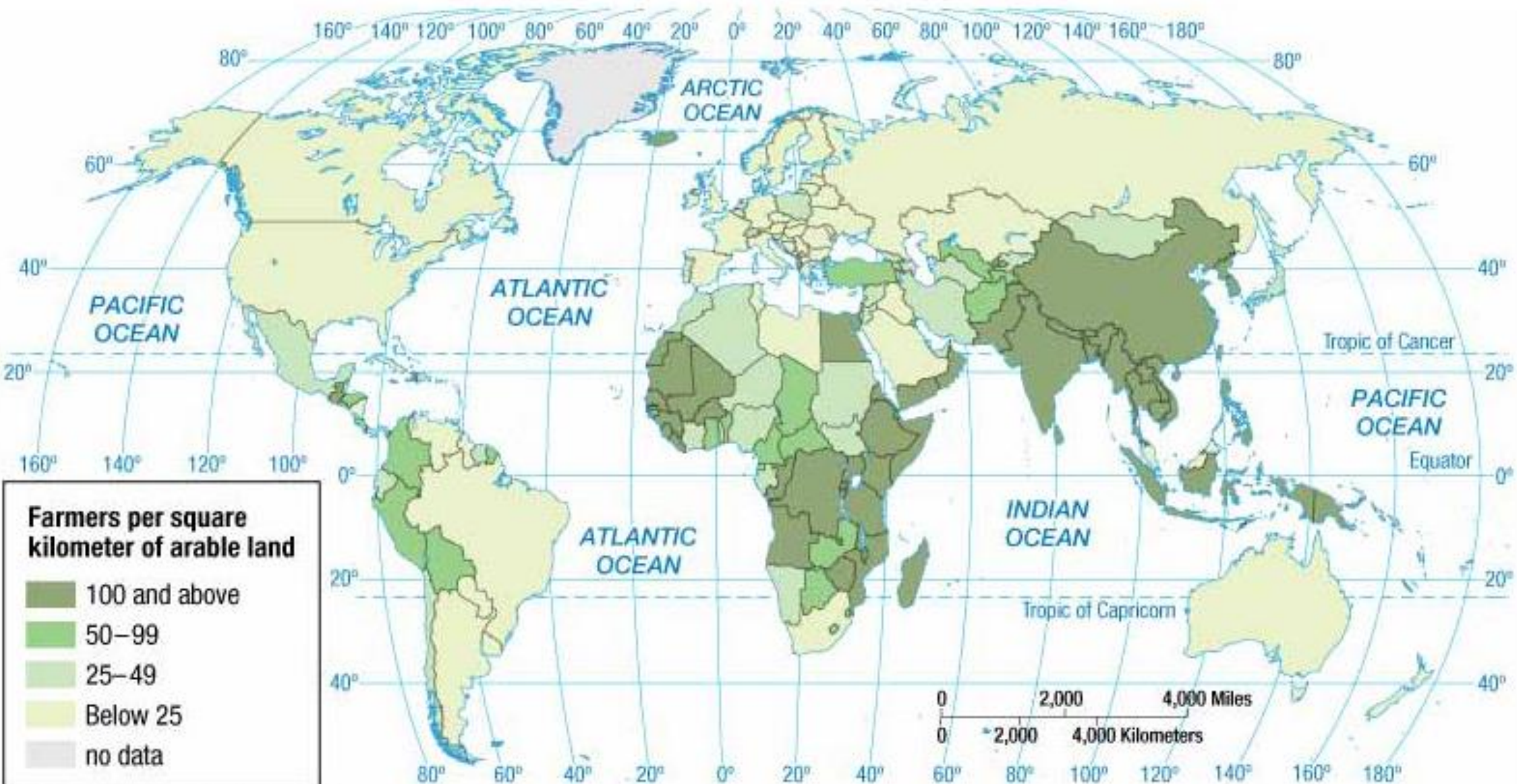
- Arithmetic Density
 - Total number of people divided by total land.
 - Enables comparisons of the # of people trying to live on a given piece of land in different regions of the world.
 - Physiological Density
 - Number of people supported by a unit area of arable land
 - Agricultural Density
 - Ratio of the number of farmers to the amount of arable land.
 - Helps to account for economic differences
-





Persons per square kilometer of arable land

- 2,000 and above
- 1,000–1,999
- 500–999
- Below 500
- no data



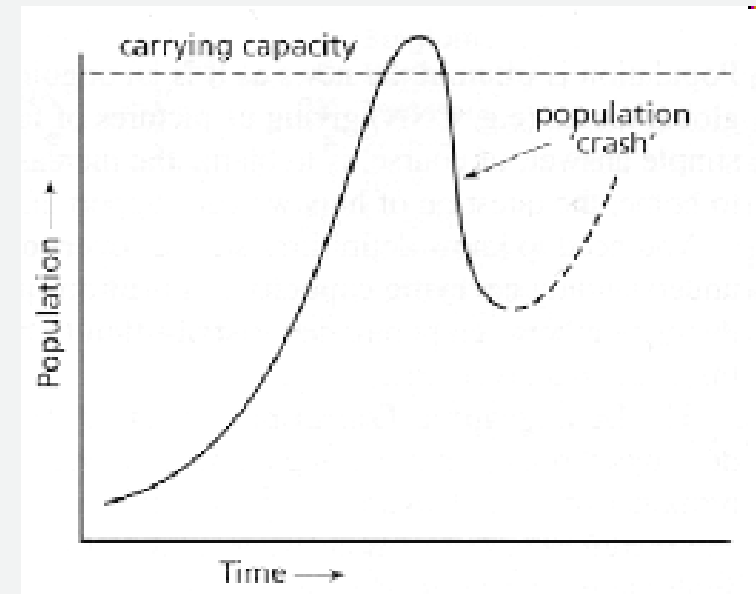
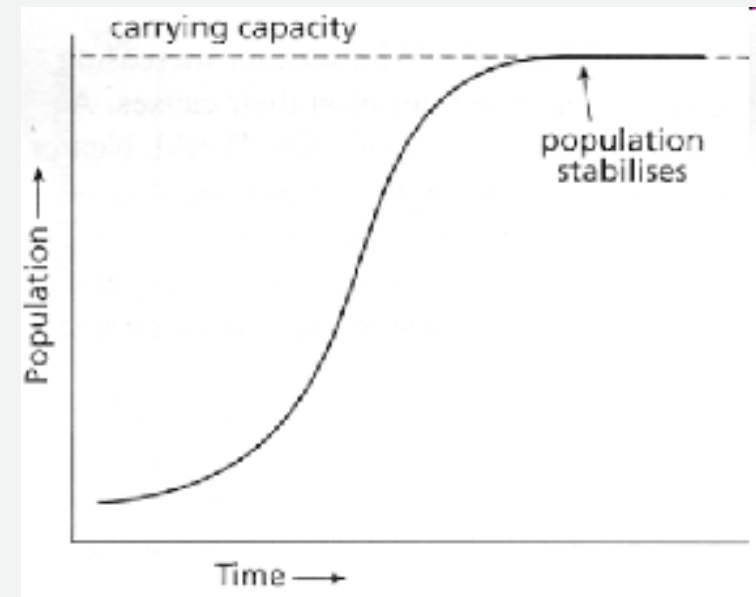
J-Curve & S-Curve

- J-Curve

- Population projection show exponential growth. If the population grows exponential our resource use will go up exponential and so will our use as well as a greater demand for food and more.

- S-Curve

- Traces the cyclical movement upwards and downwards in a graph.

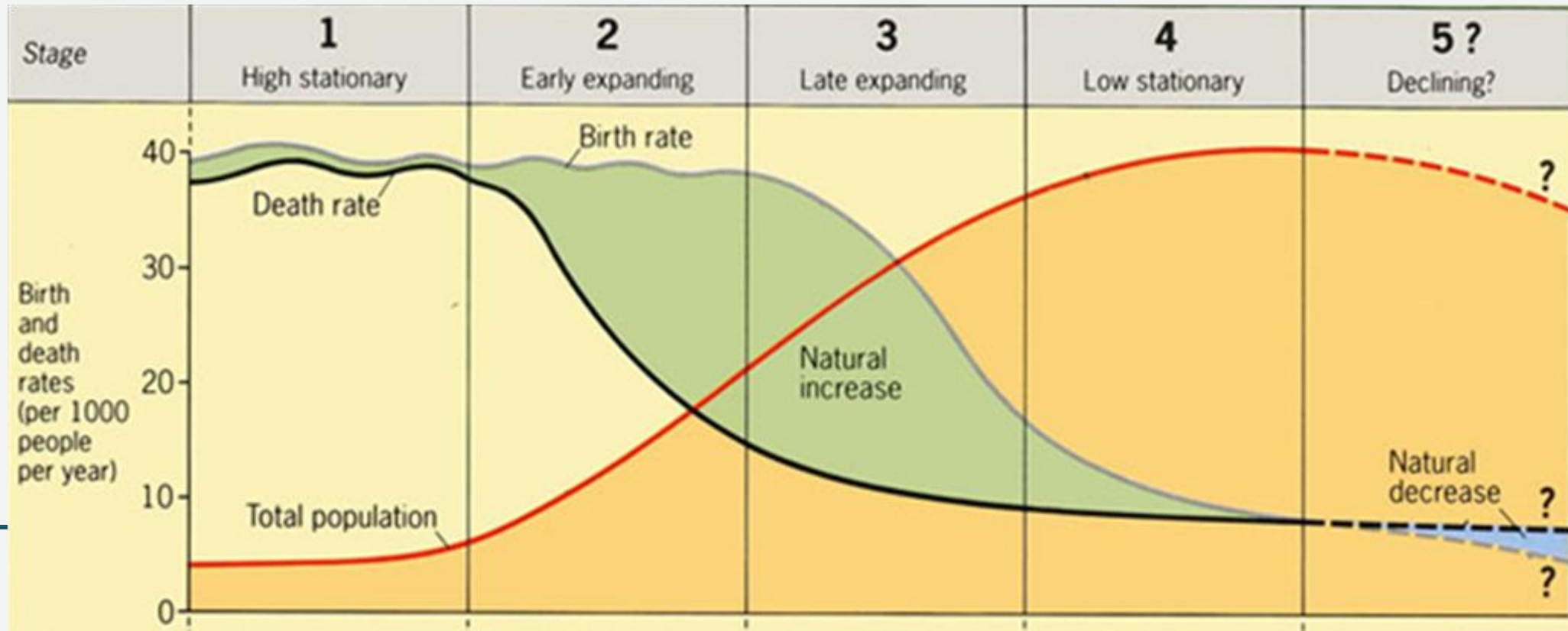


Components of Population Growth

- Demographic Transition Model
 - Measure population change
 - Crude Birth Rate (CBR) – total number of live births in a year for every 1000 people
 - Crude Death Rate (CDR) – total number of deaths in a year for every 1000
 - Rate of Natural Increase (RNI) – percentage by which a population grows in a year
 - Doubling time (the number of years needed to double the population) is affected by RNI
 - Total Fertility Rate (TFR) – avg. number of children a woman will have in her child bearing years.
-

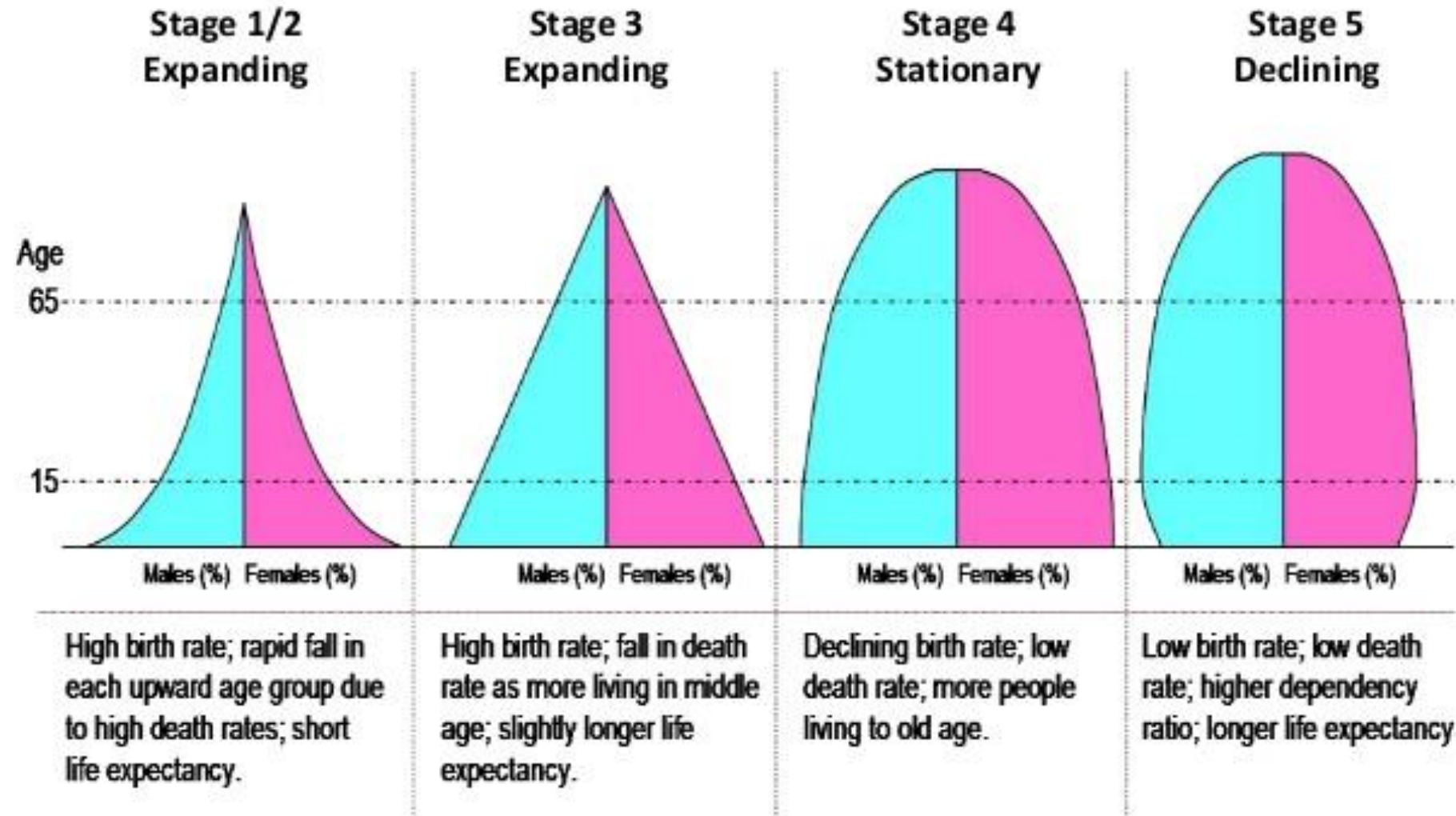
Stages of the Demographic

Stage	Birth Rates	Death Rates	Natural Increase
1	High	High	Virtually no long term natural increase
2	High	Rapid decline	Very high natural increase
3	Rapid decline	Decline	Natural increase begins to moderate
4	Very low	Very low	Virtually no long-term natural increase w/possible decrease

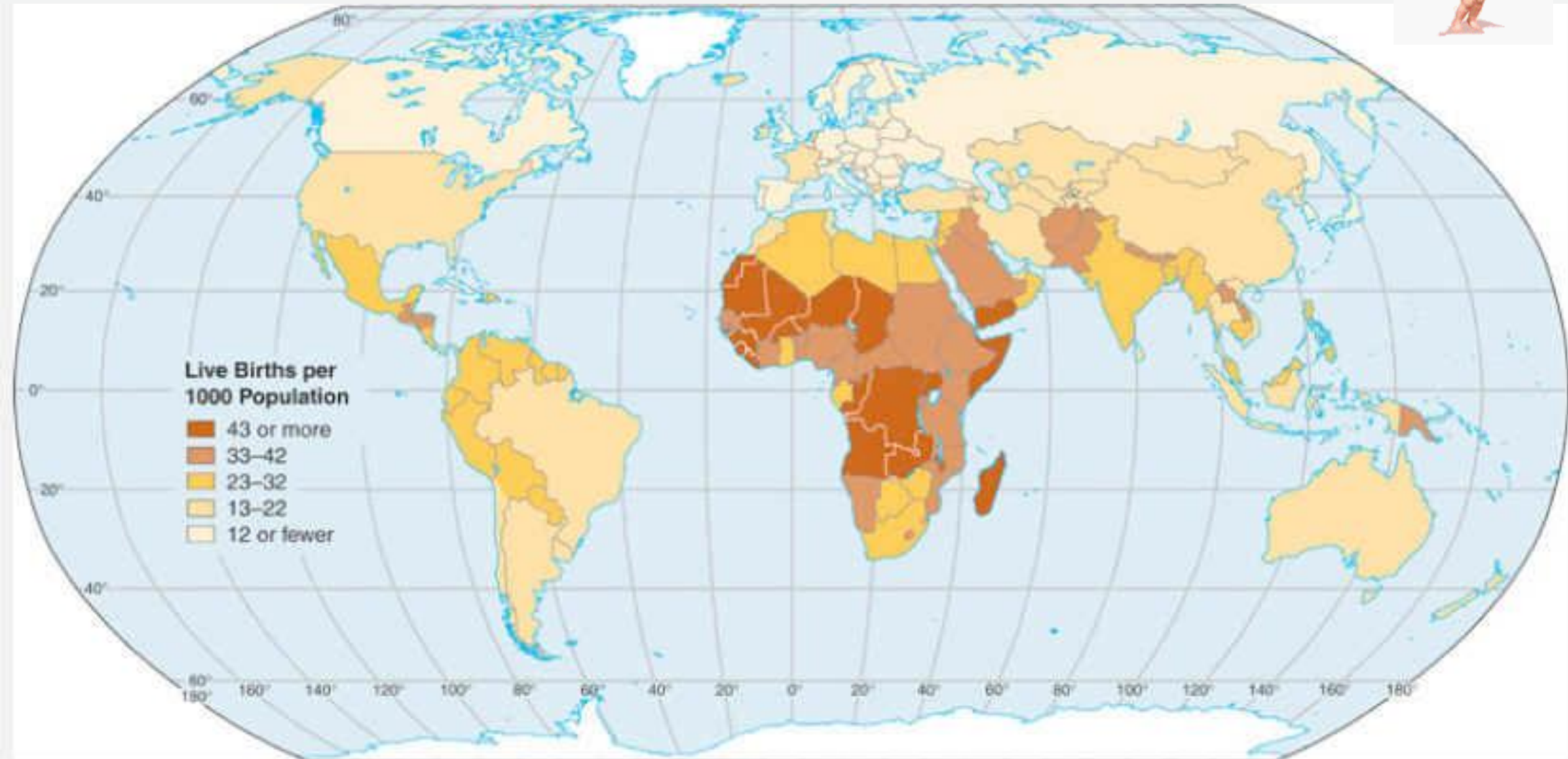
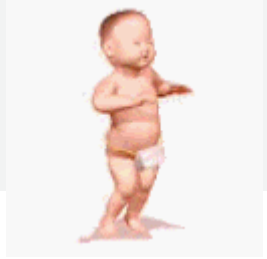


What countries fit in these stages?

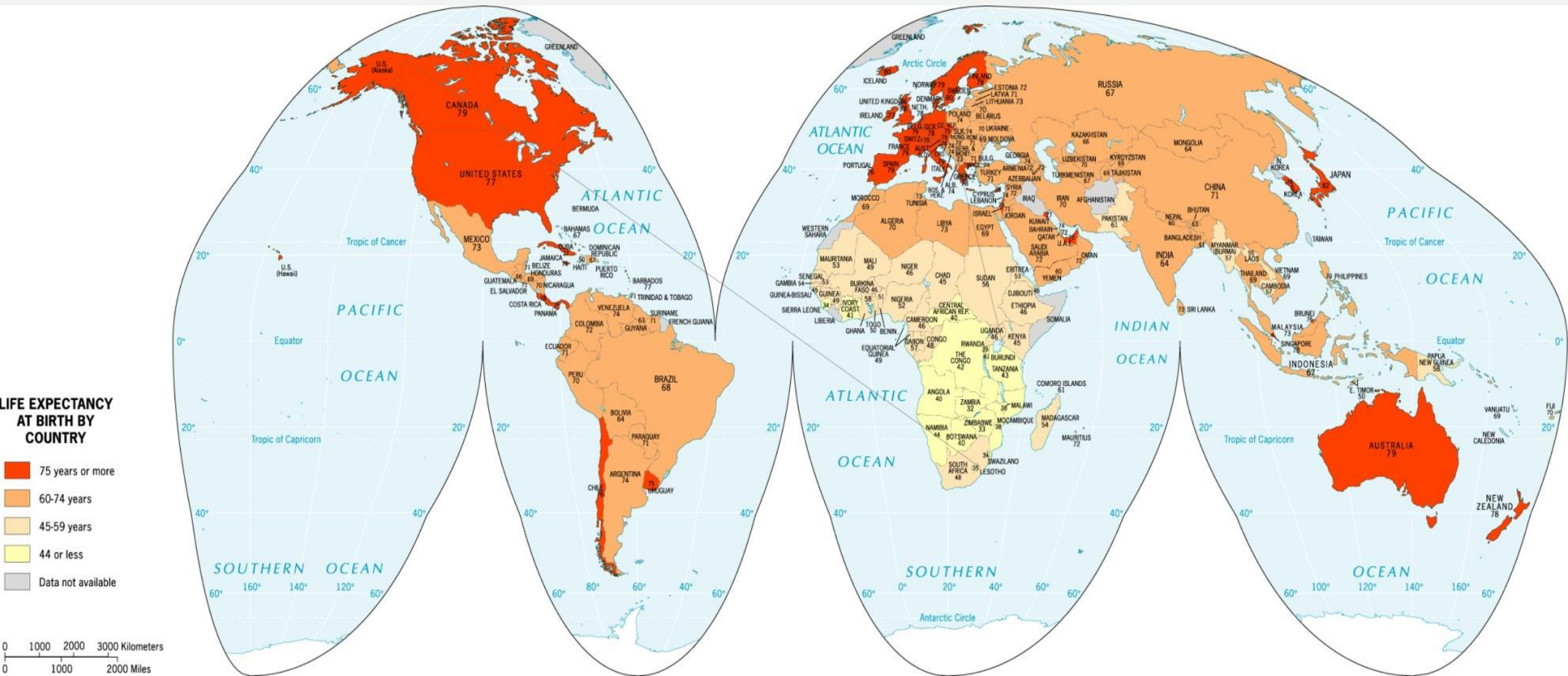
The Demographic Transition Model



Crude Birth Rate

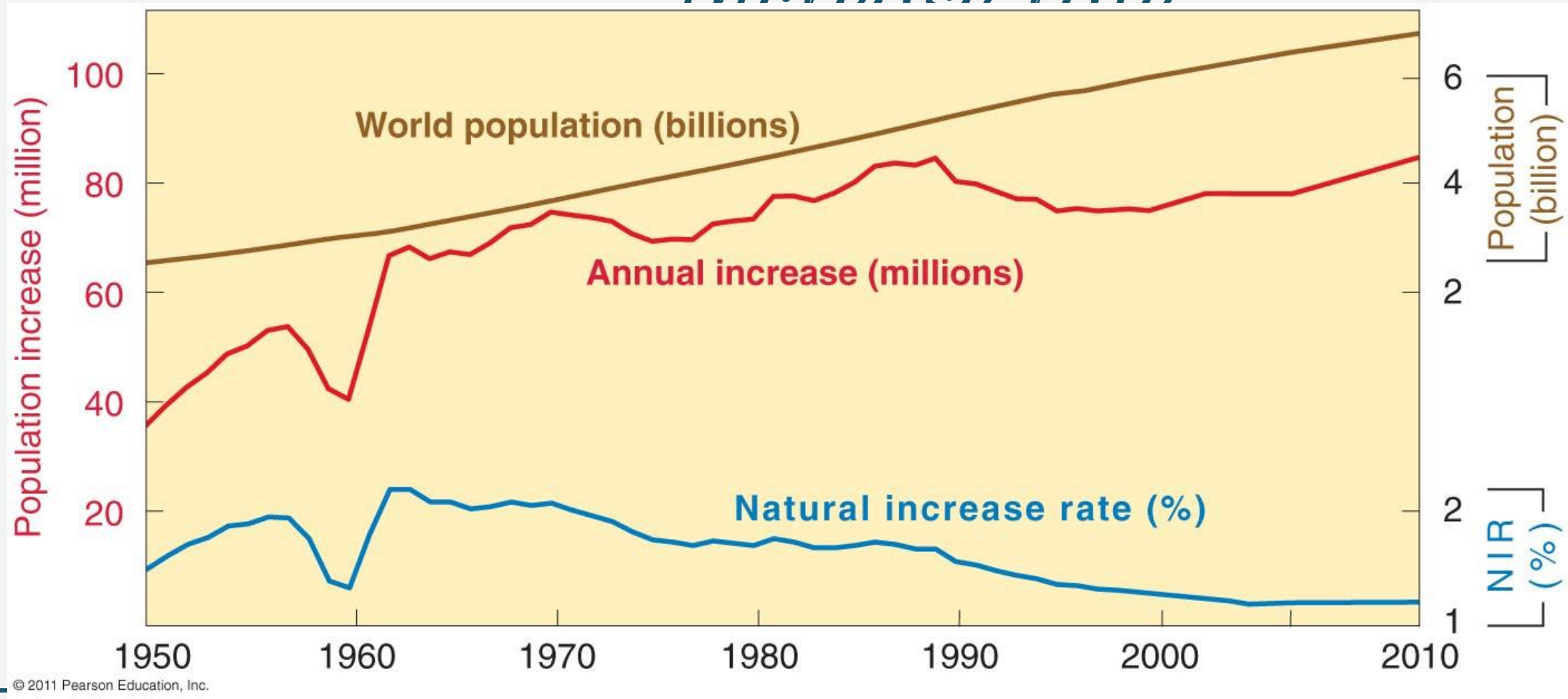


Life expectancy

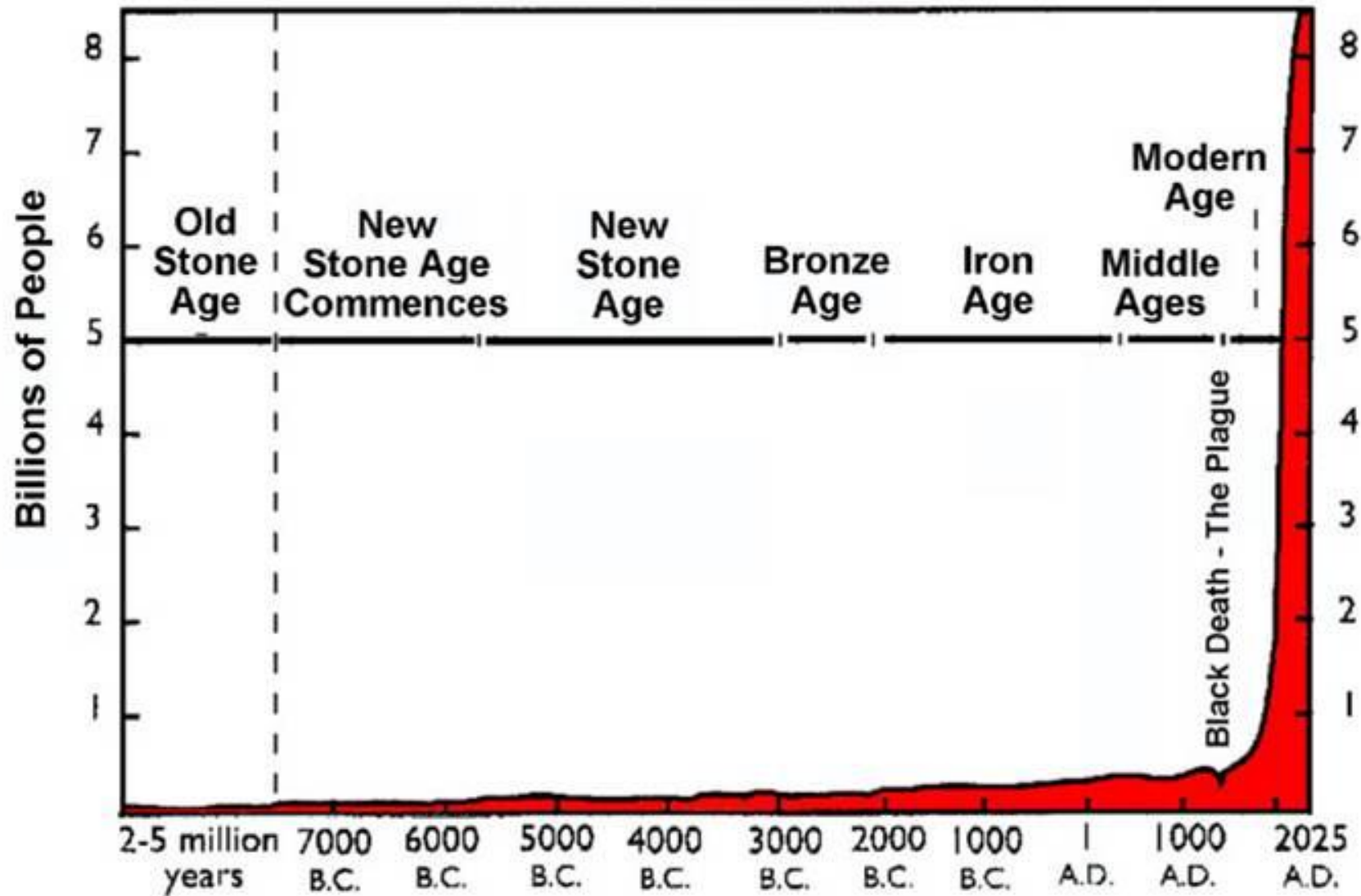


Rate of Natural Increase (RNI)

*Also known as Natural
increase rate*



World Population Growth Through History

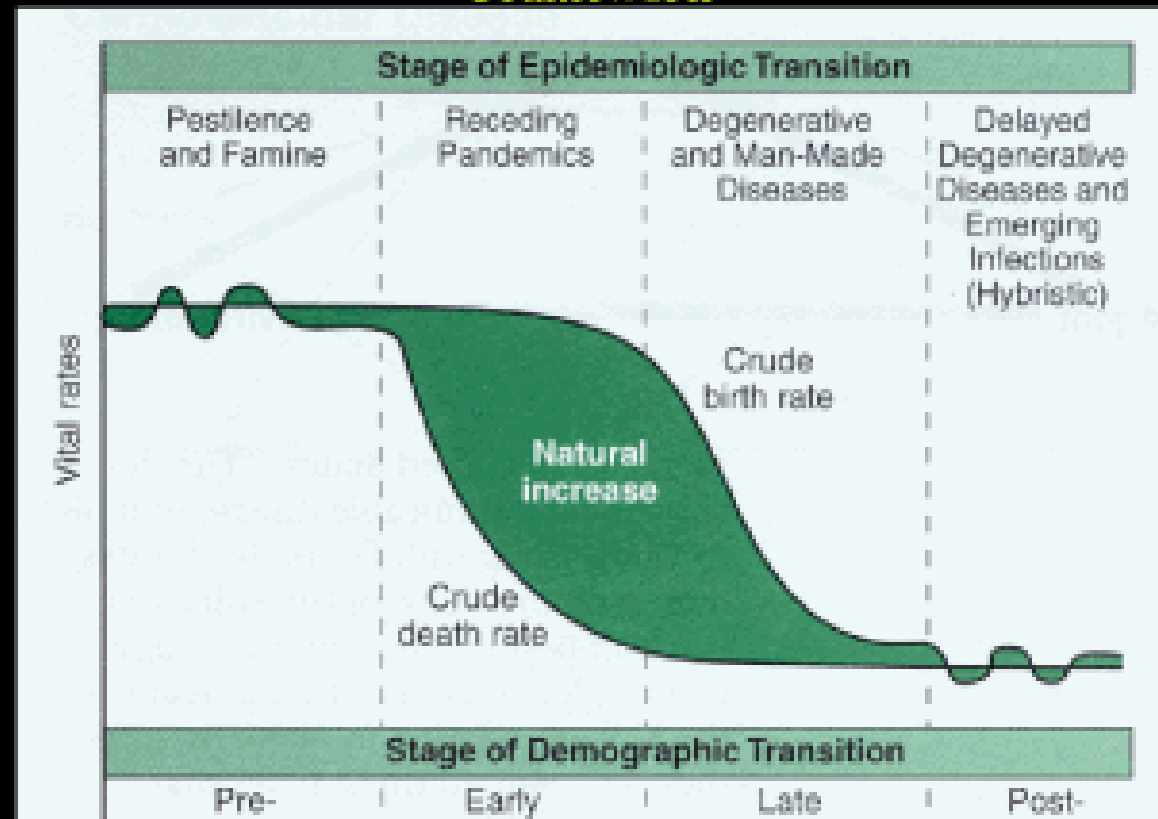


From "World Population: Toward the Next Century," copyright 1994
by the Population Reference Bureau

Epidemiological Transition Model

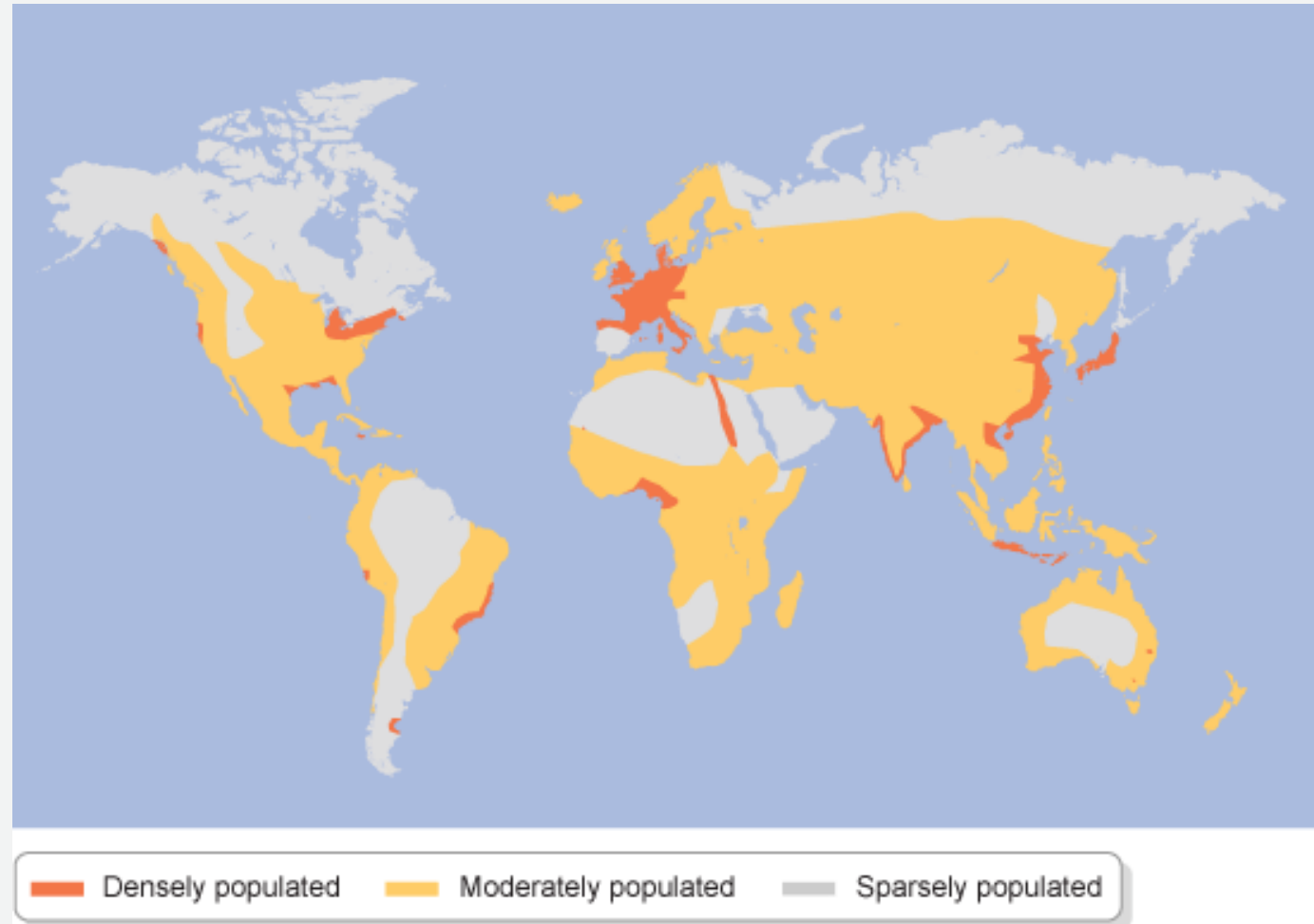
- Abdel Omran 1971
- Disease vulnerability shifts in patterns similar to the demographic transition model.
 - Stage 1 = Black Plague
 - Stage 2 = Cholera
 - Stage 3 = Chronic disorders
 - Stage 4 = Longer life expectancies

Figure 3 **Demographic/ Epidemiologic Transition Framework**



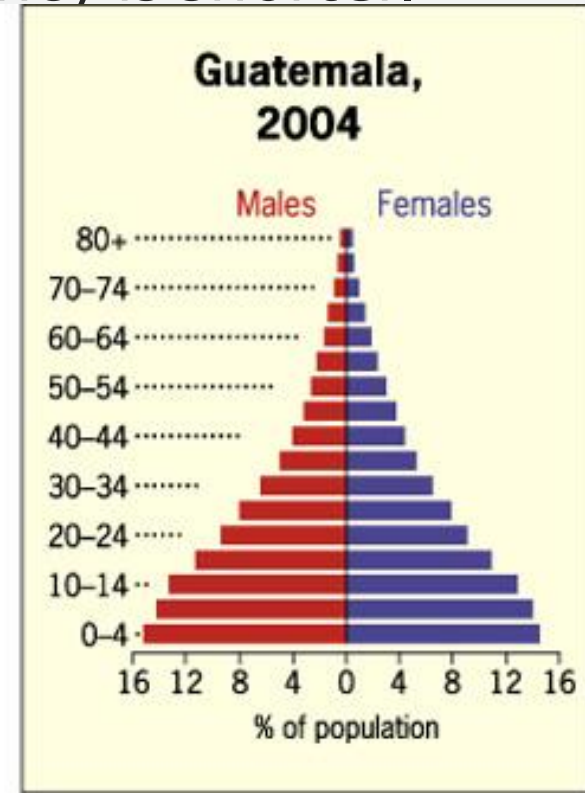
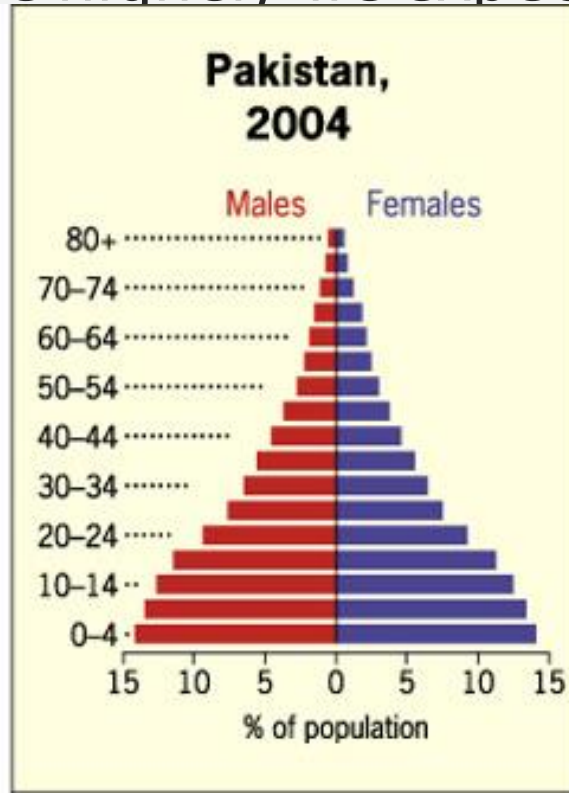
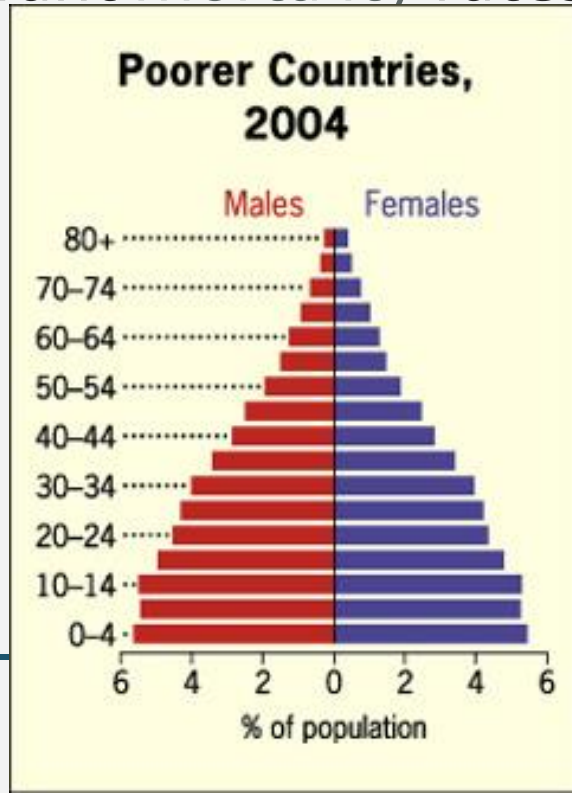
Population Patterns

- Areas of high and low population density are unevenly spread across the world.
 - The majority of places with high population density are found in the northern hemisphere.
-



Population Pyramids

- Charts that show the percentages of each age group in the total population, divided by gender.
- For poorer countries, the chart is shaped like a **pyramid**
 - Infant mortality rates are higher; life expectancy is shorter.



Population Pyramids

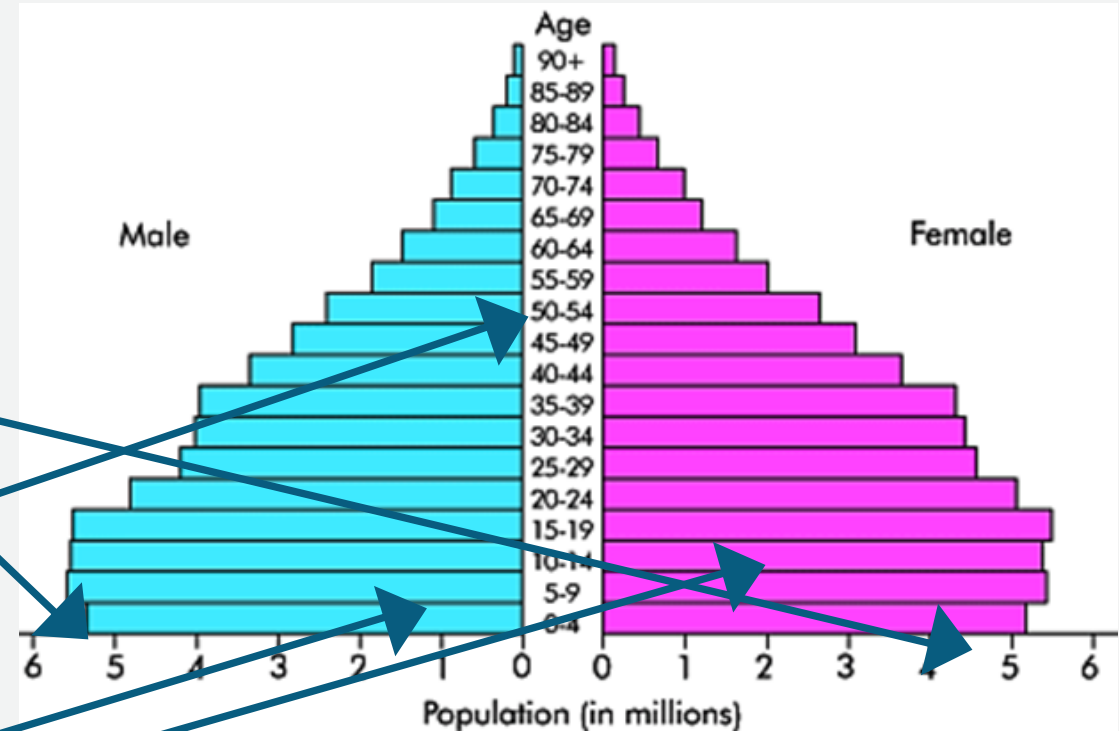
- A population pyramid shows lots of different information about a countries population

• Population in people & as a % of men

• Population in people & as a % of women

• Population by age group (every 5 years if grouped together)

• Population of men & women by age group

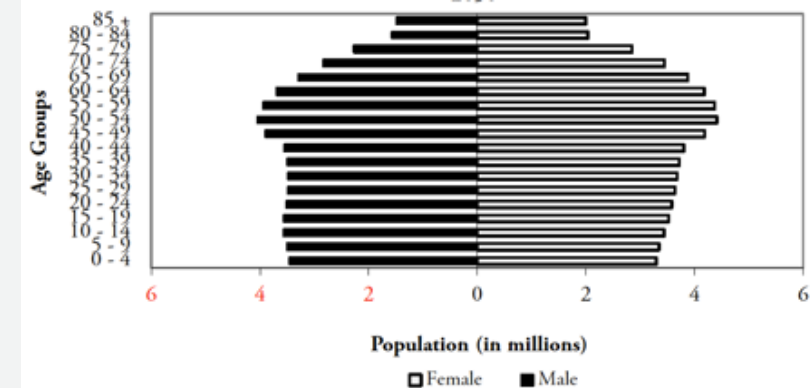
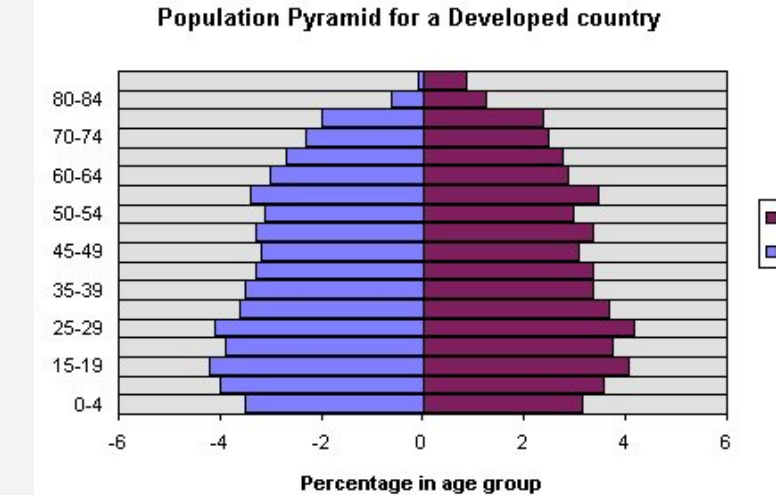
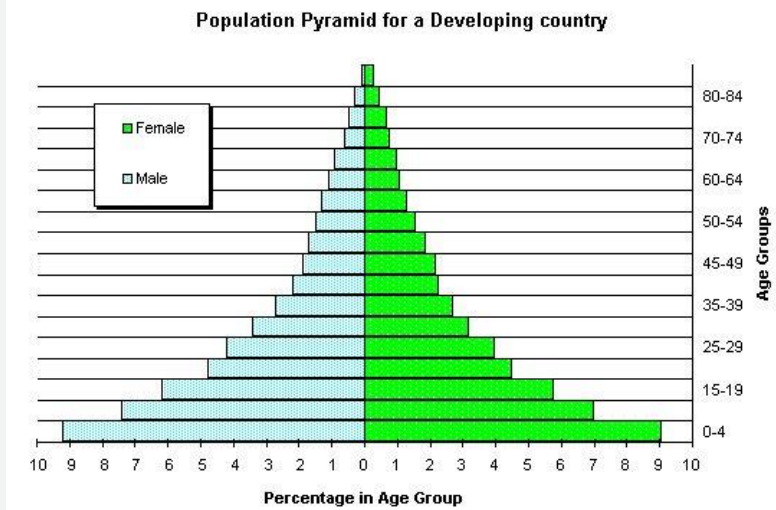


How to read a population pyramid


- First, determine if the pyramid is **measuring** in millions of people or as a percent of the population.
- Second, what are you being asked?
 - About women, men, or the total population? Of a certain age group, several ages grouped together, or all together?
- Finally, identify what you can infer from the pyramid.
 - Level of development
 - Major events in the country's history
 - EX: War would be represented by several age groups next to each other where there are many more women than men
 - EX: A time of celebration may show a population spike, like the Baby Boom of the late 40s & 50s in the US

Population pyramid Developed, Developing, Middle Income

- Developing tend to have a triangular shape
 - Low life expectancy; Steady % of each age dying off; High birthrates
- Developed have more of a block base
 - No decrease in age groups until roughly 60; Better medical care
- Middle Income take parts of both of these
 - Block through 30-35; Steady decrease with every group after.



Components of Population pyramids

- Replacement Rate
 - Total Fertility Rate at which girls would have an average of exactly one daughter over their lifetimes.
 - Dependency Ratio
 - Measure showing the number of dependents (aged 0-14 & over the age of 65) to the total population (age 15-64)
 - Demographic equation
 - Increase or decrease in the population (births – deaths) +/- the amount of migration to the demographic area
 - Sex Ratio
 - Ratio of males to females in a population
- 

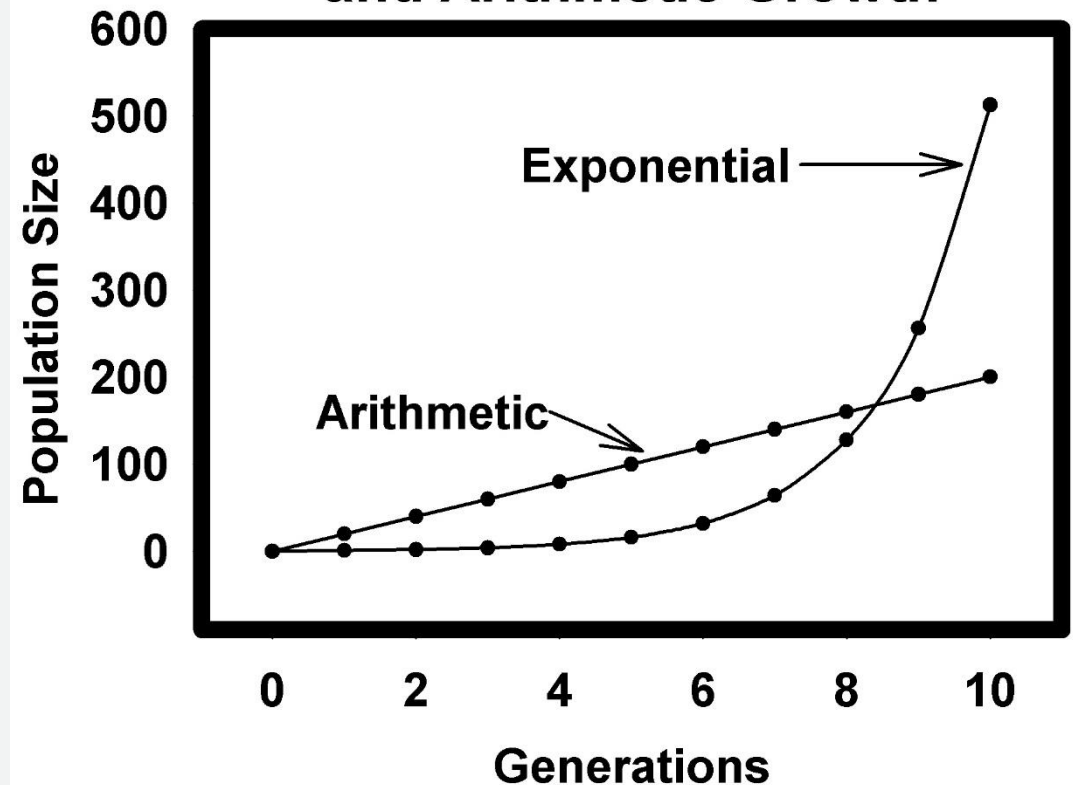
Thomas Malthus



Thomas R. Malthus
1766-1834

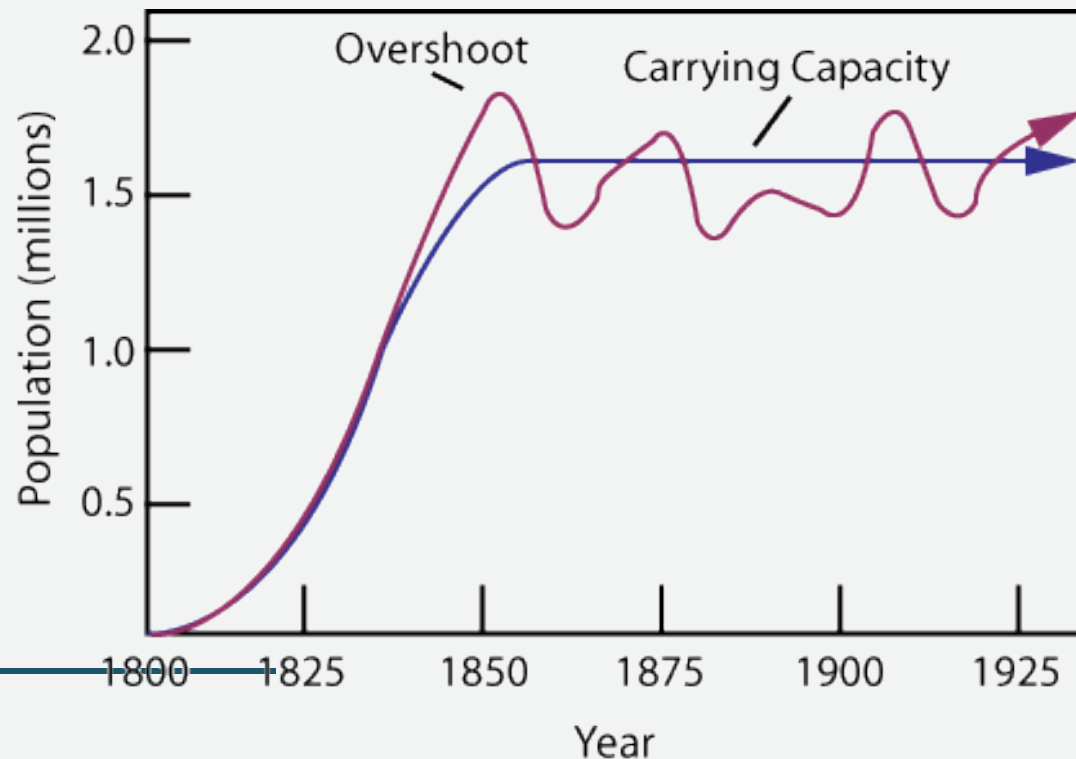
- Influential in the fields of political economy and demography
- *An Essay on the Principle of Population*
- Basic premise: The population is growing exponentially (geometrically), however, the food supply only increases arithmetically (linear)

Comparison of Exponential and Arithmetic Growth



Carrying Capacity

- Maximum population size that the environment can sustain indefinitely, given the food, habitat, water, and other necessities available in the environment.



Neo-Malthusian

- Advocate for population control programs, to ensure resources for current and future populations.

Boserup

- ▶ Challenged Malthus's conclusion
 - ▶ Suggested that food production can, and will, increase to match the needs of the population
-

Malthus' critics

- Many consider his beliefs too pessimistic
 - Theory was based on idea that world's supply of resources is fixed rather than expanding.
 - Disagree that population increase is not a problem
 - Larger populations could stimulate economic growth, and therefore, production of more food.
-

Population Policies

- Expansive population policies
 - Encourages population growth
 - Eugenics population policies
 - Favors one racial or cultural sector over others.
 - Restrictive population policies
 - Range from toleration of unapproved birth control to outright prohibition of large families.
-

- Expansive policy – Europe
 - Sweden & Norway – Range of policies designed to help couples have more children
 - Poland – pay women for each new child they have.
- Eugenics policy – key program was cleansing the human race by sterilizing the unfit.
 - Nazi Europe WWII era – Jews, Gypsy, Unfit, Poles, etc.
- Restrictive policy – China and India
 - China – One-child policy. Restricts the number of children married urban couples may have.
 - India – population and family planning. Cases of government enforced sterilization

Influence of health & well-being

- Closely related to location & geography
 - Infectious diseases – invasion of parasites and their multiplication in the body
 - Malaria (vectored) – transmitted by an intermediary vector (mosquito)
 - AIDS (nonvectored) – direct contact between host & victim
 - Chronic/Degenerative Diseases
 - Afflictions of middle and old age – heart disease, cancer, stroke, pneumonia, diabetes, etc.
 - Genetic/Inherited Diseases
 - Disorders that are transferred from one generation to the next.
 - Metabolic diseases – Lactose intolerance, PKU (Phenylketonuria)
- 