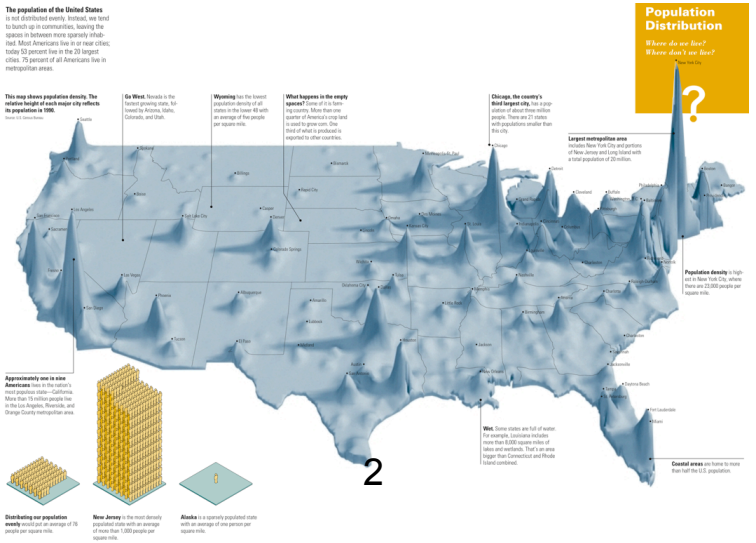
Ch. 2 Population - Key Issues

- Where is the world population distributed?
- Why is global population increasing?
- Why does population growth vary among regions?
- Why do some regions face health threats?

- Respond to the following question:
  - What do you think the total population of the world is?
  - Of the US?
  - Of New York State?
  - Of New York City?
  - Of Erie Co.?
  - Of Buffalo?



Populations

- Of the World: 7,272,000,000
- Of the US: 321,744,00
- Of New York State: 19,746,227
- Of New York City: 8,405,837
- Of Erie County: 919,040
- Of Buffalo: 261,310

Overpopulation

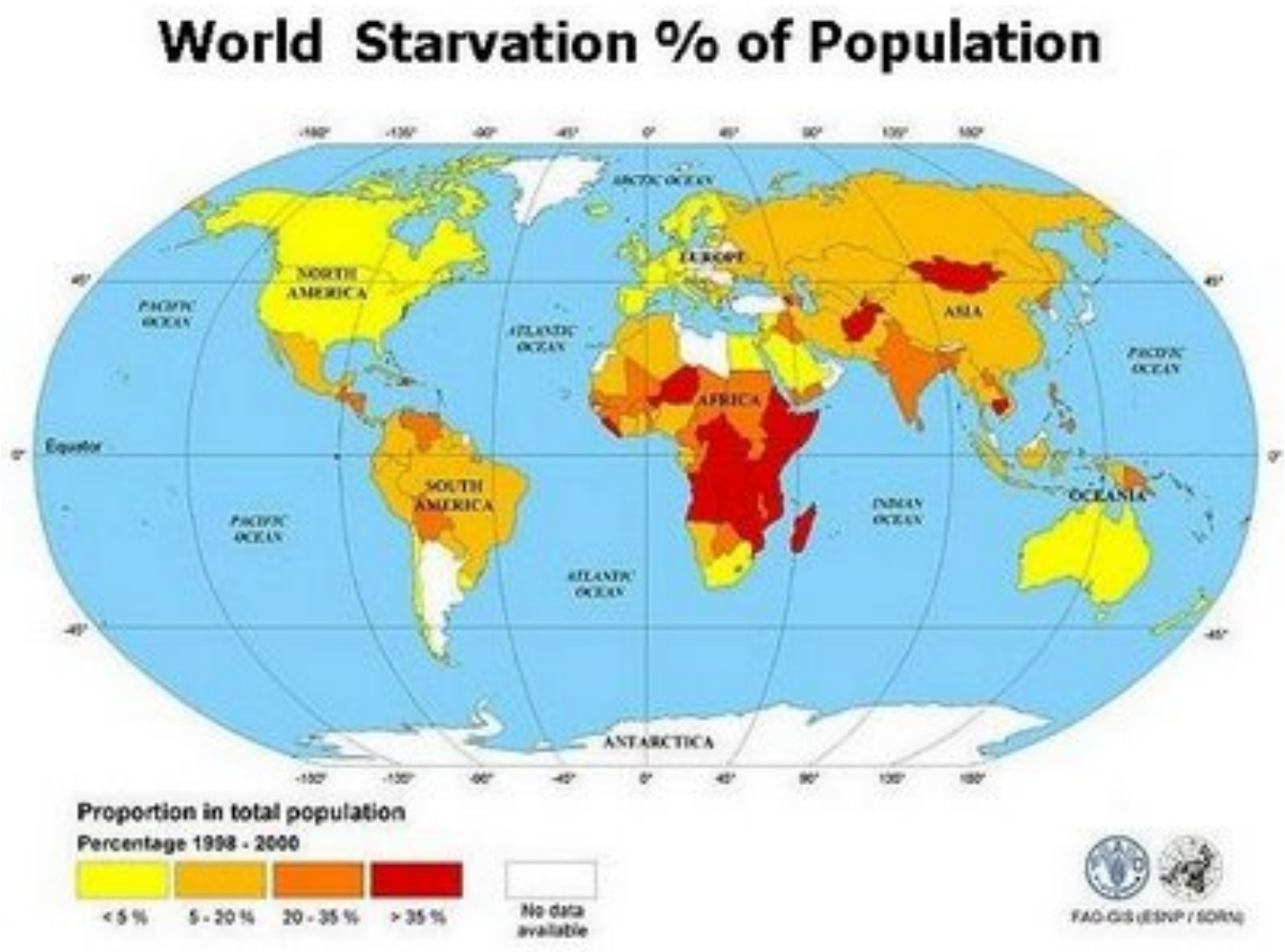
- How would you define overpopulation?
- How do geographers define overpopulation?
  - When an *area's* population *exceeds* the capacity of the environment to support it at an *acceptable standard of living.*
  - What are the variables in this definition?

What do you think about this?

- How might this dramatization relate to a discussion of overpopulation issues?

Overpopulation?

http://www.breathingearth.net/



verpopulation

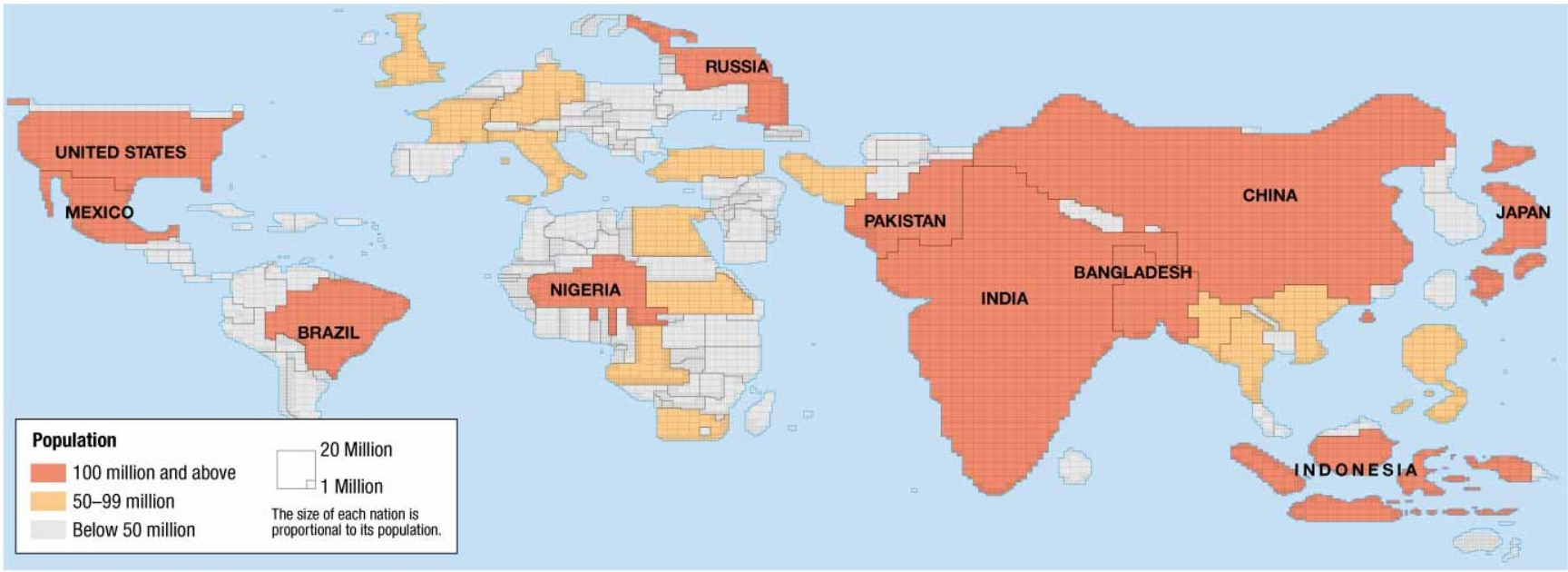
- "The [former] director of the U.S. Central Intelligence Agency, Gen. Michael Hayden, when asked to pinpoint which issue was of most pressing concern to him, said that the most troublesome threat facing the U.S. and the world today is not terrorism or global warming, but overpopulation, especially in the poorest parts of the planet."
- http://www.modernrecession.com/Overpopulation%20and%20Job%20Losses.pdf

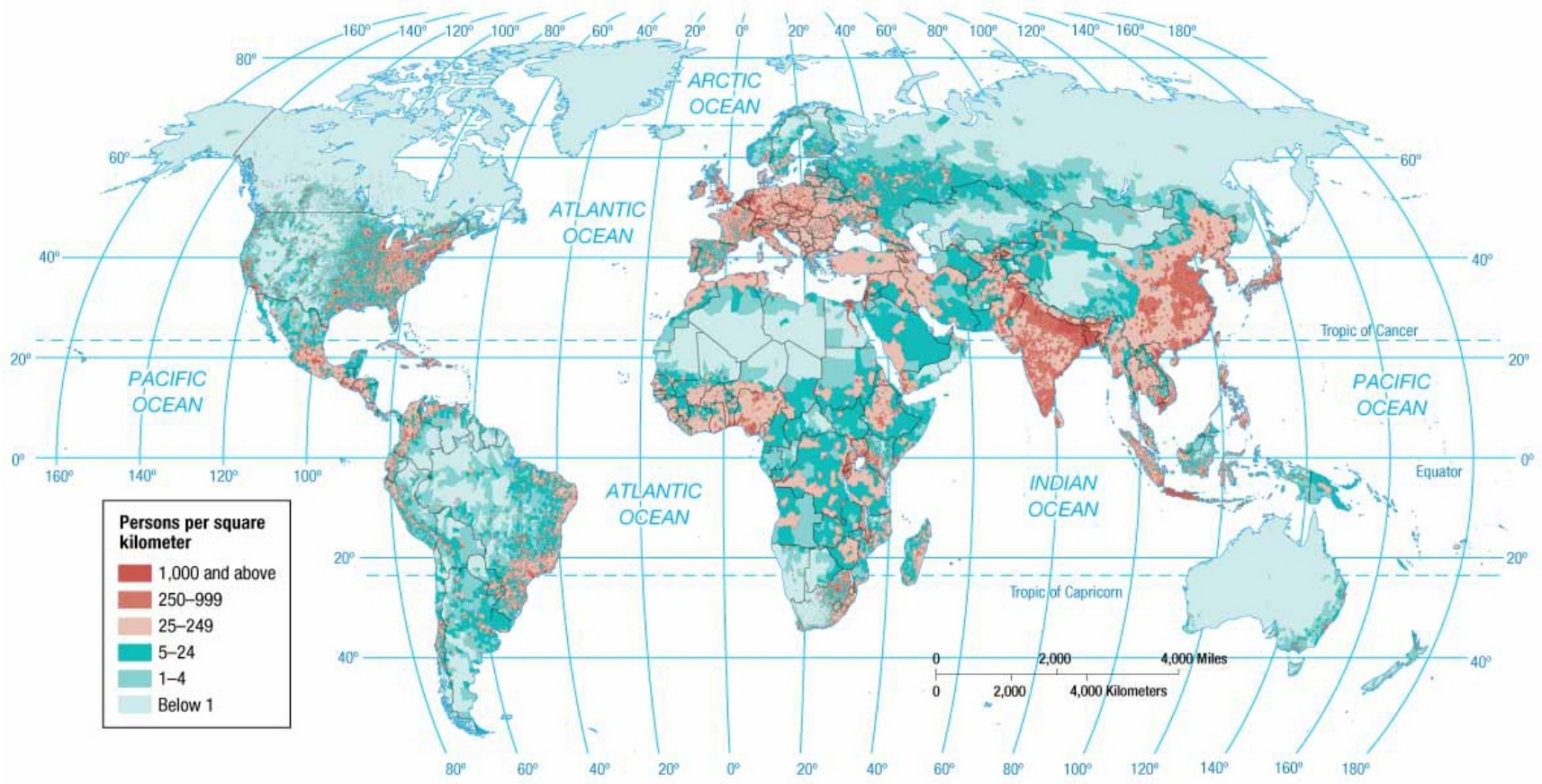
CIA Director, General Michael Hayden

- The rapid growth of the world's population, according to Hayden, may lead to fueling further instability and extremism, along with exacerbating worsening climate change, and making fuel and food much scarcer. Population, Hayden argues, is considered the prime multiplier for all types of human ills.
- **Debate Question: Is overpopulation the greatest threat facing our world today? 5 minutes to form argument**

KI #1 Where Is the World's Population Distributed?

- Population Concentrations
  - 2/3 of the world's inhabitants are clustered in four regions.
    - East Asia
    - South Asia
    - Southeast Asia
    - Europe
  - Site and Situation of Population Clusters
    - Low-lying areas with fertile soil and temperate climate
    - Near an ocean or near a river with easy access to an ocean.





Where Is the World's Population Distributed?

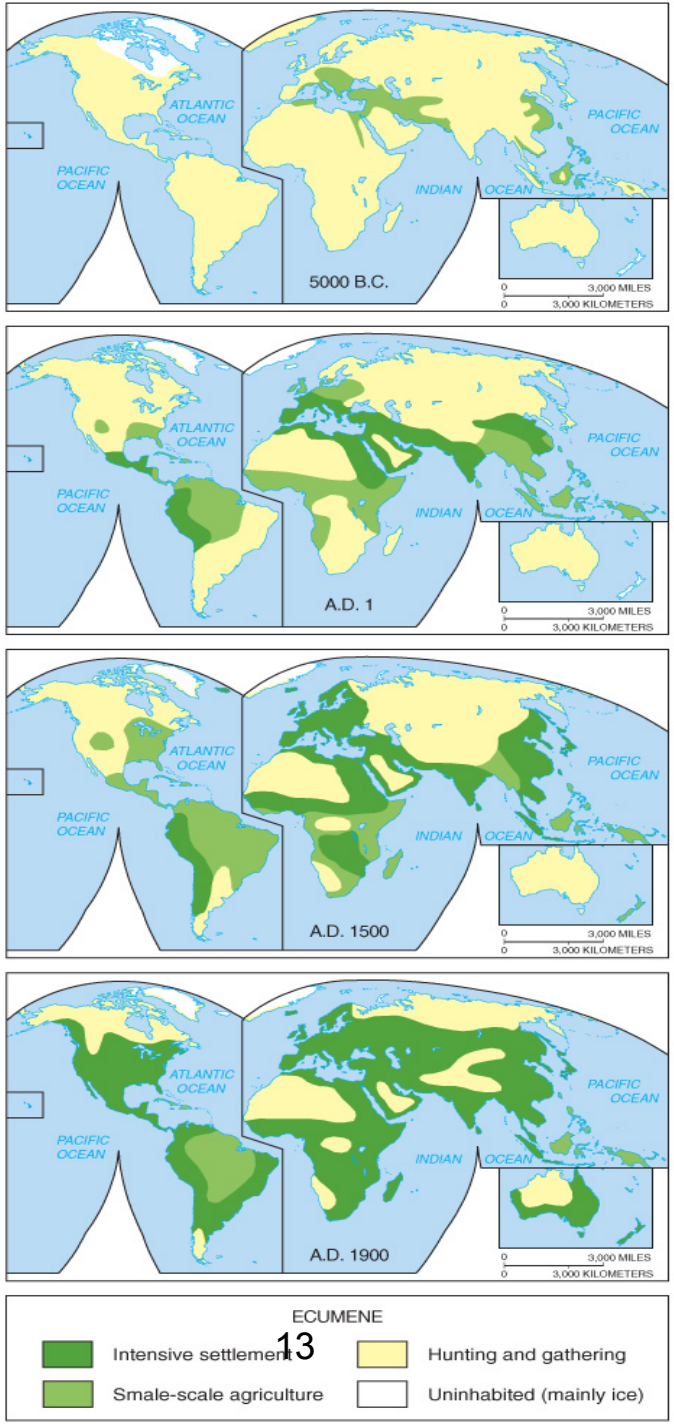
- Sparsely Populated Regions
  - Humans avoid clustering in certain physical environments.
    - Dry Lands
    - Wet Lands
    - Cold Lands
    - High Lands
  - Places considered too harsh for occupancy have diminished over time.
    - Places of permanent human settlement are termed the *ecumene.*

- # Expansion of the Ecumene

5000 BC - AD 1900

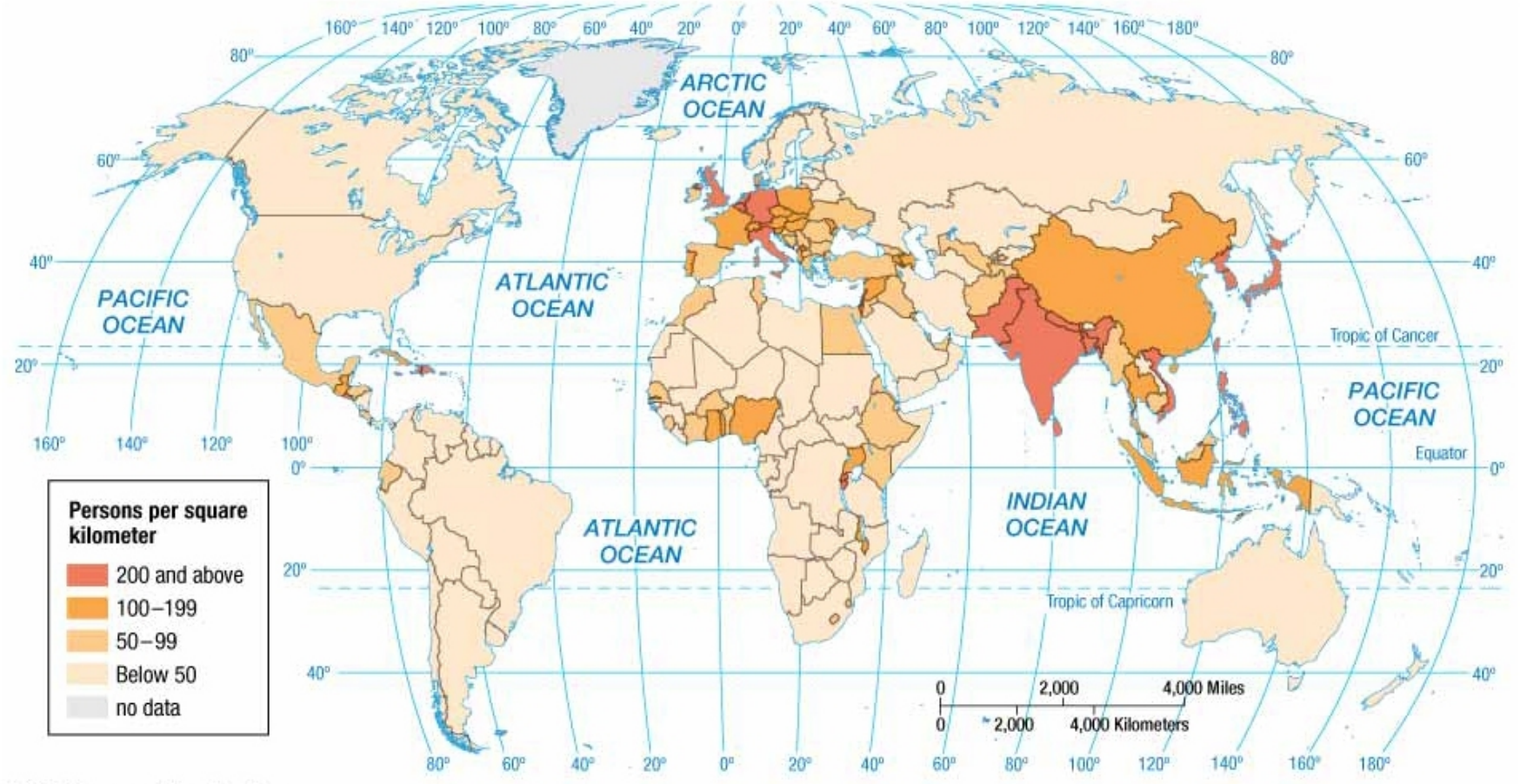
75% live on only 5% of the Earth's surface

Fig. 2-3 (pg. 50): The **ecumene**, or the portion of the earth with permanent human settlement, has expanded to cover most of the world's land area.

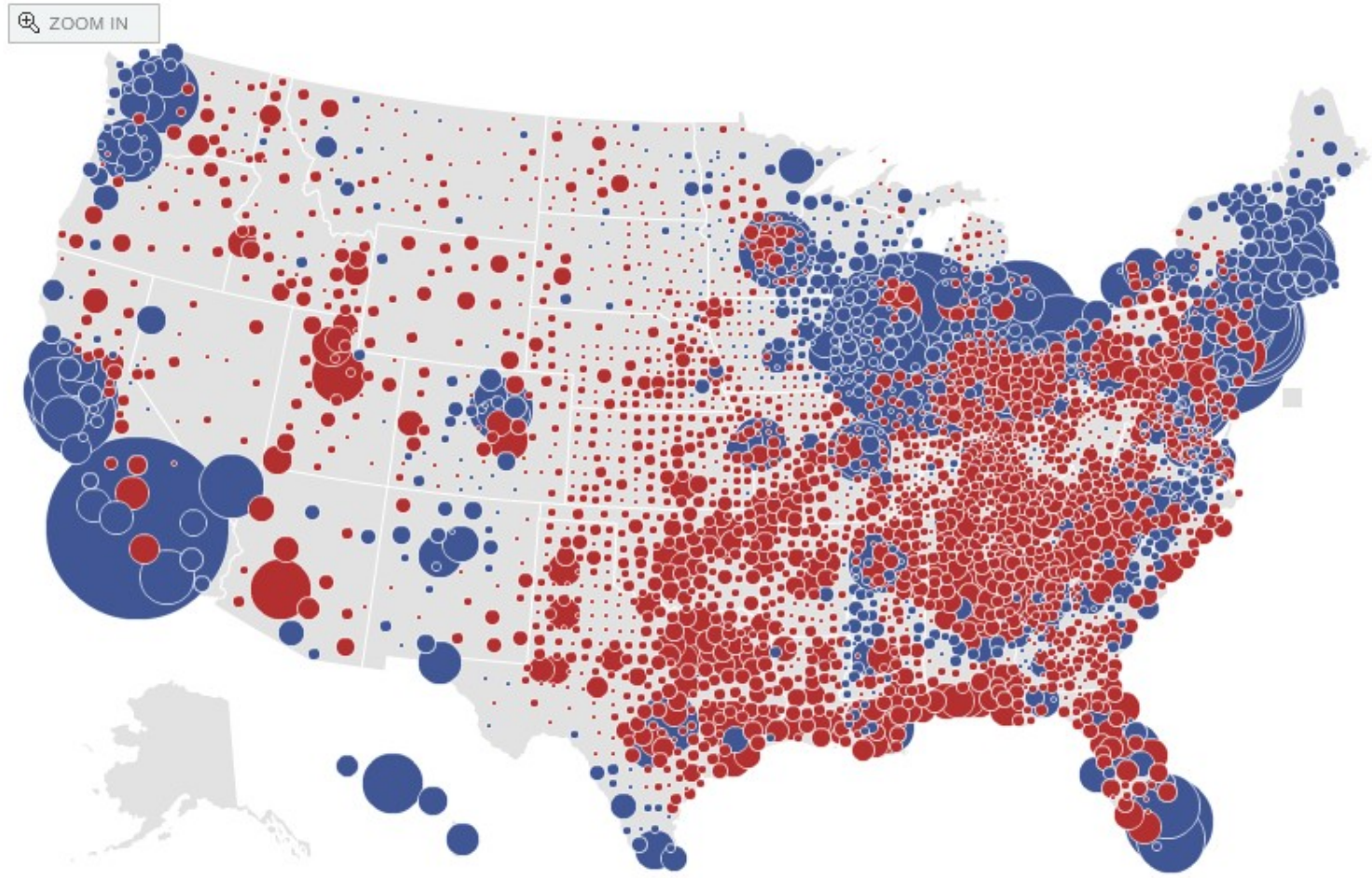


Where Is the World's Population Distributed?

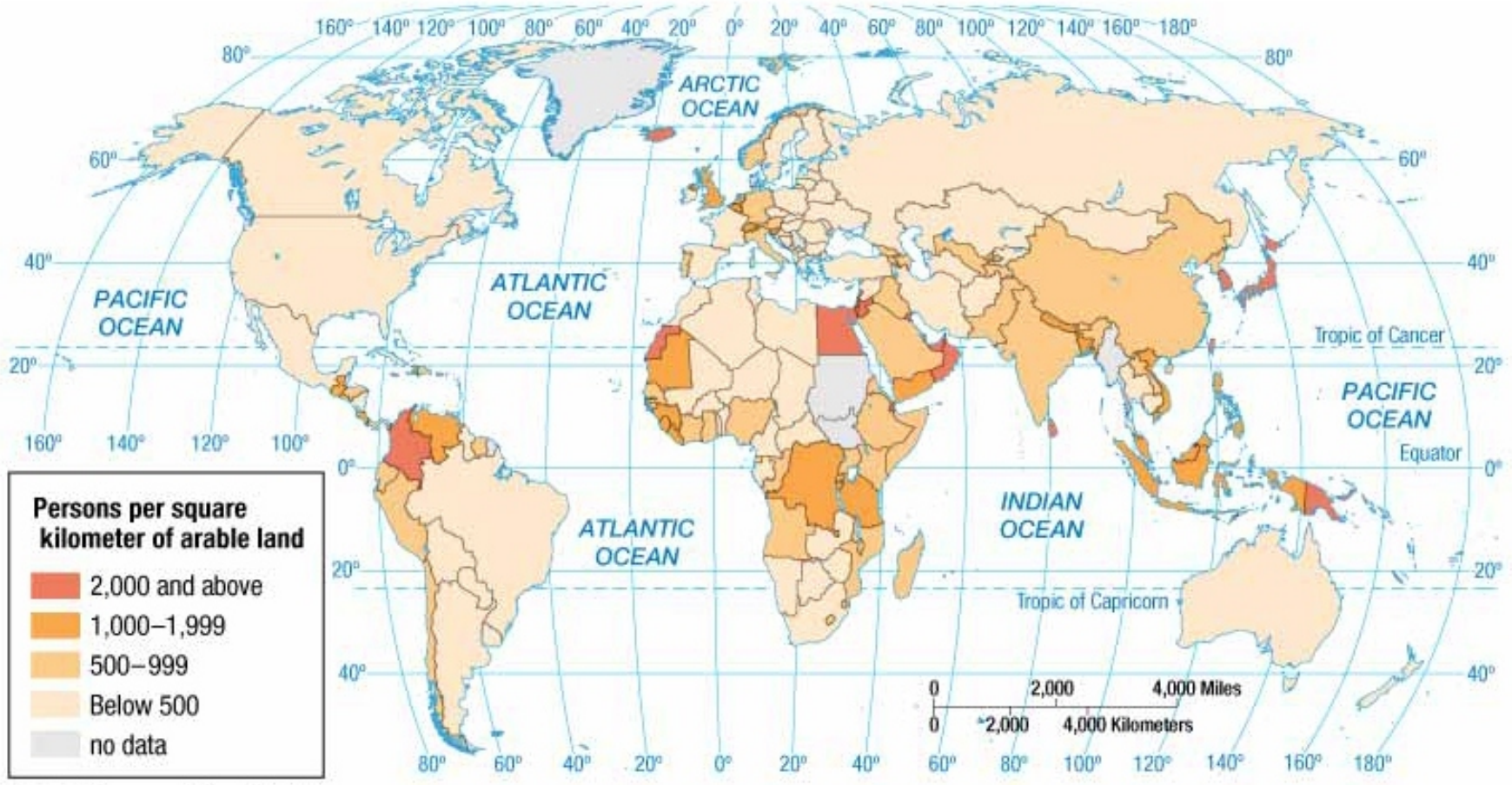
- Population Density
  - Density can be computed in up to three ways for a place.
    1. Arithmetic Density
       - Total number of objects in an area
       - Computation: Divide the population by the land area
    2. Physiological Density
       - Number of people supported by a unit area of arable land
       - Computation: Divide the population by the arable land area
    3. Agricultural Density
       - Ratio of the number of farmers to amount of arable land
       - Computation: Divide the population of farmers by the arable land area

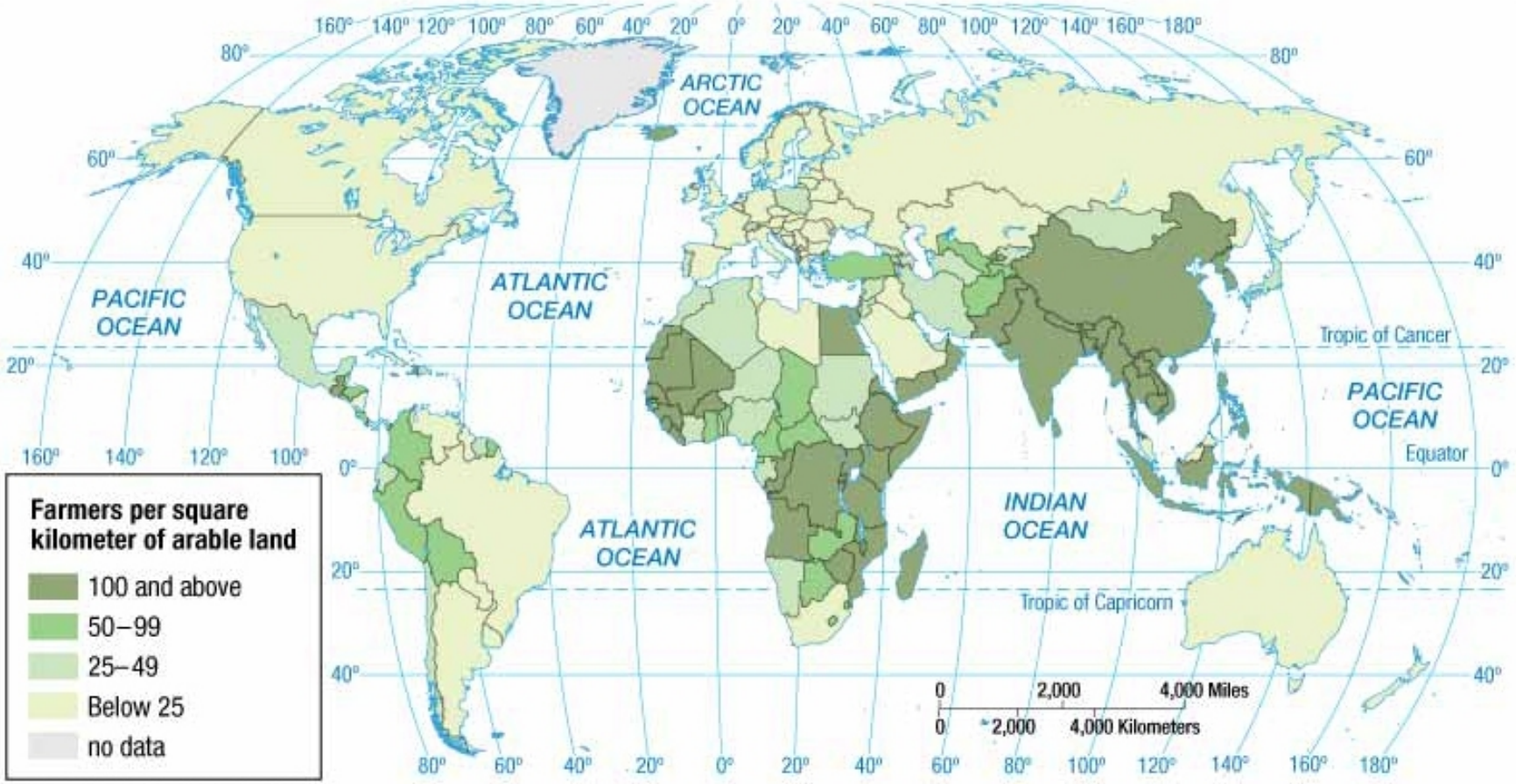


Arithmetic Population



http://www.dwtkns.com/density/





Agricultural Density

- Agricultural Density: ratio of the number of farmers to the amount of arable land.
  - US and Canada have lower agric. densities than India and Bangledesh.
  - Why would the US have fewer farmers per acre of arable land? What is different about farming in the US vs. India or a more LDC?

TABLE 2-1 MEASURES OF DENSITY IN SELECTED COUNTRIES

	ARITHMETIC DENSITY*	PHYSIOLOGICAL DENSITY*	AGRICULTURAL DENSITY*	PERCENT FARMERS	PERCENT ARABLE
Canada	3	65	1	2	5
United States	32	175	2	2	18
Egypt	79	2,296	251	31	3
United Kingdom	255	1,083	9	2	23
Japan	338	2,695	46	3	13
India	356	690	163	58	52
Netherlands	398	1,748	23	3	23
Bangladesh	1,127	1,927	472	52	58

*Population per square kilometer

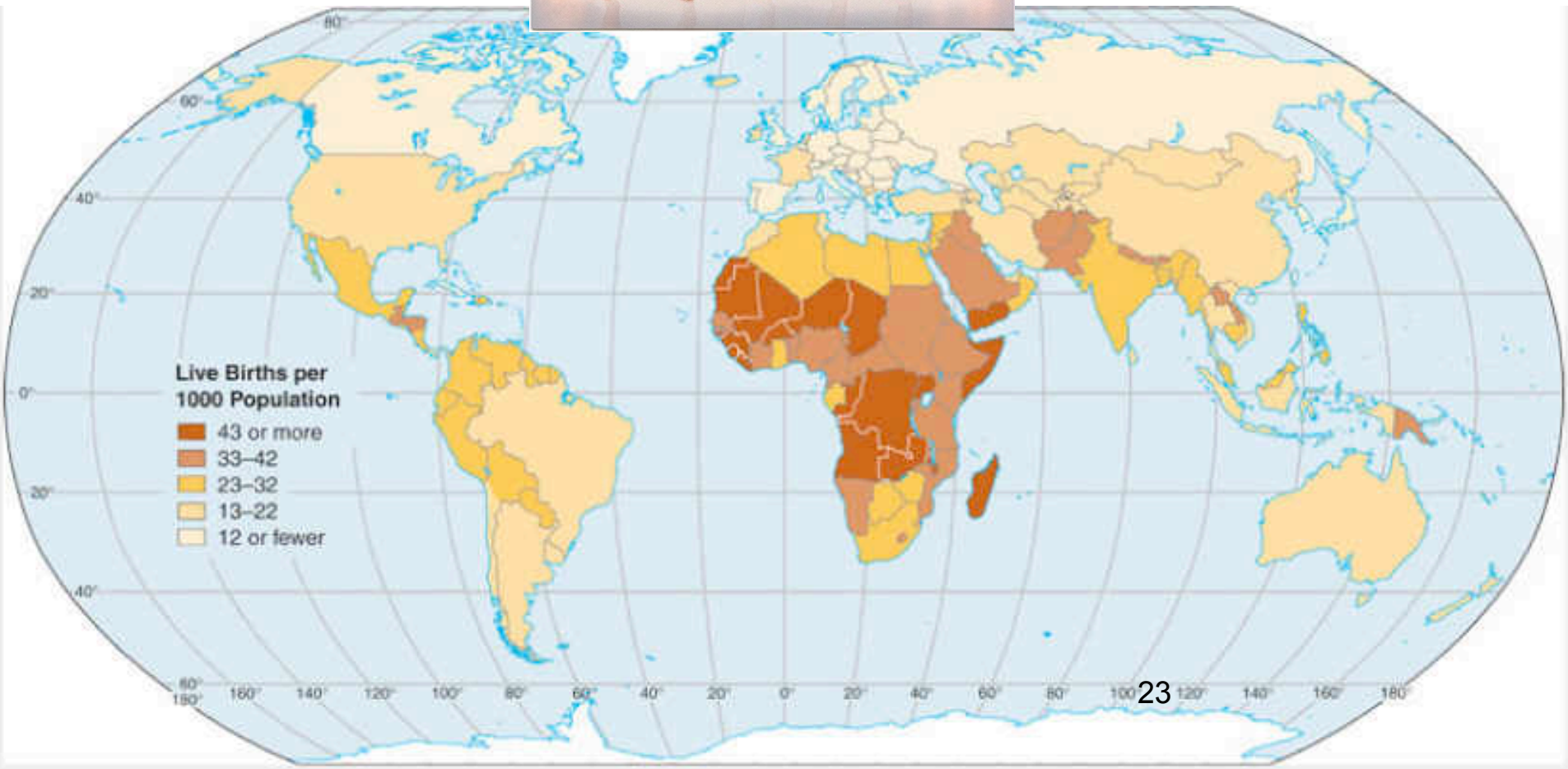
Quick Review

- The most rapid growth in population is occurring in _____
- The most populous country in the world is _____
- A country with a large amount of arable land and a small number of farmers will have a _____ agricultural density.
- 75% of the world's population lives on 5% of the earth's surface. The portion where humans live is called the _____.

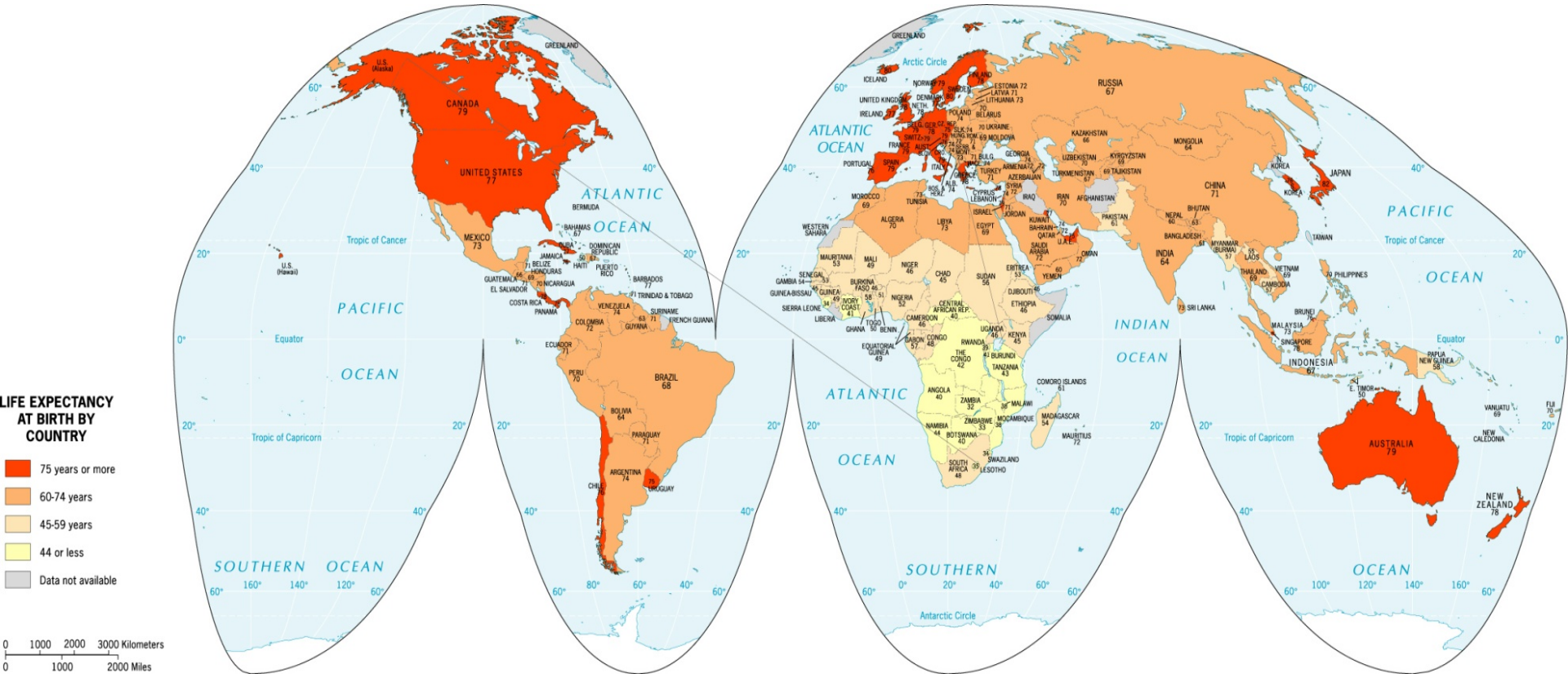
KI #2 Why Is Global Population Increasing?

- Components of Population Growth
  - Geographers measure population change in a country or the world as a whole by using three measures:
    - **Crude Birth Rate (CBR)** – total number of live birth in a year for every 1,000 people alive in society.
    - **Crude Death Rate (CDR)** – total number of deaths in a year for every 1,000 people alive in society.
    - **Natural Increase Rate (NIR)** – *percentage* by which a population grows in a year.
      - Computation: CBR – CDR = NIR
        - » Remember NIR is a percentage (*n* per 100, while CBR and CDR are expressed as *n* per 1,000)

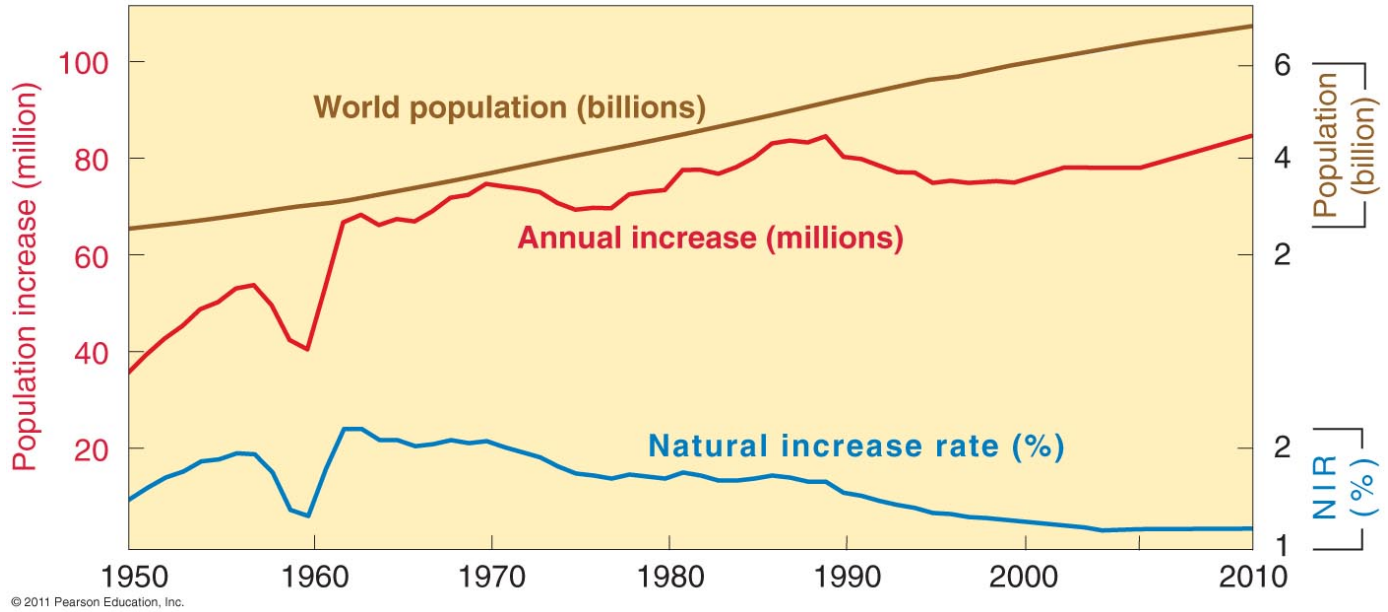
- Crude birth rate (CBR) - The number of births per 1,000

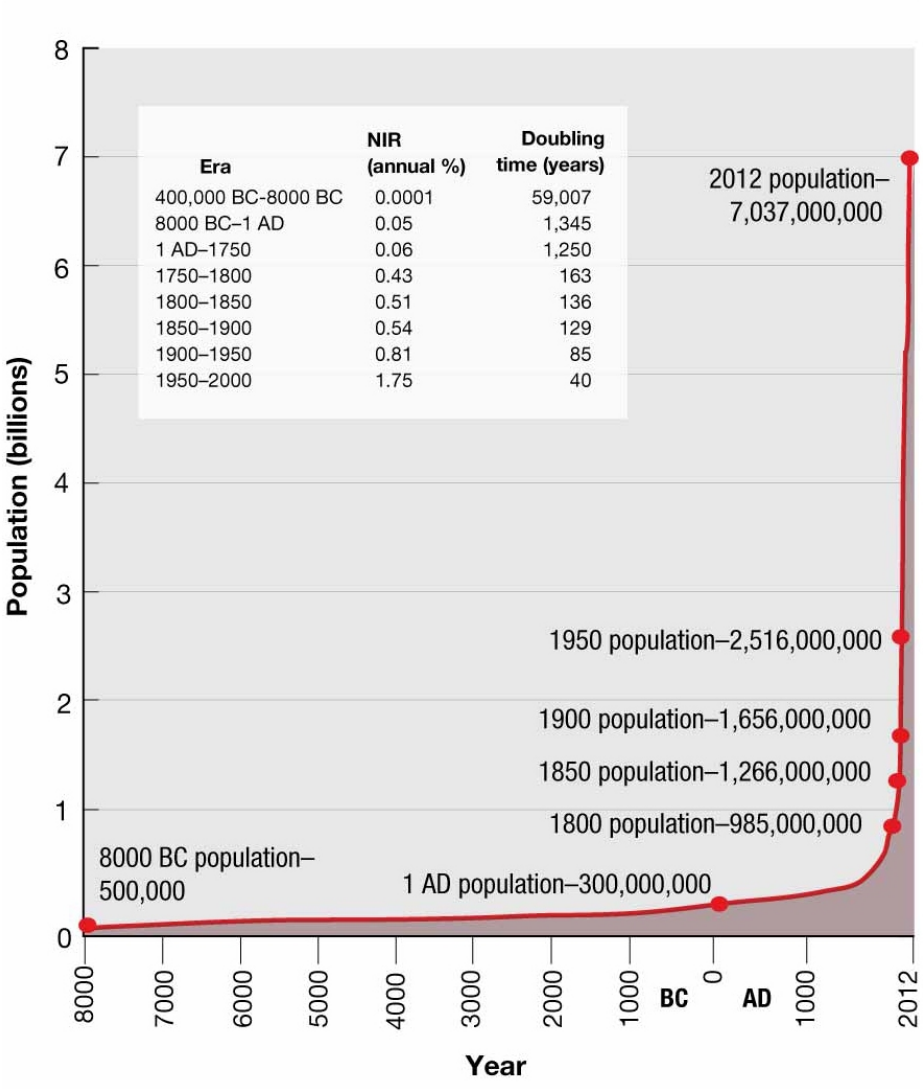


Life expectancy – the average number of years a newborn can expect to live at current mortality levels



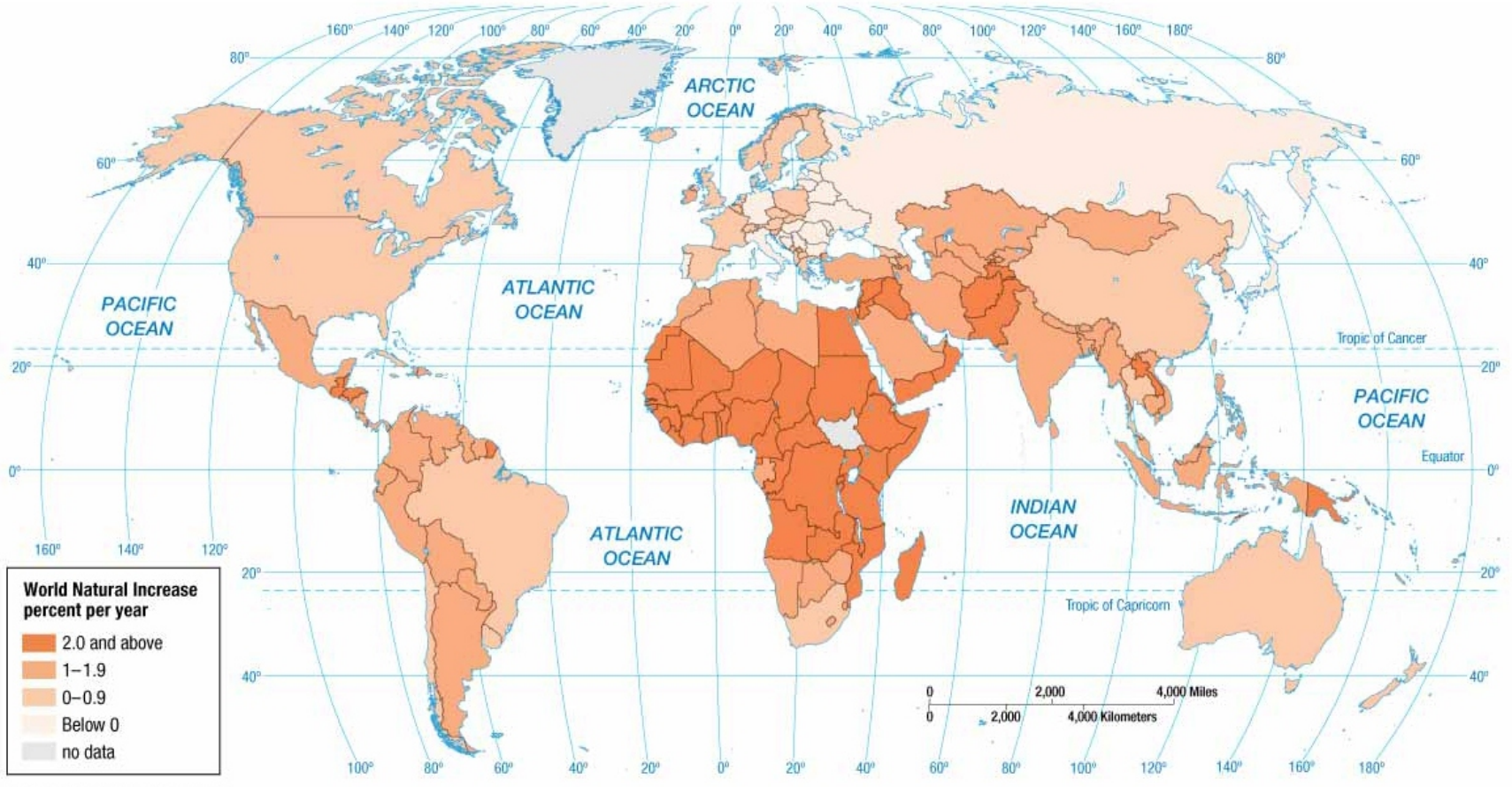
- Natural increase rate (NIR)
  - The percentage by which a population grows in a year (NIR = CBR minus CDR)
  - Hit an all-time high of 2.2% in 1963, slowly fell throughout the latter part of the century, and has declined sharply during the past decade
  - Although the NIR is % is lower the number of people be added is higher. Why?
    - Larger base!!!





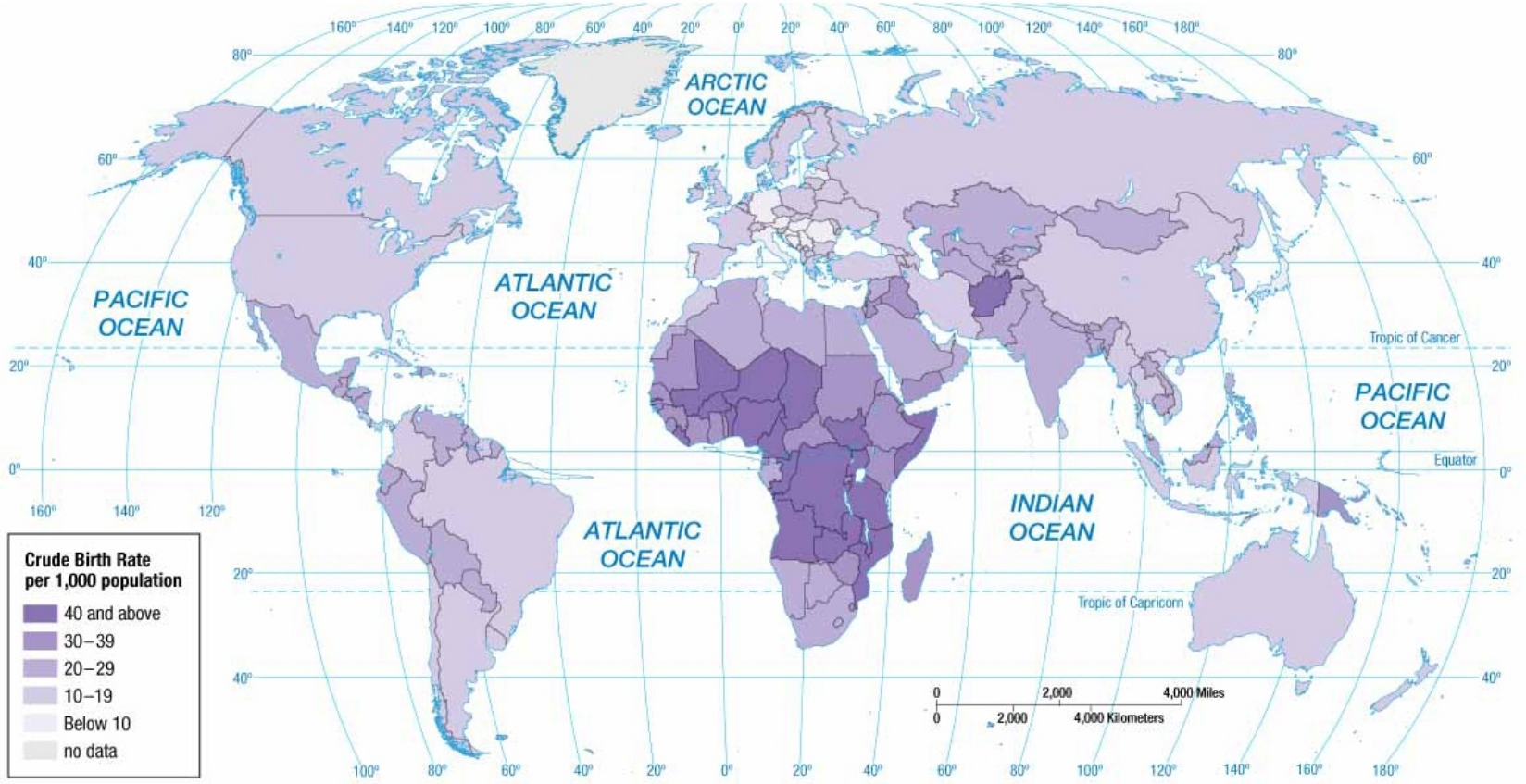
Why Is Global Population Increasing?

- Components of Population Growth
  - Natural Increase
    - About 82 million people are added to the population of the world annually.
    - Rate of natural increase affects the *doubling time*–number of years needed to double the population, assuming a constant rate of natural increase.
      - Twenty-First Century Rate (1.2 percent): 54 years
        - » Global population in 2100 would reach 24 billion.
      - 1963 (2.2): 35 years
        - » Global population in 2010 would have been 10 billion instead of nearly 7 billion.
    - More than 95 percent of the natural increase is clustered in developing countries.



Why Is Global Population Increasing?

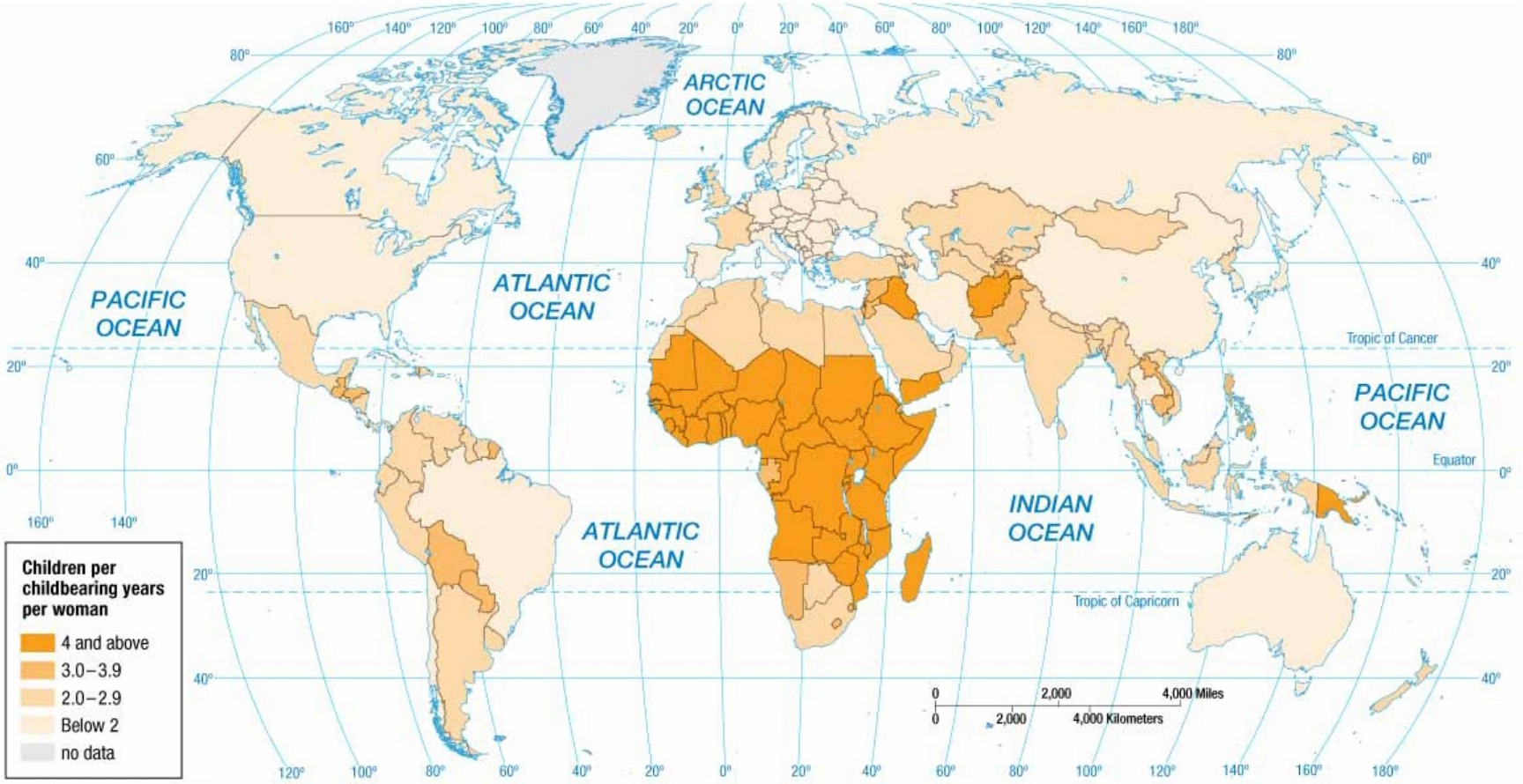
- Components of Population Growth
  - Mortality
    - *Infant Mortality Rate (IMR)*
      - Measure used by geographers to better understand death rates in a society
      - Defined as the annual number of deaths of infants under one year of age, compared with total live births
      - Usually expressed per 1,000 births rather than a percentage
      - IMR is 5 in developed countries and 80 in sub-Saharan Africa.

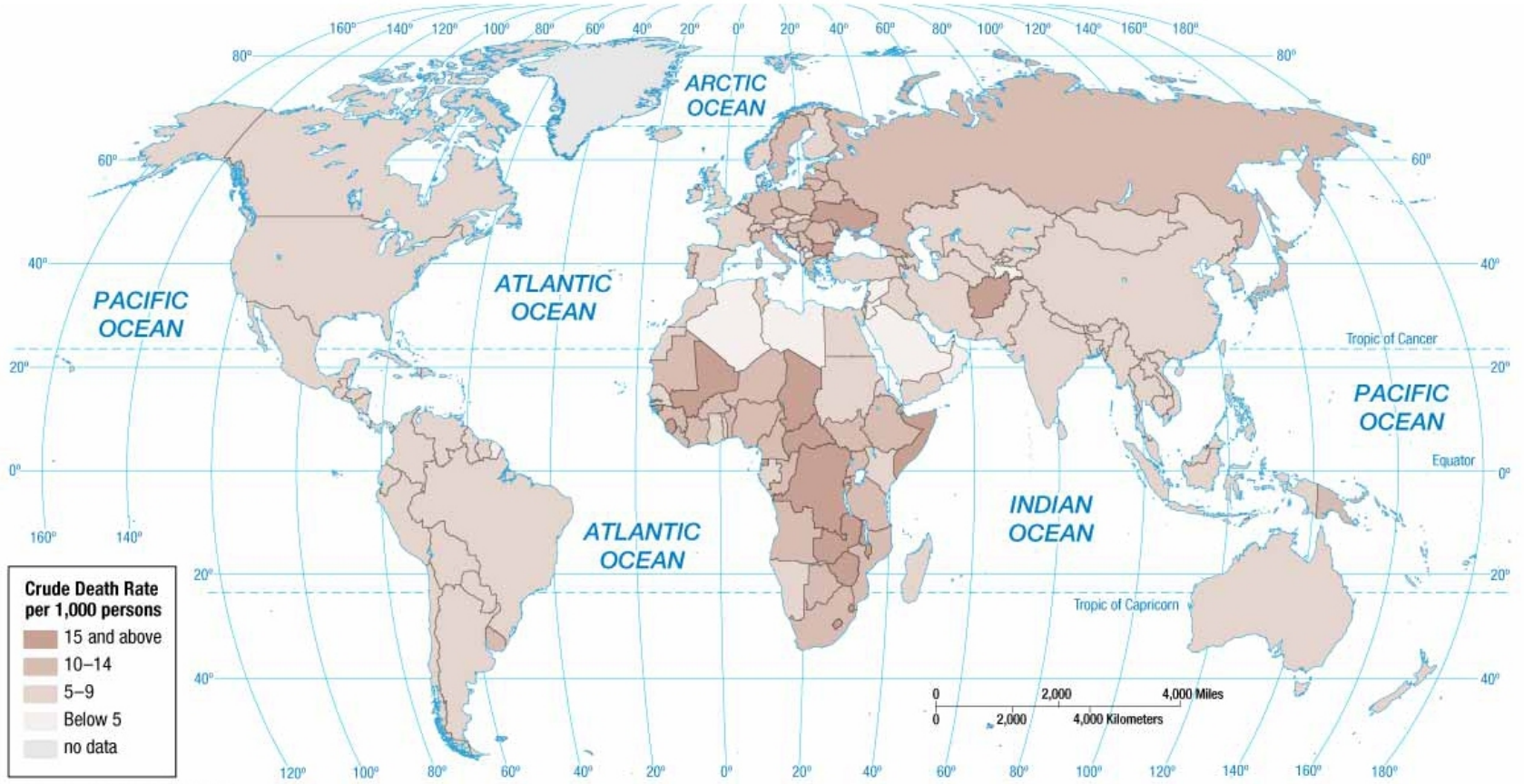


Why Is Global Population Increasing?

- Components of Population Growth
  - Fertility
    - *Total Fertility Rate (TFR)*
      - Measure also used by geographers to measure number of births in a society.
      - Defined as the average number of children a woman will have throughout her childbearing years (15–49)
      - TFR for world is 2.5.
      - TFR exceeds 5 in sub-Saharan Africa, while 2 or less in nearly all European countries.

http://www.ted.com/talks/hans_rosling_religions_and_babies



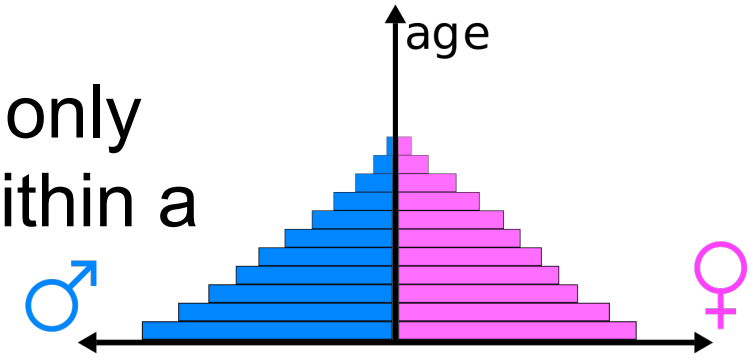


Why Is Global Population Increasing?

- Summary of Spatial Patterns
  - Developed Countries
    - Lower rates of…
      - Natural increase
      - Crude birth
      - Total fertility
      - Infant mortality
  - Developing Countries
    - Higher rates of…
      - Natural increase
      - Crude birth
      - Total fertility
      - Infant mortality

Why Is Global Population Increasing?

- Population Structure
  - Fertility and mortality vary not only spatially but also temporally within a country.
  - A special bar graph known as a *population pyramid* can visually display a country's distinctive population structure.
    - *X*-axis
      - Percent male displayed to the left of zero
      - Percent female displayed to the right of zero
    - *Y*-axis
      - Age cohorts typically grouped in 5-year intervals
      - Youngest displayed at bottom and oldest at top



Why Is Global Population Increasing?

- Population Structure
  - Dependency Ratio
    - Defined as the number of people who are too young or too old to work, compared to the number of people in their productive years.
      - People aged 0 to 14 and over 65 years old are considered dependents.
      - Larger dependency ratios imply greater financial burden on the working class.
        - » 85 percent in sub-Saharan Africa, while 47 percent in Europe.

Why Is Global Population Increasing?

- Population Structure
  - Sex Ratio
    - Defined as the number of males per 100 females in the population
      - Developed countries have more females than males, because they tend to live 7 years longer.

Population Pyramids

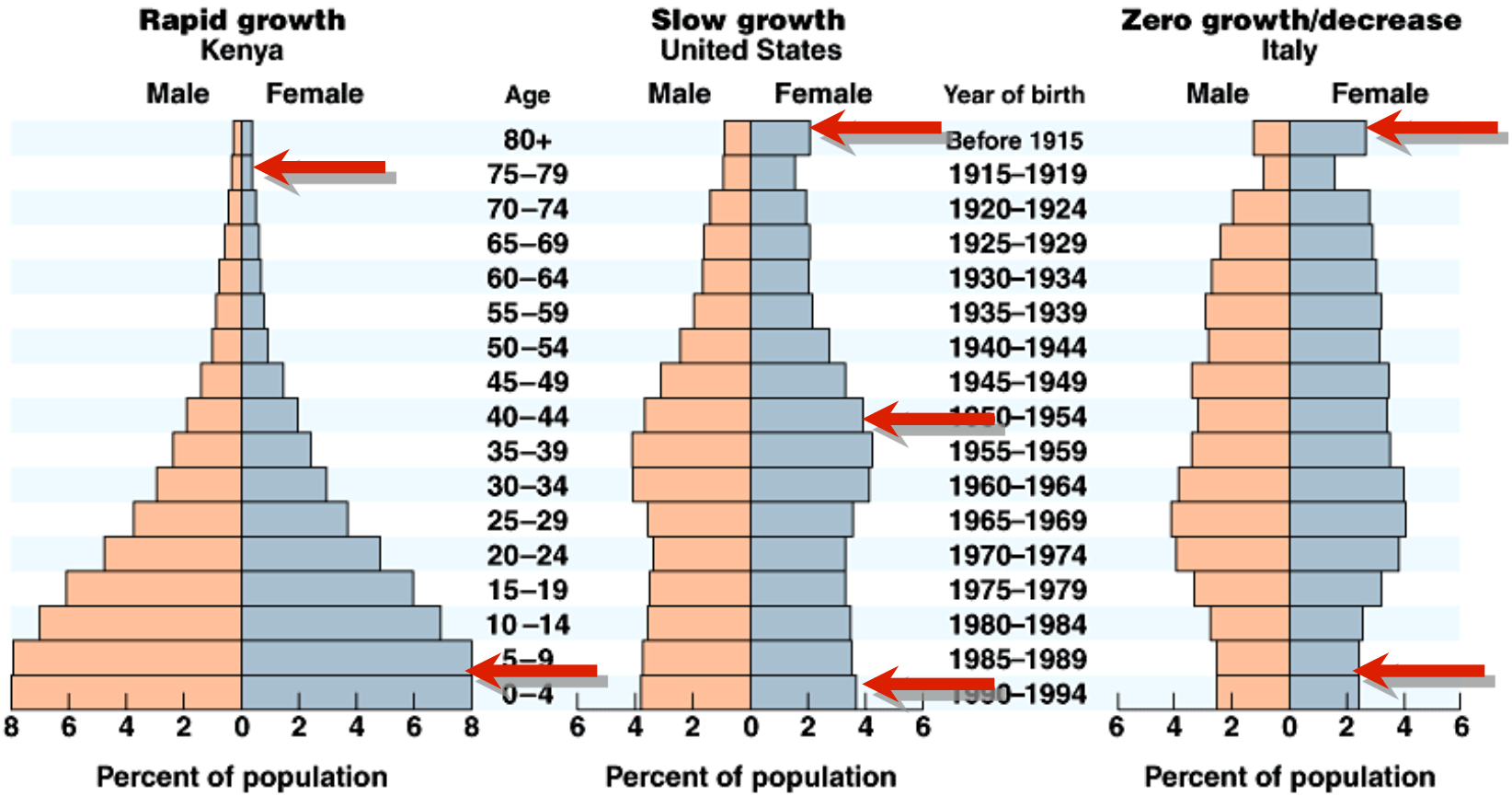
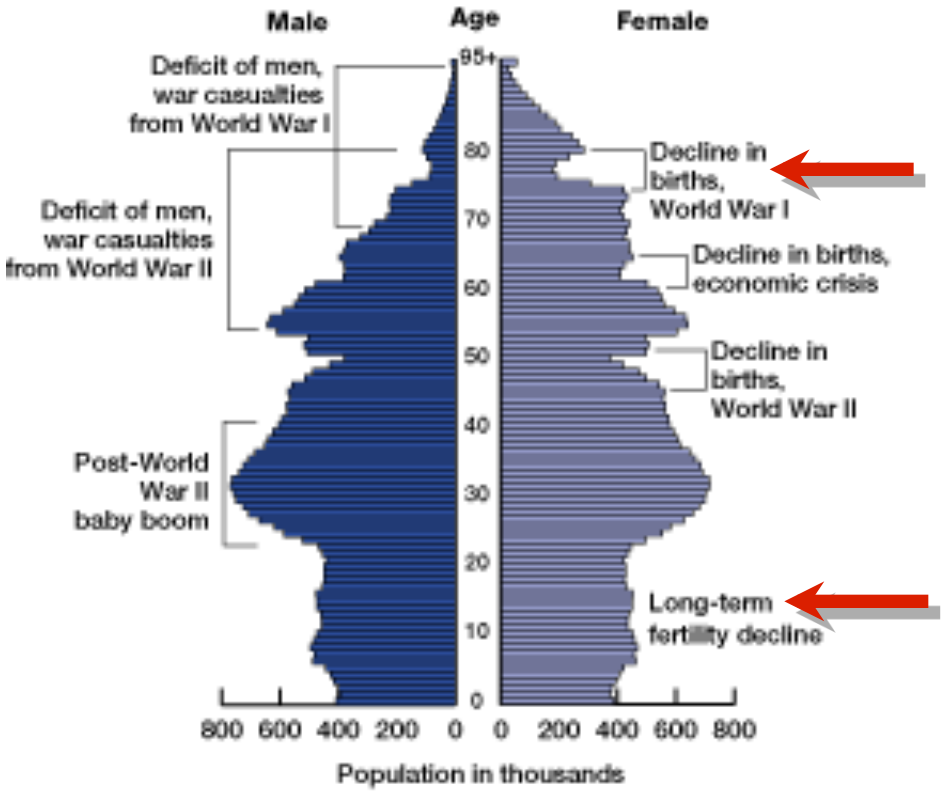
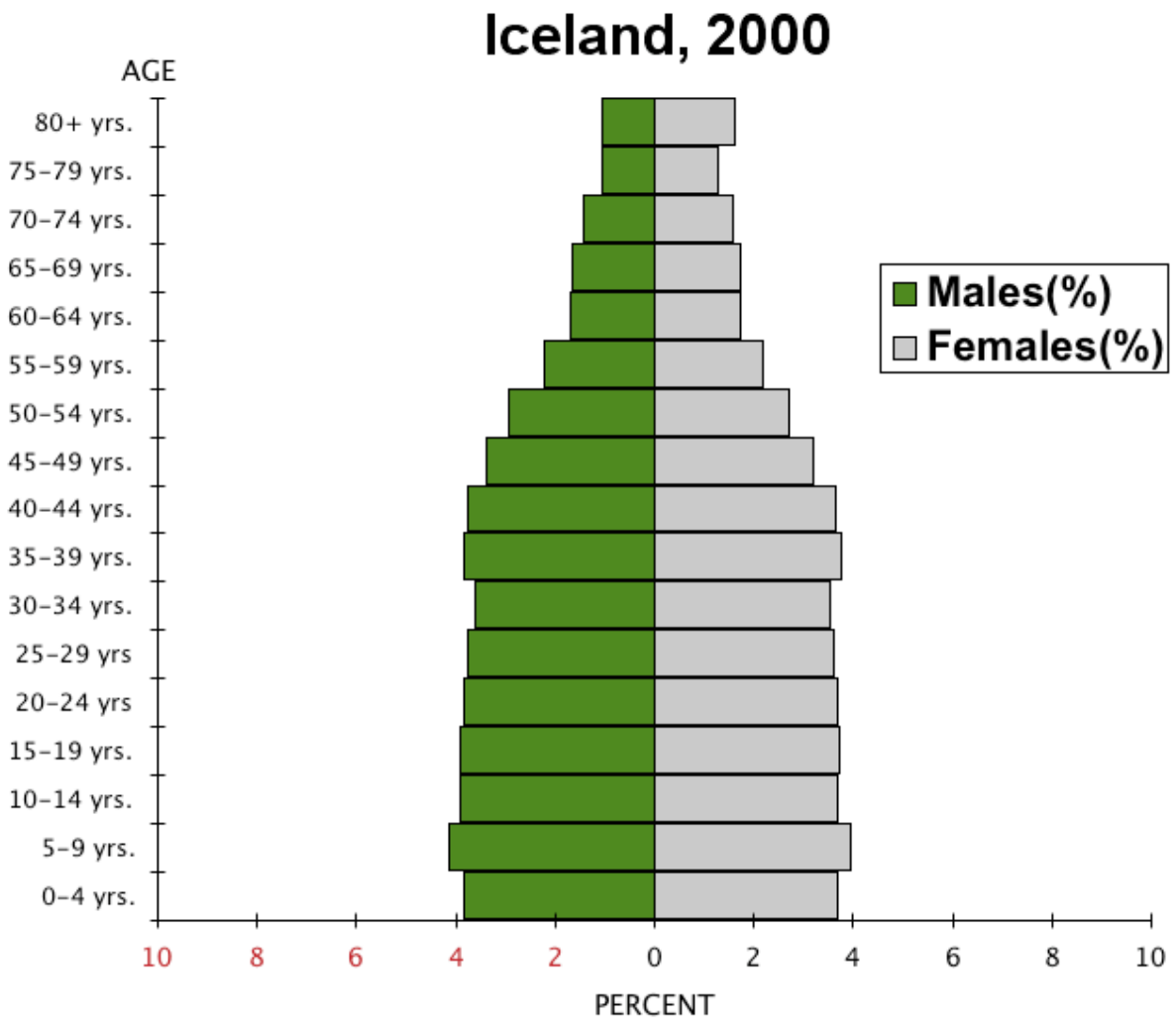


Figure 7

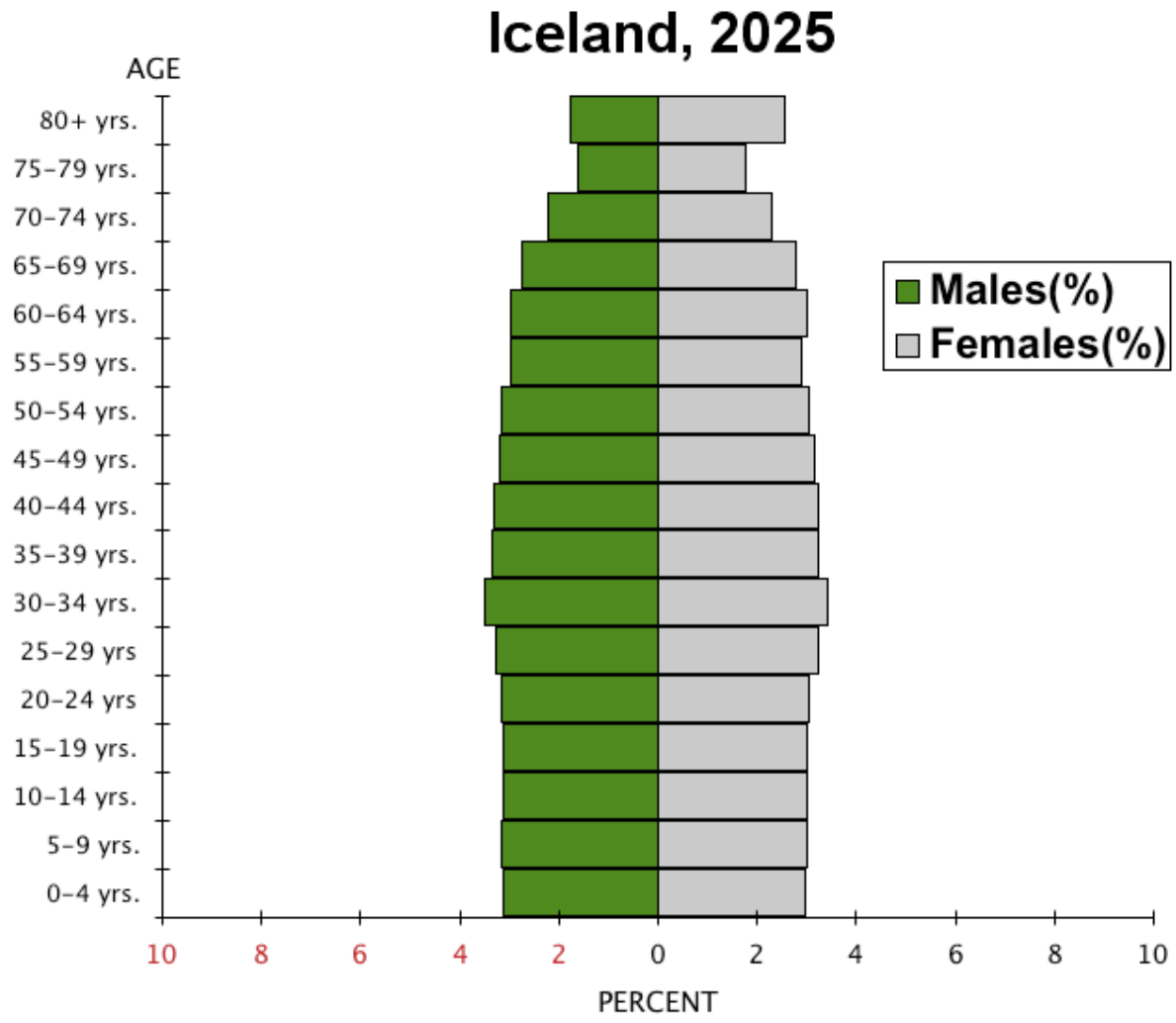
Germany's Population by Age and Sex, 1996

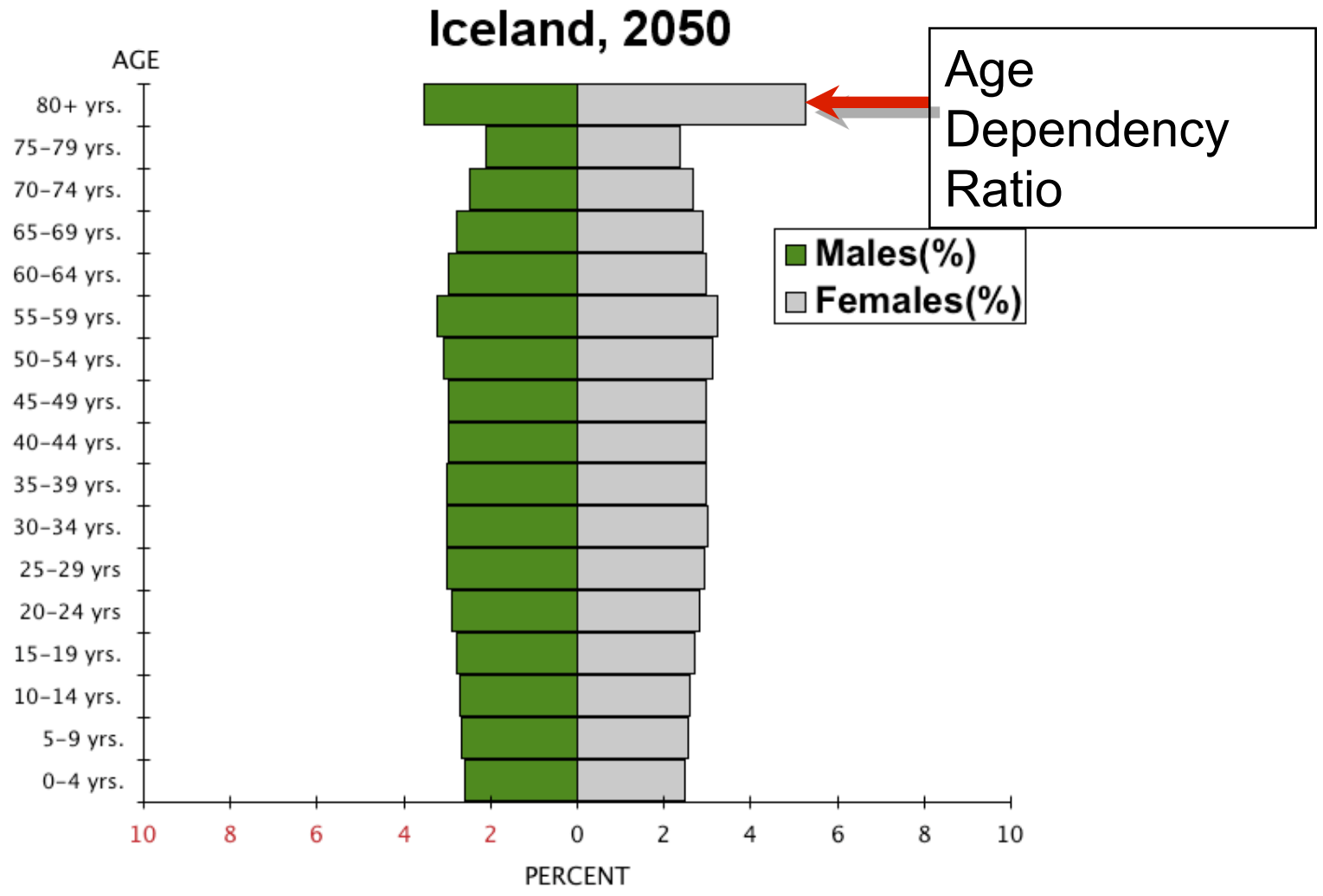


Source: Federal Statistics Office (Germany), unpublished data.



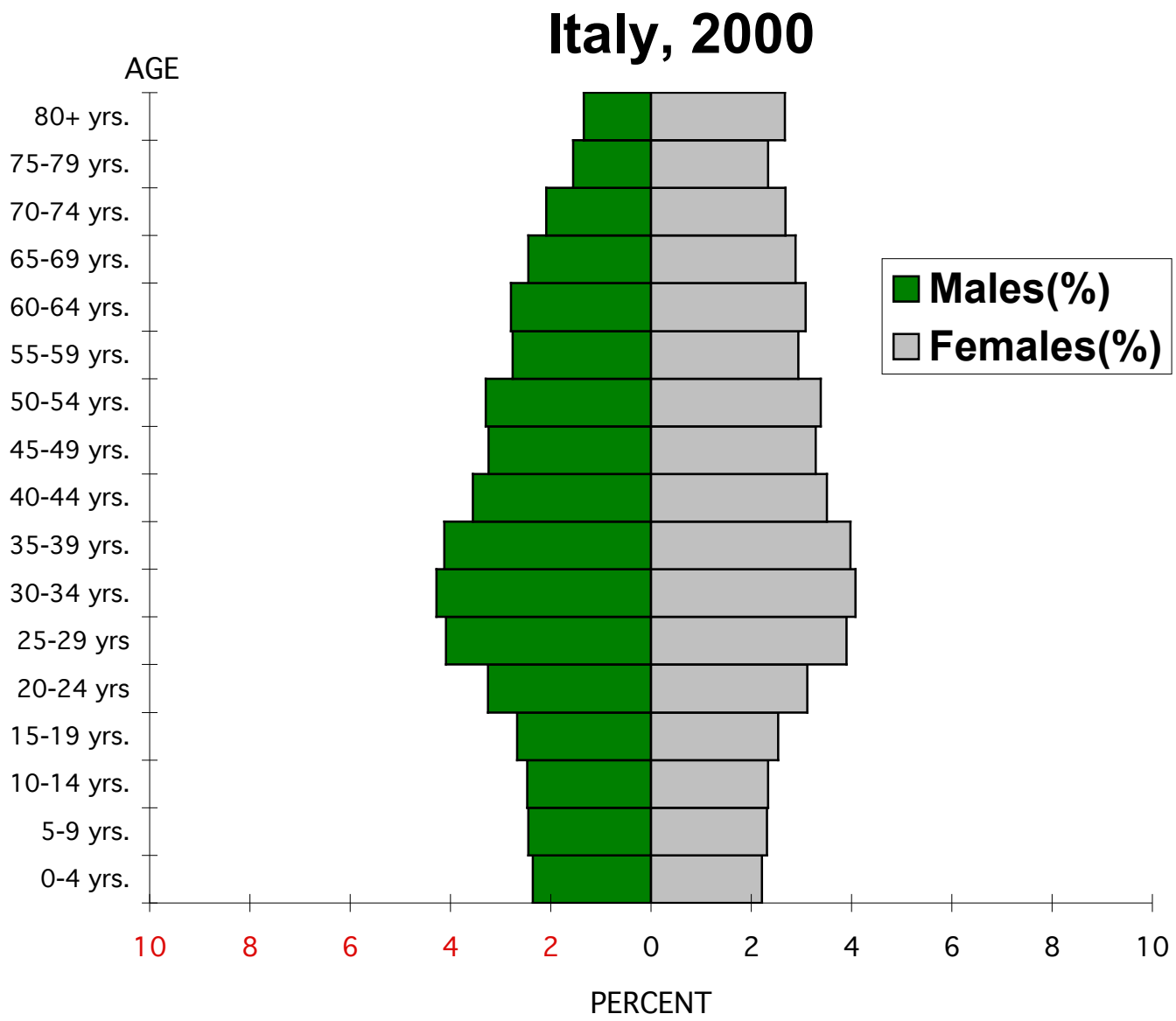
What will the pyramid look like in 2025? 2050?

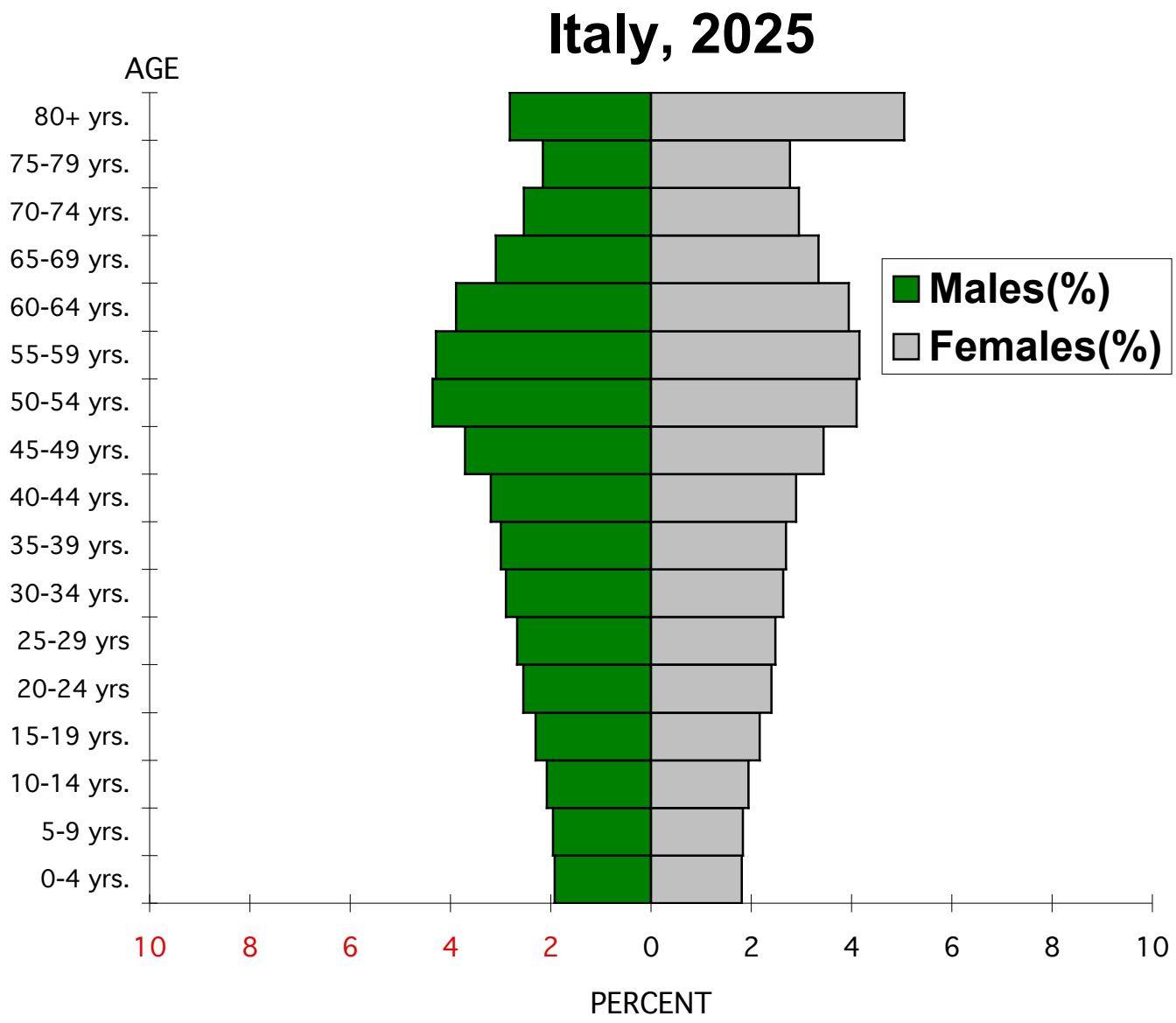


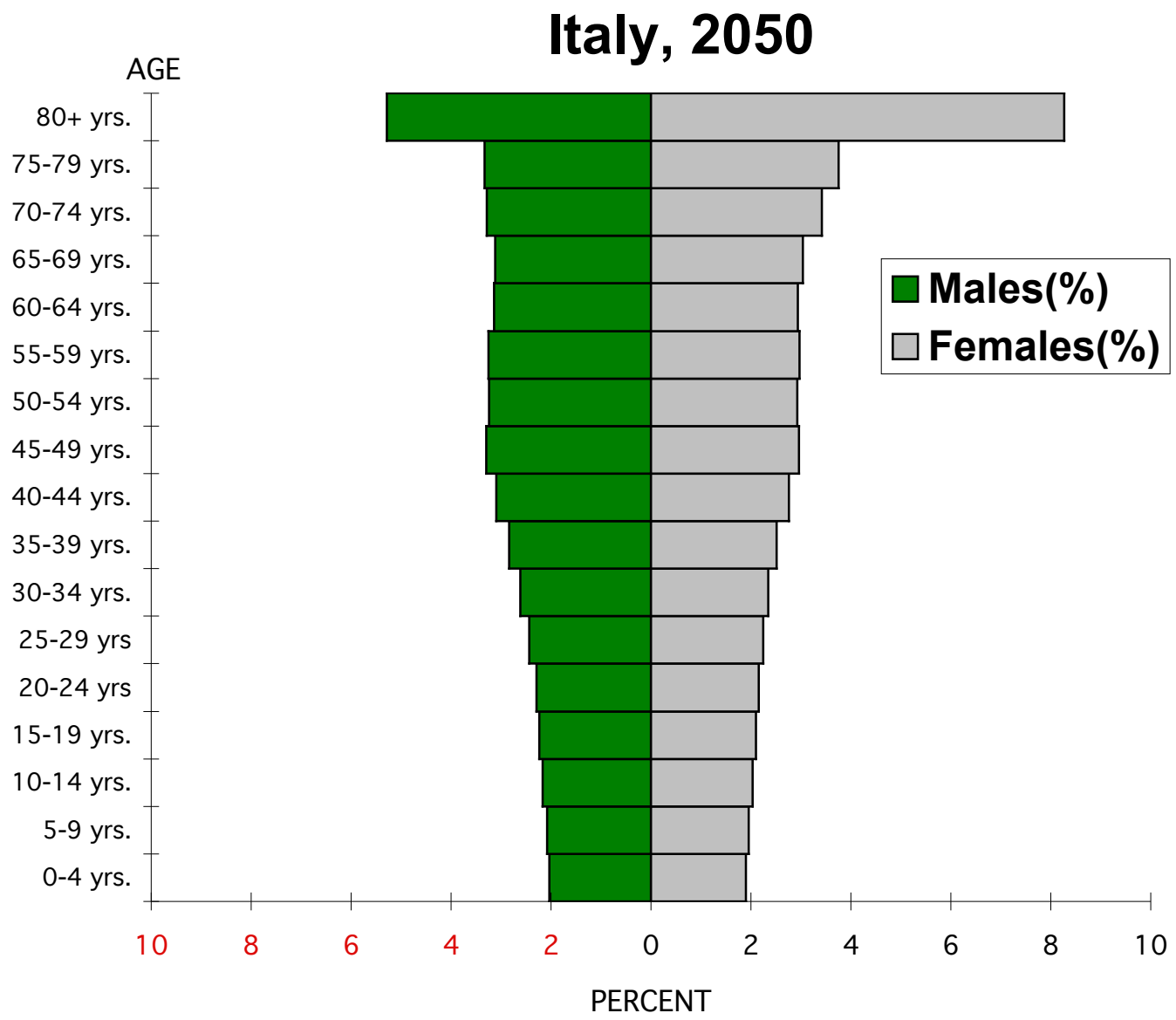


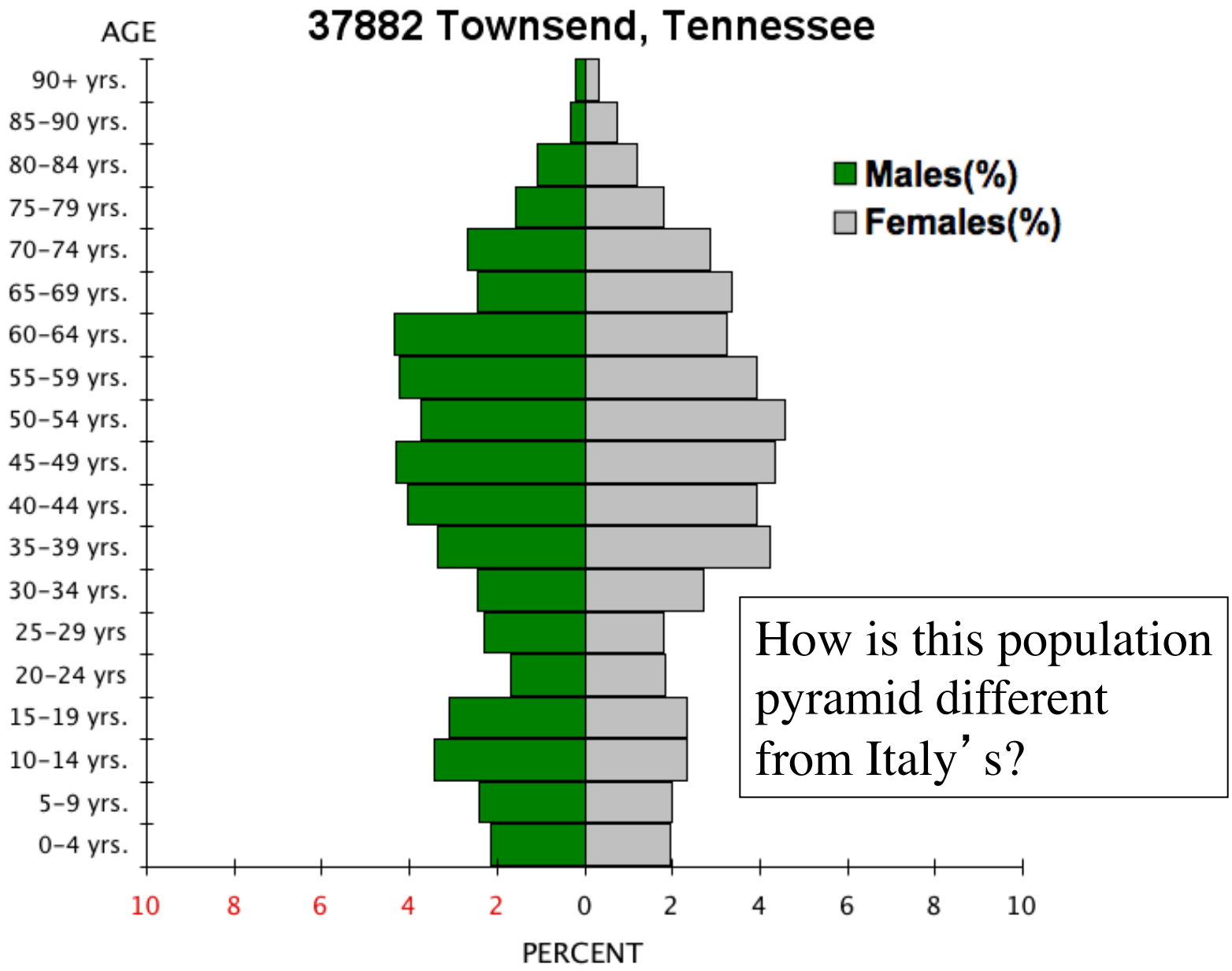
Aging population…

…declining birth rate









The Townsend Chamber of Commerce
Townsend, Tennessee

Chartered 1992

Welcomes You to Townsend and the Great Smoky Mountains

Townsend, Tennessee, adjacent to the Cades Cove and Little River region of the Great Smoky Mountains National Park is a quiet and scenic village.

Known as *"The Peaceful Side of the Smokies"* ™ the Townsend area with its abundance of outdoor activities, accommodations, craft shops, and seasonal festivals, provides an ideal vacation getaway or retirement home site. It is a perfect destination for visits to Cades Cove and other attractions in the Smokies.

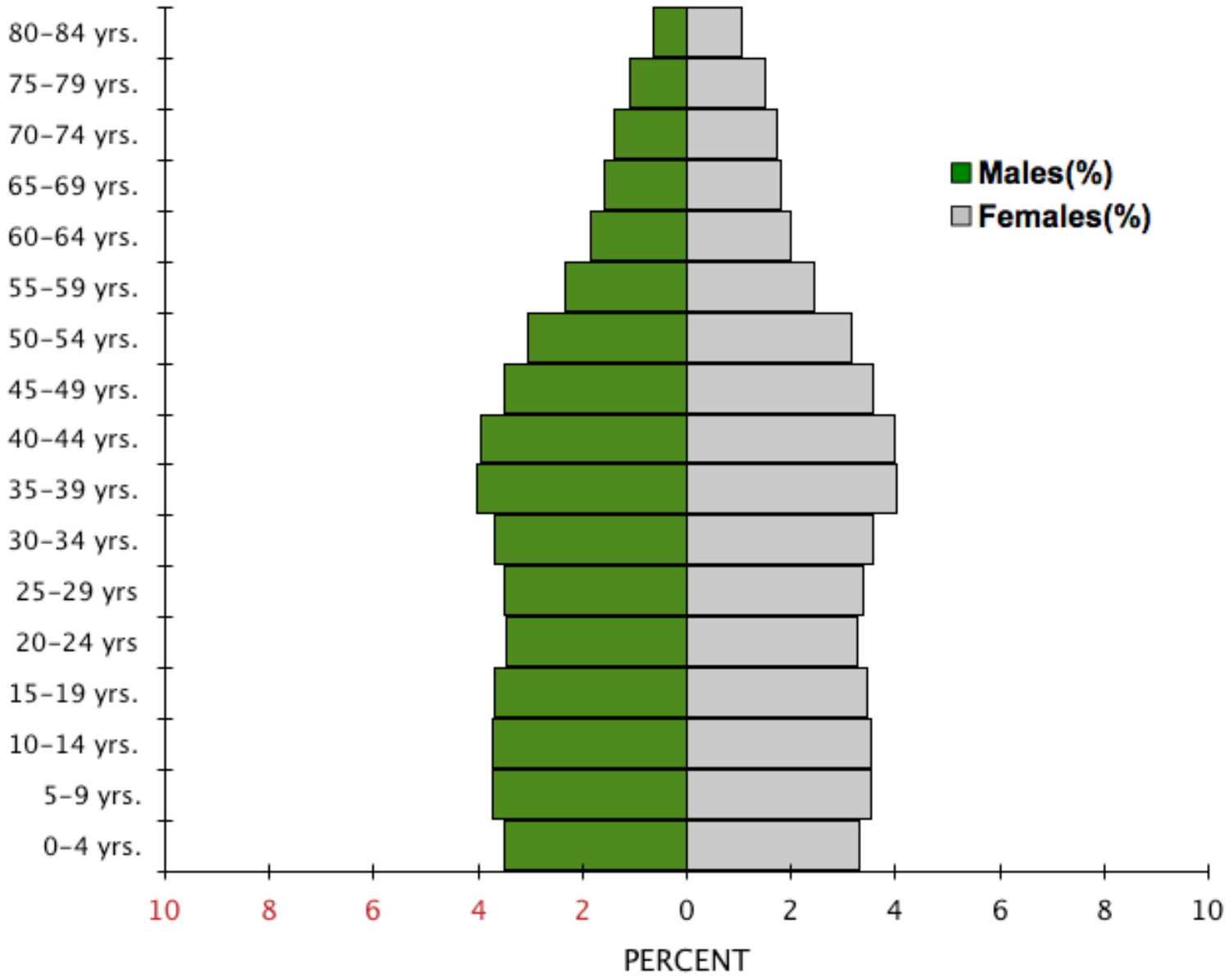
Townsend, itself, is a great place to visit, to do business, or to live. It has many recreational and sight-seeing opportunities of its own - as well as being adjacent to the Great Smoky Mountains National Park. This enchanting community has an interesting history, and some fascinating local attractions. It is a part of historic and scenic Blount County, Tennessee - with easy access to Knoxville, and the University of Tennessee - in addition to the shops and shows of Gatlinburg, Pigeon Forge, and the more commercialized areas of the Smokies.

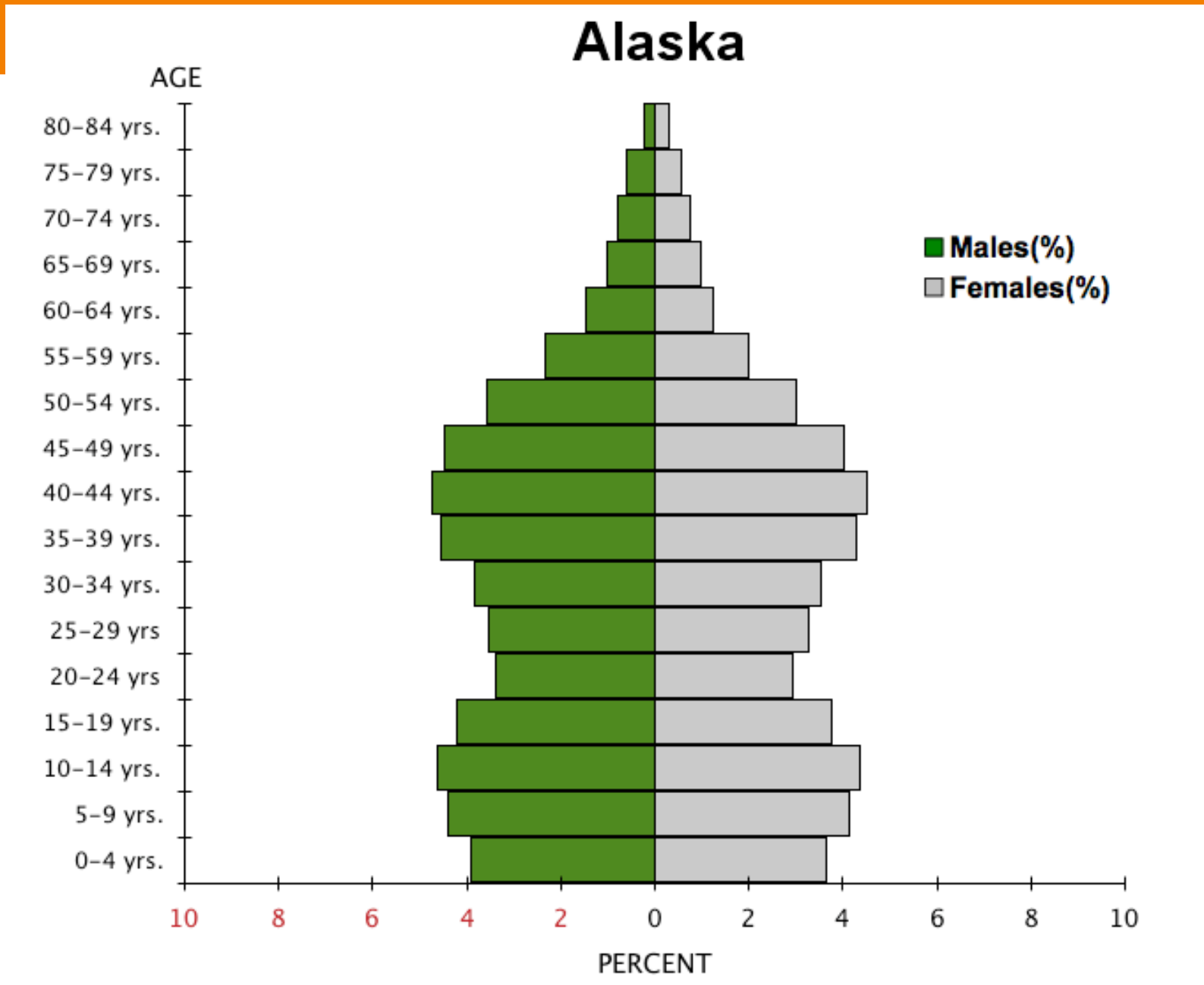
The Mission of the Townsend Chamber of Commerce is to provide information and promote awareness of the features of this unique locality - primarily through this web site. The Chamber member businesses provide the products and services necessary to help make your visit to Townsend pleasant, comfortable, and enjoyable. Enjoy your stay in Townsend - whether for a day or a lifetime!

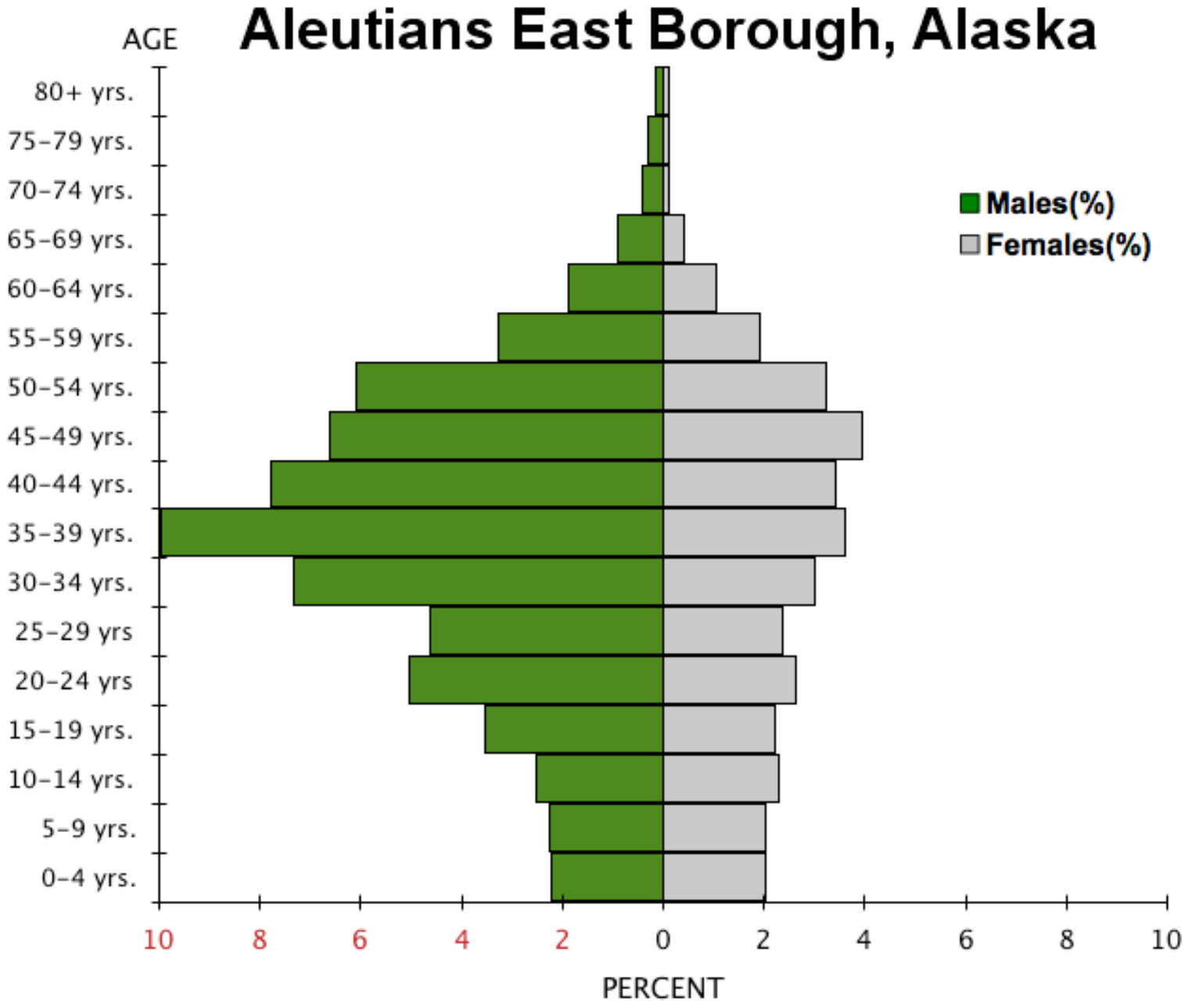
Population Pyramids at Different Scales

- Country
- State
- County (Borough)

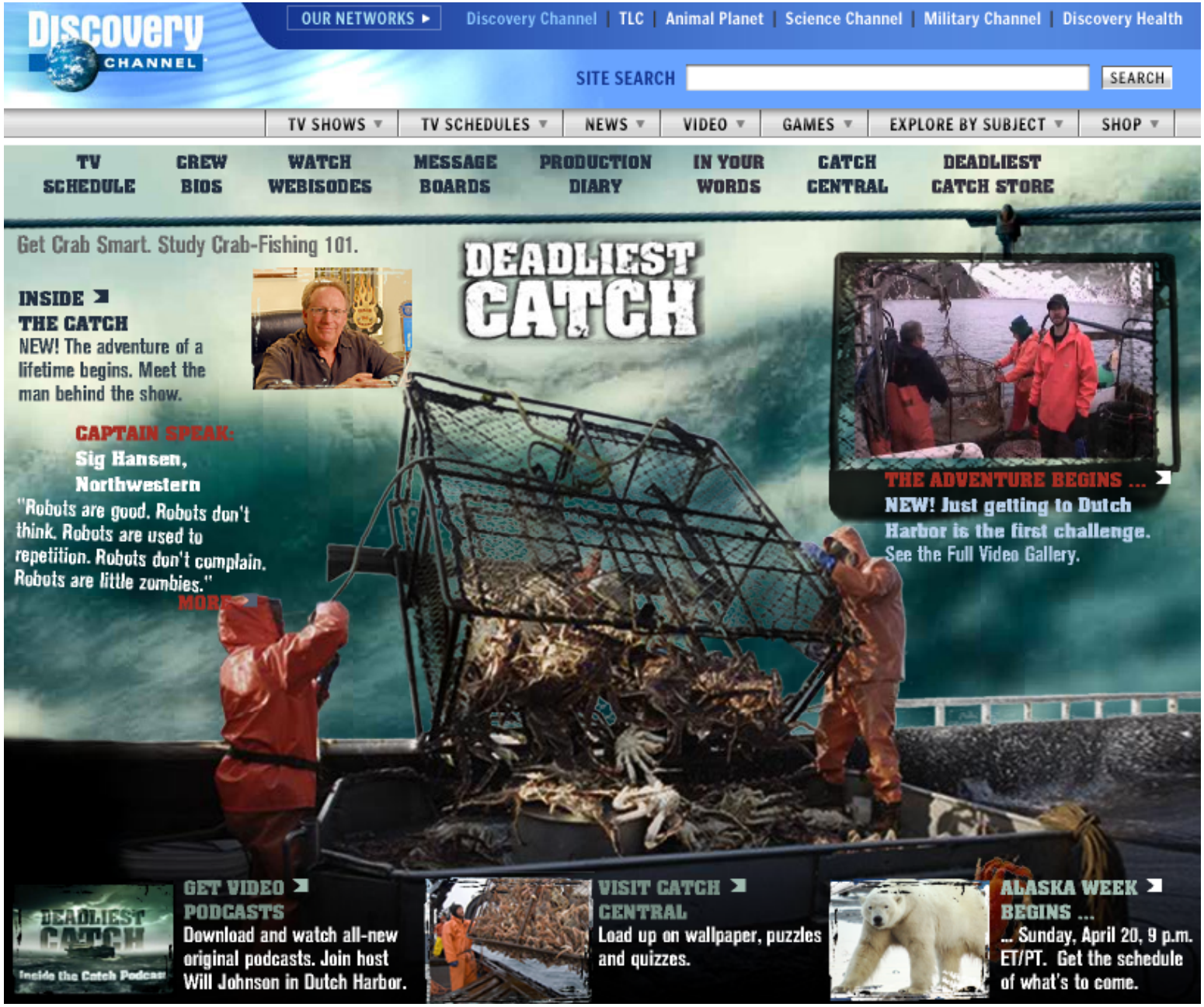
The United States of America







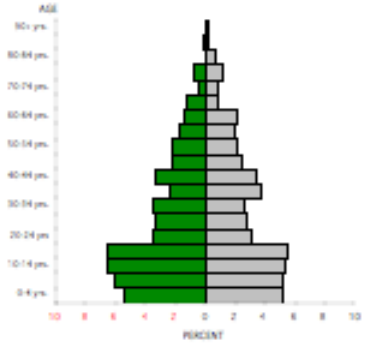
http://www.aleutianseast.org



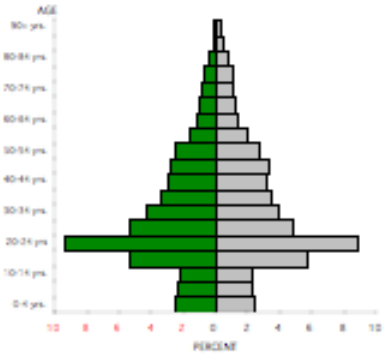
http://dsc.discovery.com/fansites/deadliestcatch/deadliestcatch.html

Selected Population Pyramids in the United States

1._____



2._____

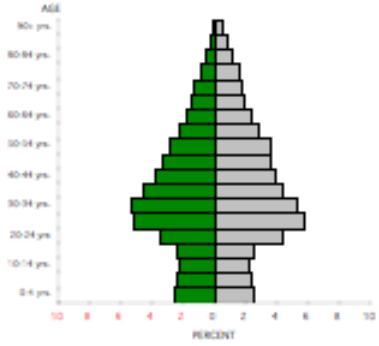


Males(%)

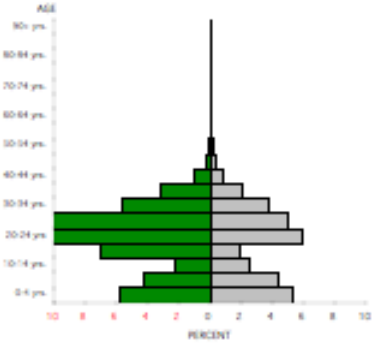
Females(%)

A. Ann Arbor, MI
B. Buffalo County, SD
C. Fort Bragg, NC
D. Leavenworth, KS
E. Manhattan, NYC
F. Northampton, MA
G. Punta Gorda, FL
H. Springfield, IL

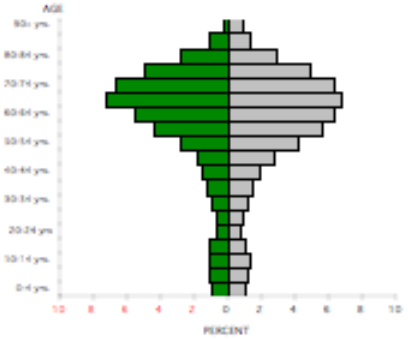
3._____



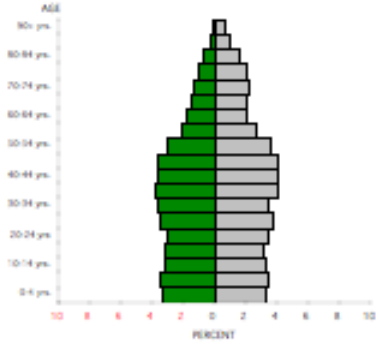
4._____



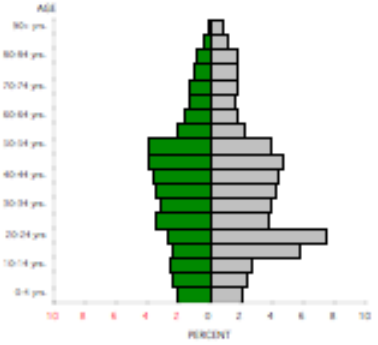
5._____



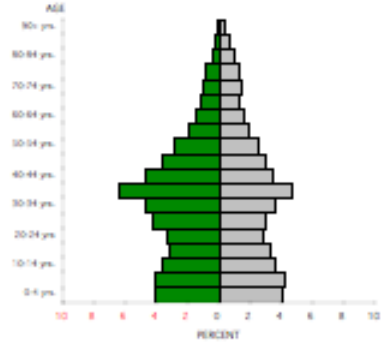
6._____



7._____



8._____



Helpful Hints:

A. Ann Arbor, MI - University of Michigan

B. Buffalo county, SD - Crow Creek Indian Reservation, one of the poorest counties in the United States

C. Fort Bragg, NC - United States Army Fort

D. Leavenworth, KS - United States Penitentiary

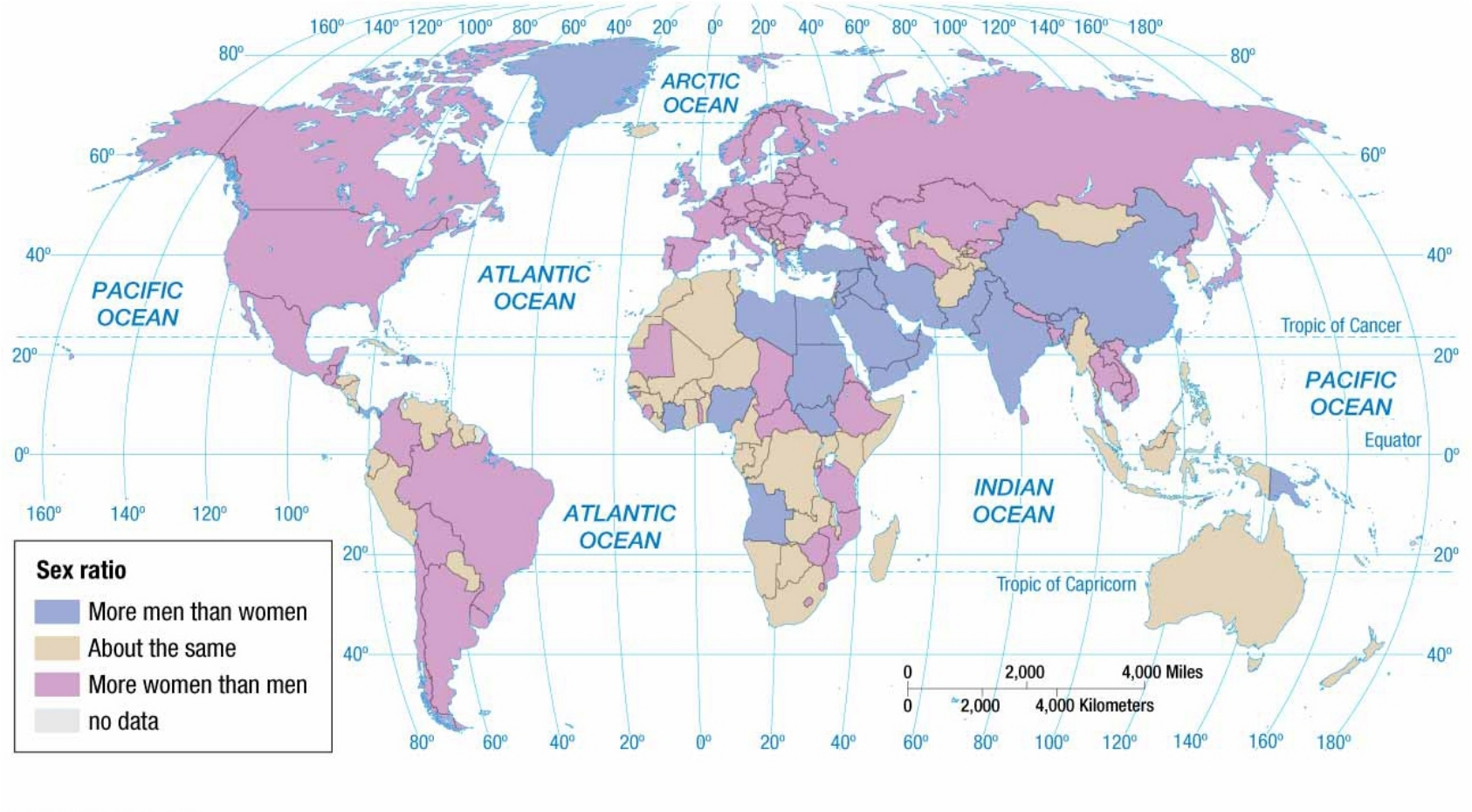
E. Manhattan, NYC - wealthy downtown, few large families

F. Northhampton, MA - Smith College, an all girls college

G. Punta Gorda, FL - retirement community

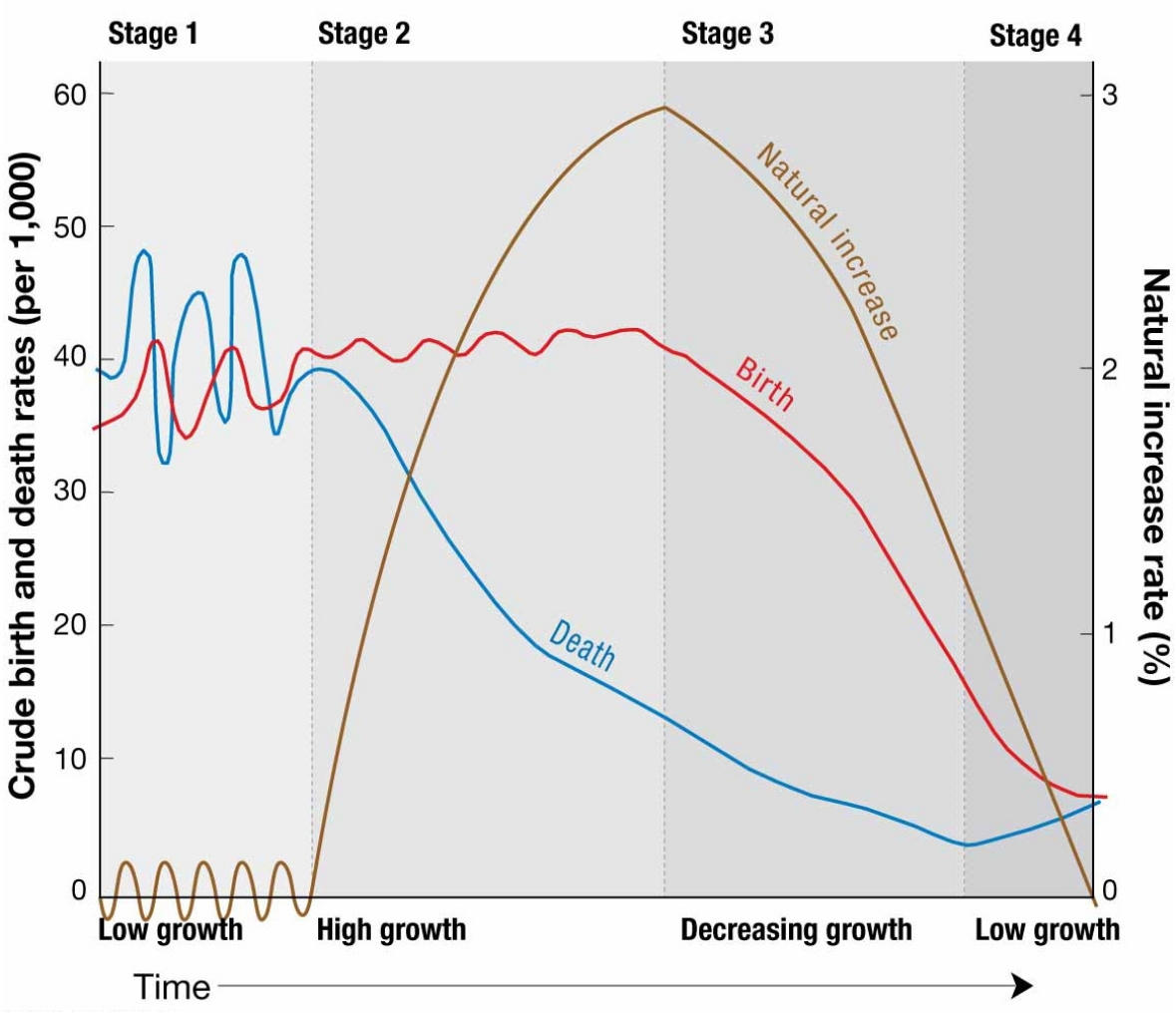
H. Springfield, IL - average American city

- 1. B
- 2. A
- 3. E
- 4. C
- 5. G
- 6. H
- 7. F
- 8. D



KI #3 Why Does Population Growth Vary among Regions? IMPORTANT!!!!!

- The Demographic Transition – (IMPORTANT!!)
  - It is a model consisting of four stages that helps to explain the rising and falling of natural increase over time in a country.
  - Historically, no country has ever reverted back to a previous stage.
    - Thus, the model can be thought to have a beginning, middle, and an end.



Why Does Population Growth Vary among Regions?

- The Demographic Transition
  - Stage 1: Low Growth
    - Marked by very high birth and death rates.
      - No long-term natural increase
      - No country presently is in Stage 1
  - Stage 2: High Growth
    - Marked by rapidly declining death rates and very high birth rates
      - High natural increase
      - Europe and North America entered stage 2, as a result of the *industrial revolution* (~1750).
      - Africa, Asia, and Latin America entered stage 2 around 1950, as a result of *medical revolution*-improved medical care.

Why Does Population Growth Vary among Regions?

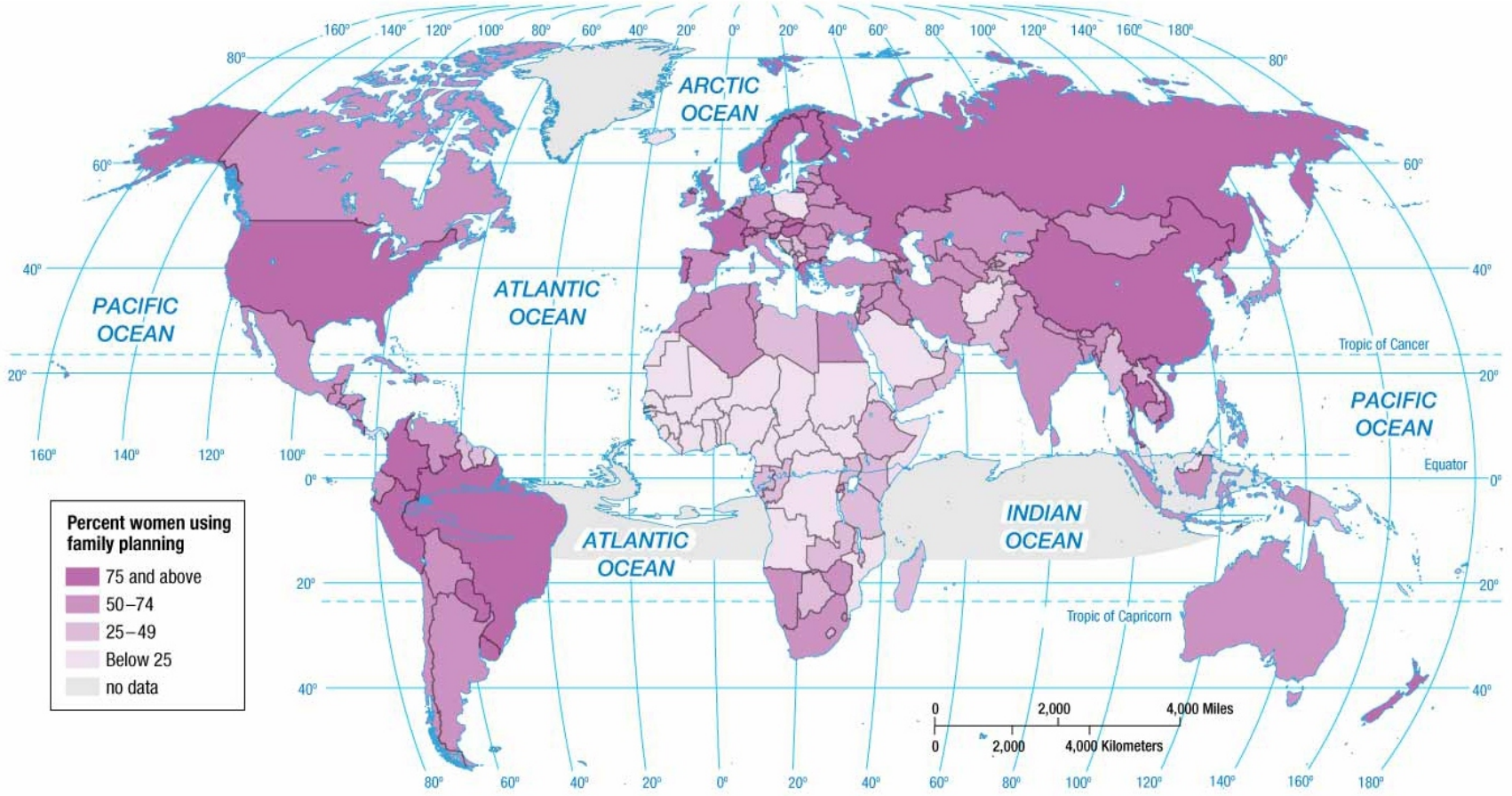
- The Demographic Transition
  - Stage 3: Moderate Growth
    - Marked by rapid decline in birth rates and steady decline in death rates
      - Natural increase is moderate.
        - » Gap between CBR and CDR is narrower in stage 3 countries than stage 2 countries.
    - Population grows, because CBR is still greater than CDR.
    - Most European countries and North America transitioned to stage 3, during first half of twentieth century.

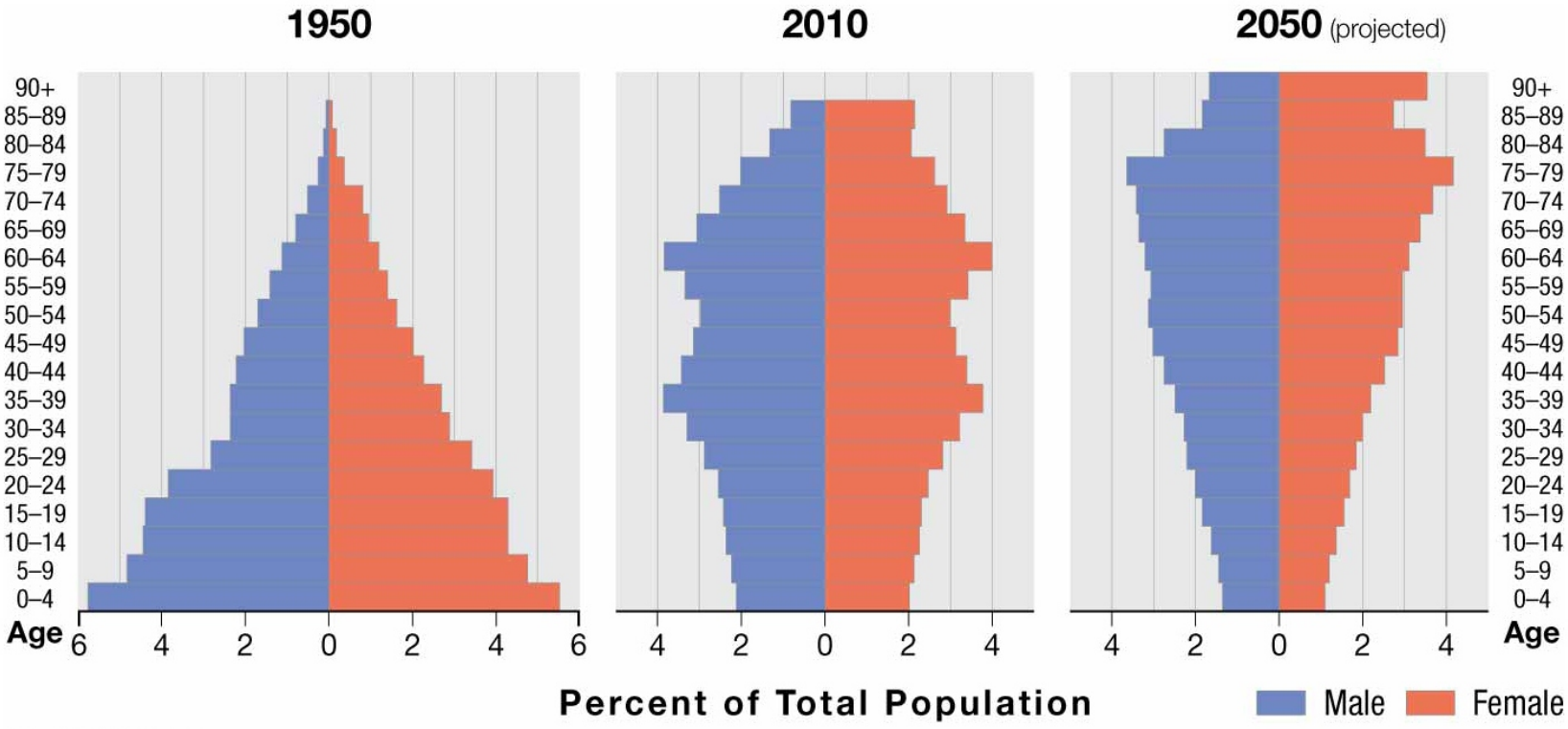
Why Does Population Growth Vary among Regions?

- The Demographic Transition
  - Stage 4: Low Growth
    - Marked by very low birth and death rates
      - No long-term natural increase and possibly a decrease
    - Country reaches stage 4 when population gains by CBR are diminished by losses because of CDR.
      - Condition known as *zero population growth (ZPG)*
        - » Demographers more precisely define ZPG as the TFR that produces no population change.
    - Population change results from immigration.

Why Does Population Growth Vary among Regions?

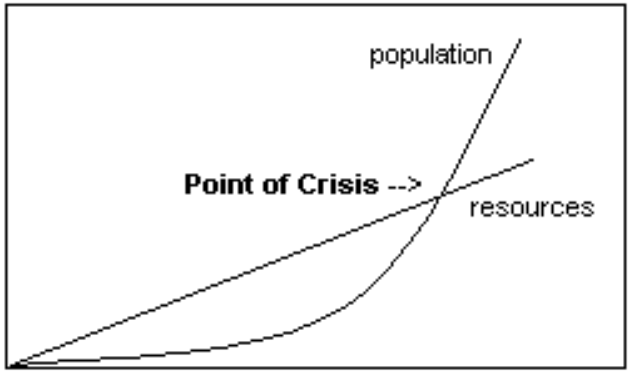
- Declining Birth Rates
  - Two Successful Strategies for Lowering Birth Rates
    1. Improving Education and Health Care
       - Emphasizes improving local economic conditions so that increased wealth is allocated to education and health programs seeking to lower birth rates.
    2. Contraception
       - More immediate results reaped than previous approach
       - Met with greater resistance, because it goes against cultural or religious beliefs of some.
         - » Roman Catholics, fundamentalist Protestants, Muslims, and Hindus.





Will the World Face an Overpopulation Problem?

- What is the most immediate challenge that overpopulation of the earth poses to mankind?
  - *Essay on the Principle of Population 1798 (time of Industrial Revolution population explosion)*
- Basic premise: <u>The population is growing **exponentially (geometrically)**, however, the food supply only increase **arithmetically (linear)**</u>



Malthus' Basic Theory

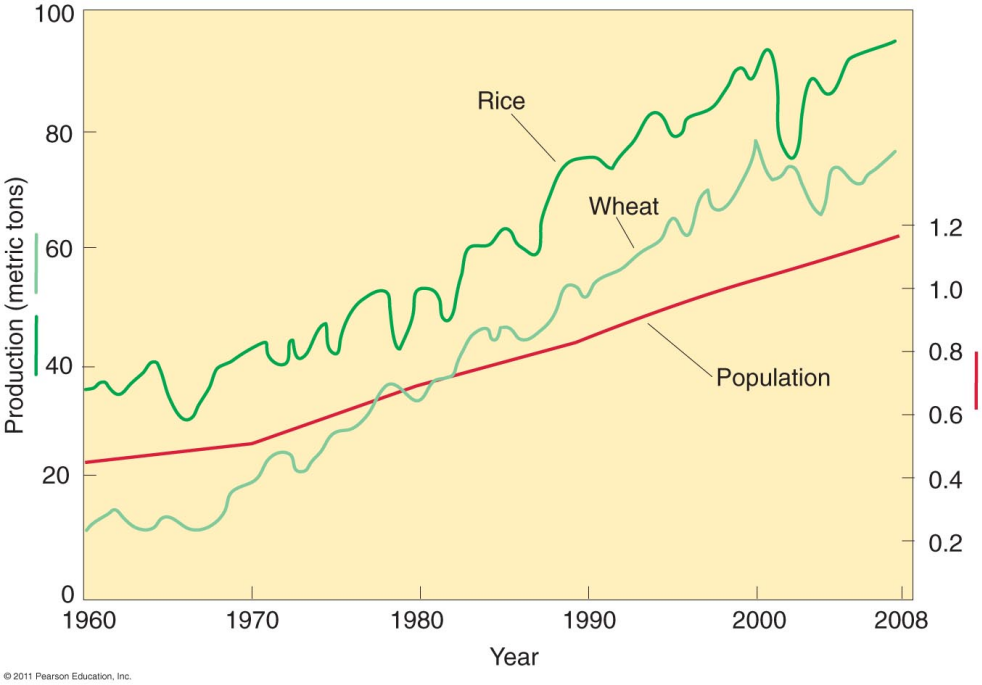
Why Does Population Growth Vary among Regions?

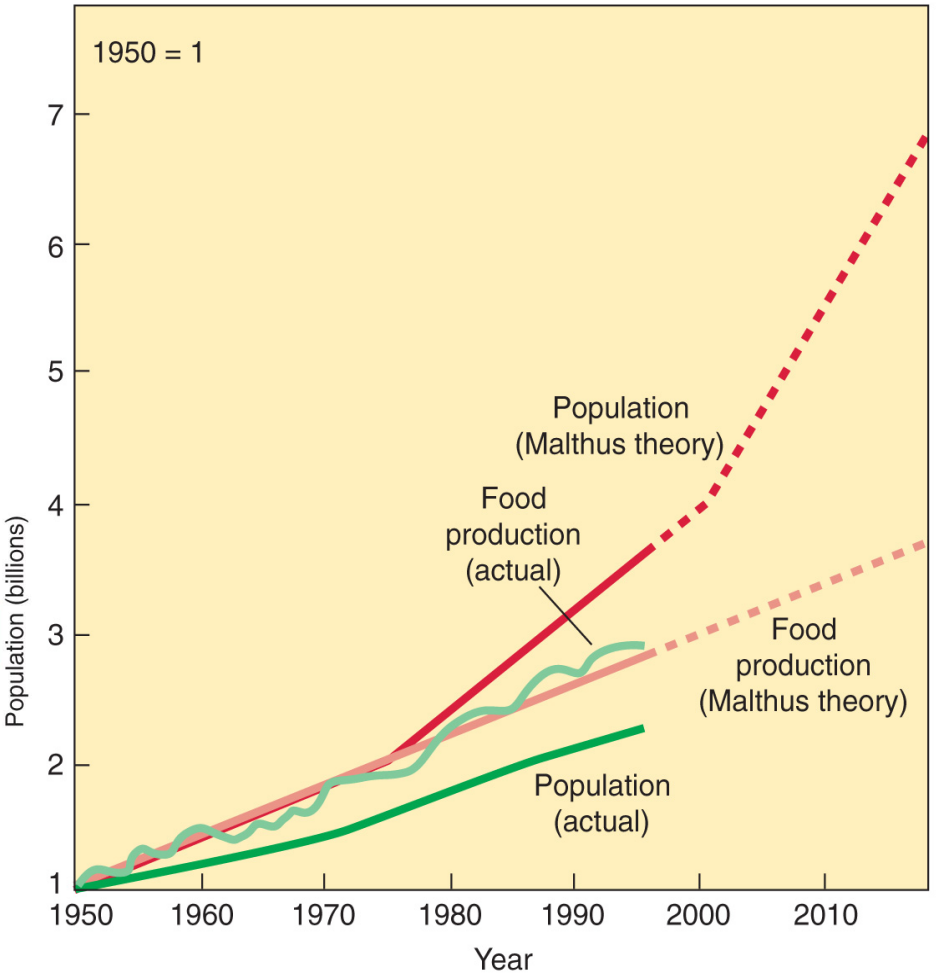
- Malthus on Overpopulation
  - He claimed the population was growing faster than the increase in food supply.
  - Malthus's Critics
    - Many geographers consider his beliefs too pessimistic.
      - Malthus's theory based on idea that world's supply of resources is fixed rather than expanding.
    - Many disagree that population increase is not a problem.
      - Larger populations could stimulate economic growth, and therefore, production of more food.

Why Does Population Growth Vary among Regions?

- Malthus on Overpopulation
  - Theory and Reality
    - Food production has increased over last 50 years faster than Malthus predicted.
    - His model predicted world population to quadruple over the course of 50 years.
      - Not even in India has population growth outpaced food production.

Malthus: Theory & Reality





Why Does Population Growth Vary among Regions?

- Population Futures
  - Demographic Transition Possible Stage 5: Decline
    - Characterized by…
      - Very low CBR
      - Increasing CDR
        - » More elderly people than young persons
      - Negative NIR
      - Over time, few young women in child-bearing years
        - » Contributing to ever falling CBR
    - Several European countries already have negative NIR.
      - Russia is most notable hosting a negative NIR for 50 years.

Types of Population Policies

Pro-natalist / Expansive

Anti-natalist / Restrictive

Why would a country want a pro-natalist policy ?

http://www.aishbaltimore.com/zz/family/rebbitzen/The_Joys

http://

Why would a country want an anti-natalist policy ?

U.S.S.R. - pro-natalist

Starting on July 8, 1944 the government of the U.S.S.R. began awarding medals to women in order to encourage a high fertility rate.

Why did the government believe there was a need for a pro-natalist policy at this time ?

Motherhood Medal 2nd Class

5 children 8,000,000 awarded

Motherhood Medal 1st Class

6 children 4,000,000 awarded

Order of Maternal Glory 3rd Class

7 children 2,000,000 awarded

Order of Maternal Glory 2nd Class

8 children 1,000,000 awarded

Order of Maternal Glory 1st Class

9 children 500,000 awarded

Order Mother Heroine

10 children 200,000 awarded

Germany

Cross of Honor of the German Mother (Ehrenkreuz der deutschen Mutter)

1938 - 1944

China - anti-natalist

2 different programs in recent years

- Later, Longer, Fewer Policy
- One Child Policy

Later, Longer, Fewer (wan xi shao) 1971

- get married later in life (mid - late twenties)
- wait longer for first baby and in between babies
- have fewer, 2 in urban areas & 3 in rural areas

One Child Policy 1979

- rewards start once 1 child contract is signed

Rewards

- free medical care
- free daycare and schooling
- guaranteed job for child
- bonuses for parents
- extra maternity leave
- better housing
- bigger old age pension

Penalties

- must repay financial benefits
- educational, medical benefits, & guaranteed jobs are withdrawn
- parents' wages reduced

Why are improved old age pensions such an important part of the policy ?

How did the government persuade its citizens to cooperate ?

Geography of Demography

- Mao Zedong encouraged population growth-after his death Deng Xiaping called for control
- 1979 launched the One Child Policy with goal of stabilizing at 1.2 billion by end of 20th cent.
- 1970s growth rate 2.4%
- 1985 growth rate 1.1%
- After 1982 more serious enforcement-mandatory contraception after 1st child.
- If a 2nd child was born-parents were sterilized.


POPULATION

One-Child Policy

Because of concerns about a rapidly expanding population, China in 1979 adopted a policy of one child per family. In addition, the country has age restrictions for marriage. A man must be 22 and a woman 20 before they can marry. Those policies have reduced China's birthrate dramatically.

However, the government policy of one child per family has run into opposition. Rural families, in particular, feel the need for more than one child to help work on their farms. Because of these problems, the government has relaxed the one-child policy.

88

80,000 Family Planning Workers

source: http://www.iisg.nl/~landsberger/pop1.html

Practice birth control for the revolution

source: http://www.iisg.nl/~landsberger/pop1.html

source: http://www.iisg.nl/~landsberger/pop1.html

source: http://www.iisg.nl/~landsberger/pop1.html

Part of Education Program

The Science of Family Planning

source: http://www.iisg.nl/~landsberger/pop.html

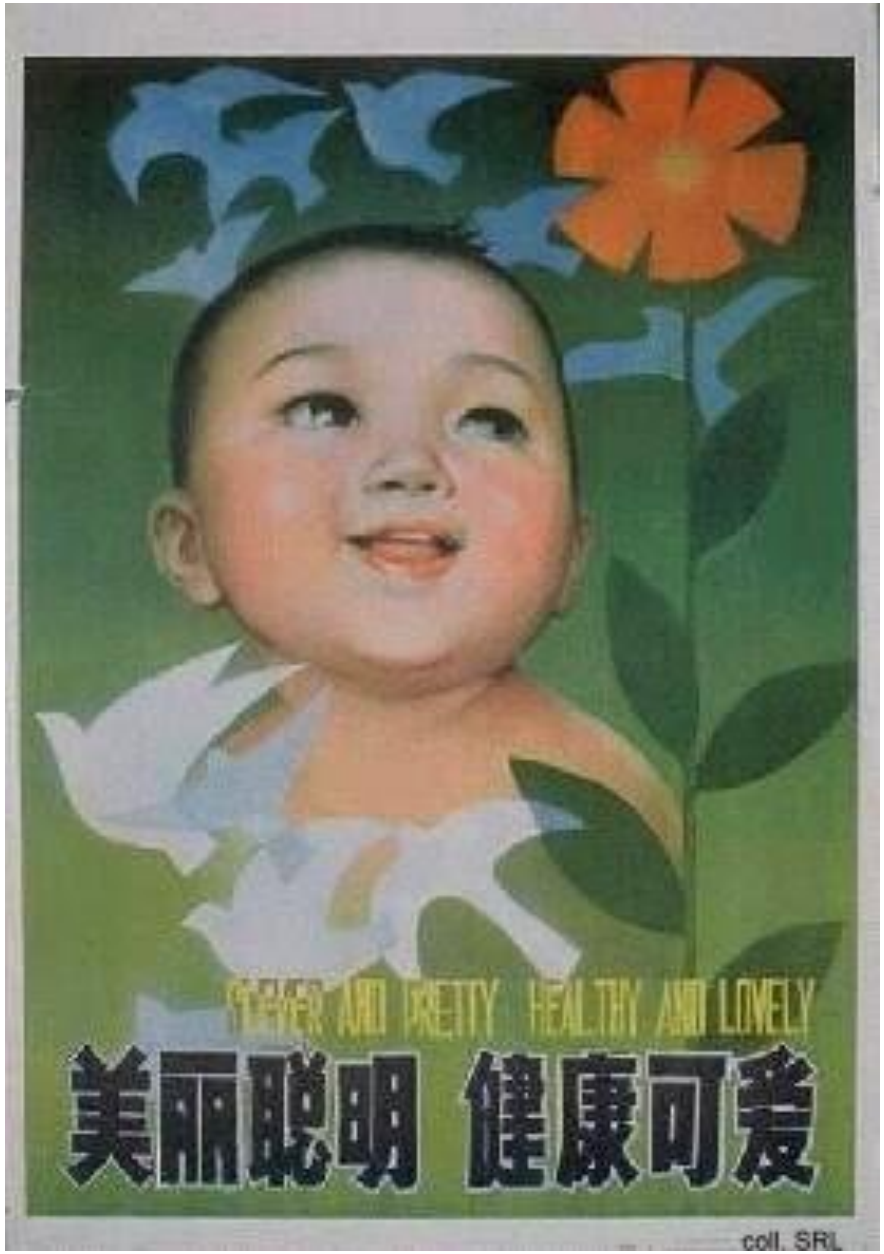
Peer pressure is also effectively used to keep birth rates down

Millions of dollars have been spent on education and on advertizing.

http://www.iisg.nl/~landsberger/pop1.html

http://www.iisg.nl/~landsberger/pop1.html

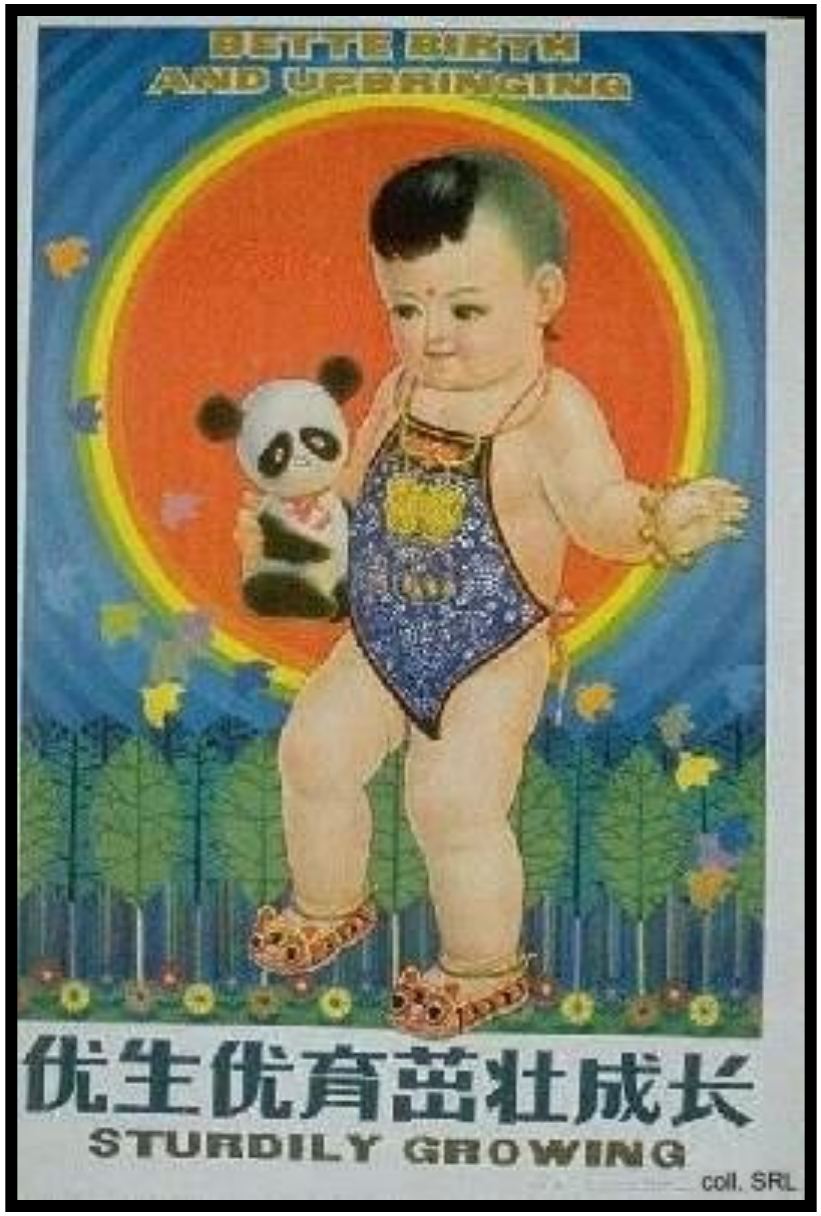
Carry out family planning
Implement the basic national policy



source: http://www.iisg.nl/~landsberger/pop.html

Clever and pretty
healthy and lovely

http://www.iisg.nl/~landsberger/pop1.html



http://www.iisg.nl/~landsberger/pop.html

China's One Child Policy

What are some of the limitations, unintended consequences, and contradictions found in government policies toward population growth?

Geography of Demography

- Many rural Chinese defied rule, hid pregnant women, failed to register births, prevented inspectors from visiting rural villages.
- Government took drastic action:
  - Violators were fired
  - Land was confiscated
  - Lost all benefits
  - Pregnant women were arrested & forced to have abortions

Geography of Demography

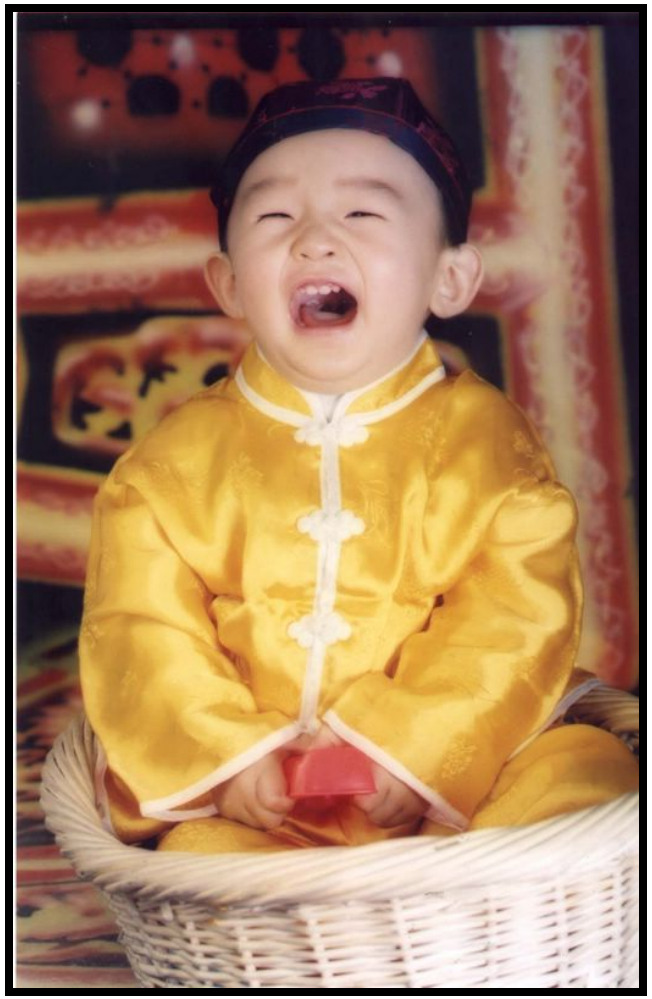
- First 6 years 70 million abortions
- 1980s about 20 million sterilizations a year-3X as many women as men.
- Party Members were birth control police-got cash and promotion for enforcing the laws.
- 1984 One Child Policy was relaxed in the countryside-a couple with a daughter-2nd child after 4 years.

Geography of Demography

- Corruption a major problem- permitted to evade rule-bribe.
- Fertility rates are rising as the rules are relaxed.
- One Child Policy was practical- but rural tradition opposed the rule
- Drive for Zero Population Growth eroded the traditions of Chinese society.
- Female infanticide a common occurrence.

Little emperors

Any social problems ?



In recent years China has relaxed the rules, and in some cases have even started encouraging two children.

In many cases, parents are not taking advantage of this opportunity.

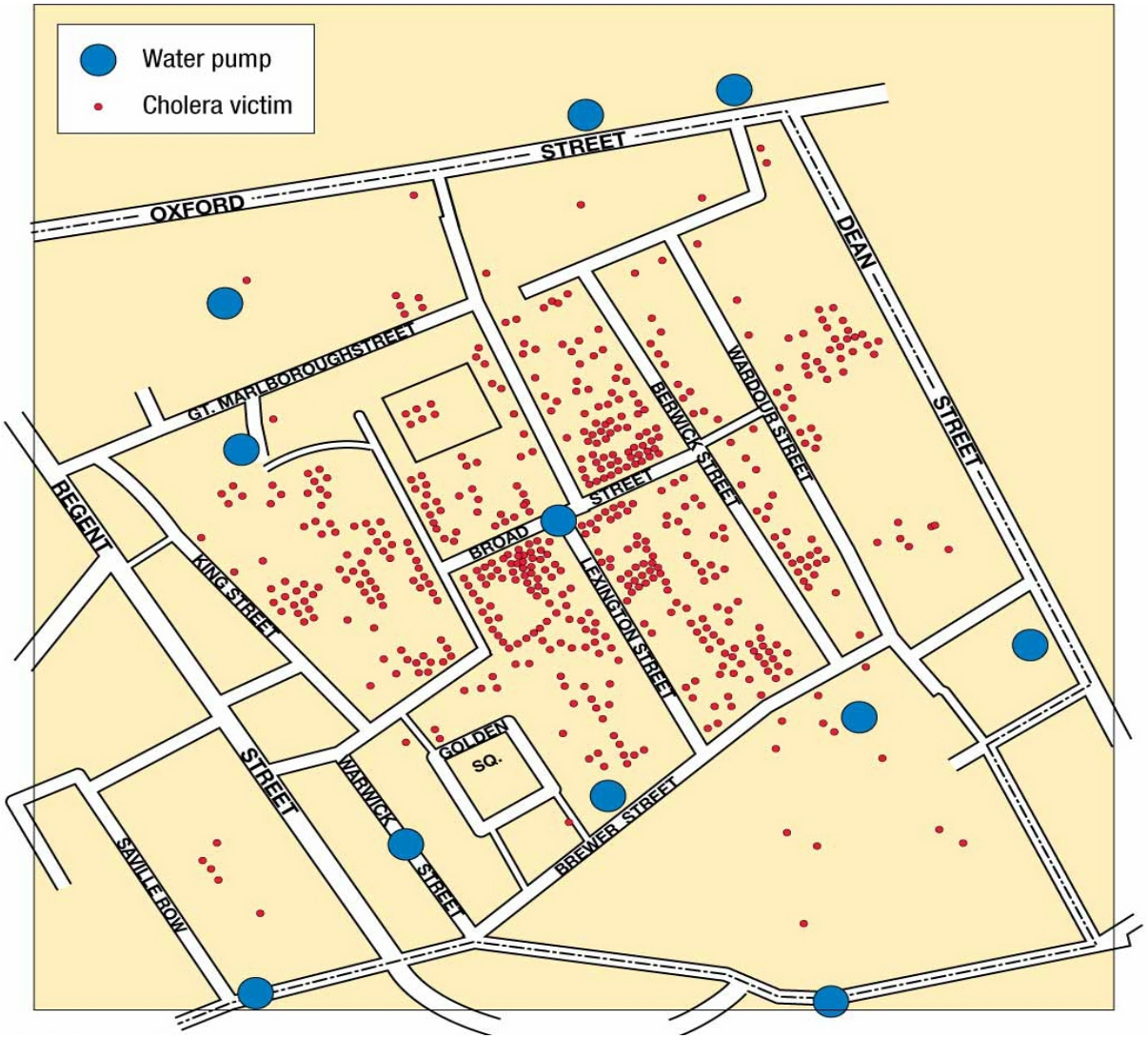
Why ?

KI #4 Why Do Some Regions Face Health Threats?

- Epidemiologic Transition
  - Medical researches have identified an *epidemiologic transition* that focuses on distinct health threats in each stage of the demographic transition.
  - Stage 1: Pestilence and Famine (High CDR)
    - Principal cause of death: infectious and parasitic diseases
      - Ex. black plague (bubonic plague)

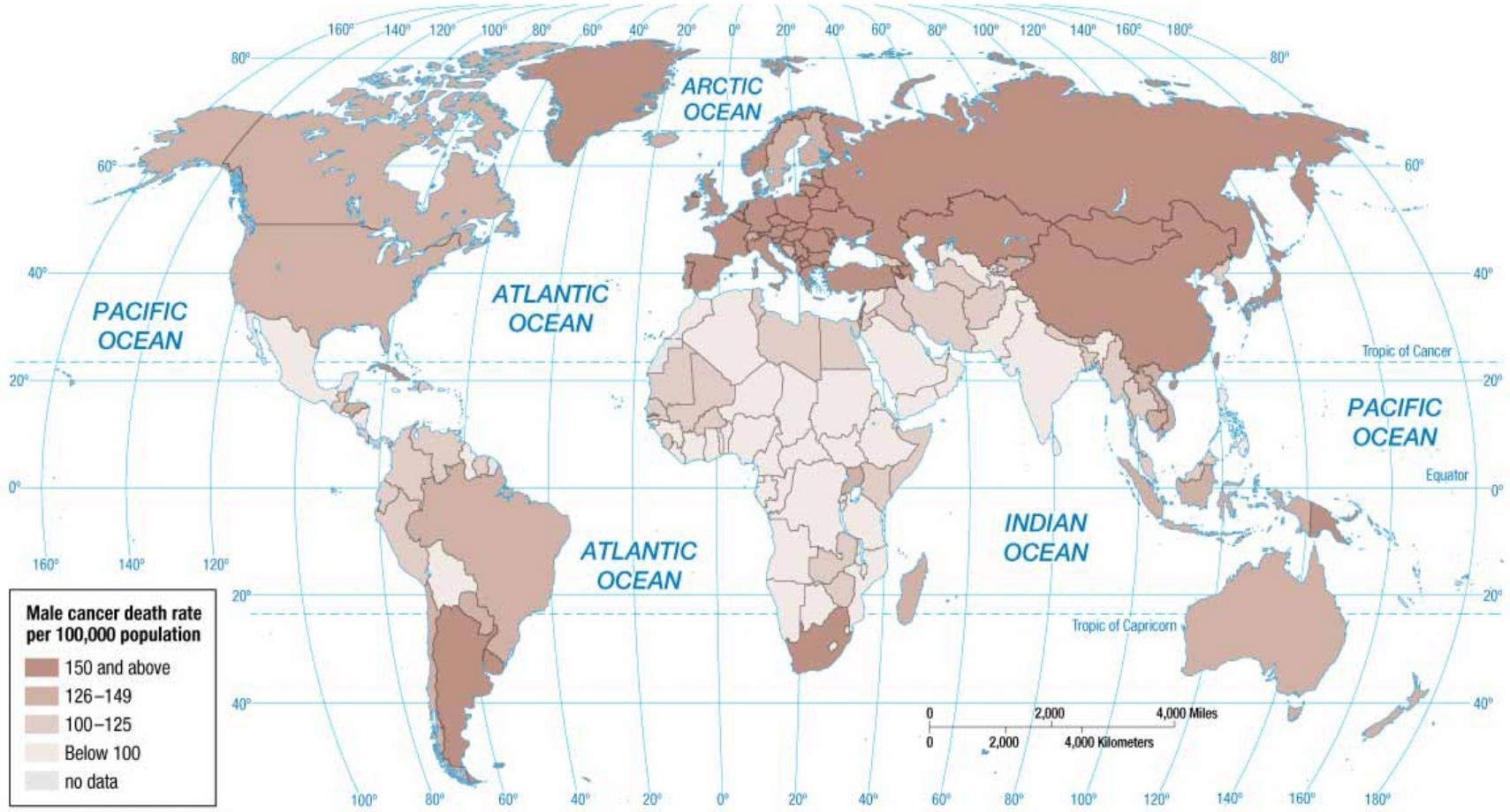
Why Do Some Regions Face Health Threats?

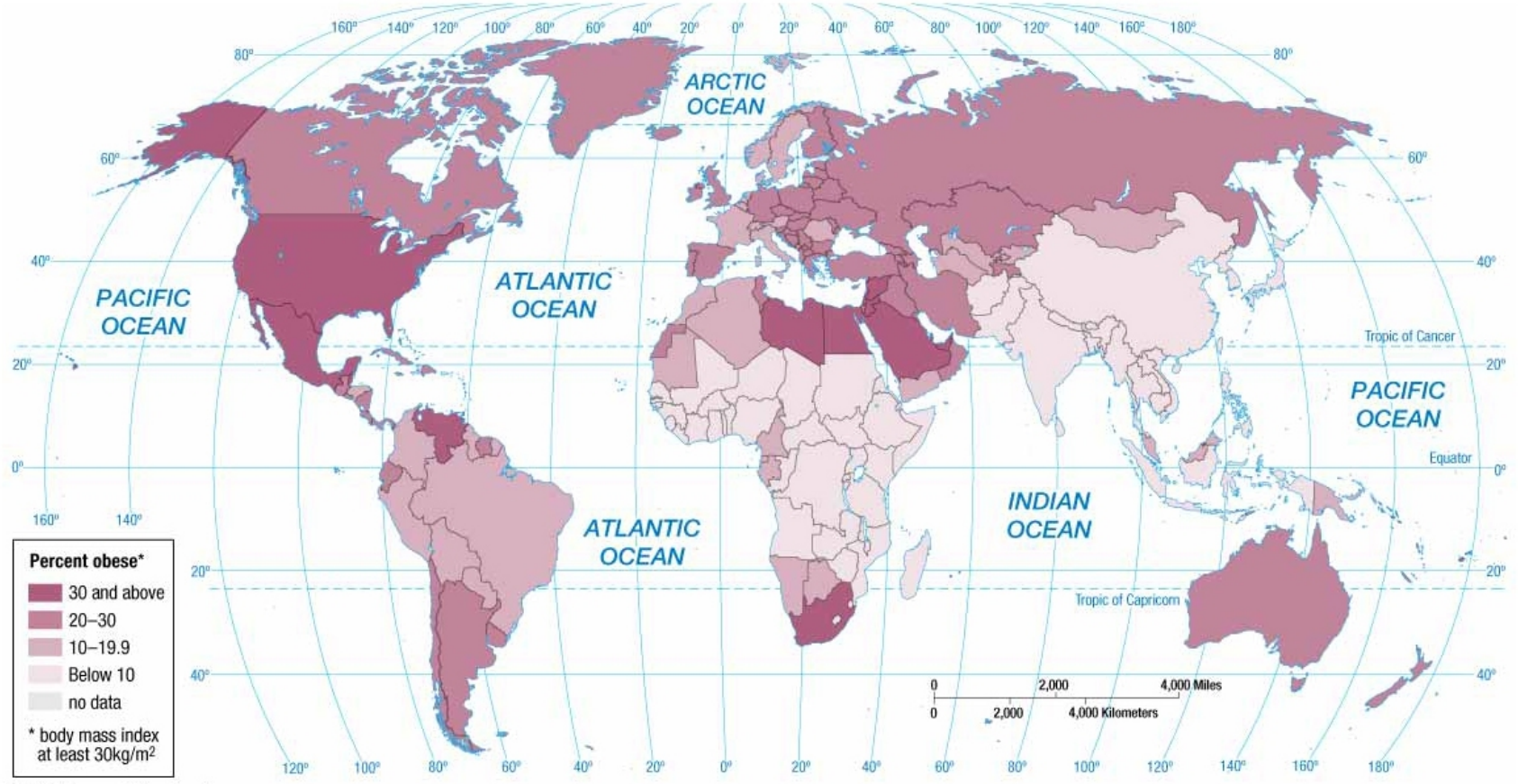
- Epidemiologic Transition
  - Stage 2: Receding Pandemic (Rapidly Declining CDR)
    - *Pandemic* is a disease that occurs over a wide geographic area and affects a very high proportion of the population.
    - Factors that reduced spread of disease, during the industrial revolution
      - Improved sanitation
      - Improved nutrition
      - Improved medicine
    - Famous cholera pandemic in London in mid nineteenth century.



Why Do Some Regions Face Health Threats?

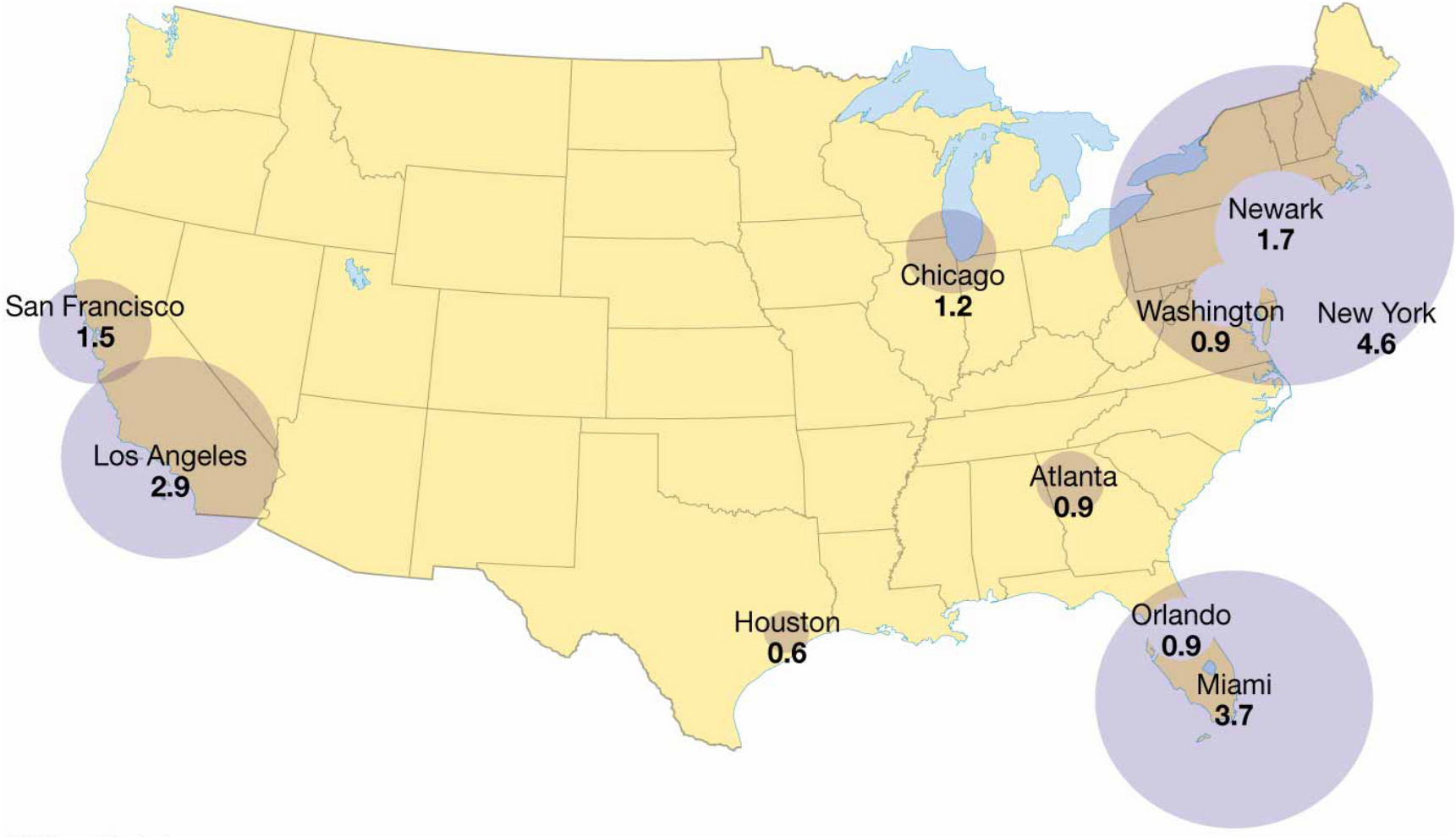
- Epidemiologic Transition
  - Stage 3: Degenerative Diseases (Moderately Declining CDR)
    - Characterized by…
      - Decrease in deaths from infectious diseases.
      - Increase in chronic disorders associated with aging.
        - » Cardiovascular diseases
        - » Cancer
  - Stage 4: Delayed Degenerative Diseases (Low but Increasing CDR)
    - Characterized by…
      - Deaths caused by cardiovascular diseases and cancer delayed because of modern medicine treatments.





Why Do Some Regions Face Health Threats?

- Infectious Diseases
  - Reasons for Possible Stage 5
    - Evolution
      - Infectious disease microbes evolve and establish a resistance to drugs and insecticides.
      - Antibiotics and genetic engineering contributes to the emergence of new strains of viruses and bacteria.
    - Poverty
      - Infectious diseases are more prevalent in poor areas because of presence of unsanitary conditions and inability to afford drugs needed for treatment.
    - Increased Connections
      - Advancements in modes of transportation, especially air travel, makes it easier for an individual infected in one country to be in another country before exhibiting symptoms.



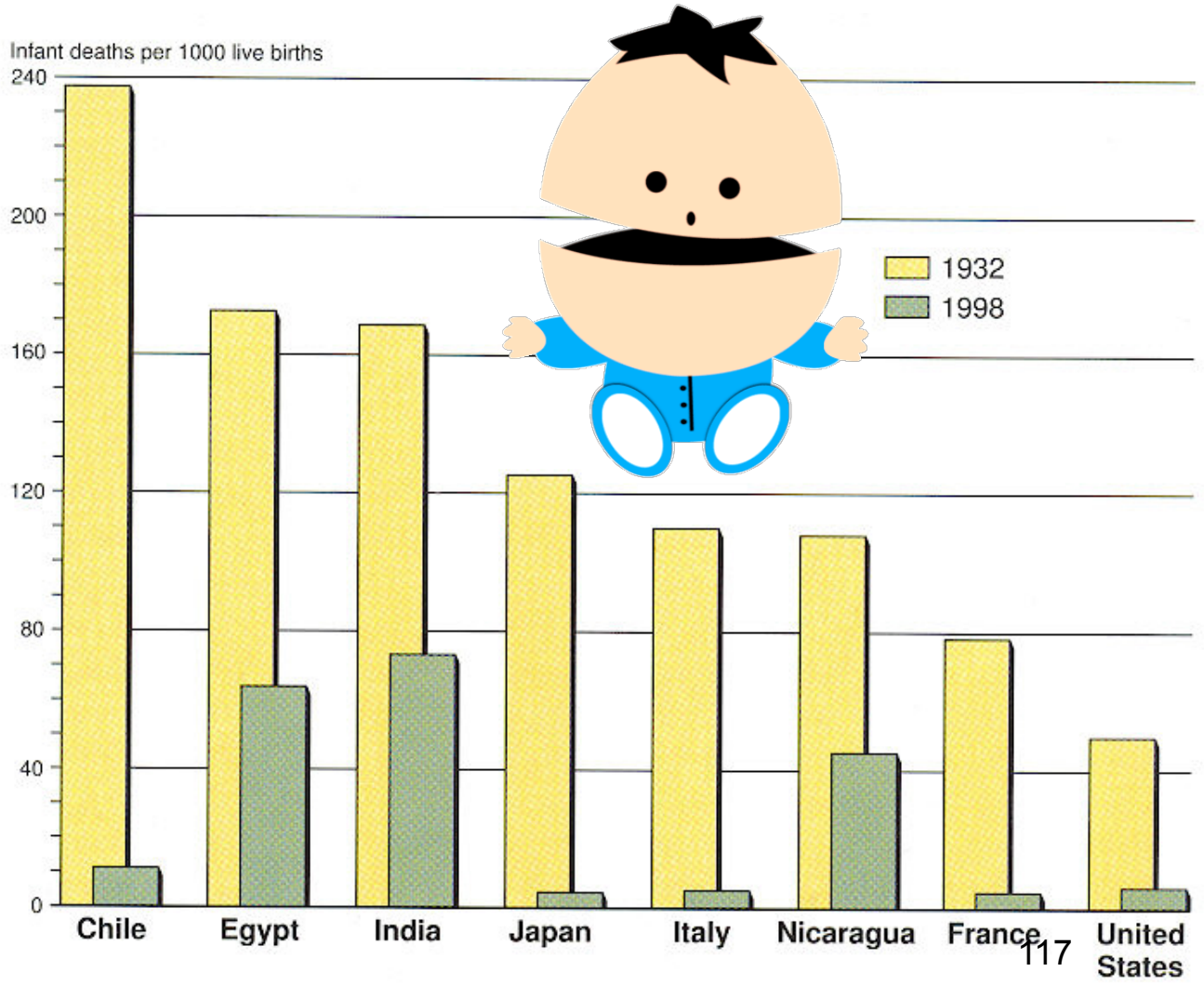
Why Do Some Regions Face Health Threats?

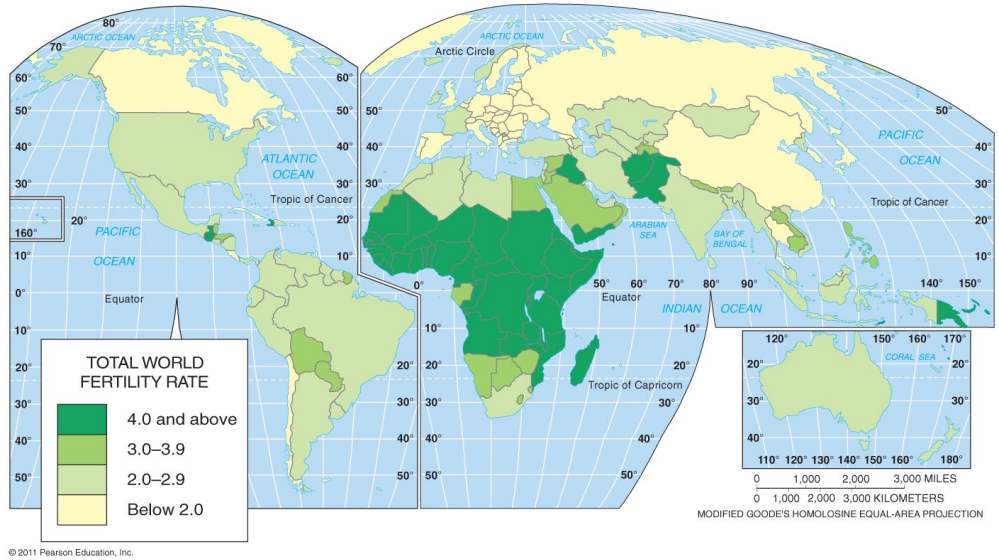
- Health Care
  - Health conditions vary around the world, primarily, because countries possess different resources to care for people who are sick.
    - Expenditures on Health Care
      - More than 15 percent of total government expenditures in Europe and North America.
      - Less than 5 percent in sub-Saharan Africa and South Asia.

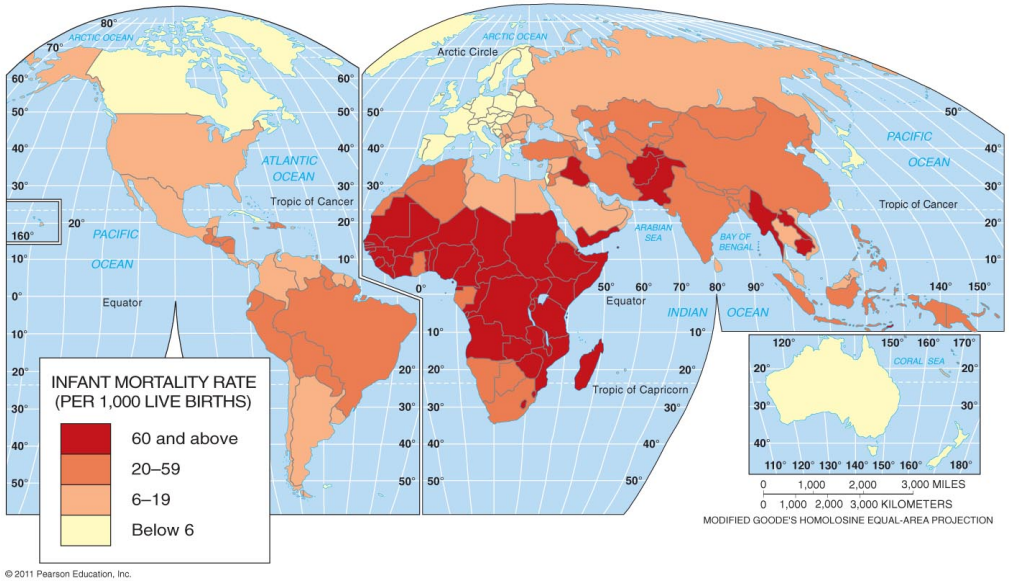
Why Do Some Regions Face Health Threats?

- Health Care
  - Health Care Systems
    - Developed Countries
      - Public service available at little or no cost.
      - Government pays more than 70 percent of health-care costs in most European countries, and private individuals pay about 30 percent of the expense.
    - Developing Countries
      - Private individuals must pay more than half of the cost of health care.
        - » U.S. is an exception to these generalizations, because private individuals are required to pay about 55 percent of health care costs making it more closely resemble a developing country, in regards to health care.

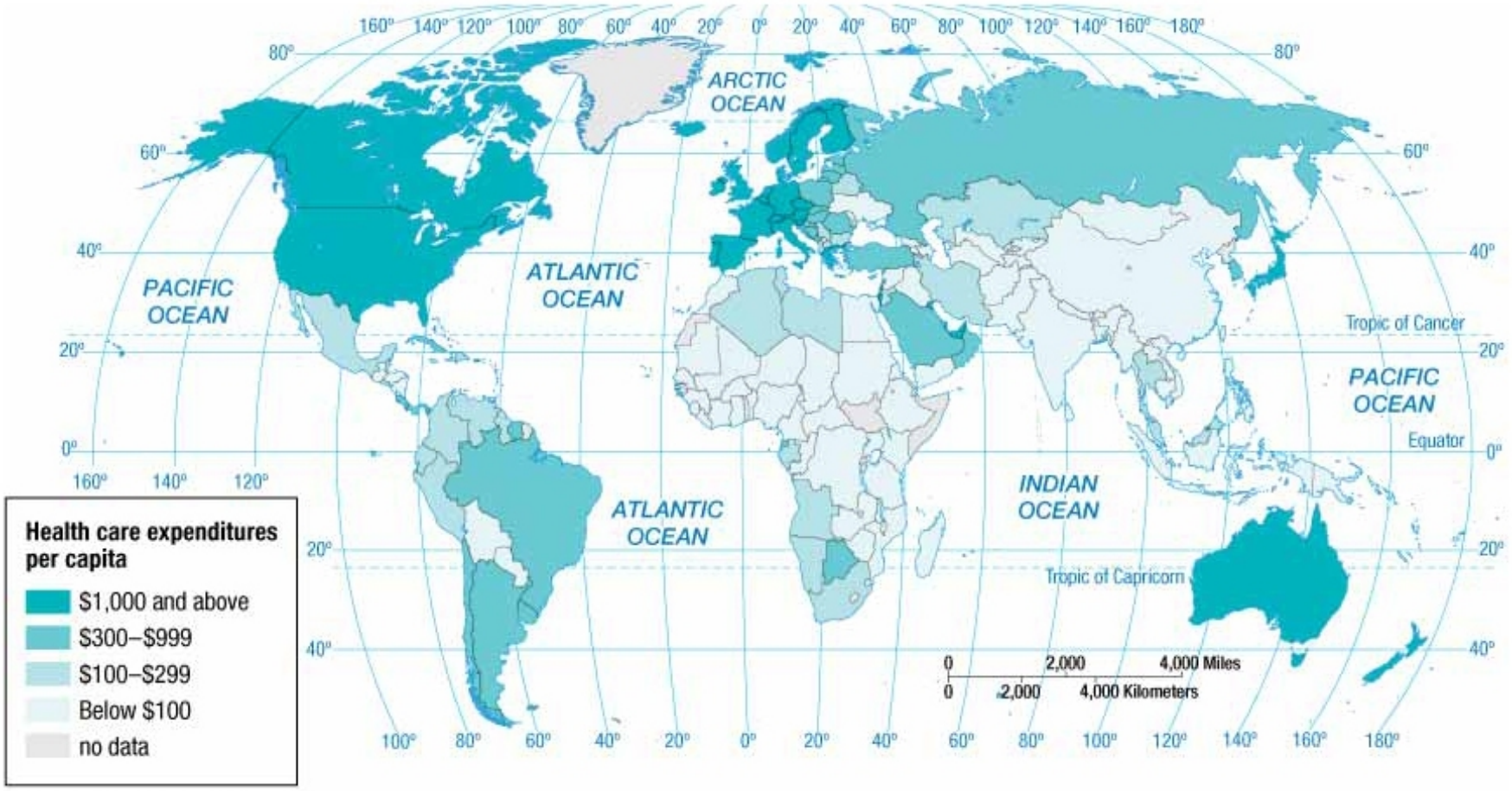
Infant mortality rate (IMR) – the annual number of deaths of infants under 1 year old compared to number of live births

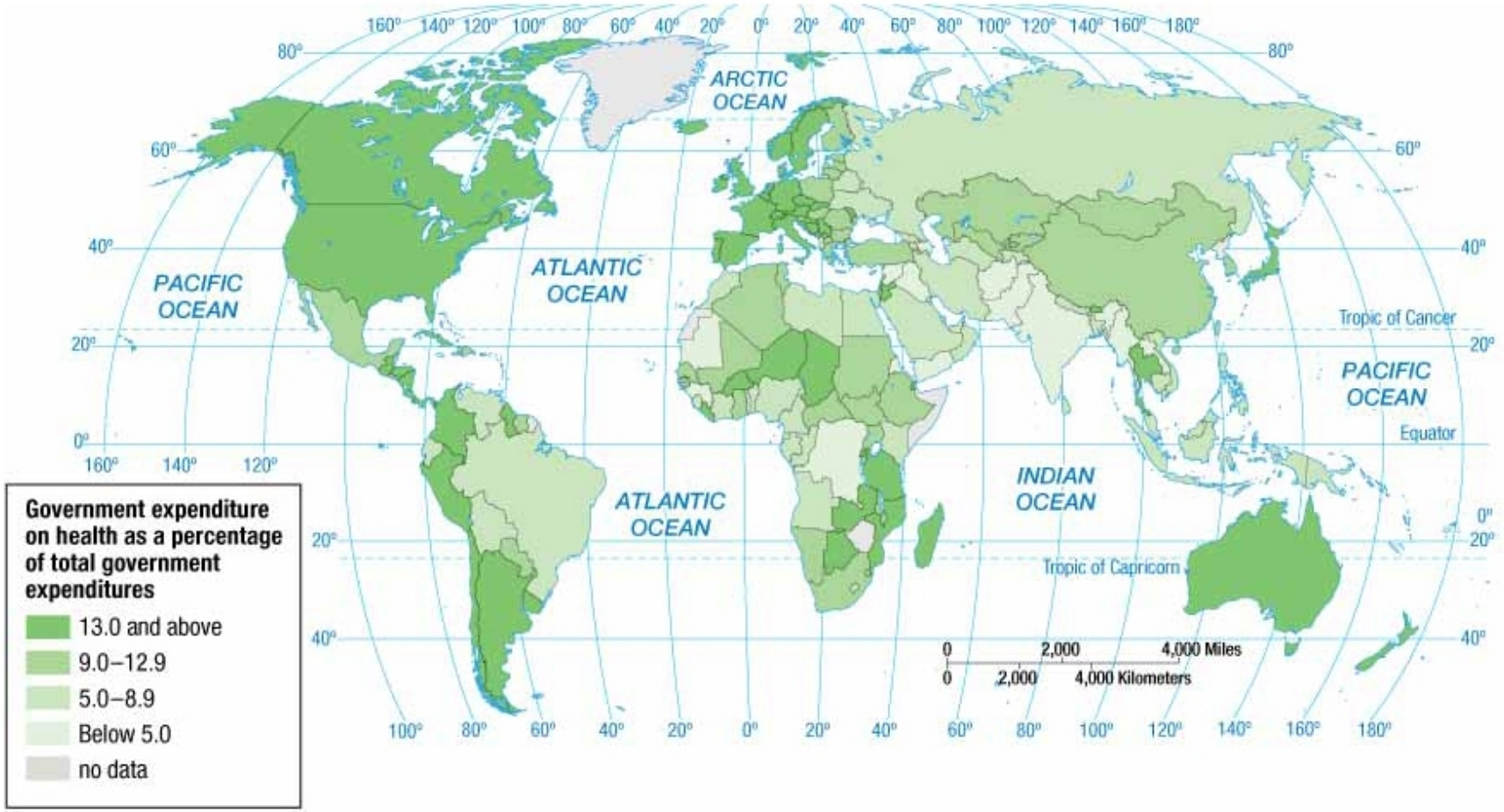


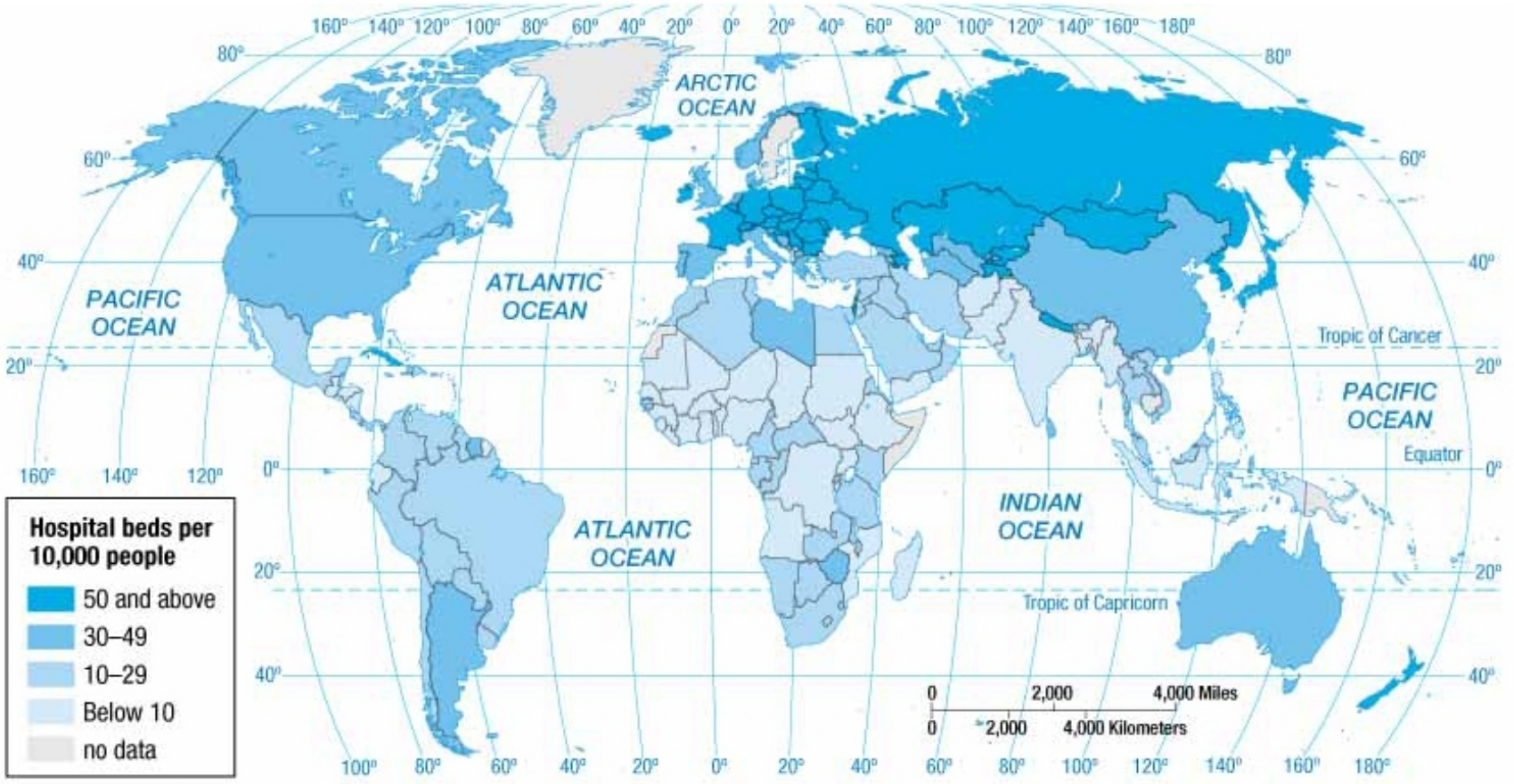


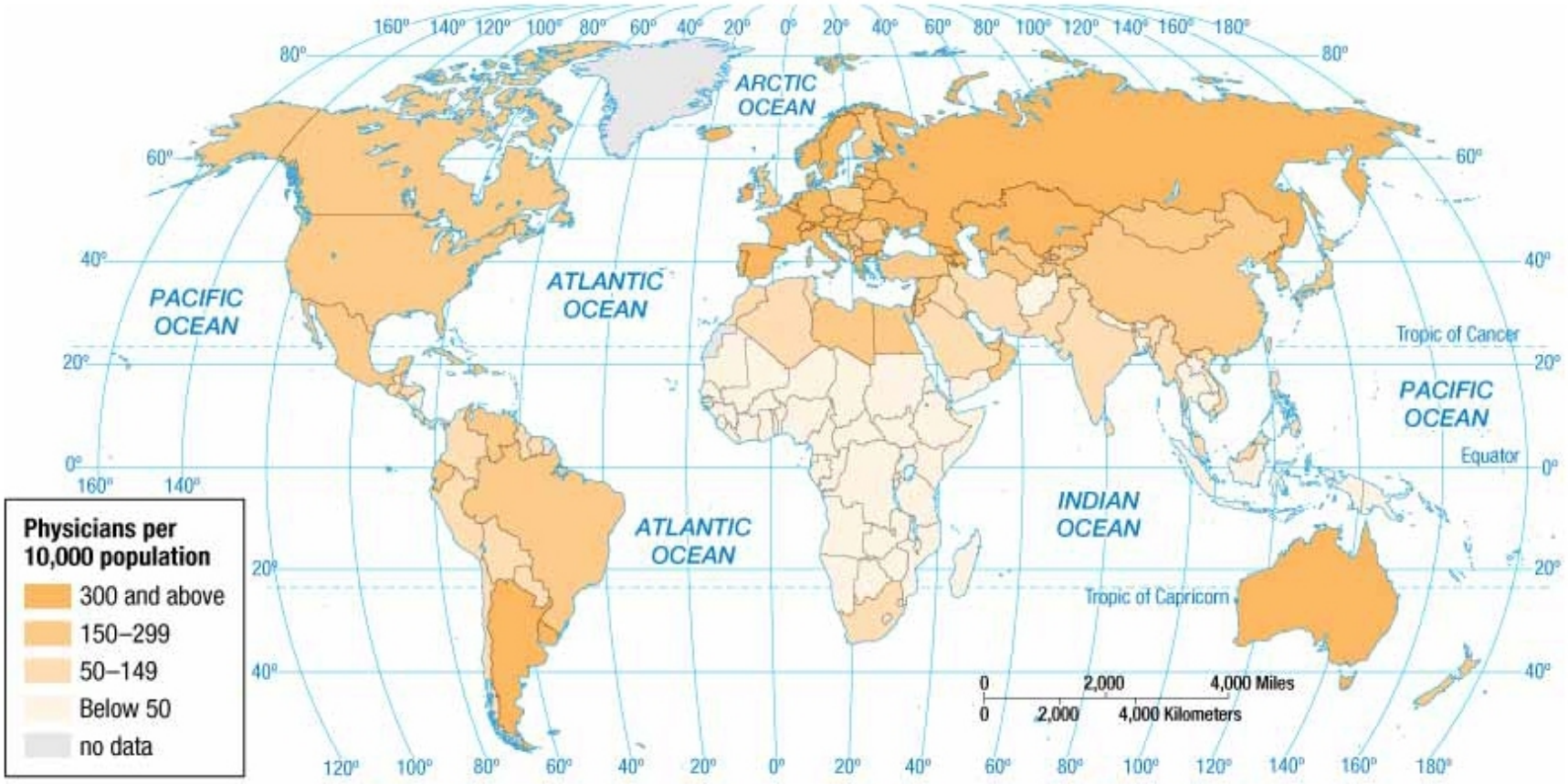


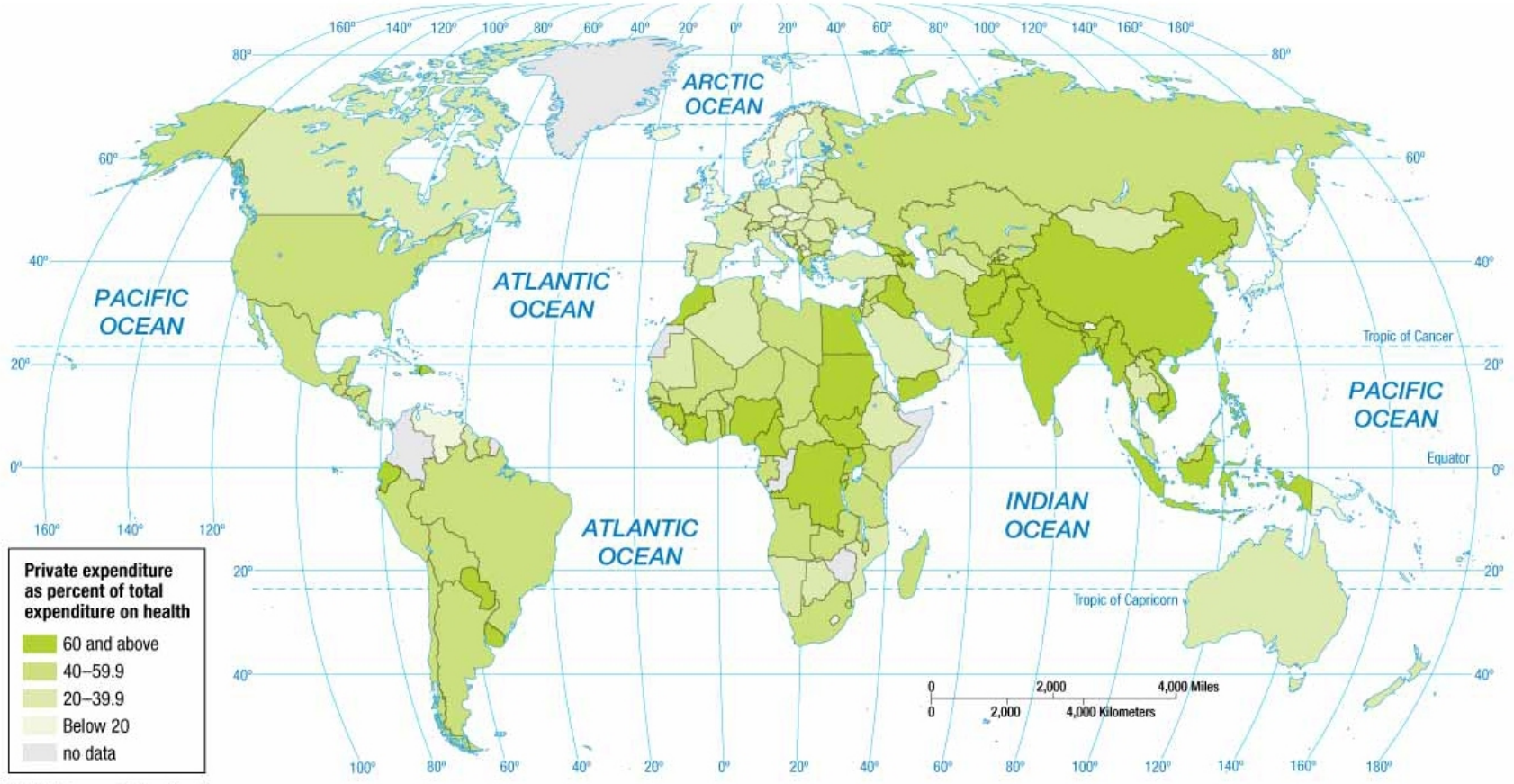
- Notice that places with high TFRs tend to have high IMRs and that places with low TFRs have low IMRs. (**In poorer countries, Infant Mortality Rates are usually high.)**











Summary

- Global population is concentrated in a few places that are not too wet, too dry, too cold, or too mountainous.
- Nearly all NIR is concentrated in developing countries.
- Developed countries have a stable population, if not slightly declining.
- Population growth varies among regions, because not all countries are in the same stage of the demographic transition model.

Summary

- Intimately connected to the demographic transition model is the epidemiologic transition model that helps to explain why different regions face varying health threats.