GEOG 11003 INTRODUCTION TO GEOGRAPHY



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1: INTRODUCTION TO GEOGRAPHY

Learning Outcomes

- Understand: the importance of maps and some tools used to create them.
- Explain: the concept of places and how they are characterized from a spatial perspective.
- Describe: the various types of diffusion.
- Connect: the discipline of geography with other academic disciplines.

In this chapter, you will learn what geography is as well as some of the fundamental concepts that underpin the discipline. These fundamental terms and concepts will be interwoven throughout the text, so a sound understanding of these topics is critical as you delve deeper into the chapters that follow."

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1.1: Introduction

Geography is a diverse discipline that has some sort of connection to most every other academic discipline. This connection is the spatial perspective, which essentially means if a phenomenon can be mapped, it has some kind of relationship to geography. Studying the entire world is a fascinating subject, and geographical knowledge is fundamental to a competent understanding of our world. In this chapter, you will learn what geography is as well as some of the fundamental concepts that underpin the discipline. These fundamental terms and concepts will be interwoven throughout the text, so a sound understanding of these topics is critical as you delve deeper into the chapters that follow. By the end of the chapter, you will begin to think like a geographer.

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1.2: What Is Geography?

The Greek word *geographos* from which geography is derived, is literally translated as writing (*graphos*) about the Earth (*geo*). Geography differs from the discipline of geology because geology focuses mainly on the physical Earth and the processes that formed and continue to shape it. On the other hand, geography involves a much broader approach to examining the Earth, as it involves the study of humans as well. As such, geography has **two major subdivisions, human (social science) and physical (natural science)**. This text focuses primarily on human geography, but because the physical aspects affect humans and vice versa, physical geography will not be completely excluded, but will receive less emphasis.

Geography is the study of the physical and environmental aspects of the world, from a spatial perspective. As geographers study the Earth, the one element that binds the discipline of geography and makes it unique is studying the Earth from a spatial perspective. The spatial perspective means that the phenomenon you are studying can be displayed on a map, so geography focuses on *places* around the world. **Geography**, then, is a physical (or natural) and social science that asks the fundamental questions, "What is *where*, and why?" Human geography is a social science that focuses on people, where they live, their ways of life, and their interactions in different places around the world. A simple example of a geographic study in human geography would be where is the Hispanic population concentrated in the U.S., and why? A physical geography research endeavor might ask where do most hurricanes strike the U.S. coastline, and why? In addition, because the Earth is dynamic, geographers also look at how places change through time, and why, so there is a natural connection with history.

1.2.1 Geography and its relationship to other disciplines

Not only is there a connection between geography and history, but geography is also related to a broad range of other academic disciplines (**Figure 1.1**). If you examine Figure 1.1, you may find your own major on the outside margin of the circle, with the corresponding subdiscipline in geography on the interior of the circle. Again, if a phenomenon can be depicted on a map and studied from a spatial perspective, it is geographical. A basic example would relate to the health sciences or medical geography, the subfield of geography that focuses on the spatial patterns of various aspects of health. For example, when the spread of a disease from its source area is mapped, medical professionals can get a better idea of the causes of a disease and the mechanisms of its transmission. Often, the understanding of cultural practices or the environmental conditions (such as the habitat for a mosquito-borne disease) can shed light on the process of how the disease operates. Another example of how geography relates to other disciplines is in economicgeography, the subfield that examines the different economic activities in various places, and how places interact economically. A fundamental concept in economic studies is that the location of a business is often important to the success of that business. If the business is located in close proximity to its clientele, for example, the customers might be more likely to visit that restaurant, store, etc. on a regular basis. A business owner would be wise to consult maps of both transportation networks as well as the population of the customers to which they intend to cater.

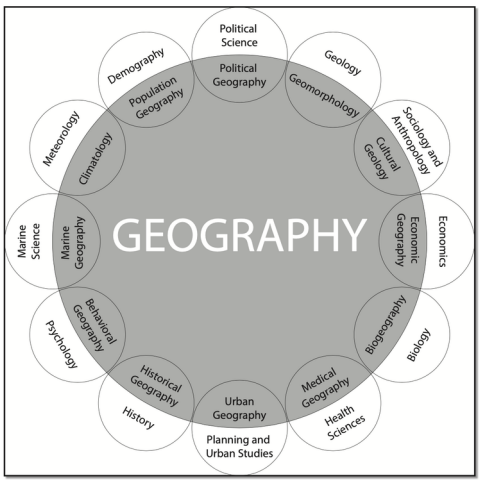


Figure 1.1 | Geography Relationships
Geography and its relationship to other disciplines.[1]
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1.3: Mapping The World

Maps are fundamental to the discipline of geography and have been used by humans since before 6,000 B.C. Today's maps are much more sophisticated, complex, and precise, and are used by many people who employ GPS mapping systems in their vehicles. This technology allows motorists to navigate from place- to-place with relative ease, but the process by which these digital and other maps are created is exceptionally complex.

Essentially, a map, which is a flat presentation of a place on Earth, is actually depicting a curved surface. The Earth, which looks like a sphere, is technically an oblate spheroid, which means that the "middle" of the Earth, around the equator, is slightly wider, and the north/south pole axis is slightly shorter, than a perfect sphere. When any curved surface is depicted on a flat surface, that process is known as **projection**, and many types of map projections exist**.** A fundamental characteristic of all maps is they involves projections, and all projections have some sort of distortion inherent in them. The size, shape, distance, and direction of objects are distorted to various degrees on maps. The reason this distortion occurs can be visualized by simply imagining peeling an orange, and trying to flatten the peel on a table. If you drew the continents on that orange before peeling it, the continents would most certainly be distorted when you try to flatten the peel on the table. This analogy does not precisely describe how projections are created; the process is much more involved. However, the underlying principle still applies. An example of distortion is shown on the map of the globe below (**Figure 1.2**). Note, for example, in this Mercator projection that Greenland appears to be larger than South America, although it is, in fact, much smaller.

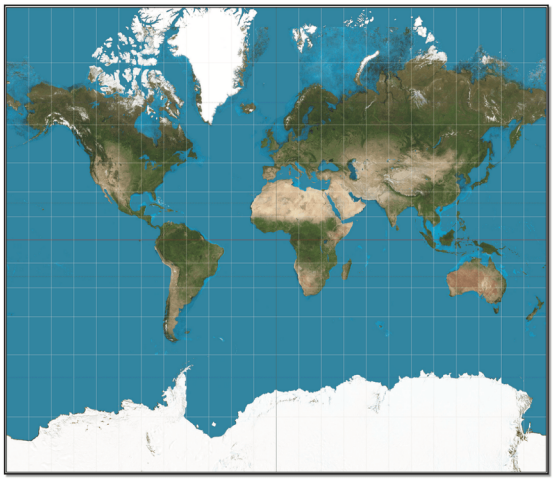


Figure 1.2 | World Map
World Map with Mercator Projection.
Author | User "Strebe"
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Besides projections, another important characteristic of maps is the **scale**. The scale of a map is a ratio of the length or distance on the map versus the length or distance on the Earth or ground (actual). The amount of detail shown on a map will vary based on the scale. For example, a map with a scale of 1:100,000 (which means 1 in/cm on the map equals 1,000,000 in/cm on the ground) would show much less detail than a map at a scale of 1:10,000 (**Figure 1.3**). Besides showing scale as a ratio, it can also be presented as a bar graph or as a verbal statement. Scale can also mean the spatial extent of some kind of phenomena. For example, one could examine migration at the global, national, state, or local scale. By either definition, however, each refers to the level of detail about the place that the geographer is researching. Examining the world from different scales enables different patterns and connections to emerge.

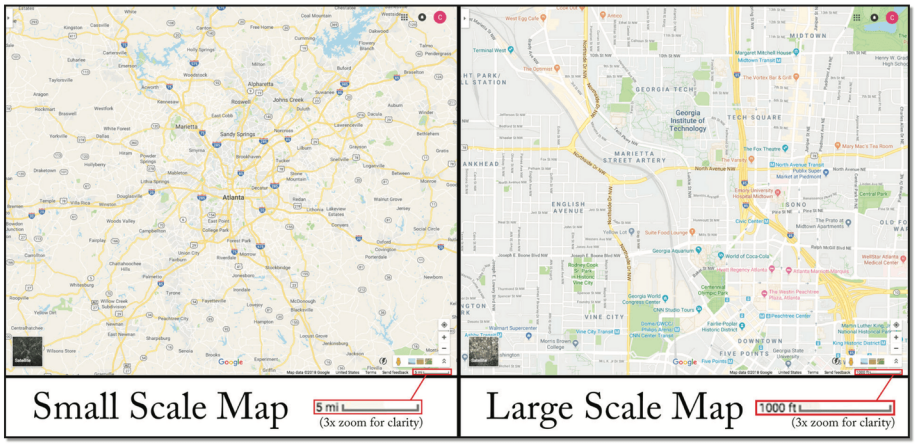


Figure 1.3 | Comparison of Map Scales
The map on the left is a small scale map, showing a larger area. The map on the right is a large scale map, showing a smaller area.
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1.4: Where In The World Am I?

One of the most important pieces of information that maps provide is location. Knowing precisely where a place is in the world is fundamental to geography. While one can define a location simply by using a street address, not all places on Earth have such an address. Therefore, one of the basic ways to pinpoint a location on the Earth is using the geographic grid. The geographic grid is comprised of meridians and parallels, which are imaginary lines and arcs crisscrossing the Earth's surface. **Meridians** are half circles that connect the north and south poles, and **longitude** refers to the numbering system for meridians. **Parallels** are circles that encompass the Earth and are parallel to the equator, and the numbering system for these circles is known as **latitude** (**Figure 1.4**). Where meridians and parallels intersect at precise locations (points) on the Earth on the geographic grid, a location can be known by its latitude and longitude.

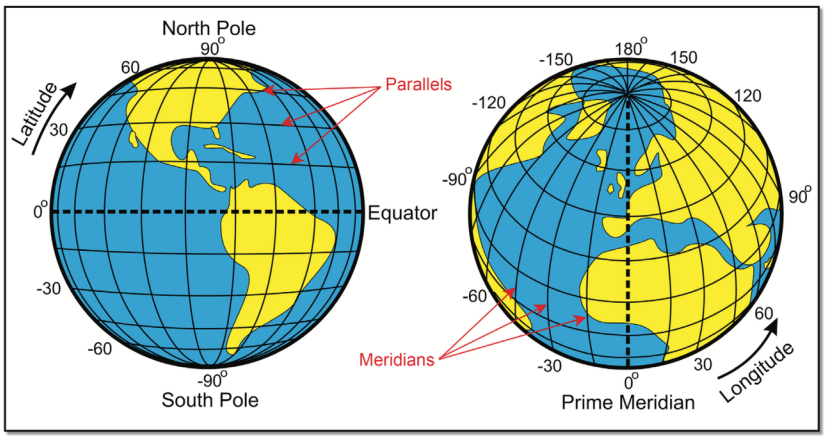


Figure 1.4 | Longitude and Latitude
The geographic grid comprised of meridians and parallels with longitude and latitude.
Author | User "Djexplo" and Corey Parson
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A few meridians on Earth are of particular importance, one being the **Prime Meridian** located at 0o longitude, which passes through Greenwich, England. The other important meridian, called the **International Date Line**, follows roughly along 180 o longitude, and this meridian is on the opposite side of the world from the Prime Meridian (**Figure 1.5**). When a traveler crosses the International Date Line, the day of the week instantaneously changes. When moving westward, the day moves forward, and when traveling eastward, the date jumps backward one day. Fortunately, the International Date Line is in the middle of the Pacific Ocean, so disruptions to the daily calendar are minimal for most people in the world. Moreover, the International Date Line does not precisely follow the 180 o longitude line, and this accommodation allows countries and territories consisting of islands that straddle 180 o longitude to share the same calendar date.

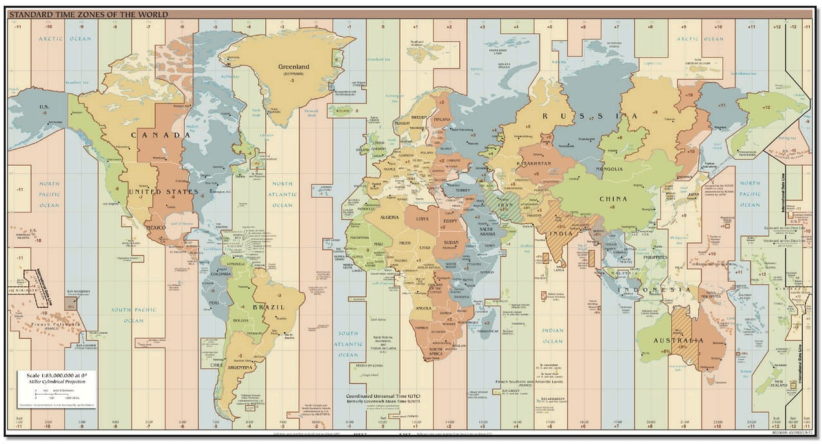


Figure 1.5 | Time Zones
This world map shows the international date line and global time zones.
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1.5: How Do I Describe Where I Am?

Defining a location by using the geographic grid is only part of the process of describing a place. Geographers are primarily concerned with two ways of describing a place: site and situation. **Site** refers to the physical characteristics, such as the topography, vegetative cover, climatic conditions, and the like. **Situation**, on the other hand, refers to the area surrounding the place, and is sometimes referred to as relative location. In other words, where is this place relative to other places, and how is it connected to its surroundings via transportation networks? New Orleans provides an excellent example of site versus situation. The site of New Orleans is not ideal for a city, as it lies below sea level and is prone to flooding. However, the situation of New Orleans is much better in that New Orleans is connected to large portion of the Mississippi River's network of navigable waterways while also being close to the Gulf of Mexico and convenient to coastal traffic. Hence, the situation of New Orleans is why the city has not long since been abandoned, despite catastrophic flooding such as during Hurricane Katrina in 2005. As we examine various placesaround the world, both site and situation are key considerations in determining the "why" of where a place is located.

1.5.1 Regions

While site and situation can help describe a place, a broader view of the world and the connections between places can be derived from the concept of regions. A **region** is an area that shares some sort of common characteristic that binds the area into a whole. Geographers use regions to help one understand the interconnections between places and simplify a complex world. Two major types of regions are formal and functional. **Formal regions** are characterized by homogeneity or uniformity in one or a number of different characteristics. These characteristics can be both human and physical-related, so regions could be defined by climate or vegetation types, in the sense of physical geography, or they could be defined by language or ethnicity, in the sense of human geography. One example of a map that includes formal regions would be a map of the states in the US. In this map, each state could be considered a formal region because each state is governed in a common or unique way, and hence portrays homogeneity (**Figure 1.6**).

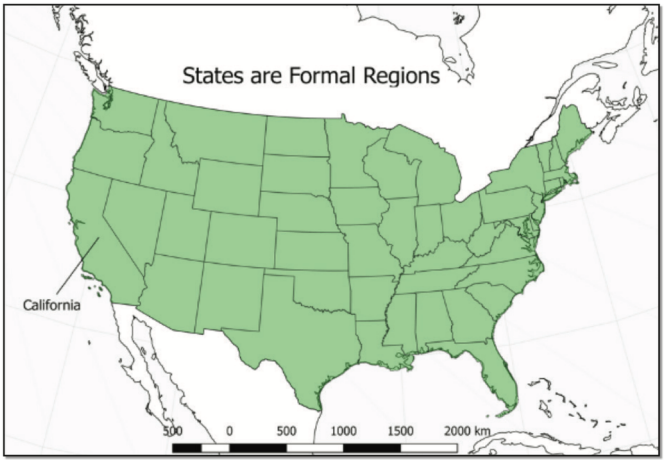


Figure 1.6 | United States
This map shows the formal regions of the states.
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A **functional region,** which is sometimes called a nodal region, is an area that contains a central node or focal point to which other places in the region are connected by some activity. Functional regions can be seen in cities where the central area of the city might serve as the focal point for the rest of the metropolitan area (**Figure 1.7**). At a smaller scale, a Wi-Fi hotspot could be considered the focal point of a functional region that extends to the range of the Wi-Fi signal. Even the delivery area for the local pizza restaurant would be a functional region with the restaurant as a central node.

Regions are devised and not absolute, so whether or not a particular place fits within a region is sometimes a matter of dispute. For example, scholars disagree on the exact extent of the American South as a formal region. What defines this region? It depends on what characteristics one uses to define the region, be they food, dialect, political affiliation, historical affiliation in

the Civil War, or any other element the mind conjures up when one thinks of the South as a relatively homogeneous formal region. Most geographers see Texas as a part of the South, but West Texas is much different from East Texas, and Florida is likewise diverse. Extreme southern Florida is vastly different from the panhandle of Florida in ethnic make-up and political affiliation. The opinion on what constitutes the Southern region varies based on personal viewpoints (**Figure 1.8**). The Southern region, then, may be thought of as a vernacular (or perceptual) region because theboundaries of these types of regions depend on the perspectives or mental maps of different groups of people who live both outside or inside that region. Hence, the concept of regions and their definition is not a straightforward process and involves generalities and varying opinions.

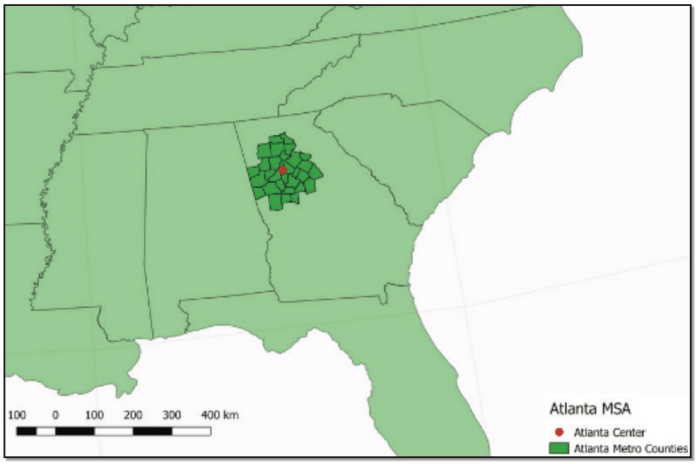


Figure 1.7 | Atlanta MSA
The Atlanta Metropolitan Statistical Area as defined by the United States Census Bureau.
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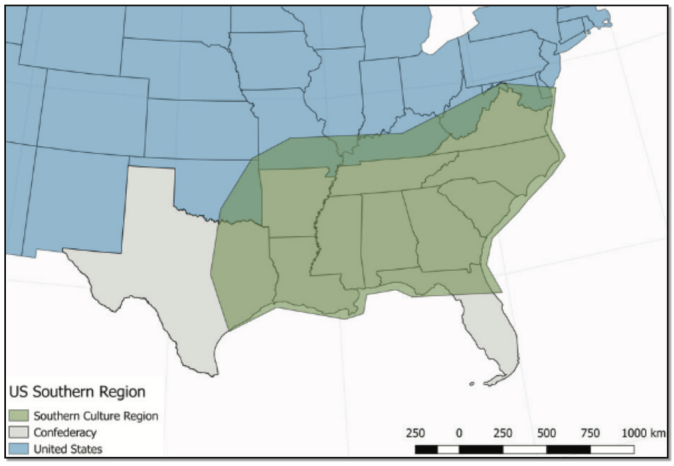


Figure 1.8 | The Fuzzy Boundaries of the American South
It's not exactly the old Confederacy, or the slave states. And it varies from one part to the next.
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1.6: Geographic Data Collection and Analysis

In order to analyze and develop regions, describe places, and conduct detailed geographic analysis, two important tools have been developed that are of particular value to geographers. The first is **remote sensing**, or the acquisition of data about the Earth's surface from aerial platforms such as satellites, airplanes or drones. Images taken from these airborne machines can provide a wealth of valuable information about both the human and physical characteristics of a place. For example, satellite imagery can depict the extent of human impact on rainforests in the Amazonian rainforest of Brazil (**Figure 1.9**). Imagery can also depict information that humans cannot see with the naked eye, such as the temperature of the Earth's surface. One example is a thermal infrared image, which can show warm temperatures in red tones and cooler temperatures in blue tones (**Figure 1.10**).

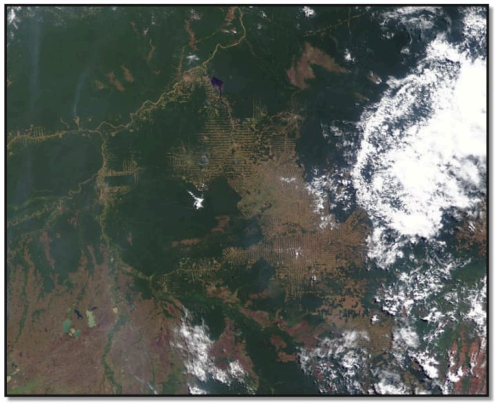


Figure 1.9 | Deforestation
Deforestation in the state of Rondônia, western Brazil.
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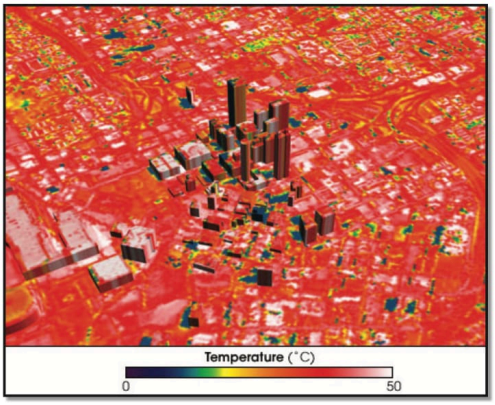


Figure 1.10 | Thermal Imaging
Thermal imagery of Atlanta, GA.
Author | NASA
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Digital imagery like the one in Figure 1.9 is in a format that can be entered into **Geographic Information Systems (GIS)**, the second important tool employed by geographers. GIS combines computer hardware and software in a system that stores, analyzes and displays geographic data with a "computer mapping" capability.

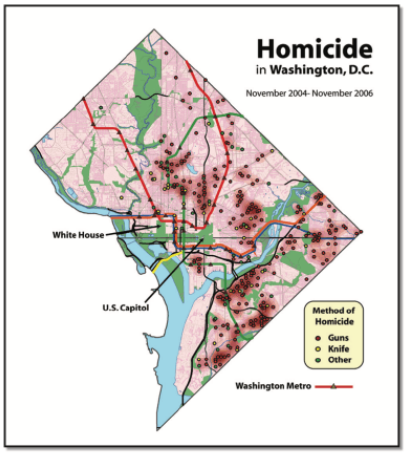


Figure 1.12 | Crime Analysis
A crime analysis of Washington DC.
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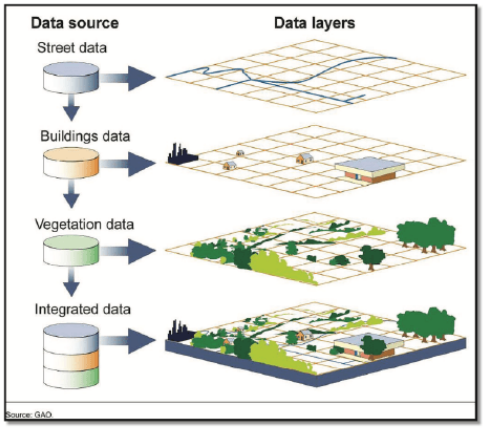


Figure 1.11 | Data Layers
Data layers in a Geographic Information System (GIS).
Author | US Government Accountability Office
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Geographic data is stored in layers, and these layers of data can be queried in a number of sophisticated ways to analyze some aspect of an area (**Figure 1.11**). Each data point in a GIS is georeferenced to a precise location on the Earth's surface

(latitude and longitude, for example), and these data points have different attributes corresponding to the data layer they are associated with. Data layers can represent a myriad of characteristics about that data point, such as elevation, soils, the presence of water, per-capita income, ethnicity, etc. Overlaying the data layers can provide incredible insights into the connections between characteristics/ factors in places, such as the connection between per-capita income and ethnicity or the links between soil types and vegetative cover. GIS also has a vast suite of other capabilities such as least-cost path for transportation, line-of-sight perspectives from a particular location, or 3-D models of urban areas. Because of their multi-faceted capacity to present geographic information, businesses and government agencies around the world use GIS to answer questions, plan development, chart delivery routes, and even monitor crime and first responder activity (**Figure 1.12**). It is not surprising that one of the fastest growing job markets is in GIS technology, as GIS jobs exist at the local, state, and national level as well as in many businesses in the private sector. Even the U.S. Census Bureau maintains an extensive GIS database known as Topologically Integrated Geographic Encoding and Referencing (TIGER).

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1.7: Changes in Places- Diffusion

Thus far, we have examined the Earth in a rather static fashion by learning about places and regions, how maps are created, and how geographic information is gath- ered and analyzed. However, the Earth is dynamic and constantly changing, and one of the reasons places change is because of diffusion. **Diffusion** is the spread of ideas, objects, inventions, and other practices from place to place. As people migrate or move to a new area, they bring their ideas, objects, and the like with them in a process call **relocation diffusion**. Another diffusion process involves the spreadoutward from a core area that contains the idea, cultural practice, etc. This type of diffusion is **expansion diffusion**, and this type of diffusion can occur from person-to-person contact (as with a contagious disease) or through a hierarchy, or stratified condition, where the idea might originate in a major city, spread to medium-sized cities, and so on to smaller cities (**Figure 1.13**). In Chapter 6, we will examine how religion has spread across the world through both relocation and expansion diffusion, and in Chapter 10, we will see that domesticated plants and animals have diffused extensively across the Earth.

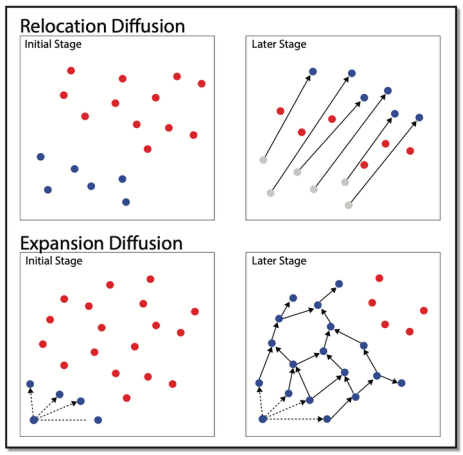


Figure 1.13 | Diffusion
Relocation and expansion diffusion.[2]
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1.8: The Human-Environment Relationship

The process of spatial diffusion can be profoundly affected by the physical terrain, such as is the case with a mountain range. Because migration and transportation over mountain ranges can be limited, diffusion can be slowed or even stopped by these physical barriers. This example is but one instance of the relationship between humans and their environment. The environment can significantly affect human activities, and vice versa, humans can shape and changethe Earth's surface and its atmosphere. Two major perspectives on the humanenvironment relationship in the field of geography are environmental determinism, which has been largely rejected, and possibilism. **Environmental determinism** is the idea that the natural or physical environment shapes and creates cultures; in other words, the environment essentially dictates culture. For example, environmental determinists in the 1920s thought that people who lived in the tropics were slothful and backward because finding food in the tropics was thought to be rather easy. In contrast, Europeans, who lived in "stimulating" climates with a sharp change in seasons were more industrious and inventive. The racist undertones of this sort of perspective is clear, but modern geographers still recognize the definitive impact of the environment on societies, as can be seen, for example, in the theorized demise of the Anasazi people in the American Southwest because of extended drought (**Figure 1.14**).

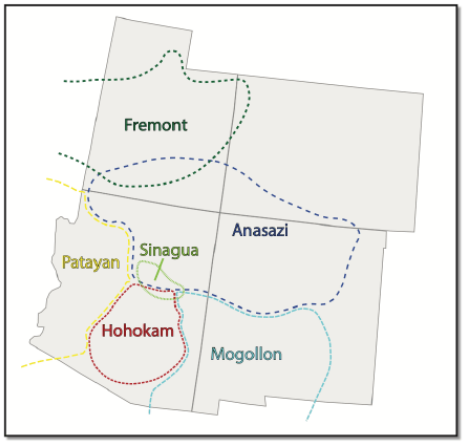


Figure 1.14 | Indigenous People of the Four Corners
Extent of Anasazi and other indigenous people, U.S. Southwest.[3]
Author | Corey Parson, User "Theshibboleth"
Source | Wikimedia Commons
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Figure 1.15 | Ski Dubai
Indoor ski slope at Ski Dubai located in the Mall of the Emirates.
Author | Filipe Fortes
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The Anasazi, who are believed to have inhabited in the Southwestern U.S. from 100 B.C. to 1300 A.D., were ill-equipped to deal with drought, compared to those who inhabit the modern-day states of New Mexico and Arizona. In the view of **possibilism**,

people can adapt to their environmental conditions, despite the limitations they might pose, and if a society has better technology, the people are better able to adapt and develop their culture in a number of possible ways. The possibilities are greater, hence, the term possibilism. One excellent example of possibilism is found in Dubai, in the United Arab Emirates. Although snow skiing in the Middle East may seem preposterous, plans are in place to build the longest indoor ski slope in the world in this city, where one ski slope already exists (**Figure 1.15**). Even technological advanced societies, however, can still be tremendously affected by the environment and have little or no control over the power of nature. The devastating impact of hurricanes in the United States, tsunamis in Japan, and fire in the United States are but a few examples (**Figures 1.16** and **1.17**).



Figure 1.16 | Colby Fire, California, 2014
Colby Fire in the San Gabriel Mountains foothills.
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Figure 1.17 | Tennessee Wildfires, 2016
An aerial shot of the wildfires in Sevier county.
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1.9: Key Terms Defined

Diffusion – spread of ideas, objects, inventions, and other practices from place to place.

Environmental determinism – the idea that the natural or physical environment shapes and creates cultures; in other words, the environment essentially dictates culture.

Expansion diffusion – the type of diffusion involves the spread outward from a core area that contains the idea, cultural practice, etc. and can occur from person-to- person contact (as with a contagious disease) or through a hierarchy.

Formal region – a region defined by homogeneity in one or a number of different characteristics.

Functional region – a region that is define by a central node or focal point to which other places in the region are connected.

Geographic information systems – combines computer hardware and software in a system that stores, analyzes and displays geographic data with a "computer mapping" capability in a system of data layers.

Geography – literally, writing about the Earth; the study of the physical and environmental aspects of the world, from a spatial perspective.

International Date Line – roughly follows 180^{o} longitude.

Latitude – the numbering system for parallels.

Longitude – the numbering system for meridians.

Meridian – half circles that connect the North and South poles.

Parallel – circles that encompass the Earth and are parallel to the equator.

Possibilism – the theory people can adapt to their environmental conditions and choose from many alternatives (possibilities), despite the limitations that the environment pose.

Prime Meridian – 0^{o} longitude, passes through Greenwich, England.

Projection – the process of transferring locations from the Earth's curved surface to a flat map.

Region – an area that shares some sort of common characteristic that binds the area into a whole.

Relocation diffusion – the diffusion process in which people migrate or move to a new area, and bring their ideas, objects, and the like with them.

Remote sensing – acquisition of data about the Earth's surface from aerial platforms such as satellites, airplanes, or drones.

Scale – ratio of the length or distance on the map versus the length or distance on the Earth or ground (actual); can also refer to the spatial extent of some phenomenon.

Site – a way to describe a location; refers to the physical characteristics, such as the topography, vegetative cover, climatic conditions, etc.

Situation – a way to describe a location by referring to the area surrounding the place, and is sometimes referred to as relative location.

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2. Fellmann, Jerome D., Arthur Getis, Judith Getis, and Jon C. Malinowski. *Human Geography: Landscapes of Human Activities*. Boston: McGraw Hill Higher Education, 2005.
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2: POPULATION AND HEALTH

Learning Outcomes

- Understand: the spatial organization of the human population
- Explain: the dynamics of population as they are reflected in fertility, morbidity, and mortality
- Describe: the relationship between population and other spatial phenomena such as living standards, agriculture, and health
- Connect: development, migration and population as a fluid self- balancing system

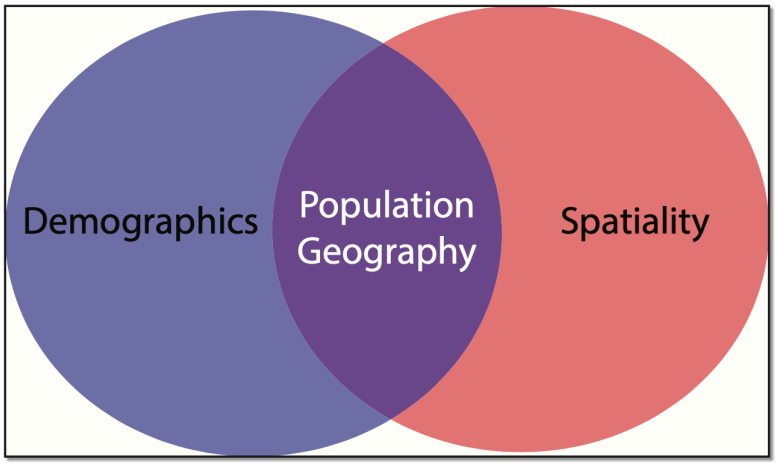


Figure 2.1 | Population Geography
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2.1: Introduction
2.2: Thinking about Population
2.3: Population and Development
2.4: Population Is Dynamic
2.5: The Demographic Transition
2.6: Measuring The Impact Of Population
2.7: Future Population
2.8: Geography of Health
2.9: Summary
2.10: Key Terms Defined
2.11: Works Consulted and Further Reading
2.12: Endnotes

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2.1: Introduction

"You are one in a million, there are 1700 people in China exactly like you."

In this chapter we will look at the human population. We'll look at the size of it, and whether it may be growing or shrinking. We'll explore the role of scale. We'll look at differences between countries. And we'll do all of this through the lens of spatiality.

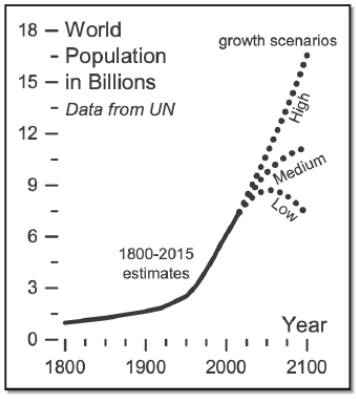


Figure 2.2 | Historical World Population
This graph depicts human population growth from the year and includes three possibilities for the future of human population.[1]
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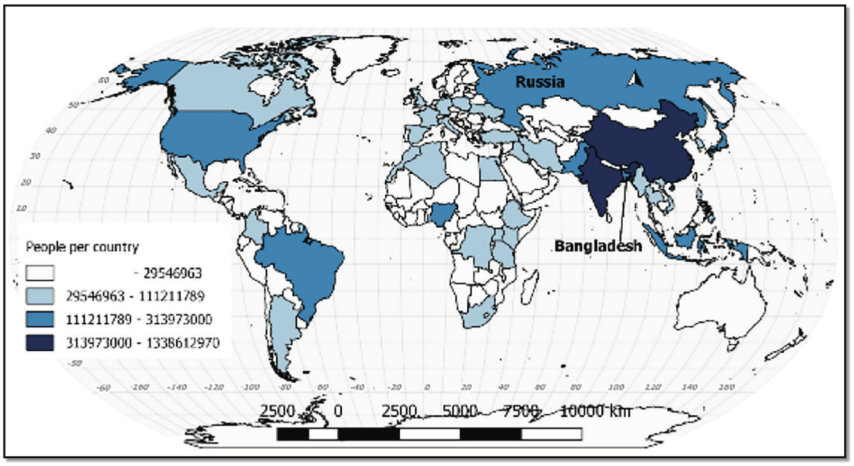


Figure 2.3 | Countries by Population 2015[1]
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The human population is at 7.5 billion, an all-time high. In the space of a few centuries it has gone from less than one billion to more than seven, with projections of several billions more in the relatively near future (**Figure 2.2**).

At the global level we can talk about population without consideration of migration, since the earth is a closed system in this regard, but when we discuss countries, it is useful to separate the **natural increase rate**—the rate of population change only accounting for births and deaths—from the effect of migration. A full discussion of migration occurs in Chapter Three. The following map shows a choropleth map of countries of the world categorized by population (**Figure 2.3**). Notice Bangladesh, the small country nearly surrounded by India. Now look at Russia.

Hold that in your mind while you look at **Figure 2.4**. Although they are vastly different in size, the population of Bangladesh is almost 20 million larger than Russia. Not only that, but the population of Russia is shrinking and the population of Bangladesh is growing!

Rank	Country	Population as of July 2016
1	China	1,382,323,332
2	India	1,326,801,576
3	Unites States	324,118,787
4	Indonesia	260,581,100
5	Brazil	209,567,920
6	Pakistan	192,826,502
7	Nigeria	186,987,563
8	Bangladesh	162,910,864
9	Russia	143,439,832
10	Mexico	128,632,004

Figure 2.4 | Top Ten Countries by Population[2]
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As **Figure 2.3** showed there are some spatial patterns that present themselves, but there is a great deal of noise in the signal. Many of the countries with large populations are physically large themselves. Places like China and India have had comparably large populations for a long time. Very often, explorations of population growth are short circuited by discussions of religion or levels of development. Although religion and development are not irrelevant, they are not as important as is often assumed. Individual characteristics have come to mean less than they have in the past.

The most obvious characteristic that often leads to higher population growth is poverty. There are many reasons for this, two of which were mentioned previously, but there are others. The effect of infant mortality drives some people to have a large number of children in the forlorn hope that some of them survive to adulthood. Another is the effect of migration, which can boost incomes by sending some population to other countries to work, but depopulate the places that are sending migrants.

In almost all countries, the rate of population growth has slowed. Two countries, China and India, account for 36 percent of the world's population. Any change in these two places will have a large impact on the values for the entire planet. According to the World Bank for 2013, the population of China is growing .5 percent per year, India is growing 1.2 percent per year, the United States is growing by .7 percent per year, and Indonesia is growing by 1.2 percent per year. The rates for all these countries have been falling for decades, even Indonesia and India.

The populations of the countries of Japan, Russia, Germany, Spain, and Ukraine are all shrinking whereas the populations of Nigeria, the Democratic Republic of Congo, Iraq, and Kenya are expanding rapidly (**Figure 2.5**). In developed countries, population decline has implications for social programs such as retirement, which is funded by a shrinking pool of workers. In very advanced societies, a worker shortage is driving rapid development of robotics. In poorer places rapid population growth can trigger large-scale migration and social disruption.

Why is it so difficult to find one characteristic that explains the population dynamics of a particular country? Because places matter. Each place is a unique combination of factors, and their interactions.

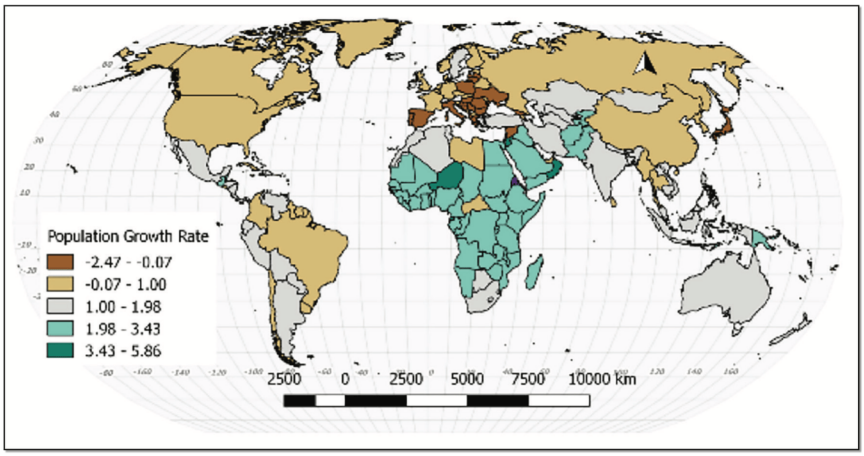


Figure 2.5 | Countries by Population Growth Rate 2015[3]
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2.2: Thinking about Population

2.2.1 The Greeks and *Ecumene*

No discussion of population is complete without a brief history of the philosophical understanding of population. This discussion starts as it often does, with the ancient Greeks. The Greeks considered that they lived in the best place on Earth. In fact, they believed in the exact center of the habitable part of the Earth. They called the habitable part of the Earth **ecumene**. To the Greeks, places north of them were too cold, and places to the south were too hot. Placing your own homeland in the center of goodness is common; many groups have done this. The Greeks decided that the environment explained the distribution of people. To an extent, their thinking persists, but only at the most extreme definitions. Many places that the Greeks would have found too cold (Moscow, Stockholm) too hot (Kuwait City, Las Vegas) too wet (Manaus, Singapore) or too dry (Timbuktu, Lima) have very large populations.

2.2.2 Modern Ideas About Population

Thomas Malthus (1766-1834) *"Population, when unchecked, increases in a geometrical ratio."* [4]

Ester Boserup (1910-1999) *"The power of ingenuity would always outmatch that of demand."* [5]

Modern discussions of population begin with food. From the time of Thomas Malthus (quoted above), modern humans have acknowledged the rapidly expanding human population and its relationship with the food supply. Malthus himself was a cleric in England who spent much of his time studying political economy. His views were a product not only of his time, but also of his place. In Malthus' case his time and place were a time of social, political, and economic change.

Karl Marx (1818–1883) took issue with Malthus' ideas. Marx wrote that population growth alone was not responsible for a population's inability to feed itself, but that imbalanced social, political, and economic structures createdartificial shortages. He also believed that growing populations reinforced the power of capitalists, since large pools of underemployed laborers could more easily be exploited.

The post-World War II period saw a flurry of books warning of the dangers of population growth with books like Fairfield Osborn's *Our Plundered Planet* and William Vogt's *Road to Survival*. Perhaps most explicit was Paul and Anne Ehrlich's *The Population Bomb*.

These books are warnings of the dangers of unchecked population growth. Malthus wrote that populations tend to grow faster than the expansion of food production and that populations will grow until they outstrip their food supplies. This is to say that starvation, war, and disease were all predictions of Malthus and were revived in these Neo-Malthusian publications. Some part of the current conversation of environmentalism regards limiting the growth of the human population, echoing Malthus.

A common theme of these books is that they all attempt to predict the future. One of the advantages we have living centuries or decades after these books is the opportunity to see if these predictions were accurate or not. Ehrlich's book predicted that by the 1970s, starvation would be widespread because of food shortages and a collapse in food production. That did not happen. In fact, the global disasters predicted in all these books have yet to arrive decades later. What saved us?

Perhaps nothing has saved us. We have just managed to push the reckoning a bit further down the road.

If we have been saved, then the assumptions inherent in the predictions were wrong. What were they?

1. Humans would not voluntarily limit their reproduction.
2. Farming technology would suddenly stop advancing.
3. Food distribution systems would not improve.
4. Land would become unusable from overuse.

All of these assumptions have proven to be wrong, at least so far. Only the most negative interpretation of any particular factor in this equation could be accepted.

One the other hand, Ester Boserup, an agricultural economist in the twentieth century, drew nearly the opposite conclusion from her study of human population. Her reason for doing so were manifold. First, she was born one and one -half centuries later, which gave her considerably more data to interpret. Second, she didn't grow to adulthood in the center of a burgeoning empire. She was a functionary in the early days of the United Nations. Third, she was a trained as an economist, and finally, she was a woman. Each one of these factors was important.

2.2.3 Let's Investigate Each One of These Assumptions

In preindustrial societies, children are a workforce and a retirement plan. Families can try to use large numbers of children to improve their economic prospects. Children are literally an economic asset. Birth rates fall when societies industrialize. They fall dramatically when women enter the paid workforce. Children in industrialized societies are generally not working and are not economic assets. The focus in such societies tends to be preparing children through education for a technologically-skilled livelihood. Developed societies tend to care for their elderly population, decreasing the need for a large family. Developed societies also have lower rates of infant mortality, meaning that more children survive to adulthood.

The increasing social power of women factors into this. Women who control their own lives rarely choose to have large numbers of children. Related to this, the invention and distribution of birth control technologies has reduced human numbers in places where it is available.

Farming technology has increased tremendously. More food is now produced on less land than was farmed a century ago. Some of these increases are due to manipulations of the food itself—more productive seeds and pesticides, but some part of this is due to improvements in food processing and distribution. Just think of the advantages that refrigeration, freezing, canning and dehydrating have given us. Add to that the ability to move food tremendous distances at relatively low cost. Somehow, during the time that all these technologies were becoming available, Neo-Malthusians were discounting them.

Some marginal land has become unusable, either through desertification or erosion, but this land was not particularly productive anyway, hence the term marginal. The loss of this land has been more than compensated by improved production.

At this point, it looks like a win for Boserup, but maybe it isn't. Up to this point we have been mixing our discussions of scale. Malthus was largely writing about the British Isles, and Boserup was really writing about the developed countries of the world. The local realities can be much more complex.

At the global scale there is enough food, and that has been true for decades. In fact, many developed societies produce more food than they can either consume or sell. The local situation is completely different. There are developed countries that have been unable to grow food to feed themselves for over a century. The United Kingdom, Malthus' home, is one of them. However, no one ever calls the U.K. overpopulated. Why not? Because they can buy food on the world market.

Local-scale famines happen because poorer places cannot produce enough food for themselves and then cannot or will not buy food from other places. Places that are politically marginalized within a country can also experience famines when central governments choose not to mobilize resources toward the disfavored. Politically unstable places may not even have the necessary infrastructure to deliver free food from other parts of the world. This is assuming that food aid is even a good idea (a concept revisited in the agriculture chapter). These sorts of problems persist to this day and they have an impact of population, although often in unpredictable ways, such as triggering large-scale migration or armed conflict.

To recap, at the global level, population has not been limited by food production. However, people do not live at the "global level." They live locally with whatever circumstances they may have. In many places the realities of food insecurity are paramount.

Although discussions of population tend to start with food, they cannot end with it. People have more needs than their immediate nutrition. They need clothing and shelter as well. They also have desires for a high standard of livingheating, electricity, automobiles and technology. All of these needs and desires require energy and materials. The pressure put on the planet over the last two centuries has less to do with the burgeoning population and more to do with burgeoning expectations of quality of life.

2.2.4 Scale and the Ecological Fallacy

Numbers can be a little bit misleading. You may read that the "average woman" in the United Sates has 1.86 births and wonder, "What does this tell me about a particular woman?" And the answer is . . . it tells you nothing. Remember that number is an aggregate of the data for the entire country, which means it only works at that scale; it only tells you about the country as a

whole. The **Ecological Fallacy** is the idea that statistics generated at one level of aggregation can be applied at other levels of aggregation.

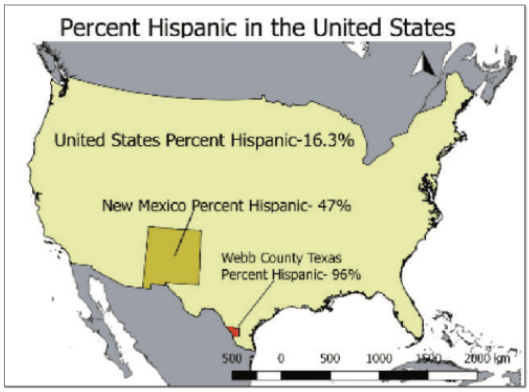


Figure 2.6 | Percent Hispanic aggregated to the County, State, and National level[6]
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Similarly, one of the biggest problems with maps is that they can make us think that a place is the same (homogenous)within a border. We see a country like the United States, and it has one color for the entire area on the map and we tell ourselves that the U.S. is just one place. And it is. But it's made of many smaller places. It's fifty states, and those states combined have 3144 counties (and county-like things). And each one of those things is a level of aggregation. It looks a bit like this (**Figure 2.6**).

Webb County only uses the data from one county. New Mexico uses the data for its 33 counties, and the U.S. uses the data for all its counties. Each level of aggregation has its calculated value. They are all different. And they still tell younothing about an individual person.

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2.3: Population and Development

We can return to the diverging ideas of Malthus and Boserup. Does population growth spur innovation or starvation? Is population growth good or bad?

Population growth has spurred innovation, but interestingly enough, not usually in the places that are experiencing that growth right now. If population growth is dramatically higher than economic growth, the result will not be new technologies and paradigm shifts; it will be emigration or civil unrest.

A country like Russia with a large land mass and a relatively small population may be underpopulated compared to its neighbor, China (**Figure 2.7**). Having large tracts of uninhabited land has historically invited the attention of outsiders. Underpopulation is not normally the problem that most people would associate with population. When we think of population problems, we generally think of overpopulation. What is overpopulation? Like so many other questions we have asked so far, the answer depends. **Overpopulation** means an inability to support a population with the resources available.

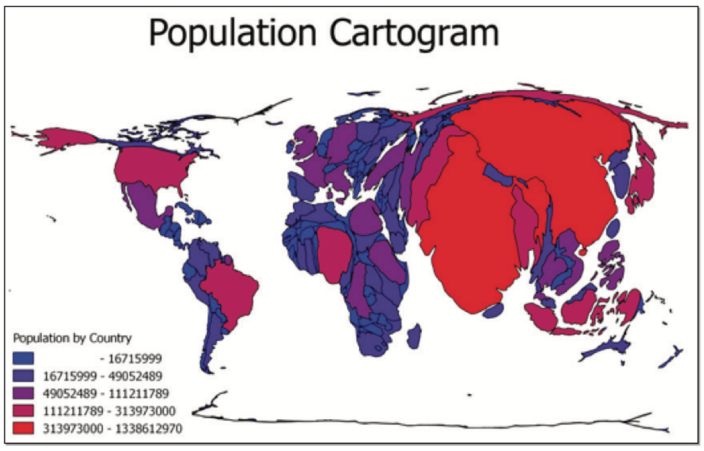


Figure 2.7 | Population Cartogram[7]
This population cartogram takes the borders of each country and adjusts the size of the country by the size of the population. What happens to China and India? What happens to Canada and Russia? What does this tell you?
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2.4: Population Is Dynamic

Although the world's population is still growing, the overall growth has slowed and the growth has become very uneven. Some places are still growing very rapidly. Others are growing much more slowly and some are shrinking in terms of population. We can compare differences between places using a series of different rates. Rates are ratios that divide the occurrence of a phenomenon with the population hosting the phenomenon. For example, **crude birth rate** is calculated as the number of births per 1000 people in a particular place in a particular year. The **crude death rate** is similar. It is calculated as deaths per 1000 people in a particular place in a particular year. These numbers can be used to compare places, but they have great limitations.

For one thing, they are aggregated variables describing the entire country; they tell you nothing about individuals within the country. Just because the average woman in a country has 2.3 children tells you nothing about a particular woman. The ecological fallacy is the idea that aggregated data tell you anything about individuals. It does not because it cannot. Once the data are lumped together, they lose their individual characteristics.

The rates do not necessarily relate to one another, either. The crude birth rate doesn't tell you anything about the average number of children born per woman, at what stage in their lives women tend to have children, etc. The crude death rates don't separate deaths of elderly people from deaths of infants. High rates of death are often found in developed societies; in many ways it's a sign of development, since developed countries tend to have older populations. A high rate of infant mortality (children under 1 year of age) is a near-universal sign of underdevelopment. The countries with the highest crude birth rates tend to be low income (**Figure 2.8**).

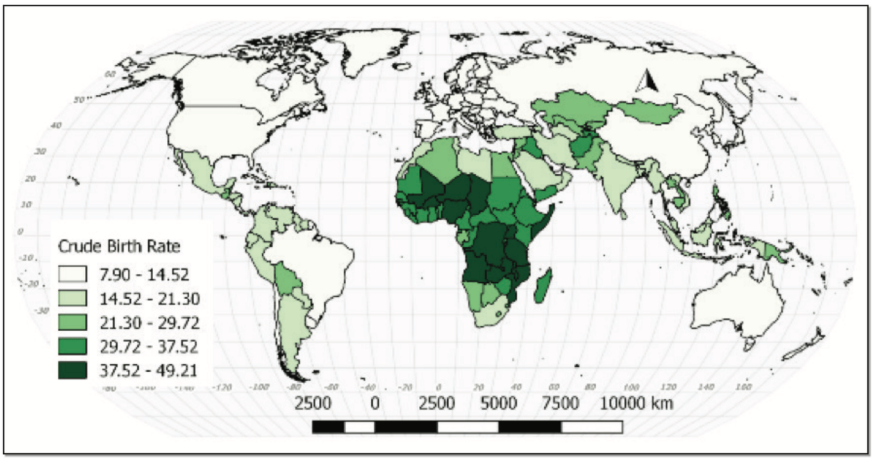


Figure 2.8 | Crude Birth Rate 2015[8]
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The crude death rate is more nuanced (**Figure 2.9**). Some countries on the map, for example, Chad, have a high crude death rate due to a high rate of infant and child mortality. Russia, on the other hand, has a rapidly aging population and a partially collapsed social security network.

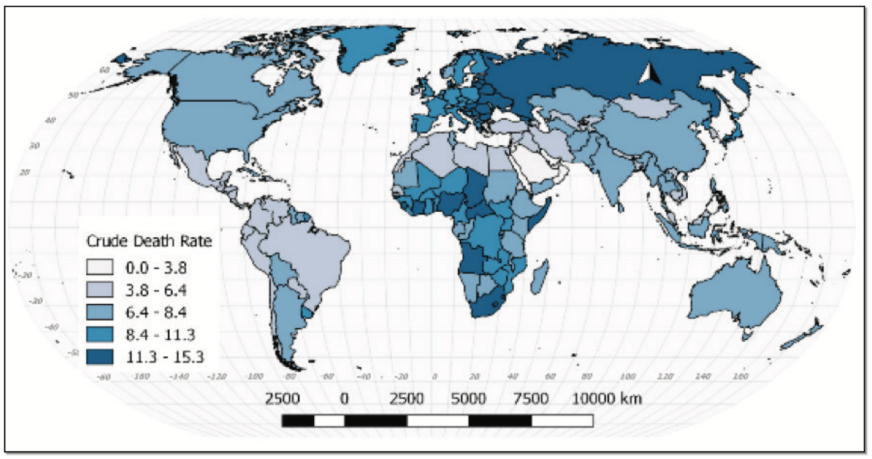


Figure 2.9 | Crude Death Rate 2015[9]
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The **replacement level** of a population refers to the number of births that are necessary to offset deaths. This is often referred to in terms of average fertility of women. In modern societies, on average, women need to produce 2.1 children in a lifetime to keep a place demographically stable. This number is derived by counting a mother and her partner, and accounts for those who never reproduce.

Places with a fertility rate below 2.1 will shrink over time. Those places above that will grow, and those well above that will grow quickly (**Figure 2.10**). The preceding graphic demonstrates that in the same way that many places are growing very rapidly, many places are at or below replacement. The United States is below replacement. It is demographically buoyed by immigration.

What kinds of places are growing fastest? These are places that are poor or economically or politically unstable. This may seem counterintuitive. Why would people have children in places that are already so poor? Remember that individual families have children. Children can seem like a mechanism for surviving bad situations. What kinds of places are declining? This is more complicated, but in general the more educated and empowered the female population is, the lower the birth rate. This isn't a perfect, linear relationship, but it's useful as a start. Why is there so much variability? Because places matter. Uganda has a government advocating population growth, while Afghanistan and Somalia have little governance at all. Russia and Australia have similar fertility rates, and few other similarities.

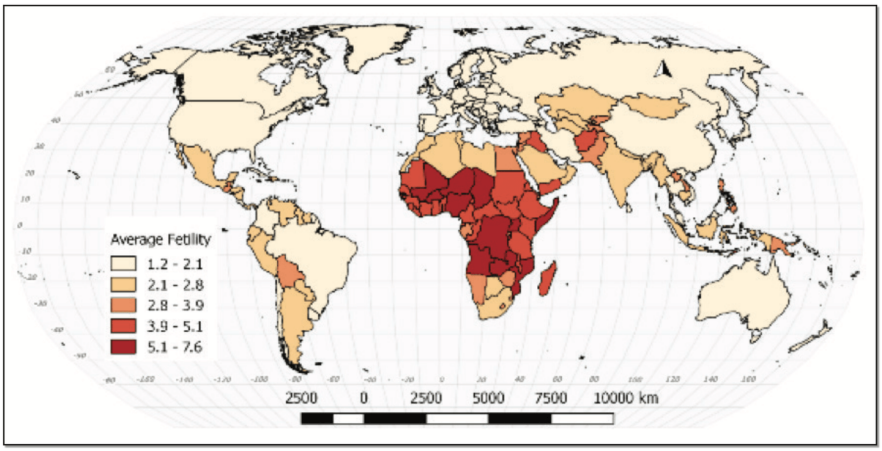


Figure 2.10 | Countries by Average Fertility 2015[10]
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General measurements of population are useful, but often if is useful to know the age and gender structure of a population. This is shown using a population pyramid. A **population pyramid** breaks the population into groups sorted by age ranges, called

cohorts, as well as by sex. The resulting shape tells you a great deal about the population dynamic of the country. If the shape is actually a pyramid, then the country has a high birth rate and a high death rate. Countries with stable populations look like a column. Some countries even have their greatest population in the older cohorts with comparably few young people. **Figure 2.11** shows some examples of current populations. Some examples of estimated future populations are shown in **Figure 2.12**.

First, it is important that you understand that all these numbers are estimates. Current population numbers are good enough for general comparison. As you can see, the differences between places becomes more pronounced as we look toward the future. The world population increases by over two billion people, but what is interesting are the shifting dynamics between countries. China shrinks by more than 30 million, the US grows by 64 million, and Nigera poor Saharan countrygrows by 52 million, more than double its current size! One of the most useful measures of population is **doubling time**, which is how much time it would take at current levels of population growth for a population to double. According to **Figure 2.2**, most of human history saw very slow growth with doubling times measured in centuries. During the 19th and 20th centuries, doubling time at the global level fell to as short as 35 years.

This has numerous implications. At the global level, those extra billions will need food and water, houses and clothing. That is to say that they will require resources. They will also have desires that require even more materials and energy expenditure. In places like Niger, this will be very difficult, if not impossible, to meet.

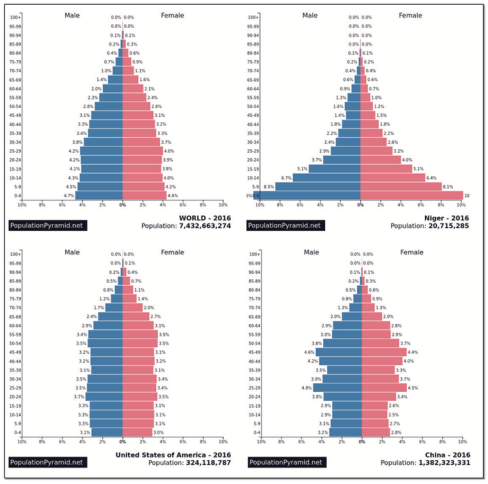


Figure 2.11 | Population Pyramids for select countries 2016
Authors | Martin de Wulf, David Dorrell
Source | PopulationPyramid.net
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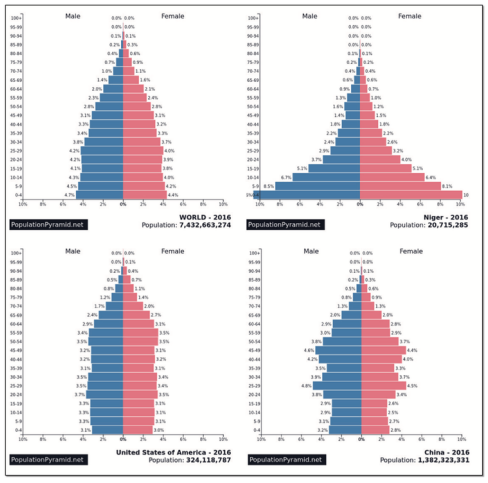


Figure 2.12 | Population Pyramids for select countries 2050
Authors | Martin de Wulf, David Dorrell
Source | PopulationPyramid.net
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In places like China, a completely different problem presents itself. These populations are both shrinking and aging. **Life expectancy**, the average lifespan in a country, has been increasing for decades in developed and some developing countries. At the same time, birth rates have fallen for a variety of reasons. This means that as time passes, the elderly portion of the population has grown. Many countries will see their populations age until large percentages will be unable to work. Societies for the past several centuries have prepared themselves for population growth, and much of modern society is predicated on it. Population growth is what has paid for social security for the elderly. Few places have prepared themselves for fewer workers in the future (although robotics may address this problem). This change will not happen at once, but the effects will be tremendous.

Another characteristic that must be acknowledged is **population momentum**. When much of your population is older than 45, it isn't reasonable to expect that population will continue to grow quickly. Countries with young populations should expect that their populations will grow when the large pool of young people have children of their own.

This map shows the tremendous differences in life expectancy from one country to another (**Figure 2.13**). In some places, people tend to live into their ninth decade. In others, they are unlikely to make it into their sixth.

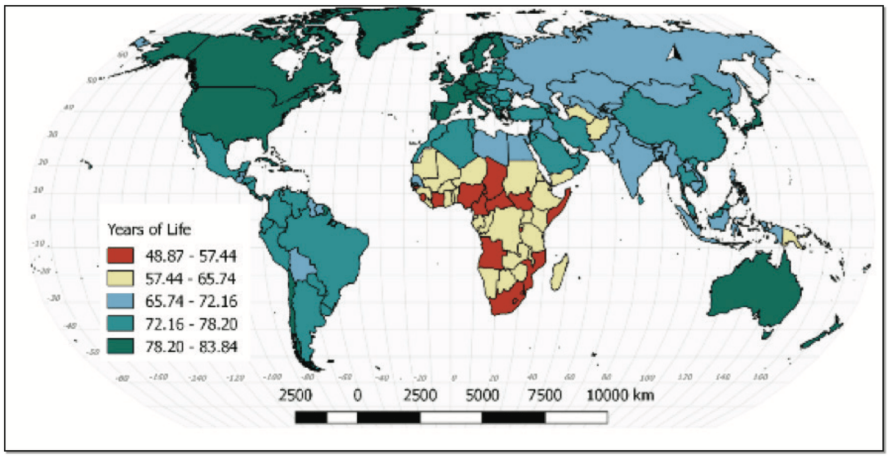


Figure 2.13 | Life Expectancy 2015[11]
Author | David Dorrell
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The **dependency ratio** is simply the number of people within a society who do not work compared to the number who do work. There are two main components of the dependency ratiochildren under 15 years old and the elderly over 65 years old, although the degree to which either group is dependent is variable (**Figures 2.14** and **2.15**). Children need care and schooling, but generally produce little of economic value. Elderly populations can be too infirm to work and are the part of the population with the highest medical costs. Where does the wealth come from to take care of these two groups? It comes from the people working and producing wealth. If the dependency ratio is high, then each worker can be responsible for a large number of dependents and less wealth will be left for the workers.

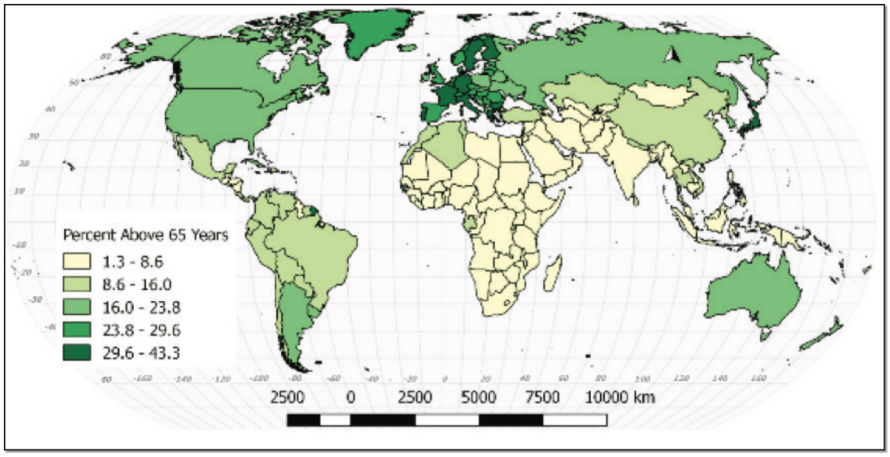


Figure 2.14 | Elderly Dependency Ratio 2015[12]
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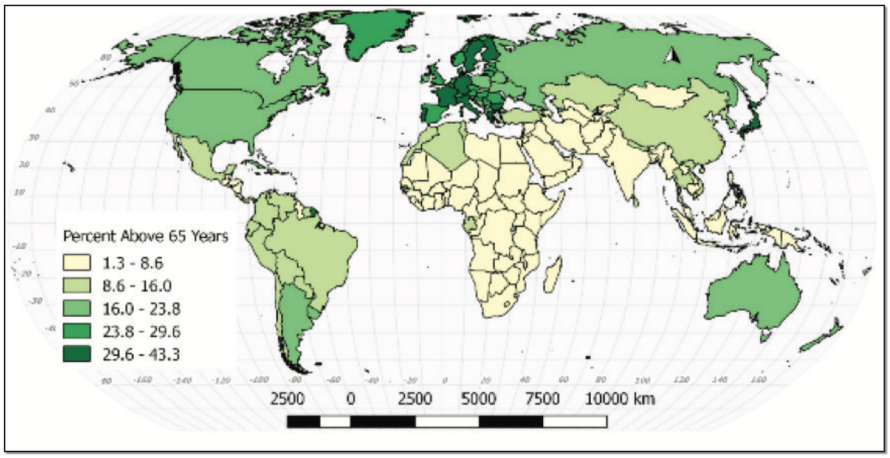


Figure 2.15 | Youth Dependency Ratio 2015[13]
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Although the dependency ratio is used to compare places, this particular ratio can be somewhat misleading. In many less developed places, children are not dependent. They are not in school and they are employed. They are not consuming a family's resources, but are instead contributing to them. In other places, the elderly may still be in the workplace. The dependency ratio informs decisions regarding the future. Will a country need more schools or assisted living centers. What does this mean for retirement or pensions? Perhaps more importantly, will the supply of workers increase or decrease? Comparing China, Niger, and the U.S. shows you that different places have different options and challenges.

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2.5: The Demographic Transition

Geographers have modeled the population dynamics of places for decades. The result of these models is called the **Demographic Transition** model (**Figure 2.16**). It describes a series of stages that societies pass through as they develop and industrialize. These models represent the general demographic conditions that countries experience.

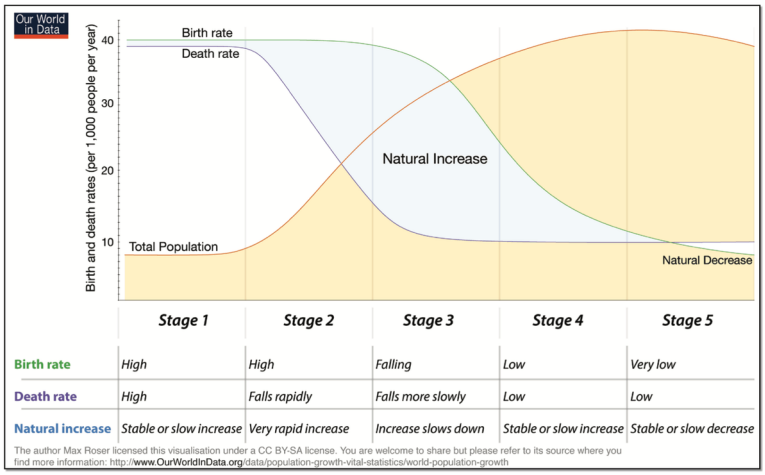


Figure 2.16 | Demographic Transition Model
Author | Max Roser
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In **Stage One**, which is pre-modern, birth rates are high, and death rates are high. As a result of these two factors, the population remains low, but stable.

By **Stage Two** as the society industrializes food becomes more steadily available, water supplies get cleaner and sanitation and medical care improves. Death rates fall, particularly infant mortality rates. However, there is a lag in the decline in birth rates. It takes time for people to adjust to the new reality of urban industrial life. Since the birth rate is still high and the death rate is low, population grows very rapidly.

Stage Three is characterized by a falling birth rate as the society begins to find an equilibrium between birth and deaths. The birth rates are still higher than death rates and population continues to increase. This continuation of population increase is known as population momentum. The end of Stage Three is characterized by the general balance between births and deaths.

Stage Four shows a return to population stability, but at a much greater number of people.

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2.6: Measuring The Impact Of Population

Remember the earlier comparison of Russia and Bangladesh? This is the section where we discuss the different ways of calculating the pressure that populations put onto the land that they inhabit. You'll recall that we began by looking simply at people per country. This is a good way to start, but the limitations are fairly obvious. Countries that are physically larger can hold more people. We need to use a method that changes from a measure of overall population to some kind of per capita measure. There are many of these and each has its merits.

Arithmetic density is the simplest one. It is simply the number of people divided by the area of the country. The area is usually measured in square kilometers, since most of the world uses the metric system (**Figure 2.17**).

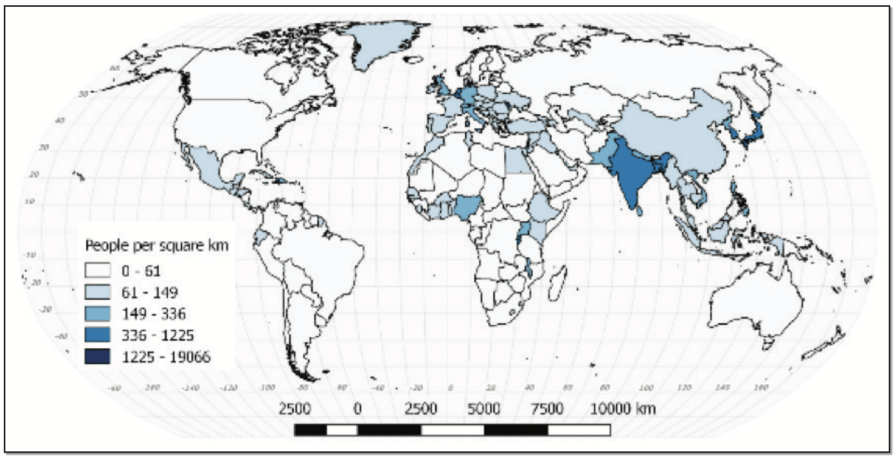


Figure 2.17 | Arithmetic Density 2015[14]
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Physiological density has the same numerator (population), but the denominator is different. Instead of using all the land in a country, it only accounts for arable (farmable) land (**Figure 2.18**). Places that are not used for agriculturedeserts, lakes, mountaintops and similar places are subtracted from the land total. This is useful for demonstrating how much pressure is being put on the farmland that is available. Be aware that food that is gathered or hunted from nonagricultural land is not considered in this number.

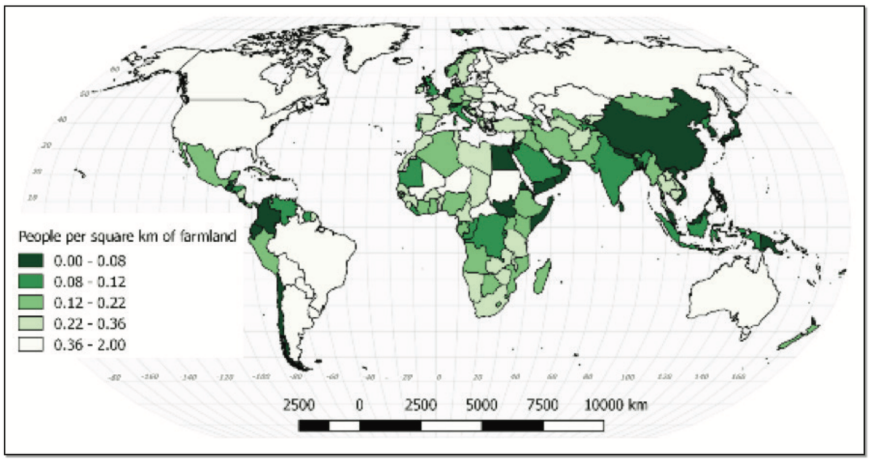


Figure 2.18 | Physiological Density 2015[15]
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Agricultural density has the same denominator as physiological density, but has a different numerator. Instead of using the entire population, it only uses farmers (**Figure 2.19**). This provides a number that is a good measure of development, or rather it's a good measure of underdevelopment. Developed countries have mechanized agriculture and few farmers per capita. Each farm tends to be large in order to generate a sufficient income. Places with high agricultural densities have more farmers per hectare, meaning that farms will likely produce less revenue. Of course, an underlying assumption of this number is the idea that people are growing food to earn a living. If they are eating the produce directly, outside the cash economy, then the comparison is less valid.

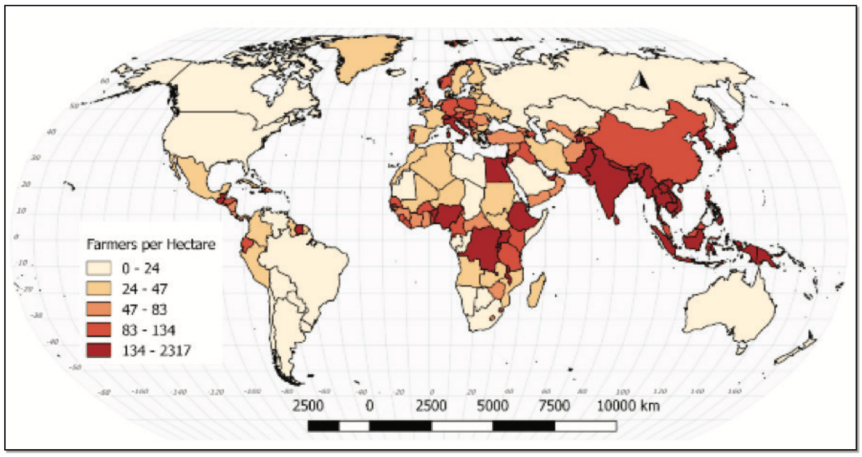


Figure 2.19 | Agricultural Density 2015[16]
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Related to food production is the concept of **carrying capacity**. Carrying capacity is simply how many people can live from a given piece of land. However, it's not really that simple. Carrying capacity is not static throughout time. Not only do environmental characteristics change (due to desertification, for example) but technology changes as well. The carrying capacity of land in wealthy developed countries has expanded tremendously due to the application of technology. These technologies could be something as simple as irrigation ditches to something as complex as genetic modification of the plants and animals themselves. Carrying capacity is snapshot taken at a particular time.

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2.7: Future Population

When we looked at the population pyramids we considered both the current population conditions and the projected population pyramids. When we looked at the first graph in the chapter, it didn't stop at the current year. It provided three different estimates of the near future. Estimating future populations is important, both at the global level and the national level, but also at the local level as well. Societies large and small attempt to plan their futures in terms of resource allocation and economic development. Population projections are difficult. They attempt to take current circumstances and use them to plot the likeliest future.

The problem is that the future may not be like the present. A disease that is suppressing fertility may be cured. The climate may change more than expected. We could experience another world war. Any number of unexpected large scale events could occur that completely invalidate the reasoning behind a projection. Nicholas Talib calls these Black Swan events. They are things that you don't know about until you do know about them. Irrespective projections will be made because they are necessary.

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2.8: Geography of Health

Although the health of populations has been considered in most sections of this chapter, there are some aspects that can be addressed most appropriately on their own. The geography of health or medical geography is the study sickness or health across space. In the same way that it is possible to compare places by their population characteristics, it is possible to compare places by their health characteristics. Also in the same way that societies tend to pass through the stages of demographic transition, they also tend to pass through an epidemiological transition. The demographic transition and epidemiological transition are somewhat related. The improvements in food supply and better sanitation that lead to larger populations also lead to healthier populations. They are not exactly the same thing however. Epidemiology is the study of diseases themselves and the way that they function. The epidemiological transition is a way of representing the relationship between development and disease. In less developed places, infant mortality is high (**Figure 2.20**) and infectious disease is the greatest threat. In more developed societies, the health threats tend to be chronic afflictionscancer, diabetes, or heart disease. One of the reasons for the difference between the developed and less developed places is the fact that in developed countries people tend to live longer. Countries in which people die in their forties will not have a problem with Alzheimer's disease.

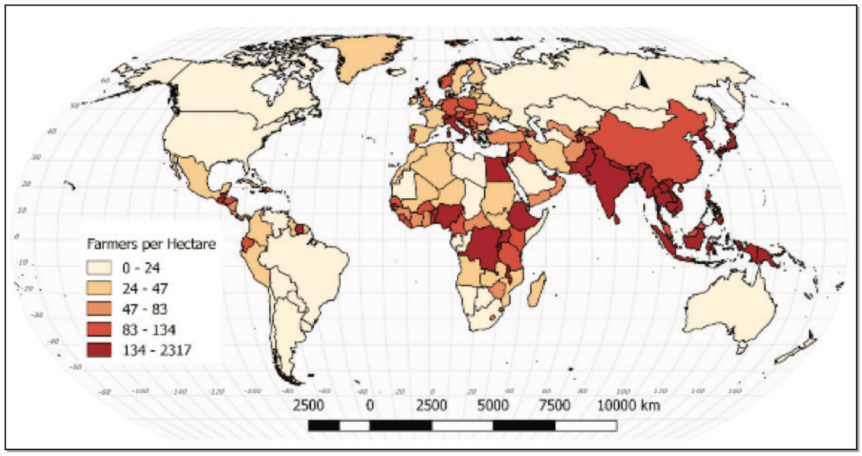


Figure 2.20 | Infant Mortality 2015[17]
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Mortality refers to death and **morbidity** refers to sickness. We can look at different rates of mortality and morbidity to gain some insight into the health of a population.

Diabetes was once related to development, but the relationship is weakening (**Figure 2.21**). As obesity becomes a greater problem in developing countries, so does diabetes.

On the other hand, malaria is a disease of poor countries, or at least it is a disease of poor places (**Figure 2.22**). The poorer parts of developing countries will likely have malaria problems, while the wealthier parts may not.

One of the changes that has occurred in medical geography is that the differences between the developed and less developed countries have been narrowing. Obesity was once considered fully within the sphere of developed world problems, but the obesity crisis has diffused into many parts of the developing world now. In the same way, infectious diseases such as HIV and Hepatitis C have become problems in developed countries.

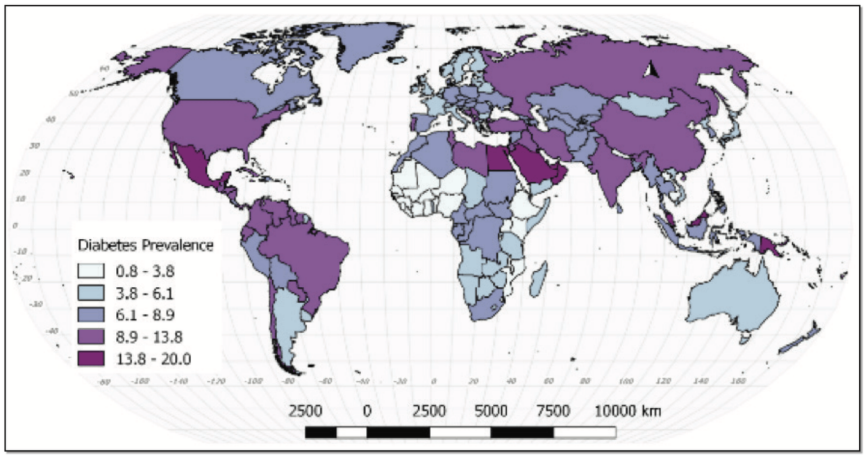


Figure 2.21 | Diabetes Morbidity 2015[18]
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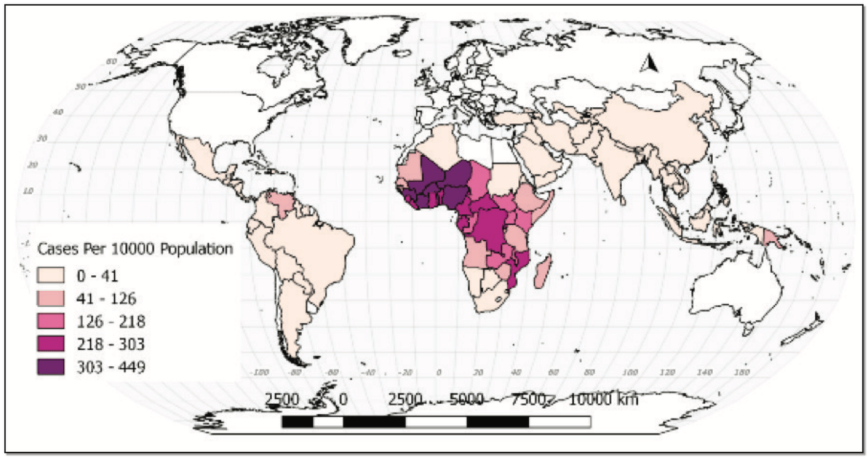


Figure 2.22 | Malaria Incidence 2015[19]
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Due to the work of numerous organizations, a number of diseases in many parts of the world have been reduced and some have been eradicated. Smallpox no longer exists in the wild and Dracunculiasis (Guinea worm) has gone from millions of cases thirty years ago to single digits in recent years. Other diseases have been dramatically reduced. Polio once infected millions of people per year across the world, but through vaccination programs, its range has been reduced to just two countries.

There is now even a category of diseases known as re-emerging diseases. These are diseases that were previously thought to be eradicable but are now returning to populations that had previously been largely free of them. Re-emerging diseases are diseases like tuberculosis and diphtheria that had been declining for decades that have begun to increase in prevalence.

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2.9: Summary

The human population is growing, but not as much as it has in the recent past. The growth is not even, with some places growing rapidly and other places losing population. Those places growing fastest tend to be poor. The effect of population growth is place-bound as well; highly developed places with low populations often use more resources than less developed places with more people. The impact of population can be measured in a number of ways, with each measurement providing a small insight into the dynamics of the human population. Uneven population growth and poverty are the two most important factors underlying the subject of our next chapter, Migration.

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2.10: Key Terms Defined

Agricultural density: The number of farmers per unit area of arable land.

Arithmetic density: The population of a country divided by its total land area.

Carrying capacity: The maximum population size that the environment can sustain indefinitely.

Cartogram: map in which some thematic mapping variable—such as population—is substituted for land area or distance.

Cohort: A subset of a population, generally defined by an age range.

Crude birth rate: Total number of live births per 1,000 of a population in a year.

Crude death rate: Total number of deaths per 1,000 of a population in a year.

Demographic transition: The transition from high birth and death rates to lower birth and death rates as a country or region develops.

Dependency ratio: The ratio of those not in the labor force (generally ages 0 to 14 and 65+) and those in the labor force.

Doubling time: The period of time required for a population to double in size.

Ecological Fallacy: Characteristics about the nature of individuals are deduced from inference for the group to which those individuals belong.

Ecumene: The Greek concept of the habitable part of the Earth

Infant mortality rate: The number of infant deaths that occur for every 1,000 live births.

Life expectancy: The number of years that one is expected to live as determined by statistics.

Morbidity: The state of being diseased or unhealthy within a population.

Mortality: The number of people who have died within a population.

Overpopulation: A condition in which a place has outstripped its ability to provide for its own needs.

Physiological density: The number of people per unit area of arable land.

Population density: A measurement of population per areal unit, such as the world, a region, a country or other area.

Population momentum: The tendency for population growth to continue due to high concentrations of people in the childbearing years.

Population projection: An estimate of future population.

Population pyramid: Graphical illustration that shows the distribution of various age groups in a population.

Rate of natural increase: The crude birth rate minus the crude death rate. This rate excludes the effect of migration.

Replacement level: The average number of children a woman needs to have to ensure the population replaces itself. The number is roughly 2.1.

Total fertility rate: The average number of children that would be born to a woman over her lifetime.

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2.12: Endnotes

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15. Data source: World Bank Health Nutrition and Population Statistics. databank. worldbank.org/data/glossarymetadata/source/all/concepts/series
16. Data source: World Bank Health Nutrition and Population Statistics. databank. worldbank.org/data/glossarymetadata/source/all/concepts/series
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19. Data source: World Bank Health Nutrition and Population Statistics. databank. worldbank.org/data/glossarymetadata/source/all/concepts/series Data source: World Bank Health Nutrition and Population Statistics. databank.worldbank. org/data/glossarymetadata/source/all/concepts/series
20. Data source: World Bank Health Nutrition and Population Statistics. databank. worldbank.org/data/glossarymetadata/source/all/concepts/series
21. Data source: World Bank Health Nutrition and Population Statistics. databank. worldbank.org/data/glossarymetadata/source/all/concepts/series

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3: MIGRATION

Learning Outcomes

- Understand: definitions of migration and associated significant terms
- Explain: the geographic patterns of migration within and between countries as influenced by economic, socio-cultural, political, and environmental factors in the contemporary historical period
- Describe: the general relationship between demographic factors and migration across time
- Connect: factors of globalization to recent trends in migration

3.1: Migration and Geography- A (Very) Brief History

3.2: Definitions and Data

3.3: Global, National, Regional, and Local Patterns

3.4: Demographic Transition, Migration, and Political Policy

3.5: Culture, Globalization, and Economics of Migration in The Twenty-First Century

3.6: The Future of Human Movement and Conclusion

3.7: Key Terms Defined

3.8: Works Consulted and Further Reading

3.9: Endnotes

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3.1: Migration and Geography- A (Very) Brief History

For most of human history, people did not move very far away from where they were born. **Migration** (a permanent move to a new location) over long distances was so dangerous, unpredictable, and risky that humans remained in a relatively small area of Eastern Africa until only about 65,000 years ago. At that time, some brave soul (or most likely many) set off on an adventure that would take tens of thousands of years to complete – the mass movement of humans to all corners of the **ecumene** (inhabited areas of earth). Scientists continue to disagree about the specific time periods (some studies suggest that the big move started 120,000 years ago!) and reasons that our ancestors finally decided to take flight, but significant evidence suggests that periodic climate change may have played a major role. The earliest evidence of human remains in the North America dates to approximately 13,000 years ago, when humans are hypothesized to have crossed an ice bridge from Eastern Russia into Alaska during the last Ice Age, before spending the next several thousand years spreading throughout North and South America and The Caribbean. Regardless of the time period, modern humans have been on the move for a very long time—a trend that has accelerated in recent years owing to cheap transportation and easier access to information by potential migrants.

Migration is also central to the formation of the world's largest religions. The spread of Christianity, for example, was facilitated by the massive movement of people within the Roman Empire along well-traveled transportation routes connecting modern Israel and Palestine with Turkey, Greece, Italy, and other parts of the empire where new ideas, cultures and beliefs were shared. Many of the most significant stories from Christianity and Judaism recount the experience of "foreigners" (sojourners) who are traveling to new lands. Similarly, Islam's prophet migrated from his city of birth, Mecca, to Medina in the seventh century, and religious ideas were spread as soldiers, merchants, and traders moved across North Africa and eventually into Europe and to Southeast Asia. Migration, in many ways, has been the most impactful of all human activities on the planet. Had humans never taken the journey, we all would still be in East Africa, just daydreaming about the rest of the earth! To learn more about humans' earliest journeys, you can click the link below: https://psmag.com/news/why-and-when-did-early-humans-leave-africa

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3.2: Definitions and Data

Migration can be interregional (between regions), intraregional (within a region), or international (across national borders). Those moving in are **immigrants**, and those moving out are **emigrants**. **Net migration** is the difference between the number of immigrants and the number of emigrants in any given year. The United Nations provides data and analysis on immigration and emigration annually, but such figures depend largely upon government sources that are more reliable in some cases than in others. For example, the United States (US) maintains databases on immigrants of all types including **guest workers** (those given permission to enter the country legally for a specific job and for a specific period of time), students, tourists, **asylum seekers** (those seeking sanctuary from political, religious, gender, or ethnic persecution), and **undocumented migrants** (those inside of a country without proof of residency). However, the US does *not* maintain or report data on those that have emigrated, except in those notable cases where individuals have denounced citizenship. Meanwhile, countries like Mexico and the Philippines track their overseas citizens regularly, acknowledging the realities of dual citizenship or residency. **Return migration** (a permanent return to the country of origin) also represents a significant flow of people, but is often under- reported. For example, up to one quarter of Europeans that migrated to the US in the late nineteenth century eventually returned to Europe. In recent years, more people have migrated back to Mexico from the US than from Mexico to the US. The process of migration, then, is a complicated nexus of movement rather than a simple one-way, permanent, single-directional move from place A to place B.

In spite of the complex patterns and processes of migration, some general characteristics of migration and migrants were articulated by British demographer Ernst Ravenstein (1885), characteristics known as the **laws of migration**. Many of them still hold true 135 years later. Can you decide which are still true today?

1. Most move only a short distance.
2. Each migration flow produces a counter-flow of migrants.
3. Long-distance migrants tend to move to major cities.
4. Rural residents are more migratory than those in towns.
5. Females are more migratory than males.
6. Economic factors are the main reason for migration.

In short, each of the "laws" generally hold true in 2018 with the notable exception of number five. Slightly more men moved internationally than women, but the truth is much more complicated. In fact, Ravenstein's estimates of female migration proved incorrect as large-scale migration to North America increased in the early twentieth century, during which time most immigrants were men seeking land, wealth, and opportunity in the "New World."

A variety of non-government organizations, research groups, and humanitarian entities also track the movement of people across borders and within countries in order to provide a deeper understanding of the causes and effects of migration *locally*, *regionally*, *nationally*, and *globally*. For example, the Migration Information Source (https://www.migrationpolicy.org) offers a wealth of reports, analysis, and data visualization that dramatically enhance our geographic understanding of migration. The Pew Research Center (http://www.pewresearch.org/topics/migration) conducts regular polls often focused on Latino populations in the US. Other non-profit organizations track the effects of immigration in the US and publish regular reports, but often they lack objectivity or editorial oversight, as the intent of such efforts is to achieve policy change to reduce immigration levels. For example, the Federation for American Immigration-FAIR (fairus. org) is an organization motivated by the explicit desire to reduce the number of immigrants and to secure the traditional cultural heritage of European Americans.Likewise, the Center for Immigration Studies (CIS) presents data to support its stated vision "of an America that admits fewer immigrants" and to reduce immigration of all kinds in the twentieth century (cis.org/About-Center- Immigration-Studies).

Geographers have identified general trends in global migration, also known as North-South migration, in which most emigrants originate in poorer, developing countries and most destinations have traditionally been wealthier, developed countries. For most Americans and Canadians, this pattern is very familiar, as recent decades have seen unprecedented numbers of Latinos immigrate to the US for the purpose of finding higher-paying jobs and better opportunities and escaping structural poverty in the developing world. Similarly, the recent patterns in Europe have seen record numbers of Eastern Europeans move west and north to earn higher wages than those available in the home country. However, such wage differentials do not tell the whole story. For example, wages in Chicago tend to be much higher than those in other parts of Illinois, but not everybody leaves rural Illinois just because they can earn a higher wage. Wages, though significant, only tell part of the story. Unless you are reading this text in Manhattan or Paris or Hong Kong, you could most likely move tomorrow and find a job elsewhere that pays more than what you earn now (if you are working). Geographers recognize that attachment to place, cultural factors, desire to stay close to family/ friends, and other factors play a powerful role in the decision to move or stay.

Another pattern that has remained consistent over time is that of **highly skilled migrants**, who tend to enjoy a much greater freedom of movement than those with lower levels of education and fewer skills. For example, computer software engineers, database managers, and a host of other highly-demanded skills lead to efforts by countries and corporations to attract the best and the brightest minds to immigrate in order to bring those skillsets into a country where they are in short supply. Countries often offer travel **visas** (temporary permission to enter a country) to those with highly demanded skillsets. Countries like Australia, Canada, and New Zealand utilize a **points system** to determine which of the highly-skilled applicants will be granted permission to enter. The **brain drain** refers to the conceptual idea that when a wealthy country recruits the 'best brains' from a poorer country, it can be damaging to the sending country, as many of the most qualified and talented groups of people are poached away by higher-payingopportunities. As such, the term **brain gain** refers to the benefits received by a country that receives all those "brains" without having to produce them from scratch! Recently, countries have also acknowledged the concept of **brain waste**, in which receiving countries fall short in utilizing the full range of **human capital** inherent in many immigrant populations. For example, nearly half of all immigrants into the US from 2011-2015 held at least a bachelor's degree, but more than 2 million immigrants with college degrees continue to work low-skilled jobs because employers or governments do not recognize foreign-held degrees. Similarly, a brain-drain/brain-gain phenomenon occurs *within* some countries, such as the US. California and New York, for example, continue to draw the most highly-trained and qualified people away from other states. Governments that wish to keep the highly skilled at home take such transfers of educated and highly- skilled people very seriously.

Framing migration as a loss or gain, however, also does not tell the whole story. Most countries that send migrants also receive them. The US receives large numbers of immigrants, but it also is a country of emigration, whereby retirees choose to live outside of the US, or long-term migrants (who usually are US citizens) choose to return to their home country in retirement. Migration is neither inherently good nor bad; rather, it is complicated. This chapter seeks to tease out some (but not all) of the important characteristics of migration in the twenty-first century to help you gain a better understanding of a topic that too often is used by politicians to gain votes or credibility. Let us put those simplistic debates aside for a few minutes to consider the basic elements of migration around the world.

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3.3: Global, National, Regional, and Local Patterns

3.3.1 Global Patterns

Though geopolitical and global economic forces change over time, it is useful to understand contemporary global, national, and regional patterns of migration as processes that vary by geography. The vast majority of people do not migrate internationally, yet migration makes a powerful impact globally. Just imagine what our world would look like if nobody ever moved! Latin America would have no coconut trees, the American Midwest would still be dominated by buffalos, and most humans would look very much alike—how boring! Instead, migrants across the globe diffuse new ideas, new genetic footprints, new diseases, new cooking styles, and new sports. While a small number of countries receive large numbers of newcomers each year, only 3.4 percent of the world's population live outside of their birth country, so most places in the world are *not* significantly impacted directly by international migration. However, the dynamics of migration are undergoing a significant transformation, and the future is very difficult to predict. Humans have been on the move for over 60,000 years, so it is unlikely to come to a halt anytime soon.

Europe	76 million
Asia	75 million
North America	54 million
Africa	21 million
Latin America/Carribean	9 million
Oceana	8 million

Figure 3.1 | Immigrant populations around the world by region
Authors | Dilip Ratha, Christian Eigen-Zucchi, and Sonia Plaza
Source | World Bank eLibrary
License | CC BY 3.0 IGO

The number of international migrants worldwide reached 244 million in 2015, representing a 44 percent increase since the year 2000 (**Figure 3.1**). During the same period, global population grew by just 20 percent, so cross-border migration seems to be accelerating in many parts of the world as more people have access to information, infrastructure, and communication—all elements that facilitate the large-scale movement of people. In 2015, nearly 70 percent of all migrants originated in either Europe or Asia, with the largest numbers coming from India, Mexico, Russia, and China. Meanwhile, those countries hosting the most immigrants were the US (47 million), followed by Germany (12 million), Russia (12 million), and Saudi Arabia (10 million) (**Figure 3.2**). Generally speaking, migrants tend to move away from low/middle income countries into high income countries because the most common driving force is economic opportunity. Most migrants move for better jobs, higher incomes, and better opportunities overall. It is worth noting, however, that about one third of international migration takes place *between* lower income countries (e.g. from Bangladesh to India or from Afghanistan to Iran).

It is also important to note that patterns can change very quickly, depending upon economic or political conditions. Spain, for example, was a major recipient of immigrants from 2000-2008, but when its economy dipped and job opportunities decreased, people began to leave *en masse*. In every year since 2011, more people have left Spain than have arrived. Ireland, on the other hand, experienced mostly net emigration from the mid 1800's until the late 1990's, when large numbers of Irish and descendants returned "home" and new immigrants began to choose Ireland as a popular destination due to its improved economic opportunities under the European Union.

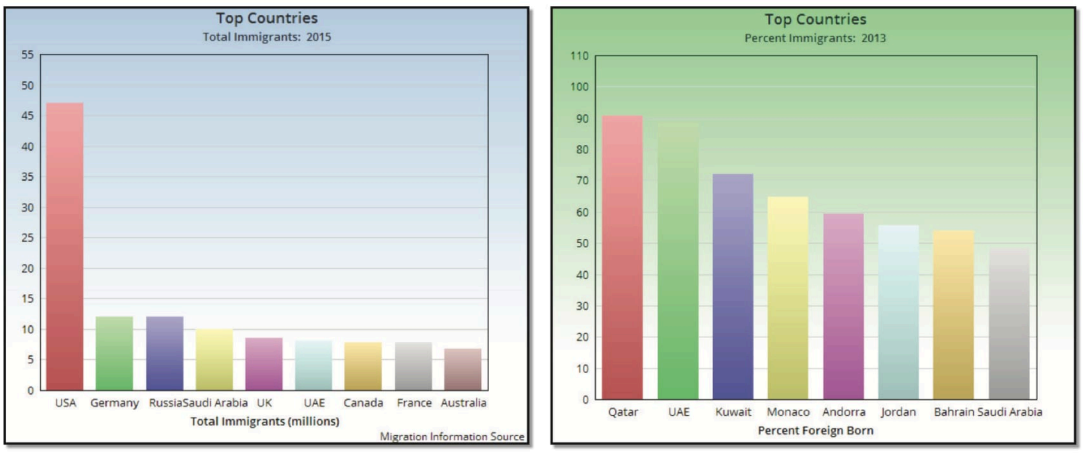


Figure 3.2 | Top countries of immigration by number and percent
Authors | Dilip Ratha et al.
Source | World Bank eLibrary
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3.3.2 Regional Migration Flows: Europe

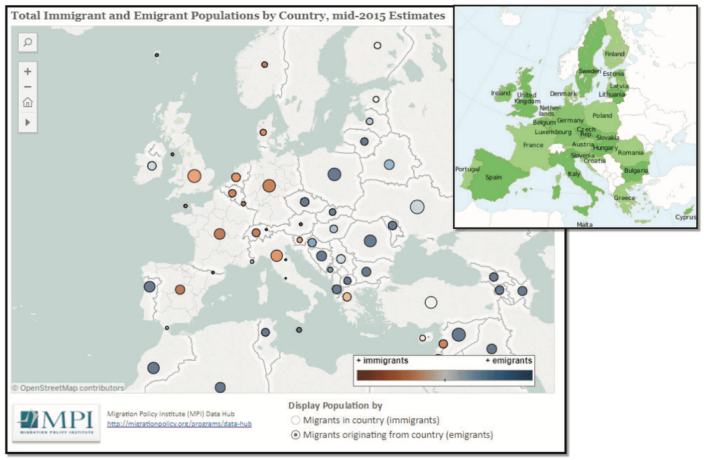


Figure 3.3 | Total European immigrant and emigrant populations by country, 2015

Figure 3.3a (left)
Authors | OpenStreetMaps and Migration Policy Institute
Source | Migration Policy Institute
License | ODbL

Figure 3.3b (right)
Author | User "Ssolbergj"
Source | Wikimedia Commons
License | CC BY SA 3.0

Consistent with Ravenstein's "Laws of Migration," most international moves continue to take place across relatively short distances. In no place is this more evident than in Europe, where it also quite common to find Spaniards in France, Germans in Switzerland, Romanians in Germany, etc. As portrayed in the map above, movement within Europe tends to be from East (blue dots) to West (red/orange dots) (**Figure 3.3**). Given the ease of travel within, the small size of, and short distances between many European countries, it is not surprising that many people move across borders for a variety of reasons. Of the 508 million residents of the European Union (EU), about 10 percent (54 million) are foreign born, of which 35 million originate outside of the EU and 19 million moved from one EU country to another. Movement within and to the EU has accelerated in recent decades for two reasons. First, Europe has intentionally worked towards greater economic integration and cooperation since WWII by removing barriers to movement (See more about the EU in Chapter 8). Citizens and legal residents of participating EU member states may travel, live, study, and work seamlessly across national borders under the *Schengen Agreement* **(Figure 3.4)**. While the EU facilitates the free movement of capital, products, and services in the region, the agreement permits the free flow of people across international borders without significant delay, hassle, or regular security checks. Millions of working-aged residents of Poland, Romania, and Bosnia, for example, have moved to countries like Germany, France, and Spain for higher wages. In some ways, the European region has become similar to the US in that Spaniards may travel to France just as easily as Californians may travel to Oregon.



Figure 3.4 | Schengen Countries (2017)
Author | User "Ssolbergj"
Source | Wikimedia Commons
License | Public Domain



Figure 3.5 | Migrant Fatalities in 2017
Author | International Organization for Migration Data Analysis Center
Source | International Organization for Migration Data Analysis Center
License | CC BY SA 4.0

The second reason for increased movement and mobility in Europe, however, is that more people from nearby Africa and the Middle East have attempted to enter Europe to seek work, escape conflict, or find better educational opportunities. Although economic and political life has been relatively more attractive in Europe than in neighboring regions for some time, the forces of globalization have accelerated such flows. Human smuggling organizations transport hopeful migrants in exchange for large amounts of money. As such, the EU has increased maritime military patrols in the region, which has forced human smugglers and would-be immigrants into riskier and more perilous routes. Thousands die each year trying to gain entry to another country (**Figure 3.5**). In 2016, approximately 7,400 died during a migration route, and nowhere is the trek riskier than in the Mediterranean, where 4,800 migrants perished in 2016, most of whom were from African countries. Additionally, conflicts in the Middle East, most notably Syria, have driven hundreds of thousands to seek refuge in Europe.

The free flow of people across the European region has come into question in recent years as northern member states mistrust the vetting process put into place by southern and eastern European states. An individual that manages to enter any of the Schengen states can travel quite easily to any of the other European states. Denmark and Sweden, for example, have increased border security and border checks in spite of being signatories to the agreement (**Figure 3.6)**. The bold experiment in Europe to integrate so many cultural, linguistic, and political systems faces constant challenges and has no guarantee for long-term success. Twice in the last century, the region was wartorn. As the twentieth century unfolds, Europe remains a focal point for migration policy and practice into the twenty-second century.

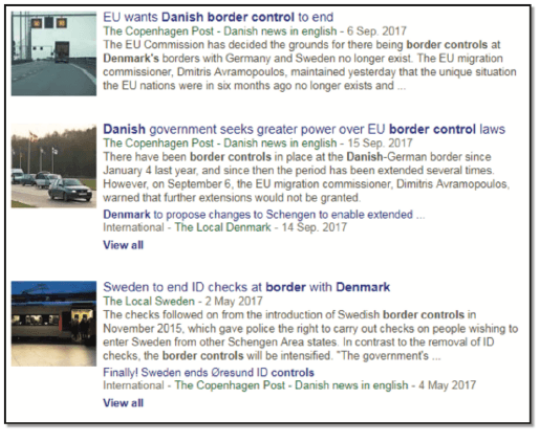


Figure 3.6 | Google News headlines on Danish border control
Search Results Screen Capture for terms "Danish border control."
6 September 2017.
Author | Google News
Source | Google News
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3.3.3 Regional Migration Flows: North America

North America represents a special case in that the US routinely receives significantly more immigrants than any other country in the world. Roughly 14.5 percent (46 million) of all residents in the US were foreign born in 2015,representing seventeen percent of the labor force. In Canada, the numbers were roughly twenty-one percent for both categories. The **International Organization for Migration (IOM),** sponsored by the United Nations, offers a great tool for visualizing migration around the world **(https://www.iom.int/ world-migration)**. Click on the tool to find out how many in the US came from China or how many from the US lived in Mexico last year (hint: toggle the In/Out button). Do you notice any patterns? Click on a few other Caribbean countries to view the flows of migration into North America. You will notice that the largest source areas to the US were Latin America and Asia, but sending countries and volumes, in fact, vary significantly over history. The figure below shows changes over time in the US immigrant population, and you can see that immigration from Latin America and Asia has only occurred in the most recent period. Do you know or think you know when your ancestors arrived? Can you visualize the time period during which they first came to North America? Which population groups are not included in the chart? Why do you think this might be?

There four distinct phases of immigration, but let's examine each one briefly. First, during the era of frontier expansion (1820-1880), a rapid westward movement occurred. Settlers were given the rare opportunity to acquire large amounts of good farmland in the "New World," which pushed people out of the large cities like New York and Boston and towards the American Midwest into the future states of Ohio, Illinois, Iowa, Nebraska, etc. Many immigrants came to the US specifically in search of land, because population pressure in Europe made land acquisition very difficult. The *Homestead Act* of 1862 offered up to 160 acres of farmland to citizens or those planning to become citizens as long as they continuously lived on and farmed the land for five years. More than 1.5 million claims for land were made in subsequent years, resulting in a massive movement of people. It was also during this era that the transcontinental railroad was completed, linking the East Coast and West Coast for the first time in a meaningful way. Most immigrants during this time came from England, Scotland, Ireland, Germany, and Scandinavia. More than 1.5 million also came from Ireland in just a ten-year period (1845-1855) when the potato crop failed due to blight (disease), a period known as the Great Hunger. The only significant non-European immigrants arrived as a result of the *BurlingameSeward Treaty* of 1868, which welcomed Chinese workers, as China also opened its borders to American businesses, students, and missionaries. Migration from China was short-lived, however, during the subsequent era.

Phase 2 (1880-1910) ushered in a dramatic shift as the number of new arrivals soared to unprecedented levels. Moreover, the source countries also changed as immigrants began to arrive from southern and eastern European countries such as Italy, Greece, Russia, and Poland. American imagery, stories, legends, books, and films tend to focus heavily on this period, because it was the most intense era of movement from Europe, and most were arriving via Ellis Island by ship before settling into distinctly ethnic neighborhoods in cities across the US It was also an era of massive industrialization that demanded a large source of low-cost workers, which immigration provided. Coal mines, steel mills, and factories were growing at unprecedented levels as the US raced to "catch up" with the great cities of the world, building bridges, skyscrapers, museums, sports stadiums, and other large structures at unprecedented levels. The period also produced a new era of exclusion as the Chinese Exclusion Act of 1882 prohibited immigration, naturalization, and citizenship for anyone of Chinese descent, including those that had immigrated previously under legal means.

During Phase 3 (1910-1965), the US dramatically curtailed the number of immigrants permitted to enter the country legally. The great western settlement had ended, and high birth rates in the US created enough new workers to meet the demand of the continued industrialization of the country. A series of new exclusionary laws prevented all "Asiatic People" from entering the country, as American nationalism fanned by white power and eugenic movements sought to exclude and divide the people of the world into categories of "civilized," "savage," and "semi-civilized." Also banned were "polygamists, anarchists, beggars, and importers of prostitutes." (For an excellent graphical overview of US immigration legislation, visit the Pew Research Center website: http://www.pewhispanic.org/2015/09/2...ions-1790-2014). During this period, immigration levels declined precipitously as the country grappled with questions of heritage, identity, and cohesion. National legislation was crafted to maintain the racial and ethnic balance of the country as mistrust between nations erupted in two world wars. Quotas were established to allow immigration of only a limited number of people from specific European countries, while all others were kept out. Ellis Island closed its doors in 1954 after having processed more than 12 million immigrants. However, a dramatic social shift was on the horizon, as the 1960's would dramatically alter US immigration in the coming decades.

Immigration into the US in the current era, Phase 4 (1965-Present), is characterized by (1) enormous growth and (2) a new diversity of source countries, dominated by the regions of Asia and Latin America. While the percent of foreign-born residents is similar to that of the early 1900's, the 47 million (in 2016) living in the US represents an unprecedented historical high with one out of every four children having at least one parent who is an immigrant. The Immigration and Naturalization Act of 1965 dramatically shifted the nature of immigration into the US from one with low numbers from a handful of pre-determined countries to a system that favors those with particular skills (e.g. scientists, engineers, and doctors) and for family reunification. As more Americans entered college, demand for manual labor also grew. Jobs that were once done by children and teenagers, such as harvesting crops, cutting grass, or washing dishes in restaurants were increasingly being filled by immigrants willing to work long hours for little pay. Asian exclusion laws and quotas were abolished, as progressive civil rights era provisions took a "colorblind" approach to welcome those from all regions of the world as long as they had the skills and education that would benefit theAmerican economy. Laws also made it much easier for existing citizens to legally bring immediate relatives from abroad, so that families would not be divided by restrictive immigration policies. Speaking to a sparse crowd in 1965 about the new immigration bill, President Lyndon B. Johnson said, this "is not a revolutionary bill. It does not affect the lives of millions . . . It will not reshape the structure of our daily lives or add importantly to either our wealth or our power."1 Yet in the three decades after its passage, more than 18 million people arrived legally, tripling the number of immigrants from the previous three decades. The "face" of immigration changed dramatically. In 2016, the largest number of foreign born were those from Mexico, China, India, the Philippines, and Vietnam. Moreover, immigrants are responsible for 25 percent of all new businesses and more than half of all start-up companies valued at more than $1 billion. Sometimes, Presidents are wrong.

3.3.4 Regional Migration Flows: Asia

Migration within Asia is difficult to summarize given the massive size and scope of a region with 4.4 billion people! However, if you revisit the world migration map (www.iom.int/world-migration), you will notice that even the largest countries in the world (China and India) contain relatively-few foreign born people compared to those in Europe and North America. Can you think of reasons why this might be the case? The first explanation is simple. Large-scale human settlement and political development occurred much earlier than in Europe or in North America. Early Chinese civilizations had already emerged more than 5,000 years ago, and many in Asia can trace ancestral lineages back thousands of years as well. As such, Asia (for the most part) wasn't "discovered," conquered, orcolonized during the time of European imperialism. Apart from a small number of missionaries, entrepreneurs, and adventurers, Asia did not become a major destination for those from foreign lands (there are several notable exceptions, particularly in the case of the British Empire). Second, most Asian countries simply do not allow for permanent immigration, except in the case of marriage (which also can be a very slow and tedious process). Nonetheless, in the age of globalization and migration, more people are on the move in Asia in the twentyfirst century than ever before.

With a population of 1.3 billion and a fast-growing economy, China tends to dominate the East Asia region. The **Chinese Diaspora** is a term that refers to the 46 million people that identify themselves as Chinese but live outside of China, with the largest number making their homes in Southeast Asia and others in Australia, North America, or Europe. Many fled China during times of political instability before and after WWII and under early communist rule, but today, many of those who leave China are wealthy and educated and do so because their skills are in demand in other parts of the world.

The most significant movement of people anywhere in the history of the world has been taking place recently inside both China and India as rural farmers have been leaving the countryside and moving into cities. Nearly 200 million people have left the interior of China to re-settle and seek work in China's dynamic cities, mostly located along the eastern part of the country. While they do not cross international borders, the distance and socioeconomic differences between rural and urban areas in China are very similar to an international move for many. The motivation is largely economic in that farmers can barely earn a few dollars a day in rural areas; new manufacturing jobs in coastal cities pay several times that.

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3.4: Demographic Transition, Migration, and Political Policy

3.4.1 What is the relationship between population structure and migration?

Even though people generally migrate to find/make a better life for themselves and for their families, the benefits and pitfalls of migration affect different countries and regions in very different ways. Demography (age structure) has a lot to do with understanding how such a differentiation occurs. (Hint: You may need to go back to Chapter 2 to review your understanding of the demographic transition model or click here): www.bbc.co.uk/schools/gcsebit...hy/population/population_change_structure_rev4.shtml.

The demographic transition model explains how countries experience different stages of population growth and family sizes, but the model also works well to understand sources and destinations for migrants. Before the explanation continues, take a look at the model to see if you can predict the stages during which you would expect large-scale emigration versus immigration. Do you feel confident in your guesses? Why or why not?

Geographers note that countries of emigration tend to be late in stage 2 or early stage 3, while countries of immigration tend to be late stage 4 or stage 5 countries. Let's think about this for just a moment. At what age are people most likely to take the risk to move to a completely different country to seek their fortune? Would you move to Slovenia next year, if you could earn triple your current salary? Most international migrants tend to be relatively young (18-35) during the prime of their working years. Countries that tend to have an abundance of working-age people also tend to be early in stage 3 of the model. Countries like Mexico, Guatemala, the Philippines, and India had large families a generation ago. As those children enter their working years, there are not enough jobs created due to an "oversupply" of laborers. Meanwhile, countries in late stage 4 find that because of low fertility rates a generation earlier, the economy now faces a shortage of working-age residents to do all kinds of jobs. Birth rates were high during the 1950's in the US, but as women had fewer children in subsequent generations, fewer workers were entering the workforce every year. Unsurprisingly, young workers from Mexico, El Salvador, Jamaica, etc., began to immigrate as the demand for their labor increased. In Europe, the same pattern occurred as those from higher fertility countries like Turkey migrated to lower fertility countries like Germany.

3.4.2 Why do some countries benefit from migration while others do not?

Demographic realities can be **push factors** or **pull factors** that serve to push people away from a place or pull them towards a place as explained in the previous paragraph. Push and pull factors can be cultural, economic, or ecological. Baptists might be "pulled" towards the American South, and Mormons might be "pulled" to Utah for cultural reasons. Meanwhile, the devastation of Hurricane Maria (2017) "pushed" hundreds of thousands of Puerto Ricans off the island. The most common destination for Puerto Ricans was Florida for economic (jobs), ecological (warm weather), and cultural (existing Spanish speakers) reasons. When the push factors and pull factors fit together nicely, migration can benefit both the sending and receiving regions.

Very often in the case of **forced migration**, however, migration does not benefit both parties. Those migrants who flee their country based upon claims of danger based upon race, religion, nationality, or other pertinent identifiers are known as **asylum seekers.** They seek a country willing to take them in permanently for fear of imprisonment, retribution, or death in their country of origin. When asylum seekers have satisfactorily demonstrated a claim in court, their status changes to **refugee.** Under international agreement, refugees cannot be forced to return to any country where they are deemed to be in danger, so refugee status provides displaced people with a legal protection against deportation. The number of refugees worldwide at the end of 2016 was 22.5 million, the highest total of refugees since the end of WWII. There were also 40.3 million people uprooted within their own country, known as **internally displaced people (IDP),** bringing the total number of displaced people to an all-time high of nearly 63 million. In recent years, large numbers of asylum seekers have left Syria, Iraq, Afghanistan, Palestine, Somalia, Sudan, Cuba, Venezuela, and Myanmar (formerly Burma) as wars and political conflict have endangered millions. During previous wars, wealthier countries in Europe, North America, and Australia accepted large numbers of asylum seekers, but anti-immigrant sentiments have risen in many parts of the world, leaving the majority of would-be refugees without refuge. Opponents of resettlement argue that the cost is just too great, and they fear that accepting refugees would encourage more unwelcome immigration in the future, so this has significantly reduced the number of migrants that countries are willing to accept.

Though twenty-first century anti-immigrant sentiment remains high in countries like the US, Australia, and the U.K., the benefits for

receiving countries are well documented. Apart from the demographic advantages already described, employers and consumers tend to benefit markedly from the low-cost, readily- available supply of labor provided by immigrants. Everything from the cost of fruit, construction, fast food, and lawn care tends to be cheaper owing to an immigrant labor force. Evidence also indicates that wages in low-skilled jobs may be suppressed by immigrants, but the overall economic benefit is widely reported by economists to be favorable when unemployment rates are low. Immigrants have higher rates of employment, are more likely to start businesses and are less likely to commit crimes than the native-born population in the US Sending countries also tend to benefit from emigration in two ways. First, emigration provides an opportunity for young workers who cannot find employment at home. Second, emigrants tend to send home the majority of their overseas earnings. Money sent home by overseas workers is called **remittances.** Countries that send large numbers of workers overseas benefit from the large infusion of foreign capital into the local economy, which tends to spur new investment opportunities. When migration is working smoothly, both sending and receiving countries can benefit.

Besides low-skilled workers and refugees, a third category of immigrant has increased dramatically under globalization. Highly-skilled immigrants represent a unique contradiction. On the one hand, countries seek to increase border security, limit asylum seekers, and build walls. On the other, those same countries actively recruit and seek to attract immigrants with specific skills, training, and educational levels. Most commonly, wealthy countries like the U.K. regularly recruit nurses, scientists, and engineers from poorer countries to meet the needs of an aging population. As British residents have fewer children and society gets older, there is more demand specifically for healthcare workers of all kinds. As such, the best and brightest minds from poorer countries become attracted to the much higher wages outside of their countries and they leave—resulting in a **brain drain.** Nearly sixty percent of all doctors born in Ghana and eighty-five percent of nurses born in the Philippines have left the country to work elsewhere! Wealthy countries reap the benefits of this **brain gain.** Although highly-skilled and educated individuals and families that emigrate for higher pay undoubtedly benefit from emigration, the countries that experience brain drain persistently lose a very valuable resource. Besides losing most of its doctors, Ghana also now faces a major shortage of those qualified to teach the next generation of medical professionals, so the negative effect crosses multiple generations.

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3.5: Culture, Globalization, and Economics of Migration in The Twenty-First Century

3.5.1 What is the connection between globalization and increased international migration?

Globalization is defined as the set of forces and processes that involve the entire planet, making something worldwide in scope. Although 246 million people live outside of their birth country, more than 96 percent of the world's people do not ever move outside of their birth country, so in the case of migration, globalization might not be as powerful as once believed. While geographers try to understand where people move and why, a more significant question might be why so many people *do not* move. If you live in one of the places on Earth where you interact with people from all over the globe on a regular basis, then it might seem to you that globalization is operating at full speed. Yet, the vast majority of humans don't leave their home country and have limited interactions with people from other places, even if the products they consume and produce might be worldwide in scope.

As we entered the new millennium in 2000, scholars were convinced that a new age was upon us. Some went so far as to say that geography was "dead" and that place didn't matter. A best-selling book written by Thomas Friedman, *The World Is Flat* (2005), decreed that humanity was becoming more connected all the time to the point that it didn't matter if you were in the streets of Bombay or in a classroom at Harvard. The best minds and the best ideas would always rise to the top, regardless of their origin. Inherent in this argument was the assumption that more people would be on the move, and international migration would accelerate as people and products would just zoom across the "flat earth" at lightning speed.

In 2017, however, geography has re-emerged to re-stake its claim. While more people than ever are, in fact, living outside of their birth countries, there is a growing resistance across the planet to "outsiders." In response to the attacks of September 11, 2001, President George W. Bush firmly asserted that "every nation in every region now has a decision to make. Either you are with us, or you are with the terrorists." Perhaps that is the moment in which the earlier hope of a fullyintegrated world with open borders and full mobility was deemed too optimistic. In the years since that speech, western nations have taken a collective stance against immigration often based upon religious or ideological grounds. In 2017, for example, Donald Trump called for a "total and complete shutdown of Muslims entering the United States" in response to a shooting in San Bernadino, California. Meanwhile, Britain moved to cut immigration levels dramatically as it exited the European Union and took a more isolationist position, and Australia moved to prevent refugees from arriving on its shores.

3.5.2 How is migration in the twenty-first century different from that of the twentieth century?

While the percent of those who migrate has not increased significantly in the twenty-first century, the destinations and origins of immigrants have shifted dramatically, so that more people are migrating to and from more places than ever before. Such a statement may sound confusing at first, but one need look no further than college campuses throughout the world to understand this dynamic. Georgia Gwinnett College in suburban Atlanta, for example, is the most ethnically-diverse college in the American South. In a typical geography class at that school, thirty-three percent speak a language other than English at home. A recent survey of the author's students (n=115) from just one semester found that students (or their families) came from Mexico, El Salvador, Peru, the Philippines, Laos, China, Colombia, Korea, Haiti, Jamaica, Vietnam, Ukraine, Dominican Republic, Liberia, Latvia, Romania, India, Pakistan, Scotland, and Paraguay. While past waves of migration were dominated by a small number of sending countries and a small number of receiving countries, migration in the twenty-first century is much less predictable.

Australia offers another example, as thousands of prospective immigrants have been traveling thousands of miles by land and sea to seek refuge in the small continent. The government eventually made the difficult decision to interceptwould-be immigrants at sea, but it still faces a complex dilemma of where to redirect those who have risked their lives to make the perilous journey. For now, they are being taken to remote islands of Papua New Guinea, Christmas Island, and Nauru for resettlement, resulting in an odd mix of refugees and South Pacific Islanders living side by side. Unpredictability is now the rule rather than the exception as twenty-first century technology allows for a rapid flow of information. Those wishing to move can now find out much more quickly about opportunities, transportation options, and routes to take than has ever been the case before. Geography does not represent

nearly as formidable of a barrier to travel than it did in the twentieth century. Other than asylum seekers, most immigrants are far more likely to travel by plane than by boat in the twenty-firs century, and they mayor may not seek permanent residence.

The final way in which migration is different today relates to the concept of **transnationalism** (exchanges and interactions across borders that are a regular and sustained part of migrants' realities and activities that transcend a purely "national" space). Those traveling to the US in 1900 were leaving everything behind to seek a new homeland, learn a new culture, and often to speak a new language. Migrants of today, however, are not forced to fully disconnect from "home." Even after a long-distance migration, people can stay connected to friends, family, news stories, and relationships across the world. A journey that took several months in 1900 today takes less than half a day. Meanwhile, apps like Facebook, WhatsApp, Snapchat, and Skype allow newcomers to stay intimately involved in the lives of those left behind—for *free*! **Transnational** families contain members that are living in multiple countries simultaneously, speak multiple languages, and are ready to move in a moment's notice, based upon market conditions in any given place at a particular time. Critics argue that immigrants of today do not assimilate as readily as those from the nineteenth and twentieth centuries, but in that era, people simply had no other choice. **Transnationalism** is a feature of twenty-first century immigrants that is here to stay as immigrants to new places have the option to live their lives in more than one world, carry more than one passport, and move more seamlessly from place to place than at any time in human history. Take note that the term appears again in this textbook (section 11.4, Political Geography) inthat corporations also operate within and between multiple countries, depending upon various factors. An important distinction exists, however, from the concept of s*upranationalism* (Section 8.3, Political Geography) in that supranationalist organizations do not officially reside under the direction of any single state (country), while transnationalism involves moving between countries – not operating outside of them.

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3.6: The Future of Human Movement and Conclusion

The future dynamics of migration are very difficult to predict, but certain geographic realities provide clues for where patterns are likely to change. In those parts of the world where societies are quickly aging and fertility rates continue to decline, we can expect rates of immigration to increase. Certain countries have experienced and will continue to experience dramatic population decline (most notably Germany, Italy, Russia, and Japan), and the demand for young, workingaged immigrants will certainly continue to draw more people to those places. Japan and China represent unique cases because both are aging and yet have been resistant to allowing outsiders to become citizens or permanent residents. In spite of cultural preferences for ethnic homogeneity, it would seem likely that the culture will shift and become more accepting of outsiders, as the country needs them to take care of the elderly, pay taxes, and provide an infusion of energy into the respective countries.

Meanwhile, people living in places without sufficient opportunities will continue to move away in search of jobs and better circumstances, regardless of the attempts made by wealthy nations to keep them out. Source countries and destinations will continue to shift, as they always have. More Mexicans have returned than have left the US in recent years, and it is no longer the leading sending source country of migration to the US. Rather, more people are now coming from Central America. The demographic pressures in many African countries will absolutely drive more working-aged people out of the continent in search of better opportunities even as the journey becomes increasingly dangerous. As the Internet becomes more pervasive on that continent, more people will find the information that they need in order to plan their emigration. Finally, the highly-skilled people of the world will continue to be increasingly mobile and largely unaffected by borders or increased security. Computer programmers, nurses, doctors, engineers, and high-tech workers of all sorts will use the globe to their advantage and seek out places that best fit their desires. Television shows like “House Hunters International” demonstrate how the vast numbers of people who work online or in highly-skilled careers can virtually live anywhere. Wealthy people from across the globe are leaving their passport countries by the millions, as Wi-Fi networks are now available across the world. The poor and wealthy alike will continue to move about the planet, reconstituting the human geography of our world well into the twenty-first century but for very different reasons and with very different experiences.

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3.7: Key Terms Defined

Asylum seeker – those who leave the sovereign territory of one country in order to achieve refugee status in another, based upon claims of danger because of race, religion, nationality, or other pertinent identifiers.

Brain drain – the collective loss of skills, education, training, and wealth that occurs when highly-skilled and educated people move away from a country (usually away from a relatively poor country).

Brain gain – the collective gain of skills, education, training, and wealth that occurs when highly-skilled and educated people move into another country (usually to a relatively wealthier country).

Brain waste – a phenomenon in which international migrants with high levels of education and/or training often are not eligible to work in their area of training due to regulations or certification requirements, resulting in a "wasted" potential in certain groups.

Diaspora – a group of people sharing a common historical and ethnic connection to a territory, but who no longer live in that territory or country. Some members of a diaspora may have been removed from the traditional homeland for multiple generations but still identify with it as a "homeland."

Ecumene – human inhabited areas of Earth

Emigrant – an individual who moves *away* from one country into another for a prolonged period. The definition of "prolonged" varies by country and is defined by the World Bank as minimum of one year.

Forced migration – a type of movement in which individuals or groups are coerced into moving by an external set of forces, most notably environmental, economic, social, or political factors.

Globalization – all those processes, technologies, and systems that result in greater connections, communication, and movement among increasingly distant people and places on Earth.

Guest worker – someone without legal permanent status who has been granted permission to reside in a country's territory in order to work for a specific set of time on a particular kind of work.

Highly skilled migration – patterns movement by those with skills that are in high demand on the global market. Examples include nurses, doctors, IT specialists, actors/artists, and athletes who tend to enjoy greater levels of movement across borders than others.

Highly skilled migration – patterns movement by those with skills that are in high demand on the global market. Examples include nurses, doctors, IT specialists, actors/artists, and athletes who tend to enjoy greater levels of movement across borders than others.

Immigrant – an individual who moves for a prolonged period *to* another country. The definition of "prolonged" varies by country. In 2016 there were 246 million immigrants in the world.

Internally Displaced People (IDP) – those who have moved or been forced to move from a homeland for the same reasons as refugees but have not crossed an international boundary and do not have refugee status.

Laws of migration – generalizations about international migration as detailed by nineteenth-century demographers

Migration – a permanent move to a new location

Net migration – the difference between the number of immigrants and the number of emigrants in any given year

Points system – a national immigration policy that seeks to attract people with a specific set of skills, experience, and job training to satisfy unmet demand among those currently in the country. Regardless of origin country, anyone with the prescribed set of skills, linguistic ability, and education may apply to migrate to that country if they have acquired enough points to do so. Canada, Australia, New Zealand, and England all have a points system.

Pull Factor – those forces that encourage people to move *into* a particular place

Push Factor – those forces that encourage people to move *away* from a particular place

Refugee – an individual who, owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality, and is unable, or unwilling, to avail themselves of the protection of that country. An individual who has been granted "refugee" status is afforded a certain set of rights and privileges, mostnotably, the right not to be forcibly returned to the country of origin.

Remittances – money sent "home" by international migrants. Remittances represent the largest single source of external funding in many developing countries. The global figure for 2016 was US$600 billion.

Return migration – a return of a migrant to the country or place of origin

Transnationalism – exchanges and interactions across borders that are a regular and sustained part of migrants' realities and activities that transcend a purely "national" space.

Undocumented migrants – those inside of a country without proper authorization or proof of residence.

Visa – the legal permission granted by a receiving country to those seeking to enter. Examples include tourist, temporary work, and student visas. A visa is different from a passport.

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3.9: Endnotes

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4: FOLK CULTURE AND POPULAR CULTURE

Learning Outcomes

- Understand: the origins and diffusion of culture and globalization
- Explain: how culture changes across space and time
- Describe: popular and folk culture, diffusion and the changing pace of globalization
- Connect: globalization and cultural conflict

4.1: Introduction

4.2: The Cultural Landscape

4.3: Folk Culture

4.4: The Changing Cultural Landscape

4.5: Popular Culture

4.6: The Interface Between The Local and The Global

4.6.1: South Asia

4.6.1.1: South Asia's Physical Landscape

4.6.1.2: Patterns of Human Settlement in South Asia

4.6.1.3: Cultural Groups in South Asia

4.6.1.4: South Asia's Population Dynamics

4.6.1.5: Future Challenges and Opportunities in South Asia

4.7: Global Culture

4.8: Resistance to Popular Culture

4.9: Summary

4.10: Key Terms Defined

4.11: Works Consulted and Further Reading

4.12: Endnotes



Figure 4.1 | Double Decker Bus
Double decker bus referencing the Beatles in Ferrol, Spain near the historic Camino de Santiago. This is the intersection of two iconic cultural symbols. Both the bus and the pilgrimage route invite the public to take journeys, whether sonic or geographic.
Author | Dominica Ramírez
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4.1: Introduction

What is **culture**? When some people speak of culture, they are thinking of high culture (e.g. ballet or opera). Others may think of current, prominent topics (i.e. pop culture). Academic settings, though, are referring to something else. Culture is a learned behavior and a human construct. Culture exists to answer questions. Some of the questions that are answered are philosophical or ideological, for example, “Where did we come from?” or “What is acceptable behavior?” Other questions revolve around daily life. “How do we secure shelter, clothe ourselves, produce food, and transmit information?” Culture provides us with guidance for our lives. It both asks and answers questions. Children, from an early age, start asking “What is my place in the world?” Culture helps to answer that.

The word culture itself comes the Latin word *cultura*, meaning cultivation or growing. This is precisely what humans do with both their material and abstract cultural components. Humans, since early childhood, learn to shape, create, share, and change their culture. Culture is the very vehicle we use to navigate through our environments. Culture is a form of communication and it evolves. And as a type of compass, it leads.

4.1.1 Components of Culture

At the most simplistic levels, culture can be either concrete and tangible, or abstract. Either way, culture is used to express identity for both individuals and groups. And whether it is concrete or abstract, again it is a human construct used as a way to create a sense of belonging. People convey culture through various outlets such as festivals, food, and architecture. They are able to meet their worldwide fundamental needs while maintaining individual group qualities. Culture can be classified into three different categories: mentifacts (ideas or beliefs), artifacts (goods or technology), and sociofacts (forms of social organization).

All cultures have underlying beliefs and thought processes. These beliefs include religion (Chapter 6) and language (Chapter 5) but go far beyond that. Other important beliefs include things like nationalism (see Chapter 8), customs orprejudices. These beliefs can be expressed through various avenues, using a variety of auditory, visual, and tactile means. For example, nationalism can be expressed through song, cuisine, dress, and public events. You can hear nationalism in the form of an anthem, see it in the form of a flag, taste it when you eat a dish that represents a group of people, and feel it in the form of a piece of jewelry.

Technology is a human construct. From our earliest inventions (fire, weapons) to a supercomputer, the things that people build are products of their perceived needs, their technical abilities and their available resources. Technology includes clothing, foods and housing. Another name for technology is **material culture**. Think of material culture as the material that archaeologists study. The materials that we use are often left behind for later people to study, like the clay tablets the Sumerians used to record their writing or the remnants of an Iroquois longhouse used for shared living. Other components of culture (like ideas) leave fewer traces. We can find material culture related to burial practices that date back millennia but may not always have the material evidence to show how people grieve.

Lifestyle is a component of culture that can be overlooked, but it is vitally important. In many cultures, a family is a very large unit and people can tell in great detail their exact relationship to everyone else in a place. In the modern context, a family could consist of a single parent and a child and it is possible to live in a neighborhood filled with unrelated people and not know the name of a single neighbor.

Culture can be seen either through the lens of a microscope or through that of a telescope. Folk culture is local, small and tightly bound to the immediate landscape. Popular culture is large, dispersed, and globalizing. These two forms of culture are not totally separated. They are related and both currently exist in the world. Prior to about 2008, most people on Earth lived in rural communities, often practicing a folk culture. The world as a whole is moving toward popular culture.

4.1.2 Cultural Reproduction

As human beings, we reproduce in two ways: biologically and socially. Physically we reproduce ourselves through having children. However, culture consists solely of learned behavior. In order for culture to reproduce itself, it has to be taught. This is what makes culture a human creation. How is culture transmitted? Human beings are natural mimics. This is the way we learn to speak, and it is the way we learn the rest of our culture as well. We learn through observation and, subsequently, through practice. At another scale, mimicry is the mechanism that drives cultural diffusion. Human beings copy the things we like. The old line “Imitation is the sincerest form of flattery,” perfectly describes the human desire to incorporate successful adaptations.



Figure 4.2 | Ribs restaurant in Madrid, Spain
This restaurant is near one of the busiest tourist areas in the city, but it is on a side-street off the iconic Gran Vía. Could you imagine this restaurant on a street corner in the United States?
Author | Dominica Ramírez
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Figure 4.3 | Spanish restaurant in Tivoli Gardens, Copenhagen, Denmark
Notice the use of yellow and red (the colors of the Spanish flag). Also, the bull and matador image is prominent. Is that the best way to promote churros, a typical fried food of Spain?
Author | Dominica Ramírez
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How people have shared culture has changed drastically over time. This can partly be attributed to the channels in which we share culture. In the past, culture was shared orally and in person. Words eventually became written, the written became electronic, and we now have access to things from anywhere at any time.

The debate over authenticity has also become a topic of debate. If culture is created, recreated, and is fluid, how can we define authenticity? Has culture become **placeless**? Placelessness or the irrelevance of place has become a central topic in the contemporary philosophy of geography. Can people have an All-American dining experience in the heart of Madrid, Spain? Can they experience Spanish street-food at a historic theme park in Copenhagen, Denmark? As the following pictures show, icons representing other places are now common in the landscape.

4.1.3 Culture Hearths

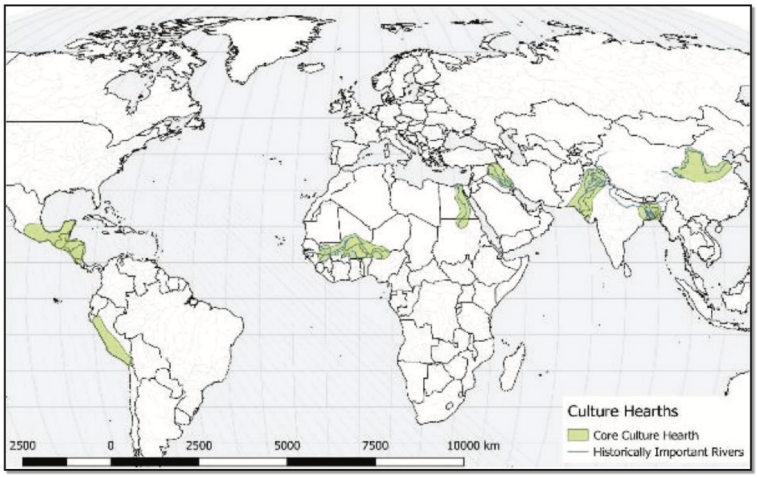


Figure 4.4 | Depicts culture hearths and their associated rivers, where applicable[1]
Author | David Dorrell
Source | Original Work
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Human beings have always had learned behaviors, it's one of the defining characteristics of human beings. Cultural evolution describes the increasing complexity of human societies over time. Our earliest cultures were simple. Welived in small groups, ranged across fairly large areas, and lived off the natural landscape. Human impact on the environment is less than it is now, but there was an impact. Earlier peoples burned forests to clear land and flush game, and in some places hunted the megafauna to extinction.

Recognizable cultures have places of origin. The word culture refers to cultivation or growing. We care for something, we nurture an idea as it grows. All cultural elements have a place of origin. Some places have been responsible for a great deal of cultural development. We call these places **culture hearths**. Culture hearths provided many of the cultural elements (technologies, organizational structures, and ideologies) that would diffuse to other places and later times. Cultural hearths provide operational scripts for societies.

Culture hearths are closely associated with the foods that they domesticated. food is an important cultural element due to the fact that it is both a technology as well as form of expression. Although the preceding map shows areas of ancient civilization, these are not the only places that have contributed to contemporary cultures. Ideas can arise anywhere, but ancient ideas collected in these places.

Cultures incorporate pieces of other cultures. Some recognizable themes in creation myths are stories of great floods or other cataclysmic events, and these types of stories recycled through history. Languages without writing will often reuse another language's writing system. Once again, desirable characteristics get copied.

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4.2: The Cultural Landscape

Cultures' beings rely on natural resources to survive. In the case of rural cultures, those resources tend to be local. For urban cultures, those resources can either be local, or they can be products brought from great distances. Either way,cultures influence landscapes and in turn landscapes influence cultures.



Figure 4.5 | Culture-Landscape Relationship
Author | David Dorrell
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The physical landscape consists of places like the Appalachian Mountains that stretch across a large portion of North America, the Mongolian-Manchurian grasslands, the Amazon river basin, or any other environment. These are landscapes that have been formed over thousands, if not millions of years by forces of nature. In order to live in places a different as these, humans have needed to adapt their lifestyles. The relationship between people, their culture, and the physical landscape is known as human-environment interaction. This relationship is reciprocal; culture adapts to a particular place, and that place is changed by people. **Cultural ecology** refers to the types of landscapes created by the interaction of people and their physical environment.

Humans have been thinking about the relationship between people and their environments for a considerable amount of recorded history. In the book *On Airs, Waters, and Places*, the Greek philosopher Hippocrates wrote that different climates produced different kinds of people. He believed that cold places produced emotionally distant people, and hot climates produced lazy, lethargic people. The ideal place (which coincidentally was his own place) was in the middle of the known world and produced the best kind of people. These ideas would now be considered environmentally deterministic. Remember that Environmental determinism is the idea that a particular landscape necessarily produces a certain kind of people. Ideas like this were still fashionable into the twentieth century. The problem with the idea is that it's simplistic and reductionist. A cold environment doesn't force people to be aloof. It forces them to invent warmer clothes. Technology is the difference, not behavior. Instead of determinism, the more common term to use is now possibilism. Physical landscapes set limits on a group of people that may or may not require a large adaptation, or a large modification of the environment itself. Humans can now survive in very inhospitable environments, most notably, the International Space Station.



Figure 4.6 | Helen, Georgia
What is the narrative here? How have people changed/adapted the mountainous landscape of this region of Georgia, USA, to look like a town in mountainous Bavaria, Germany?
Author | Dominica Ramírez
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Landscapes are cultural byproducts. The way that we use the local resources generates the visible landscape. Architecture, economic activities, clothing and entertainment are all visible to anyone interested in looking at a place. Because the physical landscape varies across space, and because culture varies across space, then the cultural landscape is variable as well. Different people can have different adaptations to similar places. Conversely, places far from one another may have similar adaptations to climate or other factors.

Cultural landscapes can be considered as both history and narrative. Power is written into the landscape. We make statues to commemorate the wealthy and the politically connected in rich places. We place garbage dumps and airports in poor places. Looking at the landscape as a record of history, power, and representation is known as landscape-as-text. The landscape can be read in the same that a book can be read.

The largest differences between landscapes that we see now are the differences between the rural and the industrial and between places that are less integrated with the rest of the world and those that are heavily integrated (globalized). Global places are becoming homogenized.

Cultural Change

A sensible question to ask might be “Where did all the cultures come from?” As people moved into new places, they adapted and changed, and the new places were changed in turn. People change over time as well. Circumstances change in a place. Groups who move into a forest will need a to adapt if they cut down all the trees. Groups that adopt a new crop will see their lives change. Divergence could be as simple as borrowing a word to describe an invention. All cultures change.

Culture Regions

We can sort the world into regions based on cultural characteristics. A region is an area characterized by similarity or a cohesiveness that sets it apart from other regions. Regions are mental constructs, the lines between places are imaginary. When someone talks about the English-speaking world or Latin America, they are referring to culture regions.

4.2.1 Cultural Case Study: The Diffusion of Dancehall

A cultural attribute *could* diffuse just about anywhere, but that isn’t how diffusion usually works. Some places are interested in the innovation (new thing) and some are not. The following example takes one narrowly defined culturalattribute and traces a path to other places. Dancehall, a form of reggae, developed in Jamaica in the late 1970s and grew over time to prominence on the island. On of Jamaica’s main exports is music and Dancehall became an exported commodity like many other musical forms. In the case of Dancehall, the music is sufficiently defined to allow us to see where it has diffused to. Large markets like North America are visible to us and we see Dancehall in some of the music of Drake or Rihanna, but other places may seem less obvious. In Brazil, artists such as Lai Di Dai has taken the genre and adapted it to local tastes (which may or may not include changing the language of delivery).



Figure 4.7 | Lai Di Dai
from the video for "Chega na Dança"
Author | Lai Di Dai
Source | YouTube
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In Germany, the band Seeed has found great success with Dancehall. And in Denmark we find artists like Raske Penge.



Figure 4.8 | Seeed
from the live video "Live 2013 (Berlin + Mönchengladbach)"
Author | Seeed
Source | YouTube
License | Fair Use



Figure 4.9 | Raske Penge
from the video "Original Bang Ding"
Author | Raske Penge
Source | YouTube
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This musical style has moved far beyond its origin. Similar diffusion is found with other musical genres, from the earliest forms of pop music through to the present day.

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4.3: Folk Culture

The term *folk* tends to evoke images of what we perceive to me traditional costumes, dances, and music. It seems that anything with the prefix *folk* refers to something that somehow belongs in the past and that is relegated to festivals and museums. The word *folk* can be traced back to Old Norse/English/Germanic and was used to refer to an army, a clan, or a group of people. Using this historic information, folk culture (folktales, folklore, etc.) can be understood as something that is shared first among a group of people and then with the more general population. It is a form of identification. Folk is ultimately tied to an original landscape/ geographic location as well. Folk cultures are found in small, homogeneous groups. Because of this, folk culture is stable through time, but highly variable across space.

Folk customs originate in the distant past and change slowly over time. Folk cultures move across space by relocation diffusion, as groups move they bring their cultural items, as well as their ideas with them.

Folk culture is transmitted or diffused in person. Knowledge is transmitted either by speaking to others, or through participating in an activity until it has been mastered. Cooking food is taught by helping others until an individual is ready to start cooking. Building a house is learned through participating in the construction of houses. In all cases, folk cultures must learn to use the resources that are locally available. Over time folk cultures learn functional ways to meet daily needs as well as satisfy desires for meaning and entertainment. Folk cultures produce distinctive ways to address problems.

Houses tend to be similar within a culture area, since once a functional house type is developed, there is little incentive to experiment with something that may not work. Food must be grown or gathered locally. People prefer variety, so they produce many crops, plus relying on only a few foods is dangerous. Clothing is made from local wool, flax, hides, or other materials immediately available. Local plants serve as the basis of folk medicinal systems. People are entertained by music that reinforces folk beliefs and mythologies, as well as reflects daily life. Folktales or folklore exists as foundational myths, origin stories or cautionary tales.

Holidays provide another form of entertainment. Special days break the monotony of daily life. A holiday such as Mardi Gras, which has its roots in the Catholic calendar provides an occasion to flout cultural norms and relieve tension. Another way of providing escape from monotony is provided by intoxicants. Although often not considered when discussing culture, human beings have been altering their own mental states for millennia. The production of alcohol, cannabis, tobacco or coca demonstrates that folk cultures understood the properties of psychoactive substances. Later these substances would be commercialized into modern products.

As folk cultures have receded there has been a return to valuing the folk. The Slow-food movement and the growth of **cultural tourism** has largely been driven for the desire experience elements of folk culture. As early as the German Grimm Brothers (19th Century Germany) people have wanted to preserve and promote folk culture. John Lomax (1867-1948) traveled the United States trying to record as many folk songs and folk tales (including slave narratives) as they faded from human memory.

Folk culture can also be expressed as craftsmanship versus factory work. Hand production of goods requires a great amount of knowledge to select materials, fabricate components, assemble and finish a product. Contrast this with industrial production in workers need to know very little about the final product, and have little relationship with it. This difference in modes of production was first discussed by Ferdinand Tönnies and *Gemeinschaft* and *Gesellschaft*. These two words denote the relationship between people and their communities, and by extension, their landscapes. *Gesellschaft* is the way life is lived in a small community. *Gemeinschaft* is the way that life is lived in a larger society.

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4.4: The Changing Cultural Landscape

It is understood that folk culture has been declining in the face of popular culture for some time. What is driving this decline? There are many things, with different underlying processes. Politically, in the last few centuries many placeshave been incorporated into states. These states have often pursued nationalistic policies that made life difficult for minorities of nearly every variety. The growth of a state-sanctioned national culture is the beginning of popular culture. Something as innocuous as public schooling or an official language can serve as a vehicle for promoting national values. Even if there is some overlap between the old culture and the new, the old has been prised loose from its central position in communal life. Economics also plays a role. Small, rural communities have been shrinking globally for centuries, since the beginning of the Industrial revolution. Leaving the spatial confines of a folk culture makes reproducing that culture very difficult, due to its close connection to place. When people migrate to places practicing popular cultures, the pressure to acculturate and assimilate are tremendous.

Changes in infrastructure has also aided the diffusion of popular culture. Roads bring in outside people, as well as reduce the friction of leaving a place. The internet has dramatically reduced the friction of distance regarding the diffusion of popular culture. It took decades for tomatoes to diffuse from the Americas to Italy, but we know about a new iPhone months before it even gets released.

The United States is huge laboratory of cultural interchange. Innumerable distinctive folk cultures were already in the Americas when the Europeans arrived. Waves of people from folk cultures arrived for decades, and they changed the larger culture of the United States.

Places of folk culture aren't the only places that are changing. Many places

with an established popular culture are subject to interaction between different pop culture spheres. At one time immigrants to the United States came from folk cultures. Now they are often from areas of popular culture. The Spanish-speaking world has its own pop music stars, and chart-topping musicians from different countries will often collaborate together garnering airplay and sales around the world. World regional cuisines are subject to becoming fads as well.

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4.5: Popular Culture

Popular culture is culture that is bought. Think about your daily life. You work to buy food and clothing, pay your rent, and entertain yourself. The origin of each ingredient in your food could be hundreds or even thousands of miles in either direction. Your clothing almost certainly wasn't made locally, or even in this country. Your house might look just like any house in any subdivision in North America, placeless and with little connection to local resources.

Popular culture is driven by marketing. Entire industries exist to convince us that our desires and needs will be best met through shopping. Why is this? Because without sales, the companies that produce pop culture will go bankrupt.

Popular culture industries must continuously reinvent themselves. Being popular today is not a guarantee of longevity. In order to convince consumers that last year's t-shirt is now unacceptable, it is necessary to promote **fashion**. Fashion is not just a concept related to clothing. It is the reason that automobile companies make cosmetic changes to their products every year. It is why fast food restaurants continually change some parts of their menus. Without the cachet of fashion, consumers may feel socially disadvantaged. This explains why some people with very limited incomes will spend money on expensive luxuries.

In terms of popular culture holidays are simply reasons to sell merchandise. The commercialization of Christmas has been increasing for over a century in western countries. Now it is possible to see Christmas displays in Japan or China, places with few Christians, but many available consumers. The same sort of marketing can be seen in the expansion of Halloween globally, and in the growth of Cinco de Mayo in the United States.

Hierarchical diffusion plays prominently in popular culture diffusion. Larger places tend to generate many of pop culture's hit songs, clothing styles, and food trends. Diffusion in popular culture is highly related to technology. Although it wasn't invented as such, the internet has become a venue for advertisement. Clickbait headlines and ad revenue have created an atmosphere where every conversation is a sales pitch.

This hierarchical diffusion means that innovations tend to diffuse from large, well-connected places to other large-well-connected places first, then trickle-down to smaller and smaller places. The gap in time that it takes for a new idea or product is known as cultural lag. In some places, there is almost no cultural lag. To very remote places, some innovations take a very long time to arrive. Bear in mind that there are places in the United states that still have no internet service.

Popular culture covers large populations with access to similar goods and services, but the pressing need to sell drives almost incessant modification, generally at a superficial level. Because of this we usually describe pop culture as stable across space, but highly variable across time.



Figure 4.10 | Fast Food Restaurant
Where is this fast food restaurant? It could be almost anywhere on Earth. In this case it is in Malmö, Sweden.
Author | Dominica Ramírez
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The commodification of folk intoxicants mentioned earlier has had a decided effect on the modern world. Low alcohol beers

have a minimal effect on the human body compared to commercial distilled spirits. The opium poppy, dangerous enough in its raw form, can be processed into heroin. The same can be said of coca (now used to produce cocaine) or tobacco. In folk form, these substances tended to be used for ritual purposes. In the context of popular culture, they are used in great quantity. Nevertheless, old folk patterns are still visible in the pop culture landscape. Italians still drink wine, a product they have produced for centuries, only now it might be bought from somewhere else. The Russian climate was good for producing grain and potatoes, which eventually was distilled into vodka.

Selling culture goes well beyond just food and clothing. Popular music and other forms of entertainment (video games, movies, etc.) are huge commercial entities marketing products well outside their places of origin. Movies made in the United States are often being made with the understanding that their international box office sales will be larger than their domestic sales. This is also true of other mass media products. These products are often related to other pop culture products. Companies rely on the familiarity consumers will have with a movie character in order to sell clothing, toys, video games, conventions and more movies in that series. When Marshall McLuhan wrote that "The medium is the message" he meant that television would be able to sell itself. The same expression could be expanded to pop culture in general.

The following graphic shows the top ten music charts for the week of September 10-16, 2017. Look closely at them.

US Top Ten

1. **Attention** by Charlie Puth
2. **There's Nothing Holdin' Me Back** by Shawn Mendes
3. **Slow Hands** by Niall Horan
4. **Believer** by Imagine Dragons
5. **Strip That Down** by Liam Payne featuring Quavo
6. **Wild Thoughts** by BJ Khaled featuring Rihanna & Bryson Tiller
7. **Look What You Made Me Do** by Taylor Swift
8. **Despacito** by Luis Fonsi & Daddy Yankee featuring Justin Bieber
9. **No Promises** by Cheat Codes featuring Demi Lovato
10. **Feels** by Calvin Harris featuring Pharrell Williams, Katy Perry, & Big Sean

Croatia Top Ten

1. **No Roots** by Alice Merton
2. **More Thank You Know** by Axwell & Ingrosso
3. **Feels** by Calvin Harris featuring Pharrell Williams, Katy Perry, & Big Sean
4. **New Rules** by DuaLipa
5. **Ok** by Robin Schulz featuring James Blunt
6. **Mi Gente** by J Balvin & Willy William
7. **Look What You Made Me Do** by Taylor Swift
8. **Frka** by Nipplepeople
9. **Sign Of The Times** by Harry Styles
10. **On My Mind** by Disciples

Colombia Top Ten

1. **Olha A Explosao** by MC Kevinho
2. **Feels** by Calvin Harris featuring Pharrell Williams, Katy Perry, & Big Sean
3. **Walk on Water** by Thirty Seconds to Mars
4. **La Estrategia** by Cali Y El Dandee
5. **Vivo Pensando En Ti** by Felipe Peláez & Maluma
6. **Besame** by Valentino, Manuel Turizo
7. **Bonita** by J Balvin & Jowell & Randy
8. **Robarte Un Beso** by Carlos Vives & Sebastian Yatra
9. **Shape of You** by Ed Sheeran
10. **Bailame** by Nacho

India Top Ten

1. **Mi Gente** by J Balvin & Willy William
2. **Walk on Water** by Thirty Seconds to Mars
3. **Makeba** by Jain
4. **Despacito** by Luis Fonsi & Daddy Yankee featuring Justin Bieber
5. **Hawayein** by Pritam & Arijit Singh
6. **Attention** by Charlie Puth
7. **Qismat** by Ammy Virk
8. **Feels** by Calvin Harris featuring Pharrell Williams, Katy Perry, & Big Sean
9. **Mere Rashke Qamar** by Nusrat Fateh Ali Khan
10. **Dusk Till Dawn** by ZAYN & Sia

Mexico Top Ten

1. **El Cido** by Timbiriche
2. **Ready For It?** by Taylor Swift
3. **Una Lady Como Tu** by Manuel Turizo
4. **Mi Gente** by J Balvin & Willy William
5. **Look What You Made Me Do** by Taylor Swift
6. **Robarte Un Beso** by Carlos Vives & Sebastian Yatra
7. **Felices los 4** by Maluma
8. **Me Rehúso** by Danny Ocean
9. **Bonita** by J Balvin & Jowell & Randy
10. **What Lovers Do** by Maroon 5 featuring SZA

China Top Ten

1. **A Million On My Soul** by Alexiane
2. **Despacito** (Remix) by Luis Fonsi & Daddy Yankee
3. **Look What You Made Me Do** by Taylor Swift
4. **Feels** by Calvin Harris featuring Pharrell Williams, Katy Perry, & Big Sean
5. **Attention** by Charlie Puth
6. **Go Away and Fly** by Jin Zhiwen
7. **Shape of You** by Ed Sheeran
8. **You Be Love** by Avicii
9. **Mi Gente** by J Balvin & Willy William
10. **Faded** by Alan Walker

Figure 4.11 | Top Ten Charts for Select Countries
Notice the amount of repetition from one chart to the next? Not every chart is a copy of the others, but the similarities certainly bear out the idea of an international music industry.
Compiled By | David Dorrell
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4.6: THE INTERFACE BETWEEN THE LOCAL AND THE GLOBAL

The basis of popular culture is commerce. As long as a product can be sold, it can survive in the marketplace. This brings up an interesting process. Commodification is the process in which a cultural attribute is changed into a mass-market product. Bear in mind that the mass-market product may not resemble the original product very much. Using a similar fast-food model as McDonald's, Taco Bell sells ostensibly Mexican products across the world with the notable exception of Mexico. Panda Express is similar for Chinese food. These chains are not in the business of makinghamburgers, tacos, or orange chicken. They are in the business of making a profit. Authenticity is irrelevant, and probably harmful in the drive to sell more.

The reverse of this process also applies. One aspect of marketing is the incorporation of global products into the local market. Companies will change their products or their entire product lines, if doing so is cost-effective and generates agood return on investment. There is even a Central America-based fried chicken chain in the United States. Brands like Sony and Hyundai are highly visible in the American landscape. K-Pop bands tour suburban arenas that also host Celine Dion and Paul McCartney.

4.6.1: South Asia

4.6.1.1: South Asia's Physical Landscape

4.6.1.2: Patterns of Human Settlement in South Asia

4.6.1.3: Cultural Groups in South Asia

4.6.1.4: South Asia's Population Dynamics

4.6.1.5: Future Challenges and Opportunities in South Asia

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4.6.1: SOUTH ASIA

4.6.1.1: South Asia's Physical Landscape
4.6.1.2: Patterns of Human Settlement in South Asia
4.6.1.3: Cultural Groups in South Asia
4.6.1.4: South Asia's Population Dynamics
4.6.1.5: Future Challenges and Opportunities in South Asia

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4.6.1.1: South Asia's Physical Landscape

Learning Objectives

- Identify the key geographic features of South Asia
- Explain the patterns of human settlement in South Asia
- Describe the cultural landscape of South Asia
- Analyze South Asia's current population growth and future prospects

South Asia's Himalaya Mountains are the highest in the world, soaring to over 8,800 meters (29,000 feet). Yet, these are also some of the world's youngest mountains, reflecting a region that has experienced significant physical and cultural changes throughout its history. Here, we find one of the earliest and most widespread ancient civilizations, the hearth area for several of the world's great religions, and a region whose population will soon be the largest on Earth.



Figure 4.6.1.1.1: Map of South Asia (© Cacahuate, Wikimedia Commons, CC BY-SA 4.0)

South Asia is a well-defined region in terms of its physical landscape (Figure 4.6.1.1.1). Formidable physical barriers separate the region from the rest of the Eurasian landmass. Much of the impressive physical geographic features of South Asia are the result of tectonic activity. Between 40 and 50 million years ago, the Indian Plate collided with the Eurasian plate (Figure 4.6.1.1.2). Both the Indian Plate and the Eurasian plate were comprised of fairly low density material, and so when the collision occurred, the two landmasses folded like an accordion creating the mountain ranges we see today. The Indian Plate is still moving towards the Eurasian plate today and over the next 10 million years, will move an additional 1,500 km (932 mi) into Asia.

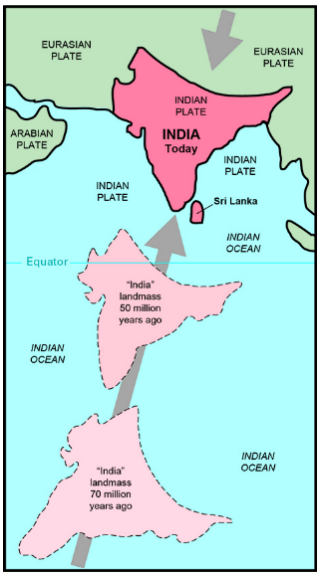


Figure 4.6.1.1.2: Indian Plate and Eurasian Plate Boundary (United States Geological Survey, Public Domain)

This massive tectonic collision resulted in perhaps the most well-known physical feature in South Asia: Mount Everest. Everest, located in the Himalaya Mountain range on the border of Nepal and China, is the tallest mountain in the world. Because the India Plate continues to collide with the Eurasian Plate, this mountain range is still tectonically active and is rising at a rate of 5 mm each year. Thus, if you're planning on scaling Mount Everest in ten years, be prepared to climb an extra two inches.

Although the Himalaya Mountains are well-known for having the highest peak, the Karakoram Mountain range, passing through Pakistan, India, China, and Afghanistan, has the highest concentration of peaks above 8,000 meters (26,000 feet). Its highest peak, K2, is the second-tallest mountain in the world and far fewer people have successfully made it to the top compared to Everest. One in four people die while attempting to summit.

Another key physical feature of South Asia, the Deccan Plateau, was also formed from the region's tectonic activity. Around 65 million years ago, there was an enormous fissure in Earth's crust which led to a massive eruption of lava. The entire Indian peninsula was buried in several thousand feet of basalt, a type of dense, volcanic rock.

South Asia's rivers, including the Indus, Ganges, and Brahmaputra form a lowland region that was home to several ancient civilizations. Today, these rivers provide for the water needs of many of this region's people, irrigation for agricultural lands, and an abundance of fish. However, these rivers have had significant environmental concerns in recent years and have supported increasing numbers of people along their banks. Most of the area along the Ganges River, for example, has been converted into urban or agricultural land and the wild species like elephants and tigers that used to be present along the river are now gone. Pollution in the Ganges River has reached unprecedented levels as industrial waste and sewage is dumped untreated into the river despite the fact that people frequently use the water for bathing, washing, and cooking. It is estimated that around 80 percent of all illnesses in India result from water-borne diseases. The World Bank has loaned India over $1 billion to clean up the river, but experts believe that larger scale infrastructure improvements are needed to improve the region's water quality.

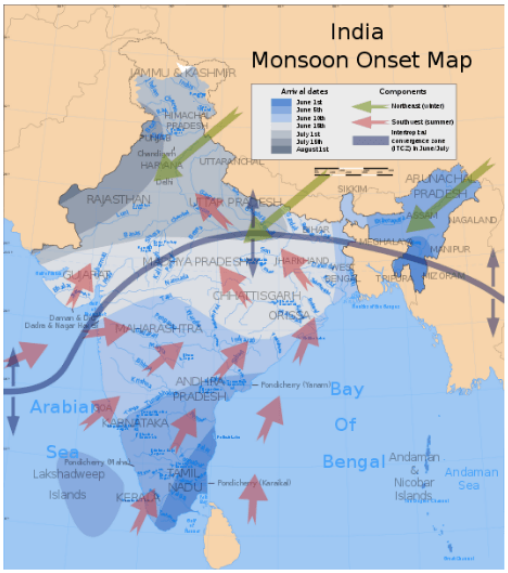


Figure 4.6.1.1.3: Map of Average Rainfall in India (© Saravask, based on work by Planemad and Nichalp, Wikimedia Commons, CC BY-SA 3.0)

The most important climatic feature of South Asia is a dramatic weather cycle known as the **monsoon** (Figure 4.6.1.1.3). The monsoon refers to seasonal shifts in wind that result in changes in precipitation. From October to April, winds typically come from the northeast in South Asia creating dry conditions. Beginning in April, however, winds shift to the southwest, picking up moisture over the Arabian Sea, Indian Ocean, and Bay of Bengal.

Most of the rain during the monsoon season results from **orographic precipitation**, caused when physical barriers form air masses to climb where they then cool, condense, and form precipitation (Figure 4.6.1.1.4). India's Western Ghats, a mountain range on its western coast, for example, causes orographic precipitation on its windward side. The Himalaya Mountains similarly result in orographic precipitation. However, these impressive highland areas are so formidable that they cause a dry area on their leeward side, known as a **rain shadow**. On one side of the Himalayas are some of the wettest places on Earth with over 30 feet of rain each year. On the other side, the rain shadow from the mountains forms the arid Gobi Desert and Tibetan Plateau.

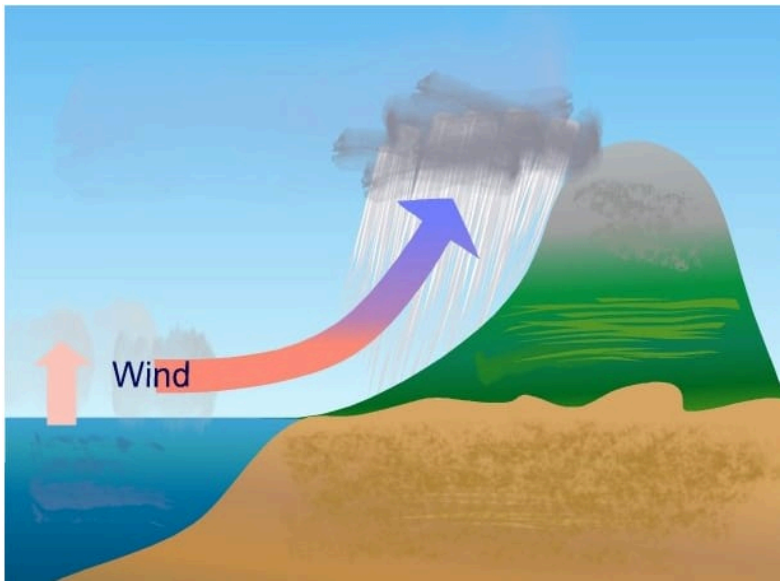


Figure 4.6.1.1.4: Orographic Precipitation (© Saperaud~commonswiki, Wikimedia Commons, CC BY-SA 3.0)

The monsoon rains, though extreme, provide significant benefits for South Asia's agriculture and economy. India gets more than 80 percent of its yearly rainfall from the monsoon and the rains are essential for both subsistence and commercial agriculture in the region. A good monsoon year will replenish the region's water supplies and increase crop yields, driving down food prices. Ample rainfall also contributes to the region's hydroelectricity potential. However, the torrential rains of the monsoon can also cause widespread flooding, destroying agricultural lands and transportation infrastructure, and can contribute to water-borne and

insect-borne illnesses due to the significant amounts of standing water.

The monsoon is changing, though. Global changes in climate have made the monsoon harder to predict. In addition, rising numbers of automobiles across South Asia have increased air pollution, which can interfere with the mechanics of the monsoon. In the past, once the monsoon season starts, rains continue throughout the season. Recently, though, the monsoon rains have begun to stop and start throughout the rainy season. People in this region are generally unprepared for an unpredictable or variable monsoon season and rely heavily on the rains for agriculture. Local leaders are pushing for more research to better understand the shifting monsoon rains and for increased education on water conservation and sustainable agricultural management.

Monsoon:

a seasonal shift in winds that results in changes in precipitation

Orographic precipitation:

rainfall that results from a physical barrier forcing air masses to climb where they then cool, condense, and form precipitation

Rain shadow:

a region with dry conditions on the leeward side of a highland area

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4.6.1.2: Patterns of Human Settlement in South Asia

South Asia's rich cultural landscape is a product of its varied physical environment and long history of human settlement. Modern humans first settled in this area 75,000 years ago, and early human ancestors likely settled in the region hundreds of thousands of years before that. The first major civilization in South Asia was in the Indus River valley beginning around 3300 BCE. This civilization, located in present-day Pakistan, Afghanistan, and northwestern India, relied on the monsoon rains to provide water to the Indus River. Here, early settlers developed systems of urban planning, baked brick houses, and the civilization at its peak numbered over five million people.

By 1800 BCE, however, the Indus Valley civilization began to decline. Weakened monsoon rains likely led to drought conditions and even small changes in precipitation and climate can have a devastating effect on a population of five million. Although residents developed some systems of water supply, they largely depended on the monsoon rains for agriculture, and many began moving to other areas of the region as arid conditions increased.

Around 1500 BCE, the Aryans, an Indo-Iranian group from modern-day Iran, invaded northern India. The Aryans were speakers of Indo-Iranian languages and brought their language, known as Sanskrit, their culture, and their ideas of social order to the South Asian realm. Hinduism and the caste system would both emerge from the Aryan culture.

South Asia was conquered by a number of different empires, each leaving an impact on the cultural landscape. The Maurya Empire stretched across the Himalaya and Karakoram mountain ranges, extending into most of South Asia by 250 BCE followed by a number of different dynasties. In the middle ages, the Islamic Empire extended into Afghanistan and Pakistan.

In the 18th century, however, the ruling Islamic Mughal Empire was in decline, leaving a power vacuum that would be exploited by the British. As the Industrial Revolution swept through the United Kingdom, the British were interested in expanding their supply of natural resources. Throughout the mid-18th century and the early 19th century, the British Empire, which had established the British East India Company, took over large stretches of land in India. The British established tea and cotton plantations, and took control of South Asia's resources. Although this region had previously established successful trading systems, the British saw local industries as competition and shifted their development to export raw materials. British rule also increased Westernization in South Asia and created an extensive rail transportation system.

As time went on, there were rising demands for independence. Mohandas K. Gandhi, known in India by the title "Mahatma," was a London-educated lawyer and one of the leaders in India's struggle for independence. He organized local communities to participate in nonviolent protests and his commitment to nonviolent resistance would inspire later civil rights leaders like Martin Luther King Jr.

Throughout this time, the isolated Himalayan countries of Nepal and Bhutan largely existed as **buffer states**, caught between the powerful British Empire and China. Their relative isolation allowed them to develop unique cultural features with little influence from outside groups, but as with most buffer states, left them with less economic and industrial development than their more powerful neighbors.

The British eventually agreed to withdraw from India but political and religious differences resulted in a **partition** of the former British territory in 1947 (Figure 4.6.1.2.1). Areas that were majority Hindu would become the secular state of India. Areas that were majority Muslim would become the new Islamic state of Pakistan. Since Muslims were clustered both in modern-day Pakistan and along the mouth of the Ganges on the coastal Bay of Bengal, the Muslim state of Pakistan would be divided into a Western and an Eastern territory. This prompted large-scale migrations of Hindus and Muslims who were on the "wrong" side at the time of the partition.



Figure 4.6.1.2.1: Partition of British India and Migration (Derivative work from original by historicair, Wikimedia Commons, CC BY-SA 3.0)

Not everyone in South Asia supported the partition plan. Gandhi, who had long called for religious unity in the region, was opposed to the concept. Hundreds of thousands of people were killed in violent riots. In 1948, Gandhi was assassinated by a Hindu nationalist who opposed the partition plan and Gandhi's commitment to nonviolence.

Furthermore, although there were areas that were clearly majority Hindu or majority Muslim, religious minorities existed throughout India and not all regions had an easy transition. At the time of the partition, states were free to decide whether they wanted to join Hindu India or Muslim Pakistan. In the territory of Jammu and Kashmir in Northern India (Figure 4.6.1.2.2), Muslims comprised around 75 percent of the population but the maharaja, the Sanskrit term for "great ruler," was Hindu. The maharaja struggled with the decision, and in the meantime, Muslim rebels, backed by Pakistan, invaded. He then gave the territory to India in exchange for military aid.



Figure 4.6.1.2.2: Map of the Disputed Areas of Jammu and Kashmir (Central Intelligence Agency, World FactBook, Public Domain)

Today, Jammu and Kashmir still remains a contentious territory and there have been violent clashes in the past few decades over political control. In the 1950s, China, without the knowledge of India, built a road through the northern portion of the state and was given territory by Pakistan. Although India claims the entire state, it controls the southern half of the state and about four-fifths of its population. Pakistan controls the territory's northern portion and moved its capital from Karachi to Islamabad to better control its frontiers. East Pakistan, long marginalized and culturally discriminated against by West Pakistan, gained independence as the state of Bangladesh in 1971.

As a region, South Asia is now the most populous area in the world and is home to over 1.8 billion people. Some of the world's largest megacities are located here as well, including Delhi, India (population of 26 million in the entire metropolitan area), Karachi, Pakistan (population of 14 million, with some estimating that it is much higher) and Mumbai, India (population of over 21 million). Despite the sizeable population, however, the region remains largely rural. Only around 36 percent of people in Pakistan, 31 percent of people in India, and 28 percent of people in Bangladesh live in cities. These relatively low levels of urbanization indicate that most people in the region still practice agriculture.

Urbanization is increasing, however, as industrialization and development have brought new jobs to the cities. British colonization left the region with the English language which has proven an economic asset, though it has also led to the marginalization of indigenous languages. Foreign companies have increasingly outsourced to India, taking advantage of a large, low-wage and English-speaking labor pool. **Outsourcing** refers to contracting out a portion of a business to another party, which might be located in a different country. Business processing in particular, such as call centers and information technology, has been outsourced and employs significant numbers of people in India. India is also one of the global leaders in fiber production, and textile production remains an important part of Pakistan's and Bangladesh's economies as well.

Nepal and Bhutan remain isolated both in terms of physical geography and global economic integration. Political uncertainty has generally hampered economic growth in Nepal but the country has been able to reduce its poverty rate considerably in recent decades. Tourism to Nepal has also increased, though local leaders have expressed concern over mounting issues of trash and pollution as a result of climbers flocking to Mount Everest. In the early 21st century, Bhutan transitioned from an absolute monarchy to a constitutional monarchy and held its first general election. Its government has promoted the measure of gross national happiness (GNH), as opposed to relying strictly on measures of economic or industrial development and has sought sustainable ways to develop and urbanize.

Buffer states:

a country situated between two more powerful states

Partition:

the division of a territory into smaller units, as with the former British Empire in South Asia

Outsourcing:

contracting out a portion of a business to another party, which might be located in a different country

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4.6.1.3: Cultural Groups in South Asia

South Asia is a diverse region in terms of its ethnic landscape, culture, and religious beliefs. As shown in Figure 4.6.1.3.1, in the northern portion of the region, the Indo-European languages like Hindi dominate as a result of the Aryan invasion. Along the Himalayas, languages in the Sino-Tibetan family dominate. In southern India, however, most groups speak a language in the Dravidian family, comprised of the indigenous languages of South Asia that were present before the arrival of the Aryans. These language families reflect broader differences in culture and ethnicity, including particular religious practices and food customs. Thus the label "Indian cuisine" actually encompasses a diverse array of regional and traditional specialties.



Figure 4.6.1.3.1: Map of the South Asian Language Regions (© Filpro, Wikimedia Commons, CC BY-SA 4.0)

South Asia is a hearth area for several of the world's great religions. Out of the Aryan invasion of northern India came a religious belief system known as Vedism. The religious texts of Vedism, known as the Vedas, combined with local religious beliefs developed into the modern-day religion of Hinduism by around 500 BCE. **Hinduism** is a polytheistic religion with a wide variety of individual beliefs and practices. Hinduism is a highly regional and individual religion and its polytheistic nature reflects this open understanding of belief. Of Hinduism's over 1 billion followers, 95 percent live in India.

At its heart, there are four key features of Hinduism: dharma, karma, reincarnation, and worship. Dharma refers to the laws and duties of being and is different for every person. You might be a student and an employee and a child and a sibling. All of those roles have prescribed responsibilities. To be a good student, for example, means to attend class, read the textbook, and study. In Hindu culture, there are also restraints and observances for how you interact with other people depending on their status.

Hindu views on the afterlife are quite different from the Judeo-Christian conception of heaven. Hindus believe in karma, which means that your deeds, good or bad, will return to you. They also believe in reincarnation, which is the idea that once you die, your spirit is reborn. Thus, you are the sum of numerous past existences. Karma, dharma, and reincarnation go hand in hand. If someone had done good deeds, had good intentions, and lived virtuously, when they die and are reincarnated, they might come back as something great – a prince, perhaps. Conversely, if someone was a terrible person, accumulating an excess of negative karma, when they are reincarnated, they might come back as someone of very low status – or maybe not even a person at all.

Hindu scripture discusses four distinct castes, or groups, of people in society, an example of **social stratification**. This social hierarchy is known as the **caste system**. The Brahmins, the highest caste, consist of priests and teachers and represent around 3 percent of India's total population. There is a warrior caste, a merchant caste, and finally the lowest, the laborer caste of landless serfs. Excluded from this caste system, and viewed as so below it that they are not even a part of it, are the "untouchables," also known as "Dalit" meaning "oppressed." The untouchables are so-named because they perform work that makes them spiritually unclean, such as handling corpses, tanning hides, or cleaning bathrooms. Traditionally, higher castes would get ritually purified if they touch a Dalit. Many untouchables are indigenous, non-Aryan Indians.

So how might the belief in karma and reincarnation affect social justice in South Asia? Although the caste system was outlawed by the Indian constitution, widespread discrimination and persecution persists. Many Hindus believe that those in lower castes were reborn into that social status because they had committed misdeeds in their past life. However, other Hindus fought against the caste system and have worked to more fully integrate the Dalits into Indian society.

Buddhism emerged out of Hinduism in northern India following the life and teachings of Hindu prince Siddhartha Gautama. According to Buddhist belief, Siddhartha lived a life of luxury, but became disenchanted with his life of privilege when he was faced with society's injustices, such as illness and extreme poverty. Since Hinduism offered no clear cessation of what Siddhartha viewed as an endless cycle of suffering through samsara, the soul's continual death and rebirth, he sought out new ways of ending suffering. For a time, Siddhartha practiced meditation and extreme asceticism, eating only dirt and bits of rice. But neither the path of luxury nor the complete absence of worldly pleasures gave him the insight he sought. Eventually, Siddhartha, in meditation under a Bodhi tree in Bodh Gaya, India, discovered what Buddhists refer to as the Middle Way, a path of moderation. He is said to have achieved enlightenment and is known as the first Buddha, meaning "awakened one."

Although Buddhism, like Hinduism, is a highly regional religion with many different forms of individual expression, Buddhists generally share a belief in the Four Noble Truths: 1) Suffering is universal and inevitable, 2) The immediate cause of suffering is desire and ignorance, 3) There is a way to dispel ignorance and relieve suffering, and 4) The eightfold path is the means to achieve liberation from suffering. Buddhists also share with Hindus a common belief in karma, dharma, and reincarnation.

Buddhism diffused across Asia, though never taking a strong hold in India (Figure 4.6.1.3.2). The Maurya Emperor Ashoka, in particular, was responsible for the widespread diffusion of Buddhism in the 3rd century BCE. The religion has three primary branches, each with a distinct regional concentration. The oldest branch, Theravada, is primarily practiced in Southeast Asia, in places like Cambodia, Laos, Myanmar, and Thailand and is also the majority religion on the South Asian island of Sri Lanka. Mahayana is practiced by most Buddhists worldwide, particularly in places like China and Japan. Vajrayana Buddhism, which is sometimes considered a subset of Mahayana Buddhism, is practiced in the Himalayas and Tibetan Buddhism is a notable example. Buddhism has around 500 million followers worldwide.

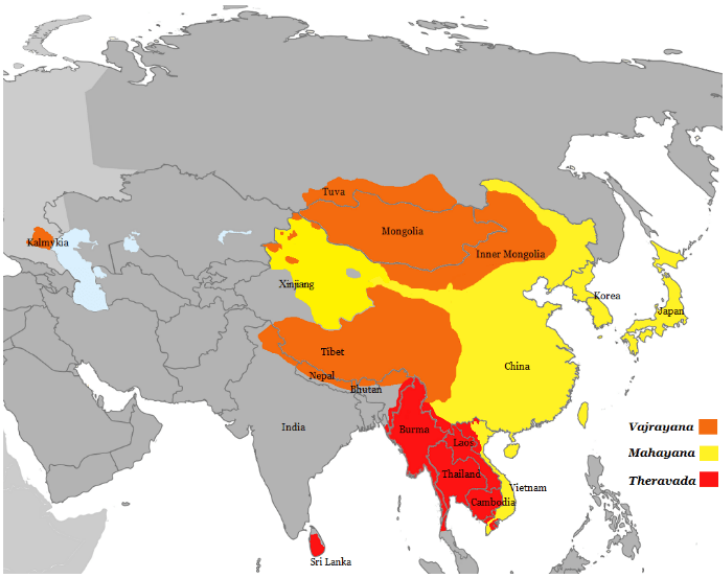


Figure 4.6.1.3.2: Map of Buddhism (© Javierfv1212, Wikimedia Commons, CC BY-SA 3.0)

Although Buddhism and Hinduism are the most widely practiced, South Asia was also a hearth area for the Jain and Sikh religions. **Jainism** emerged in India in the first century BCE and emphasizes ahimsa, nonviolence toward all living beings. Even insects found in the home are gently ushered out rather than killed. Jains also seek to break free from attachments and inner passions, and aim to keep an open mind toward different perspectives. The teachings of Jainism were influential for Gandhi and his emphasis on nonviolent resistance.

Sikhism emerged in the Punjab region of northwestern India and northern Pakistan in the 15th century. It is a monotheistic religion founded on the teachings of Guru Nanak that combines elements of both Hinduism and Islam. Like Hindus, Sikhs believe in reincarnation and karma. But unlike Hinduism, Sikhism prohibits the worship of idols, images, or icons. Sikhs believe God has 99 names, an adaptation of Hindu polytheistic belief. Sri Harmandir Sahib, commonly called the "Golden Temple," in Amritsar, India is the holiest Sikh temple, which are called gurdwara (Figure 4.6.1.3.3). However, the building is open to everyone and every

visitor is offered a free meal. Over 100,000 people visit the site every day.



Figure 4.6.1.3.3: Harmandir Sahib, Amritsar, Punjab, India (© Oleg Yunakov, Wikimedia Commons, CC BY-SA 3.0)

These religions, along with other minority religions like Christianity and indigenous belief systems, have not always coexisted peacefully in South Asia. Although India is officially secular, having no official religion, regional religious conflicts have often occurred throughout history. The difficulty is that in this region, very few people actually are secular, with no attachment to religion. Governments have thus struggled to find ways of accommodating minority religious groups while not offending the majority.

Hinduism:

an ancient polytheistic religion that first developed in South Asia and is characterized by a belief in karma, dharma, and reincarnation

Social stratification:

a system of social categorization where people in a society have differing levels of social status

Caste system:

a form of hereditary social hierarchy found in Hinduism

Buddhism:

religion that emerged from Hinduism and is based on the teachings of Siddhartha Gautama

Jainism:

a religion emerged in India in the first century BCE and emphasizes ahimsa, nonviolence toward all living beings

Sikhism:

a monotheistic religion founded on the teachings of Guru Nanak that combines elements of both Hinduism and Islam

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4.6.1.4: South Asia's Population Dynamics

South Asia is the most populous region on Earth, but why is it the most populous, and how do geographers study population? The simplest way to measure population is to count the number of people in an area. India, for example, has a population of over 1.3 billion, making it the second-most populous country after China. But do raw numbers of people tell the whole story of the human population in an area? If two countries have the same population, but one is far smaller than the other, how could we examine population in a way that explores this difference?

Geographers often use the concept of density to investigate population. **Arithmetic density** is fairly easy to calculate. It is determined by simply taking the number of people in an area divided by the size of the area. If a territory was one kilometer square, for example, and was home to 100 people, the arithmetic density would be 100 people per square kilometer. Although arithmetic density is easy to calculate, it gives us a fairly limited view of population density. What if there are two tracts of land that are the same size and have the same number of people, but one is lush and fertile and has people spread out evenly and the other has a tiny river that everyone lives near? If you were using arithmetic density, the measurements for these two areas would be the same even though the actual settlement patterns are quite different (Figure 4.6.1.4.1). **Physiologic density** takes into account this difference by examining the number of people per unit of arable, or farmable, land.

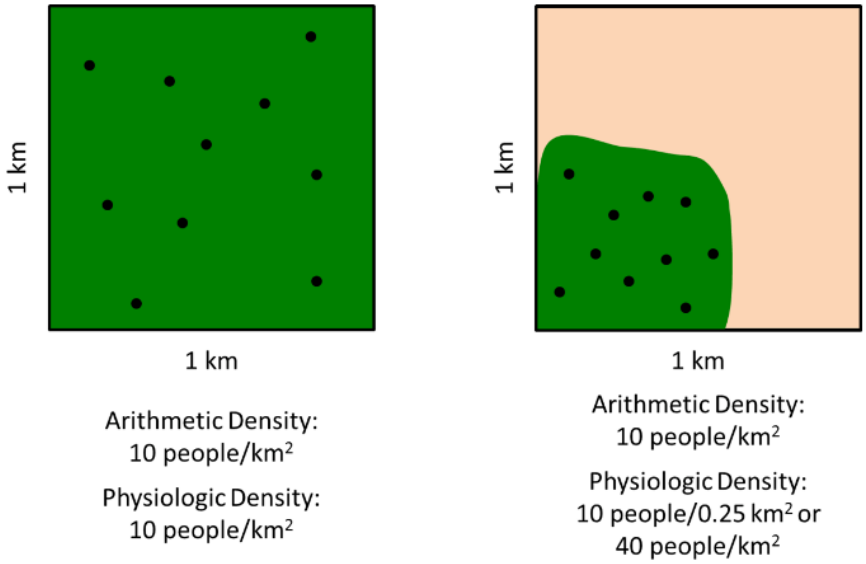


Figure 4.6.1.4.1: Arithmetic and Physiologic Density (Figure by author)

Arithmetic and physiologic density can give us insight into the concentration of a country's population and allows us to make comparisons between countries. The United States, a fairly large country, for example, has an arithmetic density of 32 people per square kilometer. However, a relatively small percentage of US land is arable, so the physiologic density is 179 people per square kilometer. Bhutan, by comparison, has a low population density of only 14 people per square kilometer. However, its rugged mountain environment means that only around 2 percent of the land is farmable, so its physiologic density is 606 people per square kilometer. By most measures, the most densely populated place in the world is Singapore with an arithmetic density of 6,483 people per square kilometer and a physiologic density of 441,000 people per square kilometer.

Another way to measure population is **agricultural denisty** which is the ratio of the number of farmers to the area of land. In developing countries where many people work as farmers, agricultural density is very high. South Asia has a high agricultural density. In developed countries, commercial agriculture and technological innovations have allowed relatively few people to be farmers and agricultural densities are generally low.

Geographers can also examine how a population is growing and changing over time. One way to explore this is with a **population pyramid**, a graphical representation of a population's age groups and composition of males and females. Ages of people are grouped in cohorts with younger people on the bottom and older on the top. Thus, a population pyramid that is very triangular has a lot of young people and is growing rapidly.

Typically, the ratio of males to females, known as the **sex ratio**, is 1 to 1 and population pyramids will have even sides. However, in populations where males are favored, the ratio may be skewed. Similarly, in countries where men have died in war, such as in World War II Germany, there might be more females. When geographers and population demographers refer to sex, it means something different from gender; sex is a person's biological identity as male or female while gender refers to a person's role as a "man" or "woman" within society.

India's 2017 population pyramid reveals rapid population growth over the past few decades (Figure 4.6.1.4.2). However, the leveling off at the base of the pyramid indicates that population growth may be slowing. In addition, India's cultural preference for male children is clearly apparent. Among children aged zero to four, India has 62 million males and only 55 million females. Nationwide, there are over 47 million more males in India than females. Both abortion and infanticide have contributed to this imbalance.

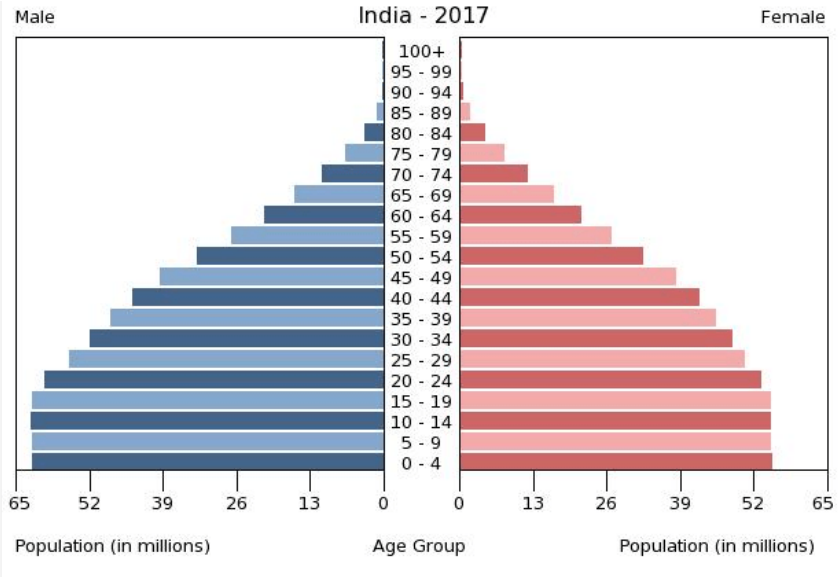


Figure 4.6.1.4.2: India's Population Pyramid, 2017 (U.S. Census Bureau, Public Domain)

All of the population pyramids for the countries in this region reveal preferences for male children, though none are as severe an imbalance as India. Although Pakistan's population growth has slowed in the past decades, its fertility rate remains the highest in the region at around 3.5, meaning a woman in Pakistan, on average, will have 3.5 children.

Arithmetic density:

the number of people in an area divided by the size of the area

Physiological density:

the number of people per unit of arable land

Agricultural density:

the ratio of the number of farmers to the area of land

Population pyramid:

a graphical representation of a population's age groups and composition of males and females

Sex ratio:

the ratio of males to females in a population

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4.6.1.5: Future Challenges and Opportunities in South Asia

India's male-skewed population pyramid is indicative of a larger issue of gender inequality in its society. Sexual violence in particular continues to be a significant issue. Although the percentage of women who have been raped in India is lower than in other countries, a majority of rape cases are never reported and even an incidence rate of 8 or 9 percent in a population of over 1 billion people means that tens of millions of women have been victimized. The government of India has taken steps to reform its criminal code so that more criminals are prosecuted but even after a 2013 reform, marital rape continues not to be a crime. In a country that has few female police officers, high rates of domestic violence, and a relatively low status of women, sexual violence will likely remain a problem until these broader, systemic issues are addressed.

Overall, South Asia's growing population will have a significant impact on its geography. Much of the historic growth in this region was supported by the **Green Revolution**, which refers to changes in agricultural technology and productivity beginning in India in the 1960s. In 1961, India was at risk of widespread famine when a hybrid rice seed was developed that yielded ten times more rice than traditional seeds. It was called "Miracle Rice" and its use spread throughout Asia. Despite these agricultural advances, South Asia has the highest rates of child malnutrition of any world region. The low status of women in particular contributes to a lack of knowledge about the nutrients that are needed for children. Around one in three children in India are underweight.

Economically, South Asia has experienced rising prosperity yet systemic issues of governance and poverty remain. India in particular has one of the world's largest economies and the fastest growing economy in the region. This economic growth has mainly been focused on urban centers, drawing large numbers of people from the rural countryside to the cities in hope of finding work. Many cities have been unable to accommodate the rapid migration, however, and the sprawling slums in India, Pakistan, and Bangladesh are indicative of inadequate infrastructure and economic inequality. Several factories in this region have collapsed in recent years, killing thousands of workers and highlighting the poor working condition of many South Asians.

What does the future hold for South Asia? Although economic growth has reduced poverty in India, down from 60 percent in 1981 to 25 percent in 2011, corruption has increased. Inequality between genders, religious groups, castes, and ethnic groups remains a problem in much of the region. In some cases, this has led to **communal conflict**, which refers to violence between members of different communities. In Sri Lanka, a majority Buddhist country, ethnicity and religion are closely linked. Buddhists here have shaken the traditional peaceful image of their religion and have engaged in violent conflict with the minority Tamils and Muslims.

Still, local government and community leaders have sought to escape the shadow of the 20th century's turmoil by embracing new models of development and cooperation. In Bhutan, for example, the government initiative to measure gross national happiness resulted in shifting urban amenities, such as schools and healthcare clinics, to rural areas. This slowed the rural to urban migration that was rapidly occurring in other parts of the realm. Despite political and military turmoil, Pakistan has been able to substantially decrease its poverty rate. South Asia remains a complex realm at the crossroads of modernization and traditional cultural and religious values.

Green Revolution:

changes in agricultural technology and productivity beginning in India in the 1960s

Communal conflict:

violence between members of different communities

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4.7: Global Culture

Globalization is the integration of the entire world into a single economic unit. This is associated with frictionless movement of money, ideas, and (to a lesser extent) people. This growing reality has created a newer type of popular culture, global culture.

Historically, popular culture was restricted to areas the size of States, or at the very most areas within culturally related spheres (e.g. the English-speaking world). United States culture was defined by a set of characteristics (language, law, settler colonial history, etc.) that translated to a few other places, such as Canada or Australia, but mostly remained place bound. This is no longer the case. As was mentioned previously, video games are designed in one country to appeal to a global market. The same is true of music, movies, clothes, smartphones and office productivity software.

At a superficial level at least, the components of life are becoming more homogeneous across large parts of the world. National popular culture producers are merging into international producers, and these international producers have global ambitions. Any sizable popular culture content distributor (EMI Records, Sony, Vivendi Universal, AOL Time Warner and BMG) is a transnational corporation. In fact, the five listed global record labels account for 90% of global music sales.

Starbucks, Toyota, Wyndham and others have helped reduce the friction of distance by reducing spatial variation. They aren't doing this to help people, or to hurt them. Although they will cater to local needs to some degree, they are not in the business of promoting local flavors.

William Gibson wrote "The future is already here, it's just not evenly distributed." In terms of globalization, he was correct. There are still people living in remote areas practicing something similar to a paleolithic lifestyle. On the other end of the scale there are people with great wealth who have access to powerful technologies and are able to live anywhere they desire.

Sometimes globalization even has an effect on folk culture. In many places, economic realities have forced people to perform religious activities of relive special events for tourist dollars. Attending luaus in Hawaii or watching voladores in Veracruz in a quest for authenticity is in itself changing the folk culture that is the center of attention.

This assessment may seem particularly bleak for folk culture, but it isn't necessarily completely bad. People survive, and they try to keep the practices that are most valuable to their lives. Folk cultures have a much longer timeline than pop cultures, and have proven to be resilient.

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4.8: Resistance to Popular Culture

Although popular culture has been expanding rapidly at the expense of folk culture, it is not without resistance. Although it is not strictly-speaking true, global culture is perceived as largely corporate, secular, and western. Each of these aspects have their own critics.

Anti-globalists fall into two main groups. The first are leftists who oppose the power that has accumulated to corporations and the authoritarian state. The other group are rightists who prefer that power be centered at the state level, and who fear that globalization naturally undermines state sovereignty.

In some places, globalization is the same thing as modernization is the same thing as westernization which is perceived as secular (or even atheistic), materialistic and corrupt. Movements such as Al-Qaeda or Islamic State are violently opposed to popular culture, although they would not have a problem if their idea of the ideal culture were to become fully global. Rejecting modern popular culture often also involves elevating a nostalgic, often imaginary golden age as the only acceptable model of society.

Many people feel that symbols and representations of popular culture are erasing the very personality of regional cultures. Resistance to popular culture can come in many forms. Let us revisit the concept of fundamental needs, which are universal, and how they vary geographically. Locally sourced food products, customs, and recipes are pitted against global fast-food giants that provide inexpensive and easy access to ready-made food products. There has been an uprising of farm-to-table businesses, the Slow Food movement, and an emphasis on fair-trade products.

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4.9: Summary

Culture, the learned portion of human behavior is a very broad and very deep topic of human study. Historically humans have lived in small groups practicing folk culture. This was particularly true of the cultures the sprang from the diffusion of agriculture. Many of the folk culture attributes date to this time of human development. The industrial age also ushered in the era of popular culture. Pop culture provides the cues that people use to live, work, and interact. Relatively recently has been the rise of global culture, a phenomenon in which large numbers of people in diffuse places are committing the same or similar culture practices.

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4.10: Key Terms Defined

Commodification: The process of transforming a cultural activity into a saleable product.

Cultural ecology: Study of human adaptations to physical environments.

Cultural Landscape: Landscapes produced by the interaction of physical and human inputs.

Cultural reproduction: The process of inculcating cultural values into successive generations.

Cultural tourism: A variety of tourism concerned with exploring the culture of a place.

Culture: Learned human behavior associated with groups.

Culture Hearth: Historic location of cultural formation.

Fashion: The latest and most socially esteemed style of clothing or other products and behaviors.

Folk Culture: Culture practiced by a small, homogeneous, usually rural group. AKA Traditional culture.

Formal region: A region that has defined boundaries, often a governmental unit such as a country, province, or county.

Functional region: A region defined by a relationship, such as the market area of a product, a commuter zone or an employment market.

Globalization: The global movement of money, technology, and culture.

Heterogeneous: A population composed of dissimilar people.

Homogeneous: A population composed of similar people.

Material culture: The objects and materials related to a particular culture.

Perceptual region: Internally defined region that exists as the expression of a cultural type.

Placelessness: The state of having no place. In the modern context, a place exactly like any other place.

Popular Culture: Culture created for consumption by the mass of population.

Resistance: Actively pursuing a policy of obstruction of a particular process or undertaking.

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4.12: Endnotes

1. Data Source: World Borders Dataset thematicmapping.org/downloads/world_ borders.php

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5: RELIGION

Learning Outcomes

- Understand: the significance of religion as a historical spatial phenomenon
- Explain: the significance of sacred spaces and places to understandings of culture locally, regionally, and globally
- Describe: the hearths and diffusion patterns of the major religions of the world
- Connect: religious belief and values to trade, colonialism, and empire

5.1: Introduction

5.2: Overview of Major Religions

5.3: Diffusion of Major Religions

5.4: Religious Conflict

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5.1: Introduction

> *"I love you when you bow in your mosque, kneel in your temple, pray in your church. For you and I are sons of one religion, and it is the Spirit."*
>
> Khalil Gibran

This chapter is an exploration of the geography of religion. Like language and ethnicity, religion is a cultural characteristic that can be closely bound to individual identity. Religion can provide a sense of community, social cohesion, moral standards, and identifiable architecture. It can also be a source of oppression, social discord, and political instability. Religion is more than metaphysicsmagical explanations for natural phenomena; it is also a governing philosophy of behavior and an organizing cosmology of the universe.

The following pie chart gives us an idea of the relative size (in terms of adherents) of the world's major religions (**Figure 6.1**). Bear in mind that these numbers are estimates; there is no world governing body collecting detailed statistics of religion. Christians and Muslims make up over half of the world's population. The next category, the unaffiliated, are a large but diffuse body containing people who do not identify with any religion. Hindus, who cluster in the Indian subcontinent, are the next largest group. The category of Folk religion is similar to that of Unaffiliated-it is a large group of religions that are bound into one category solely for logical consistency. Folk religions may consist of ancestor worship in China, animism in central Africa, or any other number of indigenous, local religions. The Other category contains newer religions that are just gaining their footholds and other religions that may be fading in the contemporary milieu. Judaism is included in the chart, although it has comparatively few adherents. It is included for two reasons. First, it provided the cultural spoor for both Christianity and Islam, and second, it is the predominant religion of the modern state of Israel.

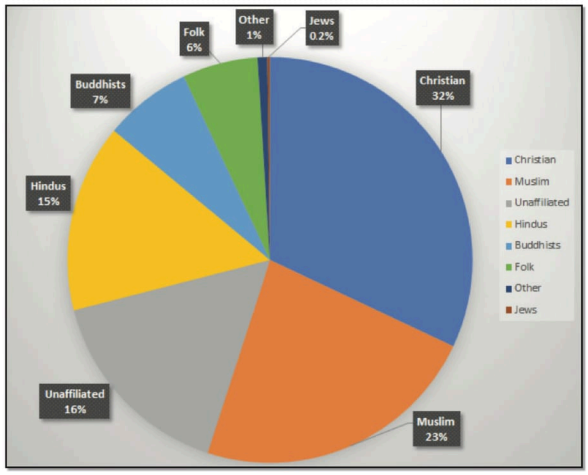


Figure 6.1 | Global Religious Percentages[1]
This pie chart shows the relative distributions of the World's Major Religions.
Author | David Dorrell
Source | Original Work
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In some places, religion can be considered a separate element of civil society, but in many others, religion cannot be meaningfully separated from daily life or governance. Charts such as this can be somewhat misleading, as can maps of religion (**Figure 6.2**). All these methods of tabulating religion rely on estimates with varying degrees of accuracy. One problem is determining the predominance of a particular religion. Does predominance require over fifty percent? What if no religion in a country has a majority? In the case of this map, if no religion has a majority, but there are two large religions (for example Christianity and Islam in Nigeria) then the country is split between the two. If there are numerous fragmented groups, then the group with a plurality is used.

In some parts of the world, some forms of religious expression are discouraged or banned outright. For example, in North Korea, the state ideology is known as Juche, which is not a traditional religion with supernatural elements. The practice of Buddhism or Christianity in North Korea must necessarily be circumspect. In other places, religion has reached the status of being nominal (in name only) in which people identify with a religion, but the practices of that religion have little impact on their daily lives.

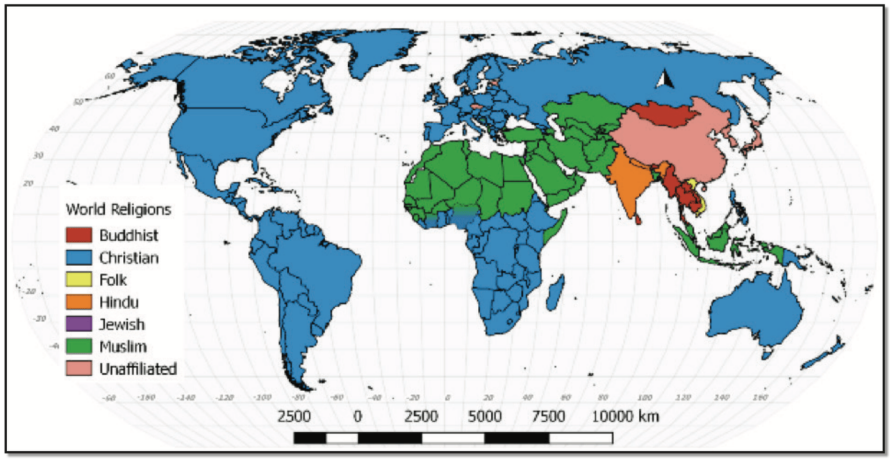


Figure 6.2 | World Religions by State 2012[2]
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State religions are religions that are recognized as the official religion of a country. In some places with a state religion, such as Denmark or the United Kingdom, the official status of one religion has little effect either on the practice of other religions or on the society at large. In places like Saudi Arabia or Pakistan, however, the official religion is closely connected to the power of the state, most obviously in the form of blasphemy laws which allow for state penalties (including death) for violations of religious statutes.

Maps such as this one can be very misleading in the sense that they present homogeneous, religious landscapes by country (**Figure 6.2**). This is, of course, untrue and it represents one of the problems with mapping anythingthe level of aggregation. As any spatial phenomenon is aggregated into larger and larger groups, the details of those groups are often lost. An example of the importance of scale is seen in the following graphic. Although Mormons make up 88 percent of Utah County, Utah, they are only 61% of the state of Utah, and a mere 1.6% of the United States.

6.1.1 Scale and Predominant Religion

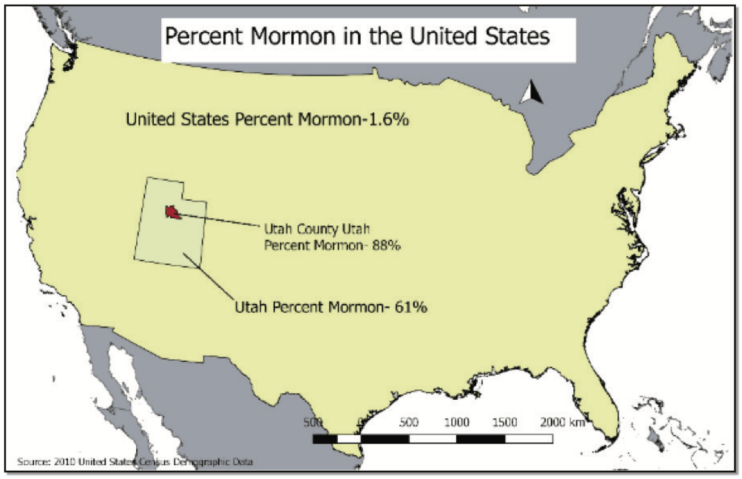


Figure 6.3 | Percent Mormon aggregated to the County, State, and National level [3]
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6.1.2 Religions in History

The current religious map of the world is best thought of as a snapshot. The religious landscape has been continuously changing

throughout human history and will continue to change in the future. New religions are founded and old ones die out.

New religions are often made using pieces of older religions; Christianity and Islam deriving in part from Judaism and Buddhism deriving from Hinduism are not aberrations, but instead are examples of a common occurrence.

Within the relatively recent past, it has been possible to watch the creation and diffusion of several new religions just within the United States. Mormonism, the Jehovah's Witnesses, Seventh Day Adventism, and Scientology are all religions that were founded in the U.S. in the relatively recent past.

6.1.3 The Religious Contribution to Culture and Identity

Religions are not isolated social phenomena. They exist within a cultural complex that nurtures and sustains them, or conversely, demeans and undermines them. Religion can be closely bound to other elements of identity -language, or nationality. In many societies, the boundaries between religion and social life, family structure, and law and politics are nonexistent. Religion in those places is the center of all life and everything else revolves around religious concepts. A place that is purely governed by a religious structure is known as a **theocracy**. There are very few of these in the modern world, although many states have strong religious influence. Many modern societies have built barriers between religious influence and political life. These places are called **secular** and are much more common in the developed world.

Religion, along with ethnicity and language, are very often core components of an individual's identity. It can define the way a person sees the world, what clothing is appropriate, gender roles, employment, and even your position within the greater society. As such, it has tremendous cultural influence, and this influence is visible in the landscape.

6.1.4 Esthetics and religion

Religion has a motivating factor that few other social phenomena can match. When people are doing something for God, they generally have fewer limits than in other spheres of life. One of the ways this lack of limits is manifest in the landscape is through religious architecture.

Sacred spaces can be religious structures, but they can also be historic battlefields, cemeteries, mountains, or rivers. Anything that humans use to generate a sense of the divine can be considered a sacred space. Sacred spaces have expectations of behavior. In some places, it is still possible to claim **sanctuary** in a sacred place. The small altars that mark roadside fatalities in the United States can be considered sacred spaces, as could a closet that is used as a prayer room.

Elements of culture may be manifest in different types of churches, temples on the landscape, as well as clothing, the food grown, and small home devotionals. Another way that religion manifests in the visible sphere is through codes of acceptable dress as well as acceptable public behaviors.

A less obvious way that religions may influence the landscape is through religious influences on dietary choices. Food production can be influenced by religions. Many religions have doctrine regarding what is acceptable food, and what is not. Halal, Kosher and Ital are all representative of food restrictions. Religions that prohibit the consumption of pork will probably not have swine farms. Cattle wander through the countryside in India, since they are religiously protected from harm. Another effect that religion has on the landscape is the effect of **pilgrimage**. Many religions have an activity that requires gathering at a particular place. Probably the best-known pilgrimage is the Hajj of Islam, but this isn't actually the largest in the world. That would be the Hindu Kumbh Mela. The Camino Santiago is a well-known Christian pilgrimage that ends in Santiago de Compostela, Spain. Pilgrimage is not just visible through the pilgrims, but in the entire infrastructure that develops to support the pilgrims.

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5.2: Overview of Major Religions

6.2.1 Types of Religions

We often break religions into one of two basic types: ethnic and universalizing. **Ethnic religions** are associated within one group of people. They make little to no effort at **proselytizing** (converting others), although that possibility may exist. The largest ethnic religion is Hinduism. Judaism is another well-known ethnic religion. Through migration, both of these religions have become dispersed around much of the world, but they are closely tied to their own ethnic groups.

Universalizing religions seek to convert others. For some religions, it is a requirement for practitioners to spend part of their lives in missionary work attempting to convert others.

Another way of dividing religions is into the categories of polytheistic (many gods) and monotheistic (one god). Although the difference between monotheistic religions and polytheistic religions seems unbridgeable, there are religions that have managed to combine elements of **polytheism** and **monotheism** into the same religion. For example, in Voudon (Voodoo), entities that had previously represented African gods are recast as Catholic saints, who themselves are semidivine in the Catholic cosmology. Combining two religions to create a new religion is known as syncretism.

6.2.2 A Brief Description of the Major Religions

Christianity

Christianity is a monotheistic religion centered on the life and teachings of Jesus of Nazareth. It dates to some time in the first century AD since the Western world uses the Christian calendar. Christianity began as an offshoot of Judaism, and includes the Hebrew Bible (known to Christians as the Old Testament) as well as the New Testament as its canonized scriptures. It has three main branches: Catholic, Orthodox, and Protestant (**Figure 6.4**). Catholic and Orthodox Christianity split roughly one thousand years ago, while the Protestant/Catholic **Schism** began in the sixteenth century. The split between the Orthodox and Catholic hierarchies centered around whose authority in the church was final. The split between Protestantism and Catholicism mostly centered on practices conducted by the Catholic Church that the future Protestants did not believe were suitable for a religious organization.

The three **branches** of Christianity have their own spatiality, with a great deal of overlap between them. Orthodox Christianity is mostly seen in Russia, Eastern Europe, and Southern Europe with notable examples in Africa (Ethiopia) and in places where large numbers of people from these places have migrated (the United States, Canada). Catholic Christianity is seen in a wider range of places. It largely formed around the historic Roman Empire, then spread to the north and west of Europe. Catholicism did not stop there, however. The age of colonial expansion transplanted Catholicism to such widespread places as the Philippines, much of the Americas and Caribbean, and large parts of Africa. Protestantism is the most recently developed Christian branch, but it has also diffused widely. The initial Protestant countries were in northern Europe, but again due to colonialism, Protestant Christianity was exported to places like the United States, South Africa, Ghana, and New Zealand. The current expansion of Christianity, particularly in Asia, is largely due to the growth of Protestantism.

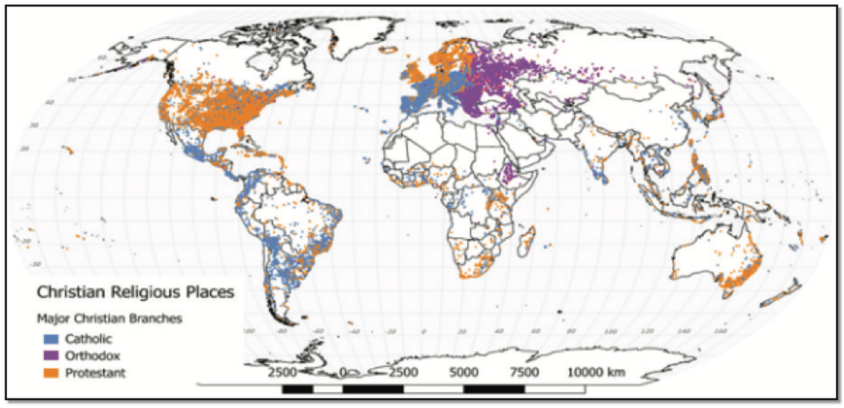


Figure 6.4 | Christian Places [4]
This dot map shows structures designated as Christian from OpenStreetMap. Note how it varies from Figure 6.2 in that it shows a religious landscape that is more fragmented and interspersed.
Author | David Dorrell
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Each Christian branch has developed a distinct appearance in the landscape. Orthodox churches are meant to invoke a sense of the divine. Buildings are elaborate, both inside and outside. Catholic churches also tend to be elaborate, in asimilar vein to Orthodox churches, but with a different architectural tradition. This is understandable due to the fact that these two branches of Christianity arose in different places with different ideas of architectural grandeur and beauty. Protestant churches as a collective are less elaborate that their close relatives. This is a reflection of the early history of Protestant churches, which were often specific rejections of the elaborate ceremony and ostentatious display of the Catholic Church.

Islam

Islam is a monotheistic religion originating with the teachings of Muhammad (570-632), an Arab religious and political figure. The word Islam means “submission”, or the total surrender of oneself to God. An adherent of Islam is known as a Muslim, meaning “one who submits (to God).” Both Islam and Christianity inherited the idea of the chain of **prophecy** from Judaism. This means that figures such as Moses (Judaism) and Jesus (Christianity) are considered prophets in Islam. Muslims believe that Muhammad is the very last in that chain of prophecy. Islam has two main branches, and many smaller ones. Of the two main branches -Sunni and Shi’a, Sunni is much larger, comprising roughly 80% of all Muslims (**Figure 6.5**). The split between the two largest branches of Islam centered around the question of succession, that is to say, who would be the rightful leader of the Muslim world. Currently, there is no single voice for the global Muslim community. Other forms of Islam include Sufi (mystical) Islam and Ahmadi Islam. India is the number three Muslim country, but there are five times as many Hindus in India as there are Muslims.

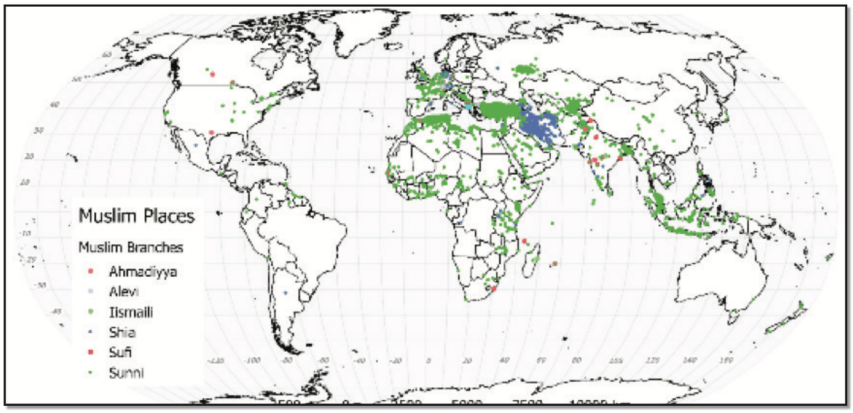


Figure 6.5 | Muslim Places [5]
This dot map shows structures designated as Muslim from OpenStreetMap. The distribution of the different branches (particularly Sunni and Shia) belie any hard lines in the religious landscape.
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The Muslim world is somewhat more contiguous than the Christian world. This is mostly due to the fact that the Muslim expansion did not occur in two phases in the same way that Christianity did. As can be seen in the following map, Sunni and Shi'a countries are somewhat spatially separated. Only the countries of Iran, Iraq, Azerbaijan, and Bahrain are majority Shi'a. There are sizable minority Muslim sects in the world. Many of these groups, such as the Ahmadiyya, are subject to discrimination by other Muslim populations and/or governments. The world's most theocratic governments are Muslim, particularly those of Iran and Saudi Arabia. This is notable in that these two countries are also regional rivals and the two most powerful states in the Muslim world.

Buddhism

Buddhism is an offshoot of Hinduism that dates to the fifth century BCE. It was founded by Siddhartha Gautama near the modern border between Nepal and India. The three largest branches of Buddhism are Theravada, Mahayana and Vajrayana (**Figure 6.6**). The main differences between the branches are their approaches to **canonized doctrine**.

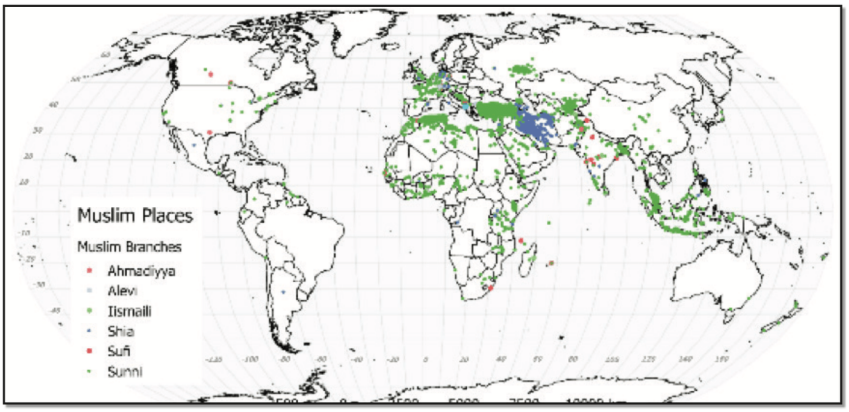


Figure 6.6 | Buddhist Places [6]
This dot map shows structures designated as Buddhist from OpenStreetMap. It does not break Buddhism into its major branches of Theravada, Mahayana, and Vajrayana.
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Hinduism

Hinduism is a religious tradition that originated in the Indian subcontinent (**Figure 6.7**). Its origins can be traced to the ancient Vedic civilization (1500 BCE), a product of the invasion of Indo-European peoples. A conglomerate of diverse beliefs and traditions that assembled organically over a period of centuries, Hinduism has no single founder. Due to its concurrent growth with Indian civilization, Hinduism has historically been tightly bound to the caste system, although the modern Indian state has worked to ameliorate the more damaging effects of this relationship.

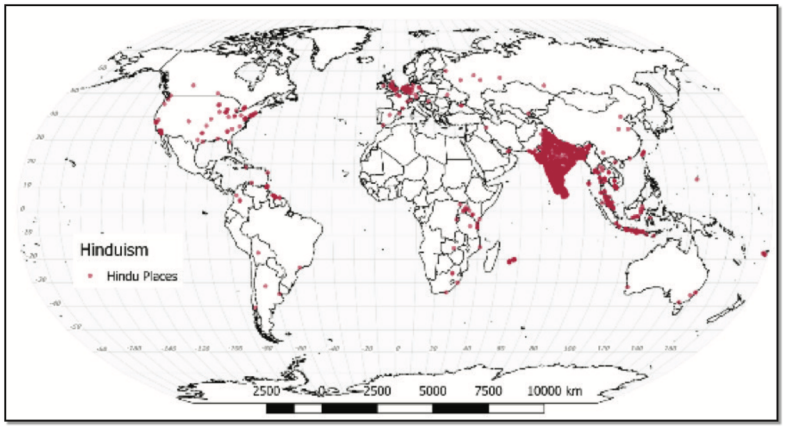


Figure 6.7 | Hindu Places [7]
This dot map shows structures designated as Hindu from OpenStreetMap. Although heavily associated with the modern Indian state, large numbers of Hindus now live elsewhere.
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Chinese Religions

Not strictly located in China, Chinese religions are closely tied to Daoism (a nature religion), Confucianism (a philosophy of living), and ancestor worship. Chinese religious structures are associated with people of Chinese descent within and external to China. Because of the diversity of religious practices and beliefs, this category is best thought of as a complex of beliefs, rather than a defined set of beliefs and practices.

Sikhism

Sikhism is a 15th Century amalgamation of Islam and Hinduism. It is in many ways emblematic of syncretic religions. **Syncretic religions** are created by the combination of two or more religions, with the addition of doctrinal elements to create cohesion between the disparate pieces. Founded by Nanak Dev Ji (1469 – 1539) Sikhism reconciles Hinduism and Islam by recasting Hindu gods as aspects of a single god, in a manner similar to the Catholic Trinity. Although heavily associated with the Punjab region of the Indian subcontinent, Sikhism has spread widely through relocation diffusion (**Figure 6.8**). It has about 26 million adherents.

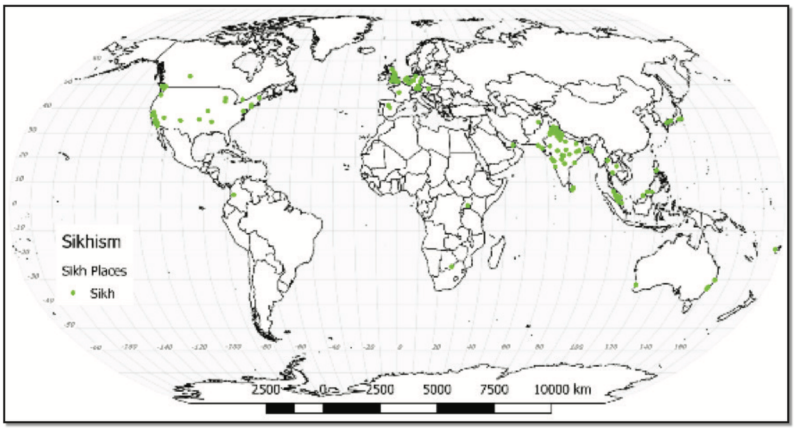


Figure 6.8 | Sikh Places [8]
This dot map shows structures designated as Sikh from OpenStreetMap. Although originating in the Punjab on the Indian Subcontinent, it has diffused widely.
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Judaism

Judaism is a monotheistic religion originating in the Bronze Age in the eastern Mediterranean (**Figure 6.9**). Although it has no single founder, it holds the Torah as its holy book. In the modern context of Judaism, there are three major forms—Orthodox, Conservative and Reform—each with their own set of interpretations of correct practice. Judaism, as the initial Abrahamic religion, influenced other religions (particularly Christianity and Islam).

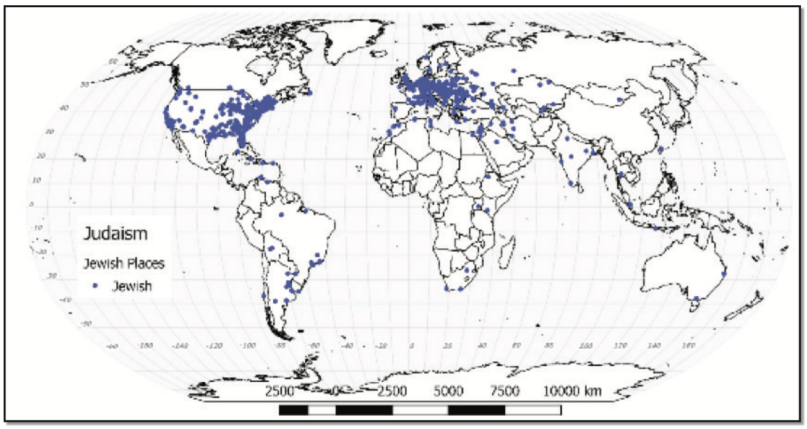


Figure 6.9 | Jewish Places [9]
This dot map shows structures designated as Jewish from OpenStreetMap. It does not break Judaism into Orthodox, Conservative and Reform.
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Animism, Jainism, Bahai, Shinto and Others

This catch-all category combines together religions that are all quite different. They are here due to their similar ties to places or ethnicities, not because they share any doctrinal or historical connections. Before continuing on a discussion of the following religions, it is important to make a point clear. It is possible to practice more than one religion. Many people in the world practice two or more religions with no sense of contradiction. In many parts of the world, pre-Christian or pre-Islamic beliefs persist alongside the newer religions.

Animism is a broad category, found in a variety of environments (**Figure 6.10**). The underlying theme is the idea that almost anything in the environmentpeople, mountains, rivers, rain, etc. is alive and worthy of recognition as such. Animism is frequently practiced with other ideologies or philosophies.

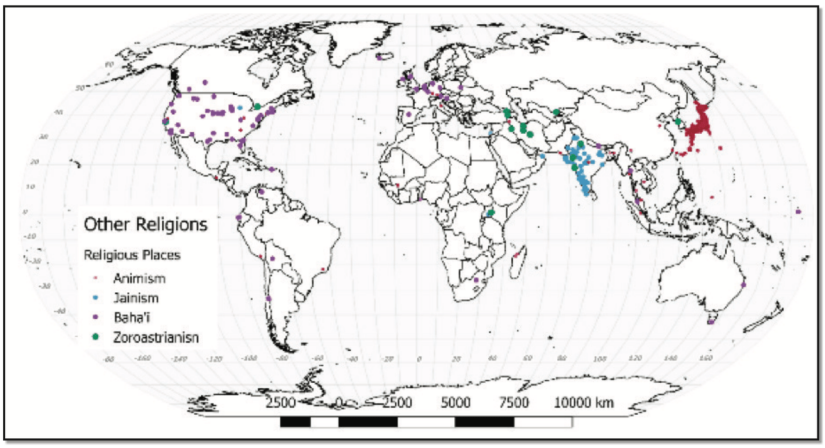


Figure 6.10 | Other Religious Places [10]
This dot map shows some structures designated as Animist, Jain, Baha'I, and Zoroastrian from OpenStreetMap.
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Baha'i was founded by Mirza Husayn Ali Nuri (1817-1892) in 1863. Baha'i was an offshoot of another religion, Babism, that in itself was a derivative of Islam. Although traditional Muslims believe that Muhammad was the last of the prophets (the seal of the prophets) many religions have been founded on the idea that there could be other, later people who also spoke for god. Baha'is believe that new messengers would be sent to humanity to remind people of their universal relationship to god and one another. The late date and historic context of this religion informed a religion that explicitly rejected racism and nationalism. One of the notable characteristics is that although Baha'is are not one of the larger religions on Earth, they have a temple on every permanently inhabited continent.

Jainism is another ancient religion that arose in India. It is best known for its concept of *ahimsa*, or nonviolence.

Shinto, the ethnic religion of Japan is often practiced in conjunction with Buddhism. It is polytheistic and dates back centuries. The most important consideration of Shinto is that the rituals are so ingrained in Japanese national identity that the religion can either be considered vibrant and relevant, or moribund and ritualistic, depending on the perspective of the viewer.

Syncretic Religions

Syncretic religions are formed by the combination of two or more existing religions to produce a new religion (**Figure 6.11**). Some of the larger syncretic religions have already been mentioned, such as Baha'i or Sikhism.

Cao Dai is a religion founded in twentieth century Vietnam. It has strains of Taoism and Buddhism and represents an attempt to reconcile many diverse religious traditions into a single religion.

Voodoo arose in French Caribbean colonies as a combination of Catholicism and the beliefs of another set of West African peoples, the Ewe and the Fon. Practitioners speak to God using intercessors called loa that function as saints do in both the Catholic and Sufi worlds.

Candomble is a syncretism formed from many West African religious traditions and Catholicism. It has existed in Brazil for centuries. It believes in a creator god (Oludumare) and a series of demi-gods (Orishas).

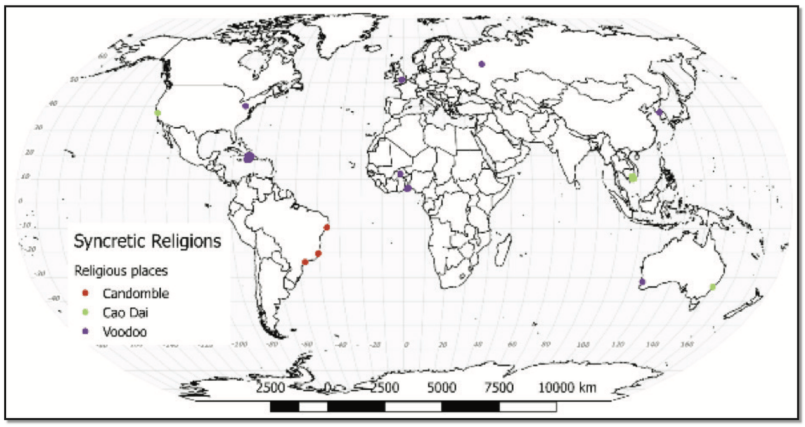


Figure 6.11 | Syncretic Religions [11]
This dot map shows structures designated as Candomble, Voodoo, or Cao Dai from OpenStreetMap. Notice that Cao Dai has diffused from its origin in Vietnam to Australia and the United States.
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New Religions

Much like any other human phenomena, new religions are formed continuously. They are usually adaptations or combinations of existing religions. It is impossible to list the most recent arrivals. This category includes such religions as Scientology, the Unification Church, Seicho no Ie and Wicca.

What about the Nonreligious?

Sometimes the nonreligious are considered a religion unto themselves. This is generally not true. The nonreligious category is amorphous. There are no documents of beliefs that all nonreligious people must abide by. There is no overarching nonreligious creed. It is another catch-all category that contains a large, diverse population with divergent beliefs and practices. Within these categories, however, there are notable manifestations. First, there are those places which are officially **atheistic** or non-religious. This label is problematic. It provides only the perspective of the government of these places. In many places that officially have no religions, practitioners simply do not advertise their religious affiliations. In other places, religious attendance has declined to a point that many people have no connection to a particular religious tradition. The label **agnostic** refers to the idea that the existence of a higher power is unknowable. It is important to point out that religions do not necessarily require the existence of a god-like force. Daoism relies on nature as its driving force.

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5.3: Diffusion of Major Religions

Religion uses nearly all forms of diffusion to reproduce itself across space. Hierarchical diffusion generally involves the conversion of a king, emperor, or other leader who then influences others to convert. Relocation diffusion, oftenthrough missionary work, brings “great leaps forward” by crossing space to secure footholds in far-away places. Contagious diffusion is most often seen in a religious context as the result of direct proselytizing. All these forms of diffusion produce patterns of diffusion that are complex. It is impossible to know why certain religions have appeal in particular times or places, but they do, and that appeal can wear off over time.

Another important thing to remember is that the religious landscape is just a snapshot. In the same way that it has always changed, it will continue to do so. These maps can reinforce this idea in that they demonstrate the historical nature of current religious distributions. Remind yourself that these religious expansions occurred at different times. This will help explain why some places will become Buddhist or Christian at one point in history, but become Muslim at another.

6.3.1 The Diffusion of Buddhism

Buddhism originated near the current Nepalese-Indian border. Like many other religions, it spread in other directions, particularly to the south and east (**Figure 6.12**).

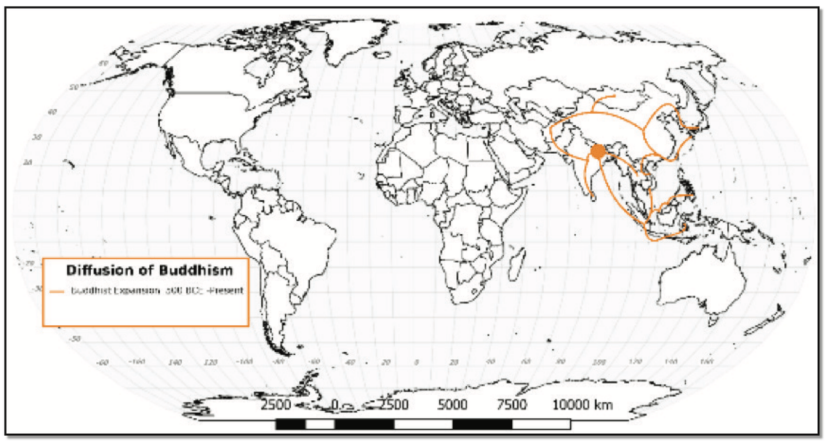


Figure 6.12 | Diffusion of Buddhism [12]
This map shows the distinct waves of the diffusion of Buddhism.
Author | David Dorrell
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Due to its position as the oldest large, universalizing religion, Buddhism is a good example of the lifecycle of a religion. From its origins, the religion spread across what is now India and Nepal. It spread in all directions but looking at a current religious map reveals that the process did not end 1500 years ago. Much of its territory on the Indian subcontinent would become mostly Hindu or Muslim. To the east and south, however, the religion continued and expanded. It is not unusual for a religion to prove popular far from its place of origin. In fact, that is the key to a successful universalizing religion.

6.3.2 The Diffusion of Christianity

Christianity was founded in the eastern Mediterranean, although much like Buddhism, its greatest successes were found in other parts of the world (**Figure 6.13**). Christianity initially grew in areas dominated by the Roman Empire,but it would adapt and thrive in many places. With the collapse of the Empire, Christianity became the only source of social cohesion in Europe for centuries. Later, Christianity was promoted through the process of colonialism, and as such, it was modified by the process that distributed it. The spread of Christianity helped drive the process that created the modern world.

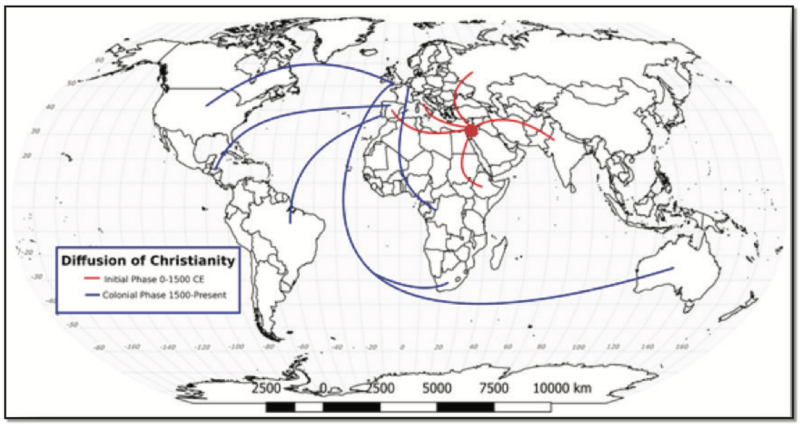


Figure 6.13 | Diffusion of Christianity [13]
This map shows the distinct waves of the diffusion of Christianity, the initial wave from its foundation, and the subsequent wave associated with European Colonialism.
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6.3.3 The Diffusion of Islam

The most recent of the world's largest religions, Islam is also the one that is expanding the fastest (**Figure 6.14**). This is not necessarily through conquest or conversion, but mostly through current demographics. Islam provides a blueprint for most aspects of life and as such, has often been associated with rapid expansion driven by military conquest. Although military conquest occurred in the past, military campaigns have been rare since the fall of the Ottoman Empire. The relative distributions of Buddhists, Christians, and Muslims have in fact changed little in half a millennium. Although there has been some migration of Muslims into western Europe, the percentages of Muslims in each country is small. France has the largest percentage of Muslims at 7.5%. To keep this in perspective, that is much lower than the percentage of Muslims in Spain in 1492.

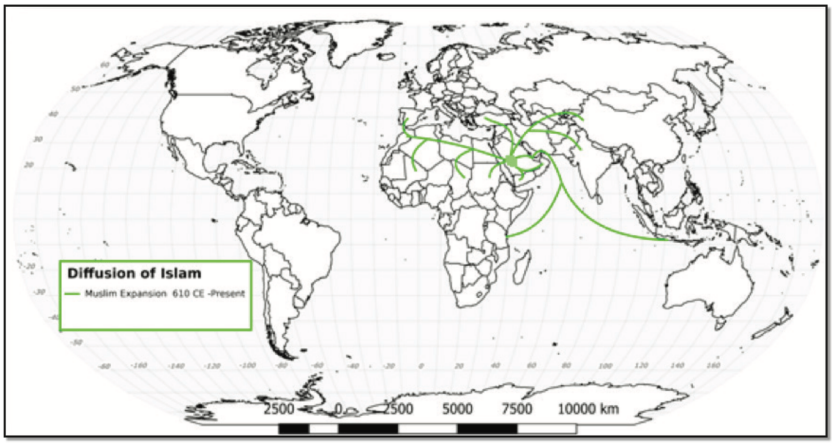


Figure 6.14 | Diffusion of Islam [14]
This map shows the distinct waves of the diffusion of Islam.
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5.4: Religious Conflict

Human beings have struggled against one another for a variety of reasons. Religious disagreements can be particularly intense. **Sectarian violence** involves differences based on interpretations of religious doctrine or practice. Thestruggles between the Catholic and Orthodox churches, or the wars associated with the Protestant Reformation and Counter Reformation, are examples of this form of conflict. The current violence seen between Sunni and Shia Muslims is also in this category. Closely associated with this kind of conflict is **religious fundamentalism**. Religious fundamentalism rests on a literal interpretation and strict and intense adherence to the basic principles of a religion. The conflict arises when religious fundamentalists see their coreligionists as being insufficiently pious. Extremism is the idea that the end of a religious goal can be justified by almost any means. Some groups that are convinced that they have divine blessing have few limits to their behavior, including resorting to violence.

Another form of religious violence is between completely different religions. Wars between Muslims and Christians or Hindus and Buddhists have been framed as wars for the benefit or detriment of particular religions. What is described as religious strife, however, is often not. Although some religions are fighting over doctrinal differences, most conflict stems from more secular causesa desire for political power, a struggle for resources, ethnic rivalries, and economic competition.

The Israel/Palestine conflict is a struggle over territory, resources, and political recognition. The Rohingya crisis in Myanmar has less to do with religion and more to do with differences in ethnicity, national origin, and post-colonial identity. Massacres in Sahelian Africa are better framed as farmers versus herders. The long running violence between Protestants and Catholics in Northern Ireland is better framed as a violent dispute between one group who holds allegiance with the Republic of Ireland and the other who holds allegiance with the United Kingdom.

This is not to say that religious violence does not exist. It does. The most obvious example of this in recent years has been the emergence of Islamic State. This organization carries all the worst examples of religious extremismsectarianism toward other Muslims (the Shi'a), attempted genocide of religious minorities (Yazidis and Christians), and brutal repression through the apparatus of the state.

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5.5: Summary

Religion can be key to a person's identity. It manifests both as an internal sentiment as well as in structures in a landscape. The religious world is always changing, but at a pace that is generally very slow. New religions are created, while other religions may fade away, or change. The general historical trend has been toward a small number of universalizing religions gaining ground over local, ethnic religions. Religious differences can lead to conflict, although many conflicts presented as religious in nature have their roots elsewhere. Just like language, religion is another way of sorting people into groups, either for good or bad. Another such way of sorting people is ethnicity, the subject of the next chapter.

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5.6: Key Terms Defined

Agnostic: The belief that existence of the supernatural is unknown or unknowable.

Atheistic: The belief that there is nothing supernatural.

Branches: A large division of a religion.

Canonized doctrine: The officially recognized documents or ideas of a religion.

Ethnic religions: A religion associated with a particular ethnic group.

Monotheism: The belief in one god.

Pilgrimage: A journey to a sacred place.

Polytheism: The belief in many gods.

Prophecy: Communication with a supernatural power.

Proselytizing: Seeking converts to a religion.

Religious fundamentalism: The belief in the absolute authority of a religious text.

Sacred spaces: Places associated with a sense of the divine.

Sanctuary: A haven or place of safety, often defined by law.

Schism: The fracturing of an organization.

Sectarian violence: Violence between different sects of the same religion.

Secular: A condition of separation between a state and any religion.

State religion: The official religion of a state. This is not the same as theocracy.

Syncretic religion: A religion formed by the combination of other religions.

Theocracy: A state ruled by religious principles.

Universalizing religion: A religion that seeks converts.

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5.8: Endnotes

1. Data source: Pew Research Center's Forum on Religion & Public Life 2012. http:// www.globalreligiousfutures.org/explorer#/
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12. Adapted from Proliferation of Buddhism. Spiegel Online http://www.spiegel.de/ international/spiegel/grossbild-460247-779134.html
13. Adapted from https://www.ed.ac.uk/divinity/resear.../animated-maps
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6: SOUTH ASIA

6.1: South Asia's Physical Landscape
6.2: Patterns of Human Settlement in South Asia
6.3: Cultural Groups in South Asia
6.4: South Asia's Population Dynamics
6.5: Future Challenges and Opportunities in South Asia

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6.1: South Asia's Physical Landscape

Learning Objectives

- Identify the key geographic features of South Asia
- Explain the patterns of human settlement in South Asia
- Describe the cultural landscape of South Asia
- Analyze South Asia's current population growth and future prospects

South Asia's Himalaya Mountains are the highest in the world, soaring to over 8,800 meters (29,000 feet). Yet, these are also some of the world's youngest mountains, reflecting a region that has experienced significant physical and cultural changes throughout its history. Here, we find one of the earliest and most widespread ancient civilizations, the hearth area for several of the world's great religions, and a region whose population will soon be the largest on Earth.



Figure 6.1.1: Map of South Asia (© Cacahuate, Wikimedia Commons, CC BY-SA 4.0)

South Asia is a well-defined region in terms of its physical landscape (Figure 6.1.1). Formidable physical barriers separate the region from the rest of the Eurasian landmass. Much of the impressive physical geographic features of South Asia are the result of tectonic activity. Between 40 and 50 million years ago, the Indian Plate collided with the Eurasian plate (Figure 6.1.2). Both the Indian Plate and the Eurasian plate were comprised of fairly low density material, and so when the collision occurred, the two landmasses folded like an accordion creating the mountain ranges we see today. The Indian Plate is still moving towards the Eurasian plate today and over the next 10 million years, will move an additional 1,500 km (932 mi) into Asia.

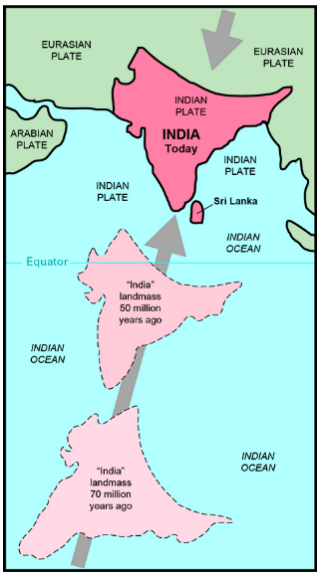


Figure 6.1.2: Indian Plate and Eurasian Plate Boundary (United States Geological Survey, Public Domain)

This massive tectonic collision resulted in perhaps the most well-known physical feature in South Asia: Mount Everest. Everest, located in the Himalaya Mountain range on the border of Nepal and China, is the tallest mountain in the world. Because the India Plate continues to collide with the Eurasian Plate, this mountain range is still tectonically active and is rising at a rate of 5 mm each year. Thus, if you're planning on scaling Mount Everest in ten years, be prepared to climb an extra two inches.

Although the Himalaya Mountains are well-known for having the highest peak, the Karakoram Mountain range, passing through Pakistan, India, China, and Afghanistan, has the highest concentration of peaks above 8,000 meters (26,000 feet). Its highest peak, K2, is the second-tallest mountain in the world and far fewer people have successfully made it to the top compared to Everest. One in four people die while attempting to summit.

Another key physical feature of South Asia, the Deccan Plateau, was also formed from the region's tectonic activity. Around 65 million years ago, there was an enormous fissure in Earth's crust which led to a massive eruption of lava. The entire Indian peninsula was buried in several thousand feet of basalt, a type of dense, volcanic rock.

South Asia's rivers, including the Indus, Ganges, and Brahmaputra form a lowland region that was home to several ancient civilizations. Today, these rivers provide for the water needs of many of this region's people, irrigation for agricultural lands, and an abundance of fish. However, these rivers have had significant environmental concerns in recent years and have supported increasing numbers of people along their banks. Most of the area along the Ganges River, for example, has been converted into urban or agricultural land and the wild species like elephants and tigers that used to be present along the river are now gone. Pollution in the Ganges River has reached unprecedented levels as industrial waste and sewage is dumped untreated into the river despite the fact that people frequently use the water for bathing, washing, and cooking. It is estimated that around 80 percent of all illnesses in India result from water-borne diseases. The World Bank has loaned India over $1 billion to clean up the river, but experts believe that larger scale infrastructure improvements are needed to improve the region's water quality.

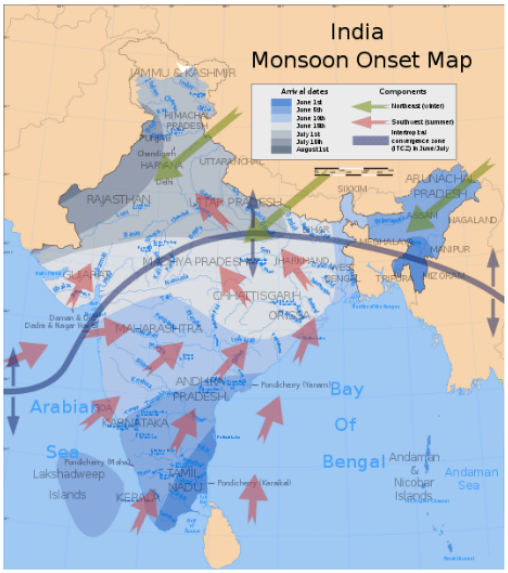


Figure 6.1.3: Map of Average Rainfall in India (© Saravask, based on work by Planemad and Nichalp, Wikimedia Commons, CC BY-SA 3.0)

The most important climatic feature of South Asia is a dramatic weather cycle known as the **monsoon** (Figure 6.1.3). The monsoon refers to seasonal shifts in wind that result in changes in precipitation. From October to April, winds typically come from the northeast in South Asia creating dry conditions. Beginning in April, however, winds shift to the southwest, picking up moisture over the Arabian Sea, Indian Ocean, and Bay of Bengal.

Most of the rain during the monsoon season results from **orographic precipitation**, caused when physical barriers form air masses to climb where they then cool, condense, and form precipitation (Figure 6.1.4). India's Western Ghats, a mountain range on its western coast, for example, causes orographic precipitation on its windward side. The Himalaya Mountains similarly result in orographic precipitation. However, these impressive highland areas are so formidable that they cause a dry area on their leeward side, known as a **rain shadow**. On one side of the Himalayas are some of the wettest places on Earth with over 30 feet of rain each year. On the other side, the rain shadow from the mountains forms the arid Gobi Desert and Tibetan Plateau.

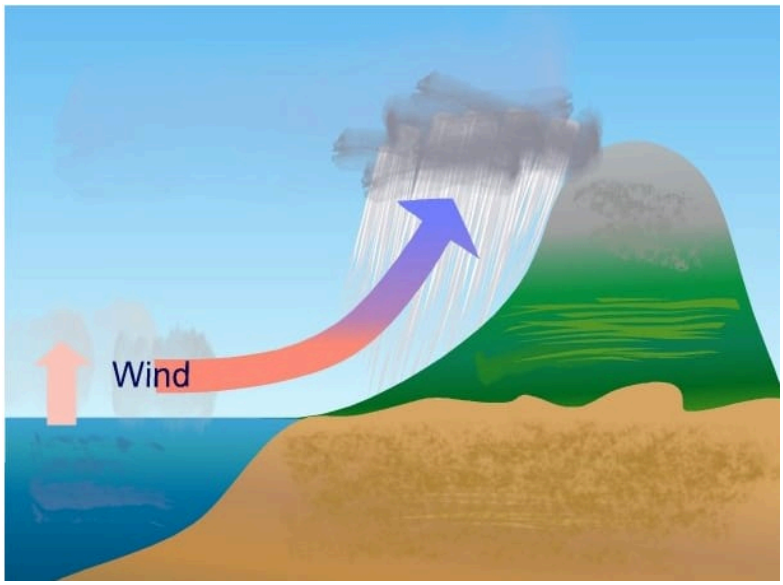


Figure 6.1.4: Orographic Precipitation (© Saperaud~commonswiki, Wikimedia Commons, CC BY-SA 3.0)

The monsoon rains, though extreme, provide significant benefits for South Asia's agriculture and economy. India gets more than 80 percent of its yearly rainfall from the monsoon and the rains are essential for both subsistence and commercial agriculture in the region. A good monsoon year will replenish the region's water supplies and increase crop yields, driving down food prices. Ample rainfall also contributes to the region's hydroelectricity potential. However, the torrential rains of the monsoon can also cause widespread flooding, destroying agricultural lands and transportation infrastructure, and can contribute to water-borne and

insect-borne illnesses due to the significant amounts of standing water.

The monsoon is changing, though. Global changes in climate have made the monsoon harder to predict. In addition, rising numbers of automobiles across South Asia have increased air pollution, which can interfere with the mechanics of the monsoon. In the past, once the monsoon season starts, rains continue throughout the season. Recently, though, the monsoon rains have begun to stop and start throughout the rainy season. People in this region are generally unprepared for an unpredictable or variable monsoon season and rely heavily on the rains for agriculture. Local leaders are pushing for more research to better understand the shifting monsoon rains and for increased education on water conservation and sustainable agricultural management.

Monsoon:

a seasonal shift in winds that results in changes in precipitation

Orographic precipitation:

rainfall that results from a physical barrier forcing air masses to climb where they then cool, condense, and form precipitation

Rain shadow:

a region with dry conditions on the leeward side of a highland area

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6.2: Patterns of Human Settlement in South Asia

South Asia's rich cultural landscape is a product of its varied physical environment and long history of human settlement. Modern humans first settled in this area 75,000 years ago, and early human ancestors likely settled in the region hundreds of thousands of years before that. The first major civilization in South Asia was in the Indus River valley beginning around 3300 BCE. This civilization, located in present-day Pakistan, Afghanistan, and northwestern India, relied on the monsoon rains to provide water to the Indus River. Here, early settlers developed systems of urban planning, baked brick houses, and the civilization at its peak numbered over five million people.

By 1800 BCE, however, the Indus Valley civilization began to decline. Weakened monsoon rains likely led to drought conditions and even small changes in precipitation and climate can have a devastating effect on a population of five million. Although residents developed some systems of water supply, they largely depended on the monsoon rains for agriculture, and many began moving to other areas of the region as arid conditions increased.

Around 1500 BCE, the Aryans, an Indo-Iranian group from modern-day Iran, invaded northern India. The Aryans were speakers of Indo-Iranian languages and brought their language, known as Sanskrit, their culture, and their ideas of social order to the South Asian realm. Hinduism and the caste system would both emerge from the Aryan culture.

South Asia was conquered by a number of different empires, each leaving an impact on the cultural landscape. The Maurya Empire stretched across the Himalaya and Karakoram mountain ranges, extending into most of South Asia by 250 BCE followed by a number of different dynasties. In the middle ages, the Islamic Empire extended into Afghanistan and Pakistan.

In the 18th century, however, the ruling Islamic Mughal Empire was in decline, leaving a power vacuum that would be exploited by the British. As the Industrial Revolution swept through the United Kingdom, the British were interested in expanding their supply of natural resources. Throughout the mid-18th century and the early 19th century, the British Empire, which had established the British East India Company, took over large stretches of land in India. The British established tea and cotton plantations, and took control of South Asia's resources. Although this region had previously established successful trading systems, the British saw local industries as competition and shifted their development to export raw materials. British rule also increased Westernization in South Asia and created an extensive rail transportation system.

As time went on, there were rising demands for independence. Mohandas K. Gandhi, known in India by the title "Mahatma," was a London-educated lawyer and one of the leaders in India's struggle for independence. He organized local communities to participate in nonviolent protests and his commitment to nonviolent resistance would inspire later civil rights leaders like Martin Luther King Jr.

Throughout this time, the isolated Himalayan countries of Nepal and Bhutan largely existed as **buffer states**, caught between the powerful British Empire and China. Their relative isolation allowed them to develop unique cultural features with little influence from outside groups, but as with most buffer states, left them with less economic and industrial development than their more powerful neighbors.

The British eventually agreed to withdraw from India but political and religious differences resulted in a **partition** of the former British territory in 1947 (Figure 6.2.1). Areas that were majority Hindu would become the secular state of India. Areas that were majority Muslim would become the new Islamic state of Pakistan. Since Muslims were clustered both in modern-day Pakistan and along the mouth of the Ganges on the coastal Bay of Bengal, the Muslim state of Pakistan would be divided into a Western and an Eastern territory. This prompted large-scale migrations of Hindus and Muslims who were on the "wrong" side at the time of the partition.



Figure 6.2.1: Partition of British India and Migration (Derivative work from original by historicair, Wikimedia Commons, CC BY-SA 3.0)

Not everyone in South Asia supported the partition plan. Gandhi, who had long called for religious unity in the region, was opposed to the concept. Hundreds of thousands of people were killed in violent riots. In 1948, Gandhi was assassinated by a Hindu nationalist who opposed the partition plan and Gandhi's commitment to nonviolence.

Furthermore, although there were areas that were clearly majority Hindu or majority Muslim, religious minorities existed throughout India and not all regions had an easy transition. At the time of the partition, states were free to decide whether they wanted to join Hindu India or Muslim Pakistan. In the territory of Jammu and Kashmir in Northern India (Figure 6.2.2), Muslims comprised around 75 percent of the population but the maharaja, the Sanskrit term for "great ruler," was Hindu. The maharaja struggled with the decision, and in the meantime, Muslim rebels, backed by Pakistan, invaded. He then gave the territory to India in exchange for military aid.



Figure 6.2.2: Map of the Disputed Areas of Jammu and Kashmir (Central Intelligence Agency, World FactBook, Public Domain)

Today, Jammu and Kashmir still remains a contentious territory and there have been violent clashes in the past few decades over political control. In the 1950s, China, without the knowledge of India, built a road through the northern portion of the state and was given territory by Pakistan. Although India claims the entire state, it controls the southern half of the state and about four-fifths of its population. Pakistan controls the territory's northern portion and moved its capital from Karachi to Islamabad to better control its frontiers. East Pakistan, long marginalized and culturally discriminated against by West Pakistan, gained independence as the state of Bangladesh in 1971.

As a region, South Asia is now the most populous area in the world and is home to over 1.8 billion people. Some of the world's largest megacities are located here as well, including Delhi, India (population of 26 million in the entire metropolitan area), Karachi, Pakistan (population of 14 million, with some estimating that it is much higher) and Mumbai, India (population of over 21 million). Despite the sizeable population, however, the region remains largely rural. Only around 36 percent of people in Pakistan, 31 percent of people in India, and 28 percent of people in Bangladesh live in cities. These relatively low levels of urbanization indicate that most people in the region still practice agriculture.

Urbanization is increasing, however, as industrialization and development have brought new jobs to the cities. British colonization left the region with the English language which has proven an economic asset, though it has also led to the marginalization of indigenous languages. Foreign companies have increasingly outsourced to India, taking advantage of a large, low-wage and English-speaking labor pool. **Outsourcing** refers to contracting out a portion of a business to another party, which might be located in a different country. Business processing in particular, such as call centers and information technology, has been outsourced and employs significant numbers of people in India. India is also one of the global leaders in fiber production, and textile production remains an important part of Pakistan's and Bangladesh's economies as well.

Nepal and Bhutan remain isolated both in terms of physical geography and global economic integration. Political uncertainty has generally hampered economic growth in Nepal but the country has been able to reduce its poverty rate considerably in recent decades. Tourism to Nepal has also increased, though local leaders have expressed concern over mounting issues of trash and pollution as a result of climbers flocking to Mount Everest. In the early 21st century, Bhutan transitioned from an absolute monarchy to a constitutional monarchy and held its first general election. Its government has promoted the measure of gross national happiness (GNH), as opposed to relying strictly on measures of economic or industrial development and has sought sustainable ways to develop and urbanize.

Buffer states:

a country situated between two more powerful states

Partition:

the division of a territory into smaller units, as with the former British Empire in South Asia

Outsourcing:

contracting out a portion of a business to another party, which might be located in a different country

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6.3: Cultural Groups in South Asia

South Asia is a diverse region in terms of its ethnic landscape, culture, and religious beliefs. As shown in Figure 6.3.1, in the northern portion of the region, the Indo-European languages like Hindi dominate as a result of the Aryan invasion. Along the Himalayas, languages in the Sino-Tibetan family dominate. In southern India, however, most groups speak a language in the Dravidian family, comprised of the indigenous languages of South Asia that were present before the arrival of the Aryans. These language families reflect broader differences in culture and ethnicity, including particular religious practices and food customs. Thus the label "Indian cuisine" actually encompasses a diverse array of regional and traditional specialties.



Figure 6.3.1: Map of the South Asian Language Regions (© Filpro, Wikimedia Commons, CC BY-SA 4.0)

South Asia is a hearth area for several of the world's great religions. Out of the Aryan invasion of northern India came a religious belief system known as Vedism. The religious texts of Vedism, known as the Vedas, combined with local religious beliefs developed into the modern-day religion of Hinduism by around 500 BCE. **Hinduism** is a polytheistic religion with a wide variety of individual beliefs and practices. Hinduism is a highly regional and individual religion and its polytheistic nature reflects this open understanding of belief. Of Hinduism's over 1 billion followers, 95 percent live in India.

At its heart, there are four key features of Hinduism: dharma, karma, reincarnation, and worship. Dharma refers to the laws and duties of being and is different for every person. You might be a student and an employee and a child and a sibling. All of those roles have prescribed responsibilities. To be a good student, for example, means to attend class, read the textbook, and study. In Hindu culture, there are also restraints and observances for how you interact with other people depending on their status.

Hindu views on the afterlife are quite different from the Judeo-Christian conception of heaven. Hindus believe in karma, which means that your deeds, good or bad, will return to you. They also believe in reincarnation, which is the idea that once you die, your spirit is reborn. Thus, you are the sum of numerous past existences. Karma, dharma, and reincarnation go hand in hand. If someone had done good deeds, had good intentions, and lived virtuously, when they die and are reincarnated, they might come back as something great – a prince, perhaps. Conversely, if someone was a terrible person, accumulating an excess of negative karma, when they are reincarnated, they might come back as someone of very low status – or maybe not even a person at all.

Hindu scripture discusses four distinct castes, or groups, of people in society, an example of **social stratification**. This social hierarchy is known as the **caste system**. The Brahmins, the highest caste, consist of priests and teachers and represent around 3 percent of India's total population. There is a warrior caste, a merchant caste, and finally the lowest, the laborer caste of landless serfs. Excluded from this caste system, and viewed as so below it that they are not even a part of it, are the "untouchables," also known as "Dalit" meaning "oppressed." The untouchables are so-named because they perform work that makes them spiritually unclean, such as handling corpses, tanning hides, or cleaning bathrooms. Traditionally, higher castes would get ritually purified if they touch a Dalit. Many untouchables are indigenous, non-Aryan Indians.

So how might the belief in karma and reincarnation affect social justice in South Asia? Although the caste system was outlawed by the Indian constitution, widespread discrimination and persecution persists. Many Hindus believe that those in lower castes were reborn into that social status because they had committed misdeeds in their past life. However, other Hindus fought against the caste system and have worked to more fully integrate the Dalits into Indian society.

Buddhism emerged out of Hinduism in northern India following the life and teachings of Hindu prince Siddhartha Gautama. According to Buddhist belief, Siddhartha lived a life of luxury, but became disenchanted with his life of privilege when he was faced with society's injustices, such as illness and extreme poverty. Since Hinduism offered no clear cessation of what Siddhartha viewed as an endless cycle of suffering through samsara, the soul's continual death and rebirth, he sought out new ways of ending suffering. For a time, Siddhartha practiced meditation and extreme asceticism, eating only dirt and bits of rice. But neither the path of luxury nor the complete absence of worldly pleasures gave him the insight he sought. Eventually, Siddhartha, in meditation under a Bodhi tree in Bodh Gaya, India, discovered what Buddhists refer to as the Middle Way, a path of moderation. He is said to have achieved enlightenment and is known as the first Buddha, meaning "awakened one."

Although Buddhism, like Hinduism, is a highly regional religion with many different forms of individual expression, Buddhists generally share a belief in the Four Noble Truths: 1) Suffering is universal and inevitable, 2) The immediate cause of suffering is desire and ignorance, 3) There is a way to dispel ignorance and relieve suffering, and 4) The eightfold path is the means to achieve liberation from suffering. Buddhists also share with Hindus a common belief in karma, dharma, and reincarnation.

Buddhism diffused across Asia, though never taking a strong hold in India (Figure 6.3.2). The Maurya Emperor Ashoka, in particular, was responsible for the widespread diffusion of Buddhism in the 3rd century BCE. The religion has three primary branches, each with a distinct regional concentration. The oldest branch, Theravada, is primarily practiced in Southeast Asia, in places like Cambodia, Laos, Myanmar, and Thailand and is also the majority religion on the South Asian island of Sri Lanka. Mahayana is practiced by most Buddhists worldwide, particularly in places like China and Japan. Vajrayana Buddhism, which is sometimes considered a subset of Mahayana Buddhism, is practiced in the Himalayas and Tibetan Buddhism is a notable example. Buddhism has around 500 million followers worldwide.

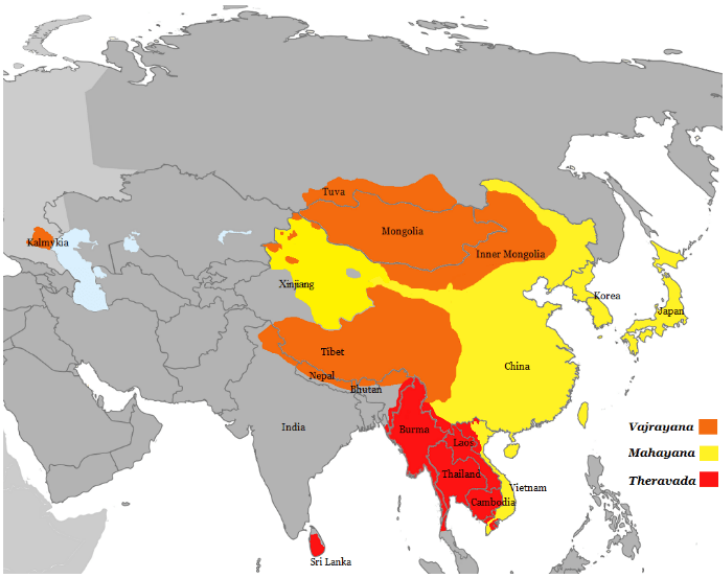


Figure 6.3.2: Map of Buddhism (© Javierfv1212, Wikimedia Commons, CC BY-SA 3.0)

Although Buddhism and Hinduism are the most widely practiced, South Asia was also a hearth area for the Jain and Sikh religions. **Jainism** emerged in India in the first century BCE and emphasizes ahimsa, nonviolence toward all living beings. Even insects found in the home are gently ushered out rather than killed. Jains also seek to break free from attachments and inner passions, and aim to keep an open mind toward different perspectives. The teachings of Jainism were influential for Gandhi and his emphasis on nonviolent resistance.

Sikhism emerged in the Punjab region of northwestern India and northern Pakistan in the 15th century. It is a monotheistic religion founded on the teachings of Guru Nanak that combines elements of both Hinduism and Islam. Like Hindus, Sikhs believe in reincarnation and karma. But unlike Hinduism, Sikhism prohibits the worship of idols, images, or icons. Sikhs believe God has 99 names, an adaptation of Hindu polytheistic belief. Sri Harmandir Sahib, commonly called the "Golden Temple," in Amritsar, India is the holiest Sikh temple, which are called gurdwara (Figure 6.3.3). However, the building is open to everyone and every

visitor is offered a free meal. Over 100,000 people visit the site every day.



Figure 6.3.3: Harmandir Sahib, Amritsar, Punjab, India (© Oleg Yunakov, Wikimedia Commons, CC BY-SA 3.0)

These religions, along with other minority religions like Christianity and indigenous belief systems, have not always coexisted peacefully in South Asia. Although India is officially secular, having no official religion, regional religious conflicts have often occurred throughout history. The difficulty is that in this region, very few people actually are secular, with no attachment to religion. Governments have thus struggled to find ways of accommodating minority religious groups while not offending the majority.

Hinduism:

an ancient polytheistic religion that first developed in South Asia and is characterized by a belief in karma, dharma, and reincarnation

Social stratification:

a system of social categorization where people in a society have differing levels of social status

Caste system:

a form of hereditary social hierarchy found in Hinduism

Buddhism:

religion that emerged from Hinduism and is based on the teachings of Siddhartha Gautama

Jainism:

a religion emerged in India in the first century BCE and emphasizes ahimsa, nonviolence toward all living beings

Sikhism:

a monotheistic religion founded on the teachings of Guru Nanak that combines elements of both Hinduism and Islam

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6.4: South Asia's Population Dynamics

South Asia is the most populous region on Earth, but why is it the most populous, and how do geographers study population? The simplest way to measure population is to count the number of people in an area. India, for example, has a population of over 1.3 billion, making it the second-most populous country after China. But do raw numbers of people tell the whole story of the human population in an area? If two countries have the same population, but one is far smaller than the other, how could we examine population in a way that explores this difference?

Geographers often use the concept of density to investigate population. **Arithmetic density** is fairly easy to calculate. It is determined by simply taking the number of people in an area divided by the size of the area. If a territory was one kilometer square, for example, and was home to 100 people, the arithmetic density would be 100 people per square kilometer. Although arithmetic density is easy to calculate, it gives us a fairly limited view of population density. What if there are two tracts of land that are the same size and have the same number of people, but one is lush and fertile and has people spread out evenly and the other has a tiny river that everyone lives near? If you were using arithmetic density, the measurements for these two areas would be the same even though the actual settlement patterns are quite different (Figure 6.4.1). **Physiologic density** takes into account this difference by examining the number of people per unit of arable, or farmable, land.

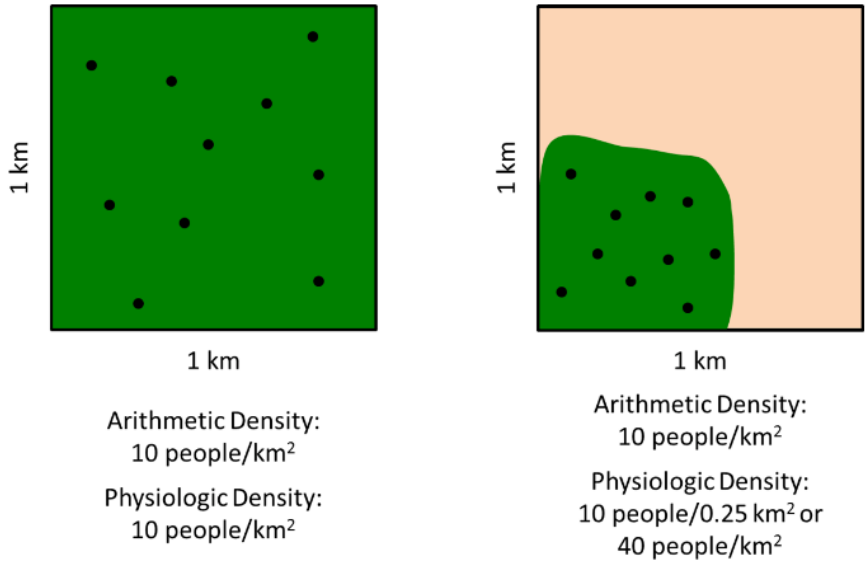


Figure 6.4.1: Arithmetic and Physiologic Density (Figure by author)

Arithmetic and physiologic density can give us insight into the concentration of a country's population and allows us to make comparisons between countries. The United States, a fairly large country, for example, has an arithmetic density of 32 people per square kilometer. However, a relatively small percentage of US land is arable, so the physiologic density is 179 people per square kilometer. Bhutan, by comparison, has a low population density of only 14 people per square kilometer. However, its rugged mountain environment means that only around 2 percent of the land is farmable, so its physiologic density is 606 people per square kilometer. By most measures, the most densely populated place in the world is Singapore with an arithmetic density of 6,483 people per square kilometer and a physiologic density of 441,000 people per square kilometer.

Another way to measure population is **agricultural denisty** which is the ratio of the number of farmers to the area of land. In developing countries where many people work as farmers, agricultural density is very high. South Asia has a high agricultural density. In developed countries, commercial agriculture and technological innovations have allowed relatively few people to be farmers and agricultural densities are generally low.

Geographers can also examine how a population is growing and changing over time. One way to explore this is with a **population pyramid**, a graphical representation of a population's age groups and composition of males and females. Ages of people are grouped in cohorts with younger people on the bottom and older on the top. Thus, a population pyramid that is very triangular has a lot of young people and is growing rapidly.

Typically, the ratio of males to females, known as the **sex ratio**, is 1 to 1 and population pyramids will have even sides. However, in populations where males are favored, the ratio may be skewed. Similarly, in countries where men have died in war, such as in World War II Germany, there might be more females. When geographers and population demographers refer to sex, it means something different from gender; sex is a person's biological identity as male or female while gender refers to a person's role as a "man" or "woman" within society.

India's 2017 population pyramid reveals rapid population growth over the past few decades (Figure 6.4.2). However, the leveling off at the base of the pyramid indicates that population growth may be slowing. In addition, India's cultural preference for male children is clearly apparent. Among children aged zero to four, India has 62 million males and only 55 million females. Nationwide, there are over 47 million more males in India than females. Both abortion and infanticide have contributed to this imbalance.

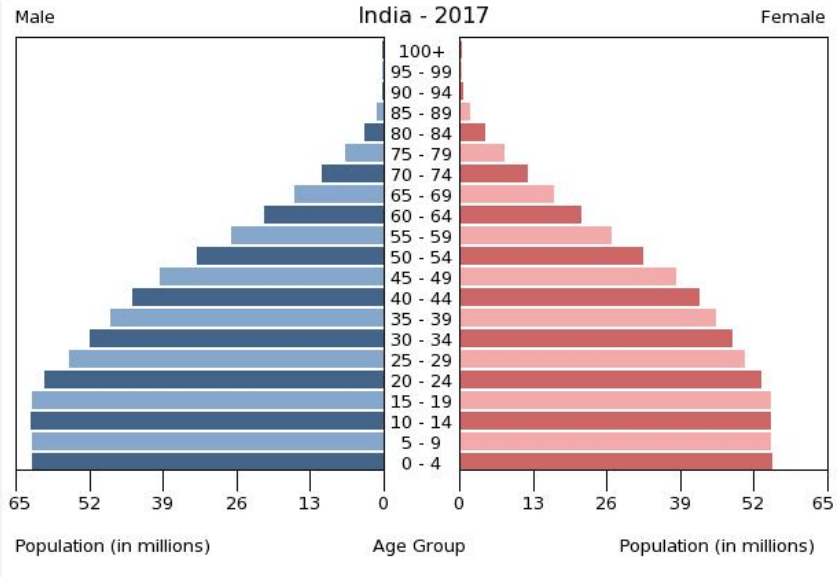


Figure 6.4.2: India's Population Pyramid, 2017 (U.S. Census Bureau, Public Domain)

All of the population pyramids for the countries in this region reveal preferences for male children, though none are as severe an imbalance as India. Although Pakistan's population growth has slowed in the past decades, its fertility rate remains the highest in the region at around 3.5, meaning a woman in Pakistan, on average, will have 3.5 children.

Arithmetic density:

the number of people in an area divided by the size of the area

Physiological density:

the number of people per unit of arable land

Agricultural density:

the ratio of the number of farmers to the area of land

Population pyramid:

a graphical representation of a population's age groups and composition of males and females

Sex ratio:

the ratio of males to females in a population

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6.5: Future Challenges and Opportunities in South Asia

India's male-skewed population pyramid is indicative of a larger issue of gender inequality in its society. Sexual violence in particular continues to be a significant issue. Although the percentage of women who have been raped in India is lower than in other countries, a majority of rape cases are never reported and even an incidence rate of 8 or 9 percent in a population of over 1 billion people means that tens of millions of women have been victimized. The government of India has taken steps to reform its criminal code so that more criminals are prosecuted but even after a 2013 reform, marital rape continues not to be a crime. In a country that has few female police officers, high rates of domestic violence, and a relatively low status of women, sexual violence will likely remain a problem until these broader, systemic issues are addressed.

Overall, South Asia's growing population will have a significant impact on its geography. Much of the historic growth in this region was supported by the **Green Revolution**, which refers to changes in agricultural technology and productivity beginning in India in the 1960s. In 1961, India was at risk of widespread famine when a hybrid rice seed was developed that yielded ten times more rice than traditional seeds. It was called "Miracle Rice" and its use spread throughout Asia. Despite these agricultural advances, South Asia has the highest rates of child malnutrition of any world region. The low status of women in particular contributes to a lack of knowledge about the nutrients that are needed for children. Around one in three children in India are underweight.

Economically, South Asia has experienced rising prosperity yet systemic issues of governance and poverty remain. India in particular has one of the world's largest economies and the fastest growing economy in the region. This economic growth has mainly been focused on urban centers, drawing large numbers of people from the rural countryside to the cities in hope of finding work. Many cities have been unable to accommodate the rapid migration, however, and the sprawling slums in India, Pakistan, and Bangladesh are indicative of inadequate infrastructure and economic inequality. Several factories in this region have collapsed in recent years, killing thousands of workers and highlighting the poor working condition of many South Asians.

What does the future hold for South Asia? Although economic growth has reduced poverty in India, down from 60 percent in 1981 to 25 percent in 2011, corruption has increased. Inequality between genders, religious groups, castes, and ethnic groups remains a problem in much of the region. In some cases, this has led to **communal conflict**, which refers to violence between members of different communities. In Sri Lanka, a majority Buddhist country, ethnicity and religion are closely linked. Buddhists here have shaken the traditional peaceful image of their religion and have engaged in violent conflict with the minority Tamils and Muslims.

Still, local government and community leaders have sought to escape the shadow of the 20th century's turmoil by embracing new models of development and cooperation. In Bhutan, for example, the government initiative to measure gross national happiness resulted in shifting urban amenities, such as schools and healthcare clinics, to rural areas. This slowed the rural to urban migration that was rapidly occurring in other parts of the realm. Despite political and military turmoil, Pakistan has been able to substantially decrease its poverty rate. South Asia remains a complex realm at the crossroads of modernization and traditional cultural and religious values.

Green Revolution:

changes in agricultural technology and productivity beginning in India in the 1960s

Communal conflict:

violence between members of different communities

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7: EAST AND SOUTHEAST ASIA

7.1: The Physical Landscape of East and Southeast Asia
7.2: Natural Hazards in East and Southeast Asia
7.3: East and Southeast Asia's History and Settlement
7.4: Political Conflicts and Changes in East and Southeast Asia
7.5: Patterns of Economic Development in East and Southeast Asia

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7.1: The Physical Landscape of East and Southeast Asia

Learning Objectives

- Identify the key geographic features of East and Southeast Asia
- Explain how East and Southeast Asia's history has affected its geographic landscape
- Describe the patterns of economic development in East and Southeast Asia
- Analyze how East and Southeast Asia interacts within the global economic system

East and Southeast Asia (Figure 7.1.1) contains the world's most populous country, the most populous metropolitan area, and some of the world's oldest civilizations. It is also a region with intense internal disparities and a landscape that has been and continues to be transformed by physical, political, and economic forces. Although East and Southeast Asia are often divided into two regions, they share a common economic and political history and global geopolitical forces continue to transform this realm.



Figure 7.1.1: Map of East and Southeast Asia (CIA World Factbook, Public Domain)

The region of East and Southeast Asia is divided from the rest of Asia by a number of formidable physical barriers (Figure 7.1.2). In the north, Mongolia's Altay Mountains, the Mongolian Plateau, and the Gobi Desert separate the region from Russia. In the south, the Himalaya Mountains divide China from South Asia and contain the world's highest mountain, Mount Everest. These mountains are so high, in fact, that they form the Gobi Desert by preventing rainfall from passing over South Asia into Central Asia. In the southeast, the Arkan Mountains and Naga Hills, which stretch across Myanmar and India, and the rolling hills of China's Yunnan Plateau separate Southeast Asia from the rest of the continent. In general, this is a realm of relatively high relief, meaning there are significant changes in elevation on the landscape. Even the islands of this region have a rugged topography, from Japan's Mount Fuji to Indonesia's Mount Carstensz.



Figure 7.1.2: Physical Map of East and Southeast Asia (CIA World Factbook, Public Domain)

The rivers of this region have supported both ancient cultures and modern societies providing irrigation for agriculture, river transportation, and in some cases, hydropower. Asia's longest river, the Yangtze, flows through central China; the economic activity surrounding its river valley generates around one-fifth of the entire country's gross domestic product (GDP). In 2003, the Chinese government built the Three Gorges Dam, the world's largest hydroelectric power station, which spans the river. China's other major river, the Huang He River, also known as the Yellow River, flows through the highlands of Western China before discharging in Northeastern China. It was on the banks of the Huang He that Chinese civilization first began. In Southeast Asia, the region is dominated by the Mekong and Irrawaddy Rivers. The Mekong River, one of the most biodiverse rivers in the world, has been heavily dammed, impacting the area's ecology, and plans are underway to dam the Irrawaddy in several places. In addition, both the Mekong and the Irrawaddy originate in China, presenting issues over river flow and ownership.

Although the construction of the region's numerous dams has provided reliable power, they've been met with significant social and ecological impacts. The Three Gorges Dam, for example, was an unprecedented engineering marvel and will reduce the potential for downstream flooding, but flooding from the creation of the dam displaced over one million people and significantly reduced forest area around the river.

Most of the region's people live in the more temperate climate zones. In East Asia, for example, the coastal regions of Central and Southern China, Japan, and South Korea are primarily a humid temperate climate. Southeast Asia is largely tropical with ample rainfall throughout the year. The exception to these relatively warm areas are Western China, where the cold highland climate dominates, and Northeastern Asia is quite cold due to its high northern latitude.

The region's physical landscape has significantly affected its agricultural practices. The banks of East and Southeast Asia's rivers provided early settlers with fertile soil, and even today, provide agricultural irrigation. The region's hilly terrain, though initially an obstacle to agricultural productivity, inspired innovations such as terracing, cutting a series of flat surfaces resembling steps on hillsides. China in particular continues to be a global leader in terms of agricultural production.

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7.2: Natural Hazards in East and Southeast Asia

Much of what unites this region is its instability, not necessarily in terms of geopolitics, but rather its physical landscape. East and Southeast Asia are located in the **Pacific Ring of Fire**, an area of high tectonic activity along the Pacific Ocean basin (Figure 7.2.1). The vast majority of the world's earthquakes, around 90 percent, occur along this geologically unstable area.

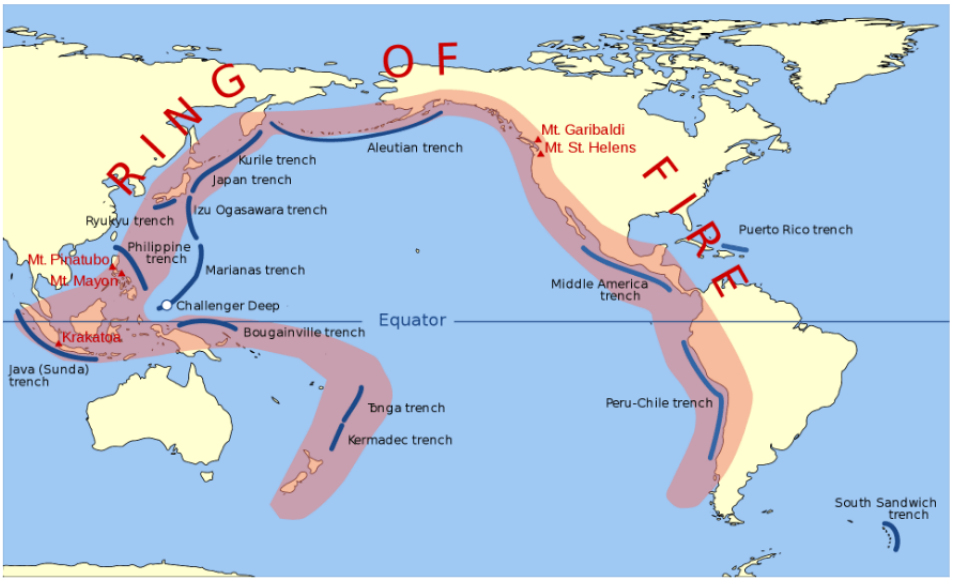


Figure 7.2.1: Map of the Pacific Ring of Fire (Map by Gringer, Wikimedia Commons, Public Domain)

In East and Southeast Asia, tectonic collisions have shaped the physical landforms present in the region and present numerous natural hazards (Figure 7.2.2). Volcanoes erupt in this region frequently, and many of the islands in this region were actually formed from a variety of historic volcanic eruptions. Japan's highest mountain peak, for example, the majestic Mount Fuji, is an active volcano that last erupted in the early 18th century. The 1815 eruption of Indonesia's Mount Tambora, one of its dozens of active volcanoes, was so powerful, it cooled global temperatures and caused crop failures as far away as Egypt and France. In 1883, the volcanic island of Krakatoa, between the Indonesian islands of Java and Sumatra, erupted with such a violent explosion that it actually collapsed. Tens of thousands died and it took several years for global weather patterns to return to normal. The sound of the eruption is considered the loudest sound in modern history and could be heard from over 4,800 kilometers (3,000 miles) away.

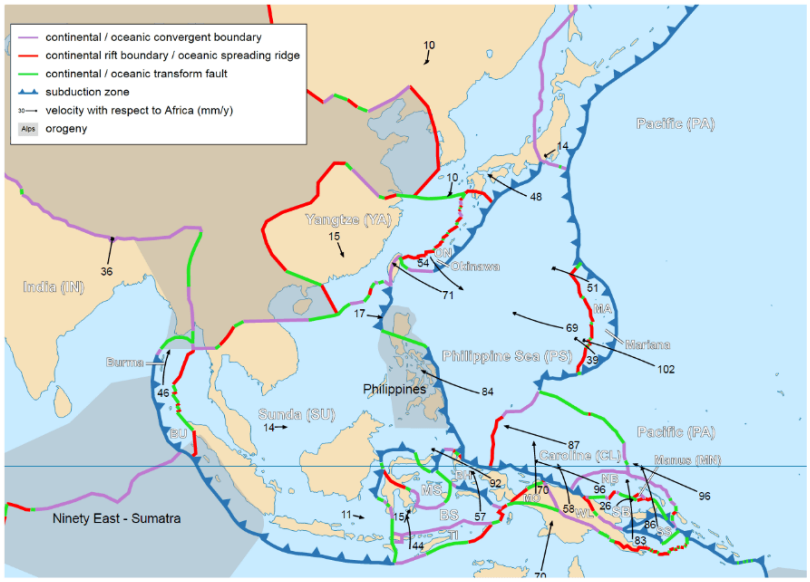


Figure 7.2.2: Map of Tectonic Plates in East and Southeast Asia (United States Geological Survey, Public Domain)

Along the islands of Indonesia, the Australian Plate is subducting, or moving below, the Eurasian Plate. This has resulted in a **subduction zone** west of the Indonesian island of Sumatra, an area of high seismic activity. In 2004, this subduction resulted in a massive undersea earthquake, so powerful that it actually shortened the day by a fraction of a second. The earthquake triggered a series of **tsunamis**, high sea waves, which devastated coastal communities in 14 different countries and killed 230,000 people. Tsunamis result from the displacement of water and can have a variety of causes, such as a landslide, meteor impact, or undersea volcanic eruption. Most commonly, though, they result from earthquakes.

In 2011, the most powerful earthquake to ever hit Japan, a magnitude 9.0, resulted in tsunami waves over 40 meters (131 feet) high in some areas. The earthquake and subsequent tsunami left over 15,000 dead and damaged hundreds of thousands of buildings. Most notably, the tsunami damaged Japan's Fukushima Daiichi Nuclear Power Plant causing a series of nuclear meltdowns and the release of radioactive material.

So what can be done about the danger from earthquakes, volcanoes, and tsunamis in this region? While nothing can stop Earth's massive tectonic plates from moving, warning systems, land use planning, and public education could help prevent casualties. After the 2004 Indonesian earthquake and tsunami, the international community created an Indian Ocean tsunami warning system. Although some of the hardest hit areas would have had only minutes to find higher ground, the warning system could have had a significant impact in alerting areas ahead of the wave. In Japan, earthquake drills are common and strict building codes ensure that buildings can withstand most seismic activity.

In addition to these geologic hazards, typhoons are also common in this region. Typhoons, the term for tropical cyclones in the northwestern region of the Pacific Ocean, routinely make landfall in East Asia. The region actually has more tropical cyclone activity than anywhere else on Earth. Most storms form in the summer between June and November and the islands of the Philippines are generally the hardest hit. Monitoring systems have been in place in the region for several decades and have helped to minimize the impacts from these powerful storm systems.

Pacific Ring of Fire:

an area of high tectonic activity along the Pacific Ocean basin

Subduction Zone:

an area where one tectonic plate is subducting, or moving below, another plate

Tsunami:

a high sea wave resulting from the displacement of water

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7.3: East and Southeast Asia's History and Settlement

The history of human settlement in East and Southeast Asia begins in China. Evidence of modern humans can be found in the region dating back to over 80,000 years ago. Around 10,000 years ago, several cultural groups emerged in China during the **Neolithic Period**, also known as the New Stone Age. This was a time of key developments in early human technology, such as farming, the domestication of plants and animals, and the use of pottery. Along China's Yangtze River, humans first domesticated rice around 6500 BCE. Villages, walled cities, and great dynasties, or families of rulers, emerged later.

While some early humans stayed in East Asia, others followed the coastline and continued on to Southeast Asia likely over 50,000 years ago. This was during the glacial period known as the Ice Age. Global temperatures were much colder and huge sheets of ice covered North America, Europe, and Asia. Since so much water was trapped
in these huge glaciers, ocean levels were actually much lower than they are today. Indonesia, Malaysia, and the other islands of Southeast Asia were a single landmass known as Sunda (Figure 7.3.1). Those cultural groups who had seafaring knowledge continued on, populating Australia and the surrounding islands. During the Ice Age, the southern islands of Japan were also connected to the rest of Eurasia, allowing the indigenous groups of Japan to migrate from what is now mainland China.



Figure 7.3.1: Map of Southeast Asia 20,000 Years before Present (© Maximilian Dörrbecker, Wikimedia Commons, CC BY-SA 3.0)

In East Asia, the Chinese dynasties dominated the political landscape for much of the region's history. They established trade routes, a strong military, and forged connections with Korea and Japan. China became a unified state under the Han dynasty, which ruled from 206 BCE to 220 CE, and this long period of stability is viewed as
a golden age in Chinese history. The dominant ethnic group in China, the Han, take their name from this ruling family. It was also during this time that Confucianism became the state religion. Confucianism takes its name from the influential Chinese philosopher and teacher Kong Fuzi (551-479 BCE), often referred to by the Latinized version of his name, Confucius. One of Confucius' key teachings was the importance of relationships, both within the family and within society as a whole and the religion emphasizes human goodness and self-reflection rather than the worship of a divine being. Confucius also emphasized education and his teachings have dominated Chinese culture for centuries.

In general, the Chinese dynasties were largely isolationist. China has a number of physical barriers that separate it from the rest of Asia, such as the Himalayas, the rugged western highlands, and the Gobi Desert. The only region where it was vulnerable to invasion was its northeastern region. Here, the ruling families of China built a series of walls, known today as simply the Great Wall of China (Figure 7.3.2).

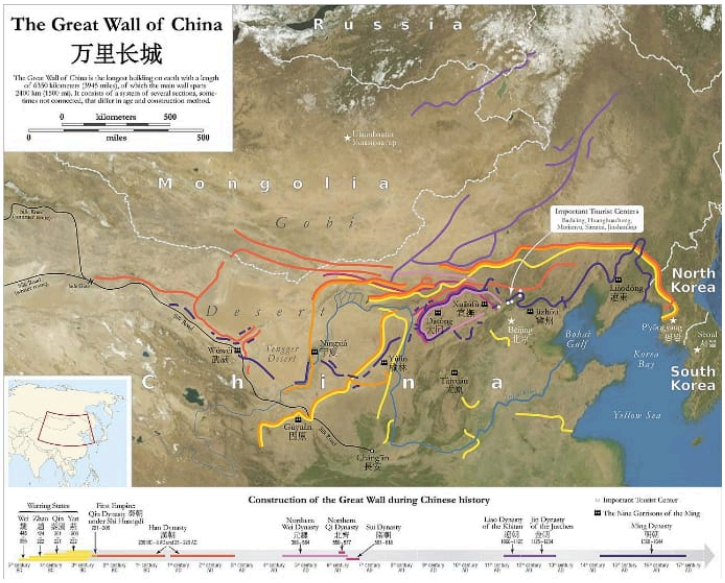


Figure 7.3.2: Map of the Great Wall of China (© Maximilian Dörrbecker, Wikimedia Commons, CC BY-SA 2.5)

However, the term “the” Great Wall of China is a misnomer. In fact, there is a series of overlapping walled fortifications that began being constructed by early dynasties in the 5th century BCE and continued through to the 17th century CE. Walls are a defensive military structure and are thus an expression of a civilization that wished to be left alone. Emperors generally disregarded China’s extensive coastline, and where port cities did emerge, they were primarily used for local trade.

In Southeast Asia, however, trade links with South Asia brought Hinduism and later Buddhism to the region. Port cities emerged, as well as cities that were religious or ceremonial centers. The Hindu rulers of the region were often viewed as divine, but in order to secure the favor of the gods, and the blessings of the Hindu priests, they agreed to build temples. Angkor Wat, in Cambodia, for instance, was built in the 12th century as the king’s state temple and capital city (Figure 7.3.3). It was later transformed into a Buddhist temple, which it remains today. The temple complex is the largest religious structure in the world.



Figure 7.3.3: Angkor Wat Temple Complex, Cambodia (© Bjøorn Christian Tøorrissen, Wikimedia Commons, CC BY-SA 4.0)

Eventually, Islam spread to Southeast Asia, particularly as a result of Sufi missionaries, part of a mystical branch of Islam. In the present-day islands of Malaysia and Indonesia, in particular, local rulers and communities embraced Islamic theology. Today, more Muslims live in Indonesia than in any other country on Earth.

Buddhism continued to dominate the religious landscape of much of Southeast Asia as well as in Japan. During the Heian period, lasting from the late 8th centuries to the 12th century CE, many of the features of modern Japanese culture emerged, such as its

distinctive art and poetry, as well as Buddhist-inspired architecture. A ruling class of warriors, known as a shogunate, would later take control of Japan beginning a feudal period in the country's history.

The evolving landscape of this region would be completely transformed by colonization, with sweeping political and economic changes that continues to shape the geography of the region today. Beginning in the 16th century, European colonial empires became interested in Southeast Asia. Before long, Europeans established permanent colonies. The Spanish would settle the Philippines, the Netherlands established the Dutch East Indies in present-day Indonesia, the French created Indochina in mainland Southeast Asia, and the British would take over Burma, now known as Myanmar, and Malaysia. By the 1800s, only Thailand would remain independent and functioned largely as a buffer state separating the British and French colonial spheres.

Japan took note of these imperial pursuits. In 1868 CE, the Japanese Emperor Meiji ended the shogante and began a series of reforms known as the Meiji Restoration. As part of the reform, the government sought to increase Japan's modernization and industrialization and began a systematic study of the developed world. Why were some countries more powerful and more industrialized than others? Britain, for example, was an island nation like Japan and yet was considered to be the most powerful country in the world. Education was critical, as was industrial technology, but Japanese leaders believed that Britain's colonial ambitions, its direct control over the resources of other areas, was key to its success.

By the beginning of World War II, Japan had built up an impressive military and had colonized much of East and Southeast Asia including northeastern China, the Korean peninsula, Taiwan, French Indochina, the Philippines, Indonesia, and Malaysia (Figure 7.3.4). In 1941, Japanese military forces attacked the US base Pearl Harbor in Hawaii. Following the attack, the US declared war on Japan and entered World War II.

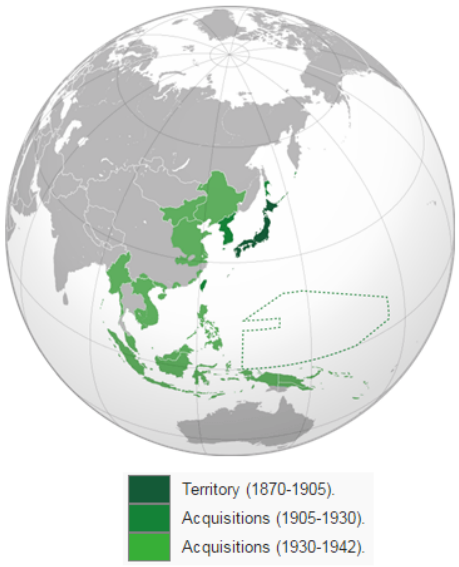


Figure 7.3.4: Map of the Japanese Empire, 1942 (Derivative work from original by Shadowxfox, Wikimedia Commons, CC BY-SA 3.0)

Following Japan's loss in World War II, the countries of East and Southeast Asia were able to acquire independence. Some countries, like the Philippines and Burma, achieved independence through a peaceful turnover of control, while others such as Indonesia won independence only after a violent period of opposition. The end of World War II reshaped not only the political map of East and Southeast Asia but development in the region as well.

Neolithic Period:

> also known as the New Stone Age, a time of key developments in early human technology, such as farming, the domestication of plants and animals, and the use of pottery

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7.4: Political Conflicts and Changes in East and Southeast Asia

The second half of the 20th century was a time of significant political change for East and Southeast Asia. The former colonies of Japan were able to break away from their colonial past and become independent, but as in many other parts of the world, that independence often coincided with political conflict.

For Japan, the end of World War II brought a period of **Westernization** and rapid economic growth. Westernization refers to the process of adopting Western, particularly European and American, culture and values. Japan adopted a new constitution and embraced democratic principles. It continued to industrialize and would become a global leader in electronics and automotive production. Today, Japan has the fourth largest GDP behind only the United States, the European Union, and China.

In other parts of East and Southeast Asia, the political changes to the region following World War II tended toward **communism**, a social, political, and economic system that seeks communal ownership of the means of production. Communism is associated with **Marxism**, an analysis of social class and conflict based on the work of Karl Marx (1818-1883 CE). In a typical society, factories are owned by a wealthy few who then pay workers a lower wage to ensure that they make a profit. In a communist society, however, the goal of Marxism would be a classless society where everyone shares the ownership and thus receives equal profits.

Marxist ideas spread to China by the early 20th century and found particular support among Chinese intellectuals. The Communist Revolution in Russia inspired Marxists in China who founded a communist political party that would eventually be led by Mao Zedong. The communist party continued to gain traction in China and following a civil war, Mao Zedong established the communist People's Republic of China in 1949. The previous Chinese government fled to the island of Taiwan, which is officially known as the Republic of China and claims control of the entire mainland. China, however, maintains that Taiwan is part of China.

After securing political control of China, Mao Zedong sought to transform China's culture by reorienting it around the ideology of communism. One of the first steps in this transformation was the **Great Leap Forward** from 1958 to 1961 which sought to reshape China's agrarian society into an industrial power. Unfortunately, the changes led to widespread famine and the deaths of tens of millions of Chinese as a direct result.

Following the failure of the Great Leap Forward, Mao aimed to eliminate any remaining traditional elements of Chinese culture or capitalist thinking through the Cultural Revolution. Millions were imprisoned, forcibly relocated, or tortured, and historical relics and cultural sites were destroyed. After Mao's death, several leaders responsible for the abuses committed during the Cultural Revolution were arrested and China began a period of modernization and economic reform.

In the Korean peninsula, allied forces divided the former Japanese colony along the 38th parallel. Russia would control the norther portion, where it helped install a communist government and economic system. The United States occupied the southern portion, where it assisted a pro-Western government in its political and economic development. Tensions between the two territories led to the Korean War in the early 1950s. Technically, the two sides are still at war having never signed a peace agreement and simply agreeing to a cease-fire. Today, North Korea, officially the Democratic People's Republic of Korea (DPRK), follows a Marxist model of development with state owned enterprises and agriculture. The government has been accused of numerous human rights violations and the people of North Korea are severely restricted in terms of their economic, political, and personal freedom. In South Korea, on the other hand, officially known as the Republic of Korea, a democratic government replaced a series of military dictatorships and the country is considered one of the most developed in the region according to the Human Development Index.

Communist ideals spread to Southeast Asia, as well, where Marxism influenced the governments of newly independent countries. In Vietnam, for example, a communist movement was begun by Ho Chi Minh to try to gain independence from France following the end of Japanese occupation inWorldWar II. The communist forces were able to defeat the French in a key battle in 1954 and established a government in the northern territory. The country was then divided into a communist north and anti-communist and majority Catholic south. This was a time of high tension between the United States and the Soviet Union, and the US feared that the entire region would eventually come under communist control, essentially creating a Western capitalist hemisphere and an Eastern communist hemisphere. The fear that the fall of one country to communism would lead to the fall of other surrounding countries to communism was known as **domino theory**, and was originally meant as an anecdote but became the basis for US foreign policy in the region (Figure 7.4.1).

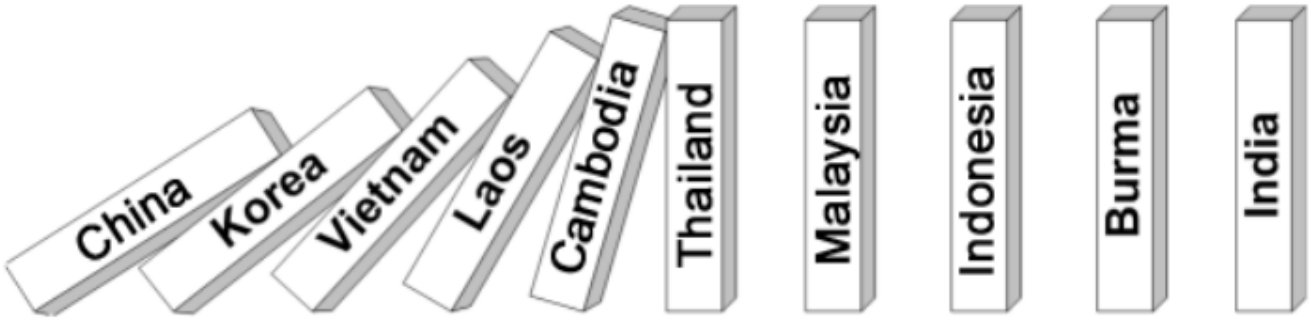


Figure 7.4.1: Illustration of Domino Theory (© User:Nyenyec, Wikimedia Commons, CC BY-SA 3.0)

The United States aimed to support South Vietnam's resistance to the communist north's goal of unification and began sending military advisors to the region. Military combat units followed and bombing campaigns began in 1965. The terrain of Vietnam was quite different than the geography of other areas where the US had previously fought. Much of Southeast Asia was tropical rainforest, and was ill-suited for the types of tanks and heavy artillery that had been so successful in World War II. The Viet Cong, referring to the Vietnamese communists, engaged in guerrilla warfare, using the terrain to support small, mobile military units. To try to combat these tactics, the US military sprayed chemical defoliants and herbicides, like Agent Orange, over Vietnam's forests. In the end, waning support for the Vietnam War led the US to withdraw and in 1975, Vietnam was unified under communist rule. Over 1 million Vietnamese and 58,000 Americans died in the fighting. Millions others were exposed to Agent Orange causing health problems and disabilities, and the chemical had devastating effects on Vietnam's ecosystem where it has lingered in the soil.

During the same time period, a communist organization known as the **Khmer Rouge**, which is French for "Red Khmers," came to power in Cambodia. Khmer refers to the dominant ethnic group in Cambodia. The Khmer Rouge opposed Westernization and US involvement in the newly independent country and believed in a return to an agrarian society. Pol Pot (1925-1998 CE), the leader of the Khmer Rouge, led a campaign to eliminate the country's schools, hospitals, and other institutions and make the entire society work on collective farms. Urban cities would no longer be the economic and political focus, but rather wealth would be spread out around the countryside. Most of the country's intellectuals, including teachers and even people with glasses who were simply perceived as academic, were killed. Large prison camps were set up to house those who were believed to be a threat to communism. Cambodians of other ethnicities or who practiced religion were also executed. In total, more than one million people were killed, often buried in mass graves known as the Killing Fields. Cambodia's attempt to transform into an agrarian society ultimately led to widespread famine and starvation. In 1978, Vietnamese forces invaded Cambodia and defeated the Khmer Rouge, but human rights continue to be severely restricted in the country.

Much of East and Southeast Asia exhibits characteristics of a **shatter belt**, an area of political instability that is caught between the interests of competing states. Beginning in the colonial era and continuing today, Western involvement in this region has at times led to industrialization and economic growth and at other times economic depression and a drive to return to traditional values. Today, political instability continues to plague several countries in the region.

Westernization :

the process of adopting Western, particularly European and American, culture and values

Communism :

a social, political, and economic system that seeks communal ownership of the means of production

Marxism:

an analysis of social class and conflict based on the work of Karl Marx

Great Leap Forward:

a campaign begun in 1958 by the Communist Party of China that sought to reshape China's agrarian society into an industrial power

Domino theory:

refers to the fear that the fall of one country to communism would lead to the fall of other surrounding countries to communism

Khmer Rouge:

a communist organization in Cambodia that opposed Westernization and believed in a return to an agrarian society

Shatter belt:

an area of political instability that is caught between the interests of competing states

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7.5: Patterns of Economic Development in East and Southeast Asia

Despite the political changes and conflicts that marked the 20th century, the 21st century has largely been marked by economic development across East and Southeast Asia. Economic geography is a branch of geography that explores the spatial aspect of economic development. Economic geographers don't just ask "Where is economic development occurring?" but also "*Why* is economic development occurring in some areas and not others?" In East and Southeast Asia, economic growth has largely resulted from regional and global trade. However, development is not spread evenly across the region and economic inequalities still persist.

Global connections have been the principle driver of economic success in East and Southeast Asia. Much of the trade connections have emerged between the countries in this region and the larger **Pacific Rim**, referring to the countries that border the Pacific Ocean. Many of these countries are members of the Asia-Pacific Economic Cooperation (APEC) which promotes free trade across Asia and the Pacific. In Southeast Asia, the countries of the region formed the **Association of Southeast Asian Nations**, or ASEAN (Figure 7.5.1). The organization aimed to promote political security, economic growth, and social development among member countries.



Figure 7.5.1: Map of ASEAN Member States (Derivative work from original by ASDFGH, Wikimedia Commons, Public Domain)

In China and Japan, histories of relative isolation gave way to an embrace of globalization and global trade. Although China's government is communist, it has allowed more free-market oriented economics in areas known as **Special Economic Zones**, or SEZs. These SEZs are located in coastal China and have special incentives to attract foreign investment (Figure 7.5.2). Other capitalist shifts have occurred in China even allowing for US supermarkets and restaurants to open locations in the country. These SEZs, as well as other special development areas in China, have functioned as **growth poles**, which are areas that have attracted economic development in the region. In 2010, China displaced the United States as the global leader in manufacturing.

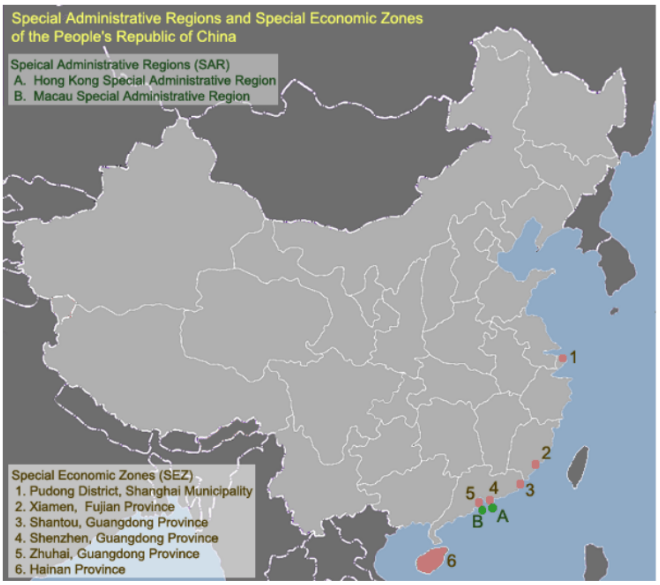


Figure 7.5.2: Map of China's Special Economic Zones (© Alan Mak, Wikimedia Commons, CC BY 2.5)

Broadly, **foreign direct investment** (also called FDI), the control of a business in one country by a company based in another country, has been a key driver of China's economic success. In 2017, China was the second most attractive company for foreign investors, behind the United States, with over $136 billion in foreign direct investment flowing into the country according to the 2018 World Investment Report. China has done its own foreign direct investing as well, increasing outward flows of FDI from $5.5 billion in 2004 to over $125 billion in 2017, according to the same report. Hong Kong is the primary destination for Chinese foreign direct investment, but substantial sums also flow to countries in Africa as well as Australia, where China is the largest trading partner. Within Southeast Asia, China is now the top investor in Myanmar and has increased foreign direct investment in Singapore.

While China and Japan remain the largest economies in the region, other areas have experienced high rates of economic growth. The Four **Asian Tigers**, in particular, referring to Hong Kong, Singapore, South Korea, and Taiwan, experienced rapid industrialization and economic development led by export-driven economies, low taxes, and free trade. Some have also theorized that the Confucian work ethic present in these countries complemented the process of industrialization. Each country also developed a distinct specialty and maintains a competitive advantage in that area. South Korea, for example, is known for its manufacturing of information technology while Hong Kong is a leading financial center.

Much of the economic growth of the Asian Tigers as well as Japan has come from the export of **value added goods**. When countries export raw materials, their economic benefit is limited since those raw materials are often not inherently valuable. When these raw materials are made into something useful, however, value is added and the product can be sold for a higher profit. Lumber is quite cheap, for example. When the lumber is made into a dining table, it has a much higher value. Many companies located in these countries have become household names in electronics, computing, and the auto industry. China has traditionally exported relatively low value added goods, but in 2016, the Chinese government announced a shift to higher value added products like transportation technology and telecommunications.

Southeast Asia has benefitted from its key geographical position as the ***entrepôt***, a French term meaning a commercial center of trade, for the rest of Asia. The Strait of Malacca in particular is the main shipping channel between the Pacific Ocean and the Indian Ocean and a key transportation gateway (Figure 7.5.3). Around one quarter of all the world's exported goods travels through the strait each year. Malaysia's economic success as an entrepôt is exemplified by its Petronas Towers in Kuala Lumpur, which were the tallest buildings in the world from 1998 to 2004. Indonesia has the largest economy of Southeast Asia, exporting primarily to Japan, Singapore, the United States, and China. Singapore has the highest GDP per capita in the region, again owing to its key geographical position.



Figure 7.5.3: Map of the Strait of Malacca (U.S. Department of Defense, Public Domain)

One lingering issue in many of these countries has been crony capitalism, the notion that the success of a business depends on its relationship to other businesses and the state. A politician might have an old friend in the manufacturing industry, for example, and give the friend a government contract with beneficial terms. In 1997, a financial crisis that started in Thailand spread throughout the Southeast Asia region and to South Korea was, in part, blamed on the business dealings of corrupt politicians. Several countries in this region rank high on an index of corruption perception, as shown in Figure 7.5.4, and some have expressed concern that the communist countries of this region will continue to embrace capitalism when it is politically beneficial rather than as part of a broader and more transparent economic system.

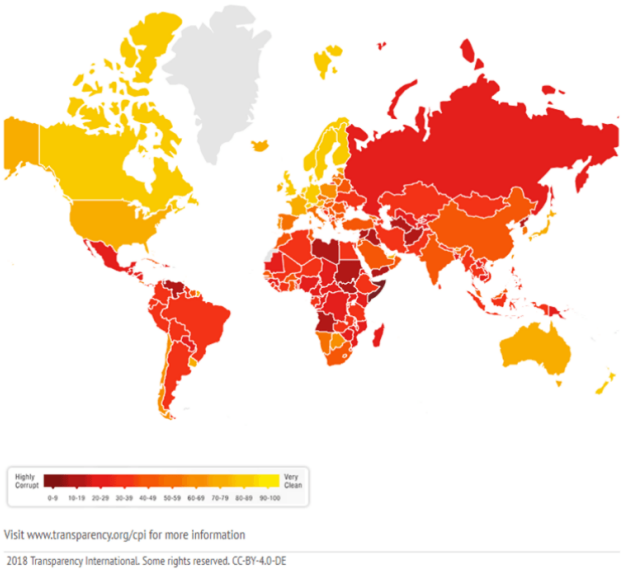


Figure 7.5.4: Map of Index of Perception of Corruption by Transparency International, 2017 (© Transparency International, CC-BY-4.0-DE)

Economic development is not spread evenly throughout the region. By most estimates, North Korea remains the poorest country in the region with an estimated GDP per capita of just $1,300 in 2016. Mainland Southeast Asia, with the exception of Thailand, remains relatively poor. Cambodia, Laos, Myanmar, and Vietnam all have GDP per capitas of less than $8,000 as of 2018 and remain far less well off than their more developed neighbors in the region.

Where economic growth has occurred, it is often confined to an urban area which can drive up population densities as people move to the city in search of work. In Indonesia, the island of Java is very densely populated while other surrounding islands are relatively sparse. The Dutch colonizers and later the Indonesian government, in a stated effort to reduce poverty and overcrowding, created a policy of transmigration seeking to relocate people to the less densely populated islands. This program

has been controversial, however, and the indigenous people who inhabit the surrounding islands see the program as a threat to their way of life.

In some cases, uneven distribution of economic development has led to both interregional and intraregional migration as people move in search of economic advancement. China in particular has seen a significant amount of rural to urban migration. Around 11 percent of the entire country's population migrated from rural to urban areas in 2009 and most of them are young adults. Many of China's migrants are part of a **floating population**, which refers to members of a population who reside in an area for a period of time but do not live there permanently. Around 50 million Chinese reside overseas, mostly in Southeast Asia. Thailand has the largest population of overseas Chinese, and Chinese also represent the majority ethnic group in Singapore. Long before colonization, East and Southeast Asia was a realm of global economic influence, from the Chinese empire to the trade routes of Southeast Asia. As some countries of the realm have moved toward political stability and economic growth, others have remained in a state of political and economic turmoil. Tourism could bring some of these countries an economic boost, but the prospect of tourism in countries with government instability is limited. Still, although countries like Laos, Myanmar, and Cambodia currently have some of the world's smallest economies, they are some of the fastest growing in the world and improvements in agricultural and natural resource development combined with a stable political infrastructure could expand the economic strength of the region.

Pacific Rim:

refers to the countries that border the Pacific Ocean

Association of Southeast Asian Nations:

an international organization that seeks to promote political security, economic growth, and social development among member countries in Southeast Asia, also known as ASEAN

Special Economic Zones:

a special region in China where more free-market oriented economics are allowed, also known as SEZ

Growth poles:

a cluster within a region that has attracted economic development

Foreign direct investment:

the control of a business in one country by a company based in another country, also known as FDI

Asian Tigers:

refers to Hong Kong, Singapore, South Korea, and Taiwan which have experienced rapid industrialization and economic development led by export-driven economies, low taxes, and free trade, sometimes also called the Four Asian Tigers

Value added goods:

a raw material that has been changed in a way that enhances its value

***Entrepôt*:**

a French term meaning a commercial center of trade

Floating population:

members of a population who reside in an area for a period of time but do not live there permanently

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8: ETHNICITY AND RACE

Learning Outcomes

- Understand: the differing bases of ethnic identity
- Explain: the relationship between ethnicity and personal identity
- Describe: the degrees of relevance of ethnicity in a society
- Connect: ethnicity, race, and class as they relate to political power

8.1: What Are Ethnicity and Race?
8.2: Relevance of Race and Ethnicity in the United States
8.3: Ethnicities in The United States
8.4: Relevance of Race and Ethnicity in Other Places
8.5: Summary
8.6: Key Terms Defined
8.7: Works Consulted and Further reading
8.8: Endnotes

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8.1: What Are Ethnicity and Race?

A common question asked in introductory geography classes is “What is ethnicity and how is it different than race? The short answer to that question is that ethnicity involves learned behavior and race is defined by inherited characteristics. This answer is incomplete. In reality, both race and ethnicity are complex elements embedded in the societies that house them. The relationship between race, ethnicity and economic class further complicates the answer.

Other students have asked, “How is this geography? Ethnicity and race have strong spatial dimensions. Both races and ethnicities have associated places and spatial interactions. A person’s ability to navigate and use space is contingent upon many factors- wealth, gender, and race/ethnicity. Anything that sets limits on a person’s movement is fair game for geographic study. Numerous geographic studies have centered on the sense of place. Race and ethnicity are part of a place. Signs are written in languages, houses have styles, people wear clothing (or not!) and all of these things can indicate ethnicity.

7.1.1 The Bases of Ethnicity

Ethnicity is identification through language, religion, collective history, national origin, or other cultural characteristics. A cultural characteristic or a set of characteristics is the constituent element of an ethnicity. Another way of thinking of an ethnicity is as a **nation** or a people. In many parts of the world, ethnic differences are the basis or political or cultural uprisings. For example, in almost every way the Basque people residing on the western border between France and Spain are exactly like their non-Basque neighbors. They have similar jobs, eat similar foods, and have the same religion. The one thing that separates them from their neighbors is that they speak the Basque language. To an outsider, this may seem like a negligible detail, but it is not. It is the basis of Basque national identity, which has produced a political separatist movement. At times, this movement has resorted to violence in their struggle for independence. People have died over the relative importance of this language. The Basques see themselves as a nation, and they want a country.

The ethnicities of dominant groups are rarely ever problematized. **Majority** ethnicities are considered the default, or the normal, and the smaller groups are in some way or another marginal. Talking about ethnicity almost always means talking about minorities.

There are three prominent theories of Ethnic Geography: amalgamation, acculturation, and assimilation. These theories describe the relation between majority and minority cultures within a society. Amalgamation is the idea that multiethnic societies will eventually become a combination of the cultural characteristics of their ethnic groups. The best-known manifestation of this idea is the notion of the United States as a “melting pot” of cultures, with distinctive additions from multiple sources.

Acculturation is the adoption of the cultural characteristics of one group by another. In some instances, majority cultures adopt minority cultural characteristics (for example the celebration of Saint Patrick’s Day), but often acculturation is a process that shifts the culture of a minority toward that of the majority.

Assimilation is the reduction of minority cultural characteristics, sometimes to the point that the ethnicity ceases to exist. The Welsh in the United States have few, if any, distinct cultural traits.

When we looked at the previous chapters- Language, Religion, and now Ethnicity, we have explored subjects that are often the core of a person’s identity. Identity is who we are and we, as people, are often protective of those who share our collective identity. For example, ethnicity, and religion can be closely tied, and what can appear as a religious conflict may be in fact a politicized ethnic disagreement or a struggle over resources between ethnicities that has become defined as a religious war. Muslim Fula herders and Christian farmers in Nigeria aren’t battling over religious doctrine; they’re two different peoples fighting for the same land and water resources.

One of the enduring ideas of modern political collectives is that we consider everyone within the boundaries of our country as “our group.” The reality has not lived up to that concept, however. Many modern countries are wracked by ethnic struggles that have proven remarkable resistant to ideas of ethnic or racial equality.

7.1.2 Race

The central question around race is simple: “Does race even exist?” Depending on how the question is framed, the answer can

be either yes or no. If race is being used in a human context in the same way that species is used in an animal context, then race does not exist. Humans are just too similar as a population. If the question is rephrased as, “Are there some superficial differences between previously spatially isolated human groups?” then the answer is yes. There are genetic, heritable differences between groups of people. However, these differences in phenotype (appearance) say very little about genotype (genetics). Why is that? The reality is that human beings have been very mobile in their history. People move and they mix with other groups of people. There are no hard genetic linesbetween different racial categories in the environment. As a consequence of this, racial categories can be considered socially constructed.

7.1.3 How are ethnicity and race different?

People tend to have difficulties with the distinctions. Let’s start with the easiest racial category in the United States- African American. Most people understand that the origin of the African American or Black population of the United States is African. That is the race part. Now, the ethnic part appears to be exactly the same thing, and it almost is, but only for a particular historical reason. If Africans had been forcibly migrated by group, for example large numbers of BaKongo or Igbo people were taken from Africa and brought to Virginia and settled as a group, then we would be talking about these groups as specific ethnicities in the same way we talk about the Germans or Czechs in America. The Germans and Czechs came in large groups and often settled together, and preserved their culture long enough to be recognized as separate ethnicities.

That settlement pattern did not happen with enslaved Africans. They were brought to the United States, sold off effectively at random, and their individual ethnic cultures did not survive the **acculturation** process. They did, however, hold onto some general group characteristics, and they also, as a group, developed their own cultural characteristics here in the United States. Interestingly, as direct African immigration to the United States has increased, the complexity of the term African American has increased, since it now includes an even larger cultural range.

7.1.4 Specifically Ethnic

The United States is a multiethnic and multiracial society. The country has recognized this from the very beginning, and the U.S. Census has been a record of ethnic representation for the U.S. since 1790. Here are the current racial categories **(Figure 7.1)**.

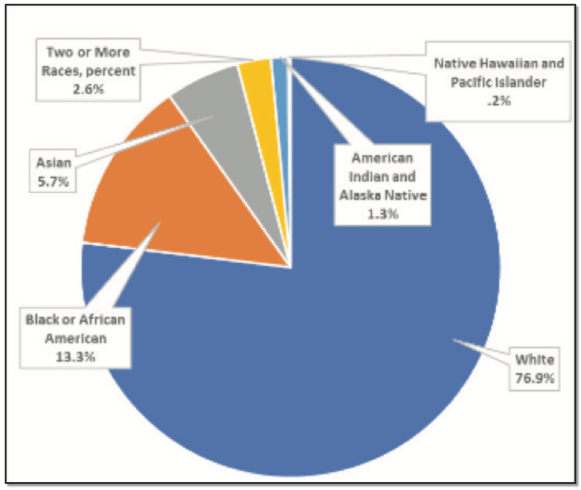


Figure 7.1 | U.S. Racial Makeup according to the United States Census of 2016 [1]
Author | David Dorrell
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There are many ethnicities in the United States, and data are collected to a granular level, but in many ways, the ethnic categories are subsets of the racial categories. The idea is that race is a large physical grouping, and ethnicity is a smaller, cultural grouping. Thinking about the data this way helps understand why African American is both an ethnicity and a race (Remembering that there are African-Americans who come directly from Africa). Another, more complete example is the numerous ethnicities within American Indian. Within the race category of American Indian and Alaska Native are dozens of individual nations (**Figure 7.2**).

American Indian Nations			
Apache	Comanche	Menominee	Seminole
Arapaho	Cree	Navajo	Shawnee
Assiniboine Sioux	Creek	Osage	Shoshone
Blackfeet	Crow	Ottawa	Sioux
Cherokee	Delaware	Paiute	Tohono O'Odham
Cheyenne	Hopi	Pima	Ute
Chickasaw	Houma	Potawatomi	Yakama
Chippewa	Iroquois	Pueblo	Yaqui
Choctaw	Kiowa	Puget Sound Salish	Yuman
Colville	Lumbee		

Figure 7.2 | Federally recognized American Indian Nations [2]
Author | David Dorrell
Source | Original Work
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7.1.5 Hispanic Ethnicity in the United States

Since 1976, the United States government has required the collection and analysis of data for only one ethnicity: “Americans of Spanish origin or descent.” The term used to designate this ethnicity is Hispanic. It is a reference to the Roman name for what is now modern Spain. Hispanics, however are generally not Spanish; they are people who originate in one of the former colonies of Spain. Another term that is used is Latino, which is another reference to the Roman Empire. Both of these labels are very vague. Generally, people identify with the country of their ancestors (Mexico, Thailand), and not with a label generated by the Census Bureau for the purposes or recordkeeping.

Hispanics can be of any race. It is important to note that all racial and ethnic information is self-reported. This means that the person who decides if you are African American, Hispanic, or any other category is you. One final detail is thatnative people of hispanophone countries, even if they themselves do not speak Spanish, will often be considered Hispanic.

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8.2: Relevance of Race and Ethnicity in the United States

The importance of race and ethnicity is variable both across space and across time. Historically, divisions in the United States along ethnic or racial lines have been the norm. but now these divisions based on race or ethnicity are not as prevalent as they have previously been. From the earliest days of the country and codified in the US Constitution, slavery created a profoundly divided society, particularly between the free, white population and the enslaved Black population. Free people of color provided a small degree of linkage between the groups.

These were not the only divisions in the US, however. The dominant group were people of English descent. In geographical terms, we refer to them as a charter group. The charter group does not refer to the first people to come to a place; they are people with the **first effective settlement**. This is an academic way of saying that they are the first group with political dominance. English settlers produced laws that furthered their own interests. They promoted their own language (English), religion (Protestant Christianity) and governance. Groups coming in later found themselves in a place where many of the cultural questions had already been answered. The pressure to assimilate in the United States applies to everyone. There can be political pressure; for example, during World War One German Americans largely stopped speaking German. The pressure can be social; for example, young children at school can feel isolated when they cannot speak the majority language. Particularly, the pressure can be economic. Without conforming to general social (majority) norms, it can be difficult to navigate the employment market. A lack of English, unawareness of the norms of formal dress or behavior, or just the inability to recognize social cues can make life difficult for those who have not acculturated.

The charter group also changed. For example, the definitions of “whiteness” and “blackness” have not been historically constant. Consider the history of the United States. Initially, the U.S. population was made largely of Protestant British white people and African black people. Adding people from other places required that definitions be amended.

Would Catholic Italians be considered “White?” In the past, many Americans would have said no. For that matter, neither would the Irish (because of their Catholicism) or Jews (because they aren’t Christian), but over time, these groups were generally included into the white category. Whiteness broadened to include more people. It became less of an ethnic category and more of a racial category.

Definitions of blackness evolved as well. In the American South, there eventually arose a legal framework that defined blackness as having any African ancestry. It would be possible (and relatively common) to be phenotypically white and legally black. Historically, mixed-race Creole people in Louisiana did not consider themselves to be black or white; they were another category altogether.

People attempting to emigrate from Asia, particularly China, were subject to their own set of exclusionary laws, which severely limited their migration to the United States. As late as World War II, it was considered acceptable for the government to intern (imprison) American citizens of Japanese descent over questions of their racial origins and loyalty.

One of the current interesting ethnic questions in the United States is the status of Hispanic people in the existing racial categories. Since Hispanic is not itself a racial category, people within this ethnicity can choose what label they feel is most appropriate. It appears now that Hispanics are identifying themselves as white in the U.S. census. This has an impact on projections for the future U.S. population. If Hispanics identify as white, then the U.S. will remain majority white for quite some time. If they do not, the U.S. will have no racial majority in a few decades.

Although race and ethnicity in the U.S. were largely associated with state- mandated identification, restrictive laws, and onerous obligations, today both race and ethnicity are self-identified for the census. Whereas at one time being Irish could be enough to deny someone employment, now it is a slogan to place on your welcome mat and celebrate once a year in March.

7.2.1 Racial Identifiers

The language used to identify racial groups has changed as well. For example, in broad terms of ethnicity, people of Asian descent who were born in the United States are now referred to as Asian Americans, although the census racial category is still Asian. The term Asian implies a relationship with Asia and no relationship with America. Asian American explicitly ties this group to America.

People who trace their ancestry to Africa have a different problem. This problem is a function of American history. The first census

label for this group was simply Black. Over time other labels were used, such as Negro (which means black), and eventually the term African American was adopted. This term is meant to provide a relationship between a population of people and a place of origin. In other words, it explicitly ties a group to their ancestral origin.

Although Native American is used in common speech in the U.S., the Census category is still American Indian, which is not the same as Indian-American (peoples associated with South Asia). The continued use of American Indian is somewhat outside the trend toward more descriptive categories.

7.2.2 Racism in the United States

Although racism and ethnic **discrimination** are similar, they are not the same thing. Although ethnic markers (generally) diminish over time, physical differences do not.

Exclusionary racial policies existed in the United States from the very beginning and have continued beyond the **Jim Crow** era of the twentieth century. From the US Constitution that counted slaves as 3/5 of a person to restrictive housing covenants in the 1960s, the country has had a history of racism that did not end in the Civil Rights era. This exclusion has not solely been limited to African Americans. Many groups have been subject to racist laws and acts. The indigenous people of the United States were not fully considered citizens until 1924. In the past, voting rights, access to housing and even union membership had racialized politics directed at many marginalized groups.

This is not to say that ethnically-based discrimination does not exist. Such discrimination has been prevalent in United States history, but it tends to subside as the host population absorbs the immigrant population.

7.2.3 Housing

Historically, ethnic groups tended to live near one another in spatially contiguous areas. Many cities have a Chinatown or Little Italy. These are known as ethnic **enclaves**. There are many reasons why groups cluster; some reasons are voluntary and some are not. In the United States, it was not uncommon for cities to restrict where African American citizens could live. These restrictions were either through the force of law, or through unwritten behavioral norms that resisted renting or selling houses to African American families outside of certain areas. This residential, spatial **segregation** was accompanied with educational, social, and economic segregation. African American communities were often known as **ghettos**, places where a certain population is forced to live. The word ghetto is older than the United States itself. Ghetto was an Italian name for the area that Jews were forced to live in. Although the word is Italian, the idea of forcing **minority** populations to live in designated areas has unfortunately had wide historical appeal. Legal housing segregation ended in the United States in 1968, but behaviors change more slowly than laws.

Many ethnic communities have arisen from less coercive means. There are numerous reasons that an ethnic community would choose to live close together. Mutual support networks, the ability to develop schools and businesses catering to their own needs, a sense of safety, and the ability to retain their own cultural connections are examples of positive reasons. Institutionalized poverty, marginalized political representation, and active discrimination are negative reasons.

7.2.4 Environmental Justice

One of the spatial manifestations of racism and ethnic discrimination is the difference in levels of political representation. Another one is the location of unpleasant environmental activities. Landfills and airports tend to be built in places inhabited by less-powerful groups, while dominant groups rarely if ever have to organize to prevent such things being built in their neighborhoods. Some groups find their economic situations limited by underfunded schools or inadequate infrastructure. The idea that different groups should have access to decent places to live called **environmental justice**.

7.2.5 Ethnic diversity in the United States

Like all predominantly immigrant countries, the United States is ethnically diverse, but the range of ethnicities has varied over time as new groups arrive and previous groups acculturate and eventually assimilate. A male of Italian descent in the United States will sometimes just say, “I’m Italian.” This may be a person who speaks no Italian, isn’t Catholic, and never been in Italy in his entire life. What then, does this statement mean? It just signals an historic connection with an ethnicity, even if the connection has faded over time. This isn’t to single out Italian- Americans. Generally, as groups assimilate, their distinctive ethnic markers fade. Comparing Polish-Americans with Mexican-Americans may involve people who speak the same language (English), have the

same Catholic religion, and live verysimilar lifestyles. The label has faded to a marker, with food being the one of the last cultural elements.

7.2.6 Foodways

One of the ways groups demonstrate ethnicity is through food. One of the most obvious hallmarks of the arrival of an ethnicity into the United States, or any other country, is the diffusion of a food from the group of origin. Pizza in the United States, curry in the United Kingdom, and doner kebab in Germany all exemplify the degree to which a food brought by immigrants can reach the status of adopted national cuisine. Food is also the cultural element that is most accessible to outsiders. Foodways are used to construct a spatial sense of one location as a reflection of the entire world.

Foodways refer to the types of food that people eat, the ways they are prepared, and the cultural factors that surround and contextualize the food. Food is the most resilient cultural artifact. In countries undergoing language unification, foods can define ethnic groups. In mostly monolingual countries like the United States, foods may indicate geographical origins or social class. Food is easily bought, tried and accepted, or rejected. As such, it is the most accessible cultural element.

In many ways, the consumption of a food and its production have been divorced from its roots by the modern restaurant industry and international food conglomerates. Americans have eaten foods they consider Chinese or Mexican for generations, while few know the histories of said foods. Questions of whether or not a food is authentic are difficult to answer when the cooks in a restaurant are of a completely different ethnicity from the stated cuisine.

We can compare foodways between places and groups. Quantities of food, the ratio of prepared foods, and consumption of tobacco and alcohol all help us get inside the lives of people in different places, at different states of technological development, and different socioeconomic classes.

7.2.7 The Ethnic Landscape

Urban ethnic landscapes are often immediately recognizable. Signs in other languages advertising exotic products, ethnic architecture, and even local tourism reveal the ethnic fabric of a place. Most people in the US do not live in large cities with obvious ethnic architecture. The majority of Americans, including many ethnicities, live in the suburbs and smaller towns. Instead of obvious population clusters, ethnic populations here can be widely dispersed. Instead of living within walking distance of their local store or religious structure, people will simply drive to such a place. Ethnicity has sprawled along with the rest of America. Waves of migration to U.S. cities and suburbs have created landscapes of tremendous ethnic difference embedded in architectural homogeneity.

7.2.8 Ethnic Festivals and the Idealized Homeland

One of the ways that ethnicities represent themselves is through festivals. People wear traditional clothing, play music from the old country, eat food previously reserved for holidays, dance the old dances, and promote their culture to others. Festivals are a way of reproducing a sense of home in emigrant communities. They are also a way of keeping children participating in activities that would otherwise forget.

Places represented in ethnic festivals in the United States are often not representative of those places now. Traditional Czech clothing at a Kolache Festival in Oklahoma represents a place/time that no longer exists, except perhaps to market “Czech-ness” to tourists.

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8.3: Ethnicities in The United States

The distribution of ethnicities in the United States follows patterns that have been in place for some time. Historic migrations (some of which were forced) produced the patterns we still see in the United States.

7.3.1 African Americans in the United States

African Americans in the United States are still heavily southern. Their distribution (**Figure 7.3**) dates to the beginning of the United States and the forced importation of millions of Africans. Starting in the early twentieth century, many African Americans migrated out of this region, but most did not. In the last decades of the twentieth century and the beginning of the twenty-first, there has even been a reverse migration of African Americans back to Southern cities and suburbs.

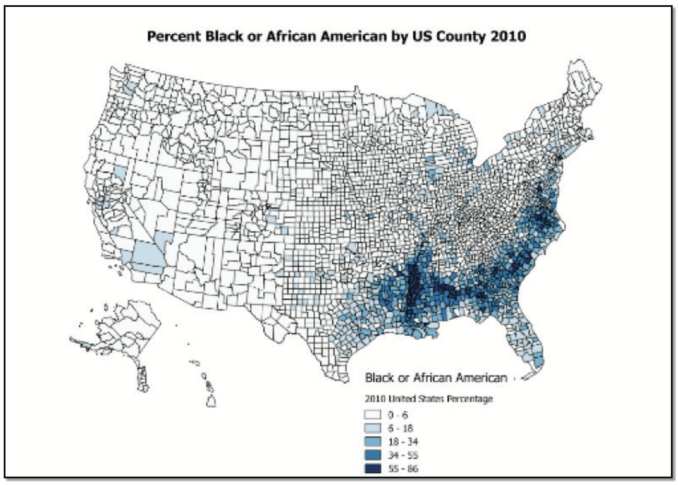


Figure 7.3 | The Distribution of the African American Population [3]
Author | David Dorrell
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7.3.2 Hispanics in the United States

Many of the states with large Hispanic populations were states taken from Mexico by the United States in the Mexican American War. In some ways, these places didn't come to the United States, the United States came to them. Certainly, a pattern is apparent. Generally, the parts of the U.S. closest to Mexico or the Caribbean are the most Hispanic (**Figure 7.4**). There are other areas with high Hispanic populations. These places have been attractive to immigrants for their employment prospects.

7.3.3 Asian Americans in the United States

Asian Americans also have a distinctive distribution based in history. The western United States, and in particular, Hawaii, are physically the parts of the United States that are closest to Asia. A proximity effect similar to that of Hispanics is in play here. **Figure 7.5** shows their distribution.

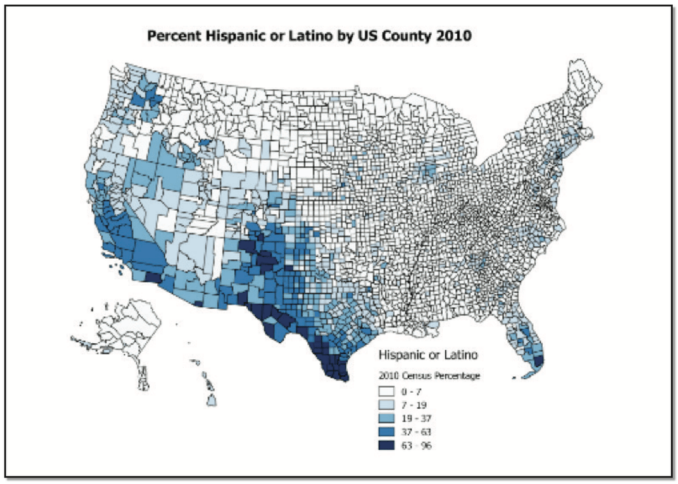


Figure 7.4 | The Distribution of the Hispanic Population [4]
Author | David Dorrell
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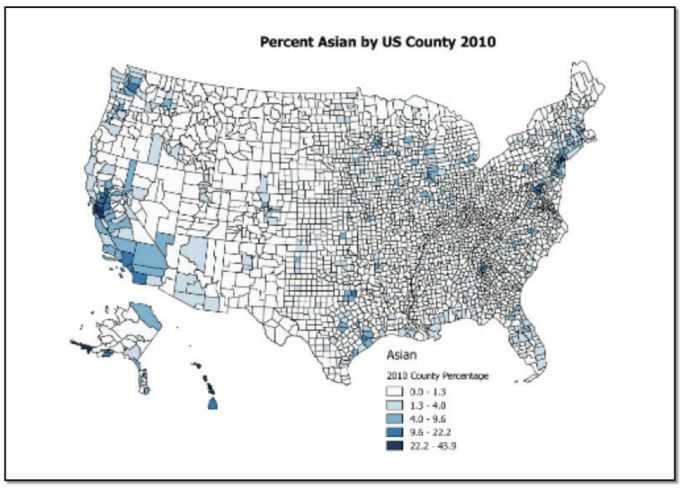


Figure 7.5 | The Distribution of the Asian American Population [5]
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7.3.4 American Indian and Alaska Natives

At one time, all of the current territory was occupied by Native Americans. Due to the influence of disease, **genocidal** wars, and poverty they have been reduced to roughly 2 percent of the overall population of the United States. Some live on reservations, but most do not (**Figure 7.6**).

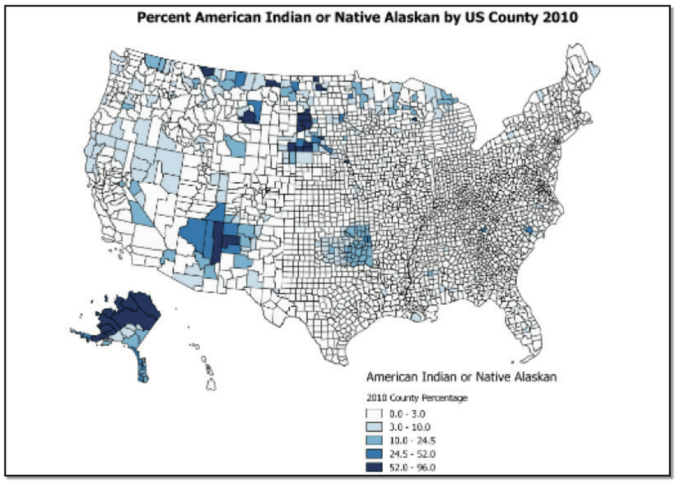


Figure 7.6 | The Distribution of the American Indian Population [6]
Author | David Dorrell
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7.3.5 Native Hawaiian and Other Pacific Islander

Hawaii at one time had been an independent kingdom. Other territories in the Pacific were taken during wars with other dominant regional powers. Many of these groups have migrated to the mainland of the United States (**Figure 7.7**). In the same way that American Indians are a minority in every state, Native Hawaiians are a minority in Hawaii.

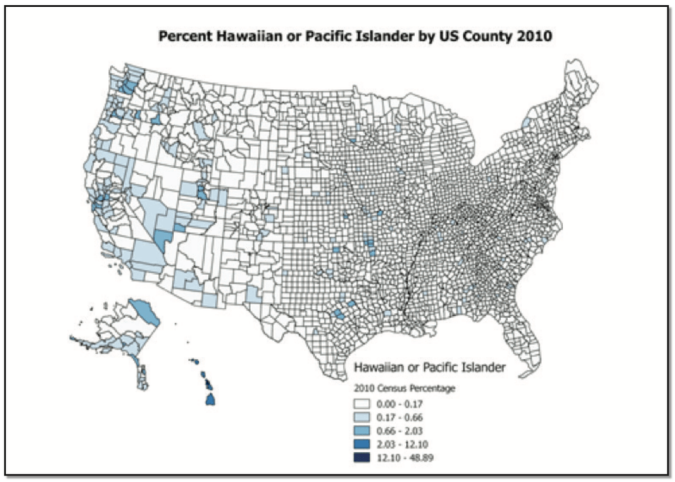


Figure 7.7 | The Distribution of the Native Hawaiian or Pacific Islander Population [7]
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8.4: Relevance of Race and Ethnicity in Other Places

Although the social implications of race or ethnicity in the United States have eroded over time, this does not mean that that is no longer relevant. It also does not mean that ethnicity is not relevant anywhere else. In many places, it is still very important. In much the same way as race defined the early United States, it defined South Africa, Brazil and other settler colonies. There were important differences between these places. Whereas white people who made up the racial majority ruled the United States, South Africa was ruled by a white racial minority. In order to preserve power for themselves, South African whites developed a system known as apartheid, which divided the population into a number of legally-defined categories. Similar to the U.S. development of Indian reservations, the South African state also developed ethnically-based "Homelands" which were used as a means of denying citizenship to black South Africans.

Sustaining such a system required the use of a police state that eventually became unsustainable. In 1994, full and open elections were held, and the black majority gained political power. The state policy of separating people ended, but this did not immediately transform South Africa into a new kind of state. It has continued to negotiate the relationship between the outside world and internal political and economic struggles between differing factions in the country.

Brazilian society was far more racially mixed from the beginning. This simply changed the social equation from a binary black/white relationship to a society stratified by skin tone and migration status. As was the case in many colonies, people born in the colonizing state (in this case, Portugal) continued to enjoy elevated social standing well after the colonial era ended. In the same manner of the United States and South Africa, social standing was related to being part of the charter group.

In other places, purely ethnic differences have had violent consequences. In the 1990s in Rwanda and in Yugoslavia, ethnic tensions flared into open warfare and genocidal massacres. A new term was coined—**ethnic cleansing**—which denoted an attempt to complete expunge traces of another population from a place. In both of these places, it would have been difficult for an outsider, and sometimes even a local, to tell the differences between the two groups. Remember that ethnic differences can be based on historical groups that may now be very similar.

It should be noted that the massacre of opposing ethnicities and the appropriation of their territories was not a product of the twentieth century. The colonial phase of world history was largely defined by the massacre and marginalization of indigenous people around the world by people of European descent.

7.4.1 Ethnicities and Nationalities

Some countries have only one ethnicity and are called nation-states (remember that an ethnicity can also be called a nation) Most places are not like this and contain many ethnicities. Some ethnicities are minorities solely by a political boundary. Many groups have found themselves on the wrong side of an imaginary line. Sometimes this is due to outside forces imposing a boundary, for example the Hausa in Nigeria and Niger, but sometimes it is a product of state creation itself. When the state of Germany was created, there were pockets of ethnic Germans scattered all over Europe. It would have been impossible to incorporate them all, since they were spatially discontiguous.

In the former Union of Soviet Socialist Republics (USSR), attempts were made to make political boundaries match ethnic boundaries. Kazakh people had the Kazakh SSR, Uzbek people had the Uzbek SSR, and so forth. It was an idea based on ease of administration, but it wasn't based on the actual distribution of the ethnic groups. The distributions were far too messy to draw clear, neat lines between them. This didn't matter as long as the USSR was still functioning, but when it collapsed, it created another landscape of minorities on the wrong side of a boundary. Irredentism is when your ethnic group has people on the wrong side of a boundary, and it's necessarily destabilizing. The following chapter on political geography will go into greater detail regarding this, but suffice it to say that splitnations do not like being split.

Some ethnicities are numerous, but find themselves minorities in several countries. Kurds, Balochs (**Figure 7.8**), and Sami are all nations who are distributed across several countries. Such groups often harbor strong desires to create their own independent political entities to the detriment of currently existing states.



Figure 7.8 | Pakistan Major Ethnic Groups, 1980
This map details the politically fragmented spatiality of the Baloch people, separated into Iran, Pakistan, and Afghanistan.
Author | U.S. Central Intelligence Agency
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As places unify politically and develop industrially, ethnicity often declines. Moving populations into cities and stirring them around in schools, militaries, and jobs fosters intermarriage and acculturation to the larger, national norms. Rural places tend to be more diverse, and somewhere like Papua New Guinea is probably the most diverse, due to the fact that smaller villages still predominate. Somewhere like South Korea, which was already relatively ethnically homogenous, has become almost fully so due to economic development.

7.4.2 Is Diversity Good?

Diversity in developed countries is often promoted as a self-evident benefit, but there are some downsides to increasing diversity. Studies have shown that ethnic diversity decreases political participation. This is likely due not only to factors such as difficulties in communication, but also simple mistrust of other groups of people, known as **xenophobia**. This mistrust can apply to all parties in the relationship. There are places in the world with very low levels of diversity. South Korea, Japan and Finland are all highly productive economies with very little cultural or ethnic variability and high levels of social cohesion.

There are benefits to diversity. Aside from the benefits to genetic diversity (a reduction in recessive-gene disorders) ethnic diversity opens citizens to a wider range of experiences. Without pizza, sushi, tacos, stir-fry, or hamburgers, the United States would be a cultural wasteland forced to subsist on our British inheritance of boiled lunch and steak and kidney pie. Diversity has made our lives more pleasant, and it has made our ability to relate to others broader.

7.4.3 Immigration and Ethnicity

The United States is not the only place to receive immigrants or to have ethnic diversity. In fact, many places have far more ethnic diversity, even places that have little history of immigration. India, China, and Russia are all countries that have had diverse populations speaking different languages and living different lifestyles for a very long time.

In many ways, the impact of immigration on the ethnic fabric in Europe is the same as it has been in the United States. Due to the relative strength of their economies, European countries have been receiving large numbers of immigrants for some time. These immigrants are usually culturally distinct from the host population. In many instances, the immigrants come from places that had previously been colonies of European powers. The increase in immigrants with backgrounds dissimilar to the host country has triggered a rise in nationalistic or xenophobic activities, and in some places, a rise in political parties dedicated to reducing immigration or even repatriating current immigrants. The separate category of guest worker has created an even more complicated ethnic relationship. Guest workers are temporary workers who are contracted for a set period of time with the understanding that they will leave when the period of work has ended. By and large, that is not what happens due to the economic realities of short-term employment. People are reluctant to return to poverty.

7.4.4 Models of Ethnicity

Different places have different conceptions of ethnicity. In the United States, we separate race from ethnicity, and we have exhaustive lists of ethnicities collected by the census. France collects neither racial nor ethnic data, under the belief that every French citizen is ethnically French. This doesn't include linguistic minorities such as the Bretons, the Basques or the Alsatians, all of whom are indigenous to France and whose ideas about their own ethnicities are different from that of the state.

In other places, ethnic identity is the most significant impediment to state cohesion. In Nigeria, no less a person than Nobel Prize winner Wole Soyinka wrote," There is no such thing as a Nigerian." He wasn't saying that Nigerians are a figment of the imagination. He was stating that in his country, few people would identify first as a Nigerian, but instead as Igbo, Yoruba, Hausa or many others. This is another concept that will be addressed in the next chapter.

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8.5: Summary

Ethnicity is key to our identity. It can be formed around a variety of nuclei- historical ties, national origin, language, religion, or any admixture thereof. Ethnicity creates a feeling of belonging to a group. Ethnicity, of course can also be a source of exclusion to those who do not belong to the group that holds power in a place. Discrimination and prejudice often have a root in ethnicity, although other factors, like economics generally play a part as well. Race (and racism) are closely related to ethnicity, in that both ethnicity and race have been used to separate people, and some ethnicities can be associated with particular races. The next chapter also deals somewhat with human identity and delves further into nations and nationality.

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8.6: Key Terms Defined

Acculturation: Cultural change, generally the reconciliation of two or more culture groups.

Discrimination: Mistreatment due to perceived difference.

Diversity: Having a range of different people.

Enclave: Self-enforced separation for a racial or ethnic group.

Environmental Justice: The concept that environmental benefits and burdens should be equally shared across different socio-economic groups.

Ethnic cleansing: An attempt to complete expunge or remove traces of another population from a place. May or may not relate to genocide.

Ethnicity: group of people sharing a common cultural or national heritage and often sharing a common language or religion.

First effective settlement: Doctrine in which the first group able to assert dominance provides the template for the future society.

Foodway: The cultural, social, and economic practices relating to the production and consumption of food.

Genocidal: having the purpose of exterminating an entire people.

Ghetto: Area of externally forced and legally-defined ethnic or racial separation.

Immigration: Incoming migration to a place.

Jim Crow: A set of laws enforcing racial segregation and disenfranchisement in the southern United States in the poet Civil War era.

Majority: A group making up more than half of a population.

Minority: A group making up less than half of a population.

Nation: An ethnicity or a people.

Race: The categorization of humans into groups based physical characteristics or ancestry.

Segregation: The spatial and/or social separation of people by race or ethnicity.

Xenophobia: fear of the different.

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8.8: Endnotes

1. Data source: United States Census Bureau 2016 http://www2.census.gov/geo/tiger/ TIGER_DP/2016ACS/ ACS_2016_5YR_COUNTY.gdb.zip
2. Data source: United States Census Bureau 2016 http://www2.census.gov/geo/tiger/ TIGER_DP/2016ACS/ ACS_2016_5YR_COUNTY.gdb.zip
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9: POLITICAL GEOGRAPHY

Learning Objectives

- Understand: how political space is organized.
- Explain: how states cooperate in military and economic alliances.
- Describe: the various types of boundaries and how boundary disputes develop.
- Connect: the electoral process in the United States to ethnic, urban/ rural, and regional affiliations.

9.1: Introduction

9.2: How Political Space Is Organized

9.3: Cooperation Between States

9.4: Boundaries and Boundary Disputes

9.5: The Electoral Process

9.6: Key Terms Defined

9.7: Works Consulted and Further Reading

9.8: Endnotes

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9.1: Introduction

When most people think of geography, they think about memorizing the states, state capitals, and perhaps learning the location of various countries around the world. These facts deal with the subdiscipline of political geographybecause they show how politics is reflected on the surface of the Earth, but political geography is much more than a “trivial pursuit” of such information. Although having knowledge about the locations of countries and states is fundamental and an important foundation for the study of political geography, the subject matter deals with many other topics such as military and economic alliances, boundaries between countries, terrorism and other civil-military conflicts, and the geography of the electoral process.

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9.2: How Political Space Is Organized

The fundamental unit of political space is the **state**, and this type of state is different than the states that make up the United States. A state is basically synonymous to a country and represents a formal region in which the governmenthas sovereignty or control of its own affairs within its territorial boundaries. The number of states in the world is currently 196, but this number changes through military conquests or the devolution, or breakup, of states. For example, the United Kingdom has devolved over the past 70 years as the Republic of Ireland has broken away from the UK, and a new referendum may occur in the next few years to decide whether or not Scotland will become independent. Another prime example of the creation of new states occurred after the breakup of the Soviet Union, when fifteen states were created in Eastern Europe. Even a terrorist group, the Islamic State, has tried to establish its own state in portions of Syria and Iraq, even though their legitimacy is not recognized by the international community.

States in which the territorial boundaries encompass a group of people with a shared ethnicity are known as **nation-states**. These states are generally homogeneous in terms of the cultural and historical identity of the people, and these groups of people are referred to as a **nation**. A few current examples of nation-states are Japan, Finland, and Egypt. Nation-states are actually in the minority compared to **multinational states**, which are states that have more thanone nation within their borders. With international migration being a significant phenomenon worldwide, more states become multinational. In contrast, some nations exist but do not have their own state, and those nations that desire to become nation-states are known as **stateless nations.** In the United States, a prime example of stateless nations are the many Native American tribes scattered throughout the countries. Other examples include the Palestinians living in Israel, Syria, Lebanon and Jordan, and the Kurds found in Iraq, Turkey, Syria, and Iran (**Figure 8.1**). Both the Kurds and the Palestinians are actively seeking statehood, but serious obstacles must be overcome because the countries where they live are reluctant to grant them independent territories.



Figure 8.1 | Kurd-majority areas in Turkey, Syria, Iraq, and Iran
Author | U.S. Central Intelligence Agency
Source | Wikimedia Commons
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The solidarity and unity of a state is influenced by both centripetal and centrifugal forces. **Centripetal forces** tend to bind a state together, and **centrifugal forces** act to break up a state. Examples of centripetal forces include nationalism, economic prosperity, and strong, ethical security forces. Centrifugal forces include wars, ineffective or corrupt governments, and market failure. Other factors that can influence the solidarity of a state include types of boundaries, ethnic differences (which may result in unity or discord), and the compactness of a state.

The compactness of a state is related to the shape of a state, and a **compact state** is one that is ideally circular in shape, where the distance from the center to any border is roughly equal. In contrast, a **fragmented state** is one that is discontinuous in nature and may consist of a number of islands. A few examples of fragmented states include Indonesia and the Philippines. Indonesia consists of over 17,000 islands, and in order to increase the solidarity of the state, the government actively encouraged migration to less populated islands in order to assimilate indigenous populations. In the Philippines, control of its southern islands such as Mindanao is problematic because of terrorist groups that are active in those areas.

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9.3: Cooperation Between States

In order to provide shared military and economic security as a unified entity, states engage in alliances. Military alliances help protect states from common enemies, and economic alliances allow for the free exchange of goods in a larger market. These alliances are also referred to as **supranational organizations**, and they all involve states giving up some of their sovereign power for the common good.

The largest supranational organization in the world is the United Nations (UN). Formed originally as the League of Nations after World War II, the UN now includes 193 states. The work of the UN includes peacekeeping, humanitarian relief, and the establishment of internationally approved standards of behavior. The headquarters of the UN is in New York City, and important subsidiary organizations of the UN include the World Health Organization (WHO), UNESCO (United Nations Educational, Cultural and Cultural Organization) and the Food and Agriculture Organization (FAO).

8.3.1 Military Alliances - NATO and Warsaw Pact

In terms of military alliances on a regional scale, the North Atlantic Treaty Organization (NATO) comprises 28 states and was developed after World War II to counter the threat of the former Soviet Union. Member states include numerous Western European states as well as the United States and Canada (**Figure 8.2.**).



Figure 8.2 | Current NATO map and former Warsaw Pact
Author | User "Alphathon"
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When the Soviet Union existed, the Warsaw Pact was a military alliance between the Soviet Union and seven satellite states of Eastern and Central Europe (**Figure 8.2**). The Warsaw Pact disbanded in 1991, and several of the former Soviet states as well as satellite states have subsequently joined NATO. As a result, Russia has felt isolated and vulnerable, and as a result, has been aggressively acting to seize or control territories in states close to its borders.

For example, in 2008, Russia engaged in a military conflict in Georgia, one of the former Soviet states, in order to support a separatist movement allied with Russia. In 2014, Russia invaded the peninsula of Crimea, within the territorial boundaries of Ukraine, one of the former states in the Soviet Union. Furthermore, Russia has intervened militarily against the rebel forces fighting in eastern Ukraine. In response to these provocations, NATO commenced Operation Atlantic Resolve, an ongoing series of training exercises between the United States and other NATO countries in former Warsaw Pact countries such as Poland, Romania, and Latvia.

8.3.2 Military Alliances – Terrorism

Although terrorists are characterized as non-military, non-state actors, they have a tremendous impact on states around the world

and involve allied groups in many countries. **Terrorism** is the intimidation of a population by violence in order to further political aims. The first terrorist group with global influence is Al Qaeda, formed in 1988 by Osama bin Laden. Although its influence has waned in the past decade, Al Qaeda was responsible for the 9/11 attacks and had several affiliates including Boko Haram in Nigeria and Abu Sayyaf in the Philippines. With the rise of the Islamic State (ISIS/L) in Iraq and Syria in 2013, terrorist groups such as Boko Haram and Abu Sayyaf have consequently declared allegiance to ISIS/L. ISIS/L is an extremist Muslim group that intends to seize as much territory as possible in the Middle East and force their subjects to adhere to their strict version of Islamic fundamentalism. To facilitate their goal, ISIS/L conducts an extensive campaign on social media to recruit fighters to come to Syria and also conduct individual attacks in their home country. Their media campaign has been successful in recruiting numerous militants to come to Syria and to inspire or instigate attacks in the United States, France, Belgium, England, Sweden, Turkey, Afghanistan, Yemen, and Saudi Arabia (**Figure 8.3**). Furthermore, ISIS/L isconducting regular military operations in Libya and Egypt.

To combat the Islamic State and other terrorist groups, interesting military alliances have developed, and the situation is exceptionally complex. The United States cooperates with numerous NATO allies to train and equip local military forces in Iraq and Syria. Iran, in alliance with Iraq, has provided assistance in driving ISIS/L out of Iraq. Kurdish forces in northern Iraq and Syria, in concert with NATO forces, have conducted much of the military action, and they hope for an independent state because of these efforts. Complicating this situation is the objection of the central governments of Iraq, Syria, and Turkey to an independent Kurdish state. Further clouding the situation is the alliance between Russia and the Syrian central government. Although these two countries do fight against ISIS/L, they are also opposed to other Syrian rebel forces, which the United States supports. The problem of ISIS/L propaganda is being addressed by numerous governments and social media outlets such as Facebook, Twitter, and YouTube. More importantly, though, military success on the ground against ISIS/L forces in Iraq and Syria is decreasing the influx of foreign fighters as well as the proliferation of internet propaganda.

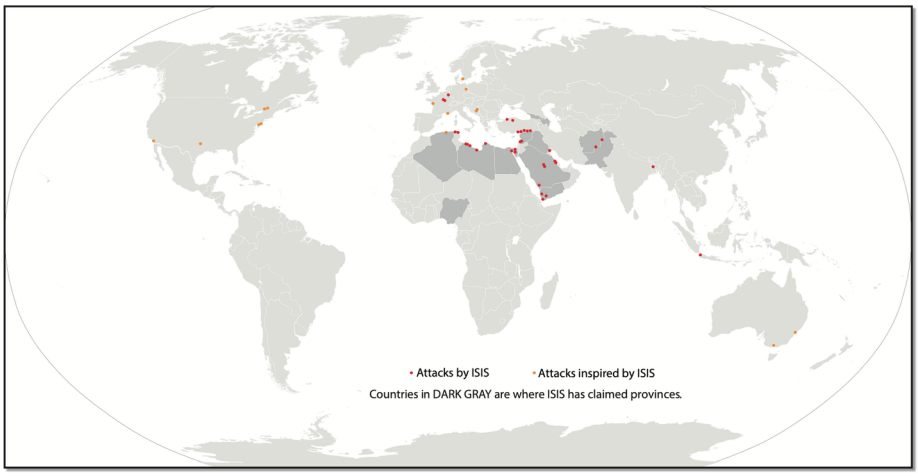


Figure 8.3 | Map of ISIS/L global influence [1]
Author | Corey Parson
Source | Original Work
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8.3.3 Economic Alliances – European Union and NAFTA

One of the most prominent economic alliances in the world is the European Union (EU), which consists of 28 member states (**Figure 8.4**). What began as the European Community (EC) in 1958, the European Union has grown significantly from the original six members and now includes seven Eastern European states that were formerly in the Soviet Union. The EU has developed a common currency, the euro, for all member countries and a European Central Bank. Furthermore, at most boundaries, a passport is not required to enter another country.



Figure 8.4 | European Union
Author | U.S. Central Intelligence Agency
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One of the weaknesses of the EU is the need to subsidize poorer countries, creating financial difficulties for the more wealthy members. For example, Greece has experienced large debts that have required rescue funding from the EU. Another issue confronting the EU is whether or not to allow Turkey to join, as Greece has long-standing disputes with Turkey over territory in Cyprus, and the Turkish central government has been accused of anti-democratic practices. Perhaps most concerning for the EU is the imminent departure of the United Kingdom (UK) from the alliance in an action termed "Brexit." In 2016, the UK voted by referendum to leave the EU, and is on schedule to formally break away in 2019. The UK's decision to leave the EU is not solely related to economics, as not only is the EU an economic alliance, but agreements on social and political policies are involved as well. The majority of British citizens are generally against the subsidizing of poorer states and the increasing number of immigrants who use scare public resources, and they generally desire greater autonomy. With the exit of Britain from the EU, EU members are concerned that other states may follow suit.

An important economic alliance for the United States is the North American Free Trade Agreement (NAFTA). Established in 1992, this alliance integrates the United States, Mexico and Canada and facilitates the flow of goods and services across borders. The Trump administration has repeatedly criticized this agreement, as manufacturers have relocated production to Mexico which has resulted in the loss of manufacturing jobs in America. Whether or not the United States withdraws from NAFTA or simply renegotiates the agreement remains to be seen.

Another significant alliance that is being considered is the Trans-Pacific Partnership, an agreement between 11 countries that border the Pacific Ocean, and originally included the United States. The proposal was signed in February 2017, but the United States had already withdrawn from the agreement in January of the same year, making ratification virtually impossible. The goal of the agreement is to promote economic prosperity by lowering tariff barriers, but also promote environmental and labor protections as well as protect intellectual property. Critics say that it would result in the loss of U.S. jobs and weaken the sovereignty of the U.S.

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9.4: Boundaries and Boundary Disputes

"Good fences make good neighbors."

-Robert Frost

As mentioned in Section 13.4, boundaries can influence the solidarity of a state, as boundaries disputes can result in conflict. A **boundary** is essentially an invisible, vertical plane that separates one state from another, so it includes both the airspace above the line on the surface and the ground below. Boundaries can be both physical and anthropogenic, and while it is difficult to categorize all boundaries, some prominent boundary types exist.

Physical boundaries are natural features on the landscape such as rivers, lakes, and mountains. The Rio Grande is an important physical boundary on the southern border of the United States. Like most rivers, the Rio Grande shiftsgradually (and sometimes abruptly) through time. As a result of the fact that the course of a river is not fixed, a river boundary can be problematic. In fact, because of the gradual shift in the Rio Grande in the vicinity of El Paso, the United States and Mexico established the Chamizal Treaty which reestablished the boundary and included a more permanent relocation of the river channel by engineering (**Figure 8.5**). Some examples of mountain ranges as boundaries include the Zagros Mountains between Iraq and Iran, the Pyrenees between Spain and France, and the Andes Mountains between Chile and Argentina.

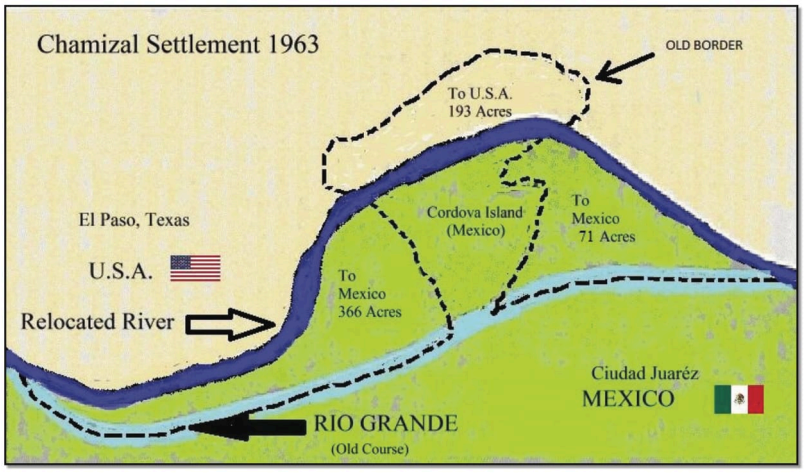


Figure 8.5 | Chamizal Treaty map
Author | Mike Hayes
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In contrast to physical boundaries, **geometric boundaries** and **ethnic boundaries** are not related to natural features. Instead, in the case of geometric boundaries, they are straight lines. These straight lines could coincide with latitude or longitude, as is the case with the northwestern boundary of the United States with Canada along 49o north latitude. Likewise, Indonesia and Papua New Guinea is separated by another geometric boundary along the 141st meridian.

For ethnic boundaries, they are drawn based on a cultural trait, such as where people share a language or religion. The border between India, which is predominantly Hindu, and Pakistan, which is predominantly Muslim, is one example. Some borders split ethnic groups that are more closely related to the people on the other side of the border. For example, in eastern Ukraine, the majority of the population speaks Russian and is sympathetic to Russians on the other side of the border. As a result, the current conflict between Russia and Ukraine has been problematic for the Ukrainian central government because of the Russian affiliation with eastern Ukraine. Russian influence in eastern Ukraine is an example of **irredentism**, or an effort to expand political influence of a state on a group of people in a neighboring state.

Another prime example of where boundaries do not coincide closely with ethnic groups is in Africa. Almost 50 percent of the boundaries in Africa are geometric, and at least 177 ethnic groups are split in two or more states. If all ethnic groups in Africa were to be enclosed in their own boundaries, Africa would have over 2,000 countries (1). Because ethnic groups straddle many boundaries in Africa, this situation has led to considerable cross-border trade, but also has created numerous conflicts. For

instance, several wars have occurred because the Somali ethnic group is split between five different countries.

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9.5: The Electoral Process

8.5.1 Gerrymandering

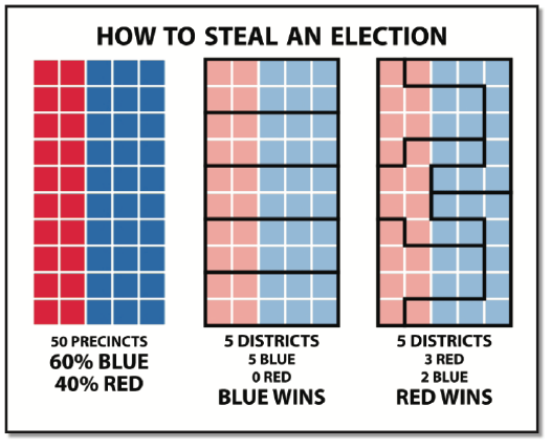


Figure 8.6 | Gerrymandering Methods
Author | Steven Nass
Source | Urban Milwaukee
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In the United States, boundaries play an important role in the electoral process, but in this case, district, and precinct boundaries are significant in contrast to the country boundaries that have been previously discussed. Political parties in power will sometimes rearrange the boundaries of voting districts in order to ensure victory in elections, and this practice is called **gerrymandering**. Gerrymandering strategies can involve drawing the boundaries so that the majority of voters in a district favor the party in power. Another method is to segregate the opposition voters into several different districts (**Figure 8.6**). While gerrymandering is not generally illegal in the United States, it can be challenged in court when it appears to clearly discriminate against minority populations. For example, when legislative districts where redrawn in 2015 in Gwinnett and Henry counties in Georgia, the NAACP filed a federal lawsuit because of the perception that the adjustment violated the rights of minority black voters. A 2013 Supreme Court decision, however, declared that a requirement in the 1965 Voting Rights Act for federal oversight of redistricting is not constitutional, and this decision may have an impact on such lawsuits.

8.5.2 Presidential Elections

One of the more intriguing aspects of political geography in the United States is presidential elections and how the Electoral College process has a decidedly spatial component. An examination of the presidential results from the 2016 election reveals interesting regional affiliations (**Figure 8.7**). Northeastern and Mid-Atlantic states, as well as far Western states, all tended to vote Democrat, while the rest of the electoral map is Republican. Although it appears that the Republican victory was decisive from a spatial and Electoral College perspective, from the standpoint of the popular vote, Democrats actually had more votes than Republicans. The dichotomy is explained by the very large populations in both California and New York, predominantly Democrat states. California's large population is reflected in a high number (55) of Electoral College votes, more than any other state.

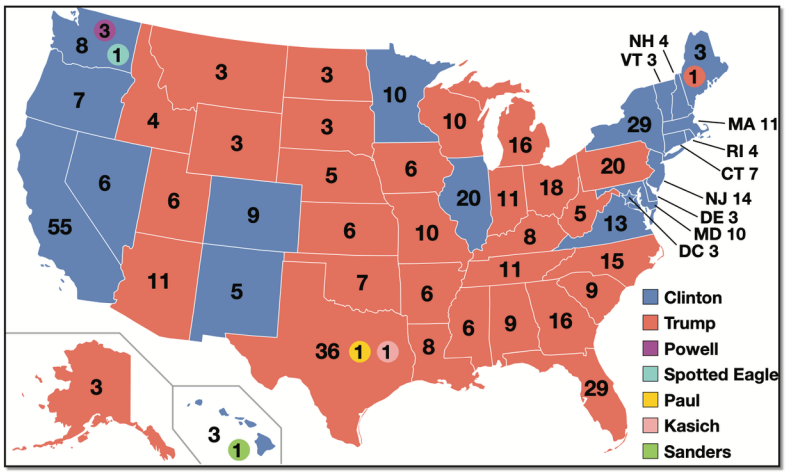


Figure 8.7 | Presidential Election of 2016
Author | User "Gage"
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Another marked trend in the voting map is evident when the election results are examined by county (**Figure 8.8**). Ethnic groups tend to vote in particular voting blocks, and the impact of ethnic groups can be seen more clearly by looking at individual counties. For example, a crescent of blue (Democrat) can be seen running through south-central Alabama and into eastern Mississippi. African Americans tend to vote Democrat, and these blue counties contain predominantly African American voters.

Similarly, the blue counties in western Mississippi have a majority African American population. Another example of the influence of ethnic groups is evident in extreme southern Texas. Hispanics generally vote Democrat, and most counties in southern Texas are dominated by Hispanics.

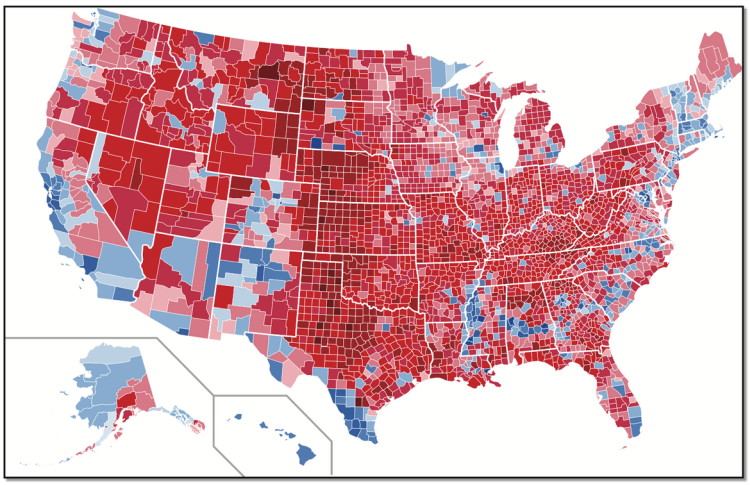


Figure 8.8 | 2016 Presidential Election by County
Author | Users "Ali Zifan" and "Inqvisitor"
Source | Wikimedia Commons
License | Public Domain

Related to ethnic affiliations by county is the trend for rural voters to lean toward Republican and urbanites to vote Democrat. Rural areas tend to have white majorities, and whites tend to vote Republican. Rural voters also have lower numbers of college graduates compared to urban areas. In the 2016 presidential election in both Georgia and Texas, urban counties tended to vote Democrat, and rural counties went to the Republicans. With increasing urbanization and diversity in the United States, the electoral map will continue to undergo significant changes in the future.

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9.6: Key Terms Defined

Boundary – an invisible, vertical plane that separates one state from another, which includes both the airspace above the line on the surface and the ground below.

Centripetal force – a force that tends to bind a state together.

Centrifugal force – a force that tends to break a state apart.

Compact state – a state where the distance from the center to any border does not vary significantly; roughly circular.

Ethnic boundary – a boundary that encompasses a particular ethnic group.

Fragmented state – a state whose territory is not contiguous, but consists of isolated parts such as islands.

Geometric boundary – a boundary that follows a straight line and may coincide with a line of latitude or longitude.

Gerrymandering – the process of redrawing legislative districts in order to benefit the party in power and ensure victory in elections.

Irredentism – an effort to expand the political influence of a state on a group of people in a neighboring state.

Multi-national state – state that has more than one nation within their borders.

Nation – group of people bonded by cultural attributes such as language, ethnicity and religion.

Nation-state – state in which the territorial boundaries encompass a group of people with a shared ethnicity.

Physical boundary – a boundary that follows a natural feature on the landscape such as a river, mountain range, or lake.

State – a formal region in which the government has sovereignty or control of its own affairs within its territorial boundaries.

Stateless nation – a nation that aspires to become a nation-state but does not yet have their own territory.

Supranational organization – an alliance involving three or more states who have shared objectives that may be economic, political/military, or cultural.

Terrorism – intimidation of a population by violence in order to further political aims.

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9.8: Endnotes

1. Adapted from https://www.nytimes.com/interactive/...the-world.html

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10: AGRICULTURE AND FOOD

Learning Outcomes

- Understand: the *origin* and *evolution* of agriculture across the globe
- Explain: the environment-agriculture relationship, market forces, institutions, agricultural industrialization, and biorevolution versus sustainable agriculture
- Describe: agricultural regions, comparing and contrasting subsistence and commercial agriculture
- Connect: the factors of global changes in food production and consumption

10.1: Introduction

10.2: Agricultural Practices

10.3: Global Changes in Food Production and Consumption

10.4: Conclusion

10.5: Key Terms Defined

10.6: Works Consulted and Further Reading

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10.1: Introduction

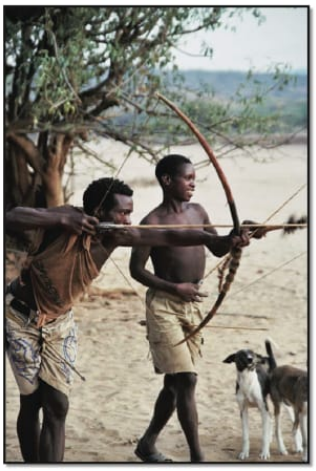


Figure 10.1 | Hadza Hunters
Author | User "Idobi"
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Before the invention of agriculture, people obtained food from hunting wild animals, fishing, and gathering fruits, nuts and roots. Having to travel in small groups to obtain food, people led a nomadic existence. This remained the only mode of subsistence until the end of the Mesolithic period, some 12,000-10,000 years ago. Then, agriculture gradually replaced the **hunting and gathering** system, constituting the spread of the Neolithic revolution. Even today, some isolated groups survive as they did before agriculture developed. They can be found in some remote areas such as in Amazonia, Congo, Namibia, Botswana, Tanzania, New Guinea, and the Arctic latitude, where hunting dominates life (**Figures 10.1, 10.2,** and **10.3**).

The term **agriculture** refers to the *cultivation of crops* and the *raising of livestock* for both sustenance and economic gain. The origin of agriculture goes back to prehistoric time, starting when humans domesticated plants and animals. The domestication of plants and animals as the *origin of agriculture* was a pivotal transition in human history, which occurred several times independently. Agriculture originated and spread in different regions (*hearths*) of the world, including the Middle East, Southwest Asia, Mesoamerica and the Andes, Northeastern India, North China, and East Africa, beginning as early as 12,000 – 10,000 years ago. People became sedentary, living in their villages, where new types of social, cultural, political, and economic relationships were created. This period of momentous innovations is known as the *First Agricultural Revolution*.



Figure 10.2 | Pumé Hunter and Gatherers
Author | User "Ajimai"
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Figure 10.3 | Inuit Hunters
Author | User "Wiki-profile"
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10.2: Agricultural Practices

Agriculture is a science, a business, and an art (**Figures 10.4** and **10.5**). Spatially, agriculture is the world's most widely distributed industry. It occupies more area than all other industries combined, changing the surface of the Earth more than any other. Farming, with its multiple methods, has significantly transformed the landscape (small or large fields, terraces, polders, livestock grazing), being an important reflection of the two-way relationship between people and their environments. The world's agricultural societies today are very diverse and complex, with agricultural practices ranging from the most rudimentary, such as using the ox-pulled plow, to the most complex, such as using machines, tractors, satellite navigation, and genetic engineering methods. Customarily, scholars divide agricultural societies into categories such as *subsistence, intermediate*, and *developed*, words that express the same ideas as *primitive, traditional*, and *modern*, respectively. For the purpose of simplification, farming practices described in this chapter are classified into two categories, *subsistence* and *commercial*, with fundamental differences between their practice in developed and developing countries.



Figure 10.4 | Trading Floor at the Chicago Board of Trade
Author | Jeremy Kemp
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Figure 10.5 | Tulip Fields in The Netherlands
Author | Alf van Beem
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10.2.1 Subsistence Agriculture

Subsistence agriculture replaced hunting and gathering in many parts of the globe. The term **subsistence**, when it relates to farming, refers to growing food only to sustain the farmers themselves and their families, consuming most of what they produce, without entering into the cash economy of the country. The farm size is small, 2-5 acres (1-2 hectares), but the agriculture is less mechanized; therefore, the percentage of workers engaged directly in farming is very high, reaching 50 percent or more in some developing countries (**Figure 10.6**). Climate regions play an important role in determining agricultural regions. Farming activities range from *shifting cultivation* to *pastoralism*, both extensive forms that still prevail over large regions, to *intensive subsistence*.

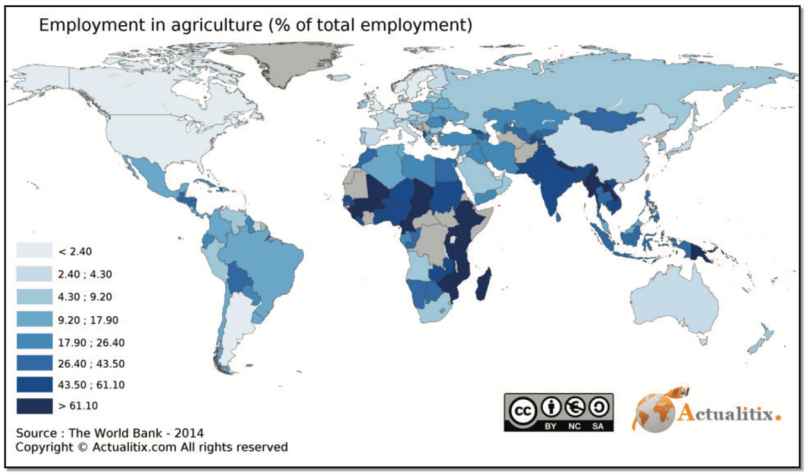


Figure 10.6 | Employment in Agriculture, 2014
Author | Actualitix
Source | Actualitix.com
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Shifting Cultivation



Figure 10.7 | Slash-and-Burn Farming in Thailand
Author | User "mattmangum"
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Shifting cultivation, also known as **slash-and-burn agriculture**, is a form of subsistence agriculture that involves a kind of natural rotation system. Shifting cultivation is a way of life for 150-200 million people, globally distributed in the tropical areas, especially in the rain forests of South America, Central and West Africa, and Southeast Asia. The practices involve removing dense vegetation, burning the debris, clearing the area, known as **swidden,** and preparing it for cultivation **(Figures 10.7)**. Shifting cultivation can successfully support only low population densities and, as a result of rapid depletion of soil fertility, the fields are actively cultivated usually for three years. As a result, the infertile land has to be abandoned and another site has to be identified, starting again the process of clearing and planting. The *slash-and-burn* technique thus requires extensive acreage for new lots, as well as a great deal of human labor, involving at the same time a frequent gender division of labor. The kinds of crops grown can be different from region to region, dominated by tubers, sweet potatoes especially, and grains such as rice and corn. The practice of mixing different seeds in the same swidden in the warm and humid tropics is favorable for harvesting two or even three times per year. Yet, the slash-and-burn practice has some negative impacts on the environment, being seen as ecologically destructive especially for areas with vulnerable and endangered species.

Pastoralism

Involving the breeding and herding of animals, **pastoralism** is another extensive form of subsistence agriculture. It is adapted to cold and/or dry climates of savannas (grasslands), deserts, steppes, high plateaus, and Arctic zones where planting crops is

impracticable. Specifically, the practice is characteristic in Africa [north, central (Sahel) and south], the Middle East, central and southwest Asia, the Mediterranean basin, and Scandinavia. The species of animals vary with the region of the world including especially sheep, goats, cattle, reindeer, and camels. Pastoralism is a successful strategy to support a population on less productive land, and adapts well to the environment.

Three categories of pastoralism can be individualized: sedentary, nomadic, and transhumance.

Sedentary pastoralism refers to those farmers who live in their villages and their herd animals in nearby pastures. A number of men usually are hired by the villagers in order to take care of their animals. Equally important is the practice in which the hired men gather the animals (cattle especially) in the morning, feed them during the day in the nearby pasture, and then return them to the village early in the evening. This is the typical pattern for many traditional European pastoralists.

Nomadic pastoralism is a traditional form of subsistence agriculture in which the pastoralists travel with their herds over long distances and with no fixed pattern. This is a continuous movement of groups of herds and people such as the Bedouins of Saudi Arabia, the Bakhtiaris of Iran, the Berbers of North Africa, the Maasai of East Africa, the Zulus of South Africa, the Mongols of Central Asia, and other groups. The settlement landscape of pastoral nomads reflects their need for mobility and flexibility. Usually, they live in a type of tent (known as *yurt* in Central Asia) and move their herds to any available pasture (**Figure 10.8**). Although there are approximately 10-15 million nomadic pastoralists in the world, they occupy about 20 percent of Earth's land area. Today, their life is in decline, the victim of more constricting political borders, competing land uses, selective overgrazing, and government resettlement programs.

Transhumance is a seasonal vertical movement by herding the livestock (cows, sheep, goats, and horses) to cooler, greener high-country pastures in the summer and then returning them to lowland settings for fall and winter grazing.



Figure 10.8 | Mongolian Nomads Moving to Autumn Encampment
Author | User "Yaan"
Source | Wikimedia Commons
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Figure 10.9 | Transhumance in the Pyrenees Mountains
Author | User "Clicgauche"
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Herders have a permanent home, typically in the valleys. Generally, the herds travel with a certain number of people necessary to tend them, while the main population stays at the base. This is a traditional practice in the Mediterranean and the Black Sea basins such as southern European countries, the Carpathian Mountains, and the Caucasus countries (**Figures 10.9** and **10.10**). In addition, near highland zones such as the Atlas Mountains (northwest Africa) and the Anatolian Plateau (Turkey), as well as in Sub-Saharan Africa, the Middle East countries, and Central Asia, the pastoralists have to practice another type of transhumance, such as the movement of animals between wet-season and dry-season pasture.



Figure 10.10 | Romanian and Vlachs Transhumance in Balkans
Author | User "Julieta39"
Source | Wikimedia Commons
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Intensive Subsistence Agriculture

Intensive subsistence agriculture, characteristic of densely populated regions especially in southern, southeastern, and eastern Asia, involves the effective and efficient use of small parcels of land in order to maximize crop yield per acre. The practice requires intensive human labor, with most of the work being done by hand and/or with animals. The landscape of intensive subsistence agriculture is significantly transformed, including hillside terraces and raised fields, adding the irrigation systems and fertilizers (**Figures 10.11** and **10.12**). As a result,intensive subsistence agriculture is able to support large rural populations. Rice is the dominant crop in the humid areas of southern, southeastern, and eastern Asia. In the drier areas, other crops are cultivated such as grains (wheat, corn, barley, millet, sorghum, and oats), as well as peanuts, soybeans, tubers, and vegetables. In both situations, the land is intensively used, and the milder climate of those regions allows double cropping (the fields are planted and harvested two times per year).



Figure 10.11 | Rice Terraces, the Philippines
Author | Susan McCouch
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Figure 10.12 | Raised fields, Vietnam
Author | Dennis Jarvis
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In recent decades, as the result of the introduction of higher-yielding grain varieties such as wheat, corn, and rice, known as **Green Revolution**, tens of millions of subsistence farmers have been lifted above the survival level. The spread of these new varieties throughout the farmlands of South, Southeast, and East Asia, and Mexico greatly improved the supply of food in these areas. Equally important was the use of fertilizers, pesticides, irrigation, and new machines. Today, China and India are self-sufficient in basic foods, while Thailand and Vietnam are two of the top rice exporters in the world. Although hunger and famine still persist in some regions of the world, especially in Africa, many people accept that they would be much worse without using

these innovations.

10.2.2 Commercial Agriculture

Commercial agriculture, generally practiced in core countries outside the tropics, is developed primarily to generate products *for sale* to food processing companies. An exception is plantation farming, a form of commercial agriculture which persists in developing countries side by side with subsistence. Unlike the small subsistence farms (1-2 hectares/2-5 acres), the average of the commercial farm size is over 150 hectares/370 acres (178 ha/193 acres U.S.) and, being mechanized, many of them are family owned and operated. Mechanization also determines the percentage of the labor force in agriculture, with many developed countries being even below two percent of the total employment, such as Israel, the United Kingdom, Germany, the United States, Canada, Norway, Denmark, and Sweden (**Figure 10.6**). Moreover, as the result of industrialization and urbanization, many developed countries continue to lose significant areas of agricultural land. North America, for example, had 28.3 percent agricultural land out of the total land area in 1961 and 26 percent in 2014. The European Union decreased its agricultural land from 54.7 percent to 43.8 percent for the same period, during which some countries recorded outstanding decreases, such as Ireland from 81.9 to 64.8 percent, the United Kingdom from 81.8 to 71.2 percent, and Denmark from 74.6 to 62.2 percent to mention only a few. In addition to the high level of mechanization, in order to increase their productivity, commercial farmers use scientific advances in research and technology such as the Global Positioning System (autonomous precision seed-planting robot, intelligent systems for animal monitoring, savings in field vegetable-growing through the use of a GPS automatic steering system), and satellite imagery (finding efficient routes for selective harvesting based on remote sensing management).

Climate regions also play an important role in determining *agricultural regions*. In developed countries, these regions can be individualized as six types of commercial agriculture: mixed crop and livestock, grain farming, dairy farming, livestock ranching, commercial gardening and fruit farming, and Mediterranean agriculture

Mixed Crop and Livestock

Mixed crop and livestock farming extends over much of the eastern United States, central and western Europe, western Russia, Japan, and smaller areas in South America (Brazil and Uruguay) and South Africa. The rich soils, typically involving **crop rotation**, produce high yields primarily of corn and wheat, adding also soybeans, sugar beets, sunflower, potatoes, fruit orchards, and forage crops for livestock. In practice, there is a wide variation in mixed systems. At a higher level, a region can consist of individual specialized farms (corn, for example) and service systems that together act as a mixed system. Other forms of mixed farming include cultivation of different crops on the same field or several varieties of the same crop with different life cycles, using space more efficiently and spreading risks more uniformly. The same farm may grow cereal crops or orchards, for example, and keep cattle, sheep, pigs, or poultry (**Figure 10.13**).



Figure 10.13 | Crop-livestock Integration
Sheep grazing under tall-stemmed fruit trees (the Netherlands).
Author | FAO
Source | FAO
License | © FAO. Used with permission.

Grain Farming

Commercial grain farming is an extensive and mechanized form of agriculture. This is a development in the continental lands of the mid-latitudes (mostly between 30° and 55° North and South latitudes), in regions that are too dry for mixed crop and livestock farming. The major world regions of commercial grain farming are located in Eurasia (from Kiev, in Ukraine, along southern Russia, to Omsk in western Siberia and Kazakhstan) and North America (the Great Plains). In the southern hemisphere, Argentina, in South America, has a large region of commercial grain farming, and Australia has two such areas, one in the southwest and another in the southeast. Commercial grain farming is highly specialized and, generally, one single crop is grown. The most important crop grown is wheat (winter and spring), used to make flour (**Figure 10.14**). The wheat farms are very large, ranging from 240 to 16,000 hectares (593-40000 acres). The average size of a farm in the U.S. is about 1000 acres (405 hectares). In these areas land is cheap, making it possible for a farmer to own very large holdings.

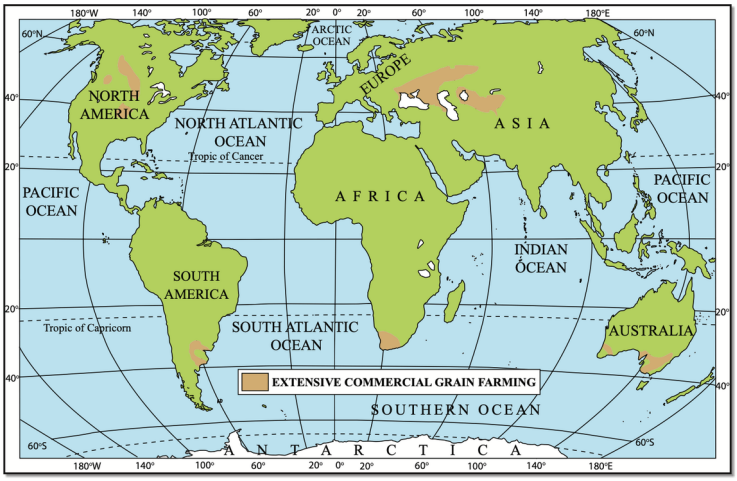


Figure 10.14 | World Commercial Grain Farming
Author | CIET NCERT
Source | NROER
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Dairy Farming

Dairy farming is a branch of agriculture designed for long-term production of milk, processed either on a farm or at a dairy plant, for sale. It is practiced near large urban areas in both developed and developing countries. The location of this type of farm is dictated by the highly perishable milk. The ring surrounding a city where fresh milk is economically viable, supplied without spoiling, is about a 100-mile radius. In the 1980s and 1990s, robotic milking systems were developed and introduced in some developing countries, principally in the EU (**Figure 10.15**). There is an important variation in the pattern of dairy production worldwide. Many countries that are large producers consume most of this internally, while others, in particular New Zealand, export a large percentage of their production, some from the organic farms (**Figure 10.16**).



Figure 10.15 | Rotary Milking Parlor
Author | Gunnar Richter
Source | Wikimedia Commons
License | CC BY SA 3.0



Figure 10.16 | Calves at Organic Dairy Farm
Author | Julia Rubinic
Source | Wikimedia Commons
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Livestock Ranching

Ranching is the commercial grazing of livestock on large tracts of land. It is an efficient way to raise livestock to provide meat, dairy products, and raw materials for fabrics. Contemporary ranching has become part of the meat-processing industry. Primarily, ranching is practiced on semiarid or arid land where the vegetation is too sparse and the soil too poor to support crops, being a vital part of economies and rural development around the world. In Australia, like in the Americas, ranching is a way of life (**Figure 10.17**). In the United States, near Greeley, Colorado, there is the world's largest cattle feedlot, with over 120,000 head, a subsidiary of the food giant ConAgra (**Figure 10.18**). The largest beef-producing company in the world is the Brazilian multinational corporation JBS-Friboi. Argentina and Uruguay are the world's top per capita consumers of beef. China is the leading producer of pig meat while the United States leads in the production of chicken and beef.

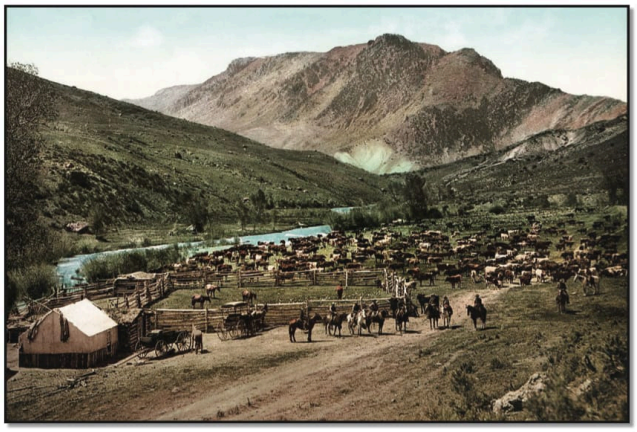


Figure 10.17 | Ranching
Author | William Henry Jackson
Source | Wikimedia Commons
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Figure 10.18 | Feedlot in the Texas Panhandle
Author | User "H2O"
Source | Wikimedia Commons
License | CC BY SA 3.0

Commercial Gardening and Fruit Farming



Figure 10.19 | Market Farming
A garden with edible plants for use in a culinary school in Lawrenceville, Georgia.
Author | U.S. Department of Agriculture
Source | Wikimedia Commons
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A market garden is a relatively small-scale business, growing vegetables, fruits, and flowers (**Figure 10.19**). The farms are small, from under one acre to a few acres (.5-1.5 hectares). The diversity of crops is sometimes cultivated in greenhouses, distinguishing it from other types of farming. Commercial gardening and fruit farming is quite diverse, requiring more manual labor and gardening techniques. In the United States, commercial gardening and fruit farming is the predominant type of agriculture in the Southeast, the region with a warm and humid climate and a long growing season. In addition to the traditional vegetables and fruits (tomatoes, lettuce, onions, peaches, apples, cherries), a new kind of commercial gardening has developed in the Northeast. This is a non-traditional market garden, growing crops that, although limited, are increasingly demanded by consumers, such as asparagus, mushrooms, peppers, and strawberries. Market gardening has become an alternative business, significantly profitable and sustainable especially with the recent popularity of organic and local food.

Mediterranean Agriculture

The term 'Mediterranean agriculture' applies to the agriculture done in those regions which have a Mediterranean type of climate, hot and dry summers and moist and mild winters. Five major regions in the world have a Mediterranean type of agriculture, such as the lands that border the Mediterranean Sea (South Europe, North Africa, and the Middle East), California, central Chile, South Africa's Cape, and in parts of southwestern and southern Australia (**Figure 10.20**). Farming is intensive, highly specialized and varied in the kinds of crops raised. The hilly Mediterranean lands, also known as '*orchard lands of the world*,' are dominated by citrus fruits (oranges, lemons, and grapefruits), olives (primary for cooking oil), figs, dates, and grapes (primarily for wine), which are mainly for export. These and other commodities flow to distant markets, Mediterranean products tending to be popular and commanding high prices. Yet, the warm and sunny Mediterranean climate also allows a wide range of other food crops, such as cereals (wheat, especially) and vegetables, cultivated especially for domestic consumption.

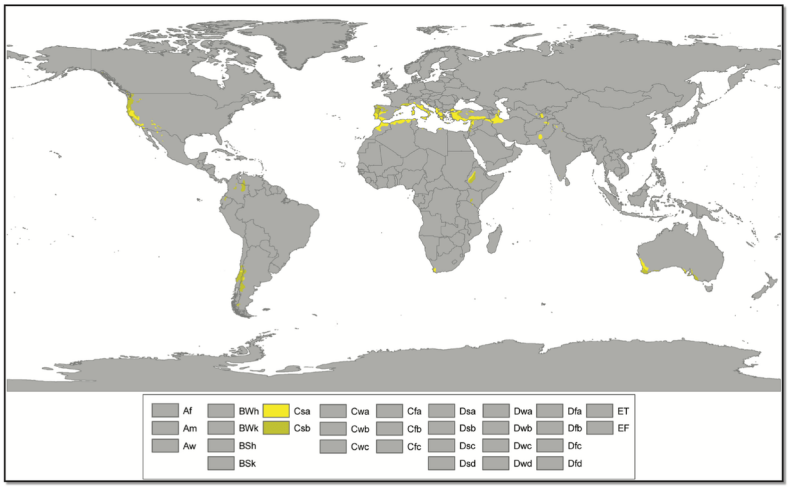


Figure 10.20 | Mediterranean Regions
Author | User "me ne frego"
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Plantation Farming

Plantations are large landholdings in developing regions designed to produce crops for export. Usually, they specialize in the production of one particular crop for market laid out to produce coffee, cocoa, bananas, or sugar in South and Central America; cocoa, tea, rice, or rubber in West and East Africa; tea in South Asia; rubber in Southeast Asia, and/or other specialized and luxury crops such as palm oil, peanuts, cotton, and tobacco (**Figures 10.21** and **10.22**). Plantations are located in the tropical and subtropical regions of Asia, Africa, and Latin America and, although they are located in the developing countries, many are owned and operated by European or North American individuals or corporations. Even those taken by governments of the newly independent countries continued to be operated by foreigners in order to receive income from foreign sources. These plantations survived during decolonization, continuing to serve the rich markets of the world.

Unlike coffee, sugar**,** rice, cotton and other traditional crops, exported from large plantations, other crops can be required by the international market such as flowers and specific fruits and vegetables. These represent the **nontraditional agricultural exports,** which have become increasingly important in some countries or regions such as Argentina, Colombia, Chile, Mexico, and Central America, to mention a few. One important reason for sustaining nontraditional exports is that they complement the traditional exports, generating foreign exchange and employment. Thus, plantation agriculture, designed to produce crops for export, is critical to the economies of many developing countries.



Figure 10.21| Coffee Plantation
Author | User "Prince Tigereye"
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Figure 10.22 | Tea Plantation
Author | User "Joydeep"
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10.3: Global Changes in Food Production and Consumption

10.3.1 Commercial Agriculture and Market Forces

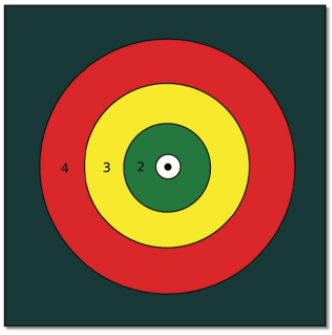


Figure 10.23 | Von Thünen Model
The dot represents a city. The white area around it (1) represents dairy and market gardening; 2) (green) the forest for fuel; 3) (yellow) field crops and grains; 4) (red) Ranching and livestock ;and the outer (dark green) region represents the wilderness where agriculture is not practised.
Author | Erin Silversmith
Source | Wikimedia Commons
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Farming is part of **agribusiness** as a complex political and economic system that organizes food production from the development of seeds to the retailing and consumption of the agricultural product. Although farming is just one stage of the complex economic process, it is incorporated into the world economic system of capitalism (*globalized*). Most farms are owned by individual families, but, in this context, many other aspects of agribusiness are controlled by large corporations. Consequently, this type of farming responds to market forces rather than to feeding the farmer. Using**Von Thünen's isolate state model**, which generated four concentric rings of agricultural activity, geographers explain that the choice of crops on commercial farms is only worthwhile within certain distances from the city. The effect of distance determines that highly perishable products (milk, fresh fruits, and vegetables) need to be produced near the market, whereas grain farming and livestock ranching can be located on the peripheral rings (**Figure 10.23**).

New Zealand, for example, is a particular case of a country whose agriculture was thrown into a global free market. More specifically, its agriculture has changed in response to the restructuring of the global food system and, at the same time, is responding to a new global food regime. For New Zealand to remain competitive, farmers have to intensify production of high added value or more customized products, also focusing on *nontraditional exports* such as kiwi, Asian pears, vegetables, flowers, and venison (meat produced on deer farms) (**Figure 10.24**). The New Zealand agricultural sector is unique in being the only developed country to be totally exposed to the international markets since the government subsidies were removed.



Figure 10.24 | Deer Farm, New Zealand
Author | User "LBM1948"
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10.3.2 Biotechnology and Agriculture

Since the 19th century, manipulation and management of biological organisms have been a key to the development of agriculture. In addition to Green Revolution, agriculture has also undergone a **Biorevolution**, involving agricultural **biotechnology** (*agritech*), an area of agricultural science involving the use of scientific tools and genetic engineering techniques to modify living organisms (or part of organisms) of plants and animals with the potential of outstripping the productivity increases of the Green Revolution and, at the same time, reducing agricultural production costs. Within the agricultural biotechnology process, desired traits are exported from a particular species of crop or animal to the different species obtaining *transgenic crops*, which possess desirable characteristics in terms of flavor, color of flowers, growth rate, size of harvested products, and resistance to diseases and pests (BT corn, for example, can produce its own pesticides).

By removing the genetic material from one organism and inserting it into the permanent genetic code of another, the biotech industry has created an astounding number of organisms that are not produced by nature. It has been estimated that upwards of 75 percent of processed foods on supermarket shelves – from soda to soup, crackers to condiments – contain genetically engineered ingredients. So far, little is known about the impacts of genetically modified (GM) foods on human health and the environment. Consequently, it is difficult to sort the benefits from the costs of their increasing incorporation into global food production. The United States is the leader not only for the number of the genetically engineered (GE) food crops but also for the largest areas planted with commercialized biotech crops. Many countries, in Europe, for example, consider that the genetic modification has not been proved safe, the reason for which they require all food to be labeled and refuse to import GM food. Yet, in the United States, genetic modification is permitted, taking into consideration that there is no evidence yet supporting that it is dangerous. Many people instead consider that they have the right to decide what they eat and, consequently, in their opinion, *labeling* of GM products must be mandatory. Protests against **GMO** regulatory structures have been very effective in many counties including the United States (**Figure 10.25**).



Figure 10.25 | Protest against GMOs
Author | Rosalee Yagihara
Source | Wikimedia Commons
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Currently, over 60 countries around the world require labeling of genetically modified foods, including the 28 nations in the European Union, Japan, Australia, Brazil, Russia, India, South Africa, China, and other countries (**Figure 10.26**). The debates regarding labeling certainly will continue. Since no one knows whether GM foods are entirely bad or entirely good, regulatory structures are crucial, protecting human health and the environment.

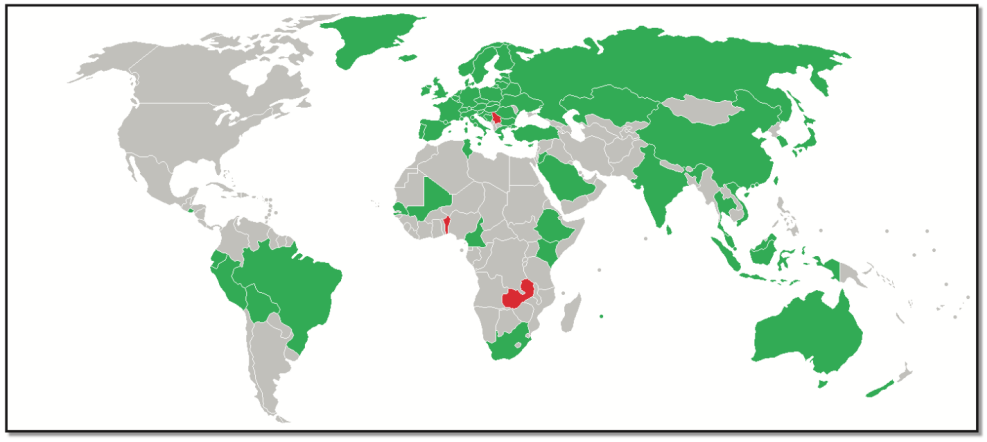


Figure 10.26 | GM Labeling Around the Globe
Author | User "Co9man"
Source | Wikimedia Commons
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10.3.3 Food and Health

Since the end of World War II, the world's technically and economically feasible food production potential has significantly expanded. As a result, today, there is more than enough food to feed all the people on the Earth (**Figure 10.27**) Yet, the major issue is the *access to food*, which is uneven, the reason for which millions of individuals in both the core and the periphery are affected by poverty, preventing them from securing adequate nutrition.

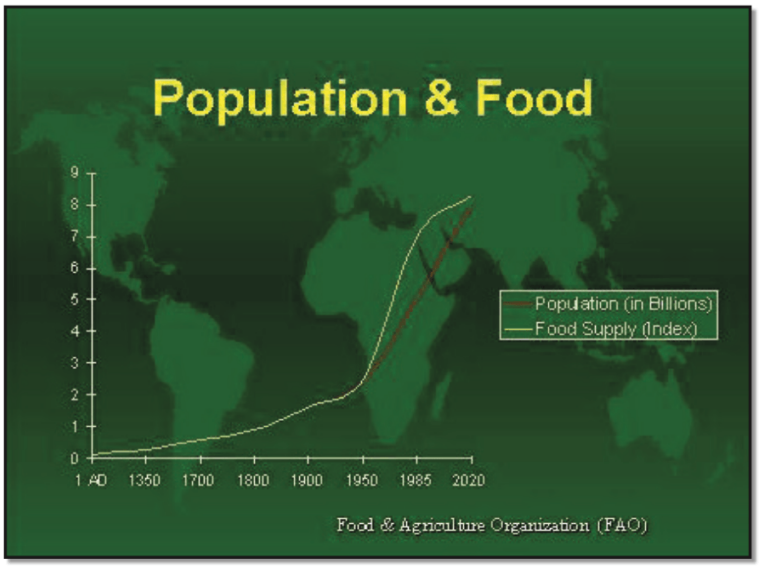


Figure 10.27 | Population & Food supply
Author | FAO
Source | Infogram
License | © FAO. Used with permission.

Hunger, *chronic* (long-term) or *acute* (short-term), therefore, is one of the most pressing issues facing the world today. Chronic hunger, also known as **undernutrition**, is an inadequate consumption of the necessary nutrients and/ or calories. The Food and Agriculture Organization of the United Nations (FAO) considers necessary at least 1,800 kcal/day for an individual to consume in order to maintain a healthy life. The world average consumption is 2,780 kcal/day, but there is a significant difference between developed countries, with an average of 3,470 kcal/day (3,800 kcal/day in the U.S.), and developing countries, recording an average of 2,630 kcal/day (even less in sub-Saharan countries). FAO estimates that currently about 800 million people are undernourished globally, significantlyless than in the early 1990s, but the majority continue to be counted in southern Asia and sub-Saharan Africa (**Figure 10.28**). One form of hunger is **famine**, an acute starvation caused even by a population's command over food resources, natural disasters (e.g., drought, Ethiopia in 1984-1985), or wars. In contrast, in North America, the United States especially, where the food is abundant and inspected for quality, overeating is a national problem, the reason for which the general condition of the population is reflected more by **obesity** (**Figure 10.29**).

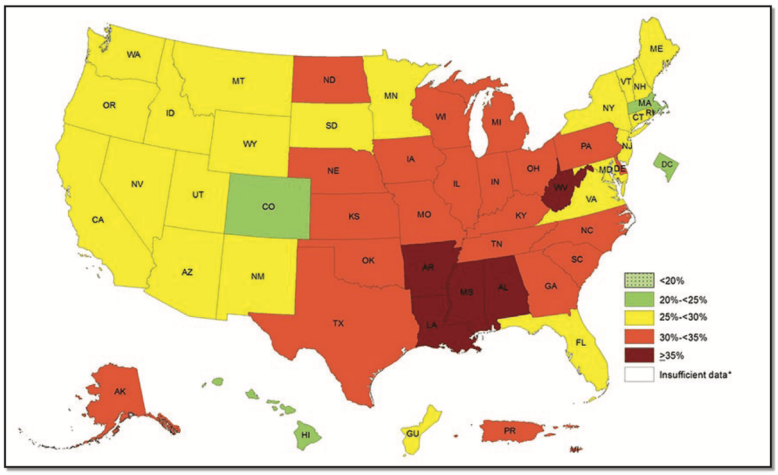


Figure 10.29 | U.S. Adult obesity rates, 2016
Author | CDC
Source | CDC
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Nutritional vulnerability is conceptualized in terms of the notion of food security. According to FAO, **food security** exists when all people, at all times, have access to food for an active and healthy life. Related to food security is the concept of **food sovereignty**, which is the right of people, communities, and countries to define their own agricultural policies. One factor connected with food in general and food sovereignty especially is the fact that more cropland is redirected to raising **biofuels**, fuels derived from biological materials. They not only have a significant and increasing impact on global food systems but also result in evictions of small farmers and poor communities.

10.3.4 Sustainable Agriculture

Alongside the emergence of a core-oriented **food regime** especially of fresh fruits and vegetables, a new orientation in agriculture is sustainability. **According to the Sustainable Agriculture Initiative (SAI), "sustainable agriculture** *is the efficient production of safe, high quality agricultural products, in a way that protects and improves the natural* **environment***, the* **social and economic conditions** *of farmers, their employees and local communities, and safeguards the* **health and welfare** *of all farmed species" (SAI Platform 2010- 2018)* **.** More specifically, sustainability in agriculture is the increased commitment to **organic farming**, the principles and practices for sustainable agriculture developed by SAI being articulated around **three main pillars**: *society, economy,* and *environment*.

Although organic food production is not the primary mode of the agricultural practice, it has already become a growing force alongside the dominant conventional farming. Yet, unlike *conventional farming*, which promotes monoculture on large commercial farms and uses chemicals and intensive hormone-practices, *organic farming*, which puts small-scale farmers at the center of food production, does not use genetically modified seeds, synthetic pesticides, herbicides, or fertilizers. Thus, sustainable agricultural practices not only promote diversity and healthy food but also preserve and enhance environmental quality.

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10.4: Conclusion

Agriculture was the key development in the rise of sedentary human civilization, domesticating species of plants and animals and creating food surpluses that nurtured the development of civilization. It began independently in different parts of the globe, both the Old and New World. Throughout history, agriculture played a dynamic role in expanding food supplies, creating employment, and providing a rapidly growing market for industrial products. Although subsistence, self-sufficient agriculture has largely disappeared in Europe and North America, it continues today in large parts of rural Africa, and parts of Asia and Latin America. While traditional forms of agricultural practices continue to exist, they are overshadowed by the global industrialization of agriculture, which has accelerated in the last few decades. Yet, commercial agriculture differs significantly from subsistence agriculture, as the main objective of commercial agriculture is achieving higher profits.

Farmers in both the core and the periphery have had to adjust to many changes that occurred at all levels, from the local to the global. Although states have become important players in the regulation and support of agriculture, at the global level, the World Trade Organization (WTO) has significant implications in agriculture. Social reactions to genetically engineered foods have repercussions throughout the world food system. Currently, the focus is especially on the option that a balanced, safe, and sustainable approach can be the solution not only to achieve sustainableintensification of crop productivity but also to protect the environment. Therefore, agriculture has become a highly complex, globally integrated system, and achieving the transformation to sustainable agriculture is a major challenge.

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10.5: Key Terms Defined

agribusiness: commercial agriculture engaged in the production, processing, and distribution of food

agriculture: a science, art, and business directed to modify some specific portions of the Earth's surface through the cultivation of crops and the raising of livestock for sustenance and profit

biofuels: fuel derived from biological materials

biorevolution: the genetic engineering of plant and animals with the potential to exceed the production of the Green Revolution

biotechnology: the manipulation through genetic engineering of living organisms or their components to make or modify products or processes for specific use

commercial agriculture: a system in which farmers produce crops and animals primarily for sale

conventional farming: agriculture that uses chemicals (fertilizers, pesticides, and herbicides) and/or hormone-based practices

crop rotation: method in which the field under cultivation remain the same, but the crop is changed in order to avoid exhausting the soil

double cropping: method used in the milder climates in which intensive subsistence fields are planted and harvested twice per year

famine: extreme scarcity of food

food regime: specific set of links, indicating the ways a particular type of food is dominant during a specific time

food security: the situation when all people, at all times, have access to food for an active and healthy life

food sovereignty: the right of people, communities, and countries to define their own agricultural policies

globalized agriculture: agriculture increasingly influenced more at the global or regional levels than at national level

genetically modified organisms (GMOs): organisms that have their DNA modified in a laboratory

Green Revolution: a new agricultural technology characterized by high-yield seeds and fertilizers exported from the core to the periphery in order to increase their agricultural productivity

hunting and gathering: activities through which people obtain food from hunting wild animals, fishing, and gathering fruits, nuts and roots

intensive subsistence agriculture: a form of subsistence agriculture in which farmers involve the effective and efficient use of small parcels of land in order to maximize crop yield per hectare

nontraditional agricultural exports: new export crops that contrast with traditional exports

organic farming: a method of crop and livestock production without commercial fertilizers, pesticides, growth hormones, and genetically modified organisms

pastoralism: subsistence activity that involves the breeding and herding of animals to satisfy the human needs of food, shelter, and clothing

pastoral nomadism: a traditional form of subsistence agriculture in which the pastoralists travel with their herds over long distances and with no fixed pattern

plantation: large landholdings in developing regions specialized in the production of one or two crops usually for export to more developed countries

ranching: a form of commercial agriculture in which the livestock graze over an extensive area

shifting cultivation: a form of subsistence agriculture, which involves a kind of natural rotation system

slash-and-burn agriculture: a method for obtaining more agricultural land in which fields are cleared (*swidden*) by slashing the vegetation and burning the debris

subsistence agriculture: farming designed to grow food only to sustain farmers and their families, consuming most of that they produce without entering into cash economy of the country

sustainable agriculture: *the efficient production of safe, high quality agricultural products, in a way that protects and improves the natural* **environment***, the* **social and economic conditions** *of farmers, and safeguards the* **health and welfare** *of all farmed species*

swidden: land that is cleared for planting using the slash-and-burn process

transhumance: a seasonal vertical movement by herding the livestock to cooler, greener high country pastures in the summer and returning them to lowland settings for fall and winter grazing

undernourishment/undernutrition: inadequate dietary consumption that is below the minimum requirement for maintaining a healthy life

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11: INDUSTRY



Figure 11.1 | Factory in Katerini, Greece
Author | Jason Blackeye
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Learning Outcomes

- Understand: the origins and diffusion of industrial production
- Explain: the impact of industry on places
- Describe: the industrial basis of modern cultures
- Connect: industrialization, technology, the service sector and globalization

11.1: Introduction

11.2: Marx's Tendency of The Rate of Profit To Fall

11.3: Factors for Location

11.4: The Expansion (and Eventual Decline) of Industry

11.5: Global Production

11.6: Summary

11.7: Key Terms Defined

11.8: Works Consulted and Further Reading

11.9: Endnotes

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11.1: Introduction

We live in a globalized world. Products are designed in one place, assembled in another from parts produced in multiple other places. These products are marketed nearly everywhere. Until a few decades ago, such a process would have been impossible. Two hundred years ago, such an idea would have been beyond comprehension. What happened to change the world in such a way. What eventually tied all the economies of the world into a global economy? Industry did. The Industrial Revolution changed the world as much as the Agricultural Revolution. Industry has made the modern lifestyle possible.

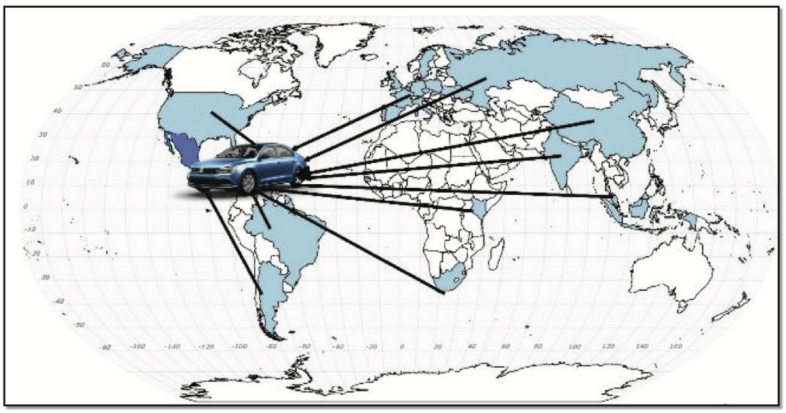


Figure 11.2 | The Volkswagen Jetta
The Volkswagen Jetta is designed in Germany and assembled in Mexico from parts from the represented countries. It is marketed as "German Engineered." Does it matter if the car wasn't made in Germany from German parts?
Author | David Dorrell
Source | Original Work
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During the 2016 U.S. presidential election, something very peculiar happened. Candidates from both major parties (Donald Trump and Hillary Clinton) agreed over and over again on one thing (and only one thing). The U.S. needed to create and/or bring back manufacturing jobs. Both candidates promised, if elected, to create new, well-paid manufacturing jobs. This was an odd shift, because for the previous 40+ years Republicans typically embraced free trade that allows manufacturers to choose where and what to produce (and many chose to move operations outside of the U.S.), while Democrats claimed to be working for the interests of blue-collar, working class people, whose jobs and wages had diminished since the 1980s period of **de-industrialization** both in the U.S. and throughout the developed/industrialized world. In the U.S. manufacturing provided jobs to 13 million workers in 1950, rising to 20 million in 1980 but by 2017 that number was back to 12 million – similar to levels last seen in 1941. A similar story can be found in Great Britain where jobs in manufacturing in 2017 were half of what they were in 1978 and output that once was 30% of GDP accounts for only 10% in 2017. Similar stories can be found in Germany, Japan, and other 'industrialized' economies. You may ask yourself, "Where did all of those jobs go?" But if you think about it, you can probably come up with your own answers.

It's important to note that even as jobs declined, manufacturing output in most industrialized countries continued to increase, so fewer people were producing more things. The first and simplest explanation for this is automation. For years, science fiction writers have warned us that the robots are coming. In the case of manufacturing technology...they're already here! Workers today are aided by software, robots, and sophisticated tools that have simply replaced millions of workers. Working at a manufacturing facility is no longer simply a labor-intensive effort, but one that requires extensive training, knowledge, and willingness to learn new technologies all the time. The second explanation is the relocation of manufacturing from wealthy countries to poorer ones because of lower wages in the latter.

As discussed earlier in this chapter, most countries have moved away from the protectionist model of development, allowing corporations to choose for themselves the location of production. No better example of this shift can be found than Walmart, which in the 1970's advertised that the majority of all of the products it sold were made in the USA. Thirty years later, it would be difficult for to find ANY manufactured product that was still 'made in the USA'. A third reason for the decline in manufacturing jobs is a decrease in demand for certain types of items. Steel production in the U.S. and England dropped precipitously during the period of deindustrialization (since the 1980's) not just due to automation or cheaper wages elsewhere, but also because demand for steel also declined. During the 20th century the U.S., Europe, and Japan required enormous amounts of steel in the

construction of bridges, dams, railroad, skyscrapers, and even automobiles. Building of such items in the 21st century has slowed down, not because those countries are in decline, but because there is a limit as to how many bridges and skyscrapers are needed in any country! Demand for steel in a country diminishes as GDP per capita reaches about $20,000. Meanwhile, demand for steel will continue to rise in Japan and India for several years as they (and other industrializing countries) continue to expand cities, rail lines, and other large-scale construction projects. Such a decline in steel production does NOT mean that a country is in decline, but rather that there has been a shift in the type of manufacturing that occurs. The U.S., Germany, and Japan all continue to increase manufacturing output (**Figure 11.3**), even as their share of global output continues to decline.

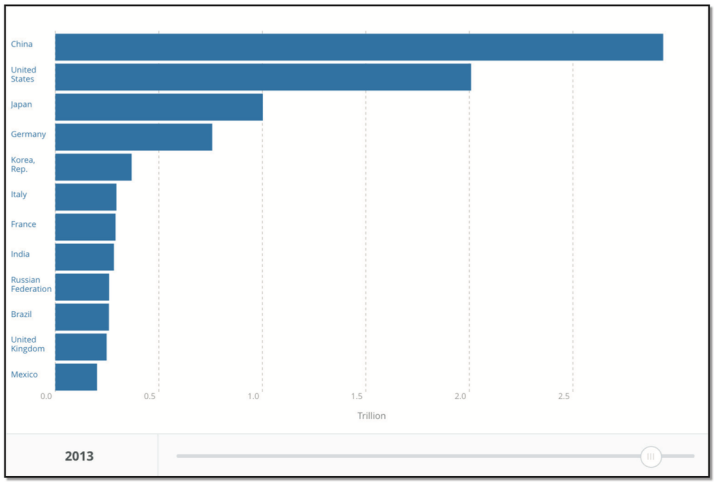


Figure 11.3 | Leading Countries in Manufacturing Output, 2013
Author | The World Bank
Source | The World Bank
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Another significant shift in manufacturing relates specifically to the geography of production and is best understood in the consideration of 2 different modes of production: 1) **Fordism** 2) **Post-Fordism**. Fordism is associated with the assembly line style of production credited to Henry Ford, who dramatically improved efficiency by instituting assembly line techniques to specialize/ simplify jobs, standardize parts, reduce production errors, and keep wages high. Those techniques drove massive growth in manufacturing output throughout most of the 20th century and brought the cost of goods down to levels affordable by the masses. Nearly all of the automobile assembly plants located in and around the Great Lakes region of North America adopted the same strategies, which also provided healthy amounts of competition and new innovation for decades, as North America became the world's leading producer of automobiles. Post-Fordism begins to take hold in the 1980's as a new, global mode of production that seeks to relocate various components of production across multiple places, regions, and countries. Under Fordism, the entire unit would be produced locally, while Post-Fordism seeks the lowest cost location for every different component, no matter where that might be. Consider an optical, wireless mouse for a moment. The optical component may come from Korea, the rubber cord from Thailand, the plastic from Taiwan, and the patent from the U.S. Meanwhile, all of those items are most likely transported to China, where low-wage workers manually assemble the finished project and an automated packing system boxes and wraps it for shipping to all corners of the world. Global trade has been occurring for hundreds of years, dating back to the days of the Silk Road, Marco Polo, and the Dutch East India Company, but Post- Fordism, in which a single item is comprised of multiple layers of manufacturing from multiple places around the world, is a very recent innovation. The system has reconfigured the globe, such that manufacturers are constantly searching for new locations of cheap production. Consumers tend to benefit greatly from the system in that even poor middle school students in the U.S. can somehow afford to own a pocket computer (smart phone) that is more powerful than the most advanced computer system in the world from the previous generation. This is kind of a miracle. On the other hand, manufacturing jobs that once were a pathway to upward economic mobility, no longer assure people of such a decent standard of living as they once did.

11.1.1 History of Industrialization

Industrialization was not a process that emerged, fully-formed in England in the eighteenth century. It was the result of centuries of incremental developments that were assembled and deployed in the 18th century. Early industrialization involved using water power to run giant looms that produced cloth at a very low cost. This early manufacturing didn't use coal and belch smoke into the sky, but it initiated an industrial mindset. Costs could be reduced by relying on inanimate power (first water, then steam, then electricity), converting production to simple steps that cheap low-skilled laborers could do (**Taylorism**), getting larger and concentrated in an area (economy of scale), and cranking out large numbers of the same thing (**Fordism**). This is industry in a

nutshell. The advantage of industry was that a company could sell a cheaper product, but at a greater profit.

As this mindset was applied to other goods, and then services, the world was changed forever. Places which had been producing goods for millennia suddenly (really suddenly) found themselves competing with a product that was far cheaper. Economist Joseph Schumpeter coined the term “creative destruction” to describe the process in which new industries destroy old ones. Hand production of goods for the masses began to decline precipitously. They quickly became too expensive in comparison to manufactured goods. Today, hand produced goods are often reserved for the wealthy.

A contemporary example of the industrial mode of production is fast food. Looking inside the kitchen of a fast food restaurant will reveal industrially prepared ingredients prepared just in time for sale to a customer. It is not the same process that you would use at home.

In the abstract, companies do not exist to provide jobs or even to make things. Companies exist to produce a profit. If changing the method of making a profit is necessary, then the company will do that in order to survive. If it cannot, then it will go away. For example, many companies today are highly diversified, for example Mitsubishi produces such unrelated products as cars and tuna fish. What is the connection between the two. They both produce profit.

11.1.2 Industrial Geography

How is industry related to geography? For one thing, industrial societies have more goods in them. Since the goods are cheaper, people just have more things. For another, the means of production, the factories, shipping terminals, and distribution centers are visible for anyone to see. The lifestyles of industrialized people are different. Pre-industrialized societies are not regulated by clocks, for example, people wear lass-produced similar clothing. They listen to globally marketed music. If it seems like you already read this in the chapter on pop culture, you have. Pop culture is a function of industry. Geography is concerned with places and industry changed the way the world operates. It changed the relationships between places. Places that industrialized early gained the ability to economically and politically dominate other parts of the world that had not industrialized. Something as simple as having access to cheap, mass produced guns had impacts far beyond mere trade relationships.

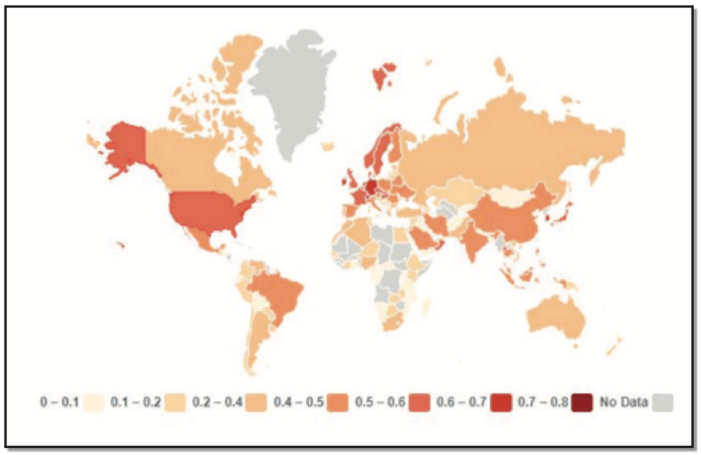


Figure 11.4 | Map of Medium- And High-Tech Manufacturing Value Added Share in Total Manufacturing[1]
Author | David Dorrell
Source | Original Work
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Over time industrial production changed from one that disrupted local economies to one that completely changed the relationship that most human beings had with their material culture, their environment, and with one another. Industry has improved standards of living and increased food production on one hand and it has despoiled environments and promoted massive inequality on the other.

Industrialization is about applying rational thought to production of goods. Specifically, this form of rational thought refers to discovering ways to reduce unnecessary labor, materials, capital (money), and time. In the same way thatfactories changed how things were produced, it also changed where things were produced. Locational criteria are used to determine where a factory even gets built.

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11.2: Marx's Tendency of The Rate of Profit To Fall

Karl Marx spent his working life trying to understand the nature of production. One of the things he noticed was that products have lifespans. When they are invented, they are new on the market and the producer has a monopoly. As soon as a product is released, competitors will quickly begin to provide alternative products at a lower price. The race begins to produce the product at an ever cheaper price, but also with an acceptable level of profit. This process occurs across both time and space as any mechanism possible to reduce the cost to manufacture the product is discovered and used.

Advancements in materials will often occur. Instead of using a metal case, plastic may be good enough. Capital infusion may allow automation of the production. Eventually, after every other possibility to reduce costs is exhausted, the only way to maintain production is to cut labor costs. Few workers will accept a dramatic reduction in pay. It's time to move the factory to a place with lower labor costs. Marx called this footloose capitalism. We call it offshoring. It's the same thing and it has always been part of capitalism. One aspect of this is that we who have grown up in a capitalistic world just naturally expect the price of goods to fall over time. In the United States we experienced a shift in manufacturing from the Northeast to the Midwest, then to the South and West. People in the United States have long moved to follow employment, and only stopped doing so when it left the confines of the country.

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11.3: Factors for Location

Industrial location is a balance between capital, material, and labor and markets. The goal is overall lowest cost. Sometimes pushing down one category, like labor, can increase other costs, like transportation. Substitution is possible across categories. For example, additional capital can replace labor through automation.

Earlier factories were built in cities in order to use the labor that was available there. Building in the middle of nowhere could have created an immediate labor shortage. Of course, labor will also migrate to places with available employment.

Some industrial activities are determined by site, the physical characteristic of a location. If you want to have a coal mine, it is probably a good idea to locate in a place that has coal. This is the most extreme form of restriction, but bear in mind that many places have mineral wealth, but not all of them are extracting that wealth right now. Many places that would otherwise be candidates for resource extraction are not currently being used because the resources cannot be extracted and sold for a profit. If the resource cannot make money, it will not be used. Remember that government subsidies can make some resources more profitable than they normally would be.

Other industrial locations are products of their situation. The maquiladoras that line the southern side of the Rio Grande (Rio Bravo in Mexico) border would not be there if the United States were not on the other side of the river. The proximity to the United States is the determining characteristic in the choice to locate there. Industries moved to Mexico because it appeared to make economic sense to do so. They were able to lower labor costs while remaining within the US/Canadian market. Transportations costs increased initially, but transportation costs overall have fallen due to more efficient methods of moving goods. Were the North American Free Trade Agreement (NAFTA) to be revoked the situation of Mexico would change, their access to the markets of the United States and Canada would diminish, and the factories that are there would have a much harder time selling their goods.

11.3.1 Land (or Materials/Energy) Costs

Classic economics lumped raw materials and energy under the category of land. Few companies bother to buy the land that produces a particular material, nor do they generally invest in power generation, or their own oil fields. Theseinputs are subject to the same price pressures as everything other part of the manufacturing process.

The land that a factory sits on has become less important over time. In earlier factories, most workers walked to work and factories were compelled to locate on expensive land in cities. That is no longer the case. Due to the widespreaddiffusion of the automobile, factories can be built in more suburban or even rural areas and workers will commute to the factory. This shifts part of the cost of securing labor onto the workers themselves. It lowers costs for the company. It is still necessary for the company to have access to the transport network, so new factories are usually built to take advantage of existing road networks, often next to interstates.

Sourcing materials has become global. Commodified inputs like steel are bought wherever they are relatively cheap and are shipped to where they are needed. Whichever source provider has the lowest cost, including shipping, will likely be chosen by the company. If you have ever bough something online, generally you want to know which company has the product with the lowest overall price. Companies operate the same way.

There are differences in energy costs across space. For energy intensive industrial activities, cheap energy is essential. China rose from producing very little steel a few decades ago to leading the world today. It this by leveraging low labor costs and a very cheap energy source- vast supplies of (highly-polluting) coal.

11.3.2 Labor

Labor costs can be reduced in a number of ways. One way is simply to pay the workers that you have less money. Workers, however do not like having their pay cut. Sending the work to a place with lower wages has been a common response to higher wages. A large portion of industrial labor requires minimal education. A company can choose to hire high school graduates in wealthy countries for a high wage or equivalently educated workers in poorer countries for far less. The labor pool has thus become globalized. Instead of competing for jobs with the other workers in a particular city, today's workers are competing for jobs with much of the human population. Labor-intensive industries are particularly sensitive to labor costs. Clothing production has shifted

to places with cheap labor as wages in developed countries have increased.

Besides the option of simply shipping jobs offshore, there is also the option of replacing workers outright. Most of the industrial jobs that have been lost in the United States in the last 30 years have not been to overseas production, they have been due to automation. Replacing people with machines is as old as industry itself. The difference now is that machines are much more capable than they were in the past and they are much cheaper. Referencing the earlier example of clothing manufacture, production of athletic shirts in the United States got a large boost with the introduction of a factory in Little Rock, Arkansas that relies on a robot called Sewbot. The factory will produce millions of shirts at very low costs ($.33 in labor per shirt). This low cost of labor renders in nearly negligible in importance compared to other factors, such as transporting the materials to the factory and transporting the finished clothes to market. The factory was built by a Chinese company in the center of the United States to minimize transport costs. More factories will likely migrate nearer their markets as the cost of labor becomes less important. Developed countries are already seeing an expansion of manufacturing, but not an expansion of manufacturing employment, due to the influence of automation.

11.3.3 Transportation

An important contributor to geographic thinking regarding industrial locations was Alfred Weber (1868-1958). Weber took the concept of using lowest overall cost for the locations of industry and expanded it. He developed models that held many inputs to manufacturing constant in order to demonstrate the importance of transportation in determining least cost.

Weber believed that transportation costs were the most relevant factor in determining the location of an industry. The best way to minimize the cost of transport depends on the raw materials being transported. There are two kinds of raw material, things that are more-or-less everywhere (ubiquitous) and local raw materials. For the ubiquitous material (e.g. water), you have more freedom to locate, because it's commonly available. In this case, you should build your facility near your market, then you won't really need to transport much. We see examples of this in the locations of breweries and soft-drink manufacture.

On the other hand, if the material is only in a particular place (like bauxite), then you have some calculating to do. First you need to figure out if your manufacturing condenses, distills or otherwise shrinks your material. We call these processes bulk- reducing. If you aren't doing that, but instead took small pieces and assembled them into something that was harder to transport (like a tractor) then it is called bulk-gaining. In order to minimize transport costs for bulk-reducing activities, you want to process them as close as possible to their extraction site. Examples of this are metal smelters and lumber mills.

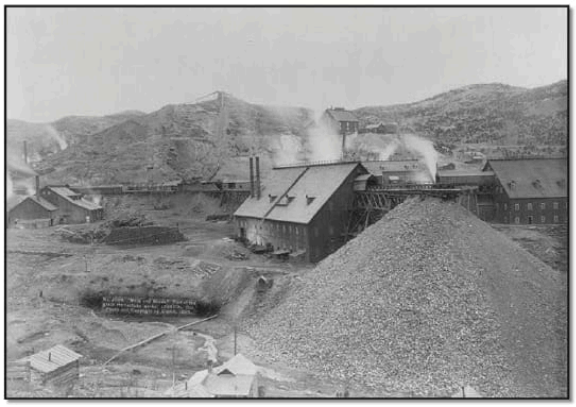


Figure 11.5 | Mills and Mines
This is a photo of a lead mine in South Dakota in the 19th Century. Notice the large piles of waste material left behind.
Author | John C. H. Grabill
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Bulk-gaining processes are a little more complicated. You need to find the least cost point between your source materials (which may be numerous) and your market. Remember that the goal is overall lowest cost, so that involves many calculations to determine which is the cheapest location, meaning your location might be in between several your inputs and/or market. A general rule of this is that these sorts of businesses tend to be fairly close to their final markets.

There were two last considerations that Weber discussed, agglomeration and deagglomeration. Weber called them secondary factors, because they were less important than the previously mentioned characteristics. Agglomeration is related to the idea of

economy of scale. Sometimes there are advantages to having similar industries near one another. Consider the manufacture of computers. Computer manufacturers don't make their own components, they buy them, and they use similar tools to put them together, and they use similar labor, and so forth. When industries concentrate in a place they can share some resources and split the cost. This is not to say that this is a conscious process, in many instances it just develops on its own. Degglomerative factors produce diseconomies of scale and are responsible for redistribution of industry. Examples of this could be escalating prices for land or labor which drive production away from an area.

11.3.4 Reducing Transportation Costs

Containerization has greatly changed the nature and cost of transportation. In the past, transporting goods required large numbers of people to move goods around. People loaded and unloaded goods at break-of-bulk points. Break-of- bulk points were places like railroad terminals, where goods were loaded onto trains, or ports, where goods were loaded into ships. Break-of-bulk points had large numbers of people loading and unloading items. Containerization changed that process tremendously. Goods are now packed into large metal boxes, then the bokes are moved from point to point. Cranes move the boxes from trucks to trains to ships, then reverse the process the process at the shipping destination. Intermodal transportation assumes that a container will seamlessly be transported by any number of different shipping methods. The number of people necessary to ship goods plummeted. The speed at which goods moved increased tremendously, since the bottlenecks were removed from the system. Containerization is a good example of an innovation that did not require a large technological shift, it simply required rationalizing a system that was labor intensive. Logistics, the commercial activity of transporting goods, is the glue that holds the global production network together. Without relatively inexpensive shipping, many offshored industries would not be able to make goods in distant factories, ship them to other places, and still make a profit.



Figure 11.6 | Shipping Containers
Uniform size and shape allow for rapid transport and sorting at minimal cost.
Author | Frank McKenna
Source | Unsplash
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11.3.5 Reducing Capital Costs

Operating an industry has more costs than materials, labor, and shipping. Other factors such as taxes, regulatory compliance, and financial incentive packages can either attract of repel manufacturing. These factors increased tremendously in importance. It has become possible for many industries to ignite a "bidding war" in order to secure increasingly advantageous incentives to locate in a particular place. Tax breaks, construction allowances and other benefits will be paid by the places that desperately struggle to attract industries. This has triggered what has beendescribed as a race for the bottom as places promise more than they can afford in the hopes of securing outside investment.

Another consideration is access to capital. Businesses often need investment funds, or short-term credit. Being unable to secure capital prevents many businesses in developing countries from starting or continuing. Countries without banking infrastructure find it nearly impossible to raise sufficient money to develop their own industries. Companies in countries like this are forced to hunt for financial backing in other countries.

11.3.6 Risk

Industries have large sunk costs. Corruption can take advantage of this to demand bribes, protection money, or other expenses that siphon off profit. High levels of corruption inhibit investment. Industries are risk averse. Places that arepolitically unstable will also have difficulty industrializing, since companies will be reluctant to build in places where any investment could be lost in a revolution or other political violence. This doesn't mean that industry requires representative government. Many places have experienced tremendous economic development without democracy. It just means that companies have to feel that any money that they invest in a place is safe.

11.3.7 Accessing a Market

One of the interesting examples of this concept is the number of foreign companies that establish themselves in the United States. Companies such as Foxconn (Taiwan), Hyundai (Korea), and BMW (Germany) build products in theUnited States. A good question to ask yourself would be "Why do they do that?" It turns out that locating in the United States is advantageous for them. First, they can reduce shipping costs, we have already addressed that. Second, although labor in the United States is relatively expensive, it's not appreciably different than in their home markets. Third, they may be able to avoid tariffs on imports. Finally, being in the United States places these products near a large market. The North American market is very large, being embedded in it can be advantageous for some companies.

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11.4: The Expansion (and Eventual Decline) of Industry

11.4.1 Transnational Corporations

Modern industry has become dominated by Transnational Corporations. Transnational Corporations (TNCs) have the ability to coordinate and control various processes and transactions within production networks, both within and between different countries. They also have the ability to take advantage of geographical differences of factors of production and state policies. Potential geographical flexibility for sales is a final benefit.

Foreign Direct Investment (FDI) is exactly what is sounds like. Companies invest in other countries. The usual narrative of this in the United States is simply offshoring for cheaper labor. The reality is more complicated. Just consider the examples above of the manufacturers who build facilities in the United States. They aren't seeking cheap labor. America companies moving production may be seeking to tap into a large pool of labor, but that labor is not as cheap as it was 20 years ago. Another reason for investing in China is the same reason that other companies invest here in North America, to gain entry into a large market. Companies and individuals investing in other countries have numerous motivations. Some of these motivations are altruistic. There is no shortage of entities that seek to use FDI as a mechanism to alleviate poverty. The earlier critique of financial incentives applies directly of foreign direct investment, for obvious reasons. Poor and desperate places will sometimes make economic decisions that make little economic sense.

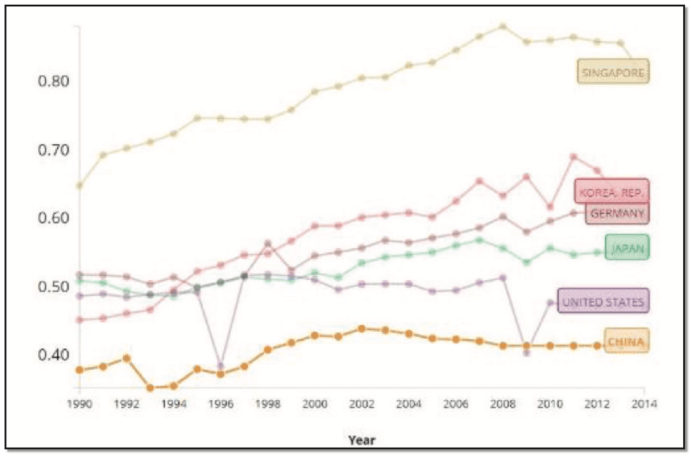


Figure 11.7 | Medium-Tech And High-Tech Manufacturing Value Added Share In Total Manufacturing
Author | The World Bank
Source | The World Bank
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FDI has an established history. Initially companies in wealthy countries were mostly interested in extracting raw materials from other, usually poorer, countries. This continues to this day. Countries like Niger, The Democratic Republic of Congo, and Venezuela function almost solely as a source of inputs for other companies based in other countries. Other places have seen investment in factories. Sometimes this is due to very low-cost labor, but in many instances, it is due to the fact that their wages are relatively low and they are relatively close to their market. An example of this was seen in Eastern Europe when many of these countries entered the European Union.

The next graph is slightly different. It shows the different trajectories of manufacturing in general as part of a countries economy. As you can see, manufacturing as a share of GPD in the United States has been quite low for some time. Manufacturing in China and Korea is much more important, but in both these places, the relative value of manufacturing is falling. In Germany, Japan and Singapore, the value of manufacturing is rising, although at very moderate levels. Note that neither of these graphs account for wages produced from manufacturing employment.

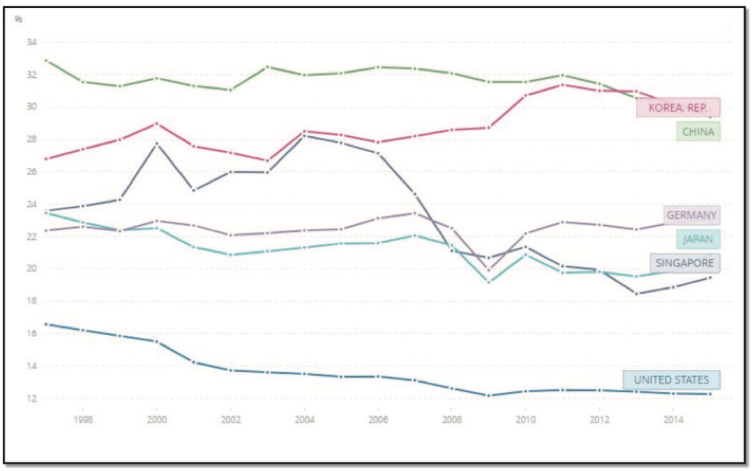


Figure 11.8 | Manufacturing Value Added Share In GDP
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11.5: Global Production

11.5.1 Hegemony and Economic Ascendency

At times industrialization has propelled countries to great economic heights. Britain, The United States and Japan all rode an industrial wave to international prominence. In those countries and others, a (largely mythical) golden age centers around a time when low-skilled workers could earn a sufficient wage to secure economic security. This is more-or-less what the "American Dream" was. Deindustrialization has changed the economic trajectories of these countries and the people living in these countries. However, it must be noted that post-industrial countries that have not seen rapid increases in poverty. Wages have been largely stagnant for decades, but they have not generally gone down. The largest difference has to do with relative prosperity for industrial and post-industrial countries. Countries such as Japan, the UK or the US are no longer far wealthier than their neighbors. In the same way that flooding a market with a particular product reduces the value of that product, flooding the world with industrial capacity lowersthe relative value of that activity. Developing countries function as appendages to the larger economies in the world. The poor serve the needs of the wealthy. Unindustrialized countries buy goods from developed countries, or they license or copy technology and make the products themselves.

11.5.2 Space and Production

In the context of a globalized market, a factory built in one market may not built in another. This is not to say that producing goods is a zero-sum game, but there are limits to the amount of any good that can be sold. It's a valid question to ask why transnational corporations (TNCs) have bought into China at rates far greater than in Cuba, Russia, or other Communist or formerly Communist (to varying degrees) countries? There is only so much spare capacity for production in the world. If one giant country (China) is taking all the extra capacity, then there will be none left for others. FDI is simply easier in China, since there is more bang for the buck. This is largely a function of population. The population of China is roughly two times the population of Sub Saharan Africa. And China has a single political/economic running class, as opposed to 55 different sets of often fractious political classes. If the industrialization of Africa happens at all, it will occur after China and its immediate neighbors who have been drawn into its larger economic functioning have largely finished their own industrializing. An example of this proximate effect is seen in the shift of some industries from China to Vietnam and Indonesia.

China's industrialization had to do with promoting itself as a huge cheap labor pool, and as a gigantic market for goods. It successfully leveraged both of these characteristics to attract foreign investment, and to gain foreign technology from the companies that have invested in producing goods there. Industrialization overall seems to have slowed. The speed at which China industrialized has not been matched by other countries following China. One current idea is that the world is in a race between industrial expansion and rapid over capacity of production. In other words, the reason that industrialization isn't expanding as rapidly as before is that we are already making enough goods to satisfy demand. Remember that goods require demand. Unsold goods don't produce any income. If the factories in the world are already producing enough, or even too much, then new factories are much less likely to be built. Technological advances and the massive industrialization of China might have ended the expansion of industry.

It also appears that the highest levels of manufacturing income are well in the past. According to economist Dani Rodrik, the highest per capita incomes from manufacturing occurred between 1965 and 1975, and has fallen dramatically since then. This is even considering inflation. Many countries industrializing now only see modest improvements in income. This is related to supply and demand. When there are fewer factories, they make comparatively more money. When factories are everywhere, they are competing with everyone.

11.5.3 Trade

Even more than expansion of industrial production, the world has seen an expansion of trade. Global trade has produced an intricate web of exchanges as products are now designed in one country, parts are produced in 10 others, assembled in yet another country, and then marketed to the world. Consider something as complex as an automobile. The parts of a car can be sourced from any of dozens of countries, but they all have to be brought to one spot for assembly. Such coordination would have been impossible in the past.

Individuals can buy directly from another country on the internet, but most international trade is business-to-business. TNCs are able to conduct an internal form of international trade in goods that can be moved and produced in a way that is most advantageous for the company. Tax breaks, easy credit and banking privacy laws exist to siphon investment from one place to another.

Because of global trade, improvements in communication and transportation have enabled some companies to enact just in time delivery, in which the parts need for a product only arrive right before they are needed. The advantage of this is that a company has less money trapped in components in a storage facility, and it becomes easier to adjust production. Once again, such coordination at a global scale was not possible even in the relatively recent past.

11.5.4 Deindustrialization

Historically industrialized countries were the wealthy countries of the world. Industrialization, however, is now two centuries old. In the last decades of the twentieth century, deindustrialization began in earnest in the United Kingdom, the United States, and many other places. Factories left and the old jobs left with them. Classical economics holds that such jobs had become less valuable, and that moving them offshore was a good deal for everyone. Offshored goods were cheaper for consumers, and the lost jobs were replaced by better jobs. The problem with this idea is that it separates the condition of being a consumer from the condition of being a worker. Most people in any economy are workers. They can only consume as long as they have an income, and that is tied to their ability to work. Many workers whose jobs went elsewhere found that their new jobs paid less than their old jobs.

11.5.5 What Happens After Deindustrialization?

The simple answer to the above question is this. The service economy happens! As manufacturing provides fewer jobs, service industries tend to create new jobs. This is a very delicate balance, however. If you are a 50-year old coal minerwhose job has been eliminated by automation, it is very difficult for you to simply change jobs and enter the ‘service sector’. This transition is very damaging to those without the right skills, training, education, or geographic location. Many parts of the American Midwest, for example, have become known as the “rust belt” as industrial facilities closed, decayed, and literally rusted to the horror of those residents who once had good jobs there. The city of Detroit, for example, lost nearly half of its urban population from 1970-2010. Meanwhile the state of Illinois loses one resident every 15 minutes as job growth has weakened in the post-industrial age. However, job growth and productivity in the service economy have strengthened and provide more job opportunities today than the industrial era ever did in the U.S.

There are 3 sectors to every economy:

1. Primary (agriculture, fishing, and mining)
2. Secondary (manufacturing and construction)
3. Tertiary (service related jobs)

The vast majority of economic growth in the post-industrialized world comes in the tertiary sector. This doesn’t mean that all tertiary jobs pay well. Just ask any fast-food worker if the service sector is making them rich! However, service sector jobs are very dynamic and offer tangible opportunities to millions of people around the world to earn a living providing services to somebody else. We can further break down the service sector into 1) public (the post office, public utilities, working for the government) 2) business (businesses providing services to other businesses) 3) consumer (anything that provides a service to a private consumer e.g. hotels, restaurants, barber shops, mechanics, financial services). Traditionally, service sector jobs worked very much like manufacturing jobs in that employees worked regular hours, earned benefits from the employer, gained raises through increased performance, and went to work somewhere outside of their home. Many service jobs in the 21st century, however, have been categorized as the **gig economy**, in which workers serve as contractors (rather than employees), have no regular work schedules, don’t earn benefits, and often work in isolation from other workers rather than as a part of a team. Examples of ‘jobs’ in the gig economy include private tutor, Uber/Lyft driver, AirBNB host, blogger, and YouTuber. Work, in this economy, is not necessarily bound by particular places and spaces in the way that it did in manufacturing. Imagine a steel worker calling in to tell his/her boss that they’re just going to work from home today! Even public schools have adapted to this model in the following manner. As schools cancel class due to weather, the new norm is to hold class online, whereby students do independent work submitted to the teacher even though nobody is at school. As such, some workers are freed up from the traditional constraints of time and place and can choose to live anywhere as long as they maintain access to a computer and the Internet. Services like fiverr. com facilitate a marketplace for freelance writers compose essays for others or for graphic artists to sell their design ideas directly to customers without every meeting one another.

The global marketplace continues to be defined as a place where the traditional relationships between employer and employee are changing dramatically. A word of caution is necessary here, however. As many choose to celebrate the freedom that accompanies flexible work schedules, there is also a darker side in that the traditional 'contract' and social cohesive element between workers and owners is very much at risk. One defining factor of the 20th century was the development of civil society that fought for and won a host of protective measures for workers, who otherwise could face abusive work conditions. Child labor laws, minimum wage, environmental safety measures, overtime pay, and guards against discrimination were all based upon an employer-employee relationship that seems increasingly threatened by the gig economy. Uber drivers can work themselves to exhaustion since they are not employees. AirBNB hosts can skirt environmental safety precautions since they do not face the same safety inspections required at hotels. These are just a few examples, but they are very worth consideration. Regardless of the positives and negatives, the new service economy is having a transformative effect upon all facets of society. Although, the authors of this textbook are all geography professors with PhD's from a variety of universities, perhaps the next version of this textbook will simply draw upon the gig economy to seek the lowest cost authors who are willing to write about all things geographical. Will you be able to tell the difference? (We hope so!!!)

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11.6: Summary

Industrial production changed the relationship of people to their environments. Folk (pre-industrial) cultures used local resources and knowledge to hand-produce goods. Now the productions of goods and the provisioning of services can be split into innumerable spatially discrete pieces. Competition drives the costs of goods and services downward providing relentless pressure to cut costs. This process has pushed industrialization into most corners of the world as companies have looked further and further afield to find cheaper labor and materials and to find more customers. Industrialization has fueled a change in lifestyle, as goods have become cheaper, they have become more accessible to more people. Our lives have changed. We now live according to a schedule dictated by international production.

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11.7: Key Terms Defined

Back office services – interoffice services involving personnel who do not interact directly with clients.

Break-of-bulk point – point of transfer from one form of transport to another.

Bulk reducing – industrial activity that produces a product that weighs less than the inputs.

Commodification – The process of transforming a cultural activity into a saleable product.

Containerization – transport system using standardized shipping containers.

Deindustrialization – process of shifting from a manufacturing based economy to one based on other economic activities.

Economies of scale – efficiencies in production gained from operating at a larger scale.

Footloose capitalism – spatial flexibility of production.

Fordism – rational form of mass production for standardizing and simplifying production.

Gig economy – a labor market characterized by freelance work.

Globalization – the state in which economic and cultural systems have become global in scale.

Intermodal – transportation system using more than one of transport.

Just in time delivery – manufacturing system in which components are delivered just before they are need in order to reduce inventory and storage costs.

Locational criteria – factors determining whether an economic activity will occur in a place.

Logistics – the coordination of complex operations.

Outsourcing – shifting the production of a good or the provision of a service from within a company to an externals source.

Offshoring – shifting the production of a good or the provision of a service to another country.

Supply chain – all products and process involved in the production of goods.

Taylorism – the scientific management of production.

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11.9: Endnotes

1. Data source: World Bank. https://tcdata360.worldbank.org

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12: ENVIRONMENT AND RESOURCES

Learning Outcomes

- Understand: the problems associated with the demand for nonrenewable energy resources and the available supply.
- Explain: the issues associated with the pollution of air, land, and water.
- Describe: the types of renewable and alternative energy resources and global initiatives to leverage these resources.
- Connect: preservation efforts worldwide to anthropogenic pressures on the environment.

12.1: Introduction

12.2: Nonrenewable Energy Resources

12.3: Renewable Energy Sources

12.4: Pollution

12.5: Preservation of Natural Resources

12.6: Key Terms Defined

12.7: Works Consulted and Further Reading

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12.1: Introduction

A discussion of resources makes an excellent capstone for this textbook, as most major topics that have been discussed previously relate to the consumption of resources in some way. Global *population* increase means a greater demand for resources. Job opportunities in fossil fuel mining and drilling are a significant pull factor for *migration* in many countries where fossil fuel extraction is an important part of the economy. *Cultures*, and their associated *political* and *economic* systems and *settlements,* affect and are affected by the availability of resources and how resources are used in a country. For example, as discussed in Ch. 9, the availability of coal in the United Kingdom helped bring about the *industrial* revolution in that country. Furthermore, as *developing* countries modernize, their energy needs for transportation and electricity grow, and there is a continued increase in the demand for such energy sources as fossil fuels.

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12.2: Nonrenewable Energy Resources

Fossil fuels are by far the most significant energy source for most countries worldwide, and these resources are **nonrenewable**, or in finite supply. Fossil fuels are burned in electric power plants, and provide energy to power vehicles, aircraft, and ships. While the technology exists to burn fossil fuels in power plants so that the emissions are not particularly significant in terms of air pollution, air quality reduction because of the combustion of fossil fuels is still considerable and is a cause for concern at the international level.

The major fossil fuels are coal, oil, and natural gas. **Fossil fuels** are formed from ancient living matter. In the case of coal, this fossil fuel was likely formed from primordial plant material in swamps that was buried and metamorphosed through time. The origin of oil and natural gas is attributed to microscopic organisms that sank to the bottom of prehistoric oceans and over time, transformed into these two fossil fuels.

The countries that hold the greatest share of fossil fuel **proven reserves**, or deposits that can be recovered with some certainty, are varied. For coal, the United States has the largest reserves, followed by Russia and China. In the case of oil, the vast majority of proven reserves are located in the Middle East in countries like Saudi Arabia (with the largest reserves) and Canada. Other countries that hold substantial reserves include Iraq and Venezuela. Lastly, for natural gas, Russia and the Iran have the largest reserves. These statistics do not take into account **potential reserves** of fossils fuels, or fossil fuels that may be exist but have not been definitively verified. One example of potential reserves in the United States is the Green River Formation in parts of Colorado, Utah, and Wyoming. This large deposit of shale rock may contain up to three trillion barrels of oil, only half of which is recoverable (7). 1.5 trillion barrels of oil, though, is roughly equivalent to the entire world's proven oil reserves. The Green River Formation is not likely to be tapped because of complications associated with extracting oil from the rock, as the process would require heating the rock and using significant quantities of water in a rather arid region. Another example of potential reserves is the deposits of oil and gas in the Arctic, a region that has not been extensively explored, but the melting of sea ice caused by rising temperatures in the Arctic is increasing opportunities for experimental drilling.

The countries that have the largest reserves are not necessarily the countries with the leading amount of fossil fuel production. **Production** refers to the extraction of fossil fuels from the Earth by drilling and mining. The leading coal producers are China, India, and the United States, largely because of significant demands for electric power. Saudi Arabia, Russia, and the United States currently lead the world in oil production. Natural gas is extracted most heavily in the United States and Russia.

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12.3: Renewable Energy Sources

Fossil fuel resources are finite, so efforts to seek other types of energy resources are ongoing in many countries around the world. Because fossil fuels are not limitless, some researchers are concerned that supply will eventually exceed demand, particularly as developing countries increase economically and technologically. Moreover, as we will see in a later section on pollution, the emissions from the burning of fossil fuels are a serious concern for the global atmosphere, and clean energy is seen as a better alternative to coal, oil, and natural gas.

The shift away from fossils fuels involves a number of different types of renewable energy and alternative energy sources. **Renewable resources** are those that are in infinite supply. Major types of renewable energy include solar,wind, hydroelectric power, biofuels, and geothermal energy. Although the risks are considered to be significant, an alternative energy source is nuclear power, but nuclear power is not renewable as it depends on the supply of uranium. Significant efforts worldwide to harness these energy sources can be seen in many regions of the world.

For example, in Europe, a concerted effort to fund renewable energy projects has been underway since the 1990s. In 2016, wind energy overtook coal as the second largest form of power production (after natural gas) in Europe, and 80 percent of new energy projects were from renewable energy sources. France, Ireland, Lithuania, the Netherlands, and Finland all set records for windfarm installation, while Germany continues to lead in wind power. Norway and Sweden are the leading countries overall in terms of renewable energy consumption in Europe, as more than half of their energy consumption is from renewables (**Figure 13.1**).

In Asia, while China continues to build many coal-powered plants, it is investing hundreds of billions of dollars on renewable energy, more money than the United Kingdom, the United States, and Japan, combined. This development is important as China is the world's largest emitter of greenhouse gases, and this pollution may contribute to global warming. Moreover, China is already the world leader in wind power and plans to build the largest solar farm on the planet. India's goal is to produce over 50 percent of its power from renewable energy by 2027. All of these efforts require a considerable amount of capital investment to help cover the costs of the energy transformation.

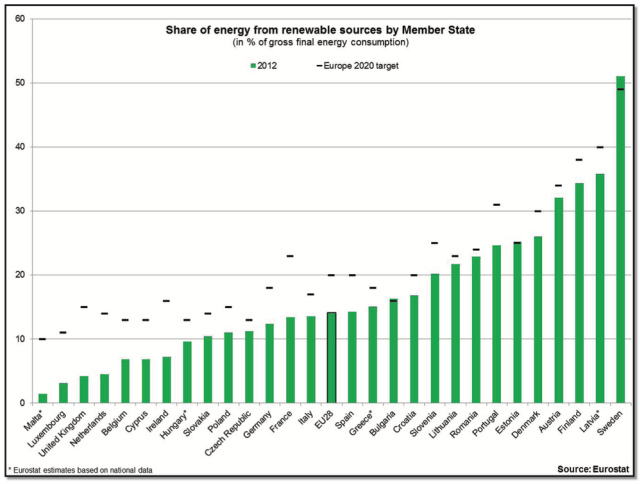


Figure 13.1 | Renewable energy for selected countries in Europe
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Figure 13.2 | The Smoky Hills Wind Farm in Kansas
Author | User "Drenaline"
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In the Middle East, even the world leader in oil production, Saudi Arabia, is looking toward renewable energy as they are expected to be a net importer of oil by 2038 as their domestic supplies dwindle. The Middle East is an excellent location for solar power because of the number of cloud-free days in a year.

In the United States, only about 12 percent of energy production is from renewables, and much of that production is from hydroelectric power. However, America has some of the largest wind and solar farms in the world. Texas leads in wind power production, and California has the most solar energy generating capacity (**Figure 13.2**). Efforts to promote electric car use have also been promoted in California, as the state government has set a goal of having 1.5 million electric cars on the road by 2025. Although using a battery to power a car instead of fossil fuels is generally environmentally friendly, electricity generated primarily from fossil fuels is still used to charge the vehicles.

One of the more controversial types of renewable energy is **biofuels**. Biofuels produce energy from living matter, and much of the biofuel used in the world is from a variety of crops such as corn, cassava, sweet potato, sugar cane, and sorghum. The United States and Brazil lead the world in biofuel production, followed by China. In the United States, most gasoline has a certain percentage of ethanol, derived from corn. The major controversy with biofuels stems from the fact that many of the plants used for biofuels could also be used to feed people, so whether or not using scarce land to produce fuel as opposed to food is a good idea is hotly debated. However, other biofuel sources exist besides agricultural crops, and these biofuels include bio-methane and even bacteria such as E. coli. In the United States, India, and Germany, methane derived from cow manure and decaying plant matter is used to power electric plants. In Gwinnett County, Georgia, methane extracted during the wastewater treatment process is used to provide electric power for the wastewater treatment process (**Figure 13.3**).



Figure 13.3 | Egg-shaped "digesters" at the Newton Creek Wastewater Treatment Plant
Author | Jim Henderson
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12.4: Pollution

13.4.1 Air Pollution

While the technology exists to burn fossil fuels so that the emissions are not particularly significant in terms of air pollution, air quality reduction because of the combustion of fossil fuels is still considerable and is a cause for concern at the international level. Another pollutant that has received worldwide attention is chlorofluorocarbons (CFCs) and their impact on the ozone layer. Water pollution and the disposal problem of solid wastes are also important environmental concerns.

One of the major issues internationally is the suspected anthropogenic, or human-caused, warming of the Earth's atmosphere because of carbon dioxide in fossil fuel emissions. The issue is complex because "climate change", as global warming has been dubbed, is affected by both natural and anthropogenic processes. A number of scientists are concerned with warming temperatures in the lower atmosphere because this warming could contribute to rising sea levels, an increase in the frequency of storms and drought, a greater number of heat injuries, and the spread of tropical pests into higher latitudes. Many climatic factors operate to affect global temperatures, so carbon dioxide produced by the burning of coal, oil, and natural gas is not the only important element that dictates temperatures worldwide. Ocean currents, shifts in large warm and cold pools of the Oceans such as El Ǹino/La Ǹina, changes in sunspot activity, photosynthesis from global plant life, the extent of global sea ice, the type and extent of global cloud cover, the natural cycling of carbon, and volcanic activity are but a few of the climate controls of global temperatures.

Despite the complexity of the Earth's climate system, many scientists attribute the slight warming (degrees C) of the average temperature of the Earth since the Industrial Revolution to increased levels of carbon dioxide, a natural component of the Earth's atmosphere. Scientists have been measuring atmospheric carbon dioxide in Hawaii since the 1960s, and the trend has been upward for virtually every year on record. The increase in carbon dioxide levels has been linked by many scientists to the burning of fossil fuels. So, how does this increase in carbon dioxide relate to warming temperatures around the globe?

Scientists suspect that a natural phenomenon called the **greenhouse effect** is related to this warming. The greenhouse effect is the trapping of long wave radiation (heat) by certain greenhouse gases in the lower atmosphere, as these greenhouse gases absorb and reradiate the heat from the Earth, essentially forming a blanket in the Earth's lower atmosphere. Without the greenhouse effect, the Earth would be over 35^{o}C cooler, and life on Earth would likely not exist. Global warming is thought to be related to the greenhouse effect because carbon dioxide is one of the many greenhouse gases that traps heat from the Earth, and by humans increasing the concentration of greenhouse gases in the atmosphere, the greenhouse effect is enhanced, leading to increased warming above and beyond the "natural" effect (**Figure 13.4**).

International efforts to curb emissions of anthropogenic carbon began in earnest with the Kyoto Protocol in 1997. This agreement, signed and ratified by many countries around the world, sought to establish goals whereby countries would reduce their greenhouse gas emissions. The U.S. never ratified the treaty, particularly because India and China, two of the world's biggest producers of carbon dioxide, were not required to reduce their emissions. However, the U.S. and other countries have continued their dialogue about lowering emissions, and the recent Paris Climate Summit is 2016, signed by 194 countries (5), is the newest plan for global cooperation in carbon dioxide reductions and with a goal to keep global average temperatures at less than 2o C above preindustrial levels.

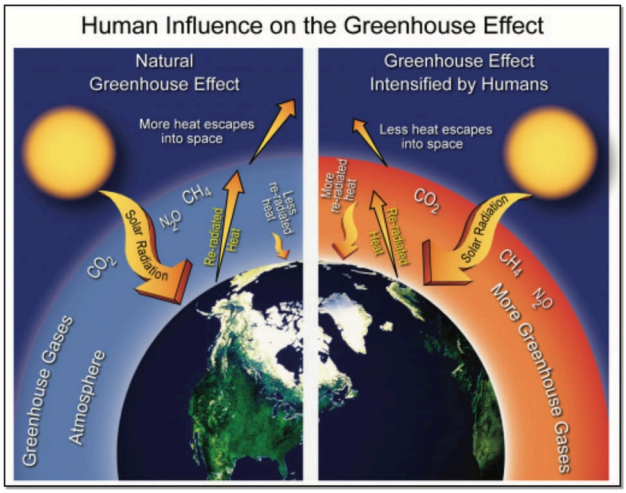


Figure 13.4 | Natural and anthropogenically-forced greenhouse effect
Author | National Park Service and U.S. Global Change Research Program
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Another example of international cooperation to decrease atmospheric pollutants involves the ozone layer. The ozone layer is in the stratosphere or upper atmosphere from 10–50 kilometers above the Earth's surface. This important layer of ozone gas protects the Earth from harmful ultraviolet radiation that can be harmful to skin by causing sunburn and skin cancer. Scientists believe that chlorofluorocarbons (CFCs), used in refrigeration equipment and aerosols, have damaged the ozone layer and caused it to become dangerously thin over some parts of the globe. This thinning of the ozone layer has been named an "ozone hole", and is most pronounced around the South Pole during the Antarctic spring (**Figure 13.5**).

In response to these scientific findings, in 1987, 105 countries signed an international agreement known as the Montreal Protocol. The participating countries agreed to reduce the consumption and production of CFCs and to cease producing CFCs by the year 2000. The Montreal Protocol process continues as countries work to find ever-better substitutes for CFCs. Although CFCs will linger in the upper atmosphere for many years, scientists have already seen some evidence of recovery in the ozone layer.

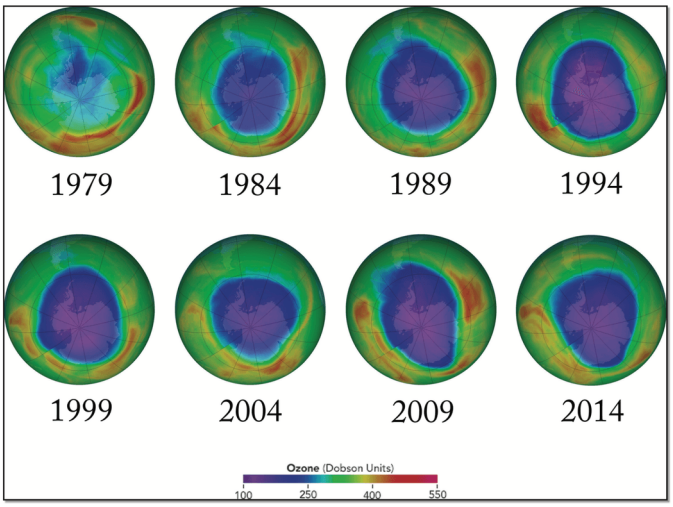


Figure 13.5 | Ozone depletion around Antarctica from 1979 to 2014
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13.4.2 Water Pollution

While air pollution of the atmospheric global "commons" is an international issue, pollution of water and land areas is likewise problematic. The supply of clean, fresh water for drinking and other uses such as irrigation is under stress as population pressure continues to increase demand. Many regions with water deficits experience periodic droughts that strain available supplies. Unfortunately, both ground and surface waters are being polluted both in the United Statesand abroad. Pollutants such as

industrial chemicals, runoff from roadways, and untreated sewage place a heavy toll on water supplies.

Not only is unclean water unsafe to drink and in some cases unfit for irrigation purposes, but pollution can also have a deleterious effect on aquatic life. Large industrial spills, discharge from paper mills, and other types of pollutants can render a lake or stream devoid of life for considerably long periods. Another type of pollutant that is of considerable concern in the United States and abroad is commercial fertilizers used in large-scale agriculture. Although it would seem that fertilizers would encourage plant growth and help aquatic ecosystems thrive, the opposite is, in fact, true in many cases. Rainfall washes commercial fertilizers into surface lakes and streams, and these fertilizers increase the growth of algae. Through a process called **eutrophication**, the abundant algal blooms die, and in the process of decomposition of the dead plant material, large amounts of oxygen are consumed. The lack of oxygen can result in extensive fish kills. One stark example of the harmful effects of eutrophication can be seen in the Gulf of Mexico. The Mississippi River carries a significant load of commercial fertilizers, and where the river discharges into the Gulf, “dead zones” form at certain times of the year. The bottom and near-bottom portions of the Gulf can become almost devoid of marine life over several thousand square miles. As a result, the Gulf of Mexico has the second largest “dead zone” of depleted oxygen area in the entire world, with the largest being in the Baltic Sea. (**Figure 13.7**).

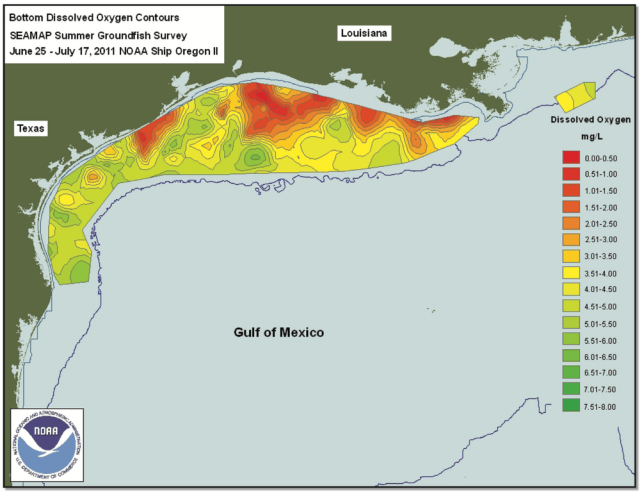


Figure 13.6 | The 2010 Dead Zone in the Gulf of Mexico
Author | NASA NOAA
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13.4.3 Solid Waste

As countries struggle to maintain clean water sources, a related problem with pollution occurs with solid waste and its disposal. Solid waste that is buried beneath the ground can, overtime, begin to pollute the groundwater below it. Water percolating downward through the rubbish can pick up harmful pollutants and deposit them in subsurface water sources. These groundwater reservoirs feed surface streams and are also tapped for well water. In the state of Florida, for example, the pollution of groundwater reservoirs, known as aquifers, is a significant issue because the state relies heavily on groundwater for its water supply.

Three primary solutions to the problem of solid wastes is disposal in landfills, incineration of the trash, or recycling. In the United States, solid waste collectors pick up trash in cities and neighborhoods and transports the waste to **landfills** where it is buried daily to decrease the pervasive odor and protect it from marauding pests. This is the most common method of dealing with solid waste in the United States, but unfortunately, as urban sprawl expands towards areas where landfills were on the periphery of populated areas, the matter of residents having to live close to landfills is problematic. Moreover, landfills require extensive areas of land, and in some states with heavy population concentrations such as New York City, government officials have resorted to shipping their refuse into adjacent states such as Pennsylvania where space for landfills is more available.

Another less common alternative to landfills is incineration, a process made famous in Disney’s *Toy Story 2* (**Figure 13.7**). At incineration facilities, trash is dumped into an enormous pile, and a claw-like machine picks up the trash and continually feeds the fire of the incinerator. The advantage of incineration is the vast reduction in the amount of trash that must be disposed of in landfills, and these facilities also generate electricity from the combustion of the burning trash. Fortunately, because of advanced technology in the smokestack systems, the emissions from modern incinerators are not particularly harmful in the atmosphere. Because of its enormous output of daily solid waste, New York City takes advantage of incineration through a facility on the

Hudson River just north of the city.



Figure 13.7 | The "Claw" moving plant waste and rubbish to incinerator
Author | Senior Airman Sam Fogleman
Source | U.S. Air Force
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The last method to deal with solid waste, recycling, is the most sustainable. **Recycling** involves the conversion of waste or other unwanted material into something that is reusable. Common wastes that are recycled include paper products, metals, plastics, and glass. In the United States, efforts to improve the percent of waste material that is recycled instead of disposed of in trash disposal units are many. For example, *Recyclemania*, started in 2001, is a nation-wide competition amongst colleges and universities to promote student knowledge and participation in recycling. Georgia Gwinnett College in Lawrenceville, GA, is one of the many competitors in *Recyclemania* every spring. Despite efforts such as these, the United States only recycles about 30 percent of solid waste, even though approximately 75 percent of the waste is recyclable. In contrast, Germany recycles about 65 percent of its municipal waste and leads the world, followed closely by South Korea at 59 percent. Germany's recycling emphasis reflects the generally strong emphasis on recycling in most European countries, thanks to rather strict recycling laws.

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12.5: Preservation of Natural Resources

Given the tremendous impact that human activities and settlements have on the environment, the question of how to preserve and protect the Earth's land areas and its resources is particularly important, especially as the global population continues to grow. Two major concepts in this effort are conservation and preservation. **Conservation** involves using the Earth's resources sustainably, which means they will be available to future generations. Ways in which conservation can be applied include not overfishing, replanting trees when they are logged, and protecting soilin farming areas from erosion. **Preservation** is the idea of protecting natural areas and trying to keep them as close as possible to their original, unspoiled state. As such, human impacts should me minimal, and resources in preserved areas are not for human use.

One of the foremost examples of preservation is the national park. The governments in nearly 100 countries worldwide have established these parks in wilderness areas where visitors can come and enjoy the scenery and the flora and fauna. The United States is a world leader in national parks, and in fact, the first national park in the world, Yellowstone, was created in the United States in 1872. However, the United States only has 59 national parks, much less than the 685 parks in Australia, the world leader in total parks. In Asia, China boasts the largest number of parks at over 200.

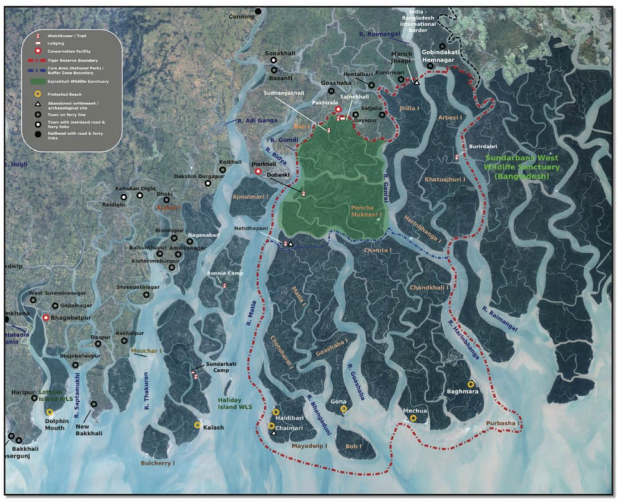


Figure 13.8 | Sundarban National Park, India
Author | User "Pradiptaray"
Source | Wikimedia Commons
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Figure 13.8 | Sundarban National Park, India
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These parks help protect some of the most vulnerable plant and animal species in the world. For example, in the coastal mangrove forests of eastern India, the Bengal tiger, an endangered species, is protected in the

Sundarban National Park (**Figures 13.8 and 13.9**). Endangered species are species that are at risk of becoming extinct, and the International Union for the Conservation of Nature is an international organization aimed at protecting habitats, such as forests, and species around the globe (website at: https://www.iucn.org/). Deforestation is one of the greatest threats to endangered species, particularly in tropical rainforests in places like the Brazilian Amazon, as depicted in Chapter 1, but also in the United States in the forests of the Pacific Northwest, for example. Thousands of endangered species exist worldwide, and in the United States, the U.S. Fish and Wildlife Service oversees the identification, protection and restoration of endangered species. The Endangered Species Act of 1973 protects vulnerable plant and animals in the United States, but the needs and demands of human development often clash with the preservation of habitat. With the world in the midst of one of the highest rates of extinction in the history of the Earth, the necessity to protect the remaining species from disappearing is a cause for alarm, both in the United States and abroad.

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12.6: Key Terms Defined

Biofuels – energy sources from living matter.

Conservation – using natural resources in a sustainable way so that they are preserved for future generations.

Eutrophication – the process by which nutrient-rich waters promote the growth of algae, and when the abundant algal blooms die, the decomposition of the dead plant material consumes large amounts of oxygen.

Fossil Fuels – energy sources such as coal, oil, and natural gas, derived from ancient plant and animal matter.

Greenhouse effect - the trapping of longwave radiation (heat) by certain greenhouse gases in the lower atmosphere; greenhouse gases absorb and reradiate the heat radiated from the Earth, increasing global temperatures by 35^{o}C compared to an atmosphere with no greenhouse effect.

Landfill – An area where solid waste is deposited and buried to reduce odor, vermin proliferation, and unsightly trash.

Nonrenewable resource – a resource that is in finite supply and is depleted by humans.

Potential reserves – estimates on available energy in deposits that are thought to exist but have not been completely verified.

Production – the extraction of fossil fuels from the ground.

Preservation – setting aside areas so that resources are essentially untouched with as little human impact as feasible.

Renewable resource – a resource that is in infinite supply such as solar and wind energy.

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