# HWG Unit 1 SG 2

## Health

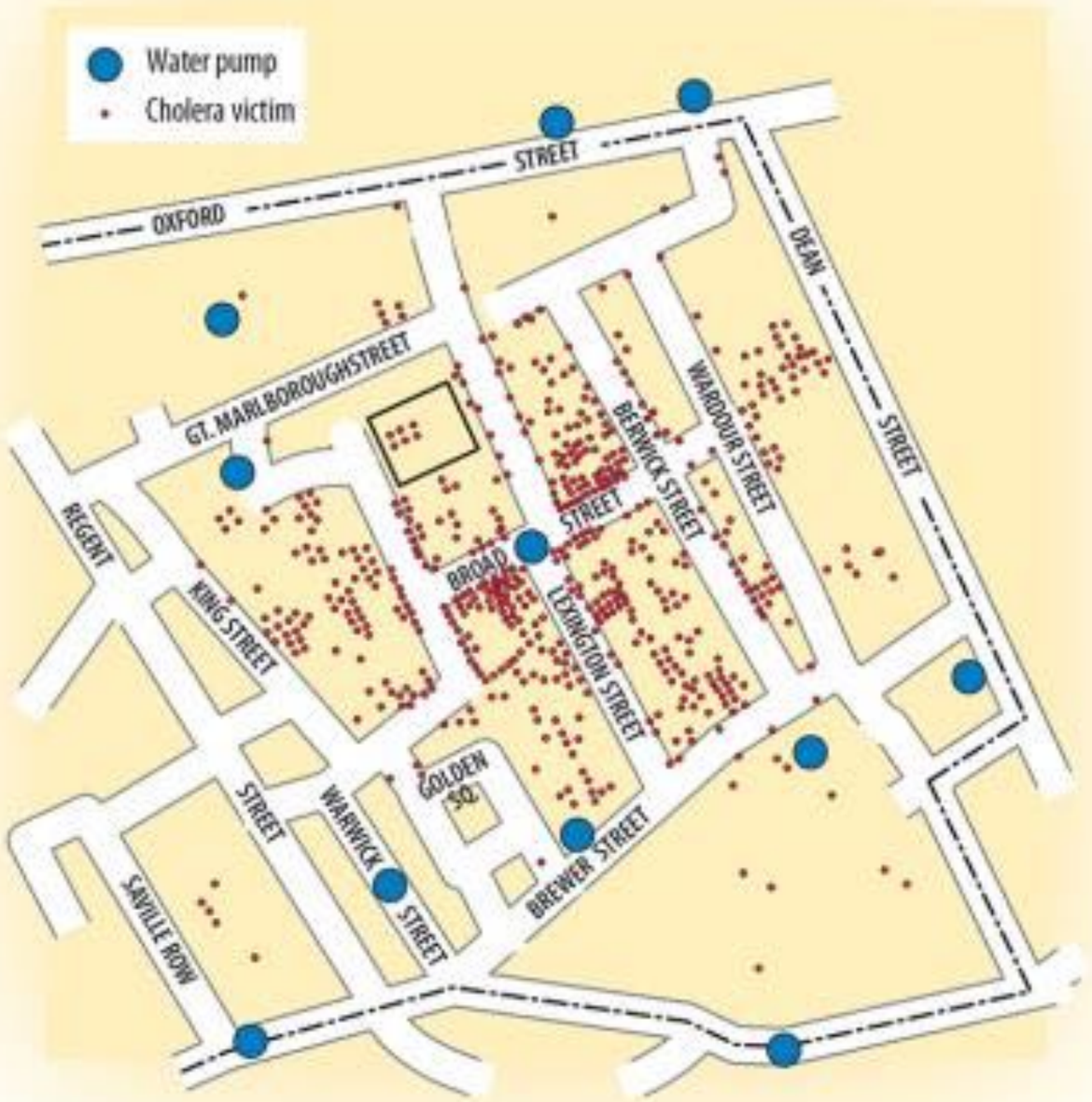
# I. The Epidemiologic Transition

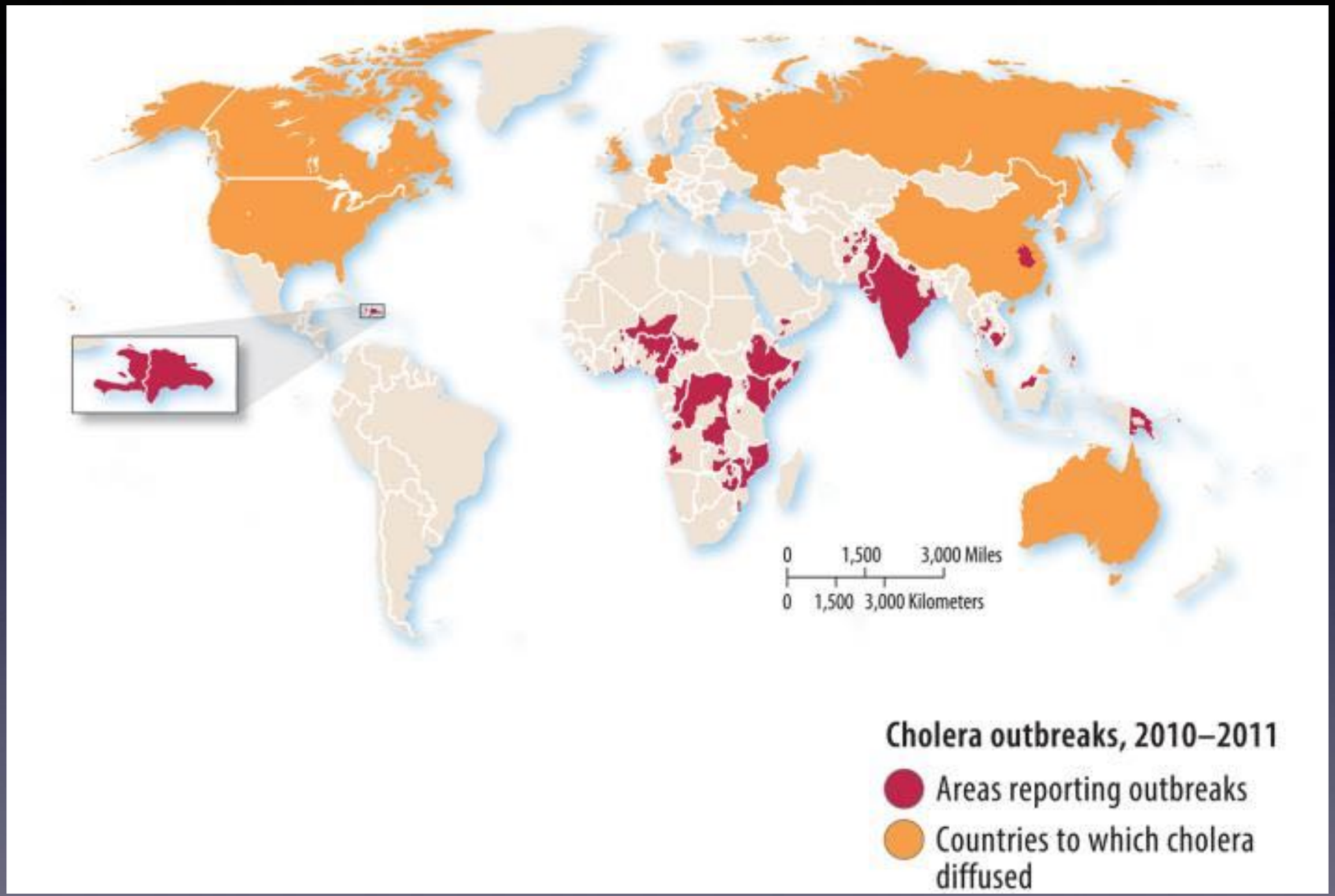
- A. Stage 1: Pestilence & Famine (High CDR)
  - 1. Infectious and parasitic diseases are the principal causes of human deaths, along with accidents and attacks by animals and other humans.
  - 2. History's most violent stage 1 epidemic was the Black Plague (bubonic plague), which was probably transmitted to humans by disease from migrating infected rats.

- B. Stage 2: Receding Pandemics (Rapidly Declining CDR)
  - 1. A pandemic is disease that occurs over a wide geographic area and affects a very high proportion of the population.
  - 2. Cholera, contracted primarily from exposure to contaminated water, has been a troubling pandemic during the early years of stage 2 of the demographic transition.

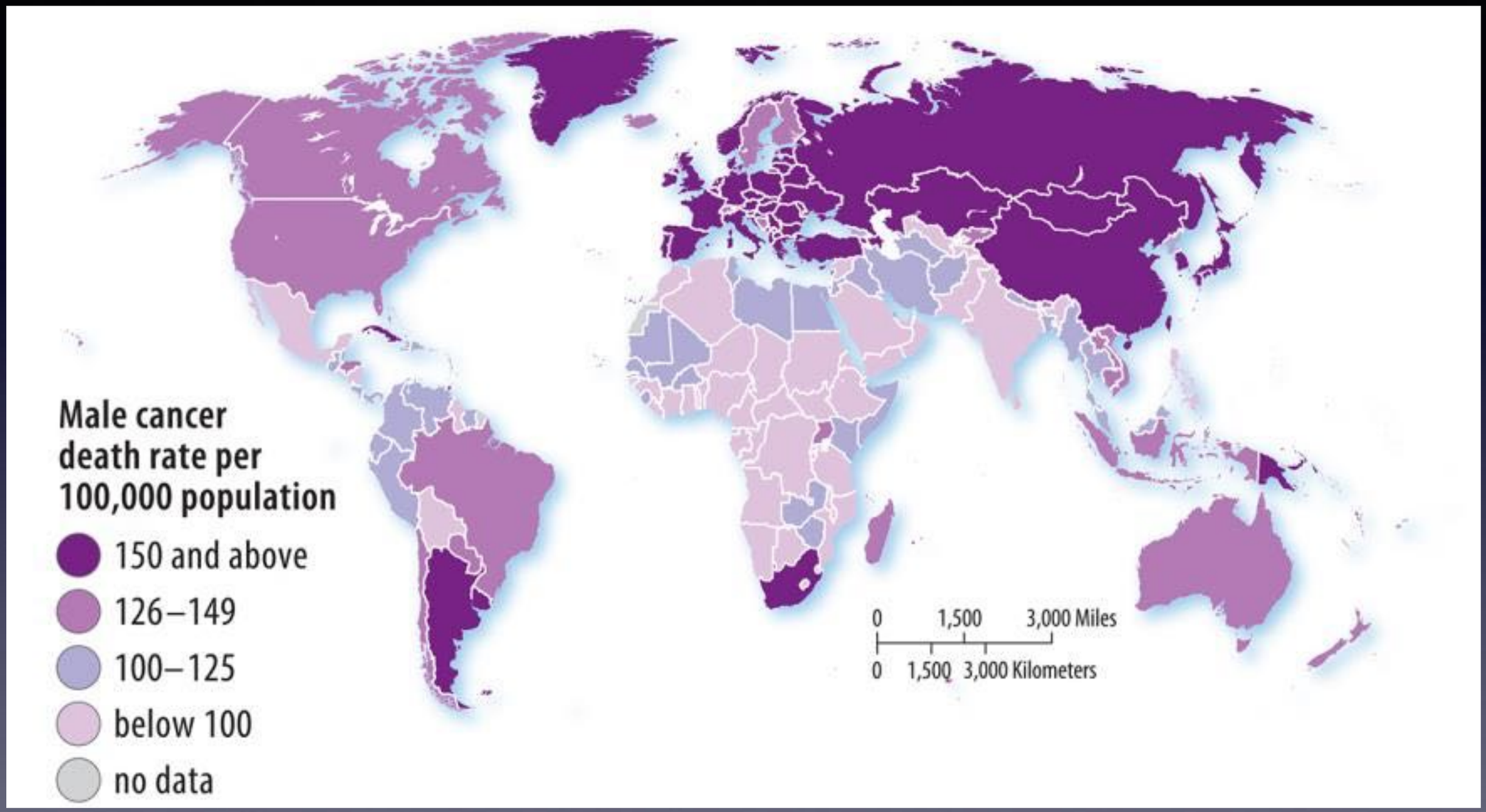
What is the difference between endemic, epidemic, & pandemic?

- 3. Cholera and Early GIS
  - a. British physician Dr. John Snow fought a cholera pandemic with a handmade map that anticipates GIS by more than a century.
  - b. Dr. Snow showed that a large percentage of cholera victims were clustered around one pump, on Broad Street.

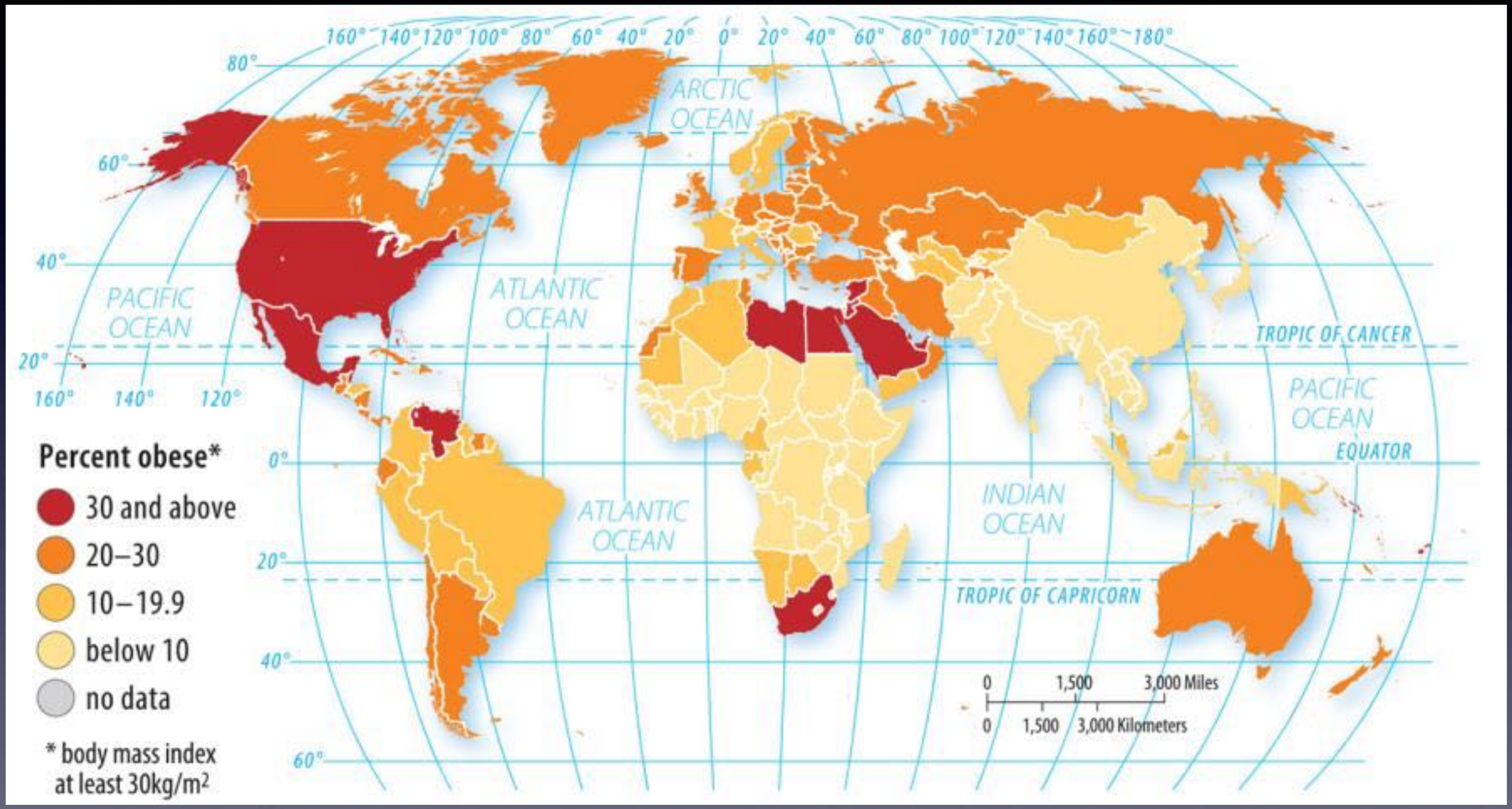

Water pump
Cholera victim
OXFORD STREET
DEAN STREET
GT. MARLBOROUGH STREET
BERWICK STREET
WARDOUR STREET
REGENT
KING STREET
BROAD
LEXINGTON STREET
GOLDEN SQ.
WARWICK STREET
BREWER STREET
SAVILLE ROW


0 1,500 3,000 Miles
0 1,500 3,000 Kilometers
Cholera outbreaks, 2010–2011
Areas reporting outbreaks
Countries to which cholera diffused

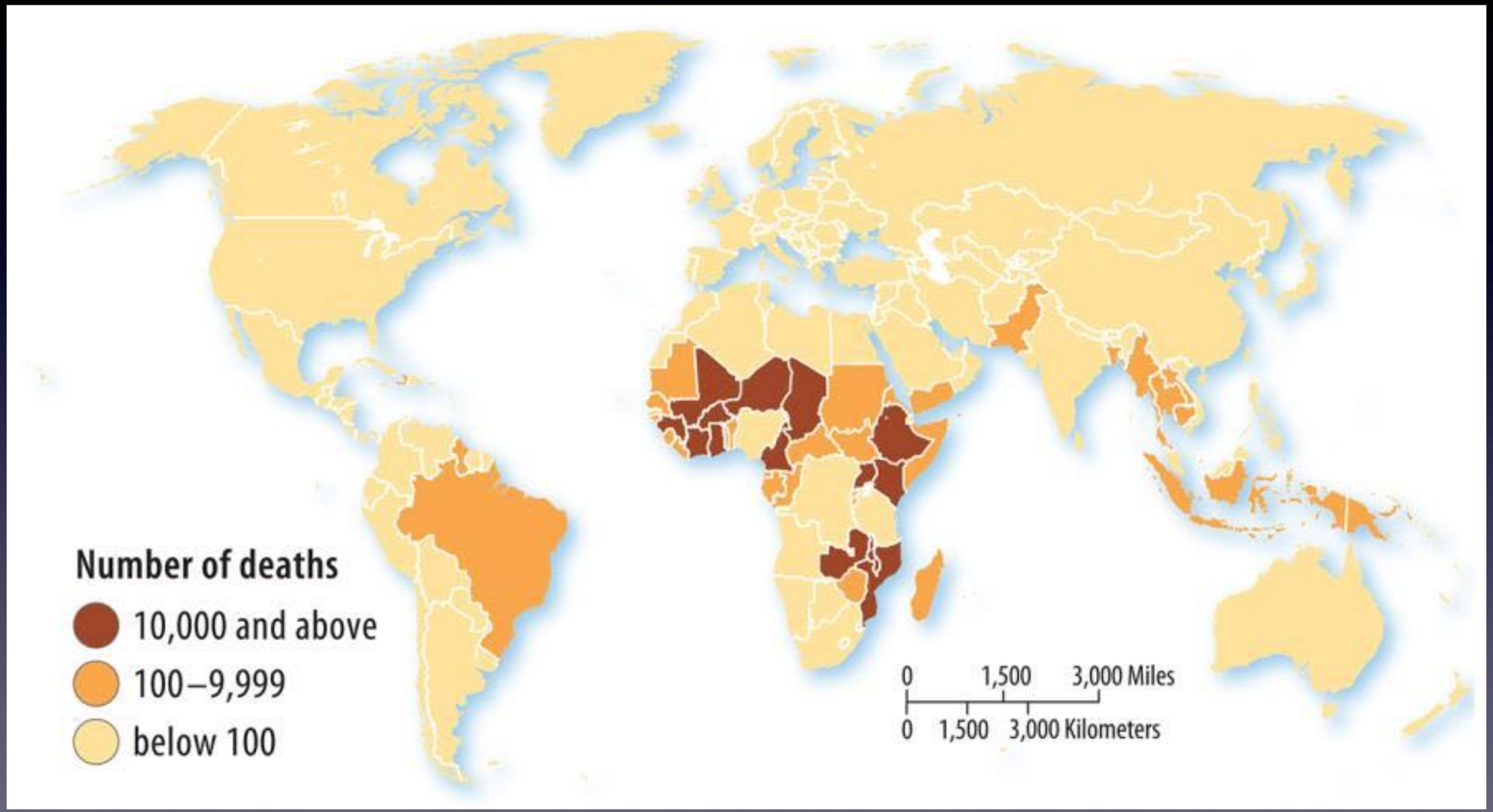
- C. Stage 3: Degenerative Diseases (Moderately Declining CDR)
  - 1. This is characterized by a decrease in deaths from infectious diseases and an increase in chronic disorders associated with aging.
  - 2. The two especially important chronic disorders in stage 3 are cardiovascular diseases, such as heart attacks, and various forms of cancer.


Male cancer
death rate per
100,000 population
150 and above
126–149
100–125
below 100
no data
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers

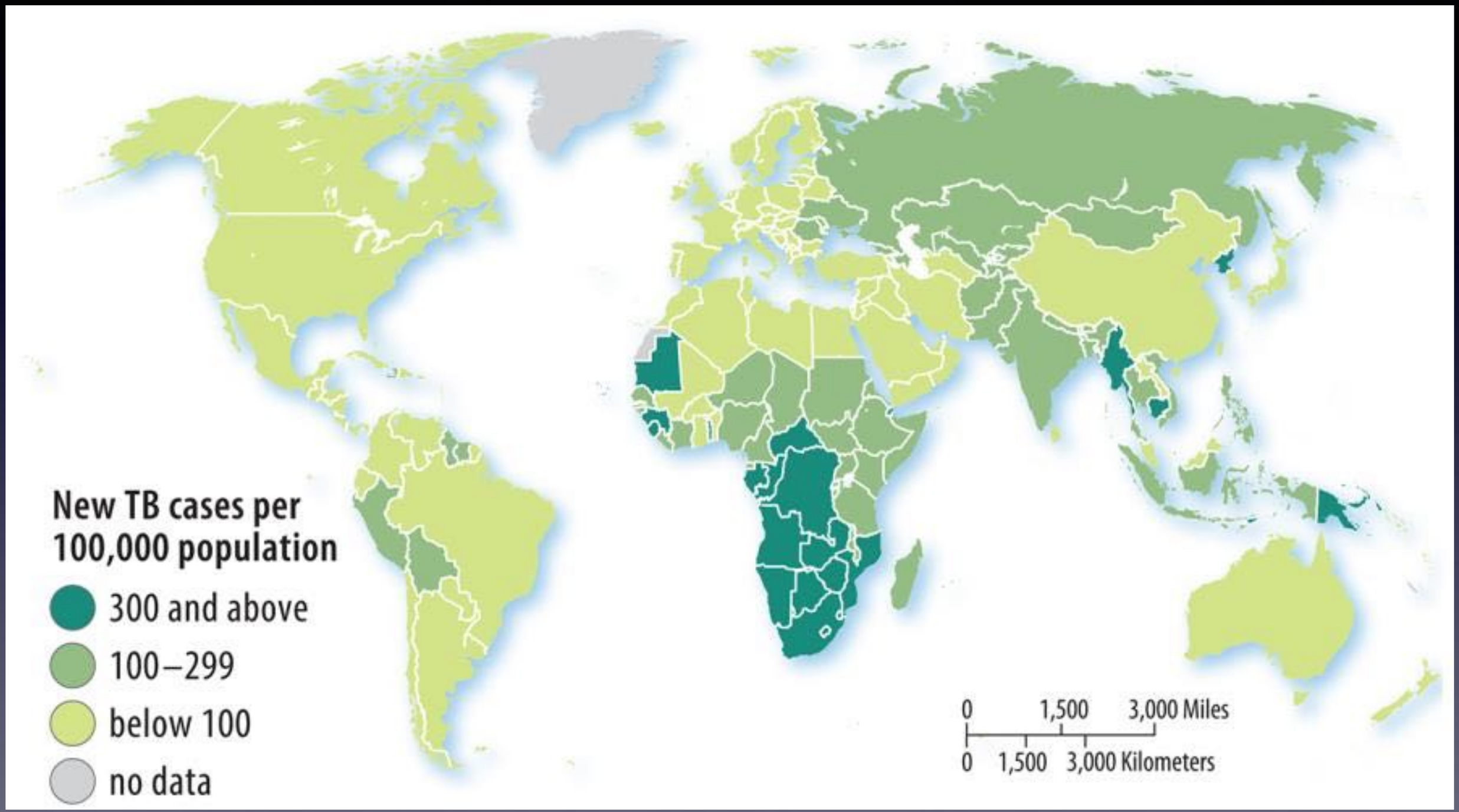
- D. Stage 4: Delayed Degenerative Diseases (Low but Increasing CDR)
  - 1. Cardiovascular diseases and cancers linger, but the life expectancy of older people is extended through medical advances.
  - 2. Consumption of non-nutritious food and sedentary behavior have resulted in an increase in obesity in stage 4 countries.


160° 140° 120° 100° 80° 60° 40° 20° 0° 20° 40° 60° 80° 100° 120° 140° 160° 180°
80°
60°
40°
20°
0°
20°
40°
60°
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
PACIFIC OCEAN
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
Percent obese*
30 and above
20–30
10–19.9
below 10
no data
* body mass index at least 30kg/m²
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers

- E. Reason for Possible Stage 5: Evolution, & Poverty, Diffusion
  - 1. Infectious disease microbes have continuously evolved and changed in response to environmental pressures by developing resistance to drugs and insecticides.
  - 2. Malaria caused an estimated 620,000 deaths worldwide in 2012 largely due to the evolution of DDT-resistant mosquitoes.


Number of deaths
10,000 and above
100–9,999
below 100
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers

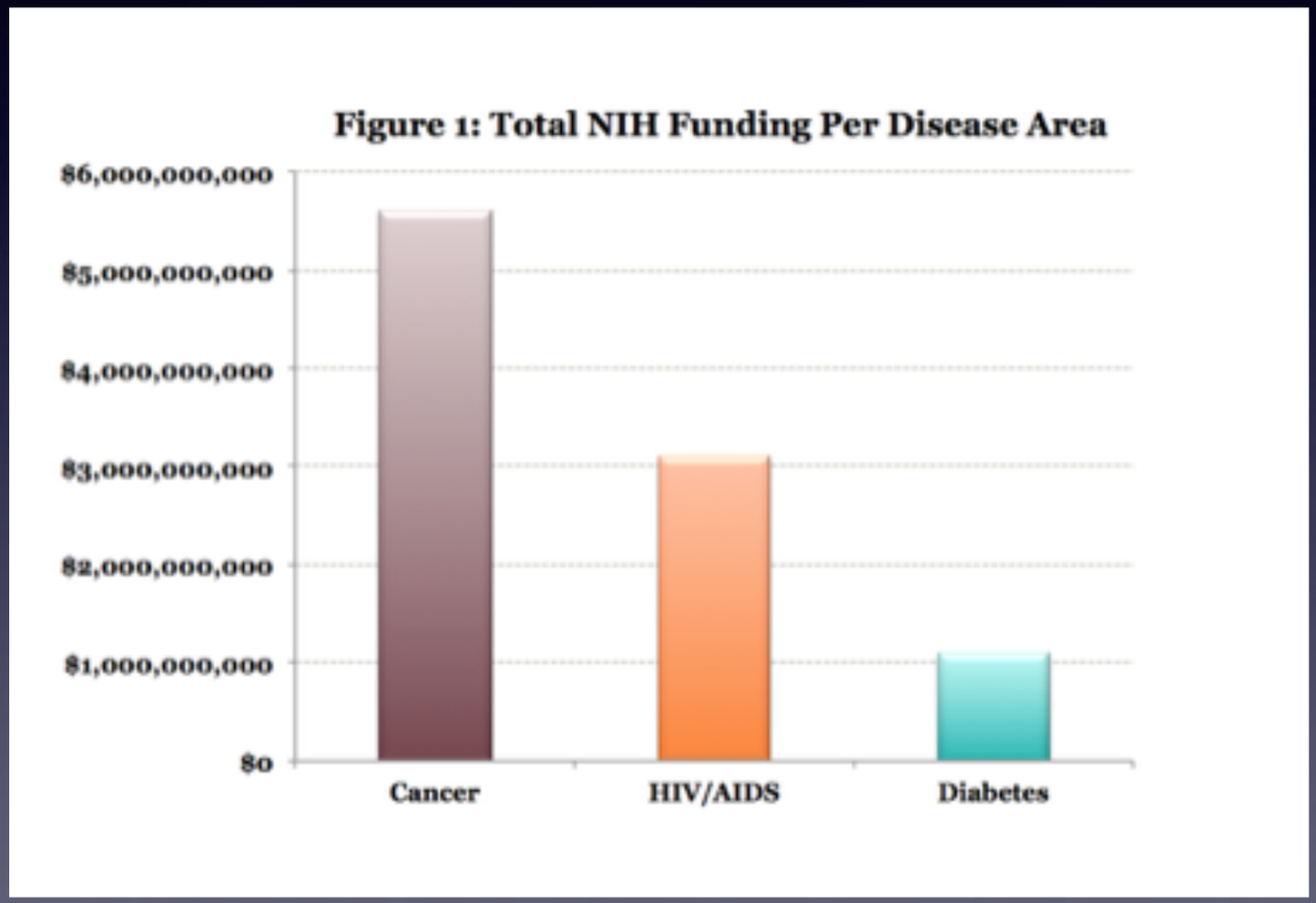
- 3. Infectious diseases are more prevalent in poor areas than other places because unsanitary conditions may persist, and most people can’t afford the drugs needed for treatment.
- 4. Tuberculosis (TB) has been largely controlled in developed countries but remains a major cause of death in developing countries.


New TB cases per
100,000 population
300 and above
100–299
below 100
no data
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers

- 5. Pandemics have spread in recent decades through the process of relocation diffusion.
- 6. The most lethal pandemic in recent years has been AIDS (acquired immunodeficiency syndrome.
- But not in the U.S. despite the media attention to it.

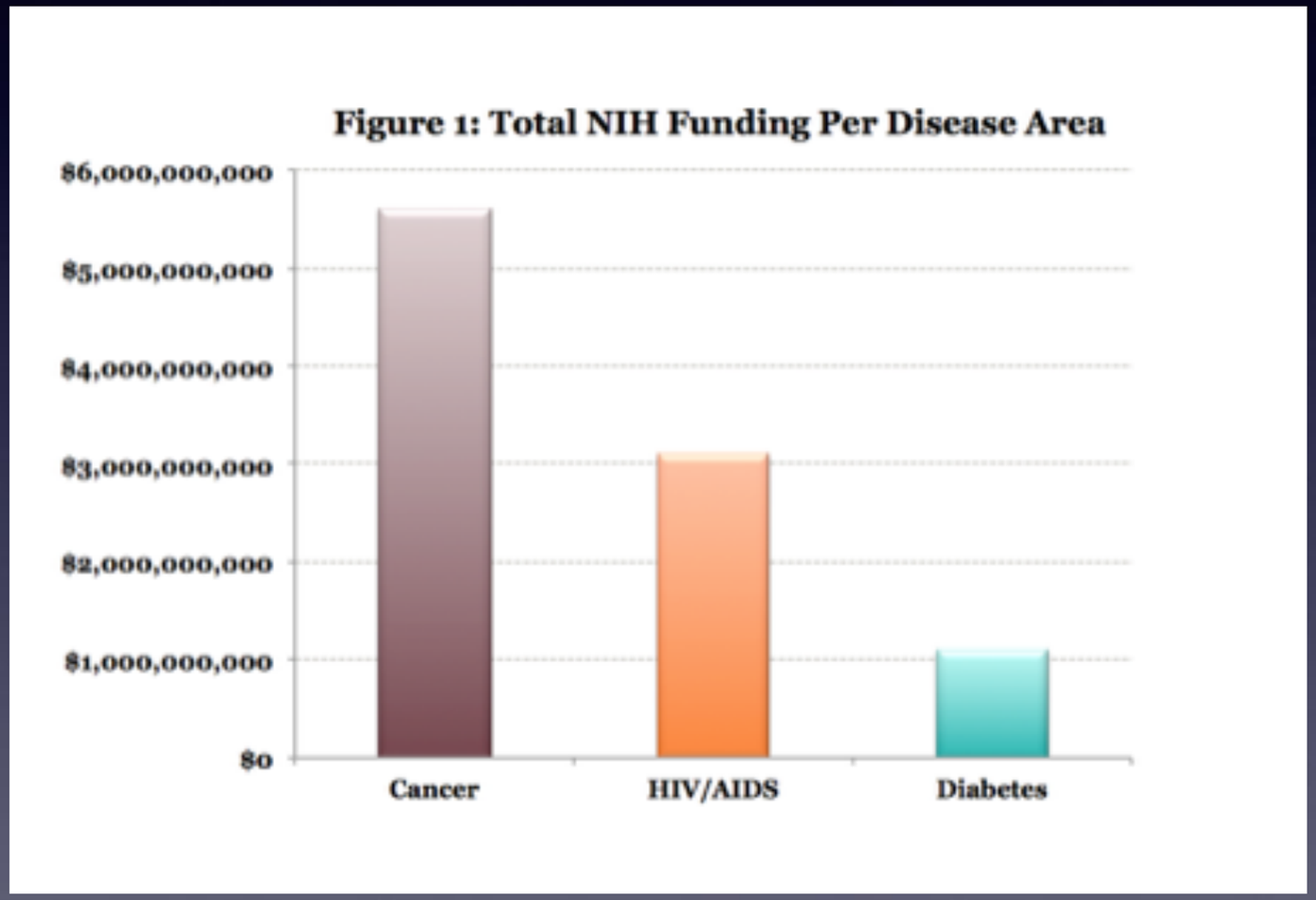
# By The Numbers

- As of 2016, about 675,000 people have died of HIV/AIDS in the USA since the beginning of the HIV epidemic in 1982. Current year expenditures: $32 billion.



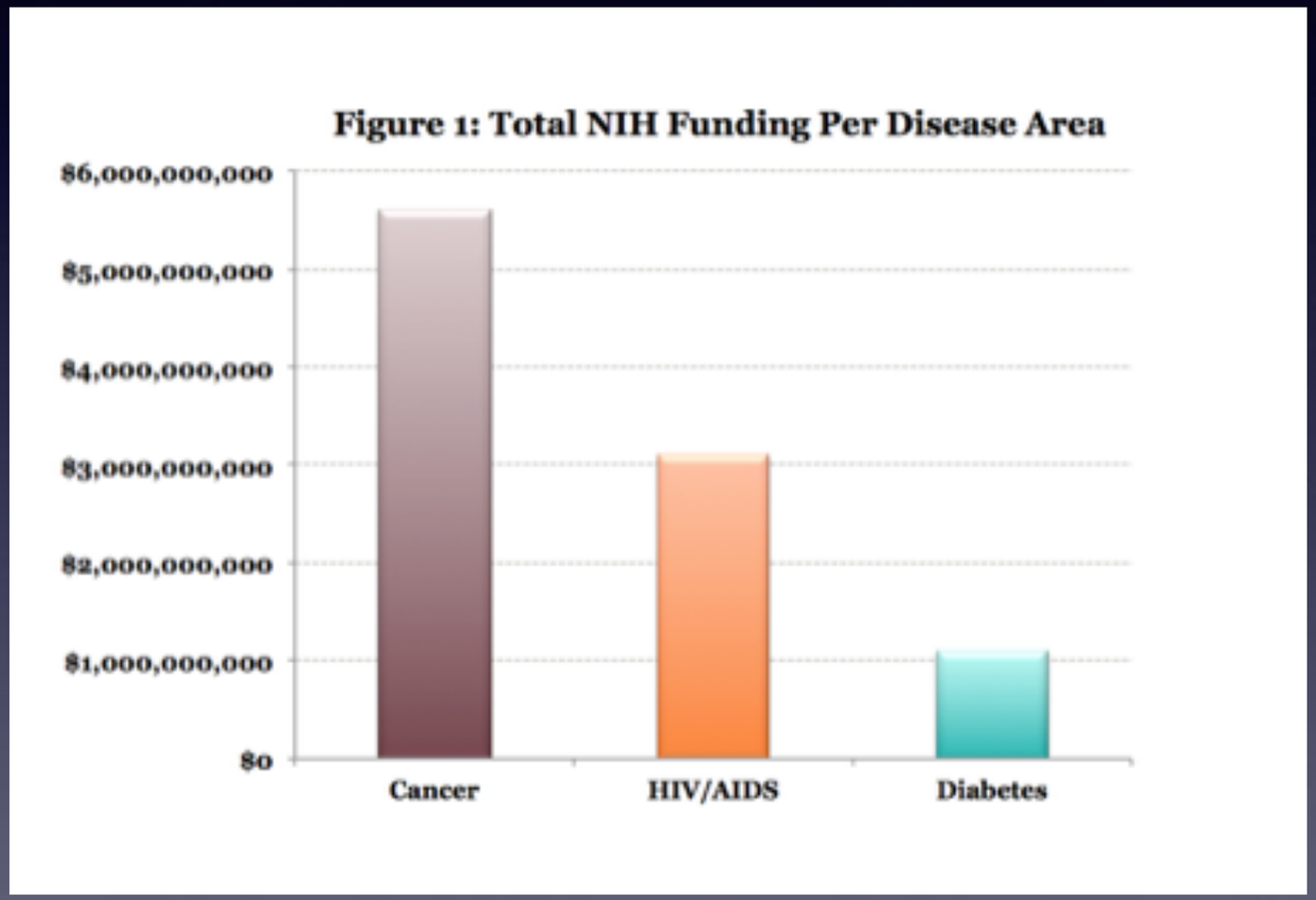
# By The Numbers

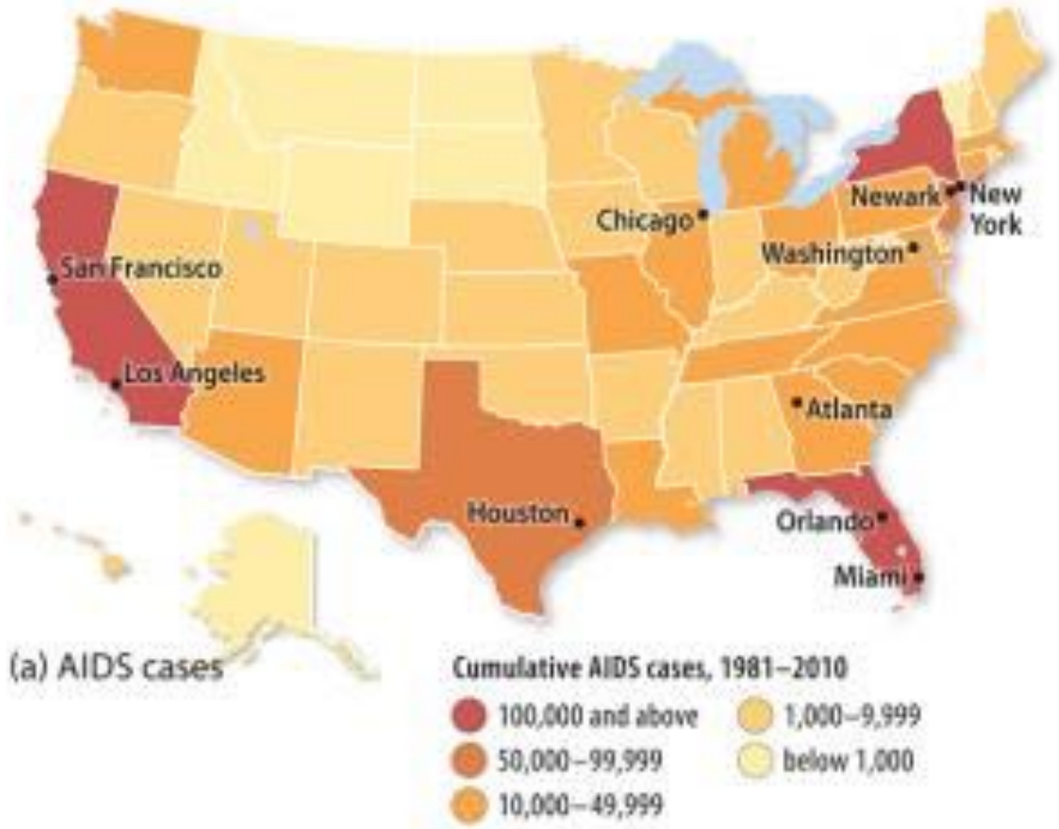
- As of 2012, about 18,000,000 people have died of heart disease in the USA since the beginning of the HIV epidemic in 1982. Current year expenditures: $32 billion.



# By The Numbers

- As of 2015, 30.3 million Americans – 9.4 percent of the U.S. population – have diabetes






(a) AIDS cases

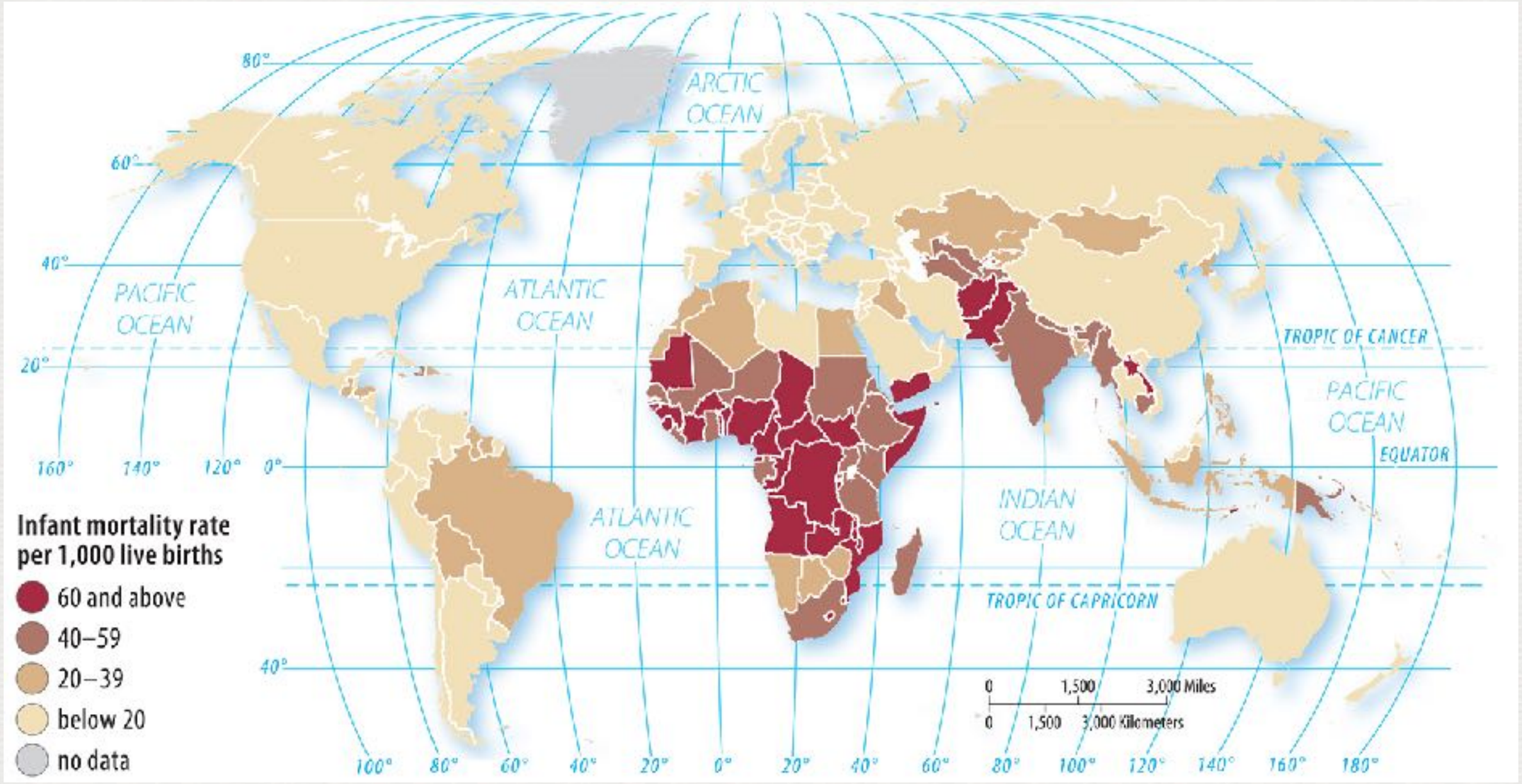
(b) International arrivals

(c)

# II. INDICATORS OF HEALTH

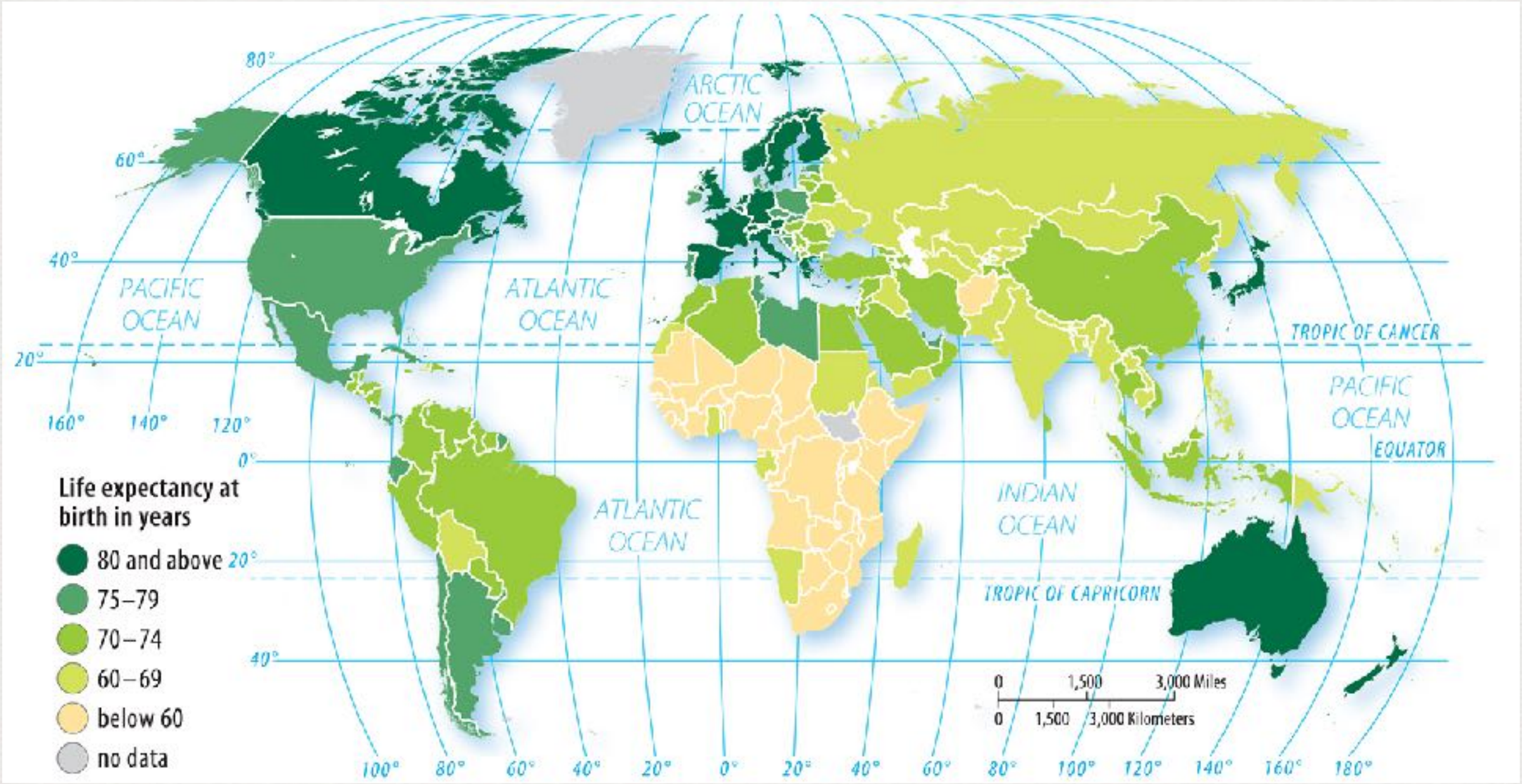
- **A. Infant Mortality Rate (IMR)**
  - 1. Annual number of deaths of infants under 1 year of age, compared with live births
    - a. Health care access indicator

# INFANT MORTALITY RATE



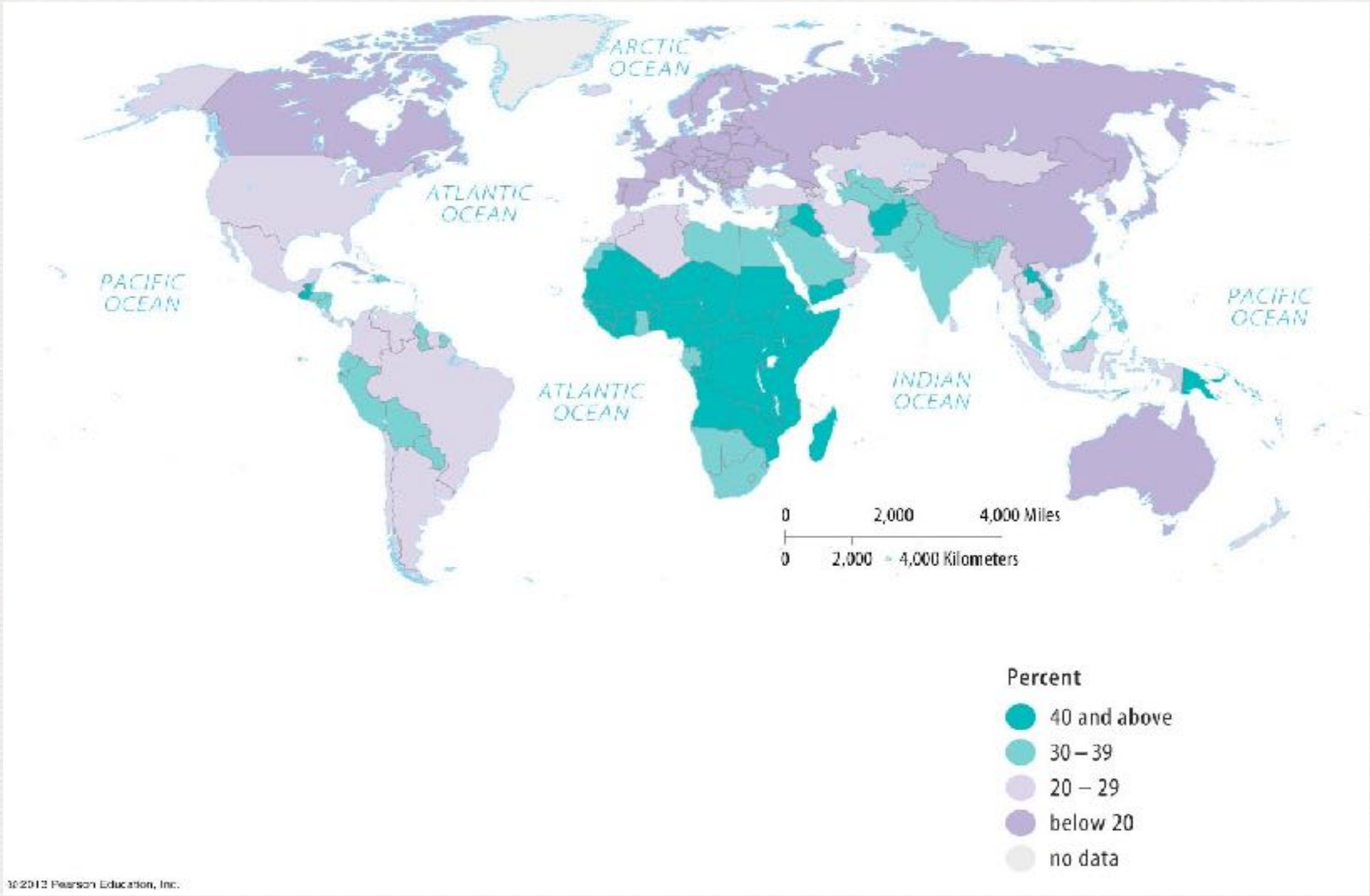
- **B. Life expectancy**
  - 1. Number of years a newborn infant can expect to live, assuming current mortality levels
    - a. Health care access and wealth indicator

# LIFE EXPECTANCY AT BIRTH



- **C. Young and old**
  - 1. Dependency ratio
    - a. Number of people who are too young or too old to work, compared to the number of people in their productive years
    - b. Indicates financial burden on a society's productive population

# POPULATION UNDER THE AGE OF 15

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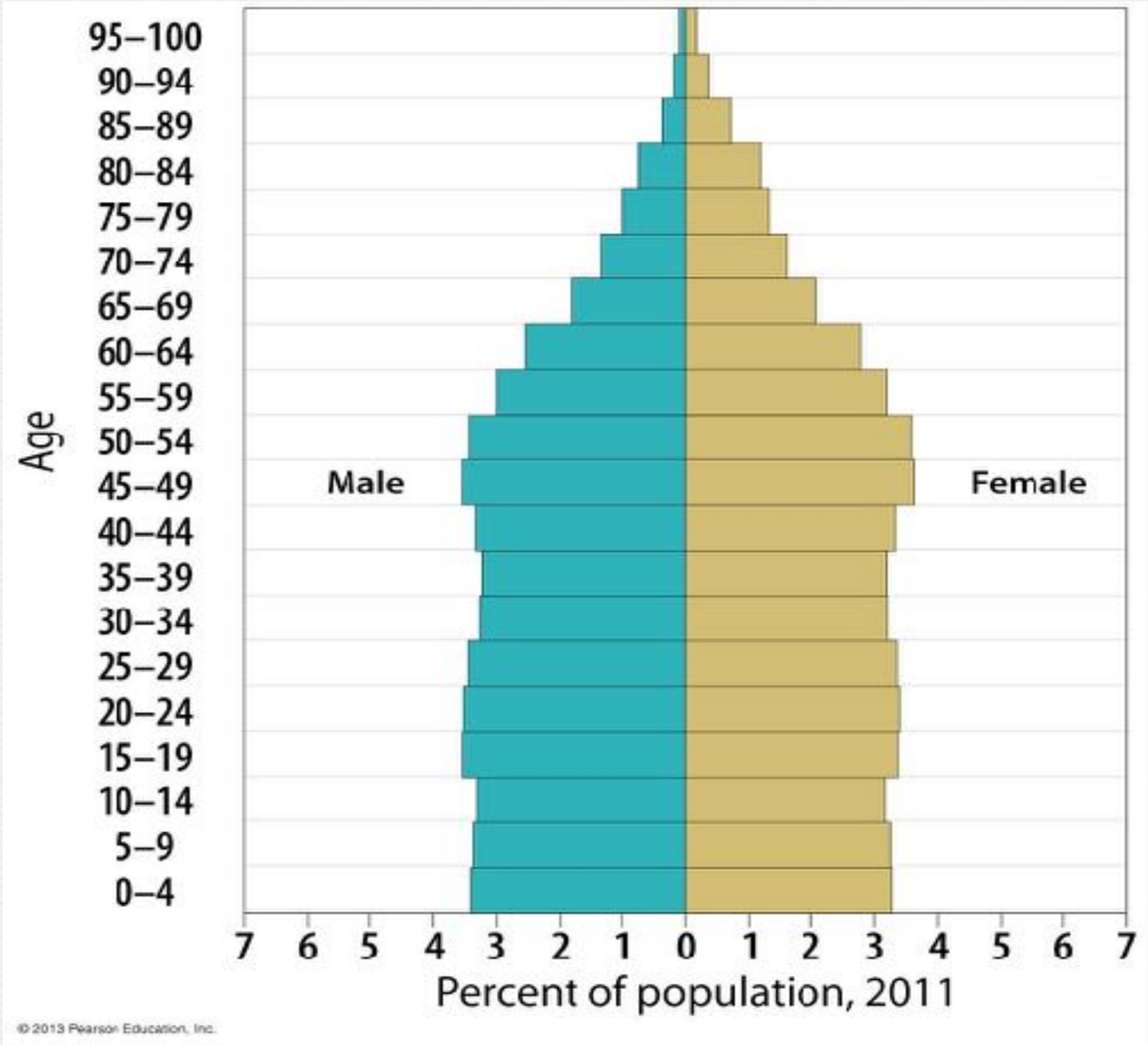
- **D. Population Pyramids**
  - **1. A population pyramid is a bar graph that displays the percentage of a place's population for each age and gender.**
  - **2. A country that is in stage 2 of the demographic transition has a pyramid with a broader base than that of a country in stage 4.**

# POPULATION PYRAMID OF THE UNITED STATES

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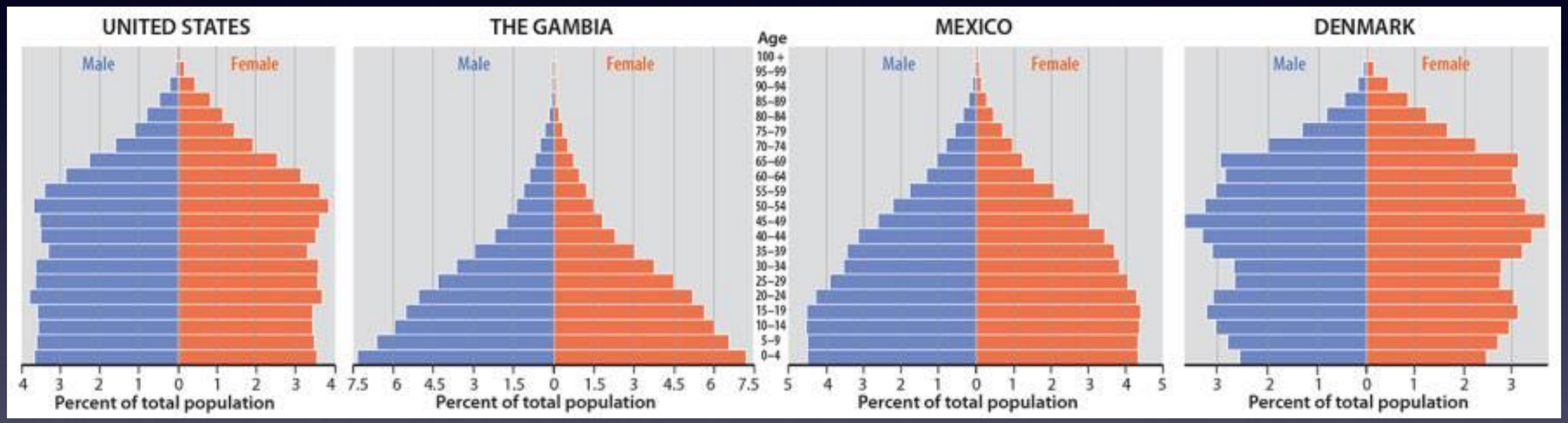
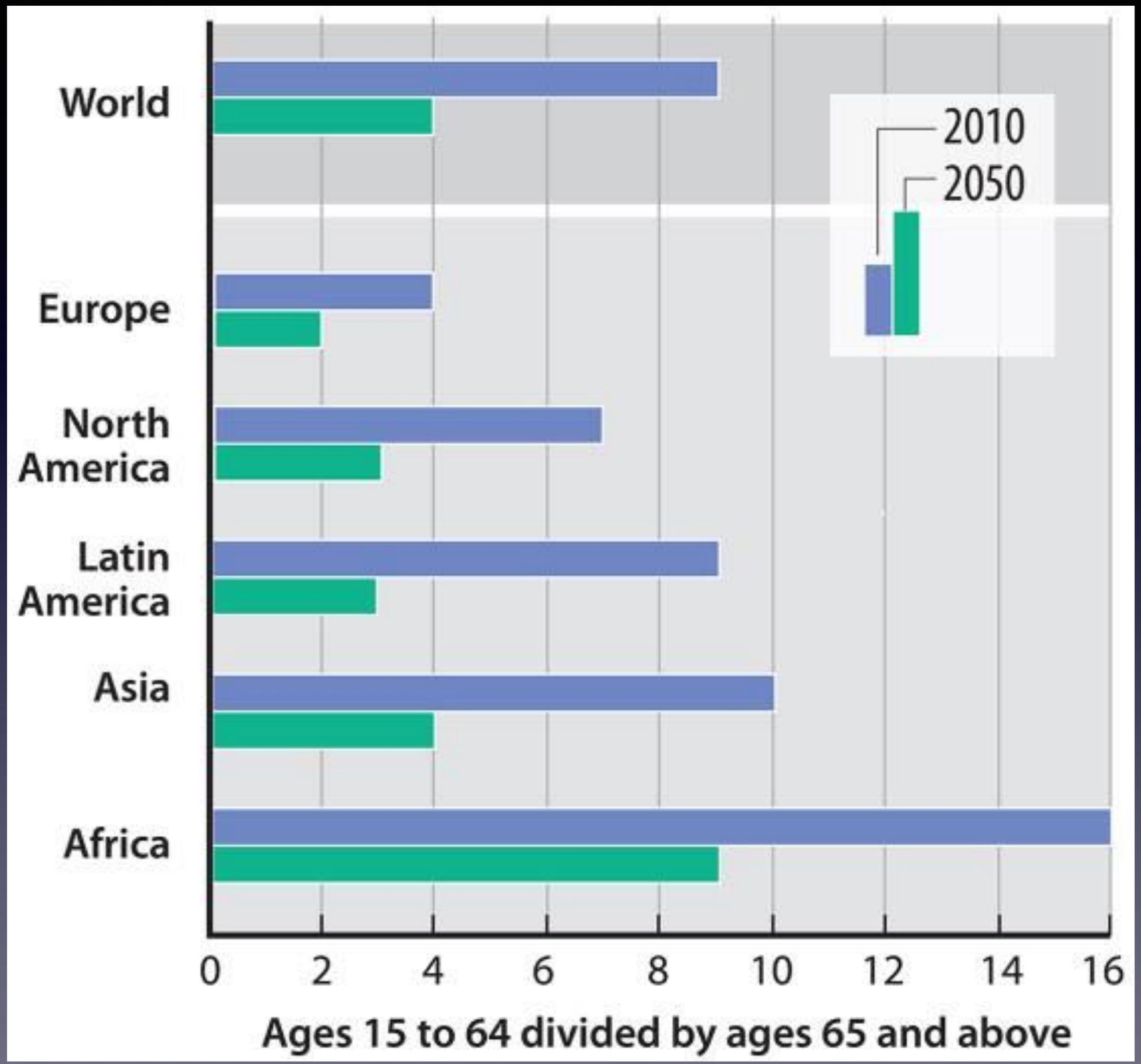
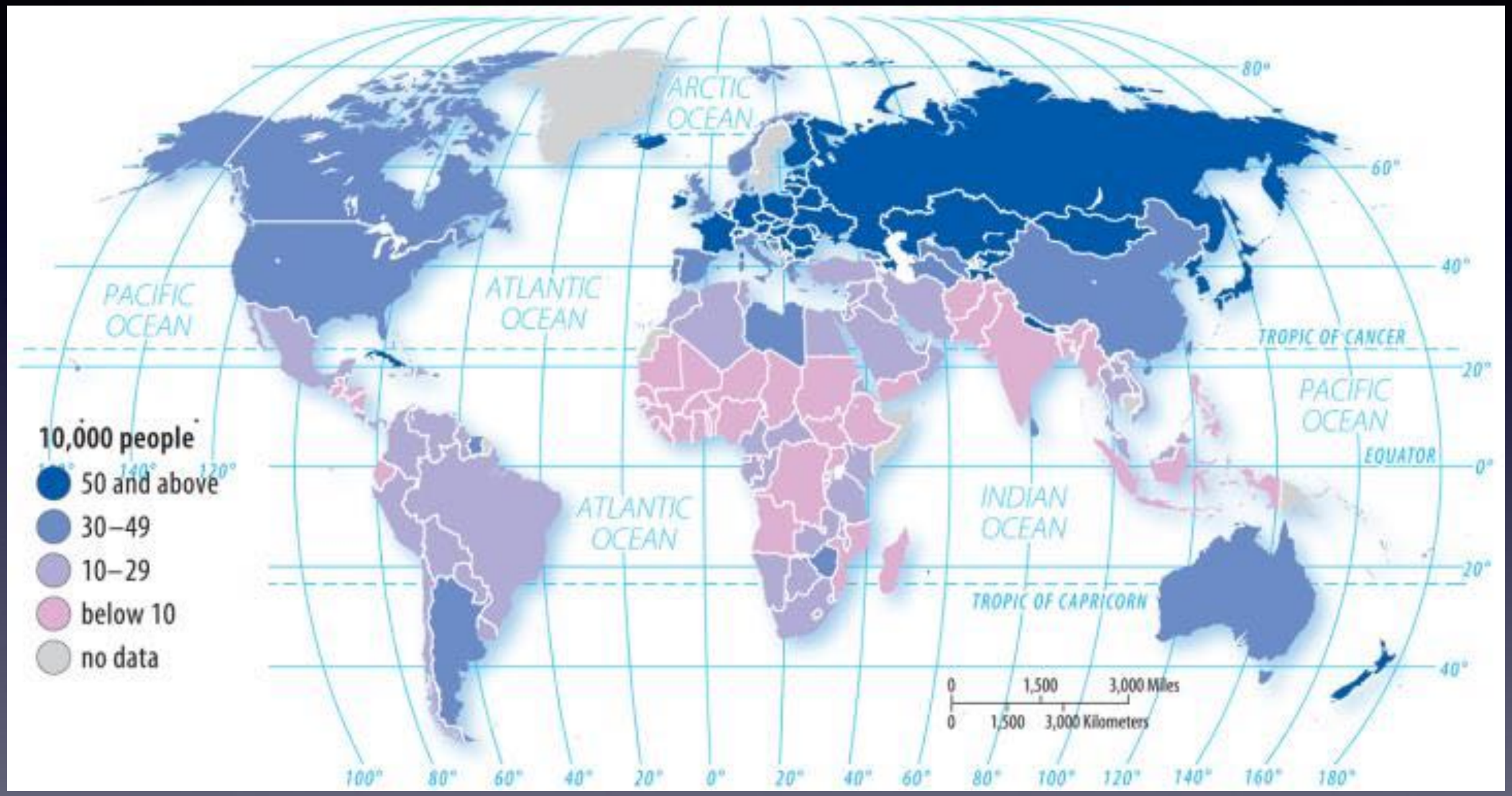
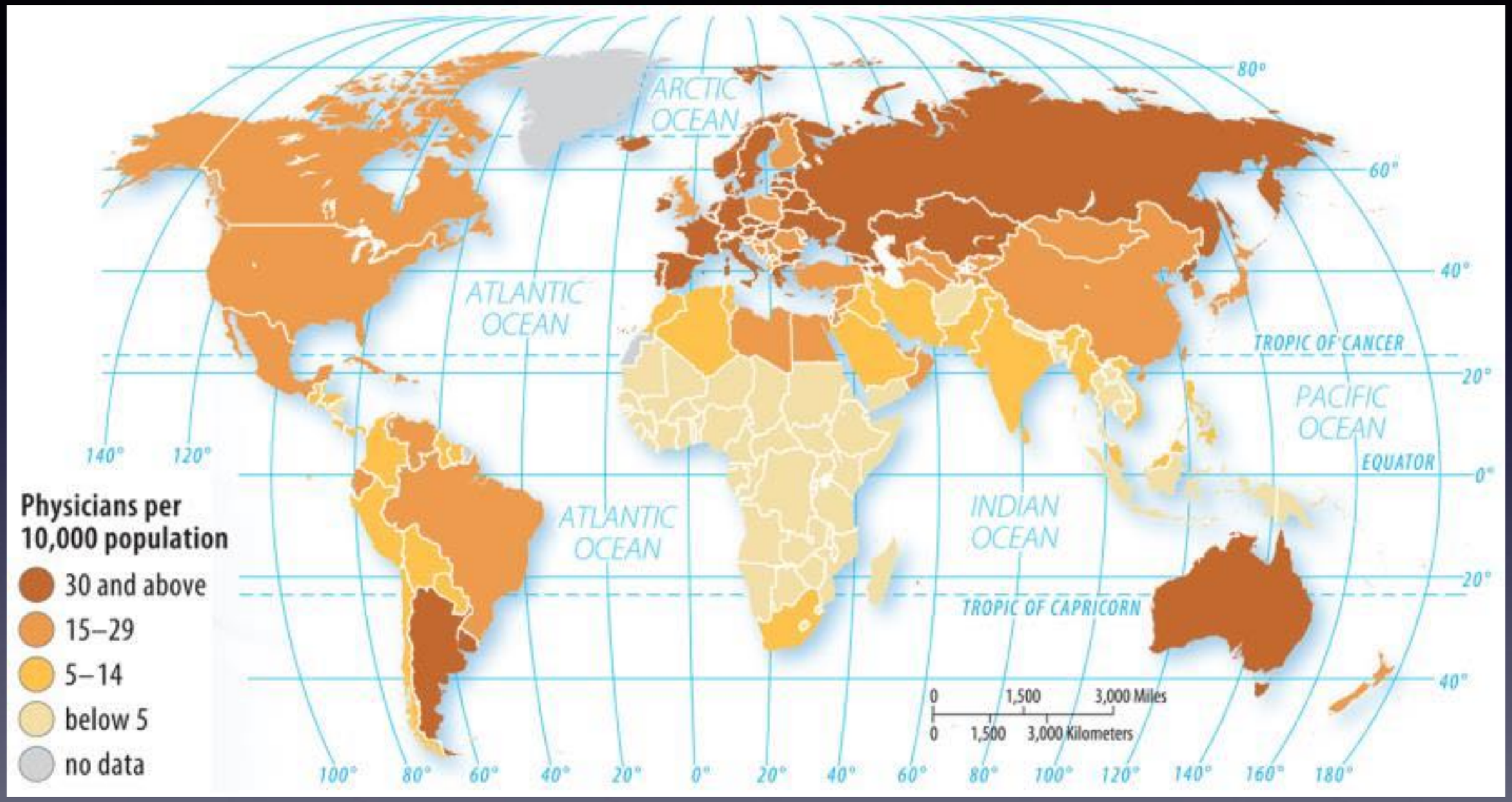

UNITED STATES
THE GAMBIA
MEXICO
DENMARK
Male
Female
Age
100 +
95–99
90–94
85–89
80–84
75–79
70–74
65–69
60–64
55–59
50–54
45–49
40–44
35–39
30–34
25–29
20–24
15–19
10–14
5–9
0–4
4 3 2 1 0 1 2 3 4
7.5 6 4.5 3 1.5 0 1.5 3 4.5 6 7.5
5 4 3 2 1 0 1 2 3 4 5
3 2 1 0 1 2 3
Percent of total population


World
Europe
North America
Latin America
Asia
Africa
2010
2050
0
2
4
6
8
10
12
14
16
Ages 15 to 64 divided by ages 65 and above

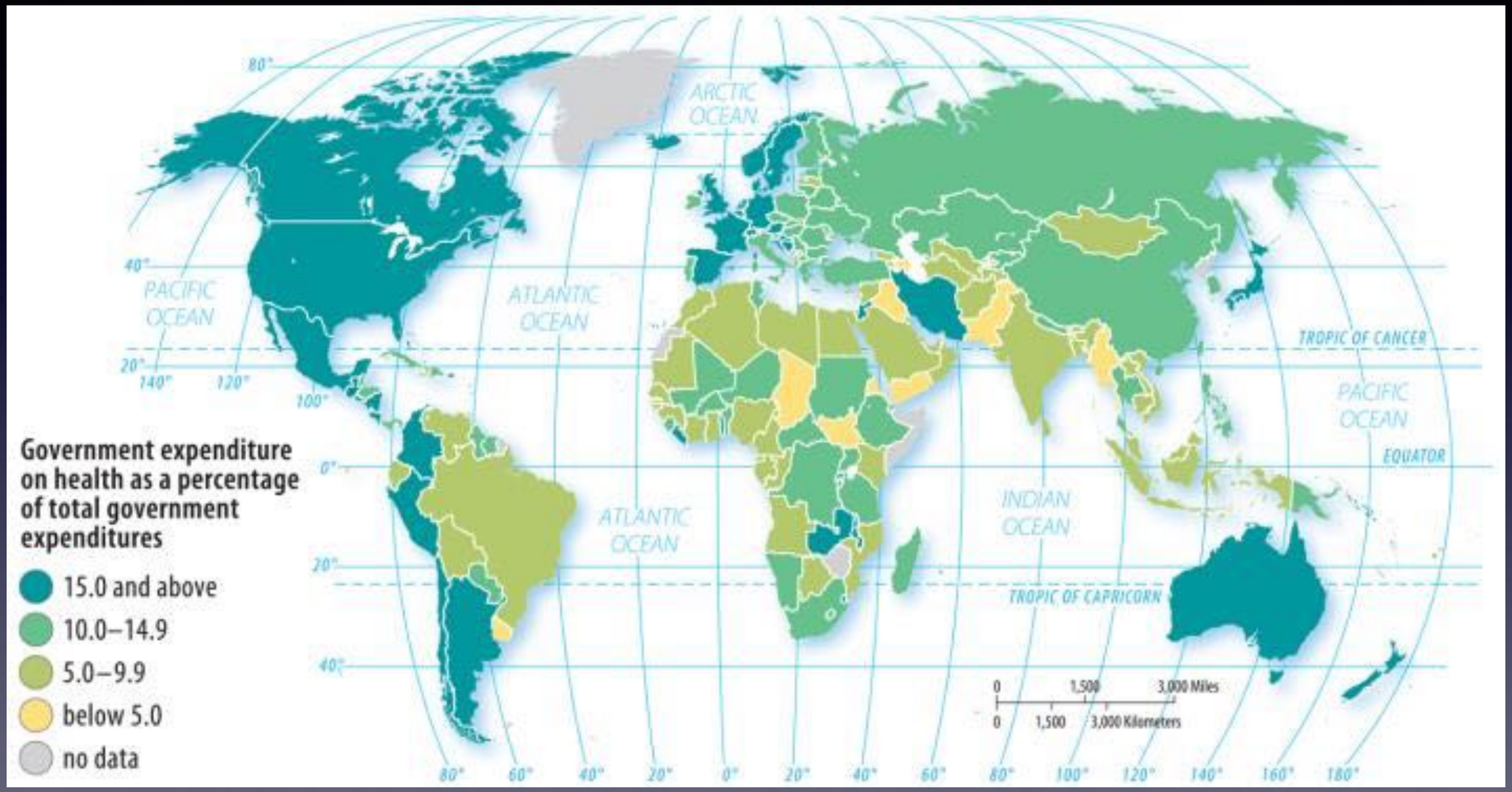
- E. Medical Services
  - 1. Most countries in Europe have more than 50 hospital beds per 10,000 people, compared to fewer than 20 in sub-Saharan Africa and South and Southwest Asia.


ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
80°
60°
40°
20°
0°
20°
40°
TROPIC OF CANCER
TROPIC OF CAPRICORN
EQUATOR
10,000 people
50 and above
30–49
10–29
below 10
no data
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers
100° 80° 60° 40° 20° 0° 20° 40° 60° 80° 100° 120° 140° 160° 180°

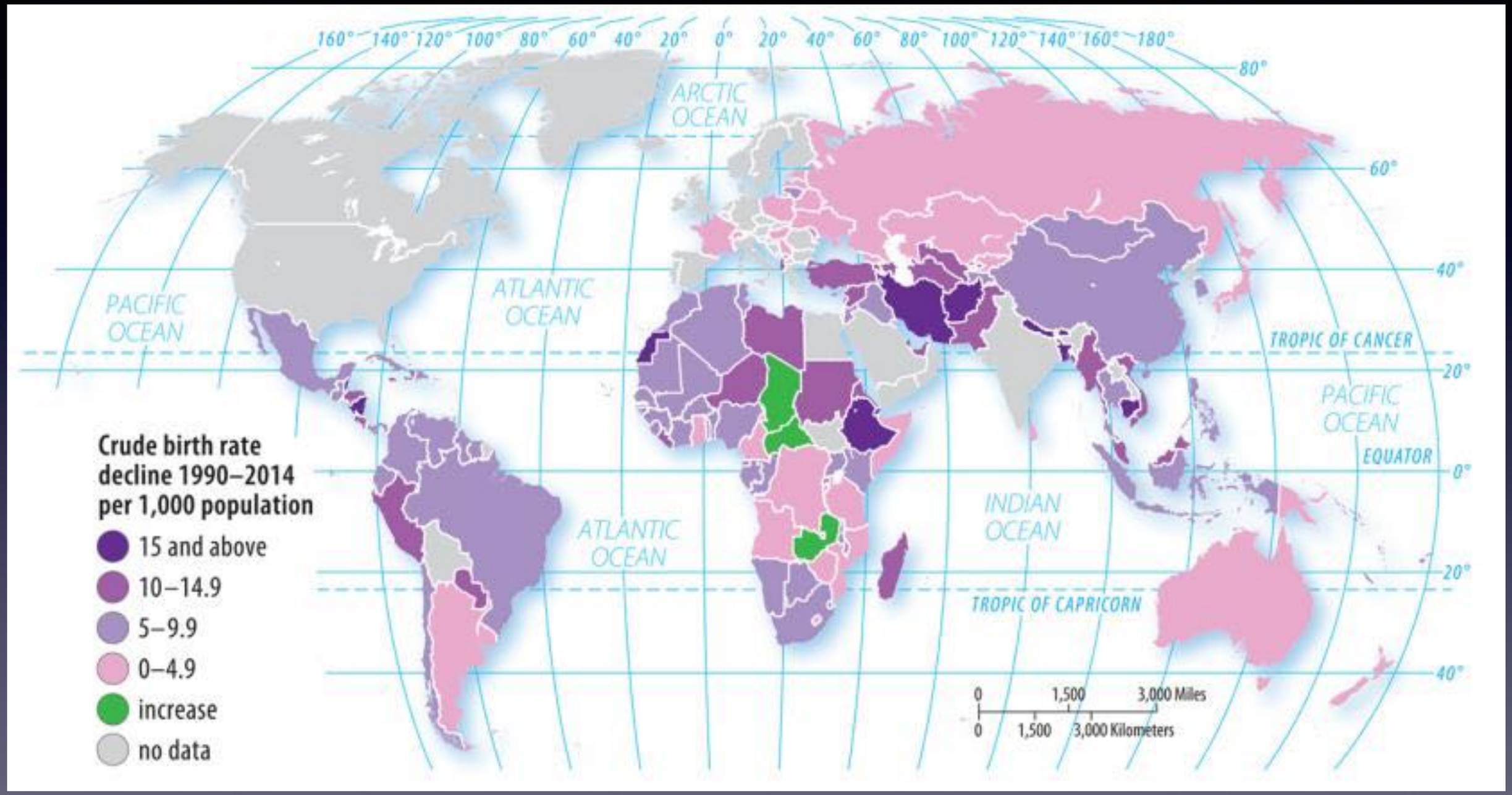
- 2. Europe has more than 30 physicians per 10,000 population, compared to fewer than 5 in sub-Saharan Africa.


ARCTIC OCEAN
ATLANTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
ATLANTIC OCEAN
80°
60°
40°
20°
0°
20°
40°
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
140°
120°
100°
80°
60°
40°
20°
0°
20°
40°
60°
80°
100°
120°
140°
160°
180°
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers
Physicians per 10,000 population
30 and above
15–29
5–14
below 5
no data

- 3. In the United States, private individuals are required to pay an average of 55 percent of health care, more closely resembling the pattern in developing countries.

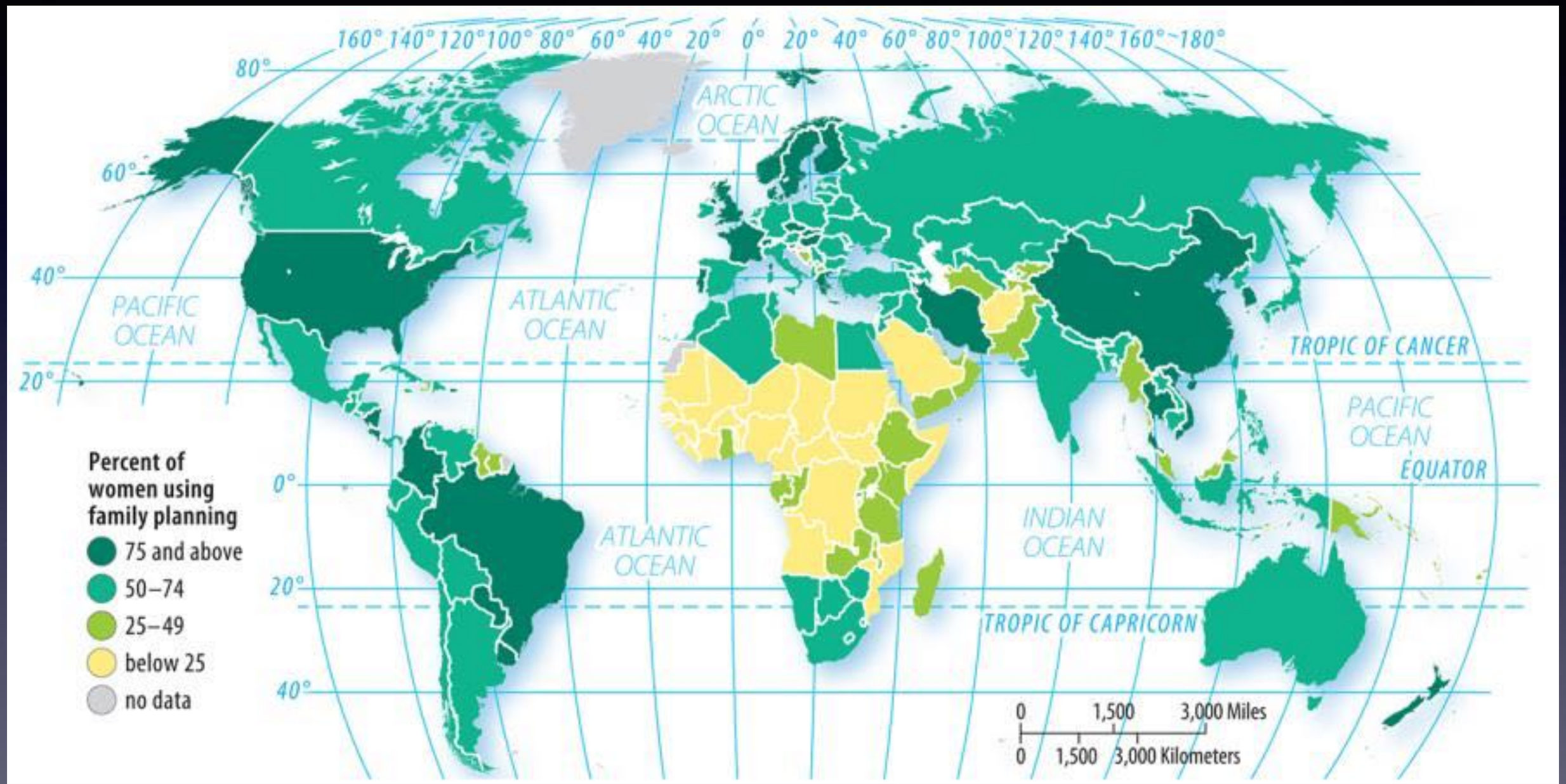

Government expenditure on health as a percentage of total government expenditures
15.0 and above
10.0–14.9
5.0–9.9
below 5.0
no data
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
PACIFIC OCEAN
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers

- F. Reproductive Health
  - 1. The CBR has declined rapidly since 1990, from 27 to 20 in the world as a whole and from 31 to 22 in developing countries.


160° 140° 120° 100° 80° 60° 40° 20° 0° 20° 40° 60° 80° 100° 120° 140° 160° 180°
80°
60°
40°
20°
0°
20°
40°
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
TROPIC OF CANCER
EQUATOR
INDIAN OCEAN
TROPIC OF CAPRICORN
Crude birth rate decline 1990–2014 per 1,000 population
15 and above
10–14.9
5–9.9
0–4.9
increase
no data
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers

- 2. Two strategies have been successful in reducing birth rates: improving economic conditions and contraception.
- 3. Economic development may promote lower birth rates in the long run, but some argue that the world cannot wait around for that alternative to take effect.

- 4. In some developing countries, demand for contraceptive devices is greater than the available supply, so the principal family planning strategy is to distribute contraceptives cheaply and quickly.
- 5. Many oppose birth-control programs for religious and political reasons.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80°
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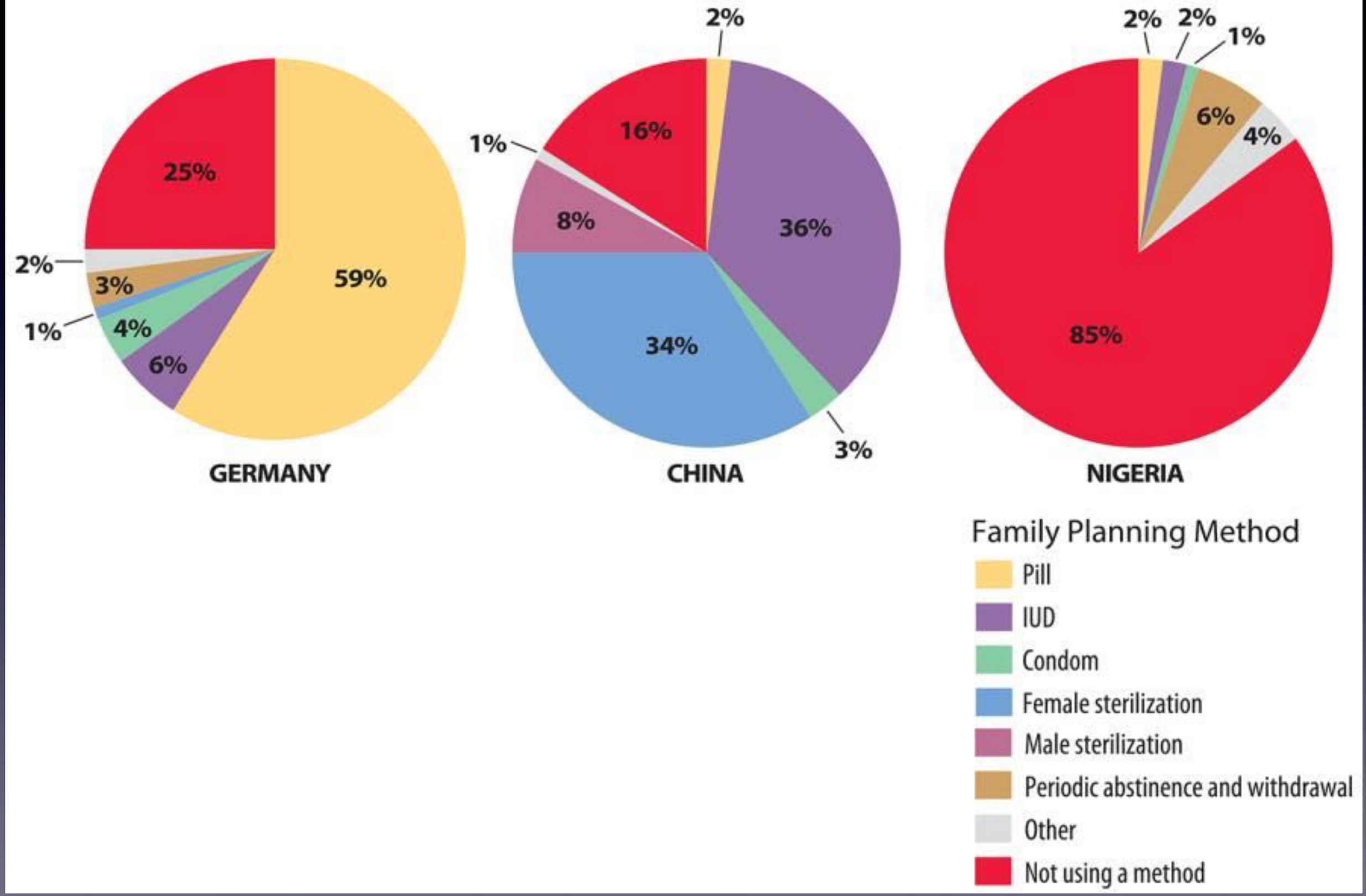
0°
20°
40°
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
TROPIC OF CANCER
PACIFIC OCEAN
EQUATOR
ATLANTIC OCEAN
INDIAN OCEAN
TROPIC OF CAPRICORN
Percent of women using family planning
75 and above
50–74
25–49
below 25
no data
0 1,500 3,000 Miles
0 1,500 3,000 Kilometers


25%
2%
3%
1%
4%
6%
59%
GERMANY
2%
1%
16%
8%
36%
34%
3%
CHINA
2%
2%
1%
6%
4%
85%
NIGERIA
Family Planning Method
Pill
IUD
Condom
Female sterilization
Male sterilization
Periodic abstinence and withdrawal
Other
Not using a method