Fertility is the driving force of population growth in the world today. Mortality rates are relatively low around the world by historical standards, though exceptions exist. Reductions in infant and maternal deaths, universally hailed as desirable, would increase population growth little compared with how powerfully reductions in fertility could curb it.

Fertility is the logical target for reducing population growth because of the place we occupy today in the history of population change. It is widely believed that for most of human history fertility and mortality were both quite high and kept human populations from growing except very slowly over very long time scales. Population growth “took off” on its dramatic rise when death rates started to fall with the advent of industrialization and, even more importantly, the development of the germ theory of disease, healthy sanitation practices, and antibiotics and other medicines. This decline in mortality began in the industrialized world in the nineteenth century and spread to the Third World after World War II, making relatively low death rates virtually a worldwide phenomenon.

In some countries fertility has followed mortality in its decline. Births and deaths are in another equilibrium, producing slow or no growth, but this time at lower levels. These are the countries that are close to zero population growth. Elsewhere, of course, fertility has not fallen to match mortality. Indeed, the essence of rapid world population growth today is this incongruence between fertility and mortality rates. The gap is greatest in the countries where population growth is most rapid, where fertility is at a peak or has just begun to fall. Growth rates are slower where the decline in fertility has been under way for a longer time or has been more rapid. Where growth rates are nearly zero, the transition to a low-fertility regime is nearly complete.

What drives variations in fertility such as those that are observable in the long sweep of human population history and in the pattern of fertility around the world? It is usual to consider the determinants of fertility in two classes—proximate, or immediate determinants, and social and economic conditions that affect fertility.

A discussion of the proximate determinants of fertility is best undertaken in the context of a question that seems paradoxical in a world where high fertility is considered a problem. That question is not why fertility is so high, but why it is not higher. Demographers estimate that, as a matter of physical possibility, the average woman is capable of bearing 17 children in a reproductive lifetime stretching from age 15 to age 50. Of course, this level is only occasionally achieved by individual women, and on a country-wide basis does not occur in the world today even in the highest-fertility countries. So what prevents humans from reaching this theoretical maximum?

In some cases biological conditions reduce fertility. Some portion of any population is sterile, and another portion is subfecund, or less fertile than it would be, because of malnutrition or disease, especially sexually transmitted disease. Even among fully fertile people, in most countries in the world today, women marry some years after age 15 or the onset of fertility,
so that age at first marriage is a significant determinant of fertility. Marriage at 20 avoids three births; in Sri Lanka, age at marriage is estimated to avoid five births for the average woman.

Another limit on fertility is of primarily historical importance: widespread celibacy. For several centuries in Europe before the development of industrial society, fertility was lower than is usual in societies that are not using modern contraceptives. In mid-nineteenth-century Belgium, for example, 15% of women and 18% of men never married. Many of those who remained celibate were lifelong servants in the houses of others. In Ireland, it is suggested that severe economic conditions contributed to celibacy. The incidence of celibacy around the world today, however, is not large enough to affect fertility significantly.

Breast-feeding, which usually suppresses ovulation, is a natural contraceptive. Where it is practiced for two years or more, it can further reduce the actual number of births from the theoretical maximum. In Bangladesh, where the average mother breast-feeds each of her children for 29 months, the practice is estimated to reduce the average Bangladeshi woman’s total births by nearly seven. In some cultures, breast-feeding’s effect on fertility is intensified by a taboo on postpartum intercourse. In Africa and South Asia, this taboo has been of historical and local significance. It is widely thought that modernization, including urbanization, is undermining this practice today.

The fertility-reduction practice most familiar to Americans is contraception. Precursors of modern condoms and diaphragms were used to avoid conception in ancient Egypt and classical Greece and Rome. Most cultures contain some folk wisdom, always for women, about avoiding conception, such as herbal concoctions for drinking or applying locally and behaviors such as jumping over sticks or otherwise exerting oneself after intercourse. Coitus interruptus, an ancient method still in widespread use today, requires male initiative. Other traditional methods include abstinence and rhythm.

Modern methods of contraception include the oral contraceptive pill; hormonal injections or implants; the intrauterine device, or IUD; barrier methods such as condoms, diaphragms, and sponges, often used with chemical spermicides; and surgical sterilization. Abortion is not technically a method of contraception, but it plays an important role around the world in preventing births.

Broader social, cultural, and economic conditions also influence fertility levels. High fertility is usually found in countries where poverty is widespread and deep. Where women do not often work for significant wages, bearing and raising children is easily integrated into their traditional unpaid work: producing, processing, and preparing food, gathering fuel and water, and other work in and near the home. The wages for women who work outside the home in these countries are always low; a mother can take time out for childbirth without sacrificing much pay, and another child can in just a few years easily make up such a minor loss with its own labor. The need for child labor also drives fertility up, especially in agricultural communities but also anywhere that families rely on the physical environment for subsistence, as for gathering wood for fuel and drawing water. A lack of schooling opportunities reinforces this effect. Another important condition of high fertility is a culture in which women have little or no prestige except that gained by bearing children, especially sons. A preference for sons also increases fertility, as couples keep having children until they achieve the number of sons that they want. High rates of infant and child mortality have the same effect. Finally, in societies without public old-age pensions, children represent the only opportunity a couple has for support in old age.

Wealthy, industrialized societies, where women increasingly compete as near-equals to men in the workplace, have the opposite conditions, conditions that encourage low fertility. Taking time off from work to bear and raise
children represents a major loss in a society where women are significant wage earners and where they usually have sources of prestige other than multiple child bearing. The sheer cost of raising a child in a complex technological society, where mass consumption is the rule and a college education is desirable, can be a deterrent as well. Child labor is illegal in most wealthy, industrialized countries, and compulsory schooling until at least age 16 is the norm, reinforcing the high cost of having children. Preference for males is not as marked as in the poorer countries, and infant and child mortality rates are low. Finally, widespread old-age pensions and a weakening of the sense of obligation that adult children have to support their parents combine to remove security in old age as a spur to repeated child bearing.

Thus a complex constellation of factors affects fertility, from basic health to contraceptive use to the status of women. If a government is interested in encouraging a reduction in fertility, it must affect one or more of these determinants. In a time of constrained budgets nearly everywhere, how is a government to know which of the many factors is most important or will work most effectively? Recent analyses of the declines in fertility of the past 30 years provide an answer.

Analysts of these declines and of the pattern of fertility around the world in general have begun to converge on a few relatively simple ideas that explain most of the variation in fertility. First in importance is the status of women. Second is primary health care, particularly health care that keeps infants and children alive and improves the health of mothers. The final element is a family planning program that offers a full range of contraceptive options and is supported by rhetoric from the highest level of government.

In general, fertility is highest where women’s status is lowest. Africa, the Arab states, and portions of South Asia have the world’s highest fertility rates. And by measures such as education, health, and income, their women have low status. In places where fertility has fallen, women have options other than motherhood from which to gain prestige and a place in their culture. The importance of the status of women to fertility is reflected in the focus of the U.N.’s International Conference on Population and Development, held in Cairo, Egypt, in September 1994, on what it called the “empowerment of women” as both an end in itself and as a means to reduce fertility.

Fertility is also higher where infant and child mortality are high. It is not hard to understand the motivation of parents who keep bearing children, in fear that some of them will die in childhood, in order to achieve the family size that they really want. Where primary health care keeps babies alive, fertility is lower.

Finally, successful family planning programs are associated with lower fertility around the world. These programs succeed in bringing about a fall in fertility when they are designed with sensitivity to the culture in which they are offered and carried out by local people. Programs also succeed that provide the full range of contraceptive options, from condoms to sterilization, to all people. And programs succeed the most when they are coupled with strong rhetorical support from the government—statements that make having smaller families a patriotic act.

Family planning programs work not only to reduce fertility directly but also to improve infant and maternal health. Where fertility is high, women must have early, late, and closely spaced pregnancies. All of these are high-risk. Family planning allows women to delay and space pregnancies, and prevent high-risk pregnancies; thus it can work as an element of primary health care, in addition to reducing fertility. In so doing, it is preparing the ground for its own further acceptance.

Thus the job of bringing fertility down to the replacement levels required to stabilize world population is somewhat simplified. A precise kind of development is called for that raises the status of women by widening opportunities for
education and work, as well as according more legal rights; brings primary health care to all with a particular emphasis on improving infant and child health; and makes the full range of family planning services available everywhere.

This approach to halting world population growth promises to be more effective than the approach envisioned by the traditionally dominant theory of population change, the demographic transition theory. We described trends in fertility and mortality over the long sweep of history at the beginning of this section. For most of history, both fertility and mortality were high and balanced, resulting in slow growth, if any. Then, with industrialization, higher incomes, and the introduction of modern medicine, mortality fell dramatically in Europe and North America. Fertility at first stayed high, resulting in very rapid rates of population growth. Then fertility fell to match mortality again, resulting in slow growth at lower levels of fertility and mortality. This three-part sequence makes up the demographic transition theory.

The theory holds that as a country becomes wealthy and industrialized, fertility will fall automatically. As it happened in Europe and North America, the theory goes, so it can happen in the now rapidly growing Third World, if only people can become prosperous enough.

Increasingly, however, dissenting voices have questioned the validity of the demographic transition theory. Some have argued that waiting until the Third World is wealthy for population to stabilize means that the ultimate size of the world’s population will be too great to avoid harm from environmental problems and resource scarcities. Others have said that the rapid population growth now characteristic of the Third World precludes the kind of large-scale and widespread economic development required to reduce fertility and slow population growth. The notion here is that some high-fertility Third World countries are trapped in the second stage of the demographic transition theory and cannot break loose without some kind of intervention.

Recognizing the importance of the status of women, maternal and child health, and family planning to fertility and population stabilization sidesteps some of the conundrums of the demographic transition theory. Instead of assuming that wealth created by industrialization will eventually trickle down to women and children, economic development should be targeted specifically at raising women’s status, improving maternal and child health, and bringing family planning to all couples. In the current less-than-generous economic age, this is a least-cost strategy. It can solve immediate problems while simultaneously creating conditions that increase the likelihood of further growth in wealth and well-being in the future by improving the wealth and well-being of the building blocks of economies, individual people.

**Exercise**

Using the data sheet, plot infant mortality against total fertility rate for the countries of the world with populations of one million or more. Formulate a hypothesis about the relationship between infant mortality and fertility.