




CHAPTER 1

THE FIELD OF DEMOGRAPHY

LEARNING OBJECTIVES

- List four questions that demography can address.
 - List four social problems or policies in which the application of demography is useful.
 - Describe the two main ways to think about population change.
 - Outline the major historical patterns that have shaped population thinking and the theories that have been developed to explain these patterns.
- Describe the influence of anthropological, psychological, political, and statistical perspectives on population thinking.
 - Discuss the difference between neo-Malthusian thinking and neo-Marxist thinking about the relation between population growth and the availability of food and other resources.

 Listen to the Chapter Audio

OVERVIEW

This book examines the three major population processes: mortality, fertility, and migration. It is an introduction to the technical and substantive aspects of demography—the study of the growth and structure of human populations, with an emphasis on substantive issues.

If you look at the size of the population of a geographic area at two points in time, people are added to the original population through births and migrants into the area, and people are removed from the original population through deaths and migrants out of the area. The sum of these changes is the difference between the size of the population at the first time and the size of the population at the second time. The study of the determinants of the basic population processes of mortality, fertility, and migration is, thus, the study of the determinants of population growth and decline.

There are large differences in fertility and mortality throughout the world, and there have been large changes over time in the rate of population growth. The way that fertility, mortality, and migration interrelate to result in population change is important as a background for understanding many social,

economic, and political issues. This book concentrates on the *causes* of population processes rather than the *effects* of population processes.

The student will be introduced to several measures of each of these processes and how to interpret these measures. Technical and methodological material is examined to enable the student to understand the meaning and interpretation of the measures but without detailed consideration of the underlying mathematics and statistics. Other books focus on more technical aspects of demographic measures and methods.¹

After using this book, a student will be familiar with the major theoretical perspectives and policy controversies about demographic processes. A student will be able to read an article in a newspaper or magazine that deals with population issues and be able to understand what the issue is about, to assess the likely validity of the article, and to identify possible problems or additional considerations. A student will also be prepared to take more advanced or specialized courses related to population and to understand the importance of population considerations in fields such as sociology, economics, psychology, history, political science, and public health as well as in a wide variety of policy debates.

This first chapter discusses the nature of and the subjects in the field of demography. The “demographic perspective” is introduced. Demographic trends and problems that have focused the interest of researchers and policy makers on demography are described. The major theories and perspectives about population growth and the components of population growth—mortality, fertility, and migration—are discussed briefly.

THE STUDY OF DEMOGRAPHY

There have been many definitions of **demography**. Demography has been defined as the scientific study of human populations. Demography has also been defined as the study of the growth, structure, and composition of human populations. Often, study of the causes and consequences of the growth, structure, and composition of populations is also considered part of demography. Much of demography focuses on estimates and projections of the size and characteristics of the population and of the components of population change.²

Sometimes, people distinguish demography from population studies. Population studies is often concerned with the consequences of demographic processes, while demography is more concerned with the causes of those processes. Other people do not distinguish between demography and population studies.

The term “demographics” has been used increasingly in popular discussion: it means the most recent statistical information about a population, often with little interpretation or analysis. Most researchers and teachers of demography do not like the term “demographics.” They think it emphasizes raw data over understanding of causes, consequences, or processes.

Hauser and Bogue defined demography as “the study of the size, territorial distribution, and composition of population, changes therein, and the components of such changes.”³ Xie argued that the inclusion of “composition” and “changes therein” in this definition situates demography as the basis upon which all social science is based.⁴ Other people would not define demography quite so broadly.

Demography studies the following:

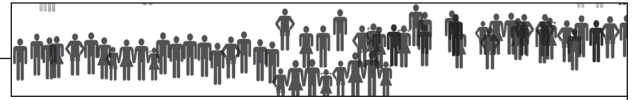
1. **Population size:** the number of people in a country, a state, a city, a region, or the world at a given time
2. **Population growth or decline:** changes in the number of people in a given geographic area over time
3. **Population processes:** fertility, mortality, and migration
4. **Factors related to population processes:** diseases and socioeconomic characteristics related to mortality, family formation, labor force participation, government policies related to fertility, differences in income and opportunities in various areas, war and immigration policies, and economic conditions motivating migration
5. **Population distribution:** geographic distribution, such as among states or between rural and urban areas
6. **Population structure:** age and sex composition, the growing proportion of the population at advanced ages, the sex ratio at birth, and the increasing proportion of the population that is female with increasing age
7. **Population characteristics:** education, income, labor force participation, marital status, and race or ethnic group membership—anything that has a value for each member of the population and does not have the same value for everyone

USES OF DEMOGRAPHY

Demographic analysis is used to address a wide variety of scientific and policy questions.⁵ Any field in which the number of people and their characteristics relate to utilization of a service, such as health care or public transport, uses the results of demographic analysis. Demography is important for estimating future school enrollment and for projecting demand for utilities and services, such as electricity and ridership on public transportation. In addition, in trying to understand the dynamics or causes of phenomena such as crime rates or educational attainment, where there is variation in the outcomes of interest by characteristics such as age, sex, education, and race or ethnicity, demographic considerations and demographic analysis are important. Often, as a first step to understanding the causes and consequences of a demographic phenomenon, it is important to actually know the magnitude of the phenomenon or the magnitude of change over time and how controlling for characteristics such as age changes the view of the situation.

Young males are more likely to commit violent crimes than women or older men. In order to understand whether the tendency to commit violent crimes has changed, it is necessary to adjust for changes in the age composition of the population.⁶ If the population has grown older, the violent crime rate will usually fall, even if the rates of criminal activity by age have not changed.

Similarly, in a country where schooling opportunities are increasing, people born later are likely to have higher educational attainment than people who were born earlier. The average educational attainment can be higher in Country A than in Country B, but the educational attainment at each age can be higher in Country B than in Country A. This can happen if Country B has a much older population than Country A. This situation is illustrated in Box 1.1, which looks at the literacy rates of people at least age 10.



BOX 1.1

A Hypothetical Example of the Effect of Age Composition on the Percentage of Literate People among Those Age 10 or Older

In this table, Country B has a higher percentage of literate people at every age than does Country A. In both countries, younger people are more likely to be literate than older people. Also, Country A has a younger population than Country B. In Country B, 31% of all persons age 10 or older are age 10–19, but in Country A, 83% of all persons age 10 or older are age 10–19. Due to the younger population of Country A than Country B, a higher percentage of people at least age 10 are literate in Country A (23%) than in Country B (20%), even though within every age group, persons in Country B are more likely to be literate than persons in Country A.

Age	Country A		Country B	
	% Literate	% of Population Age 10+	% Literate	% of Population Age 10+
10–19	25%	83%	30%	31%
20–39	15%	15%	20%	34%
40+	5%	2%	10%	35%
Age 10+	23%	100%	20%	100%

DEMOGRAPHIC PERSPECTIVES

In this section, first we discuss two different ways to think about population change. Then we give examples of the influence of the demographic perspective in various areas of social science.

Two Ways to Think about Population Change

There are two ways to think about population change: an aggregate approach and a microbehavioral approach. They are used to answer different kinds of questions.

1. **An aggregate approach:** What are the components of population change (e.g. what are the roles of births, deaths, and migration in changes in population size)?

This perspective deals with macrosocial demographic processes. It looks at how the levels of childbearing, mortality, and population movement result in the growth or decline of a population. This perspective is important for understanding when and where the population is increasing or declining.

This perspective alerted the world to the future implications of high rates of population growth in the less developed region of the world in the 1960s and 1970s. Awareness that high fertility (many more births than deaths) was the main reason for high population growth motivated the development of

family-planning programs in the less developed region of the world.

However, devising effective policies and programs to influence behavior that would lead to lower fertility depended on a microbehavioral approach (discussed next) that understood the reasons why women and couples wanted to limit the number of children they had in different circumstances.

2. **A causal or microbehavioral approach:** What are the causal factors or behavioral mechanisms that lead to the decisions that people make? What behaviors do individuals adopt to implement their decisions?

People make decisions related to fertility and migration. Individual choices and behaviors also affect the chance that a person will die. Researchers and policy makers need to understand why people have children in order to motivate people in countries with a high rate of population growth to have fewer children. In some areas, the provision of effective, easy-to-use contraceptives resulted in a rapid decline in the number of births. In other regions, the process of convincing women and couples to reduce their fertility was more complicated and required an in-depth understanding of their views of children and concerns about whether reductions in mortality in the past might be reversed in the future.

Recently, several more developed countries have become very worried as their fertility rate

has become so low that it can lead to population decline. Concern with population decline has led to a theoretical and policy debate about why people have children that is somewhat different from the debate when the concern was a high rate of population growth. Is having a child a necessary part of being an adult woman or an adult man? Are increased employment opportunities for women providing an alternative path to self-fulfillment that raising children provided in the past? Sociological and economic explanations often disagree about what policies would be most effective in maintaining or raising fertility in very-low-fertility settings.

Behaviors also influence mortality. Although people would prefer to live a longer rather than a shorter life, increasingly behaviors, such as smoking, alcohol consumption, and poor diet, affect the chances that people will die early. What motivates people to change from these unhealthy behaviors to more healthy behaviors?

Individual decisions also affect migration. Migrating to an unfamiliar setting can be a scary proposition. Why are some people willing to take this risk while others are not? What is the role of other family members in whether a person migrates? When the economy worsens or violence erupts in an area, what kind of people decide to leave while others stay?

Ecological or structural factors also influence demographic outcomes. A woman might want to limit her childbearing, but this will be difficult if no effective contraceptives are available or if there are strong family or cultural pressures against contraceptive use. A person might engage in healthy personal behaviors but will still face high mortality risks if he or she lives in a polluted environment or if clean drinking water is not available, situations over which the person or household has little control. A person might want to live a healthy life, but if racial residential segregation contributes to unclean air and a lack of social services, that person will have a difficult time remaining healthy. People might want to migrate for work and other opportunities from a poorer to a better-off country, but this might not be possible if the better-off country has restrictive immigration laws.

The Influence of the Demographic Perspective in Other Areas of Social Science

The demographic perspective has influenced the conceptualization of problems and analytic approaches in many areas of social science. Next we discuss the

influence of the demographic perspective in several areas, with examples of studies that have applied the demographic perspective.

The Demographic Perspective and Social Statistics

Much of the microbehavioral perspective in demography concerns decisions that people make given the choices or risks that they face. Not all women are able to have a second child. Naturally, only those women who have already had one child are able to have a second child. Similarly, only those who are currently married are able to be divorced.

A major part of the demographic perspective involves looking at mortality through what is called a life table. In a life table, the chance of dying at each age is considered among those who have survived to that age. For example, the chance of dying between the twentieth birthday and the twenty-fifth birthday is considered for those who are alive on their twentieth birthday. A life table looks at the chances of dying at various ages at a given point of time and calculates how many years on average a person would live if he or she were exposed to these chances in a given time and place. This approach looks at whether a particular phenomenon occurs to members of the “population at risk” of that phenomenon occurring.

The life table is discussed in detail in Chapter 4. Although often applied to mortality, the life table approach can be applied in many other areas. For example, a life table approach can be used to calculate the average number of years that a person in a population works for pay or the expected number of years that a person will remain married after marrying for the first time. The life table approach is behind the statistical methods of survival analysis and hazard analysis.⁷

The Demographic Perspective and the Study of Voting Behavior

An example from the study of voting behavior can make the “population at risk” perspective clearer.⁸ The American National Election Studies conducts a survey before each congressional and presidential election in which people are asked if they intend to vote. After the election, the survey participants are re-interviewed and asked if they actually did vote.

For many National Election Surveys, a vote validation is conducted in which survey staff check who actually voted. Almost everywhere in the United States, whether or not a person voted is a matter of public record, although, of course, who the person voted for is secret. When the vote is validated, it is possible to determine whether or not the person told the truth about their voting behavior.

Validating the vote is very expensive, since survey staff need to check local records. Thus, National Election Survey researchers wanted to know how good an indicator *reported* voting behavior was of *actual* voting behavior. If they could accept reported voting

behavior as a reasonably accurate indicator of actual voting behavior, a lot of money could be saved by not validating the vote. In this budgetary investigation of whether there needed to be vote validation, analysts looked at the proportion of those who claimed to have voted but did not actually vote or the proportion of all respondents who accurately reported their voting behavior.

Voting is normatively approved behavior. Almost no one who actually votes lies about it and says they didn't vote. In the National Election Studies, only 1% of actual voters say they didn't vote—over 90% of vote misreporters are actual nonvoters. Thus, the population at risk of misreporting their voting is not all people; the population at risk of misreporting their voting is *actual nonvoters*.

Earlier work concluded that respondent characteristics, such as education or political attitudes, were unrelated to vote misreporting. It also claimed that the only respondent characteristic related to vote misreporting was race, with *African Americans twice as likely as Whites to misstate their voting behavior*. A problem with this earlier work was that researchers were looking at all persons, both actual voters and actual nonvoters, when only actual nonvoters were at risk of misstating their voting behavior, and a higher proportion of African Americans than of Whites were actual nonvoters.

Anderson and her colleagues looked at actual nonvoters and obtained results that changed these interpretations. They found that even though more educated people are more likely to actually vote, those more educated people who *don't* vote are very likely to lie about it and say they voted. When you look at actual nonvoters, *African Americans are 20% more likely to (falsely) claim they voted than Whites—***100% more likely**. In this case, applying a demographic perspective completely changes the understanding of what was going on.

The Demographic Perspective and the Study of the Labor Force and Employment

In the study of the labor force, employment, and unemployment, one approach would be to look at the percentage of all people aged 15–64 who are working for pay. However, we know that young people often are not working for pay because they are in school, and that as people age, many withdraw from the labor force even before typical retirement age. Thus, if a population has a high proportion of members aged 15–24 or over age 50, the percentage which is working for pay will be lower than otherwise due to the age composition of the population. A demographic approach would look at how many years a person would work for pay in their entire life if the person were working for pay at each age at the rate existing in the population at that time. This could be known by applying a life table approach to

estimating the average number of years of working for pay.

Applying a demographic perspective, Smith looked at the number of years that men and women would have worked for pay over their lifetimes given the employment rates by age and sex in 1970 and 1977.⁹ She found that in both 1970 and 1977, men on average would have worked 38 years, while the number of years that women would have worked increased from 22 years in 1970 to 28 years in 1977. Her work provided a good picture of increasing female labor force participation in the United States.

The Demographic Perspective and the Study of Marriage and the Family

A population at risk demographic approach has revolutionized the study of marriage and the family.¹⁰ The only people at risk of divorce are those who are currently married. A life table approach to the study of divorce could look at the chance of being divorced before 5 years of marriage among those who were still married one year after marriage. This perspective involves a dynamic, life cycle approach that illuminates how people make decisions as they pass through their lives.¹¹

For example, Schoen and Standish used a life table approach to look at changes in marriage and divorce between 1970 and 1995. They found that women experiencing the risks of marriage, divorce, and widowhood that were present in 1970 would have married at age 22. If they divorced, it would have occurred on average at age 36, and 80% of the divorced women would have eventually remarried. Under the conditions in 1995, women would have married at age 27. If they divorced, it would have occurred at age 37, and only 69% of divorced women would have ever remarried.¹²

Bumpass and Lu used a life table approach to look at the average number of years that a child would spend in a single-parent household before age 16 in the early 1980s and in the early 1990s. They found that a non-Hispanic White child would have lived with a single parent on average for 2 years in both periods, whereas an African-American child would have lived with a single parent for 8 years before age 16 in the early 1980s but would have lived on average 10 years with a single parent before age 16 in the early 1990s.¹³

The Demographic Perspective and the Study of Organizations

The demographic perspective has also become important in the study of organizations. Just as demographers apply demographic reasoning to understand patterns of the birth and death of people, researchers in the area of organizations applied demographic reasoning to thinking about the birth and death of organizations.

Brüderl and his colleagues did a life table analysis of factors related to failure of German businesses that were founded in 1985–1986. They found that 37% of all businesses had gone out of business within 5 years. However, the more educated the founder, the less likely it was that a business would fail within 5 years. Forty-five percent of businesses where the founder had fewer than 12 years of education failed within 5 years, while only 28% of businesses where the founder had 15 or more years of education failed in the first 5 years. Also, the larger the initial capital investment, the lower the chance that the business failed, with 55% of businesses with 20,000 Deutschmarks or less (about \$11,111) in initial capital failing within 5 years, but 16% of businesses with 50,000 Deutschmarks or more (about \$28,000) in initial capital failing within 5 years.¹⁴

The Demographic Perspective and the Study of Criminology

The demographic perspective also has influenced research in the area of criminology. Pettit and Western used a life table approach to estimate the percentage of men born 1965–1969 and still alive in 1999 who had ever been incarcerated. They had survey data on rates of imprisonment by age, and they also had data on whether it was the first time the person had been imprisoned. They calculated what percentage of men would have been imprisoned at least once by 1999 if they had been exposed to the rates of first-time incarceration found in the surveys. They found that 3% of White men and 22% of African-American men born 1965–1969 would have been imprisoned by 1999. These results make clear that there are large differentials in incarceration both by race, and also by education: For men who had not attended college, 6% of White men and 32% of African-American men would have been imprisoned by 1999.¹⁵

MAJOR POPULATION PHENOMENA AND RELATED THEORIES AND FRAMEWORKS

Population theories and population policies are not created in isolation. They stem from actual population phenomena that are seen as important, in need of explanation, or problematic. Next, we look at historical patterns of population growth, mortality, fertility, and migration. In each area, after we have summarized historical changes, we look at theories and frameworks that have been developed in the given area. Often, the theories and frameworks were motivated by empirical patterns. Most of the population phenomena, theories, and frameworks are explored in more detail in later chapters.

Changes in Population Size and the Population Growth Rate

Through much of human history, the population grew slowly. Famines and wars sometimes decimated the population in a local area or, in the case of the Black Death in the fourteenth century, over a very large area.

In Europe, the population grew rapidly after 1750. This was both an opportunity and a problem. On the one hand, a growing labor force facilitated industrialization. On the other hand, the growth in the number of the poor, especially the urban poor, led to the development of competing theories about the causes of population growth and whether population growth or economic organization was the cause of poverty. The rate of world population growth increased very rapidly in the twentieth century, which led to great alarm. However, in the late twentieth century, the growth rate fell to a very low level in some highly developed countries, leading to worry about the possibilities and likely negative consequences of population decline.

Theories and Perspectives about Population Growth

Throughout the ages, many thinkers have had definite views about population growth. This thinking about population growth and population processes has been influenced by many of the phenomena discussed in this chapter. Table 1.1 summarizes various theoretical views and frameworks about population growth. The theorists and frameworks are listed chronologically in the table, although some of the discussion deals with thinkers thematically rather than completely chronologically. Some have thought that a growing population was always good for society, and the more rapid the growth, the better. Others thought that there were problems with both a rapidly growing and a rapidly declining population, but they differed regarding which they saw as the greater threat.

When thinkers and policy makers have been concerned with keeping the population from declining or from growing too slowly, this has often been expressed in **pronatalist** policies that promote fertility, whether through incentives for having children or through penalties for intentional fertility limitation. At other times, the concern has been about too-rapid population growth, and policies to limit fertility have been advocated. This section discusses positions about population growth per se. The “Changes in Fertility” section discusses theories of fertility change.¹⁶

Population Theorists and Perspectives before Thomas Malthus

The Babylonian Code of Hammurabi (2130–2088 BCE¹⁷), which is the oldest known legal code, addressed the concern to maintain a growing

TABLE 1.1 Theories and Frameworks about Population Growth

Theorist, Theory, or Framework	Date	Brief Description
Code of Hammurabi	~2100 BCE	Population growth is important for military and state power.
Confucius	~500 BCE	A large population is helpful for a productive society and would work well if the population was educated and trusted the rulers.
Plato	~400 BCE	Population should not grow or shrink rapidly. Only fit men should have children. Rapid population growth could lead to social disruption. Fertility limitation is acceptable to slow population growth.
Aristotle	~350 BCE	Population growth should be moderate. Too large a population could impair democratic government. Abortion and infanticide are acceptable means of limiting population growth.
Kautilya	~300 BCE	A large population is important for military and political reasons. Both a growing and a shrinking population create problems, but a declining population is a greater threat.
Roman rulers	~15 BCE	Population growth is necessary to produce a large army and colonists for the Roman Empire.
Ibn Khaldun	~1350	Population growth, and especially a high population density, is necessary for specialization in society.
Mercantilism	1600–1750	Population growth is essential for staffing the military and supplying colonists.
Physiocrats	~1750	A decent standard of living is important. Agriculture is an important sector, and there is a relation between agricultural production and the size of a supportable population. The solution is increasing agricultural production.
Thomas Malthus	~1800	Population grows exponentially and agricultural output linearly, so population growth must be curbed. If this is not done through reduction in fertility, mortality will increase. The only acceptable way to limit fertility is by premarital celibacy and postponement of marriage until a family can be supported.
John Stuart Mill: utilitarianism	1848	A societal goal should be the maximization of happiness, and overpopulation is a serious threat to this. Fertility limitation is acceptable.
Karl Marx	~1870	Poverty and inequality in distribution of resources are the problems, rather than population growth. There is no reason why agricultural output cannot increase more rapidly than linearly.
Émile Durkheim	1893	Specialization in society is desirable, and it is facilitated by population growth and, more specifically, a high population density.
Joseph Spengler: fear of population decline	1938	Further population decline in Europe was inevitable with bad consequences. Selfishness of low-fertility women was one cause.
Development economists and many international organizations	1960s and later	Continued high population growth rates in less developed countries would make economic development and goals such as universal primary education impossible to achieve.
Kingsley Davis: Theory of Demographic Change and Response	1963	Under pressures resulting from population increase, people have a variety of possible responses, including migration, abortion, and infanticide in addition to postponement of marriage, sterilization, and contraception.
Paul Ehrlich: <i>The Population Bomb</i>	1968	World disaster would result if population growth rates did not decline.
Club of Rome: <i>The Limits of Growth</i>	1972	This is a Malthusian analysis of the relation between population and agricultural output.
Fear of depopulation in developed countries	~2000	Very low fertility in highly developed countries, such as in Western Europe and Japan, could continue and lead to population decline with bad results.
Global warming concerns	~2005	Since global warming is mainly the result of human activity, overpopulation is a major cause of global warming.
Sustainability concerns	~2010	Population growth is a major threat to sustainability, and a lower rate of population growth or population decline would be desirable.
Craig Gurian	2012	Developed countries should be concerned about population growth. The labor problem in developed countries is the result of too-low wage rates for many jobs rather than a shortage of American labor.

population. Many of its provisions were explicitly pronatalist, including allowing a man to take a concubine if his wife was childless. Babylonian rulers saw a large population and a positive rate of population growth as resulting in increased state power, especially as reflected in the size of the army that could be raised. Pronatalist government policies have been motivated by military concerns up to recent times.

Plato (427–347 BCE) thought that both a rapidly growing and a rapidly shrinking population presented problems, and he supported fertility control. He had eugenic views, believing that only fit men, especially warriors and philosophers, should be allowed to have children. He thought that since the amount of resources available in society was limited, population size needed to be limited. He was somewhat worried that population growth could lead to social disruption, and he saw emigration (out-migration) and colonization as possible ways to remove excess population. Plato also thought that population decline could be injurious to society. In the case of population decline, he supported pronatalist policies that rewarded those with many children and thought that immigration (in-migration) might be a good idea.

The willingness of Plato to adopt strong policies to encourage a slowing or increasing of the rate of population growth as needed is consistent with the positions of countries later in history. In Chapter 9, policies in Singapore are discussed. In Singapore, when population was seen as growing too rapidly, strong fertility limitation policies were implemented; later, when population decline was a concern, pronatalist and semi-eugenic policies were implemented that encouraged increased fertility, especially among college-educated women.

Aristotle (384–322 BCE) also thought that population size should be limited, although he was not as concerned with this as Plato was. He worried that if the population grew rapidly and adequate resources were not bequeathed to children, then social disorder and revolution might result. He also worried that if the population grew too large, Greek democratic government could not function adequately. The main methods of population limitation that he advocated were abortion and exposure (infanticide) of children with disabilities or deformities.

Roman rulers also saw a growing population as a social benefit. The need for a large Roman army and the Roman colonial policies called for an ever-increasing number of people. Pronatalist laws that encouraged marriage among the upper classes were implemented in 18 BCE and again in 9 BCE.¹⁸

The value of a growing population was also recognized by Asian thinkers. Confucius in China saw a large population as helpful for a productive society, but he was also concerned that the population

needed to be well educated and have confidence in their rulers. Kautilya, who lived in India in about 300 BCE, saw population growth as important to the state for political, economic, and military reasons. Although he recognized that too many people and too high a rate of population growth could be problems, he also thought that too small a population and a negative growth rate were more serious threats than high population growth.¹⁹

Ibn Khaldun was a Tunisian historian who lived 1332–1406. He had complicated views of population growth that echo those of more modern thinkers. He thought that specialization in society was essential for prosperity. He pointed out that the key to specialization was high population density rather than a high population growth rate, but he saw high density as resulting from population growth. His views were precursors of Émile Durkheim's ideas about the importance of specialization in society.²⁰

Mercantilism was an economic doctrine and philosophy that was very important in Western Europe from the sixteenth through the eighteenth centuries. It saw international conflict and war as a normal state of affairs. Foreign trade and military power were seen as the key aspects of national power. Economic growth was seen as the result of the exploitation of natural resources from colonies, preferably helped by monopolies over every market possible. To provide soldiers and colonists, a high rate of population growth was seen as essential.

One manifestation of mercantilism was the triangle trade (also called the “triangular trade”), in which textiles, rum, and other manufactured goods went from Europe to Africa; slaves went from Africa to the Americas; and sugar, cotton, and tobacco went from the Americas to Europe. A schematic representation of the triangle trade is depicted in Figure 1.1.²¹

After the mid-eighteenth century, the physiocrats arose, mainly in France. They criticized the mercantilist neglect of agriculture, and they rejected the idea that state power should be pursued for its own sake. They argued that the population's welfare

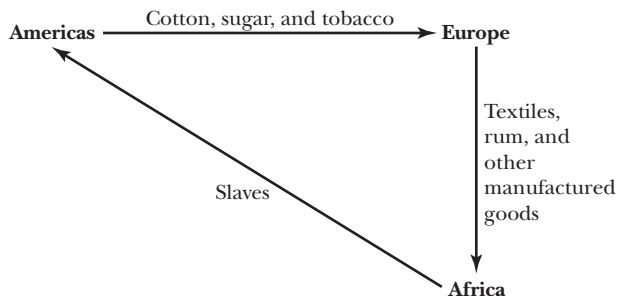


FIGURE 1.1 A Schematic Representation of the Triangle Trade

and the achievement of a decent standard of living for all people should be among society's goals. The physiocrats recognized a relation between agricultural productivity and the size of the population that could be supported, but they thought this problem should be solved by increasing agricultural productivity rather than by limiting population growth. However, the connection in people's minds between agriculture and population paved the way for Malthus, which is discussed next.

Malthusian and Marxist Perspectives on Population Growth: Arguments and Criticisms

The two main perspectives on the causes and consequences of population growth are the Malthusian perspective and the Marxist perspective. These two perspectives still influence thinking on the relation between population growth and social and economic well-being.

Malthusian Approaches to Population Growth Thomas Malthus was a late eighteenth-century minister who maintained that although population grows exponentially, food supply grows arithmetically (or linearly). He believed that poverty is the result of population growth outstripping the availability of resources, especially food. He saw the source of too-high population growth to be the absence of moral restraint. He thought that people have a natural urge to reproduce. In Malthus's view, the only acceptable way to restrict fertility was for people to remain celibate before marriage and for marriage to be postponed until the couple could afford to support whatever children resulted. Celibacy before marriage and postponement of marriage were called **preventive check** on population growth. If a preventive check was not employed, Malthus thought that population growth eventually would be curbed by a **positive check**, which was increased mortality.²² Preventive checks were also called **moral restraint**.

Various social customs have evolved consistent with the view that marriage and childbearing should be postponed until a family can be supported. Primogeniture, in which the oldest son inherits everything, promotes marriage (and childbearing) for the oldest son and a single life or postponement of marriage for other sons. The belief that a man should not marry until he had the financial security to support a family led to an advanced age of marriage in countries such as Ireland, where in 1941 34% of men and 26% of women in their late 40s had never married.²³

Polyandry, in which one woman has two or more husbands, has long been reported in some areas of northern India and Tibet. One explanation for this practice is a Malthusian argument. The areas in which polyandry is practiced have low levels of agricultural productivity, and a high rate of population

growth would soon exhaust resources. With more than one man for each woman, marriage can occur early, but fewer children are born than would have occurred with one husband for each wife and a similar early age at marriage. Recently in these areas, it is reported that polyandry has started to disappear.²⁴ The explanation seems to be that the economy has become more diverse and incomes have risen, which has allowed each man to have one wife.²⁵

By about 1800, some neo-Malthusians came to the view that birth control measures are appropriate checks on population growth. By the twentieth century, almost all Malthusians came to see contraception as acceptable. John Stuart Mill, who lived in the nineteenth century, was among the neo-Malthusians who supported the use of birth control. Mill was in the utilitarian philosophical tradition, which maintains that the right thing to do is that which maximizes happiness in society, and the worth of an action cannot be assessed until the consequences of that action are known. He thought that overpopulation was a serious threat to prosperity and human happiness and saw nothing wrong with the use of methods to inhibit fertility. He also thought that fear of hunger and want rather than actual hunger could motivate fertility limitation.²⁶

Malthus's views were a substantial influence on the thinking of Charles Darwin. Although Darwin is best known for his theory of natural selection, which describes how species compete and change in nature, an outgrowth of Darwin's thought was **social Darwinism**. Social Darwinism is the following position:

There are underlying, and largely irresistible, forces acting in societies which are like the natural forces that operate in animal and plant communities. One can therefore formulate social laws similar to natural ones. These social forces are of such a kind as to produce evolutionary progress through the natural conflicts between social groups. The best-adapted and most successful social groups survive these conflicts, raising the evolutionary level of society generally (the "survival of the fittest").²⁷

Although Malthus's writings directly addressed overpopulation, Malthus's work has often been interpreted as a concern with rapid population growth among the poor. The English Poor Laws were designed to some extent to improve the situation of the poor. Malthus was a strong critic of the modest Poor Law provisions because he thought that they simply encouraged poverty and lack of productivity, thus increasing population growth among the poor and exacerbating general overpopulation and other social problems.

One outgrowth of Malthus's ideas has been support of eugenic positions. **Eugenics** is "a science that

deals with the improvement (as by control of human mating) of hereditary qualities of a race or breed."²⁸ Malthus supported the idea of eugenics, but he was not sure that its implementation would be feasible. Commenting on eugenics, he wrote,

It does not . . . by any means seem impossible that by an attention to breed, a certain degree of improvement, similar to that among animals, might take place among men. Whether intellect could be communicated may be a matter of doubt; but size, strength, beauty, complexion, and perhaps longevity are in a degree transmissible. . . . As the human race, however, could not be improved in this way without condemning all the bad specimens to celibacy, it is not probable that an attention to breed should ever become general.²⁹

Eugenic views have been the motivation for many laws limiting intermarriage between racial and ethnic groups. They have also been the motivation for programs such as those by the Nazis to encourage childbearing among Aryans and discourage fertility among other groups. Eugenic positions contributed to Plato's views that only fit men should be allowed to have children and to recent fertility policies in Singapore.

In the nineteenth and early twentieth centuries, eugenic views were quite popular in the United States. Much of this was melded with views about health care and public health. In the early twentieth century, eugenic-inspired laws were passed in several states, including compulsory sterilization of patients in state mental institutions in Virginia in 1927.³⁰

Not all eugenic-based views are generally viewed with disapproval. Laws against marriage between first cousins in the United States are least partly eugenic based, because one of their purposes is to minimize the passing on of damaging recessive traits to children from both parents. Most people in the United States do not think these laws are unreasonable.³¹

General Malthusian arguments about population also continued to be strong. In 1972, the Club of Rome published *The Limits of Growth*, which is a Malthusian critique of population policies. Updated analyses were published in 1992 and in 2004.³² All of these works are based on the Malthusian assumption that population grows at a positive exponential rate, while resources, especially food, increase at a positive linear rate. With such a model, the amount growing at an exponential rate will always eventually overtake the amount growing at a linear rate.

Figure 1.2 shows the basic mechanism that concerns Malthusians. Food production and population size are shown on the left-hand axis. Food output grows linearly (in a straight line), while population grows exponentially (in an upward curving line). In

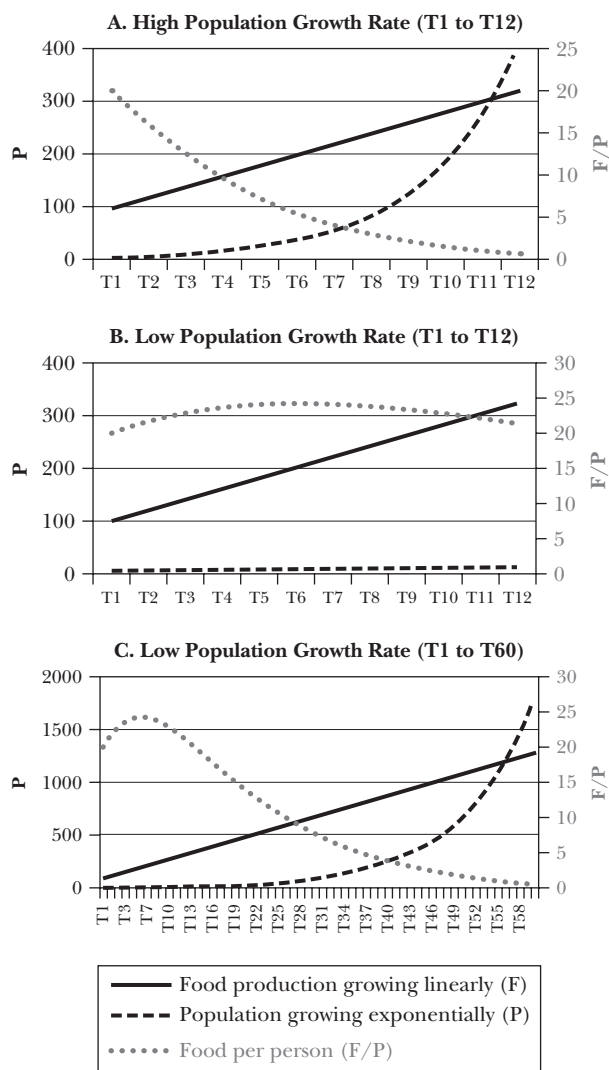


FIGURE 1.2 Food Production, Population Size, and the Food–Population Ratio

the figure, the ratio of food production to population (F/P) is also shown on the right-hand axis.

In all three panels of Figure 1.2, the line for food production is the same. Also, in all three panels, the population size at T1 is the same. Under the scenario of a high population growth rate, population grows at a higher rate than in the scenario of a low population growth rate. The first two panels show the high- and low-population-growth scenarios over a short time period, from T1 to T12. Between T1 and T12, the population size grows much less under the low-growth-rate scenario than under the high-growth-rate one. The third panel shows the low-growth-rate scenario, but over a longer time period, from T1 to T60. No matter the growth rate, as long as population is growing at a positive exponential rate and food

production is growing linearly at a positive rate, the population size curve eventually will cross the food production curve. For the high-growth-rate scenario, this occurs between T11 and T12. In the low-growth-rate scenario, the curves cross between T55 and T56.

In Figure 1.2, the values of food per person are shown on the right-hand axis. In the high-population-growth situation in Panel A of Figure 1.2, the F/P ratio declines steadily. In the low-population-growth situation, the F/P ratio increases before then declining. Panel C shows the ratio over a longer time period, from T1 to T60. It is clear from Panel B that as long as population increases at a positive *exponential* rate and food production increases at a positive *linear* rate, the F/P ratio eventually will fall below any value that one wants to specify. However, the rates at which population and food production are increasing matters a lot for how long in the future the F/P ratio will fall below any given value.

Other neo-Malthusian ideas also became prominent in the twentieth and twenty-first centuries. The neo-Malthusians generally did not oppose the use of contraception, but they saw a high rate of population growth as the most or one of the most important causes of world problems. Some of this concern was motivated by the high population growth rates in the less developed region in the 1960s and 1970s. Paul Ehrlich published *The Population Bomb* in 1968, in which he warned about worldwide starvation and social upheaval if the population growth rate did not quickly decline.³³ The family-planning efforts launched by governments and nongovernmental organizations in the 1960s and 1970s were also motivated by Malthusian concerns stimulated by very high population growth rates in some less developed countries.

Concerns about global warming have often focused on the role of population growth in the production of greenhouse gases and have seen a lower population growth rate and a smaller world population as one solution to these problems.³⁴ Related to global warming concerns are concerns about population sustainability, in which it is often argued that a nonincreasing or decreasing world population would facilitate sustainable practices.³⁵

Marxist Approaches to Population Growth Karl Marx had a very different explanation of population growth than Malthus. Marx saw the basis of capitalism as the profit that the owner makes from the surplus value of the worker's productivity, which is the difference between the true value of the worker's activities and the wage paid to the worker. Thus, his view was that the source of poverty was not a high rate of population growth but, rather, was inequality in the distribution of resources, with a small portion of the population consuming most resources, leaving little for the rest of the population.³⁶

Marx also questioned the assumption that food production could only increase linearly. He had a great deal of confidence in the potential of technological developments to increase food production, perhaps at a positive exponential rate. The Green Revolution increases in rice and wheat production, especially in Asia and Latin America, are examples of the potential for increased production of food through technological advances.³⁷ Lam has pointed to Ehrlich's dire predictions about food production in India, which was thought to have peaked in the late 1960s. Actually food production in India grew much more rapidly than had been anticipated, and in 1990 it was almost twice the level it was in 1961.³⁸ Malakoff discusses the Machakos region of Kenya, which in 1937 with a population of 250,000 was seen as disastrously overpopulated.³⁹ In 2011, the region had a population of 1.5 million and was thriving as a result of agricultural changes. Boserup argued that increased population density could lead to changes in agricultural technique that resulted in higher productivity.⁴⁰ She thought that the productivity of the land should not be viewed as a constant, while population size was viewed as variable.

In the early twenty-first century, many expressed concern about possible population decline in developed countries and saw immigration as the solution to a shrinking working-age population. At that time, a new Marxist argument emerged that developed countries such as the United States do not need population growth. Gurian argued that the United States and other developed countries should be concerned about too-high population growth. He maintained that the problem in highly developed countries such as the United States was not a labor shortage but rather was the setting of too-low wage rates for many jobs, which meant that citizens of the developed countries would not take the jobs, and only immigrants from very low-wage-rate, less developed countries would be willing to do these jobs for the pay that was offered.⁴¹

Other Important Thinkers about Population Growth

Durkheim wrote in the late nineteenth century. He saw societies as going through various stages. He saw progress as occurring through increased specialization in society, which was facilitated by an increasing population and a high population density.⁴² His ideas harked back to those of Ibn Khaldun.

Spengler was worried about incipient population decline in Europe, especially France. In 1938, he wrote,

Within the next quarter century true depopulation—a persistent long-run excess of deaths over births—will manifest itself in nearly all the countries of Europe and in those non-European countries to which Western civilization has spread.⁴³

These fears were triggered by very low fertility in France during the Great Depression. Spengler despaired that long-term population decline could be avoided. The population of France had declined during World War I, which people thought was understandable. The French population increased slowly from 1920 through 1934 and then again began to decline due to reduced fertility. Spengler attributed low French fertility in the 1930s to a combination of Malthusian fears about the economy and selfishness or egoism on the parts of women who did not want to occupy themselves with the tasks of motherhood. Thus, Spengler thought that a higher rate of population growth was desirable due to fear of massive population loss rather than a desire to produce an excess of persons for an army or colonization.

Davis proposed the **Theory of Demographic Change and Response**. He thought that people's behavior is affected by population growth, especially problems that accompany a high rate of population growth, but he thought that people have a variety of ways in which they can respond in addition to postponing marriage or adopting contraception. Possible alternative responses include using abortion, becoming sterilized, committing infanticide, and migrating. Which response is chosen depends on the socioeconomic conditions at the time and the individual or household's characteristics.⁴⁴

With falling fertility in many developed countries, fears of depopulation and its possible dire consequences have reemerged, similar to the concerns of Spengler in the 1930s. Concerns about depopulation have been linked to the fact that in low-mortality populations, a lower growth rate or a negative growth rate leads to a much older age distribution.⁴⁵ Japan has the oldest population in the world, and by 2015 the Japanese population is expected to decrease in size. That country is already facing severe social strains stemming from the high proportion of the population comprised by the elderly.

Changes in Mortality and Disease

Through much of history, periods of fairly constant mortality risks were punctuated by spurts of greatly increased mortality, called mortality crises. These crises could be caused by famine, an epidemic, or war. Gradually, these crises became less frequent, and the mortality risks that people faced became somewhat more predictable.

The growth of the European population after 1750 was mainly due to a decline in the death rate that accompanied the Industrial Revolution. Various views of the causes of this mortality decline are still debated. There is still disagreement about the

role of an improved standard of living, manifested in better nutrition, public health advances such as improved sanitation and clean drinking water, the development of vaccines, and changes in curative medical care, in mortality decline in historical Europe.

Since World War II, mortality has declined in most of the less developed region of the world, leading to increased growth rates. Mortality has declined mainly from infectious diseases, such as malaria and measles, aided by vaccines from the more developed countries.

In the more developed countries, deaths are increasingly concentrated at advanced ages. The causes of death have shifted from infectious diseases to noncommunicable causes of death such as heart disease and stroke. Unhealthy behaviors, such as smoking, obesity, and excessive alcohol consumption, are major factors in death from these noncommunicable diseases. In developing countries, these unhealthy behaviors have increased, leading to increased concern about the development of obesity, hypertension (high blood pressure), and high cholesterol.

As mortality has declined, the average age of death has increased to the point where in many more developed countries, almost all deaths occur at advanced ages. With low mortality in developed countries, although people can die from chronic conditions, such as emphysema or Alzheimer's disease, they also can live for many years without functioning fully and thus pose a substantial burden on relatives and society. This has led to interest in healthy aging in an effort to decrease the number of years that people live in a dependent state. This is discussed more in Chapter 7.

Mortality Theories and Perspectives

Discussions about mortality have not debated whether death is a good or a bad thing. Rather, they have focused on whether the causes of disease and death were supernatural, biological, or social. Table 1.2 indicates some of the major theories and perspectives about disease and mortality over time.

The Struggle for a Scientific Understanding of the Causes of Disease

In ancient times, it was commonly believed that disease and death were supernaturally caused, whether through the arbitrary act of a spirit or god or as punishment for some misdeed. Hippocrates, in about 400 BCE, stated that disease was naturally caused, a point of view that has strongly influenced medical practice to the present day. He saw disease as the result of an imbalance in the body of four humors. The idea of imbalance of humors as a cause of

TABLE 1.2 Theories and Perspectives about Disease and Mortality

Theorist, Theory, or Framework	Date	Brief Description
Supernatural causes of disease	From ancient times	Disease and death are caused supernaturally or by evil spirits.
Hippocrates: natural disease causation	~400 BCE	Disease is naturally caused, often as a result of the mixture of different humors in the body.
Girolamo Fracastoro: contagion theory of disease	1546	Many diseases are caused by transmission from one ill person to another.
Miasma theory of disease	Ancient times to mid-19th century	Many diseases are caused by a miasma or mist, often from decomposing materials.
Louis Pasteur, Joseph Lister, and the germ theory of disease	~1870	Many diseases are caused by microorganisms, and the disease can be countered by attacking the disease-causing organism. This view also led to the promotion of greater hygiene during surgery.
Allopathic view of medical care	Mid-19th–20th centuries	The way to treat a disease or injury is through focus on the specific problem with little attention to other aspects of the person's health or life.
Homeopathic view of medical care	Mid-19th–20th centuries	A person's health, including recovery from a specific disease or injury, is linked to all other aspects of the person's health and life.
World Health Organization's definition of health	1946	Health is defined as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.
Thomas McKeown	1976	Improvements in nutrition and the standard of living are seen as the main causes of mortality decline in Western Europe from the 18th through the early 20th centuries.
Davidson Gwatkin	1980	People in less developed countries are vulnerable to any new disease if they do not have a good nutritional state and thus are not very hardy.
Fries: compression of morbidity	1983	As the age at death increases, the age of onset of disability or dependency also increases.
Global Burden of Disease Project	1990	This project estimates the roles of diseases and injuries and of risk factors in death and disability for countries by income level and region.
Resurgence of homeopathic medical care	1993	This is recognition of some increase in a holistic or integrative care approach in medical care and in integration of social scientific and biomedical perspectives in explanations of disease and death.
Bruce Link and Jo Phelan: fundamental causes of disease approach	1995	Social factors are often the root causes of diseases and chronic conditions that lead to disability or death.

disease was important in Western medicine until the mid-nineteenth century and was the rationale for bleeding a sick person (also known as “bloodletting”). Girolamo Fracastoro, an Italian physician and scholar, wrote in 1546 that “such things as clothes, linen, etc., which although not themselves corrupt, can nevertheless foster the essential seeds of the contagion and thus cause corruption.”⁴⁶ He was the first person to describe how infectious diseases are transmitted in a manner that is consistent with modern understandings.

The miasma theory of disease claimed that bad air or bad humors caused disease. As mentioned, it was popular from ancient times through the mid-nineteenth century. The contagion theorists and the miasma theorists were often in conflict, with contagion advocates saying that disease transmission had to be through contact, while miasma adherents saw transmission as occurring through the air. When John Snow demonstrated in 1855 that cholera was transmitted through contaminated water, he was

on one side of an argument in which the other side maintained that cholera was transmitted through “bad air,” or a miasma. Snow’s work is discussed more in Chapter 5.

Since some diseases are airborne, miasma theory was not totally wrong. One of the major contributions of miasma theory was that it was a motivation for public health efforts that led to improvements in sanitation. Many of these efforts were aimed at reducing or eliminating bad smells.⁴⁷

The germ theory of disease brought together contagion theory and miasma theory. The germ theory of disease contended that many diseases are caused by microscopic organisms. Two of the main proponents of the germ theory were Louis Pasteur and Joseph Lister. Even though the germ theory was proposed in the last half of the nineteenth century, it took some time for its recommendations regarding disease transmission and sanitary conditions for surgery to have a major effect on medical practice.

Biomedical and Social Scientific Perspectives: The Disease, the Whole Person, and Population Implications

In the early twentieth century, there were major conflicts between two approaches to medical treatment. One was the allopathic approach, which was based on the germ theory of disease view that each disease or ailment had a specific cause. This approach contended that the way to treat an afflicted person was to address the specific cause of the person's ailment. The other was the homeopathic approach. Adherents of the homeopathic approach accepted the germ theory of disease, but they thought that other aspects of a person's situation and health also affected a person's recovery. The allopathic approach saw treating a broken arm as treating the arm in isolation, while the homeopathic approach saw the recovery of a person with a broken arm as affected also by the patient's state of mind and the other health problems that the person might face.⁴⁸

In the late nineteenth century in the United States, both approaches to medicine were popular. The Rockefeller Foundation commissioned Abraham Flexner to make a study of American medical schools, both those that applied the allopathic approach and those that applied the homeopathic approach. The Flexner Report was published in 1910 and was very critical of homeopathic medicine. As a result of this report, many homeopathic medical schools were shut down. By the 1920s, the allopathic approach almost completely won out over the homeopathic approach in American medicine. Some have contended that the findings of the Flexner Report were predetermined in collaboration with the allopathic medical community.⁴⁹

Recently, there has been increased interest in and recognition of the value of homeopathic medical care, also called integrative, holistic, or complementary and alternative medicine. In 1993, a *New England Journal of Medicine* article pointed out that, based on a telephone survey in 1991, 34% of American adults used one of these homeopathic-based therapies.⁵⁰ A study in 2007 found that 38% of American adults used one of these therapies, and people who had more education were more likely to use one of these therapies.⁵¹ Allopathic medicine has increasingly integrated these alternative approaches, especially in areas such as pain management.⁵²

Many medical practitioners have thought that the World Health Organization (WHO) definition of health is too broad and gives too much consideration to nonbiological factors. WHO defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."⁵³ This definition of health includes the role of the social and physical environments in which a person is situated. Demography and social science have

viewed consideration of the social environment and behaviors that people engage in as an important part of the explanation of disease and mortality. Social scientists have been supportive of the WHO definition. As discussed in Chapters 5–7, health behaviors and other social factors, including the social environment in which people function, are increasingly thought to explain mortality differentials, especially in more developed countries.

Even as vaccines for diseases reduced mortality from specific causes, Gwatkin was concerned that the mortality gains in less developed countries could be reversed if the people being vaccinated still did not have good nutritional status, and if they were not harder than people in their countries had been in earlier times. He thought that if they had poor nutrition, they were vulnerable to any new disease that might come along. He was criticizing the allopathic medical approach that addressed the threat of each individual disease, without sufficient concern with the overall healthiness of the person.⁵⁴ Gwatkin wrote before the HIV epidemic, but the more rapid death of HIV-positive people who are poorly nourished is consistent with his concerns.

Link and Phelan developed the **fundamental causes of disease approach**, which views social conditions, poverty, and socioeconomic characteristics as the underlying causes of disease and death.⁵⁵ Hypertension and high cholesterol contribute to disease or death in the fundamental causes of disease approach, due to the social conditions that lead to hypertension and high cholesterol. For example, being obese contributes to hypertension and in turn to a wide variety of diseases and causes of death. However, eating healthy food, which could reduce the risk of obesity, is related to the cost of those foods and their availability. People who live in poor areas often have less access to fresh and nutritious food, and, when available, these foods are often more expensive than in better-off neighborhoods. Thus, poverty and living in a poor area contribute to obesity, which in turn has negative consequences. In the view of the fundamental causes approach, focusing only on directly treating hypertension or high cholesterol is shortsighted and does not address the roots of the problem. Link and Phelan were mainly thinking about more developed countries, but their argument is similar to that of Gwatkin for less developed countries.

Integration of Biomedical and Social Scientific Perspectives

Many researchers have become interested in combining biological and social scientific knowledge in their explanations of mortality. For example, Kujaha and his colleagues found in a study of twins in Finland that although physical activity and

alcohol consumption affected the risk of dying, genetic differences caused lack of activity and drinking to be greater risks for some individuals than others.⁵⁶ Social surveys have incorporated physical measures, such as height and weight, and have taken biological samples, such as saliva and blood, to allow investigation of the joint behavioral and biological determinants of health outcomes. Many conditions, such as high blood pressure and type II diabetes, often have no symptoms for afflicted individuals. A biological measure of whether a person has a condition is a better indicator of the prevalence of the condition than is whether a person thinks he or she has high blood pressure (hypertension) or diabetes or whether a health practitioner has told the person that he or she has a particular condition. Those with regular health care are more likely to know whether they have a particular condition, but those without regular health care are often more likely to actually have the condition. Knowing both the actual prevalence of hypertension and how it is related to other characteristics are important. As discussed in Chapter 5, high blood pressure (hypertension) was the leading risk factor for death in the world in 2004. Although there are genetic predispositions to hypertension, behaviors such as diet, smoking, and exercise also contribute to whether a person is hypertensive.

The World Health Organization Global Burden of Disease (GBD) Project has promoted integration of thinking and research about biological and social factors in disease and mortality. This project has estimated the portion of deaths and of disability due to various causes for countries grouped by income level and by region. It has also estimated the contribution of various risk factors, such as high cholesterol, smoking, lack of exercise, poor sanitation, and unclean water, to death and disability. Since these risk factors span biomedical, behavioral, and social structural aspects, the GBD project promotes integration of biomedical and social scientific perspectives. This project is discussed in Chapter 5.

Public Health Perspectives on Mortality and Disease

Public health perspectives are situated between biomedical and social scientific perspectives. Public health is oriented toward promoting the health of the entire population and thus, like demography, typically has a population rather than a clinical perspective. Schools of public health often include a department of health education and health behavior, which focuses on understanding and developing policies to encourage healthy lifestyles, an area that is increasingly important in reducing mortality in developed countries. A major example of the role of health behaviors in mortality is smoking. Other

areas include alcohol consumption and seat belt use. Health education and health behavior studies also include understanding why women use contraception or choose or reject particular contraceptive methods.

Schools of public health virtually always include a department of epidemiology, whose methodological concerns are very similar to concerns in demography. Epidemiology has been defined as the “study of the distribution and determinants of health-related states or events in specified populations, and the application of this study to control of health problems.”⁵⁷ Within epidemiology is the area of **social epidemiology**, which “is a branch of epidemiology that focuses particularly on the effects of social-structural factors on states of health.”⁵⁸ Research in this area has included an examination of the relation of health and mortality to factors such as social class and income distribution. Epidemiological research in public health explicitly includes a programmatic component, while research in demography, although it often is applied to policy questions, can be undertaken for purely scientific purposes. Also, although demography is concerned with patterns and causes of mortality due to their role in population growth, epidemiology is concerned both with mortality and with patterns and causes of ill health or sickness, called morbidity. Mortality and morbidity are discussed more in Chapters 4–7.

As the causes of death have changed from conditions that kill rapidly, such as measles or smallpox, to long-lasting chronic conditions that can eventually kill people but more often lead to disabling health problems, such as diabetes, interest in population health has emerged, which bridges demography and epidemiology. Kindig and Stoddart defined **population health** as “the health outcomes of a group of individuals, including the distribution of such outcomes within the group.”⁵⁹ With declines in mortality, an increasing proportion of people live to advanced ages. A concern is whether the additional years of life are spent in an active independent state or in a disabled state that requires substantial expenditures of time and money by others to support what is often seen as a poor quality of life.

A concern with population health and with active life has also been stimulated by Fries’s idea of the compression of morbidity. Fries thought that as the age of death increased, the age of the onset of disability would also increase. If this occurred, then the time a person spent in a disabled or dependent state would be much less than if people became disabled at the same age as they had earlier and spent their additional years of life disabled and dependent on others. There has been mixed evidence as to the extent to which compression of morbidity has occurred.⁶⁰

The Clinical Perspective and the Population Perspective

In the study of human health and its treatment, people discuss a clinical perspective versus a population perspective. In the clinical perspective, the health care provider uses what is known to diagnose and treat an individual patient. The individually based clinical perspective asks, “Why did this person die?” Or, “What could have been done to prevent this person from dying so soon?” The population perspective is concerned with causes of disease, but it is also concerned with structural factors related to mortality risks and overall patterns of disease and mortality. The population perspective asks, “What could be done to reduce death rates from a particular cause?” Understanding the population perspective can aid physicians in contextualizing and understanding the situation in treating individual patients. Demography employs the population perspective.⁶¹

Changes in Fertility

Through most of human history, mortality has been high enough that women and couples have struggled to bear enough children to assure that some would survive to adulthood and subsequently have children of their own. As mortality declined and fertility did not, more children survived to adulthood, and population growth rates increased.

In Europe, starting with France in the eighteenth century, fertility declined, which reduced population growth. By the early twentieth century, fertility declined considerably in all of the currently developed countries to the point where population growth rates were moderate.

As mortality declined in the less developed countries and fertility did not decline as rapidly, growth rates in some countries became very high, making efforts to extend education and health care to a larger proportion of the population more difficult. Since the 1970s, fertility has declined in much of the less developed region, although it is still very high in much of Africa and in some other countries.

In the late twentieth century, fertility had become so low in most of the more developed region that population decline seemed very likely. Countries do not want a declining population because of anticipated negative effects on economic growth: For example, population aging accompanies a declining population and reduces the proportion of the population working for pay to support those too old or too young to work for pay. The United States has continued to have high fertility for a developed country and is unlikely to face population decline in the foreseeable future, a situation that many other developed countries would like to have.

In almost all developed countries, childbearing has shifted to an older age. In some cases, this seems

to have led to continued fertility decline. In other cases, fertility rates have increased enough at older ages to compensate for the declines at younger ages, sometimes reaching a level of fertility that would avoid population decline.

Fertility Theories and Perspectives

We talked earlier in this chapter about views of the desirability or undesirability of increased population growth. In this section, we discuss views and theories about fertility. There have been various philosophical or moral views about fertility limitation or encouragement, and there have been a variety of theories about why women and couples have children. Fertility is discussed more in Chapters 8–10. Table 1.3 summarizes the main theories and perspectives about fertility.

Much of the discussion about fertility is about how fertility affects the rate of population growth. If population growth is viewed as too high, people discuss what might be done to reduce fertility; if population growth is viewed as too low, there is discussion about what might be done to increase fertility. The Roman rulers supported high fertility because they wanted a high rate of population growth. Much of the controversy between Malthusians and Marxists, discussed in this chapter in the context of population growth, was an argument about whether a high rate of population growth necessitated specific attention to trying to lower fertility. Malthusians thought there needed to be fertility-limiting policies, while the Marxists thought the problem was not high fertility but rather a need for technological advances and a fairer distribution of resources.

Religions have taken various positions on the acceptability of intentional fertility limitation. Saint Augustine (354–430) wrote that any form of fertility limitation among married persons was wrong and saw procreation as the only legitimate purpose of sexual intercourse. These views helped form much of later Roman Catholic thought about fertility limitation and its relation to population growth.⁶² In 1930, the Anglican Church was the first Christian denomination to decree that use of contraception was acceptable.⁶³ Some religions, such as Buddhism, have no general position on the use of contraception. Hinduism has no proscription on the use of contraception and provides believers advice on how to either increase or decrease the chance that a woman becomes pregnant. In Judaism, views of contraceptive use differ by the branch of Judaism. The Qur’an does not discuss contraception, but Muhammad knew of the use of coitus interruptus (withdrawal) and did not forbid it. Historically, the use of fertility-limiting practices was acknowledged and widespread in Islam, but there has been controversy within Islam about the legitimacy of contraceptive use.⁶⁴

TABLE 1.3 Theories and Perspectives about Fertility

Theorist, Theory, or Framework	Date	Brief Description
Roman rulers	~15 BCE	High fertility is desirable because of the need for a large army and colonists for the Roman Empire.
Positions of religions		Religions differ in their positions about contraception: Christianity is often opposed, in Judaism the position varies by branch, in Islam the position varied over time and by school of thought, Buddhism takes no position, and Hinduism has no proscription.
Thomas Malthus	~1800	High fertility is the main cause of high population growth rates and must be controlled by postponement of marriage.
Karl Marx	~1870	High fertility is not a problem. Sufficient resources per person can be provided by economic growth fueled by technology and a fair distribution of resources.
Arsene Dumont: social capillarity	1890	When social mobility is possible, having fewer children facilitates mobility.
W. S. Thompson Demographic Transition Theory	1929	This is a description of population change in Europe historically in which first mortality declined and later fertility declined to the level of mortality.
Role incompatibility between motherhood and paid work	1976	Childbearing and female labor force participation are inherently incompatible.
Gary Becker: shift from child quantity to child quality	1960, 1973	The implications of viewing children as desirable consumer durables, in the context of a shift from concern with child quantity to child quality, are examined.
Richard Easterlin: relative cohort size hypothesis	1966, 1974	People decide what resources are needed to raise a child based on the resources that their family had available when they were young.
Bernard Berelson: beyond family planning	1969	This discusses a variety of policies that less developed countries could implement to try to reduce fertility.
James Fawcett: value of children studies	1972	These studies examined the social-psychological reasons for having children, such as old age security or to carry on the family name.
Ansley Coale: preconditions for fertility limitation	1972	The preconditions for fertile sexually active women and couples to intentionally limit their fertility are that (1) fertility limitation was morally acceptable and possible, (2) fertility limitation was in their interest, and (3) they had available an effective and acceptable means of limiting fertility.
John Caldwell: intergenerational wealth flows	1976	Voluntary fertility limitation is motivated by a shift in the flow of resources from upward with the older generation to downward to the younger generation.
Karen Oppenheim Mason: reconsideration of role incompatibility	1981	Whether women's labor force activity is incompatible with childbearing and childrearing depends on the nature of the work.
Coale: European Fertility Project	1986	This challenges the Demographic Transition Theory, emphasizing the role of culture and the diffusion of ideas.
Ron Lesthaeghe and Chris Wilson: FLIMP	1986	In the family labor-intensive mode of production (FLIMP), the household is the productive unit, and having many children is economically rational.
Caldwell: persistence of high fertility	1987	A fear of unpredictable future, high mortality, and destitution of many elderly persons without adult sons supports continued high fertility.
Cairo Population Conference	1994	At this conference, the attention of the population community was redirected from family planning to facilitating reproductive choice.
Dirk van de Kaa: the Second Demographic Transition	2001	Postponement of marriage and childbearing and increased childlessness led to very low fertility in some Western European countries.
Massimo Livi-Bacci: too much family	2001	Based on Italy, this theory posits that very low fertility can result from norms that allow long co-residence of adult children and high economic requirements for starting a family.
Brienna Perelli-Harris: another path to very low fertility	2005	Very low fertility was achieved in some Eastern European countries without all of the changes that are described in the Second Demographic Transition.
Arland Thornton: developmental idealism	2005	A set of views about what is good about modern society and the modern family that people internalize when they decide to control their fertility.
James Feyrer and Bruce Sacerdote: gender equity and fertility	2008	Societal gender equity is essential for highly developed countries to have a fertility level high enough to avoid population decline.
Jason Linde: children as inferior goods	2010	With changing attitudes, there can be other goods that can substitute for the material and psychological benefits that people obtain from their children.

The First and Second Demographic Transitions: Generalizations from Experience in Western Europe

Some scholars have theorized that certain conditions or changes are essential for fertility change based on observation of the empirical situation where fertility has declined. This occurred in the Theory of the Demographic Transition and the Second Demographic Transition. In each case, other thinkers have challenged these conclusions.

The Theory of the Demographic Transition is a description of the pattern of mortality and fertility decline in Europe historically. Some have looked at the social and economic changes that accompanied that transition and posited that changes such as urbanization and industrialization were essential to these demographic changes, especially to fertility decline.⁶⁵ The European Fertility Project pursued more detailed research that challenged the causal role of socioeconomic factors in the decline of European fertility and pointed to the importance of cultural factors and the diffusion of information.⁶⁶

When fertility became very low in some Western European countries in the 1990s, scholars summarized the changes that had accompanied those fertility changes, including an older age at first birth, more permanent childlessness, an increase in cohabitation, and an increase in nonmarital births. Van de Kaa described this set of changes as a Second Demographic Transition. Some researchers thought that these changes were necessary in order for very low fertility to occur.⁶⁷ Livi-Bacci looking at Italy, and Perelli-Harris looking at Eastern Europe, described situations in which very low fertility occurred without all of the changes described in the Second Demographic Transition, suggesting that there is a variety of paths to very low fertility.⁶⁸

Supports for Continued High Fertility

Much theorizing has been about what leads people to limit their fertility. In some historical and contemporary settings, fertility has remained high even after mortality had declined substantially and other social changes had occurred that people would have expected to lead to fertility decline.

Lesthaeghe and Wilson pointed out that in situations that employ what they called the family labor-intensive mode of production (FLIMP), the productive unit is the family. In these situations, in which the productive unit is often a household engaged in agriculture, as much labor as is available can be utilized, making continued high fertility rational.⁶⁹

Caldwell points out that in some less developed countries, cultural pressure to have many children has made it very difficult for people to voluntarily limit the total number of children they have. Often, many women in these populations have faced serious problems in getting pregnant and having live births

and are happy to successfully have many children. Also, in some less developed settings, older widows with no adult sons are one of the most impoverished groups in the community. In these situations, it is rational for a woman to want to have as many sons as possible to try to ensure that at least one son is alive when she reaches old age. Also, with mortality fluctuations from epidemics, famine, and war, women and couples sometimes want to have “extra children” to try to insure against unforeseen high mortality in the future.⁷⁰

Motivations for Fertility Limitation

Several theorists have proposed ideas about what motivates people to limit their fertility. One of the first was Dumont, who in 1890 put forward the idea of “social capillarity.” He thought that in a society in which social mobility was possible, those who wanted to be mobile needed to direct their resources to that end and make sacrifices. One of the sacrifices that could facilitate social mobility was remaining childless or having a small number of children.⁷¹

Caldwell, thinking about high fertility in less developed countries, saw the shift from a set of social norms and practices where resources flowed from the younger generation to the older generation to a situation in which resources flowed from the older generation to the younger generation as crucial for people to decide to try to limit the number of children they have.⁷²

Models and typologies based on sociology and social psychology have also been useful in understanding motivations for fertility control. The Value of Children studies were explicitly based on social psychology.⁷³ These studies were conducted in numerous countries. They looked at the reasons why people thought having children was valuable and how these values varied across societies. One aim was to determine whether different values of children were associated with situations in which there was little voluntary fertility limitation and situations in which there was substantial voluntary fertility limitation. Parents were asked whether they valued children for economic reasons such as help around the house or old age security and whether they thought that children tied parents down. For example, in higher fertility settings, parents were more likely to mention economic reasons and were less likely to think that children tied them down. In the same tradition, Thornton developed the model of developmental idealism.⁷⁴ He saw that throughout the world, a set of ideas has spread about what constitutes modern society and the modern family, including low fertility and the use of family planning. Other parts of developmental idealism include a society that is industrialized and highly educated. As people come to see modern society and the modern family as desirable,

they become receptive to the use of family planning, and thus fertility declines.

An economist, Gary Becker, thought fertility limitation was motivated by a shift from a concern with “child quantity” to “child quality.” Higher child quality is usually interpreted as more expensive children due to costs such as paying for schooling, so the shift to a smaller family size is explained by the observation that the fewer children a couple has, the more they can afford to invest in each child. This approach grew out of the application of ideas from economic theories of consumption to the bearing of children. Children were seen as consumer durables, and like other consumer durables, children were satisfying to parents to the extent that they satisfied their parents’ tastes. As tastes changed from a desire for child quantity to one for child quality, a different kind of child was produced for the parents’ satisfaction—a higher quality child.⁷⁵ In Becker’s view, children were superior goods, that is, they were inherently desirable. Also, there were few if any acceptable substitutes for what children could provide to parents in areas such as affection, respect, and carrying on the family name.

Coale proposed a set of three preconditions for voluntary fertility limitation that need to be simultaneously fulfilled. He thought that a woman or couple needed to think that (1) fertility limitation was morally acceptable and possible, (2) fertility limitation was in their interest, and (3) they had available an effective and acceptable means of limiting fertility.⁷⁶ With changes in the tastes of potential parents and some Second Demographic Transition arguments that people no longer needed to have children to feel they are adults, some have speculated that one reason fertility has become very low and childlessness has increased in many more developed countries is that children have changed from being superior goods to being inferior goods. An “inferior good” is something that people consume when they have a low income and cannot afford more desirable goods.⁷⁷

Female Labor Force Participation and Fertility

There has been a variety of views about the relation between female labor force participation and fertility. Many have assumed that in less developed countries, female labor force participation and childbearing (or the presence of a young child) are incompatible. This has sometimes led to expectations that increasing female income-producing activity in less developed countries would lead to lower fertility.⁷⁸ Mason, however, points out that whether the presence of young children conflicts with female labor force participation in less developed countries depends on the nature of the woman’s work. For example, a woman can resell goods on the street in a city in a less developed country and have young children present with little conflict.⁷⁹

Until recently, economic theories of fertility in developed countries have also assumed that a woman with a child, especially a young child, would not be able to work for pay or that she would avoid working for pay if at all possible. In addition, legal barriers to women’s employment in developed countries strengthened the negative relationship between fertility and female labor force participation.⁸⁰ Especially before the large increase in labor force participation of American women with young children that began in about 1970, a main economic explanation of childbearing decisions focused on the education of the wife. The economic interpretation of why more educated women had fewer children than less educated women was that a woman would have less income for some time if she had a child and that the amount of income lost due to childbearing would be directly related to her education, because the more highly educated the woman was, the higher her wage rate if she worked for pay. The assumption was that having a child led to the woman withdrawing from paid work for some time and, in doing so, losing the income she would have received if she had continued to work for pay. This was viewed as the opportunity cost of childbearing, with foregone income being the missed opportunity.⁸¹

This assumed connection between fertility and women not working for pay in more developed countries weakened as labor force participation rates of women increased, regardless of how young their children were. By the mid-1990s, there had emerged a positive relation among more developed countries between female labor force participation and fertility. This led to research on the relation between government policies and fertility. Also, as fertility at older ages increased in some developed countries, sometimes enough to raise the overall fertility level, scholars thought about what conditions were necessary for this fertility increase to occur. Feyrer put forth the view that a high level of societal gender equity was necessary for fertility to increase enough at older ages to compensate for the fertility decline at younger ages.⁸²

Changes in Fertility Policy Positions

In the 1960s and 1970s, some policy planners became very agitated about how to reduce fertility in the face of very high growth rates in many less developed countries. In 1969, Berelson discussed a wide variety of policies that had been proposed to reduce fertility, including requiring licenses to have children and compulsory sterilization of men with more than three children.⁸³

By the mid-1990s, fertility in the less developed countries as a whole had fallen considerably, and there were emerging concerns in some developed countries about very low fertility. At the World

Population Conference in Cairo in 1994, the emphasis shifted from a concern with fertility limitation and reducing population growth rates to an emphasis on reproductive health.⁸⁴ The four goals agreed on at the meeting were as follows:

1. Universal primary education and improved access of women to postprimary education
2. Reduction of infant and child mortality
3. Reduction of maternal mortality
4. Access to reproductive and sexual health services, including family planning, prevention and treatment of infertility, treatment of sexually transmitted diseases, and discouragement of female genital mutilation

It is interesting that only the fourth goal directly addressed fertility, and that goal concerned both the limitation of fertility and the prevention and treatment of infertility. The other goals addressed factors thought to be related to the decision to limit fertility but were not immediately related to reduction of population growth rates.

Changes in Migration

Human populations have always migrated. Humans originated in Africa and, through migration, spread through Europe, Asia, and the Americas. As people settled in different climates and physical settings, ways of life and social organization changed.

Migration as a part of daily life has been common throughout history. Hunters and gatherers moved frequently to new areas to find game and gatherable food. Pastoral nomads moved at least seasonally to take their animals to fresh grazing areas.

The establishment of towns and cities entailed a shift in the location of part of the population. Also, there was a major change in occupational structure, from almost everyone being engaged in agriculture to the growth in the number of full-time artisans, traders, and others providing services. Members of these new occupations did not produce their own food but received money or other goods in exchange for their services. This was a key part of the development of the market economy.

Since at least 1500, international migration has led to denser settlement of much of the world, especially in North America, Australia, and parts of Africa. This was part of the process of colonization, with accompanying implications for the spread of disease and changes in social and economic practices.

Since the late twentieth century, international migration from less developed countries has helped many developed countries avert population decline. Many developed countries have had programs that allow workers from less developed countries to come

and work for some period of time, but without the chance for permanent residence or citizenship. Often, immigration to more developed countries becomes an issue of policy formation and legislation in the more developed country rather than an issue of the desires and motivations of potential international migrants.

Natural disasters and political disturbances have led to large movements of refugees. Most refugees from less developed countries move temporarily to other less developed countries. This can cause a major strain on the resources of the receiving countries. In addition, while international laws promote the consideration of refugees for permanent residence, many more developed countries struggle with the question “Who is a true refugee?” as they perceive a much larger number of people who would like to immigrate than they would be willing to admit. Migration is discussed further in Chapter 12.

Theories of and Perspectives on Migration

Table 1.4 summarizes the main theories of and perspectives on migration. Some of the theories and perspectives were developed with internal migration (migration within one country) in mind, and some were developed to apply to international migration, but most are applicable to both internal and international migration. A major difference between explanations of internal and international migration is that legal restrictions play a much greater role in international migration. Also, the difference in wage rates is typically greater between less developed and more developed countries, even for labor-intensive jobs, than is the case within one country. However, there often is a substantially higher wage rate (even for labor-intensive jobs) in urban areas than in rural areas of less developed countries. Also, some theories involve aspects of international economic activity that influence international migration.

Geographical Perspectives on Migration

The discipline of geography has had a large impact on thinking in the area of migration. Some of this has been manifested in attraction models, such as that of Young and Zipf. These models are based on the attraction between particles in physics and the decrease in attraction with distance, and they have been used to try to model the number of migrants between places.⁸⁵ Stouffer added to earlier work by including consideration of the presence of intervening opportunities or alternative destinations as affecting the volume of migration between the two places. These intervening opportunities did not need to be physically between the two places under consideration, but would include the presence of a large city located west of both places.⁸⁶

TABLE 1.4 Theories and Perspectives about Migration

Theorist, Theory, or Framework	Date	Brief Description
E. G. Ravenstein: laws of migration	1885, 1889	There are ten laws, which include considerations of gender, age, motivation, and distance.
E. C. Young	1928	The number of migrants between two places is positively related to the “force of attraction” between the places and inversely related to distance.
Samuel Stouffer: intervening opportunities	1940, 1960	The number of intervening opportunities or alternative destinations will influence migration between two places in addition to the characteristics of the two places.
George Kingsley Zipf: inverse distance law	1946	The number of migrants between two places is positively related to the population of the two places and inversely related to distance.
Gunnar Myrdal: cumulative causation model	1957	When migration occurs, it alters the context of migration decisions and makes subsequent migration more likely.
John MacDonald and Leatrice MacDonald: chain migration	1964	The earlier international migration of friends and relatives facilitates later migration through informational, economic, and legal help.
Everett Lee: theory of migration	1966	Four factors influence migration: (1) origin characteristics, (2) destination characteristics, (3) intervening obstacles, and (4) personal factors.
John Caldwell: rural-urban migration in Ghana	1969	Networks are important, and institutions develop in urban areas to facilitate migrants and migrant adaptation.
John Harris and Michael Todaro: rural-urban migration in developing countries	1970	Based on the existence of a dual labor market, rural-urban migration is related to the difference between the expected wage rate at the destination and at the origin, especially among workers in the labor-intensive sector.
Wilbur Zelinsky: mobility transition model	1971	There are five stages of the mobility transition, which are generally related to the demographic transition.
Michael Piore: dual labor markets and international migration	1979	International migration is caused by the demand for low-cost labor in developed countries in the labor-intensive sector.
Graeme Hugo: network theory	1981	Interpersonal ties between people at the origin and destination facilitate international migration by improving information and decreasing economic and other costs to potential migrants.
Alejandro Portes and Michael Piore: world systems theory	1981	International migration is motivated by the global capitalist market. Labor flows in the opposite direction of goods and capital, often to former colonial powers.
Oded Stark and David Bloom: new economics of labor migration	1985	Migration decisions involve the entire household, not just the individual potential migrant.
Oded Stark and J. Taylor: relative deprivation and international migration	1989	The decisions of whether a household member will migrate and the choice of who will migrate are influenced by comparison, with wanting the household to have a good standard of living and good opportunities held in comparison with the household’s reference group.
Douglas Massey: institutional theory	1993	After international migration to developed countries begins, legal and illegal institutions emerge to facilitate this migration and overcome practical and legal obstacles.

Lee developed a model of migration that combined earlier geographically based work with more social scientific thinking. Migration between places resulted from four sets of factors: (1) factors associated with the origin, (2) factors associated with the destination, (3) intervening obstacles, and (4) personal factors. The origin and destination factors could include economic conditions at the origin and destination. Personal factors could include education, gender, and age. Intervening obstacles included the distance between the origin and the destination, the difficulty of travel, and alternative destinations.⁸⁷

Zelinsky’s Model of the Mobility Transition

Zelinsky developed a model of what he called the mobility transition that had five phases. The five phases

were related to phases of the demographic transition. Phase 1 is a premodern traditional society with little migration and little population growth. Phase 5 is a future superadvanced society in which almost all migration is between or within urban places.⁸⁸

Economic Perspectives on Migration

Economic models have long dominated explanations of migration. In the 1880s, Ravenstein proposed ten laws of migration, one of which was that people usually migrate for economic reasons.⁸⁹ The most prominent model of rural-urban migration in less developed countries is that of the economists Harris and Todaro, which sees the potential migrant in the rural area assessing his (or her) likely wage rate if he remained in the rural area and his likely wage rate

if he migrated to an urban destination. If the likely increment to the wage rate is sufficient, the person will migrate.⁹⁰

Stark and Bloom are economists who expanded the range of actors making migration decisions. While the Harris–Todaro model assumed the potential migrant was the sole decision maker, Stark and Bloom thought that the migration decision was made by the entire household, with the decision of whether anyone would migrate and who would migrate made with the interests of *all* household members in mind.⁹¹

Stark and Taylor further developed the role of all household members in migration decisions in the relative deprivation perspective. In this perspective, migration decisions by households are made with the standard of living and opportunities of the household's reference group in mind. If other households in the community have obtained goods due to earnings from migrants, this can motivate a household to send a member to become a labor migrant when otherwise household members would not have aspired to those goods.⁹²

Sociological Perspectives on Migration

In the area of rural-urban migration in developing countries, sociologists have also emphasized perceptions, norms, values, and other non-economic factors. Migration to an alien destination can be offsetting to a potential migrant, and for both internal and international migration there are often numerous practical difficulties that must be overcome. Thus, people are more likely to migrate if they are less risk-averse. This is one reason why migrants disproportionately tend to be people with relatively high education among those at their place of origin.

In 1957, Myrdal proposed the idea of cumulative causation, in which once a migration stream between two places begins, this in itself alters the context in which subsequent migration decisions are made and typically increases the volume of migration.⁹³ MacDonald and MacDonald showed that chain migration, in which subsequent migrants receive information and practical help from friends and relatives who migrated earlier, is important. Caldwell for Ghana and Hugo for Indonesia showed that networks in urban destinations, sometimes based on ethnic group membership, can ease the adjustment process for new migrants from rural areas. Thinking about international migration, Massey made a similar argument about the development of networks and institutions to facilitate migration.⁹⁴

Some Considerations about International Migration

Piore and Portes have addressed how the world economy influences the international migration of workers with a low skill level. They took a somewhat

Marxist approach and saw international migration as driven by the demand for low-cost workers in the labor-intensive sector of developed countries.⁹⁵

THE INFLUENCE OF HISTORY, ANTHROPOLOGY, PSYCHOLOGY, POLITICAL SCIENCE, AND STATISTICS ON POPULATION THINKING

Disciplines other than economics and sociology have not had as pervasive an influence on population thinking, although their influence has been substantial. Next, we discuss the perspectives and influence of history, anthropology, political science, psychology, and statistics.

Historical Perspectives

Historical and anthropological perspectives address the need to have sufficient cultural and historical understanding to know what things mean in a specific context. In terms of data analysis, cultural and historical understanding relates to the question of **validity**. When you have a particular indicator or measure, it is intended that it represents some underlying concept. The measure is valid if in fact it does represent the underlying concept.

A lack of cultural and historical understanding can lead to the choice of an invalid indicator, which means that the interpretation of the results can be wrong. For example, Buckley in a discussion of surveys conducted in Russia involving foreign scholars refers to difficulties of translating concepts from one language (English) in which they are well understood to another language (Russian) in which the concept is not present or is uncommon. She noted that one survey studying depression translated “Do you sometimes feel blue?” literally into Russian, even though in Russian the word “blue” does not necessarily mean depressed and can refer to gay sexual orientation. Jones notes that it has often been observed that people in Southeast Asia tend to be extremely eager to please interviewers and to give the desired answer. She argues that this tendency is real, but that it can be overcome by the interviewer establishing a good rapport with the respondent and by careful construction of survey questions so that there does not seem to be any preferred or “right” answer.⁹⁶

There is a long tradition in historical demography of attempting to understand the life of ordinary people. History had been limited because often common people were not literate and did not leave letters or diaries. In the 1960s, there emerged an interest of what was sometimes called studying history “from the bottom up,” which focused on the lives of common people. The application of demographic methods to religious and administrative records collected for

other purposes, often using church parish registers or village listings, has allowed a great deal to be discovered about mortality and fertility conditions, as well as the household and family structure of people in the past.⁹⁷

Anthropological Perspectives

Populations typically studied by anthropologists have sometimes been studied by demographers intending to make inferences about the demographic conditions experienced by populations that lived long in the past, such as hunters and gatherers. Howell's book in this vein was published in a series in historical demography.⁹⁸ However, increasingly anthropologists have applied demographic approaches to studying mainstream anthropological questions.⁹⁹

Since the 1970s, there has been increasing awareness of the importance of anthropological and cultural perspectives among demographers. Some of this was motivated by research in the Princeton European Fertility Project, which aimed to test the Theory of the Demographic Transition. In its assessment of historical fertility decline across Europe, there was substantial evidence that the geographic spread of the intentional limitation of childbearing was more strongly related to the diffusion of various cultural views and practices than it was to the extent to which a locale had become industrialized.¹⁰⁰ These observations led demographers who were usually economists or sociologists to take consideration of the role of culture more seriously than had generally been true previously. This new awareness also led to an increase in research that combined quantitative and qualitative methods, as demographers become aware that qualitative research (observing and talking to people about their views and feelings) is often necessary in order to understand demographic decision-making behavior.¹⁰¹

Political Perspectives

Much of demography is concerned with the likely implications of alternative policies, something that immediately involves political considerations and political positions. Some political issues directly involve demographic considerations, including the U.S. constitutional requirement that seats in the U.S. House of Representatives be reallocated across states after each decennial census proportionate to the distribution of the U.S. population across states.

Political considerations can also lead to demographic data not being collected. For example, Lebanon has not had a census since 1932, mainly because the Lebanese Parliament is allocated 50/50 between Christians and Muslims. It is clear that a census would show that a substantial majority of the

Lebanese population is Muslim. This result would almost certainly lead to calls for change in the composition of the Lebanese legislature, which could lead to political unrest.

Sometimes, there are intense disagreements about the wisdom or efficacy of particular programs or policies. These disagreements often reduce to different views of which groups are most deserving of government social program support, which is a political or policy judgment. For example, Ben-Shalom and his colleagues concluded that social welfare programs in the United States have had only a modest effect on reduction of poverty because they favor the employed, disabled, and elderly, groups that are viewed as deserving. These programs are less focused on the poorest segment of the population, even though the poorest segment has the worst health and the highest mortality.¹⁰²

Politics also influences fertility-related policies and programs. For example, there has been a heated policy debate in the United States about sex education programs for adolescents, which has focused on whether abstinence should be the only pregnancy prevention method discussed in schools or contraception should also be included. These debates concern whether sex education that includes more than abstinence education promotes sexual activity and also include disagreements about the effectiveness of abstinence-only programs.¹⁰³

An area of demography that directly involves political considerations is international migration. Although most countries do little to limit emigration, many countries, especially more developed countries, have strict rules about legal immigration. Illegal immigration has become an increasingly important issue of policy concern in many countries. There are also policy choices about what the penalties and enforcement procedures should be for undocumented immigrants.¹⁰⁴ Thus, the causes of immigration are sometimes more strongly related to laws and policies rather than to incentives to emigrate from the origin country or preferences of potential international migrants. Thus, much of immigration is determined by the process by which immigration laws are passed, an issue of agenda-setting and legislative dynamics that is studied by political scientists.¹⁰⁵

Psychological Perspectives

Sometimes, psychologists have studied the personality or psychological consequences that result from demographic phenomena. For example, Falbo studied the personality and other characteristics of only children in China. The large proportion of only children resulted from China's fertility limitation (one-child) policy.¹⁰⁶ Also, research on the psychological adjustment of older persons has become increasingly

relevant in aging populations.¹⁰⁷ An increasing part of research on health and mortality has focused on the role of psychological conditions such as stress or depression.¹⁰⁸

The Influence of Statistics and Advances in Computing

Advances in statistics and in computing have long been important in demographic analysis. Through the 1880 U.S. Census, results were tabulated by hand. For the 1890 Census, a punch card tabulating machine, developed by Hollerith, was used, which speeded up and reduced the cost of census tabulation. The resulting company eventually became IBM.¹⁰⁹

Advances in statistical methods, in combination with improvements in computing power, have continued to be important. Better sampling methods have improved the value of surveys. Also, more powerful computing allowed multidimensional analysis of very large files, such as individual data from census files. These developments have allowed researchers and policy analysts to answer increasingly complex questions using empirical data.

Space and geographic location have played increasing roles in demographic analysis. This has been facilitated by advances in spatial statistical methods and in the availability of low-cost Global Positioning System (GPS) units so that the locations of residences, schools, and health clinics can be used as variables to analyze the impact of proximity to health care, schools, stores, and water sources on outcomes such as infant and child mortality and use of contraception. For example, Szwarcwald and her colleagues used spatial analysis methods in a study of infant mortality in Rio de Janeiro to show that infant death from 1 to 11 months of age was related to the concentration of poverty in an area, even after the local poverty level had been taken into account.¹¹⁰ Much research about the role of geographic location addresses the role of neighborhood effects in health and other outcomes.¹¹¹

DEMOGRAPHY AS A FIELD

In the United States, demography is usually not considered a separate discipline. At American universities and colleges, students cannot get a bachelor's degree in demography, and there are only a few American universities where a doctoral degree in demography is available.¹¹² Most American demographers are either sociologists or economists, although some are historians, political scientists, psychologists, statisticians, or public health specialists. The dominant American perspective is that work in demography is enriched by a disciplinary theoretical and conceptual perspective, such as that from sociology or economics. Thus, most American demographers with doctorates

receive their degree in a field such as sociology or economics, with demography as a specialization.

In most of the rest of the world, demography is considered a separate discipline. In many countries, students can receive bachelor's degrees and advanced degrees, such as doctoral degrees, in demography. There are many excellent demographers throughout the world. However, the lack of a disciplinary base can lead demographic work to be excessively descriptive and atheoretical.

DEMOGRAPHIC PATTERNS, DEVELOPMENT, AND SOCIAL CHANGE

Many demographic phenomena are related to the population's standard of living, its education, the infrastructure in the country, or some other aspect of the development level of the country. Poorer and less educated populations typically have higher mortality and higher fertility than more prosperous and better educated populations.

There is often value in comparing the demographic situation and demographic changes in (1) the currently more developed countries in the past, (2) current less developed countries, and (3) the more developed countries. Both Marxist models of development and modernization theory have been dismissed by many as simplistic and not fitting empirical reality. However, examining the differences and similarities in the relation of social, economic, and demographic change in various circumstances can be informative.¹¹³

One major difference between the historical situation of currently more developed countries and that of the less developed countries is the pace of change and the role of technology. In the currently developed countries in the past, demographic change was fairly gradual, and technological innovation was developed at the same time that it was applied. In currently less developed countries, social and technological change has occurred much more rapidly, and there have been substantial social, economic, and cultural shocks from these changes. The introduction of vaccines sped mortality decline, and the availability of modern contraceptives often facilitated fertility decline in less developed countries.

The trajectory of the more developed countries from the past to the present gives an extended timeline of social and demographic change that is useful in thinking about likely future changes in the less developed part of the world. However, discerning which aspects of historical change in the currently more developed countries are relevant to less developed countries and which aspects are irrelevant is a major challenge to social research and policy formulation.

CONCLUDING COMMENTS

A survey was conducted in 2009 of 970 members of the International Union for the Study of Population, the major world professional organization for demographers. The survey asked questions about views of the field of demography and about the importance of various policy issues.¹¹⁴

Demographers thought that the most important characteristic for a demographer was to be “highly empirical.” That means that conclusions should be based on analysis of data and familiarity with actual population situations, rather than based on unfounded speculation or untested theories. Demographers also recognized and valued the multidisciplinary nature of demography and tended to read and publish widely across disciplines.

Table 1.5 shows the ranking of what are expected to be the most important population issues in the next 20 years. The percentage of demographers who thought that the given issue was the most important is shown. The issues span the areas of demographic concern: population growth, fertility, mortality, and migration. Population aging is by far the leading issue of concern. The second and third issues, large-scale migration flows and HIV, were cited by less than half as many demographers as population aging. It is interesting that above-replacement fertility, which is fertility high enough for the population to grow,

TABLE 1.5 Demographers’ Views of the Importance of World Population Issues in the Next 20 Years

Rank	Issue	Percentage with that view
1	Population aging	30%
2	Large-scale migration flows	14%
3	HIV	13%
4	Above-replacement fertility	12%
4	Urbanization	12%
6	Infant mortality	10%
7	Women’s reproductive rights	7%
8	Population decline	2%
Total		100%

is tied for fourth place. In the 1960s and 1970s, it almost certainly would have held first place. Population decline, although an increasing concern in highly developed countries, was cited as the most important population issue by only 2% of demographers.

Later chapters examine population growth, mortality, fertility, and migration in detail. A great deal of empirical information is presented. Hopefully, the student will come to understand the data behind population trends and concerns as well as the complexity of the issues. Also, the multidisciplinary nature of research and thinking in demography should be even clearer than what has been shown in this introductory chapter.

Study and Review Online

SUMMARY

1. Demography is often defined as the scientific study of human populations or as the study of the growth and structure of human populations.
2. Demography studies the size and characteristics of populations as well as the processes that lead to population change: fertility, mortality, and migration.
3. Demography is used to help answer scientific and policy questions in a wide variety of areas.
4. Demography can either focus on change in demographic mechanisms at an aggregate level, such as changes in the number of births or in the size of the population, or take a microbehavioral approach, looking at factors related to the behavioral mechanisms and external influences that lead individuals or households to have a child, to die from a particular cause, or to move to another place.
5. The demographic perspective has become very influential in many fields, including social statistics, the study of the labor force, research on organizations, and the study of marriage and the family.
6. Population theories and policies have been developed over time in response to population phenomena that were seen as important, in need of explanation, or problematic.
7. Malthus and Marx had very different explanations of the causes and consequences of population growth. These different perspectives have persisted over time.
8. Economics and sociology have had different kinds of explanations of population growth and population dynamics.
9. There have been controversies over time about the causes of disease and biomedical researchers, and social scientists have differed in their views of the causes of disease and death. In recent years, there has been some merging of perspectives.

10. Explanations of motivations for fertility decline have focused sometimes on economic or practical considerations and sometimes on changes in norms, values, and views of children.
11. Explanations of migration have broadened over time from consideration of the potential migrant as an individual decision maker to inclusion of the entire household in the decision-making process.
12. In the United States, demography is not considered a separate discipline, and there are few departments of demography or degrees in demography granted. Most American demographers are sociologists or economists, although some demographers come from anthropology, history, political science, or other disciplines. In most other countries, demography is viewed as a separate discipline, and degrees in demography are granted.
13. Demographers see population aging as the most important population issue in the next 20 years.

KEY TERMS

demography 2	moral restraint 9	fundamental causes of disease approach 14
pronatalist 6	social Darwinism 9	social epidemiology 15
mercantilism 8	eugenics 9	population health 15
preventive check 9	Theory of Demographic Change and Response 12	validity 22
positive check 9		

QUESTIONS FOR DISCUSSION AND REVIEW

1. What is the difference between a demographic (or a population) approach and a clinical approach to addressing a question such as infant death? Describe a situation in which the demographic approach is more relevant, and describe another situation in which the clinical approach is more relevant.
2. Discuss how changes in mortality, fertility, and migration levels have influenced theory and policy concerns.
3. Briefly describe the difference between the Malthusian and the Marxist views of the relation between population growth and the growth of food production and other resources.
4. Briefly describe the difference in views of the causes of disease and death between biomedical researchers and social scientists.
5. Briefly describe the role of economic factors and of norms and values in explanations of decisions by women and couples to have more or less children.
6. Briefly describe the economic approach to explanations of migration and how sociological explanations modify that approach.

NOTES

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