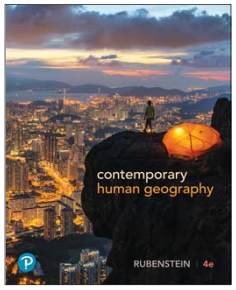
Contemporary Human Geography

Fourth Edition



Chapter 2

Population & Health

2.1 Population Concentrations (1 of 4)

- Population Concentrations
  - Human beings are not distributed uniformly across Earth's surface.
  - Jakarta, Indonesia is located in Southeast Asia, where a relatively small total land mass is home to about 1 billion people.

2.1 Population Concentrations (2 of 4)

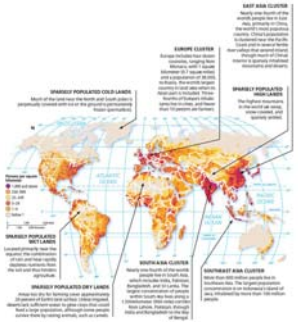
- Population Portions
  - The world can be divided into seven portions, each containing approximately 1 billion people.

2.1 Population Concentrations (3 of 4)

- Population Cartogram
  - A cartogram depicts the size of countries according to population rather than land area.

2.1 Population Concentrations (4 of 4)

- Population Clusters
  - Two-thirds of the world's inhabitants live in four regions—East Asia, South Asia, Southeast Asia, and Europe



2.2 Population Density (1 of 7)

- Population Density
  - Population density is the number of humans living within a given unit of area.
  - Chapter 2 provides three examples of population density
    - Arithmetic Density
    - Physiological Density
    - Agricultural Density

2.2 Population Density (2 of 7)

- Arithmetic Density
  - **Arithmetic density**, as used in population geography is the total number of people divided by the total land area.
  - It enables geographers to compare the number of people living on a given piece of land in different regions of the world.
  - It answers the "where" question.

2.2 Population Density (3 of 7)

- Arithmetic Density

2.2 Population Density (4 of 7)

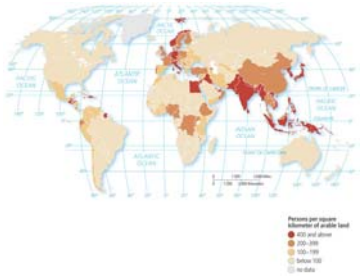
- Physiological Density
  - **Physiological density** is the number of people supported by a unit area of arable land.
  - Comparing physiological and arithmetic densities helps geographers understand the capacity of the land to yield enough food for the needs of the people.

Question – Why would Egypt have such a striking difference between physiological density and arithmetic density?

Answer – Only the Nile River Valley and delta have enough moisture for intensive agriculture and about 95 percent of Egyptians live in this region.

2.2 Population Density (5 of 7)

- Physiological Density



2.2 Population Density (6 of 7)

- Agricultural Density
  - **Agricultural Density** is the ratio of the number of farmers to the amount of arable land.
  - Sophisticated technology can allow vast increases in crop yields with fewer people.
  - Geographers study the relationships between the various density ratios. The Netherlands, for example, with the relatively high Arithmetic and Physiological Density ratios and low Agricultural Density might suggest that they put heavy pressure on the land to produce food but use sophisticated technology that requires few farmers.

Country	Arithmetic Density	Physiological Density	Agricultural Density	Percentage Farmers	Percentage Arable Land
Egypt	221	2,497	221	28	4
United States	35	79	1	2	45
The Netherlands	505	924	10	2	55
Canada	4	83	1	2	5

2.2 Population Density (7 of 7)

- Agricultural Density

2.3 Population Change (1 of 7)

- Population Change
  - Geographers frequently measure population change in a country or the world using three measures
  - The **natural increase rate (NIR)**
  - The **crude birth rate (CBR)**
  - The **crude death rate (CDR)**

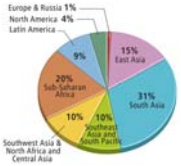
Data—determining these rates heavily rely on census information, and in the case of the United States, is conducted every 10 years

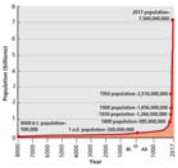
2.3 Population Change (2 of 7)

- Natural Increase Rate (NIR)
  - **Natural Increase rate (NIR)** is the percentage by which a population grows in a year.
  - "Natural" indicates that NIR does not include migration.
  - The current world NIR is 1.1, this means that the current population of the world is growing at 1.1 percent.

2.3 Population Change (3 of 7)

- Natural Increase Rate (NIR)
  - The developed countries have accounted for a very small percentage of the NIR since 1980.
  - About 2/3 of all population growth since 1980 has been is Asia.
  - The 18th century market the beginning of rapid population increase for the world.
  - **Doubling time** is the number of years needed to double a population, assuming a constant rate of natural increase.



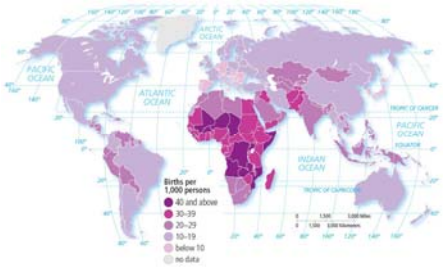


2.3 Population Change (4 of 7)

- Fertility
  - The **crude birth rate (CBR)** is the total number of live births in a year for every 1,000 people alive in the society.
  - The world map of CBRs mirrors the distribution of **natural increase rates (NIRs)**.
  - Today, many European countries have CBRs below 10, contrasted to some African countries that are over 40.
  - Think about it, a city of 100,000 people in some European cities will have less than 1000 births in a one-year period!

2.3 Population Change (5 of 7)

- Fertility

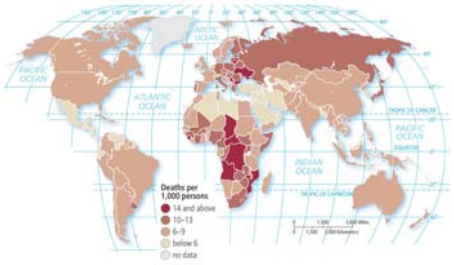


2.3 Population Change (6 of 7)

- Mortality
  - The **crude death rate (CDR)** is the total number of deaths in a year for every 1,000 people alive.
  - The CDR does not follow the same regional pattern as the NIR and CBR in the society.
  - The average CDR difference between developing and developed countries is very small, reasons for this will be discussed in the Section 2.4

2.3 Population Change (7 of 7)

- Mortality



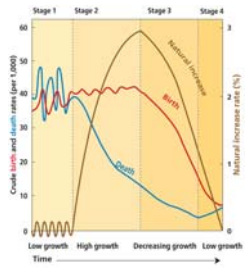
2.4 The Demographic Transition (1 of 6)

- Four stages of demographic transition
  - The **demographic transition** is a process of change in a society's population from high crude birth and death rates and low rate of natural increase to a condition of low crude birth and death rates, low rate of natural increase, and higher total population.
  - Every country is in one of these stages

STAGE 1	STAGE 2	STAGE 3	STAGE 4
• Very high CBR • Very high CDR • Very low NIR	• Still high CBR • Rapidly declining CDR • Very high NIR	• Rapidly declining CBR • Moderately declining CDR • Moderate NIR	• Very low CBR • Low, slightly increasing CDR • 0 or negative NIR

2.4 The Demographic Transition (2 of 6)

- Four stages of demographic transition

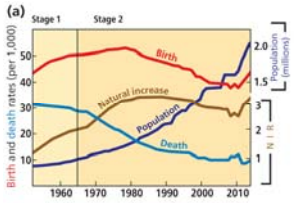


2.4 The Demographic Transition (3 of 6)

- Stage 1 (Low Growth)
  - Very high CDR and CBR, very low NIR
  - This is the stage for most of human history, but no country remains in stage 1 today.
  - During most of this stage, people depended on hunting and gathering for food. When food was easy to obtain, the population increases.

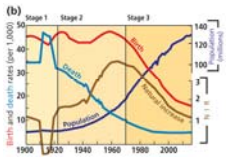
2.4 The Demographic Transition (4 of 6)

- Stage 2 (High Growth): The Gambia
  - High CBR, rapidly declining CDR, very high NIR



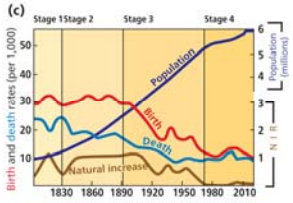
2.4 The Demographic Transition (5 of 6)

- Stage 3 (Moderate Growth): Mexico
  - Rapidly declining CBR, moderately declining CDR, moderate NIR
  - After 1974, a National Population Council promoted family planning, 40 percent of Mexico's married women have sterilizations.



2.4 The Demographic Transition (6 of 6)

- Stage 4 (Low Growth): Denmark
  - Very low CBR, low CDR, 0 or negative NIR



2.5 Health & Gender (1 of 4)

- Explain health risk faced by baby girls and mothers
  - Around 700,000 female babies are "missing" every year in China and India, as a result of gender-based sex selection.
  - The **sex ratio** is the standard biological measure of male to female babies that are born. It is established that around 105 male babies for every 100 female babies are born.
  - The high sex ratios of China and India can be used to calculate the probable percent of "missing" baby girls.
  - The United Nations concludes that the "root cause" of sex selection is gender inequality.

2.5 Health & Gender (2 of 4)

2.5 Health & Gender (3 of 4)

- Mothers at Risk
  - The **maternal mortality rate** is the annual number of female deaths per 100,000 live births from any cause related to or aggravated by pregnancy or its management.
  - In 2015, the global maternal mortality rate was 216, with only 8 in Europe.
  - The United States stands out in that its maternal mortality rate is higher than other developed countries and the rate has actually increased in the last decades.

2.5 Health & Gender (4 of 4)

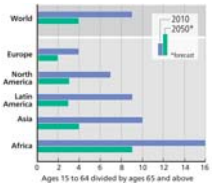
2.6 Aging & Health (1 of 5)

- Caring for Younger People
  - The **infant mortality rate (IMR)** is the annual number of deaths of infants under 1 year of age, compared with total live births.
  - It is usually expressed as the number of deaths among infants per 1,000 births.

2.6 Aging & Health (2 of 5)

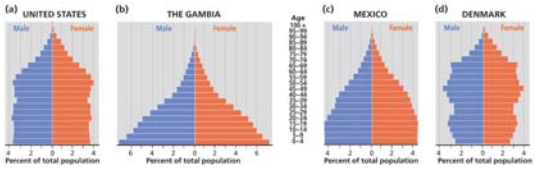
- Caring for Older People
  - The **potential support** ratio is the number of working-age people.
  - In 2050, we may only have 4 people of working age available to support each elderly person!

$$\text{potential support ratio} = \frac{\text{the number of working-age people between the ages of 15 and 64}}{\text{the number of persons 65 and older}}$$



2.6 Aging & Health (3 of 5)

- Young and Old
  - A **population pyramid** is a bar graph that displays the percentage of a place's population for each age and gender.
  - 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.



2.6 Aging & Health (4 of 5)

- Young and Old
  - **Life expectancy** is the average number of years an individual can be expected to live, given current social, economic, and medical conditions.
  - Babies born today in Europe can expect to live 81 years, but in sub-Saharan Africa it is only 60.

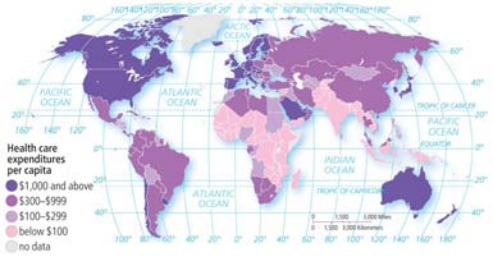
2.6 Aging & Health (5 of 5)

- Young and Old
  - The **dependency ratio** is the number of people who are too young or too old to work, compared to the number of people in their productive years.
  - The **elderly support ratio** is the number of working-age people (ages 15 to 64) divided by the number of persons 65 and older.

2.7 Medical Services (1 of 4)

- Health conditions vary around the world. Countries posses different resources for people who are sick.
- Health care expenditures per capita are vastly different around the globe.
- Developed countries spend more on health care, but also spend a higher percentage of their wealth on health care.
- 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.

2.7 Medical Services (2 of 4)



2.7 Medical Services (3 of 4)

- Europe has more than 30 physicians per 10,000 population, compared to fewer than 5 in sub-Saharan Africa.
- In developed countries, the current situation is for governments to have to make a choice between reducing benefits and increasing taxes.

2.7 Medical Services (4 of 4)

2.8 Epidemiologic Transition (1 of 9)

- Stage 1: Pestilence & Famine (High CDR)
  - Infectious and parasitic diseases are the principal causes of human deaths, along with accidents and attacks by animals and other humans.
  - 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.

2.8 Epidemiologic Transition (2 of 9)

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

2.8 Epidemiologic Transition (3 of 9)

- Stage 2: Receding Pandemics
  - Cholera persists still today in places still in stage 2 of the demographic transition, where many people lack access to clean drinking water.

2.8 Epidemiologic Transition (4 of 9)

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

2.8 Epidemiologic Transition (5 of 9)

- Cholera and Early GIS

2.8 Epidemiologic Transition (6 of 9)

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

2.8 Epidemiologic Transition (7 of 9)

2.8 Epidemiologic Transition (8 of 9)

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

2.8 Epidemiologic Transition (9 of 9)

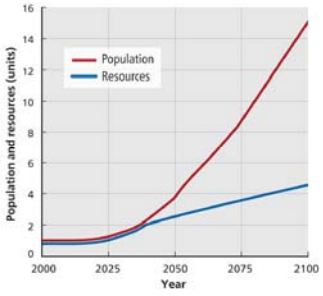
- Stage 4: Delayed Degenerative Diseases

2.9 Population & Resources (1 of 5)

- Overpopulation
  - **Overpopulation** is a condition in which the number of people in an area exceeds the capacity of the environment to support life at a decent standard of living.
  - Malthus argued that the population was growing much more rapidly than Earth's food supply because population increased geometrically, whereas food supply increased arithmetically.

2.9 Population & Resources (2 of 5)

- Overpopulation

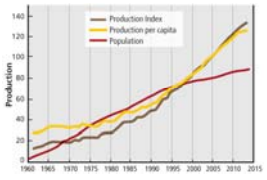


2.9 Population & Resources (3 of 5)

- Population and Resources: The Current Picture
  - Evidence from the past half-century lends support to both Neo-Malthusians and their critics.
  - Malthus was fairly close to the mark on resources but much too pessimistic on population growth.
    - We can't be too hard on Malthus for the pessimism, in his time only a few wealthy countries had entered stage 2 of the demographic transition.

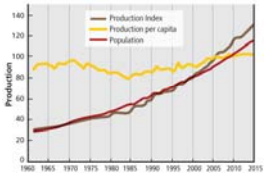
2.9 Population & Resources (4 of 5)

- Malthus's Critics
  - Theory unrealistically pessimistic because they are based on a belief that the world's supply of resources is fixed rather than expanding.
  - Critics argue that population growth is not a problem, but actually stimulates economic growth that leads to more food production.



2.9 Population & Resources (5 of 5)

- Malthus's Theory and Reality
  - Evidence from the past half-century lends supports to both Neo-Malthusians and their critics.
  - Overall food production has increased during this period somewhat more rapidly than Malthus predicted in countries such as China and India.

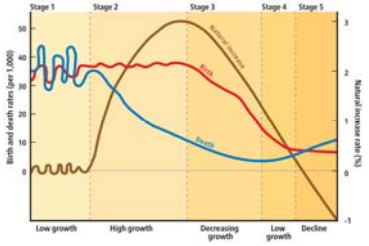


2.10 Population Futures (1 of 7)

- Possible stage 5 of the demographic transition is predicted by demographers for some developed countries.
  - Very low CBR, an increasing CDR, and a negative NIR.
  - A stage 5 country would have relatively few young women aging into childbearing years.
  - As member of this smaller pool of women choose to have fewer children, birth rate drops will be dramatic.

2.10 Population Futures (2 of 7)

- Demographic Transition Possible Stage 5: Decline



2.10 Population Futures (3 of 7)

- Demographic Transition Possible Stage 5
  - **Total fertility rate (TFR)** is the average number of children a woman will have throughout her childbearing years (roughly between the ages of 15 and 49).
  - **Zero population growth (ZPG)** is a TFR in which the population neither grows nor declines (NIR = 0).

2.10 Population Futures (4 of 7)

- Demographic Transition Possible Stage 5

2.10 Population Futures (5 of 7)

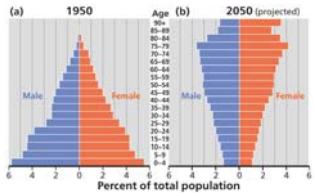
- China's Future Population
  - The core of the Chinese government's family planning program has been the One Child Policy, adopted in 1980.
  - The program provided many incentives for couples to agree to have only one child.
  - With the United Nations now forecasting China to lose population by 2100, the government has abandoned the One Child Policy.

2.10 Population Futures (6 of 7)

- India's Future Population
  - India embarked on a national family planning program starting in 1952.
  - During the 1970s, India set up camps to perform sterilizations, but this resulted in widespread opposition.
  - Still, the most dominant form of birth control continues to be sterilization of women.

2.10 Population Futures (7 of 7)

- Japan's Future Population
  - If the demographic transition is to include a stage 5, Japan will be one of the world's first countries to reach it.
  - Japan faces a severe shortage of workers. Instead of increasing immigration, Japan is encouraging more Japanese people to work.

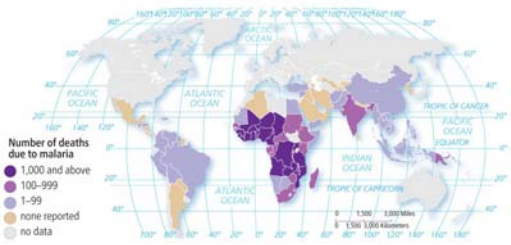


2.11 Epidemiological Futures (1 of 6)

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

2.11 Epidemiological Futures (2 of 6)

- Reason for Possible Stage 5: Evolution



2.11 Epidemiological Futures (3 of 6)

- Reason for Possible Stage 5: Poverty
  - 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.
  - Tuberculosis (TB) has been largely controlled in developed countries but remains a major cause of death in developing countries.

2.11 Epidemiological Futures (4 of 6)

- Reason for Possible Stage 5: Poverty

2.11 Epidemiological Futures (5 of 6)

- Reason for Possible Stage 5: Increased Connections
  - Pandemics have spread in recent decades through the process of relocation diffusion.
  - The most lethal pandemic in recent years has been AIDS (acquired immunodeficiency syndrome).
  - AIDS entered the United States primarily through the airports with the most international arrivals.

2.11 Epidemiological Futures (6 of 6)

- Reason for Possible Stage 5: Increased Connections

2.12 Family Futures (1 of 5)

- 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.

2.12 Family Futures (2 of 5)

- Two strategies have been successful in reducing birth rates: education and health care and contraception.
- 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.

2.12 Family Futures (3 of 5)

- Education and Health Care
  - With women staying in school longer, they would be more likely to gain economic control.
  - With better education, women would better understand reproductive rights and select better methods of contraception.
  - With improved health care programs, IMRs would decline.
  - With survival of more infants ensured, women would be more likely to choose to make more effective use of contraceptives to limit the number of children.

2.12 Family Futures (4 of 5)

- Contraception
  - 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.
  - Many oppose birth-control programs for religious and political reasons.

2.12 Family Futures (5 of 5)

Review Summary (1 of 2)

Key Issue 1 Two-thirds of the world's inhabitants are clustered in four regions. Human beings tend to avoid parts of Earth's surface that they consider to be too wet, too dry, too cold, or too mountainous. Several measures of density are used to describe where people live in the world, and the relationship between people and natural resources.

Key Issue 2 The demographic transition helps to explain why regions have varying rates of population growth. Virtually all the world's natural increase is concentrated in the developing countries of Africa, Asia, and Latin America. The difference in natural increase between developed countries and developing countries results from differences in birth rates rather than in death rates.

Review Summary (2 of 2)

Key Issue 3 Countries have distinctive patterns of gender and age, depending on the stage of the demographic transition, and they display different health conditions and medical services. Health care varies widely around the world because developing countries generally lack resources to provide the same level of health care as developed countries.

Key Issue 4 Malthus argued in 1798 that population would grow more rapidly than resources. Recent experience shows that population has not grown as rapidly as Malthus forecast. Birth rates have declined in some places primarily through education and health care, and in other places primarily through diffusion of contraception.

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