

# POPULATIONS

Key Issue 4: Why do some regions face health threats?

# Epidemiologic Transition Model

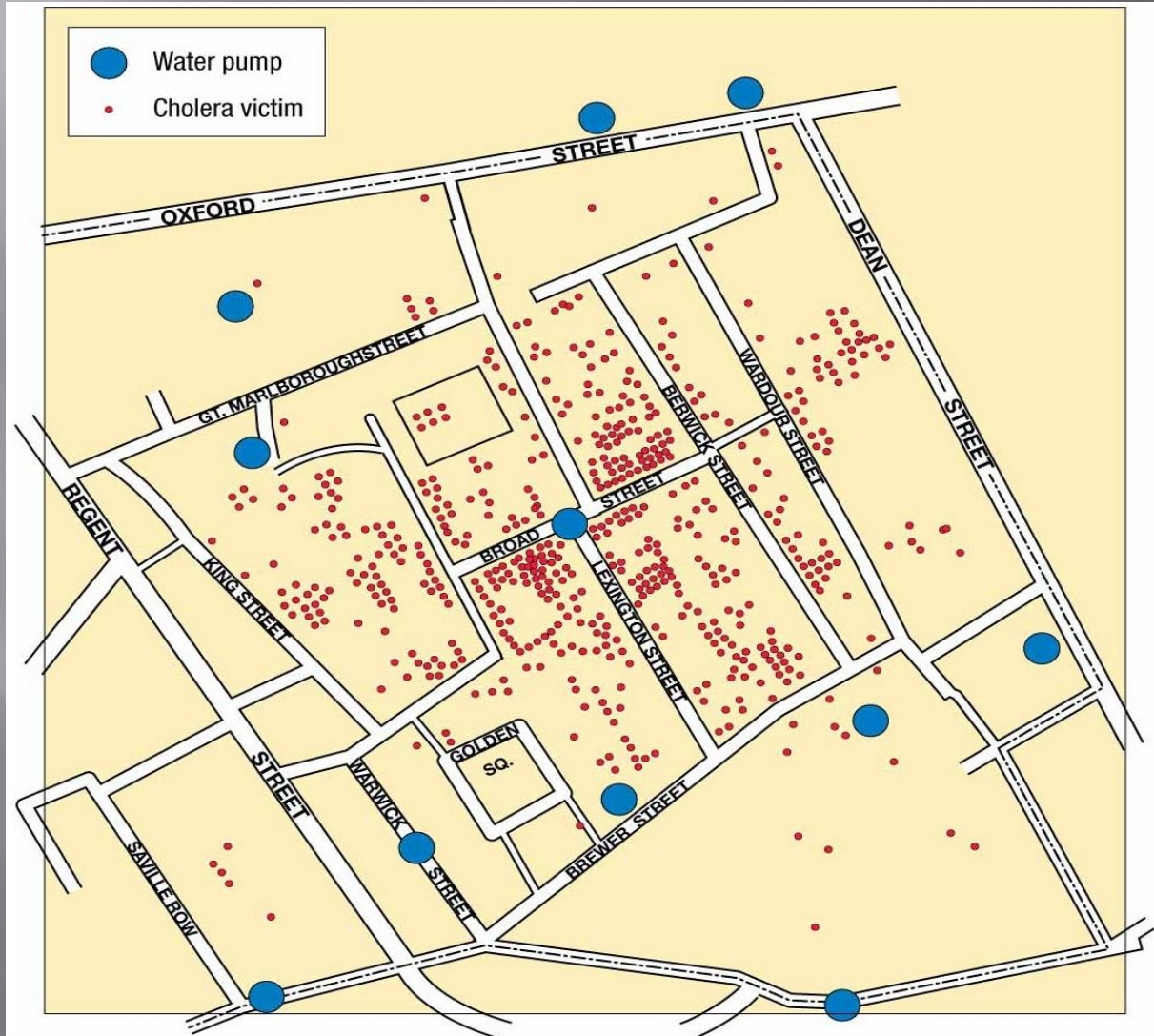
- ▣ Created by Abel Omran in 1971
- ▣ Epidemiological transition accounts for the replacement of infectious diseases by chronic diseases over time due to expanded public health and sanitation.
- ▣ Criticism: Transition from infection to chronic disease may be an illusion. New techniques of diagnosing and managing diseases may make it appear as though there are more incidences than there are.

# 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.

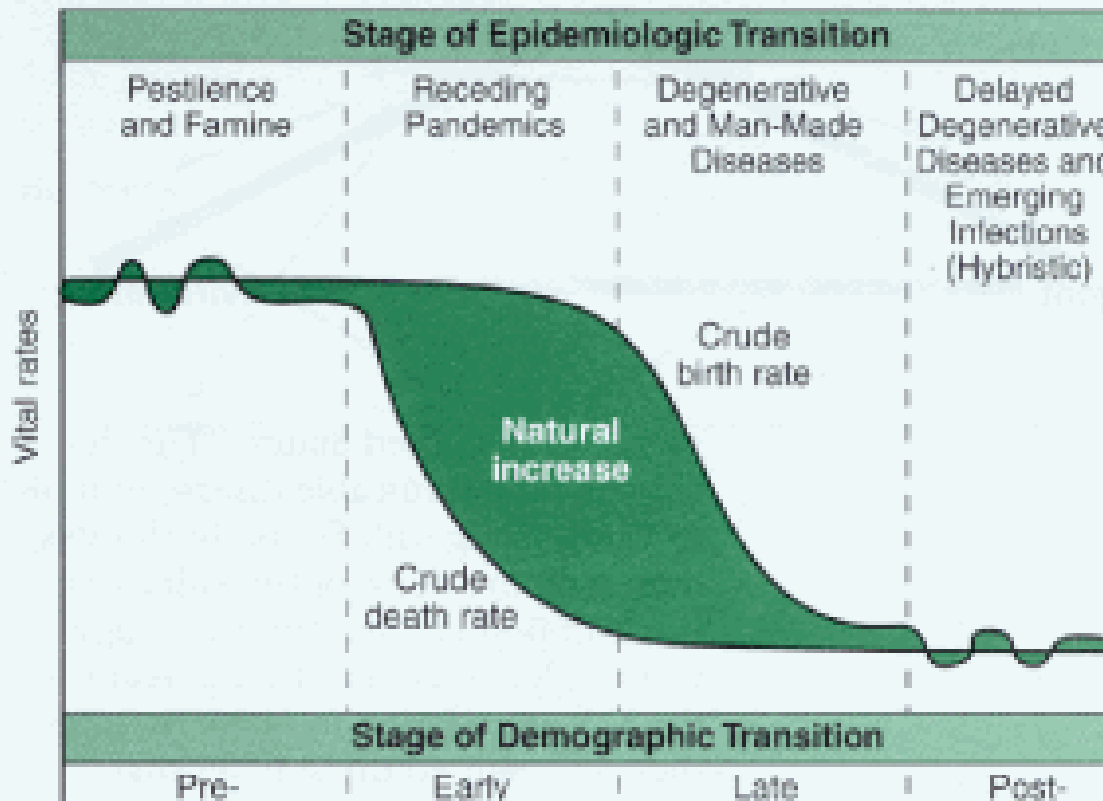


<http://geospatialrevolution.psu.edu/episode4/chapter3>

# Why Do Some Regions Face Health Threats?

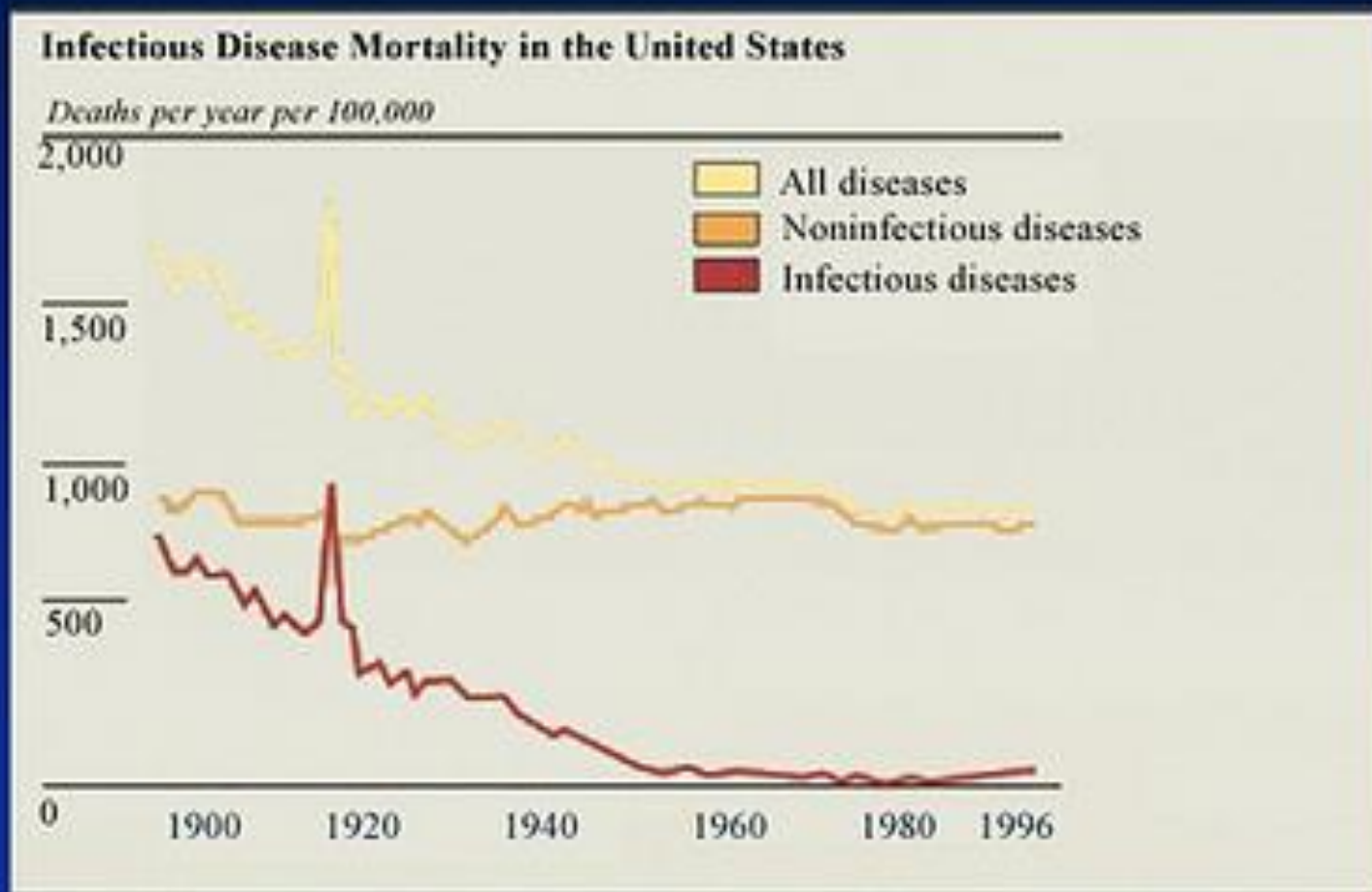
- ▣ Epidemiologic Transition
  - Stage 3: Degenerative Diseases (Moderately Declining CDR)
    - ▣ Characterized by...
      - Decrease in deaths from infectious diseases.
      - Increase in chronic disorders associated with aging.
        - Cardiovascular diseases
        - Cancer
  - Stage 4: Delayed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

**Figure 3 Demographic/ Epidemiologic Transition Framework**



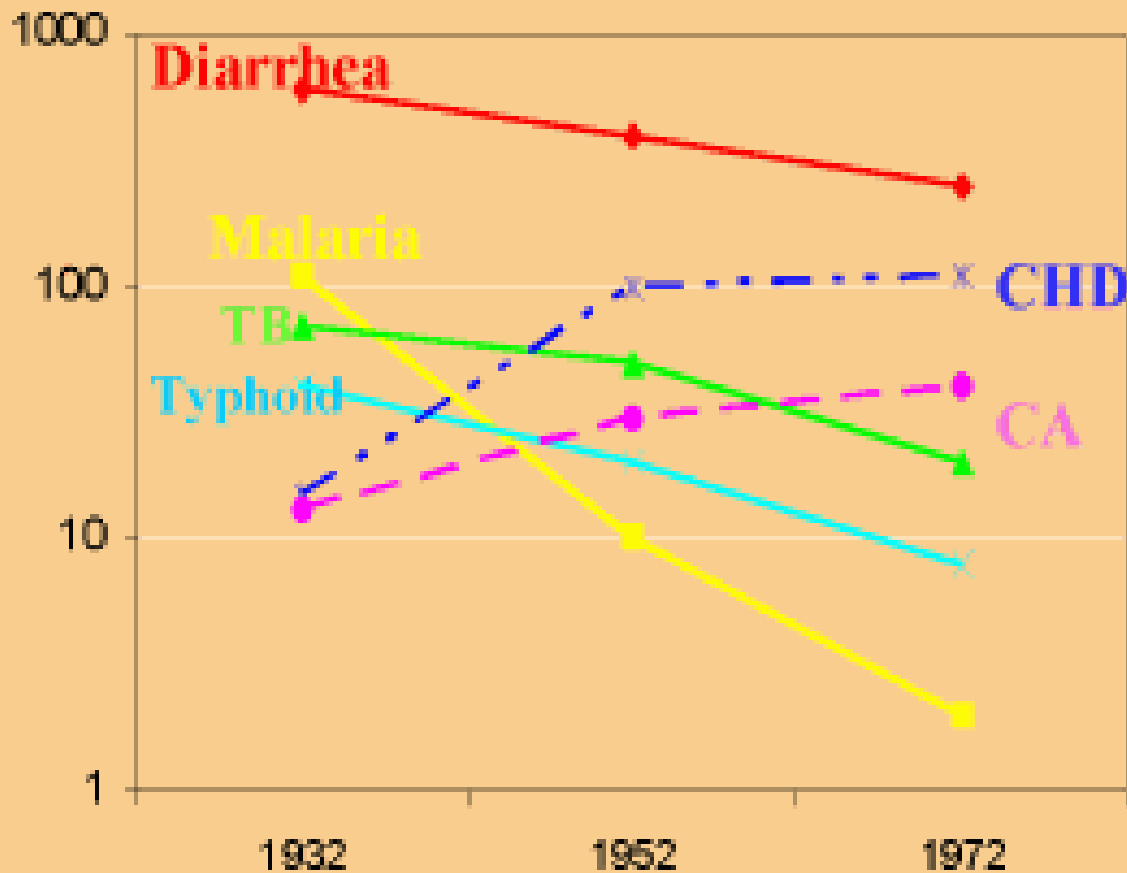


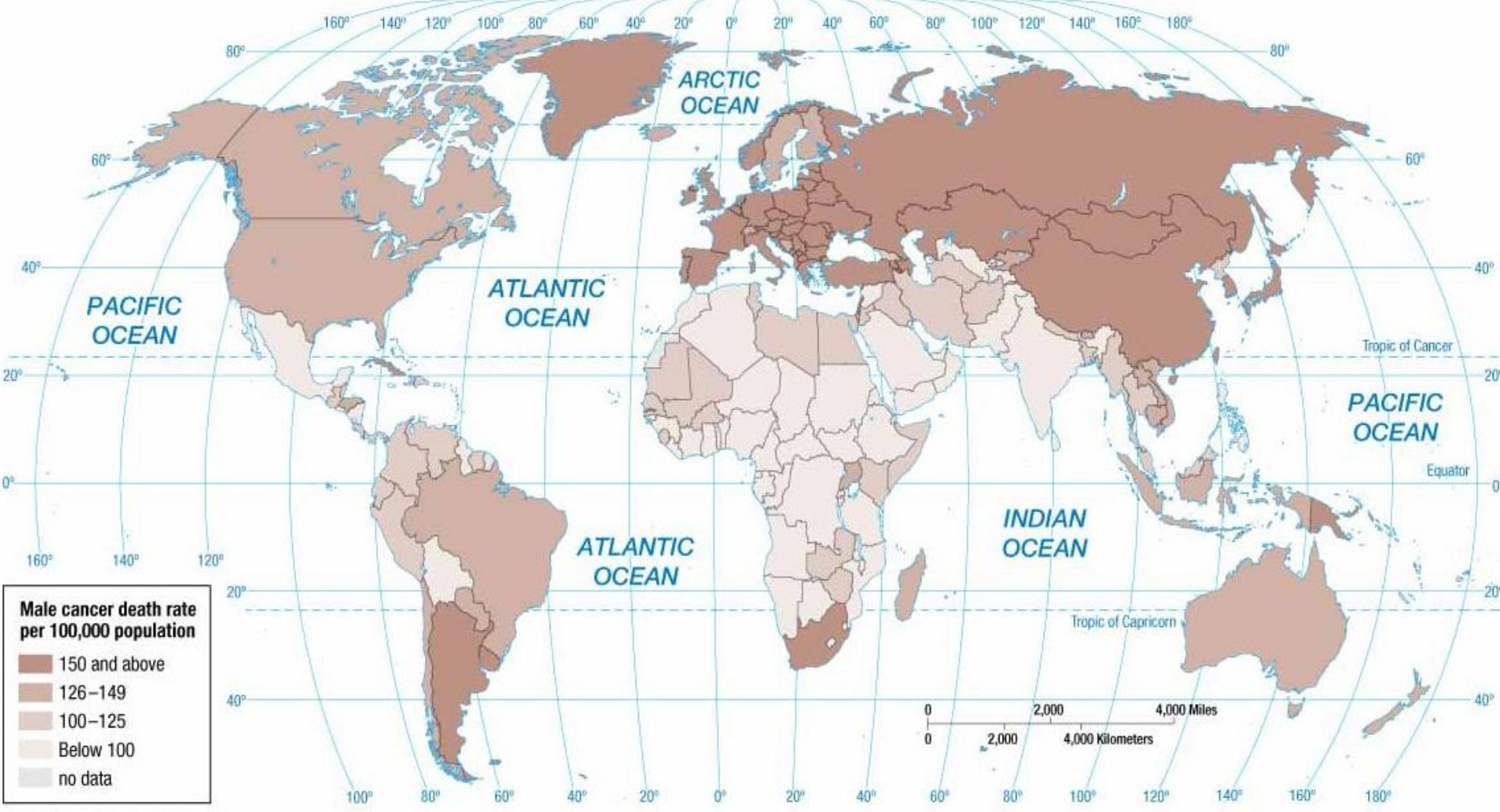
# The Epidemiologic Transition

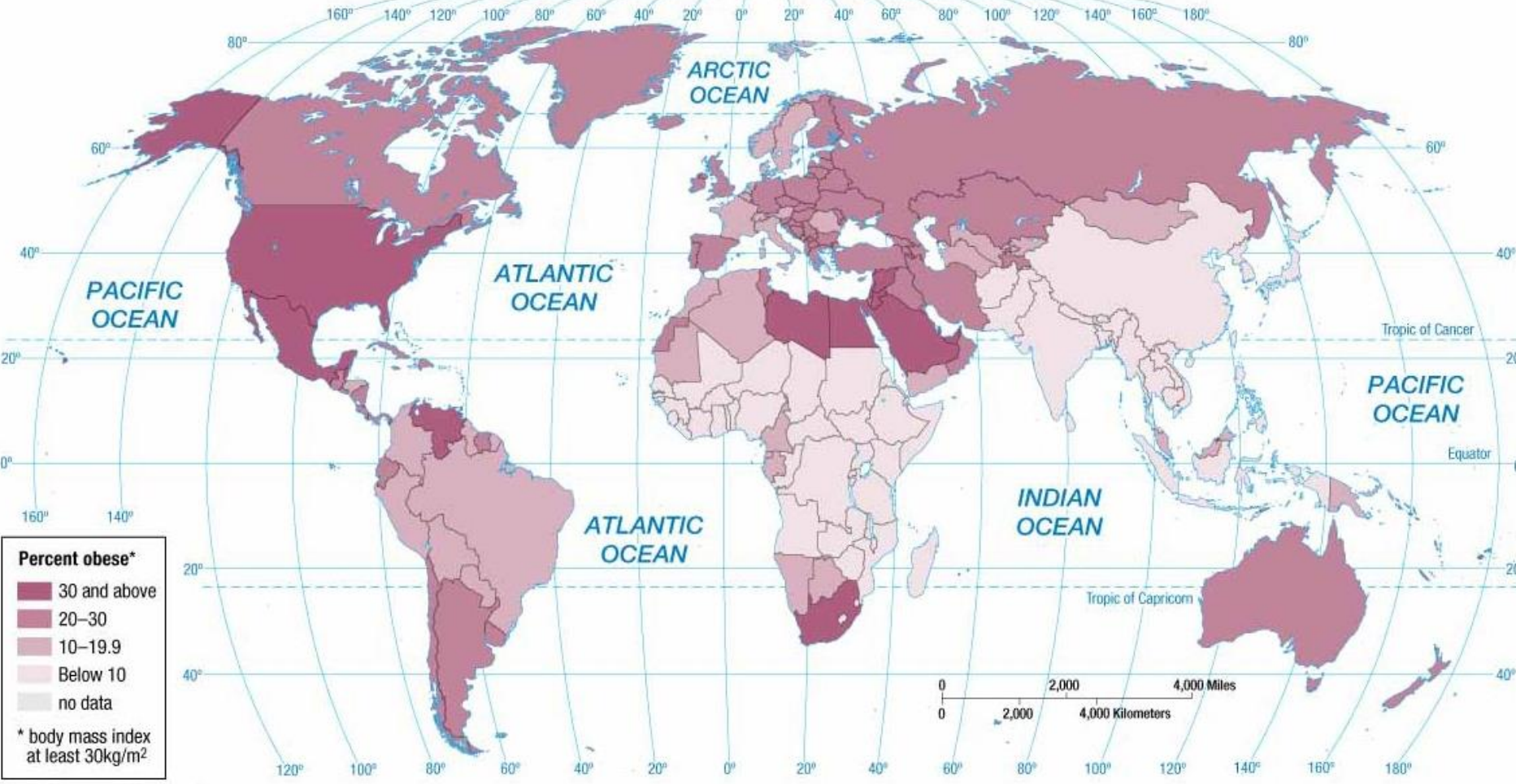
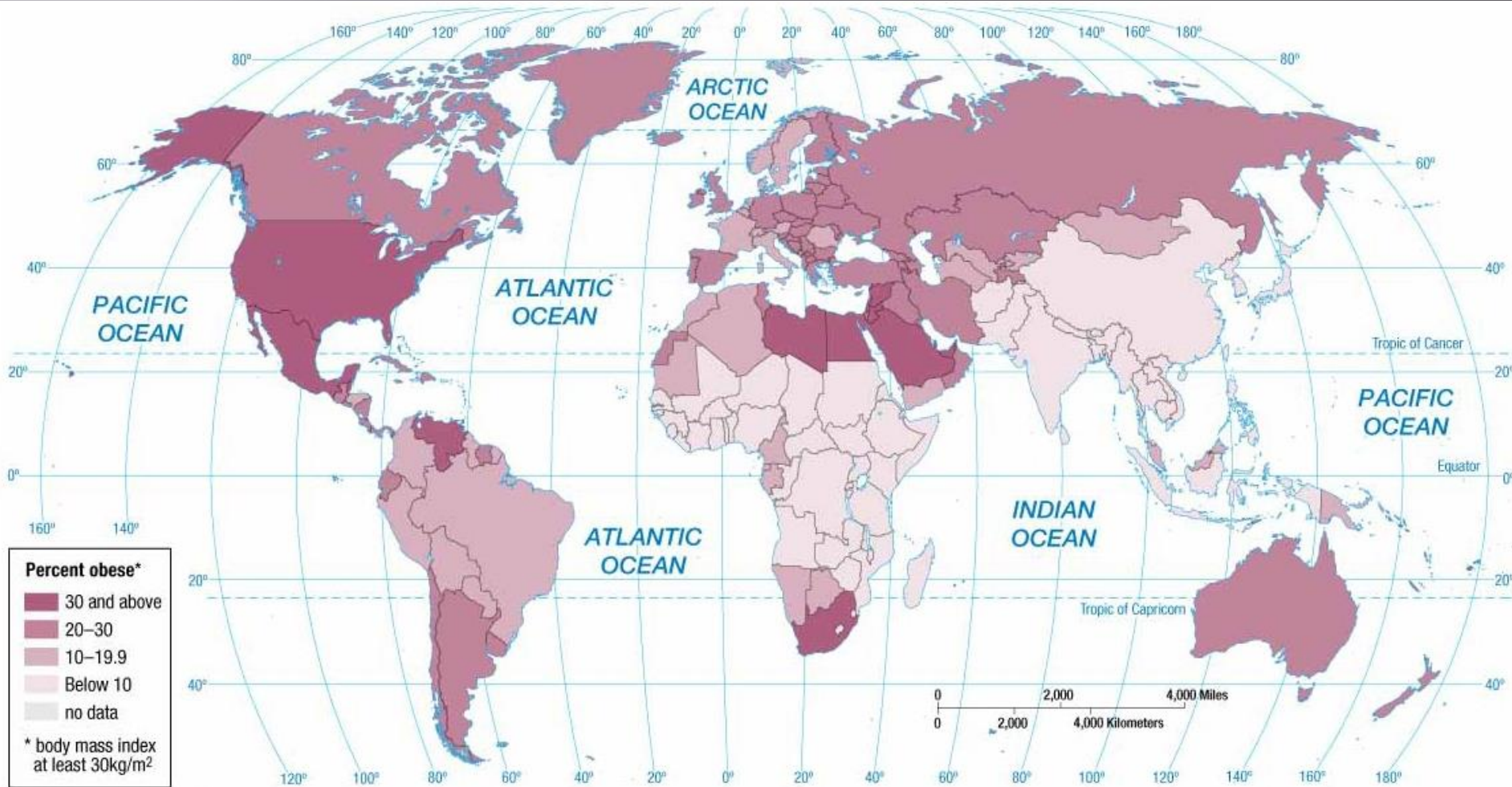


Ref: National Intelligence Council, *The Global Infectious Disease Threat and Its Implications for the United States*, 2000. Adapted.

## Epidemiologic Transition, Mexico Decline in Communicable, Rise of NCDs







# Why Do Some Regions Face Health Threats?

## ▣ Infectious Diseases

### ▪ Reasons for Possible Stage 5

#### ▣ Evolution

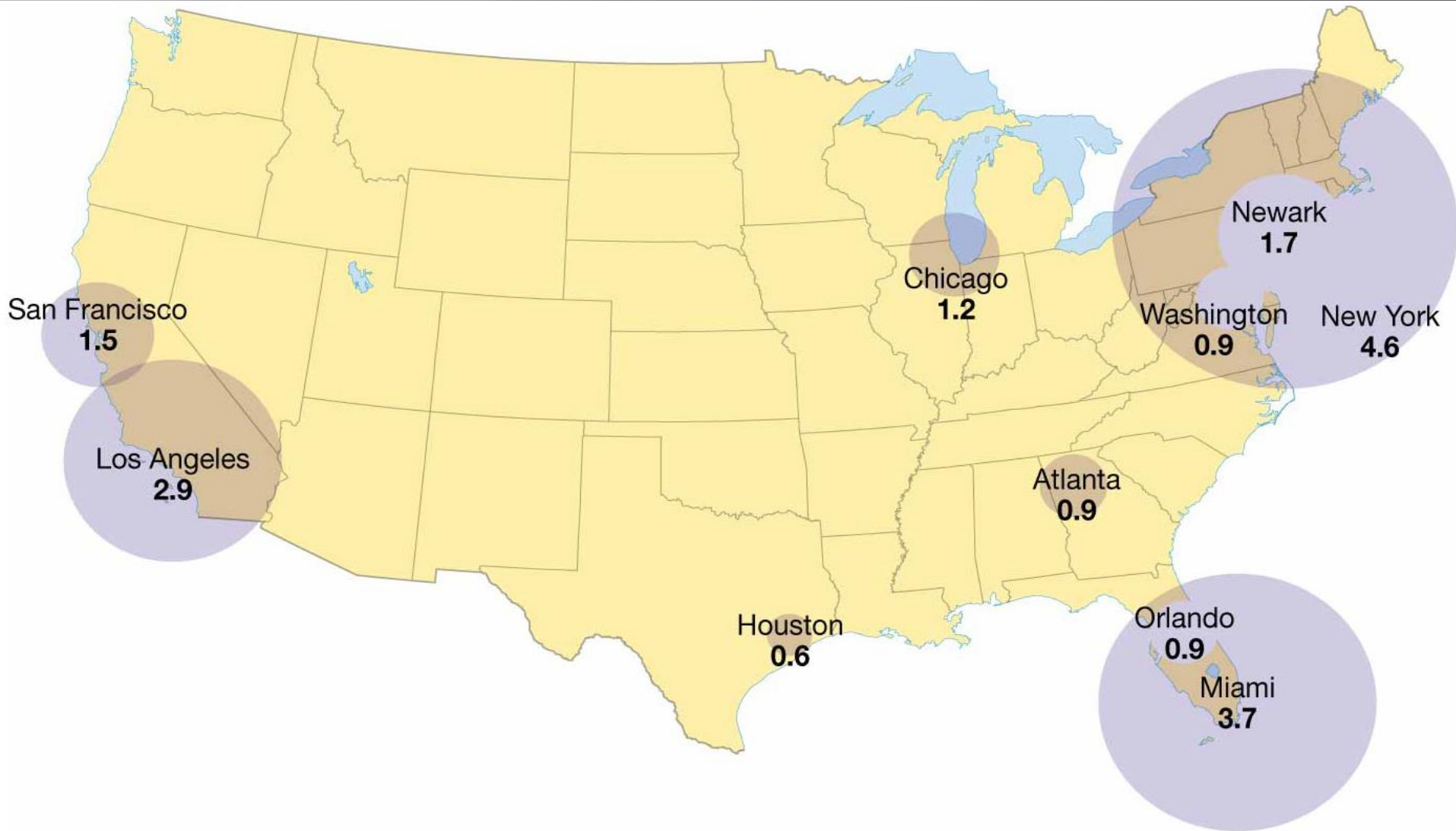
- Infectious disease microbes evolve and establish a resistance to drugs and insecticides.
- Antibiotics and genetic engineering contributes to the emergence of new strains of viruses and bacteria.

#### ▣ 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

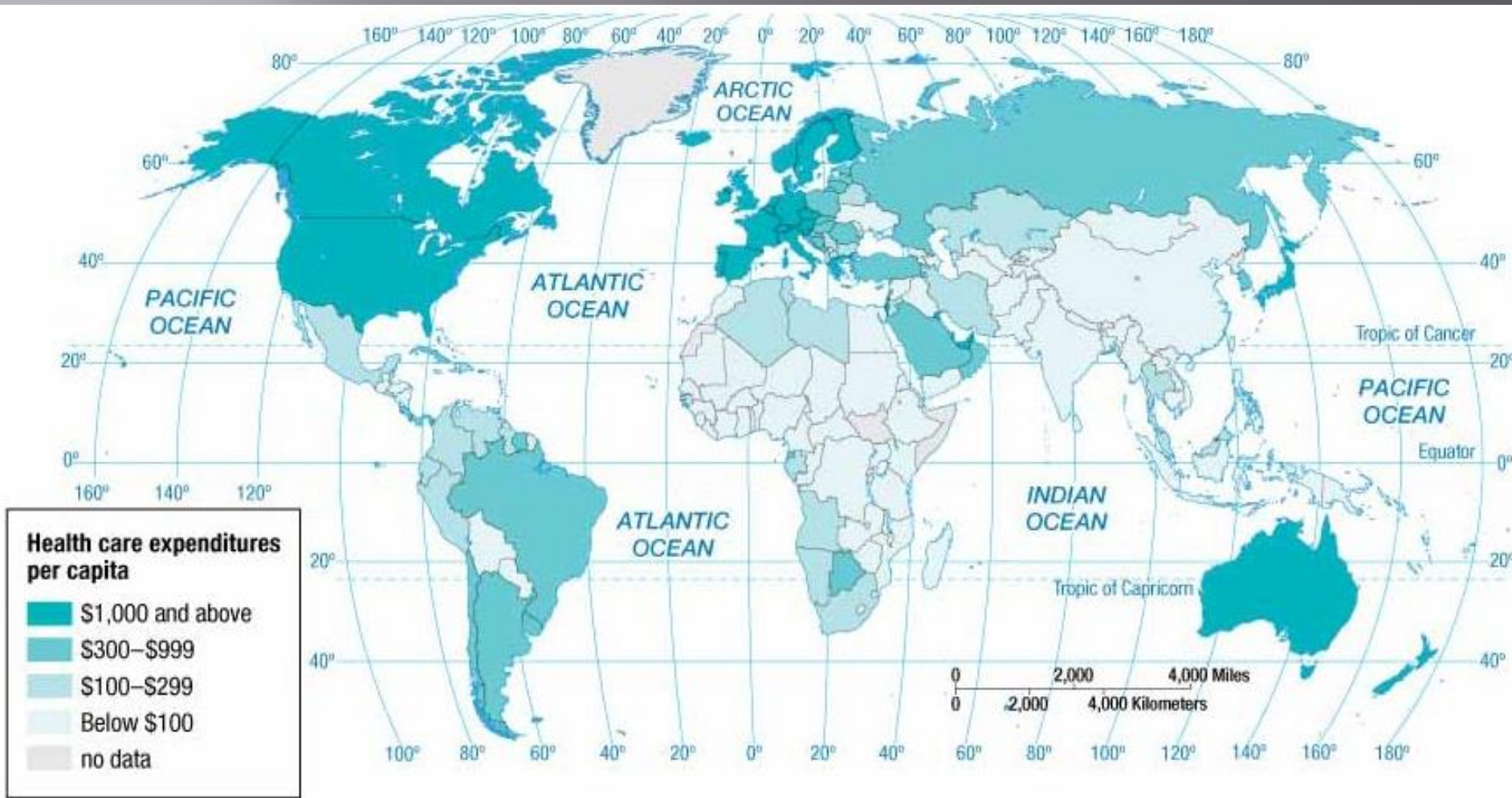
#### ▣ Developed Countries

- 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.

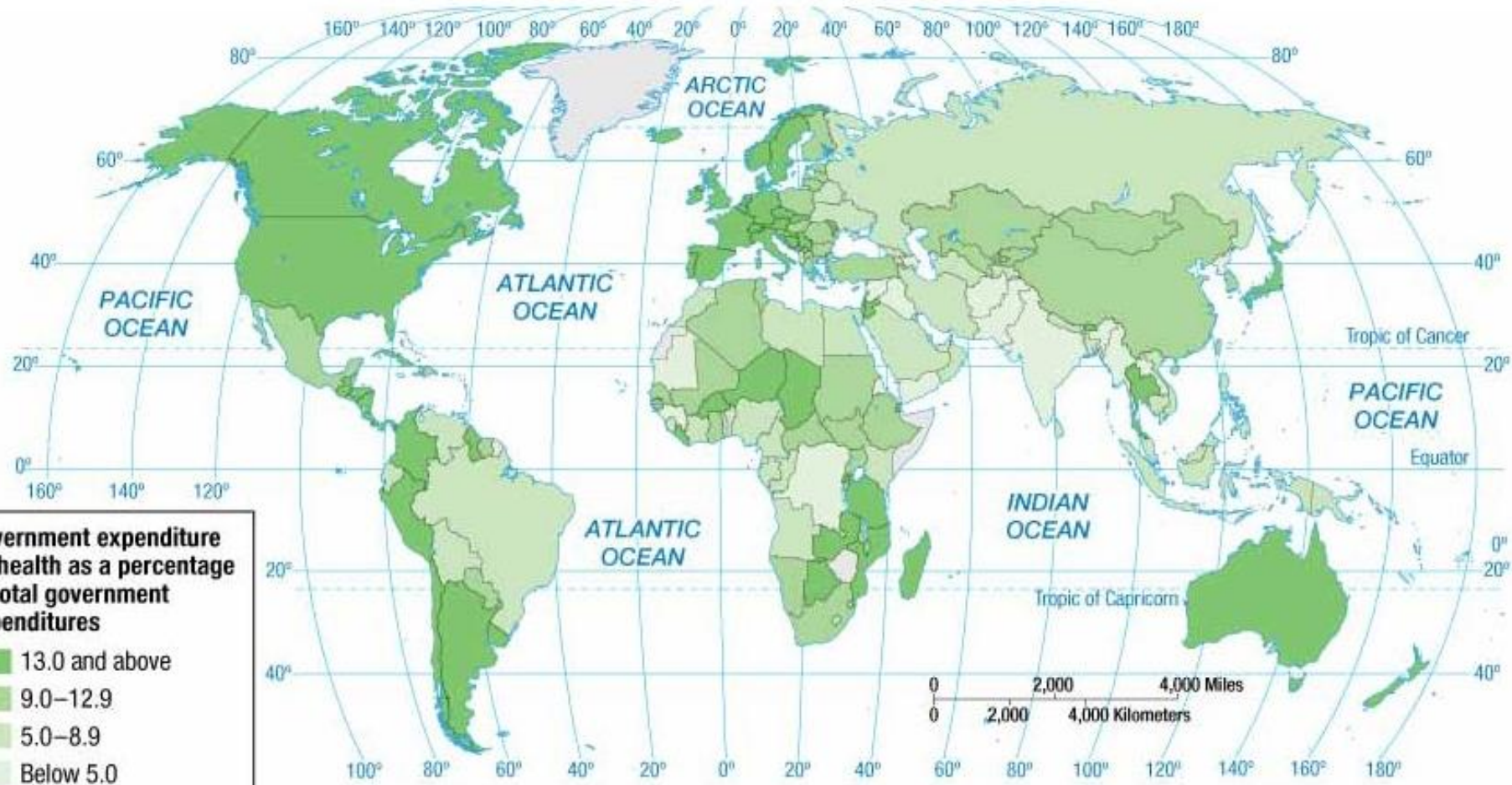




**Health care expenditures per capita**

- \$1,000 and above
- \$300–\$999
- \$100–\$299
- Below \$100
- no data

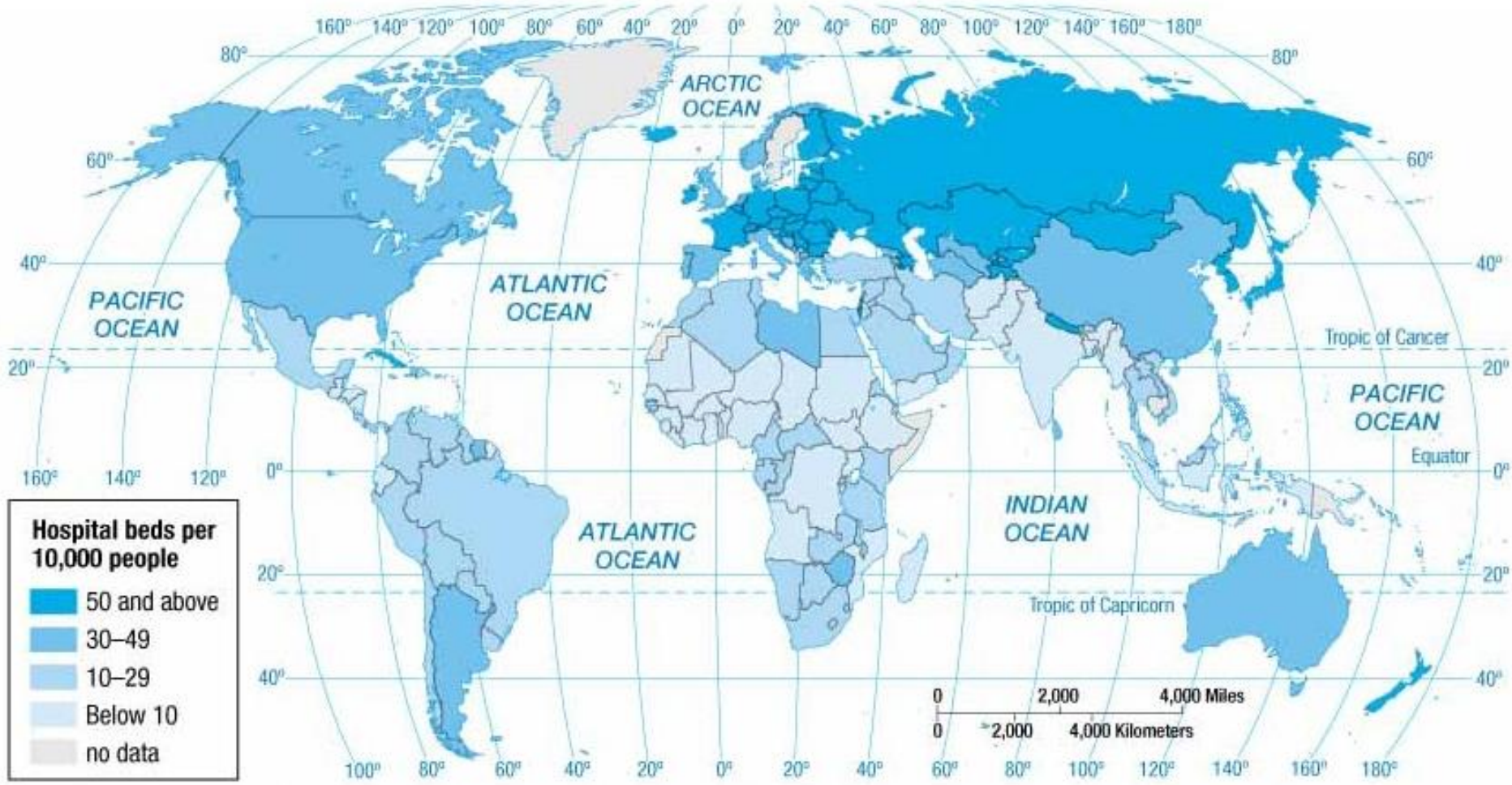
0 2,000 4,000 Miles  
0 2,000 4,000 Kilometers

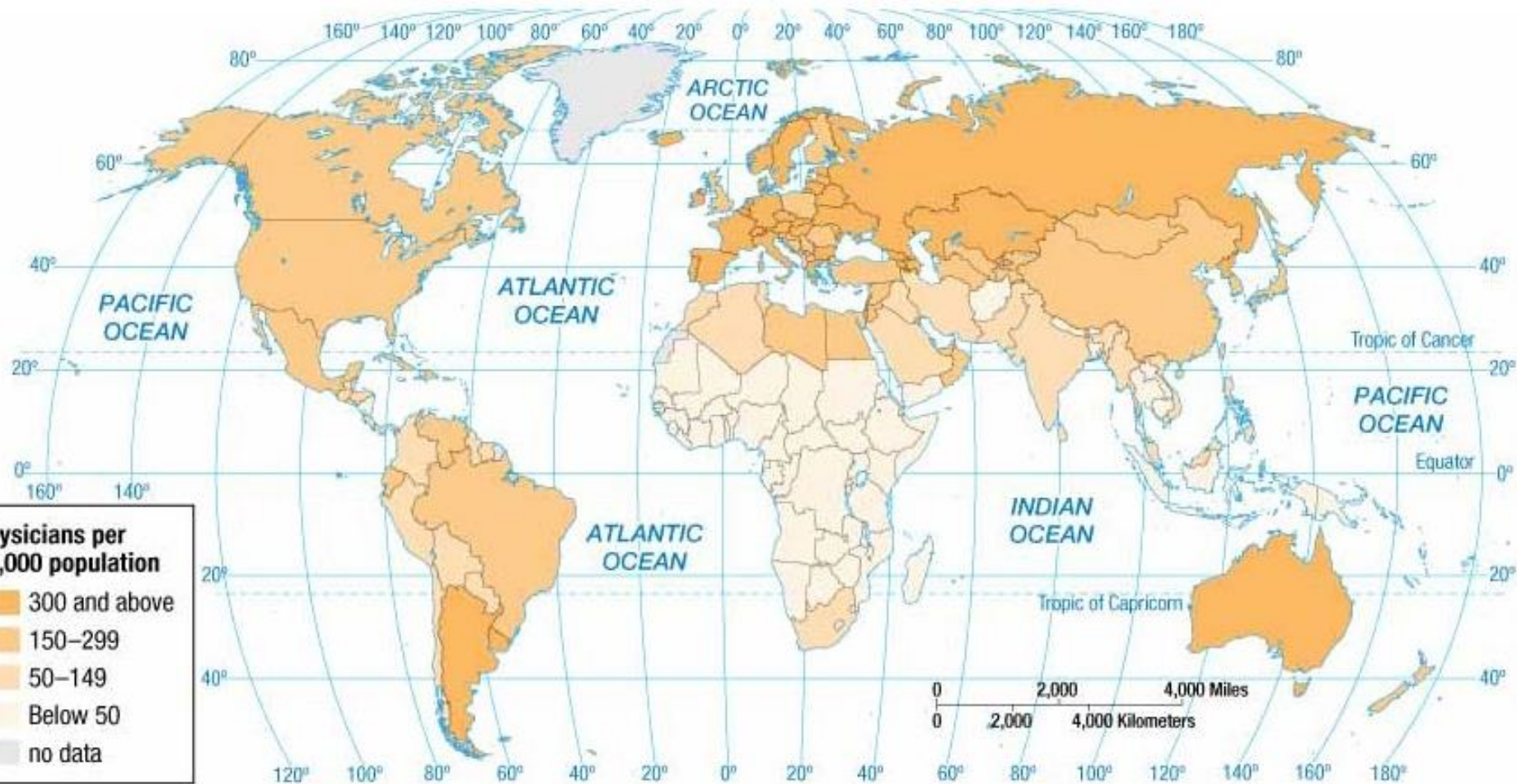


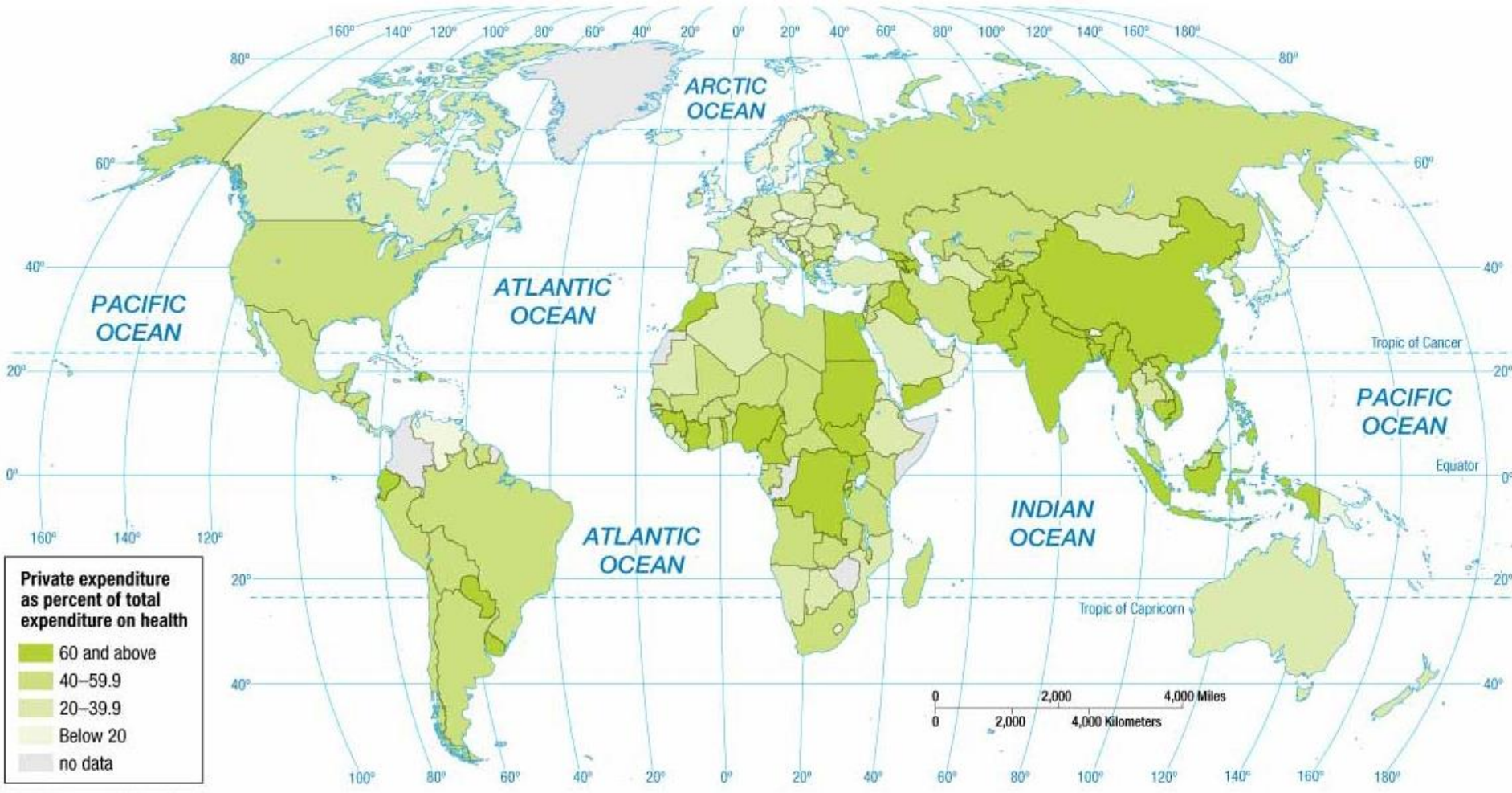
**Government expenditure on health as a percentage of total government expenditures**

- 13.0 and above
- 9.0–12.9
- 5.0–8.9
- Below 5.0
- no data









**Private expenditure as percent of total expenditure on health**

- 60 and above
- 40-59.9
- 20-39.9
- Below 20
- no data

# 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.

# How Pandemics Spread

- ▣ <http://www.youtube.com/watch?v=UG8YbNbdaco>



## SIERRA LEONE

New Cases: 8  
Total Cases: 533  
Total Deaths: 233

## GUINEA

New Cases: 33  
Total Cases: 460  
Total Deaths: 339

## LIBERIA

New Cases: 80  
Total Cases: 329  
Total Deaths: 159

## NIGERIA

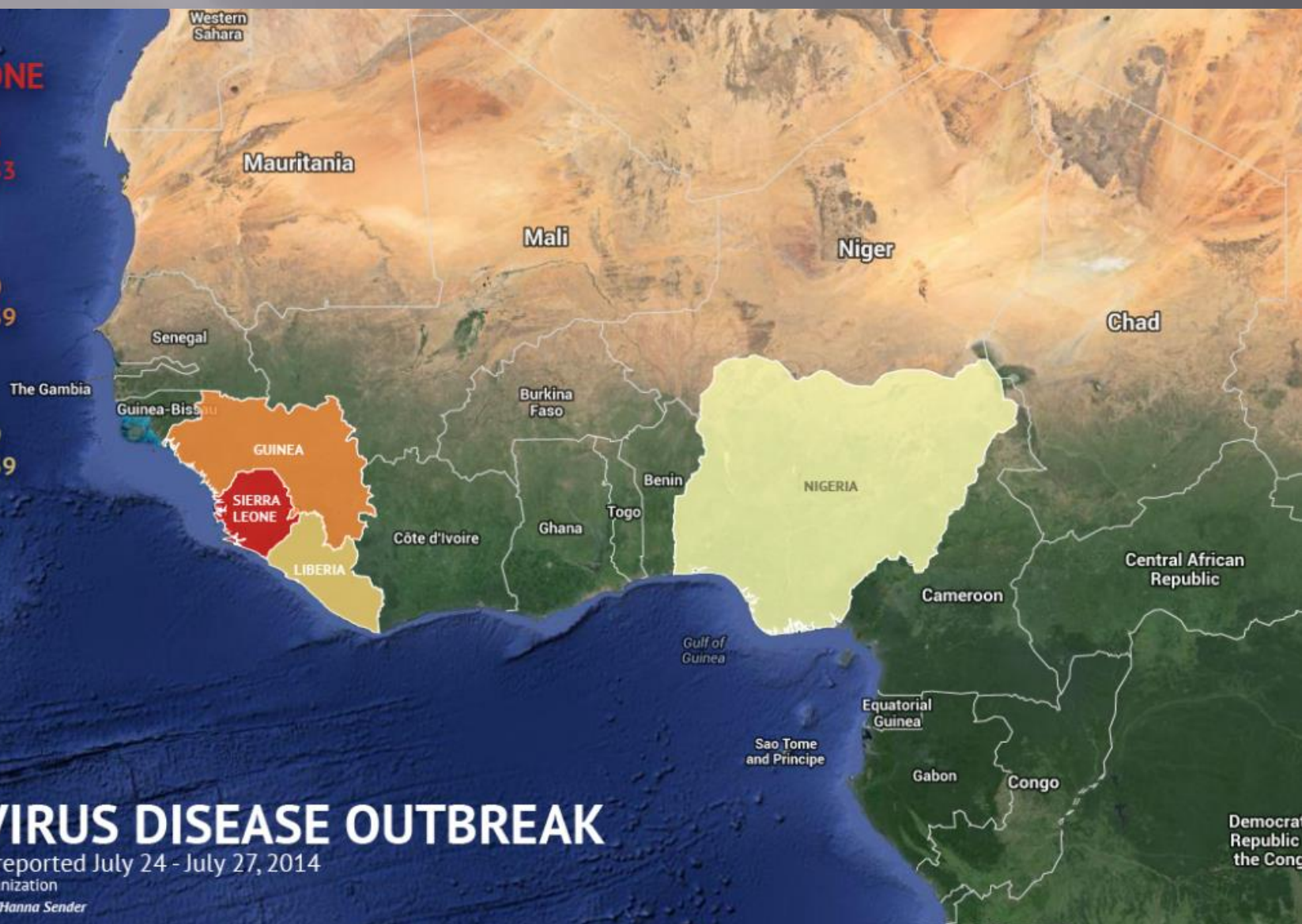
New Cases: 1  
Total Cases: 1  
Total Deaths: 1

# EBOLA VIRUS DISEASE OUTBREAK

New cases were reported July 24 - July 27, 2014

Source: World Health Organization

*International Business Times/Hanna Sender*



**Information Sources:**  
 ECHO: WHO (1, 2, 3);  
 UNICEF Liberia Ebola Outbreak:  
 SitRep #6



**GUINEA**

**SIERRA LEONE**

**LIBERIA**

- Confirmed Ebola cases (WHO)
- Spread of cases (both confirmed and unconfirmed ones)
- Country Capital
- Main towns
- Main roads
- Railroads
- Country borders
- REGIONS
- Areas with suspected EHF cases
- Areas with confirmed EHF cases

**Facts about EVD (WHO)**

- Five distinct species of the Genus Ebolavirus exist, one of which is Zaire ebolavirus.
- In Africa, fruit bats of the Pteropodidae family are considered possible natural hosts of the Ebola virus.
- Contact with carcasses of wild infected animals increase the risk of EVD occurrence.
- The mortality rate is 50%-90%.
- The virus spreads through person-to-person transmission.



CONAKRY  
 Conakry 11

Gueckedou 6

Guéckédougou  
 Foya 2

Macenta 7

MARGIBI  
 Kakata  
 Firestone  
 GRAND BASSA 1

