PART ONE

The Basics of Global Health

CHAPTER 1

A Very Brief History of Global Health Policy

KEY IDEAS

- Although people often think of health as a question of genetics and biology, the field of global health is now largely focused on how policies and social environments affect mortality and morbidity.
- The past century, marked by the second Industrial Revolution and economic development around the world, has brought improvements in standards of living. But industrialization in low-income countries poses new threats to human health, primarily through environmental degradation and occupational hazards.
- Better nutrition and basic infrastructure such as sanitation systems have helped many societies to experience an epidemiologic transition, when infectious diseases drops and life expectancy greatly increases.
- Global health policies are now partly shaped by intergovernmental institutions, such as the United Nations (UN), formed after World War II. These institutions are chiefly concerned with economic development, human development, and preventing war.
- Although fiscal austerity, trade liberalization, and the so-called Washington Consensus dominated many intergovernmental policies in the 1980s and 1990s, more recent policies have begun to acknowledge that multiple models for development are needed.

HEALTH AND PUBLIC POLICY THROUGH THE TWENTIETH CENTURY

People tend to think of health as a question of genetics and biology but our environment, more than our genetic code, probably explains why our feet would pop out of the bottom of the Renaissance-era beds you see in current museums. Over time, the environments around us have tended to improve our health prospects. New medical technologies, access to better nutrition, and fewer life-threatening hazards in our everyday work lives have helped increase global life expectancy. In the healthiest nations, life expectancy has increased from fifty years in 1900 to sixty-five years in 1950 to eighty years in 2000. In a much more extreme trajectory, Cuba's life expectancy moved from nineteen in 1900 to fifty-seven in 1950 to seventy-seven in 2000 (figure 1.1).

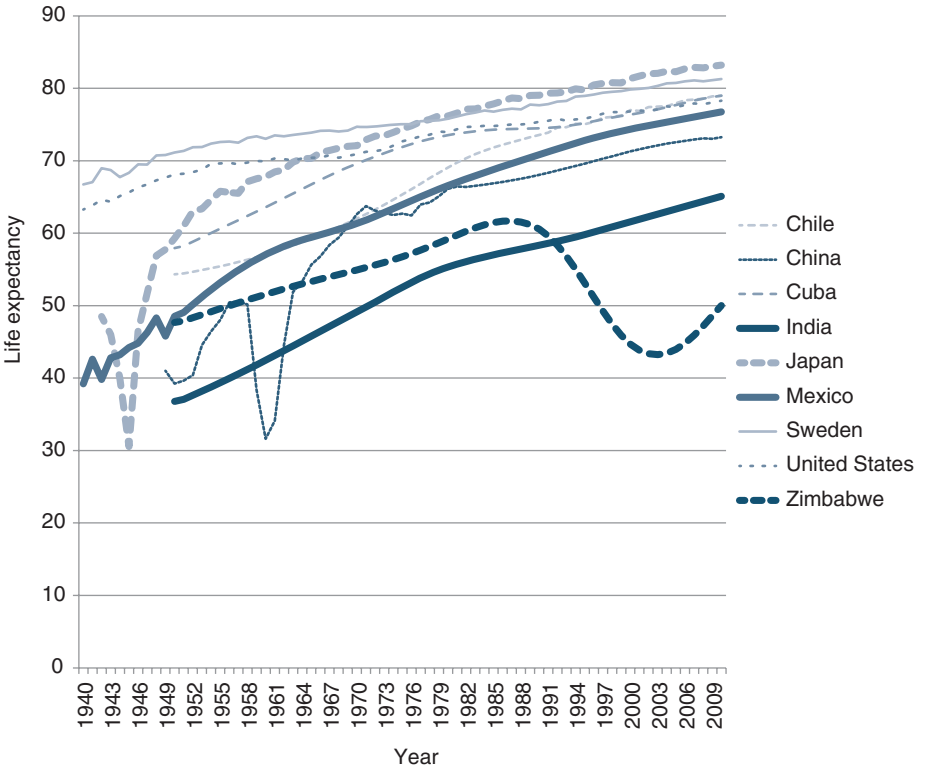

Figure 1.1. Changes in life expectancy from 1940 to 2009 in some of the nations that we discuss extensively in this book.

Source: World Health Organization. Rendered by Gapminder.org.

In this chapter, we give a very brief history of some of the key trends that have shaped population health worldwide in the past few hundred years. Along the way, we will introduce some of the key public health issues that we will dive into more deeply later in the book.

Communities and Health

In the days when humans lived as hunters and gatherers, the best hunters and the best gatherers were almost certainly more likely to get the hottest partner around. But for most people, eating and being eaten were probably bigger concerns than one's position in the social pecking order (Diamond, 1998). These two problems—finding food and fending off attacks—were greatly mitigated by agrarian lifestyles, introduced around ten to twelve thousand years ago (Denham et al., 2003). By keeping livestock, farming, and gathering in communities large enough to scare off predators, humans greatly increased their chances of survival.

When food could be had with less physically demanding work, a sedentary lifestyle and more rapid population growth occurred. But the agrarian life also introduced new problems. For one, there was a need for division of labor and governance. Thus, formal **social hierarchies** were introduced. Those at the top were more or less ensured access to food, a mate, and superior protection from threats than those at the bottom.

Europe and Asia had some native plants and animals that really benefited the people there, including barley, two types of nutritious wheat, and easily domesticated goats and sheep for wool, leather, and meat. The grains could be stored for a long time without getting spoiled, unlike fruits and vegetables. European and Asian people were also lucky because their lands were contiguous on an east-west axis so they could reach one another and trade products by land. Donkeys and horses from the Middle East also helped these people trade and flourish. With luck, work, and trade, the people of Europe, the Middle East, and Asia cultivated a wide range of nutritious crops and domesticated animals. Folks in Africa, however, mostly dealt with untamable animals, such as lions and leopards; they continued to hunt and gather (Diamond, 1998).

Of course, up until relatively recently in human history, few people died of diabetes and hypertension. It is true that the automobile, television, and high-caloric food all play big roles in the predominance of heart disease as a major cause of death (Lowry, Wechsler, Galuska, Fulton, & Kann, 2002). But few people died of these conditions mostly because more often people died of infectious disease before they had a chance to get their first heart attack. Over time, the people outside of the Americas developed immunity to common pathogens. There is even evidence that they evolved by natural selection to

become resistant to some diseases, such as the plague (Galvani & Slatkin, 2003). When Europeans encountered Native Americans during the colonial period, they brought diseases, such as smallpox, that cut down half or more of some tribal populations. Likewise, endemic malaria in Africa and yellow fever in parts of Asia killed many Europeans during the colonial era (Diamond, 1998).

Thus, by transitioning from hunter and gatherer lifestyles to an agrarian and feudal life, old threats to survival were conquered but new ones were introduced. These newer problems tended to require higher-scale cooperation and collective problem solving so that health policies began to evolve not just in small villages or clans but also in nation-states and civilizations.

These problems included, among many others, the need to dispose of all the feces produced by large collections of people living together and to ensure clean water to drink. Some human civilizations were able to tackle these problems quite early on. Many ancient civilizations show evidence of complex water delivery and basic sewage disposal systems. Other nations to this day cannot effectively provide these basic provisions, even though it has never been cheaper or easier to provide them. Thus, we see that a given community or nation can unambiguously benefit from new ideas and technologies only if it can govern well enough to counteract the unintended consequences of collective living and make full use of technology so that it does more benefit than harm. (See figure 1.2.)

National Policies and Health

In the late 1700s and 1800s, manufacturing technologies and processes gave rise to the first **Industrial Revolution.** This opened the door to the development of new medicines and life-saving goods. In the first Industrial Revolution, the development of refined coal and the steam engine helped create a new manufacturing sector, one in which machines helped with agriculture and transport. New tools and machine parts were also made. This, in turn, led to new machines that greatly facilitated the production of textiles (with cotton spinning machines), paper, and glass. Water was easier to pump out of mines. The advent of the coal-powered steam engine transformed trade and migration along new rail routes, and the rediscovery of concrete (which had been lost for thirteen hundred years) reinvigorated building construction techniques.

The second half of the nineteenth century brought the second Industrial Revolution, with assembly-line production of goods, the internal combustion engine, and electricity power generation. This era is renowned for the development of steel, chemical industries, petroleum refinement, the car industry, and hydroelectric power.

Figure 1.2. Residents live near a waterway containing raw sewage and trash in Chennai, India, 2013.

Source: Flickr/McKaySavage.

But just as agrarian living created some problems and solved others, industry posed new health threats. In England, for example, the population had remained steady at six million from 1700 to 1740. After the first Industrial Revolution, the population increased from eight million in 1800 to seventeen million in 1850 and then to almost thirty-one million in 1900 (Ashton, 1997). Yet, despite this population increase, childhood survival rates remained abysmally low. Children were not afforded the chance to receive an education, and they were expected to work. The Industrial Revolution made the hazardous conditions of child labor a lot more visible than they were before and was documented by writers such as Charles Dickens. Children died in explosions in mines; they were burned and blinded making glass. "Matchstick girls" developed phossy jaw, or phosphorous necrosis of the jaw, and then organ failure while making matches (Myers & McGlothlin, 1996). The new, dense

Figure 1.3. During the Industrial Revolution, the advent of coal and steam use as energy sources became widespread.

slums brought open sewers, polluted water and air, and persistent dampness, leading to widespread cholera, tuberculosis, lung diseases, and typhoid (Ashton, 1997). (See figure 1.3.)

Technological advances such as steel provided bold new opportunities to bring consumer goods to market that have greatly improved our quality of life, but they came at an enormous cost in terms of pollution, depreciation, and global climate change. Cancers, heart disease, neurological diseases, kidney disease, and liver disease slowly began to take center stage as infectious diseases were conquered and lifelong exposure to toxic hazards increased in industrializing nations (Parkin, Bray, Ferlay, & Pisani, 2005; Trichopoulos, Li, & Hunter, 1996). Mass cultivation of food products allowed society to feed its rapidly growing population, but it also allowed the tobacco industry to greatly expand production and market its product to a broader portion of the population.

In the United States, environmental degradation culminated in a number of river fires that took large crews of firefighters to extinguish. Factories along the Cuyahoga River in northeastern Ohio had been dumping flammable solvents into the water, which were probably ignited by a passing train. When this river caught fire in 1969, the last of many fires, it called national attention to waterway pollution in the United States.

WAS THE INDUSTRIAL REVOLUTION A PUBLIC HEALTH DISASTER OR BOON?

The Industrial Revolution is widely seen as a public health disaster by academics. It brought overpopulation, overcrowding, and pollution on a wide scale. How could it be anything else? We have to keep in mind, though, that the Industrial Revolution was the forerunner of modern industrial society. Today, its pollution continues to contribute to despeciation (the loss of animal and plant species), global warming, and cancer (among many other diseases) but it has also led the way for modern industrial civilization replete with its diverse food supply, nice homes, trains, hospitals, and, yes, consumer products that improve our quality and length of life. The question is not so much whether modern industrial civilization is good or bad, but rather how we reduce the harms that it produces while maximizing the benefits.

Recently, many more severe incidents of waterway pollution in China have received notice. One factory spill effectively killed all life in the river that supplied water to Harbin, one of China's largest and most important cities. This benzene spill turned the river into a giant foamy, frothy mess. Chinese officials told citizens that they were shutting the city's water off for "routine maintenance" until the spill passed, but the water was probably still unsafe for some time (and by many accounts still is because so many pollutants were there to begin with) (see figure 1.4).

These examples highlight how industries bringing in economic growth and improvements in our standard of living also bring about new threats to human health through environmental degradation and occupational hazards. Certainly, even today, and even in wealthy countries, environmental problems cause concerns. But in wealthy countries, these problems have been mitigated with national regulatory policies that allow their citizens to enjoy the benefits of these technologies while reducing their harms (Schmidheiny, 1992). For example, cleaner, more efficient forms of power generation have meant that even coal-fired power plants produce significantly less harmful pollutants today than they did just a few decades ago. China is trying to move toward more sustainable development, too, as it becomes a wealthy country, but the potential scope of the environmental destruction in a country with 1.4 billion people adds a good deal of concern. There is hope, however, because industrialization in the modern era of green technology also offers the opportunity to leapfrog right over the problems of the industrial revolution if China is willing to make the investments (Schmidheiny, 1992).

Figure 1.4. In 2005, a chemical plant explosion in Jilin, a province in northern China, led to a massive release of nitrobenzene into the Songhua River. The water became foamy and was too dangerous to drink. The spill at first was covered up by the Chinese government, but the truth was disclosed after large numbers of dead fish washed ashore in the large northern city of Harbin and residents began to panic.

Source: www.greendiary.com/polluted-water-may-affect-four-million-people-in-china.html.

Indeed, there is a global push to use technology to solve the very problems that technology creates. With advanced water and sanitation systems, it became possible to dispose of sewage and deliver clean water even in dense urban environments. These advances helped all but rid nations of diarrhea, greatly reducing the mortality of children under five (Gulland, 2012; Mayor, 2012). Greater nutrition also helped us stave off infectious disease, and mosquito control reduced malaria and other illnesses. These advances led to what is referred to as an **epidemiologic transition.** This occurs when infectious disease drops to the point that death among a nation's youth becomes a rare event and life expectancy greatly increases (Omran, 1971). This way, we see that the progress of human civilization has, in some ways and in some places, enabled the benefits of collective living—a reliable food source and protection from predators—without many of the downsides. Thanks to the epidemiologic transition, some nations enjoy average life expectancies that

are approaching eighty-five years. This would have been unthinkable not too many decades ago.

EPIDEMIOLOGY IN PUBLIC HEALTH

Public health is built on a discipline called *epidemiology,* which we mentioned in the introduction to this textbook. *Epi* means *on top of* and *demos* means *people.* Thus, epidemiology could be the study of things that sit on top of people but that would be silly. In fact, it is the study of disease in populations. This disease can have roots in infectious agents, genes, the social environment, or some combination of these factors. As a result, epidemiology, and public health more generally, tends to be a science that combines genetics, biology, medicine, sociology, economics, political science, and urban studies, just to name a few disciplines.

THE AGE OF GLOBAL HEALTH POLICY

The epidemiologic transition also leads to large increases in the number of people alive on earth, posing yet another challenge. Previously we mentioned that collective living brought people together into villages and then cities and nations, opening the possibility of war.

It also brings new, improved ways of killing people. In the beginning of the twentieth century, technologies enabled us to bomb people from the air, killing dozens of people at a time from a single biplane. By the end of the twentieth century, we could do this from space (in the form of an intercontinental ballistic missile), with the potential to kill everyone on the planet. (On the bright side, there is a global treaty that keeps us from storing the weapons in space. In the event of nuclear war, this should prolong the survival of human civilization by up to six minutes.)

More people and better killing technologies, such as missiles, mean larger-scale and more violent conflicts. With dense collections of people, alliances between civilizations with similar goals were formed. This meant that wars could become quite large and devastating in scale, as evidenced by the World War I. In that conflict, new technologies such as airplanes and toxic chemicals were used as weapons with effects that were so devastating that international agreements were drafted to ban their use during warfare. These agreements gave rise to the notion of "civilized warfare," or wars in which attempts have since been made to limit the scale of human suffering brought about by new technologies, such as germs and chemicals.

Indeed, after World War I, it became apparent that global governance—the effective formation and application of policies across nations—would be needed to prevent a recurrence of the large-scale loss of life that came as a result. Still, efforts at improving governance did not go so well. The League of Nations, formed to unify the nations of the world, did not treat nations equally. Those that lost out opted out in anger. This opened the door to yet another worldwide conflict.

Well over sixty million people lost their lives during World War II, and countless others lost their homes and livelihoods as entire cities were leveled. Moreover, when atomic bombs were dropped on two cities in Japan, it became painfully clear that new technologies would outstrip our ability to regulate their use in conflict.

World War II created strong incentives for new institutions aimed at peacekeeping and financial cooperation. The leading economic powers formed new **intergovernmental institutions** such as the UN, which was primarily charged with creating dialogue between nations in order to stem wars. They also formed the International Bank for Reconstruction and Development, now commonly known as the World Bank, which was charged primarily with rebuilding Europe. Finally, the IMF was formed to reduce the chance of another global recession, one of the many major factors thought to precipitate the war.

The reconstruction of Europe was efficient and effective. Entire cities were rebuilt in just a few short years. To many, it seemed as if a new dawn of global governance had arrived. Once Europe was more or less completed, attention focused on poorer nations in Asia and Africa.

The thought was that global governance would be one of the final solutions to humankind's perpetual public health problems. With an effective global government, poor nations could be helped to develop, war could be ended with global police actions, and global institutions would thrive in a highly regulated environment. Of course, sadly, this is one innovation in the history of humankind that did not come to pass.

Still, they gave it a good shot. Following World War II, colonial powers began a slow process of decolonization. Poor nations were given autonomy and aid but were left with little by way of social institutions. As mentioned in the introduction to this book, institutions include banks, governmental agencies, and enforceable laws. Without these institutions, the nations were unable to absorb development aid. That is, there was nowhere to put the money and there were no agencies to give it to. The ability of a nation to effectively use aid is referred to as **absorptive capacity.**

If a country receives ten million dollars but has no banks to safely put the money in, the money cannot be stored. If there is no ministry of education to build local schools, the money cannot be spent. In sum, without adequate

economic, social, or political structures in place to absorb and distribute the money, development will happen slowly if at all.

Let's take a look at one more example to drive the point home. To build a school, a region requires a department of education that is capable of managing construction, hiring teachers, and managing the schools. Efforts would be coordinated with other agencies, such as those of transportation, budgeting, and social work. For instance, the department of transportation would help ensure that there is a road to get to the school. These complex coordination efforts require top-down management. The president has to select ministers who are good managers. These ministers, in turn, have to select good managers in a complex array of departments below them. And these departments must all coordinate their efforts with one another.

Of course, the alternative is to conduct all of the development from the outside, bypassing local banks and ministry offices, but that means that these social institutions never get built so that the programs must be administered by whoever is giving the money. That is a pretty suboptimal situation when the management is coming from a very different cultural framework with very little local knowledge.

Further, the effectiveness of aid programs was compromised by political concerns. In the post–World War II era, the United States was by far the world's largest aid donor. But in that country, aid was framed in terms of national security. That is, it was mostly delivered as a counterbalance to the Union of Soviet Socialist Republics (USSR). By the 1950s, the Cold War was well under way. The United States and the USSR began to see some governments of poor nations run by sympathetic dictators as preferable to potentially unsympathetic democracies. Dictators were much easier to control and entice than democratic governments, after all. And neither the United States nor the USSR felt it could afford to lose any territory in the global struggle that pitted one political economy against the other. As one of many examples, in 1954, the United States overthrew a Jeffersonian-based democratic government in Guatemala in part because the government was left leaning (Schlesinger & Kinzer, 1982).

THE 1954 GUATEMALAN COUP D'ÉTAT

In 1944, Guatemala became one of the few countries in the world with a democracy styled after the United States (Schlesinger & Kinzer, 1982). This should have heralded the beginnings of a period of peace and economic prosperity that had the potential to spread to neighboring nations. In fact, despite the expected bumps along the way, Guatemala was doing

quite well as an exemplar for what can be achieved when dictators are replaced with a representative government. When he was elected in 1954, President Jacobo Árbenz Guzmán responded to the demands of his still quite poor electorate with a series of programs designed to alleviate poverty. Among these was a proposal for land reform—a policy that some communist nations have employed. Although land reform takes many different shapes, it is at its essence a program that purchases or expropriates land from private or government entities and then gives the land to poor people to farm. In theory, this provides low-income families with autonomy, a means to feed themselves, and a strong economic asset that can be passed down from one generation to the next. Such an asset can also be used as collateral for loans to improve farming operations, to build a house, or to start another business. With a little prodding by a major corporation that held most of the land that was to be expropriated (at its declared tax value), the US government saw this as a push for communism in its backyard. The Central Intelligence Agency therefore began a successful campaign to depose President Árbenz, installing the ironically named Colonel Carlos Castillo Armas (*armas* being the Spanish word for *weapons*). This act ultimately led to a thirty-six-year civil war that ended the lives of perhaps hundreds of thousands of Guatemalans (Gleijeses, 1992). In addition to the direct bloodshed, it greatly limited Guatemala's ability to build a public health infrastructure or to otherwise develop economically. To this day, Guatemala is one of the poorest nations in the Americas, and its life expectancy of seventy-two years ranks it in the bottom third of all nations worldwide.

At the start of the 1960s, the Kennedy administration in the United States set out to win the hearts and minds of people in poor nations (democratic or otherwise) with a good deal of development aid. If the problem with development was too little aid, the 1960s should have solved that problem. Wealthy nations and the citizens of wealthy nations contributed to this agenda, leading to a decade of unprecedented giving.

However, by the end of the decade, only modest economic or human development had actually taken place. It had become increasingly evident that it is difficult to impossible to speed poor nations through the cycle of development in the same way that Europe was redeveloped after World War II.

Economic development—the growth of national economies—was slow in the 1960s. This is in part because, even after decades of development work, poor nations still had weak institutions. Thus, without the presence of good banks, even in the absence of thieving dictators, the money could not be easily spent. Another interrelated problem was that the Cold War continued on at full steam so the United States and the Soviet Union maintained strong interests in maintaining puppet governments around the world, virtually all with poor management skills.

A final possible problem, one that was only somewhat recognized at the time (and is still contentious), is that aid may itself pose challenges to development. This can occur because providing a reliable source of funding incentivizes corrupt people to go into government (so that they can steal it). Some also argue that aid creates dependence on outside help. This way, there is little incentive to build the complementary institutions required to ultimately form a mature and stable functioning government (e.g., a system of taxation). We will cover this hypothesis in more detail in chapter 3.

Human development was slow in part because almost none of the money given away was actually going to alleviate poverty. Human development, as measured by the UN Human Development Index (HDI), focuses on the growth in life expectancy, literacy, and standard of living (purchasing power) in a nation. (At the time of press, there were efforts to expand this measure beyond just these three measures.) Rather than focusing on schools or other institutions that directly benefited the poor, aid was mostly going to large infrastructure projects, such as dams, that were intended to help these countries move along economically. There is logic to this. Dams can provide needed electrical power for job-creating factories. But human development requires more than electricity. Without investing in schools, it becomes impossible to provide the education needed to ultimately transition an economy into one with skilled jobs that offers a living wage. Thus, the world of the poor entered the 1970s with only modest improvements in literacy, life expectancy, and economic growth.

The good news is that some nations, especially in Asia, did plant the seeds for future growth, investing in schools and agriculture in the post–World War II period. (Yes, a good education can be accomplished without electricity from dams.) The agricultural efforts were more or less led by a man named Norman Borlaug who helped usher in the **green revolution** (Evenson & Gollin, 2003). The green revolution involves investments in hearty grains and the use of cutting-edge crop technologies, particularly for poor nations. These benefits were slow to come, and, sadly, although these efforts were slowly building through the start of the 1970s, the world saw another governance setback that helped derail some of the progress in education and agriculture that had been realized up until then.

THE FALL OF GLOBAL GOVERNANCE

The 1970s saw the formation of the Organization of the Petroleum Exporting Countries (OPEC) (Barsky & Kilian, 2002). These were generally poor Middle Eastern countries. However, they were able to coordinate spikes in oil prices worldwide (primarily with the intent of punishing the United States for assisting Israel). The plan worked, but it also hurt low-income nations that could not afford the high oil prices. Moreover, the OPEC countries did not have mature economic institutions, such as banks, and their governments had to deposit their newfound riches in the banks of the Western countries they meant to punish.

Of course, poor nations needed cash to pay for the higher fuel costs. Western banks, overflowing with petrodollars, then lent the money back to poor nations with interest. The result of this vicious cycle was skyrocketing debt in poor nations. Because fuel costs were so high, price inflation was running rampant. Central banks raised interest rates (thus encouraging people to save money instead of spend) to dampen inflation. This, in turn, meant that poor nations had to spend even more on their loan costs. Soon, it became nearly impossible for some nations just to pay the interest on all of the loans that they had taken out.

In the 1980s, Ronald Reagan and Margaret Thatcher were respectively elected to power in the United States and the United Kingdom. Their administrations enacted what is now known as the *Washington Consensus,* or a set of economic mandates attached to aid dollars by multinational organizations, including reducing expenditures on government services (e.g., education, health, and transportation), privatizing government agencies, and removing trade barriers (Williamson, 1993) (see figure 1.5). This set of ideas was named the *Washington Consensus* because its two main intergovernmental actors, the IMF and the World Bank, sit across the street from one another in Washington, DC. A third important actor, the United States Treasury, is also close by.

As mentioned in the introduction, the IMF and the World Bank's mandated **structural adjustment programs** (SAPs) were a set of rules (called *conditionalities*) that poorer countries were forced to adopt if they were to receive loans or aid from these agencies. These rules were designed to "adjust" the loan recipient country's debt burden by reducing government regulations and expenditures. By reducing expenditures on schools, health care, transit, and other government programs, poor nations should, in theory, be better positioned to pay off debt. By reducing regulations, such as environmental protections, paperwork needed to do business, and so forth, business would start more easily and the economy should run more efficiently and therefore generate more revenue for paying off debt. These structural adjustments often also

Figure 1.5. President Reagan meeting with Prime Minister Margaret Thatcher at the Hotel Cipriani in Venice, Italy, 6/9/1987.

Source: Photo courtesy of the Ronald Reagan Library. Available online at http://www.reagan.utexas.edu/archives/photographs/large/C41109-27.jpg

included currency devaluation, wage suppression, business deregulation, and lower taxes on imported goods.

Currency devaluation means that the nation's currency becomes less valuable than other nations' currencies, such as the US dollar. This makes everything that the country produces much cheaper to those in other nations. (Those of you who have traveled to poor nations and have been awed at the purchasing power of your currency have reaped the benefits of some of these SAPs.) But SAPs also tended to be formulaic. So a country that relies on imports, such as Jamaica, would be expected to lower the value of its currency even though this would mean that imports would become more expensive.

Therefore, in many cases, these SAPs led to recessions and dramatic increases in poverty from which some countries have not yet fully recovered. Structural adjustment did help to reduce the debt burden, which by the 1980s led to a net flow of money from poor nations to rich nations in the form of interest payments. However, because it often forced governments to cut back on necessary public goods and spending as well as wasteful spending, it also

caused the virtual disappearance of the middle class, most of whom were government employees, in poor nations (Gaidzanwa, 1999; Moghadam, 1999).

The criticisms of the Washington Consensus do not end there. Joseph Stiglitz, a Nobel Prize–winning economist, points out that the economists making decisions at these institutions often saw the world in terms of mathematical and theoretical relationships, without adequately examining what is truly happening on the ground. As a result, they recommended that countries withhold subsidies for fertilizer and seeds for their farmers, completely ignoring that the United States and Europe provide heavy subsidies for agriculture. Thus, for one, the Washington Consensus asked countries to compete in an idealized world. In reality, the playing field was far from level. This can result in failed crops and hungry people when agriculture is a nation's main source of income. Most African residents live on less than US$2 a day, even as the average European cow receives approximately US$2.20 in subsidies each day (CFR, 2005).

The 1990s saw the end of the Cold War and thus there was less incentive for the United States and its allies to provide official direct assistance (ODA). This, coupled with the burgeoning HIV/AIDS epidemic (worsened by the impact of structural adjustment on public health infrastructure), resulted in declines in life expectancy in many African nations. In 1988, South Africa boasted of a per capita gross domestic product (GDP) of US$7,966, and a life expectancy of sixty-one years. Two decades later, their per capita GDP had improved a little bit and stood at US$9,429, but the average life expectancy had plunged to fifty-two years. But the decade also saw the stellar rise of formerly impoverished nations in Asia, a rise mostly attributed to investments in agriculture and education.

The 2000s saw the rise of humanitarian aid, with the world's two richest men—Warren Buffet and Bill Gates—pooling resources to form the largest charitable organization yet, the Bill & Melinda Gates Foundation. Other forms of private giving increased, but so did government aid. China's powerful manufacturing engine, coupled with unparalleled consumer spending in the United States, led to an enormous rise in the prices of raw materials such as oil, copper, and iron. But it also led to soaring economic growth in the places that supplied these goods, particularly Latin America and Africa. China, eager to fuel its manufacturing engine, turned to poor nations that were rich in mineral resources, often exchanging government aid for access to these resources (Michel, Beuret, & Woods, 2009). Moreover, China has been willing to go where few aid agencies dare, tapping into war-torn areas and highly corrupt governments alike. Thus it has served as a model and as an investor, ushering many nations into double-digit economic growth.

With all this money flowing into poor nations, particularly from China, the IMF—with all of its stipulations for aid—fell out of favor. In 2006, Turkey

was its main debtor, and the only large one in its portfolio. This led some to jokingly call the IMF the TMF, or Turkish Monetary Fund. Interest payments declined to the point that the fund had to sell off some of its gold assets. Then, in 2007, a real estate crisis struck wealthy nations, and they in turn became in need of structural adjustment. European nations received loans from the IMF, and the IMF was back in business. Ironically, during this crisis, few wealthy nations took up structural adjustment to the extent that they required poor nations to structurally adjust in the 1980s. Instead, they mostly printed money and embarked on economic stimulus programs. Yet it is good that they did not. Stimulation in many cases proved to be a good thing, because if wealthier nations such as China and the United States had not stimulated, the entire world economy might have ended up looking like the low-income nation economies did in the 1980s.

Despite the Great Recession, mostly the new millennium brought good news with respect to health worldwide. For one, we have witnessed effective public health campaigns directed at combating the tobacco and lead industries that have robbed humans of countless years of life and intellectual capacity. With these lessons, public health officials are moving against manufacturers of unhealthy foods, the coal industry and other heavy pollutants, and other industrial threats to human health. As with most advances, industry will move on to prey on less-developed countries, until those countries, too, can build effective institutions and regulatory agencies to address public health challenges. Reductions in smoking rates in rich nations and increasing aid in very poor nations are two of the many factors contributing to the constantly brightening health picture worldwide at the time of the publication of this book at the end of 2013.

The improvements in global health coincided not just with the economic rise of low-income nations, innovative ways of tackling old public health problems, and new investments in global health, but also with an ambitious set of goals forwarded by the UN called the **Millennium Development Goals**. Even with the global financial crisis of 2007, the economic rise of poor nations and improvements in basic sanitation, education, and immunization programs put some of these goals within reach.

THE MILLENNIUM DEVELOPMENT GOALS

Recognizing that modern health problems arise from policy failures, the UN set out to generate a set of goals that might be realistically achieved to move global health and development forward. These Millennium Development Goals were devised at the Millennium Summit in 2000 and were targeted at the poorest nations on earth, to be completed by 2015.

THE MILLENNIUM DEVELOPMENT GOALS

The Millennium Development Goals comprise a set of eight goals:

Goal 1: Eradicate extreme poverty and hunger.

Goal 2: Achieve universal primary education.

Goal 3: Promote gender equality and empower women.

Goal 4: Reduce child mortality rates.

Goal 5: Improve maternal health.

Goal 6: Combat HIV/AIDS, malaria, and other diseases.

Goal 7: Ensure environmental sustainability.

Goal 8: Develop a global partnership for development.

Each set of goals contains a number of targets. For instance, the first goal, to eradicate extreme poverty and hunger, has the following targets:

Target 1.A: Halve, between 1990 and 2015, the proportion of people whose income is less than US$1 a day.

Target 1.B: Achieve full and productive employment and decent work for all, including women and young people.

Target 1.C: Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

Although the goals may have seemed unrealistic at the time that they were formulated, progress has been made. Much of this is probably attributable to the huge economic success of China between 2000 and 2013, which lifted over four hundred million people out of extreme poverty within its borders alone. The extended reach of the Chinese miracle, with tentacles reaching as far as Africa and South America, has probably helped these nations' economic prospects, lifting many hundreds of millions more out of poverty. In fact, most of the fastest economically growing nations on earth in 2013 were also among the poorest nations. A number of these poorer nations also used this windfall to implement massive social welfare and health programs in the first decade of the twenty-first century. It may well be that by the time you are reading this, extreme poverty is on track to disappear in some places. (Alternatively, you may be laughing at how naive that kind of a statement is. Publishing moves slowly but the world changes quickly.)

Indeed, many questions remain. Will China's growth be sustained? (Many feel that this is unlikely.) Will it end up speeding up climate change to the point that many people are displaced, thus worsening misery? Will rising inequalities and authoritarian policies lead to social turmoil, as in nations that participated in the Arab Spring? Will China's rise mean a sustained period of relative peace, as is currently the case? Will state ownership and mismanagement lead to a spectacular global financial collapse?

AN ALTERNATIVE HISTORY

What you have read so far has been more or less told in various ways in books covering global public health (Black, 2002; Moyo, 2009). But we would like to tell an alternative history, one that looks a little rosier.

First, let us stop for a moment and imagine that after World War II development had been successful. When people spoke of development back then, they meant *economic* development. Imagine for a moment that sub-Saharan Africa had been as easy to build with development aid as was post-WWII France. We would now be living in a world with potentially more than six billion people with US habits—driving cars, using air-conditioning, generating a ton of trash, and eating an average of 273 pounds of meat each year (USDA, 2012).

This successful development agenda could have meant that we would have developed technologies that allowed us to survive in a world full of billions of consumers. Economic development, after all, brings unimaginable technological advances that can have a positive and negative transformative effect on well-being and the environment in which we live (Schneider et al., 2011). It could also have led to slower population growth. As people urbanize and become more educated, reproduction drops dramatically (Lewis, 1955).

But this alternative development scenario could also have meant Armageddon. Had the development agenda of the 1940s been successful worldwide, the Eastern seaboard of the United States and much of South and Southeast Asia could have been entirely underwater due to environmental change. This would not only have meant the loss of major cities, such as New York City, but it would also have meant that populations would have had to adapt very rapidly to such changes, in part by migrating across what are now mostly sealed borders.

Previously, we mentioned that human development—the growth in literacy and life expectancy—was slow in the 1960s. That is mostly true but is not entirely the case, as we alluded to previously when we mentioned the green

revolution. Recall that in much of Asia and parts of Latin America, nations began investing in schooling and new agricultural techniques in the 1960s (Evenson & Gollin, 2003).

The green revolution involved the use of more hearty grains coupled with modernized farming techniques, including hybridized seeds, synthetic fertilizers, pesticides, and new management strategies. This produced a large immediate payoff in terms of economic growth (from selling the crops), health (from better food supply and from eating the crops), and schooling (now governments could afford schools and the children's bellies were full). It also helped ease fears of global food shortages that might arise from the skyrocketing number of humans on earth. The investments in education then kicked in decades later, allowing many nations to greatly improve their healthy life expectancy and sustain reasonable economic growth. These changes in life expectancy can be easily visualized by visiting www.gapminder.org and exploring the past century's life expectancy and GDP per capita paths in Malaysia, South Korea, and most of the other nations in the neighborhood.

HOW PUBLIC HEALTH RESEARCHERS MEASURE THINGS

Gapminder.org provides us with a sense of overall trends in the associations between development indicators such as income and health over time. This is an example of correlational data. The term emphasizes the idea that we can infer and test whether some association, correlation, or relationship between two variables (such as per capita GDP and life expectancy) exists but not whether one variable causes or leads to the other, what the complex causal pathways and dynamics between these two variables are, how these variables interact, and what else might be going on. This sort of trend analysis, using large datasets, is probably the most common approach. But it is also the weakest study design in public health. Humans have a tendency to draw conclusions from what they see in data. For instance, coffee was first found to be highly correlated with heart disease and lung cancer in early research studies. Can you guess why? Well, it was not the coffee, so you can rest assured (even if you now have the coffee jitters!). It was the fact that coffee drinkers are more likely to smoke cigarettes. Thus, the dictum "correlation is not causation" must be considered when reading studies in your local newspaper.

An alternative to the correlational study design is an **experimental study.** In an experimental study, scientists manipulate the environment to make sure that they are measuring what they think that they are measuring. For instance, you might start by randomly assigning one group to drink coffee and another group to drink water every morning and follow them to see who gets heart disease and who does not. In this case, smokers are just as likely to end up in one random group as the other. So, using a randomized trial, smoking cannot be the hidden or underlying **confounder**, or confounding variable in the study. (In this example, smoking is the real link between coffee consumption and higher rates of heart disease.)

If we measure progress in terms of life expectancy growth, we see that, up until the AIDS epidemic, the growth in this life expectancy has been fairly steady even in parts of the world that had been completely written off by development economists. Data on literacy rates only go back a decade and a half, but even here, we have seen significant progress. Between 1991 and 2002, Burkina Faso has gone from a literacy rate of around 13 percent to around 24 percent. Between 1987 and 1997, Malawi's literacy rate has increased from 49 percent to 64 percent. Botswana has progressed from 69 percent to 81 percent between 1991 and 2003.

Recently, national governments in some countries such as Malawi have begun to ignore the international economic development experts and to instead follow their own common sense. Malawi's government has begun to subsidize fertilizer and seeds, allowing for a miniature green revolution in that nation. These subsidies are essential for local farmers to grow crops because fertilizer and seeds would be unaffordable at market prices. (See the following box for an explanation of why subsidies might be a good or bad idea.) Internal investments, coupled with the efforts of many smaller aid agencies and **nongovernmental organizations** (NGOs), have begun to improve educational opportunities for many poor people.

These statistics suggest that development progress is being made, just as long as we measure outcomes in terms of human development. Still, some NGOs are so poorly coordinated that they are doing more harm than good. Some of these changes in practices might not catch on, and governments can quickly go into decline. But if our ultimate goal is to improve well-being—as measured by literacy and a rising life expectancy—the development agenda is, and has been, on the right path even though researchers disagree on precisely how or why.

WHY DO SOME DEVELOPMENT EXPERTS DISLIKE SUBSIDIES?

The primary argument against subsidies for fertilizer, soil, crops, and so forth is that, in theory, the free market will raise all boats more quickly than government programs. Some argue that it is inefficient to take money from individuals and businesses and then spend this money on something else using inefficient and noncompetitive government agencies. Some of this money can disappear in paperwork, red tape, or corruption, particularly in poor nations. This approach effectively wastes the money of those who are productive so that fewer goods are produced overall. Finally, by subsidizing agriculture, farmers might not do everything they can to become competitive; at their worst, subsidies, similar to other welfare benefits, act as a disincentive for work and a disincentive to think creatively about innovative ways of solving problems.

The arguments for these subsidies are that the existence of corrupt officials or fears of disincentives should not serve as an excuse for intergovernmental agencies to abandon aid for the poor. Some argue that in desperate situations, subsidies for food production are not the same as subsidies for luxury goods. They argue that the lives of millions of poor people should not be collateral damage in a political argument about the efficiency of their leaders. Moreover, by subsidizing seeds, it becomes possible to encourage farmers to modernize the crops to those that require less water and less fertilizer. This argument aside, the private sector will not sell fertilizer or seeds at a loss. If farmers had to buy fertilizer and seeds at market rates in places like Malawi, they wouldn't have enough money to eat. Farmers may eventually need to learn to become more competitive, but they first need the sort of nurturing that so-called infant industries in industrialized nations received decades before. Often, farmers in poor countries barely have the funds to feed their families, especially during years when the yield is low. In short, farmers in poor countries would never become economically productive and competitive without receiving some aid and training to kick-start their efforts. And they must compete against highly subsidized and mechanized corporate farms in wealthier countries. Without fertilizer or seeds, poor farmers will rarely have a successful crop, so one bad year can lead to a downward cycle of perpetually declining yields. A more rational policy might be to make policy not by economic theory alone but via a much more participatory discussion that takes into account the situation on the ground.

LOVE AND HEALTH IN MODERN TIMES

Today, the development landscape can be thought of as a museum of the entirety of human history with exhibits arranged by geographic region. In one section of this museum, the Congo, we see some tribal societies struggling to ensure that half of all children born survive to age five. This, amid raging infectious disease, war, and hunger. However, the Congo is also surrounded by rising prosperity, as shown by sub-Saharan Africa becoming the next economic miracle. (China, now laced with high-speed rail and buildings built by some of the world's greatest architects, looked quite similar three decades ago.) In other sections in the United States of America and China, we see struggles to overcome problems associated with human hierarchies, industrial waste, and poor regulation. In these sections, politics (in the United States) and the desire for economic growth (in the United States and China) take precedence over what others might see as "rational" social policies—those that accept slower growth in exchange for stricter pollution controls, higher taxes to pay for education, occupational safety standards, and heavy investments in public transit. (In all fairness, China has made some of the heaviest investments in public transit of any nation, and the United States has fairly decent occupational safety standards.) In yet another section of this museum of human history, the Netherlands, we find reasonable work weeks, social safety nets, and previously unimaginable life expectancies, but also struggles to cope with an aging population in the face of a society resistant to allowing younger immigrants and increasing family size. Finally, in a series of strange new additions to this museum, small, mostly nondemocratic societies are popping up in which highly socially regulated societies challenge Norway for dominance in world health rankings. One section, Singapore, offers not only extreme public health measures, but also heavy regulations on potentially unhealthy human behaviors, such as mandatory death penalties for drug trafficking. Here, we see that other aspects of well-being, such as democratic participation, take a back seat to social order.

In low-income nations, we await various significant health events. The first is the aforementioned epidemiologic transition, in which infectious disease and hunger are brought under control and the population's life expectancy begins to increase. This is typically followed by a **demographic transition,** in which birthrates decline. These transitions are best illustrated by population pyramids, such as the ones in figure 1.6, showing different stages of population and demographic change.

The first pyramid is typical of nations prior to their epidemiologic transition. The second is typical of a nation following the epidemiologic transition, the third for one undergoing a demographic transition, and the final, a country after a demographic transition.

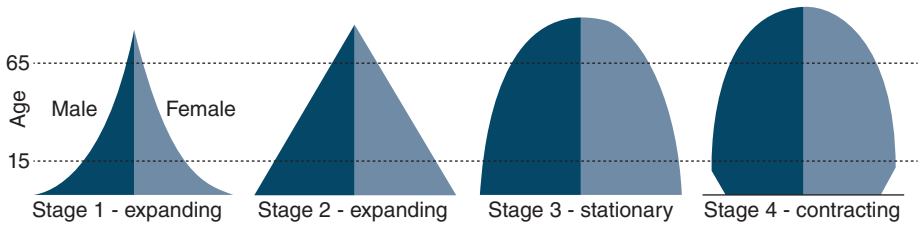

Figure 1.6. Population pyramids typical in various stages of development.

These transitions coincide with responsible governance. If industry is poorly regulated and the country becomes extremely polluted or the government fails to continue to invest in beneficial social policies, then the health and quality of life benefits associated with the epidemiologic and demographic transitions can be mitigated.

Thus, we strive for healthy development that moves nations from a low life expectancy to a high life expectancy. However, each of these sections of the world's new museum suffers from its very presence in the same museum building. These include the widespread availability of cheap, tasty sources of empty calories, the inability to protect borders from pollution or new strains of infectious disease, and the spread of new and old war technologies. Although the process of development mostly follows historical trends, these truly *global* health risks transcend borders and pose new challenges for public health. They also point to a need for effective forms of global governance. These new risks are all in keeping with the notion that, as humans manage to tackle threats to health, the solutions to old problems inevitably produce new ones.

From this new landscape, new and challenging questions arise. Namely, how do we regulate human behavior but maintain freedom and quality of life? How do we deal with skyrocketing birthrates in some areas of the world and plummeting rates in others? How do we manage the increasing prevalence of floods and droughts, coupled with rising sea levels? How, exactly, do we maintain a robust and vibrant free market economy and foster this market so that it maintains, rather than harms, human longevity at the same time? How do we cope with populations that are too young in some places and too old in others? How do we manage the massive movements of humans across borders as they seek to equilibrate economic and demographic inequalities?

The answers to some of these questions are easy. Increased immigration has not only helped solve economic problems in nations such as the United States, but it has also helped solve demographic and health problems. That is because immigrants tend to be slightly younger, have higher birthrates, and are healthier than native-born Americans (Muennig & Fahs, 2002; Muennig et al., 2012).

SUMMARY

Even this brief history holds some important lessons about global health policy. Most important, we need clear, coordinated global policies and strong leadership to manage global issues. This obviously has not happened at a global level. As this is being written, various large-scale conflicts are well in progress. There is a constant threat of nuclear attack, within countries such as the United States and between nuclear-armed nations such as India and Pakistan. The world remains ill-prepared for an infectious disease pandemic. There is no clear path to addressing global climate change. Industrial pollution is causing air quality problems not only for industrializing nations but also for their neighbors. Deforestation and despeciation are running rampant and unchecked. Much of this can be attributed to ineffective, toothless global institutions, such as the UN or WHO.

But even if such organizations were to transform themselves into effective governing bodies with actual political power, we still are not sure what those policies need to look like. For instance, we need to decide what we mean by development. Does development mean economic development to the point that we have replicated US GDP and consumption patterns in all 191 (or more) nations on earth? If so, then the world will face entirely new public health threats, such as massive environmental destruction. Or does it mean striving for the policies that will prolong our lives and improve our health, such as universal primary school education and vaccination? When do economic development and human development go hand in hand? When do they not?

KEY TERMS

absorptive capacity
confounder
demographic transition
economic development
epidemiologic transition
experimental study
green revolution
human development
Industrial Revolution
intergovernmental institutions
Millennium Development Goals
nongovernmental organizations (NGOs)
social hierarchies
social institutions

DISCUSSION QUESTIONS

1. How would you define *global health?*
2. What is the best way to achieve an epidemiologic transition?
3. Who are some of the main actors and institutions that currently help to set global health policy?
4. What are some of the key events in the late nineteenth and twentieth centuries that affected global health? How did they do so?

5. What kinds of regulations should we put on markets in the name of health, if any?
6. Is global warming a public health threat? How so?

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