

# Policy Analysis

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## ***The Greatest Century That Ever Was 25 Miraculous Trends of the Past 100 Years***

by **Stephen Moore and Julian L. Simon**

### **Executive Summary**

There has been more material progress in the United States in the 20th century than there was in the entire world in all the previous centuries combined. Almost every indicator of health, wealth, safety, nutrition, affordability and availability of consumer goods and services, environmental quality, and social conditions indicates rapid improvement over the past century. The gains have been most pronounced for women and minorities.

Among the most heartening trends discussed in this study are the following: life expectancy has increased by 30 years; infant mortality rates have fallen 10-fold; the number of cases of (and the death rate from) the major killer diseases—such as tuberculosis, polio, typhoid, whooping cough, and pneumonia—has fallen to fewer than 50 per 100,000; air quality has improved by about 30 percent in major cities since 1977; agricultural productivity has risen 5- to 10-fold; real per capita gross domestic product has risen from

\$4,800 to \$31,500; and real wages have nearly quadrupled from \$3.45 an hour to \$12.50.

During the course of this century, the affordability and availability of consumer goods have greatly increased. Even most poor Americans have a cornucopia of choices that a century ago the Rockefellers and the Vanderbilts could not have purchased. Today more than 98 percent of American homes have a telephone, electricity, and a flush toilet. More than 70 percent of Americans own a car, a VCR, a microwave, air conditioning, cable TV, and a washer and dryer. At the turn of the century, almost no homes had those modern conveniences. And although Americans feel that they are more squeezed for time than ever, most adults have twice as much leisure time as their counterparts did 100 years ago.

By any conceivable measure, the 20th century has truly been the greatest century of human progress in history.

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*Stephen Moore is director of fiscal policy studies at the Cato Institute. Julian L. Simon (1932–98) was a professor of business administration at the University of Maryland and a senior fellow at the Cato Institute. Most of the research findings come from Simon's lifetime of work showing how life on earth is getting better, not worse. The research assistance of Stephen A. Slivinski and Philip Kerpen is gratefully acknowledged.*

**We are about to complete what the 1933 World's Fair in Chicago aptly called "the Century of Progress."**

## **Introduction**

We step upon the threshold of 1900 . . . facing a brighter dawn of civilization.

—*New York Times*, January 1, 1900

The central premise of this study is that there has been more improvement in the human condition for people living in the United States in this century than for all people in all previous centuries of human history combined. Gigantic strides have been made in living standards in most other parts of the world as well, but not all. The European Jews, the Russians, and the Chinese experienced dreadful episodes of tyranny under Hitler, Stalin, and Mao.

When one considers the age of the planet, the 20th century has been a momentary flash in time. Yet the documentable improvement in the quality of human life in this brief period has been nothing short of miraculous. Although the leap forward in human progress began in the 19th century with the Industrial Revolution, the greatest strides have taken place in the 20th century. Virtually every statistic presented in the pages that follow confirms that we are about to complete what the 1933 World's Fair in Chicago aptly called "the Century of Progress."

The roughly fourfold rise in the living standards of Americans in this century is particularly impressive when we consider that for thousands of years human progress occurred at a glacial pace. For the thousand years before the Industrial Revolution, incomes were virtually flat, growing by about 0.5 percent per year. Life expectancy was not much greater in 1700 than it was at the time of the Greek and Roman Empires (Figure 1). Throughout most of human history, life was, as Thomas Hobbes famously put it, "nasty, brutish and short."

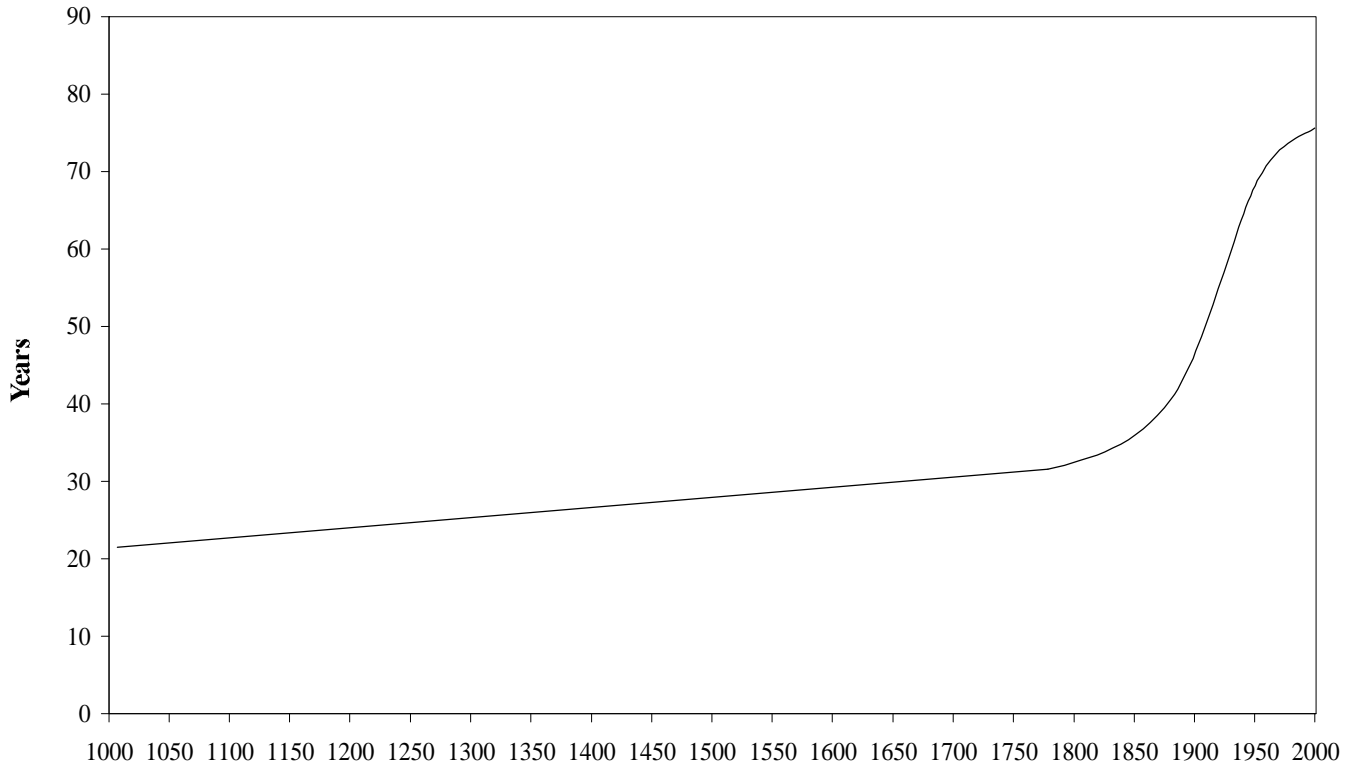
One way to appreciate the improvements in quality of life over the course of this century is to mentally travel back 100 years. What

was life really like? The latter part of the 19th century was an era of tuberculosis, typhoid, sanitariums, child labor, child death, horses, horse manure, candles, 12-hour work days, Jim Crow laws, tenements, slaughterhouses, and outhouses. Lynchings—not just of blacks—were common. (In the South 11 Italians were lynched in one month.) To live to 50 was to count one's blessings. For a mother to have all four of her children live to adulthood was to beat the odds of nature. One in 10 children died before his or her first birthday. One hundred years ago parents lived in eternal fear of a child's dying; nowadays, many parents live in eternal fear of their child's not making the county select soccer team.

Industrial cities were typically enveloped in clouds of black soot and smoke. At that stage of the Industrial Revolution, factories belching poisons into the air were regarded as a sign of prosperity and progress. Streets were smelly and filled with garbage before modern sewerage systems and plumbing were put in place. Leading killers of the day included pneumonia, tuberculosis, diarrhea, and violence. In 1918 pneumonia killed 675,000 Americans. In the first two decades of the 20th century, before the era of acid rain and global warming, pollution killed people—lots and lots of people. Deadly diseases were carried by milk and what then qualified as "drinking water." Cancer was not one of the primary causes of death as it is today, because most Americans succumbed to infectious diseases and occasional epidemics before their bodies had time to contract cancer.

Medical care was astonishingly primitive by today's standards. Abraham Flexner, writing in the famous Flexner report on medical education in 1910, commented that until then, a random patient consulting a random physician had only a 50-50 chance of benefiting from the encounter. Health historian Theodore Dalrymple notes that until the late 19th century it was often considered "beneath a physician's dignity to actually examine a patient." Most of the drugs used throughout the ages, including arsenic,

**Figure 1**  
**Life Expectancy at Birth, This Millennium**



Sources: For 1000–1850 (Europe), Julian L. Simon, *The Ultimate Resource 2*, rev. ed. (Princeton, N.J.: Princeton University Press, 1996), p. 319; for 1900–96 (United States), Centers for Disease Control, National Center for Health Statistics, *Monthly Vital Statistics Report 47*, no. 45, Table 16; and U.S. Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970* (Washington: Government Printing Office, 1975), Series B 107.

which was still used through the early 1900s, were useless and in many cases poisonous. Oliver Wendell Holmes was reported to have declared that if all of the drugs in his time were tossed into the ocean it would be better for mankind and worse for the fish.

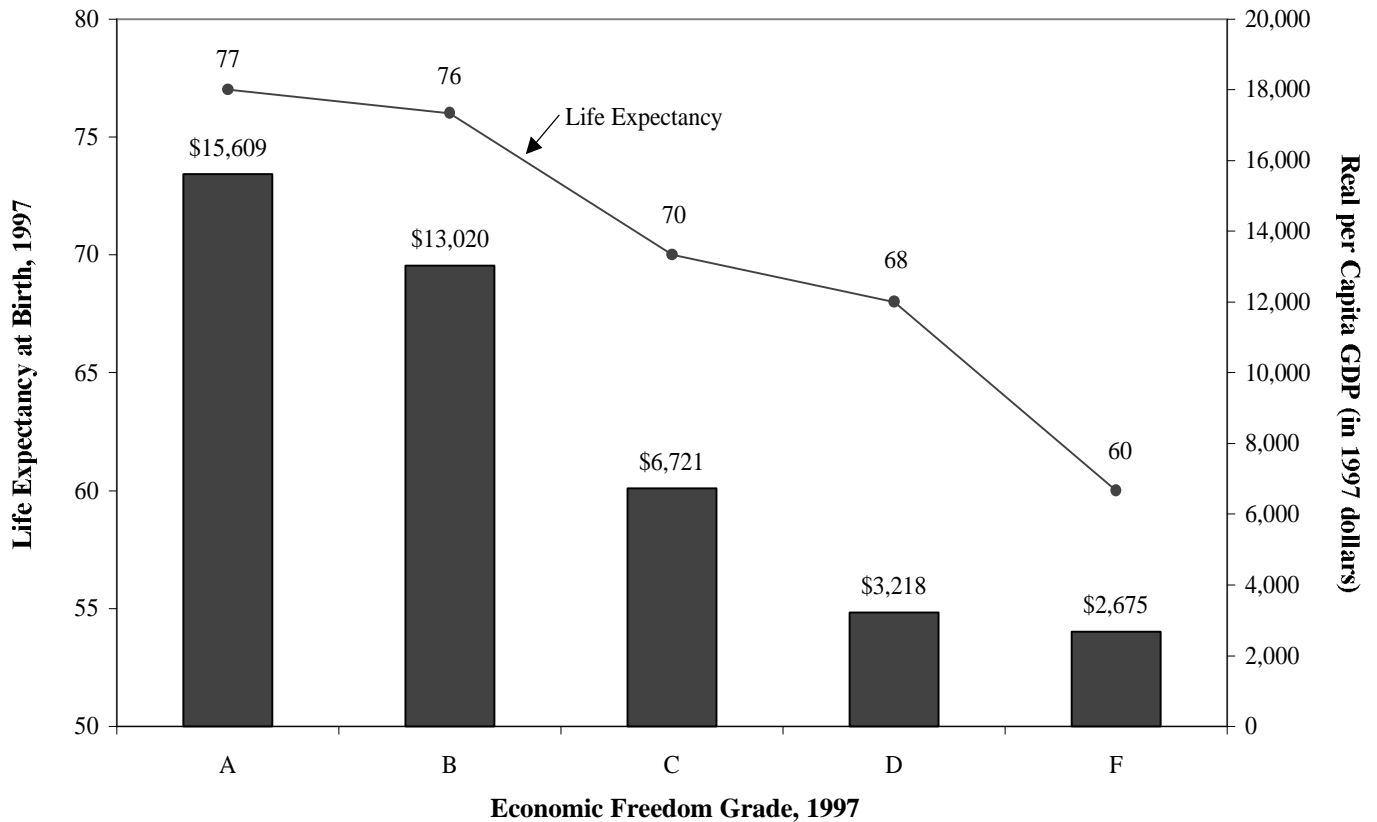
So why did mankind experience such a burst of progress all of a sudden at the start of the 20th century? And why did so much of that progress originate in the United States? The shorthand answer to the second question is this: Freedom works. The unique American formula of individual liberty and free enterprise has encouraged risk taking, experimentation, innovation, and scientific exploration of a magnitude that is unprecedented in human history.

Economic freedom and freedom from government repression, in particular, are nec-

essary ingredients for human progress. In the United States the government has, for the most part, set down a reasonable rule of law and then gotten out of the way. The tragedy of this century is that mankind has had to relearn the lesson of history again and again—most recently in the former Soviet Union, where life expectancies have tragically fallen, and in China, where tens of millions of Chinese starved to death under collectivist agricultural policies—that repression by government short-circuits the human spirit and produces sustained periods of stagnation and even anti-progress. Figure 2 shows that there is a strong positive relationship between economic freedom and life expectancy across countries.

America also enjoys a unique advantage over other nations because we are a nation

**Figure 2**  
**Life Expectancy and Economic Freedom**



Sources: Calculations by DKT International based on James D. Gwartney and Robert L. Lawson, *Economic Freedom of the World: 1997 Annual Report* (Vancouver: Fraser Institute, 1997); and Population Reference Bureau, *World Population Data Sheet 1999*,

that remakes itself through the new blood of immigrants. The tens of millions of new Americans who came through Ellis Island or the Golden Gate or across the Rio Grande have been some of the brightest and most ambitious people of the rest of the world. Americans are a people who have been self-selected as problem solvers and progress seekers. Historian Paul Johnson states this point in the first sentence of his book *A History of the American People*, when he describes Americans as “the first, best hope for the human race.”

The answer to the first question, why all this progress has been compressed into the historical nanosecond of the 20th century, is not so straightforward. We believe, however, that three relatively modern developments have revolutionized human life. The first was

modern medicine and vaccines. Scientists generally attribute up to half the increase in life expectancy in this century to improved drugs, vaccines, and other medical treatment breakthroughs.

The second development was the harnessing of electrical power. Although generation of electrical power was possible by the late 19th century, electricity started to become widely available in homes and factories only in the early decades of this century. The magic of electrical power not only brought us literally out of the darkness but also launched thousands of inventions, all of which have allowed mankind to begin to harness the forces of nature, thus improving nearly every aspect of our daily lives.

The third transforming development was the invention of the microchip. As the brains

of the computer, the semiconductor has been mankind's passport to a whole new universe of knowledge. The average American worker with a \$799 Pentium-chip laptop computer has more computing power at his fingertips than was contained in all the computers in the entire world during World War II. One hundred years ago, all of the greatest mathematicians in the world together did not have the problem-solving resources of today's fourth grader with a \$19.95 Texas Instruments pocket calculator.

Americans have a tendency to believe that things used to be better than they are now. This inclination typically impels us to look to government to make things better. The nostalgia that many Americans express for the 1950s is a notable example. However, as the comedian Jackie Gleason once noted, "The past remembers better than it lived." For the vast majority of Americans—particularly minorities and women—life was not better in the 1950s than today. We are healthier; we live longer; we are richer; we can afford to purchase far more things; we have more time and money for recreation; we have bigger and better homes; we are at much less risk of catastrophic accidents; and we breathe cleaner air and drink safer water. The list could go on and on. It is impossible, of course, to measure Americans' spiritual well-being, but there can be little argument that our material well-being has never been better.

The doubters will wonder whether our present glorious age in America is just another blip in history, like the Egyptian, Persian, and Roman Empires and the Golden Age of Greece. Skeptics moan that either the progress we have experienced in the 20th century will be reversed or, as some environmentalists fear, we will be done in by growth mania itself. We may simply be living through another episode of dynastic glory that will soon falter.

We doubt it. The advance of civilization that we are now living through is different from previous advances. Ours is the first age in which affluence has been enjoyed by more than just a tiny fraction of the population. In

previous times, even in the great empires, at least 90 percent of the populace remained at a Malthusian level of subsistence. Never before have improvements in quality of life been spread to virtually every segment of the population, as has happened in the United States and the developed world in this century.

Perhaps the best way to dramatize this point is to compare the living conditions of the poor today with those of well-to-do citizens 100 years ago. As we prepare to close the books on the 20th century, most Americans who are considered "poor" today have routine access to a quality of food, health care, consumer products, entertainment, communications, and transportation that even the Vanderbilts, the Carnegies, the Rockefellers, and 19th-century European royalty, with all their combined wealth, could not have afforded. No mountain of gold 100 years ago could have purchased the basics of everyday life that we take for granted in 1999: a television set, a stereo with the first music ever recorded, a cellular telephone, a car, a vaccination against polio, a Häagen Dazs ice cream bar, a sinus tablet, contact lenses (to say nothing of laser surgery), or the thrill of seeing Michael Jordan majestically soar through the air as if defying gravity while dunking a basketball. Today, almost all Americans can afford these things.

We are also optimistic because, unlike in previous eras of progress, the gains that have been made in the 20th century are truly irreversible because they are primarily the result of the wondrous advances of human knowledge that have accumulated in this century. That knowledge can never be erased, even if barbarians or Luddites were to burn every library to the ground. Encyclopedias can now be stored on a six-inch, \$10 computer disk. If, God forbid, a bomb were to destroy all the physical capital and infrastructure of the United States, those structures could be rebuilt in a generation, provided there were still people around to do the rebuilding. (Consider how quickly Germany was resurrected after World War II.) Moreover, the information age makes it almost futile for

**The semiconductor has been mankind's passport to a whole new universe of knowledge.**

**Table 1**  
**25 Wonderful Trends of the 20th Century**

Trend	1900–1920 <sup>a</sup>	1995–98 <sup>b</sup>
Life expectancy (years)	47	77
Infant mortality (deaths per 1,000 live births)	100	7
Deaths from infectious diseases (per 100,000 population)	700	50
Heart disease (age-adjusted deaths per 100,000 population)	307 (1950)	126
Per capita GDP (1998 dollars)	\$4,800	\$31,500
Manufacturing wage (1998 dollars)	\$3.40	\$12.50
Household assets (trillions of 1998 dollars)	\$6 (1945)	\$41
Poverty rate (percent of U.S. households)	40	13
Length of workweek (hours)	50	35
Agricultural workers (percent of workforce)	35	2.5
TV ownership (percent of U.S. households)	0	98
Homeownership (percent of U.S. households)	46	66
Electrification (percent of U.S. households)	8	99
Telephone calls (annual per capita calls)	40	2,300
Cars for transportation (percent of U.S. households)	1	91
Patents granted	25,000	150,000
High school completion (percent of adults)	22	88
Accidental deaths (per 100,000 population)	88	34
Wheat price (per bushel in hours of work)	4.1	0.2
Bachelor's degrees awarded to women (percent of degrees)	34	55
Black income (annual per capita, 1997 dollars)	\$1,200	\$12,400
Resident U.S. population (millions)	76	265
Air pollution (lead, micrograms per 100 cubic meters of air)	135 (1977)	4
Computer speed (millions of instructions per second)	0.02 (1976)	700
Computer ownership (percent of U.S. households)	1 (1980)	44

<sup>a</sup> Values are for earliest year for which data are available.

<sup>b</sup> Values are for latest year for which data are available.

repressive governments, like that of the Soviet Union, to try to restrain freedom through military might, as they did in previous eras.

Finally, we are convinced that the progress of the 20th century is not a mere historical blip but rather the start of a long-term trend of improved life on earth, because almost every measure of human material welfare has

shown gains. This is the first time in human history that has happened.

Indeed, we are hard-pressed to find more than a small handful of trends that have gotten worse in this century. Taxes are higher and government is a lot bigger and more intrusive than 100 years ago in the United States. (We believe that big government may be a consequence, but surely not the cause, of

prosperity.) The good news is that, at this moment in history, for most inhabitants of the planet, freedom is marching forward and is not in retreat. Even in the United States, federal spending as a percentage of gross domestic product has now dipped to its lowest level in 25 years—suggesting that perhaps Bill Clinton was right that “the era of big government is over.”

Some social trends, of course, indicate deterioration not improvement over the past 30 to 40 years, as William Bennett and Robert Bork have emphasized. There have been worrisome increases in family breakup, abortions, illegitimate births, and teen suicide, for example. Violent crime rates have drifted upward—in the 1920s, 1960s, 1970s, and 1980s, for example—and downward—in the 1930s and 1990s, for example—with no immediate sign of long-term improvement. However, there are glimmers of good news. In recent years, most of these troubling trends of social decay have been improving, and for almost all the other social problems, the arrow points to improvement on a grand scale.

Winston Churchill once said that “the further back you look, the further ahead in the future you can see.” The declinists are wrong when they say that mankind is on a collision course with doomsday. For Americans, the 20th century was not mostly an era of world war, environmental degradation, catastrophic global warming, capitalist exploitation, overpopulation, and a deep divide between the haves and the have-nots. (As John Tierney of the *New York*

*Times* lamented not long ago: “No matter how much healthier and wealthier everyone becomes, we always read about a gap between one group or another. . . . As more babies survive, we focus on endangered species of beetles.”) It is imperative that we understand and appreciate the advances of our recent history so we can use our resources wisely for solving real societal problems, not make-believe ones.

So the purpose of this study is in part to set the historical record straight; it is a plea that the history books and the media try to get the story right. We hope that the 25 great trends presented in the pages that follow and given in Table 1 will convince people that the 20th century has been the greatest century that ever was. It should also convince even the zealous skeptics that the past 100 years truly have been the American century. The great American comedian-philosopher Will Rogers had the story exactly right when he said many years ago:

Trying to stop this country now would be like spitting on a railroad track. No politician, no party, not Congress or the Senate, can really hurt this country now. And we’re not where we are on account of any one man. We’re here on account of the common sense of the big normal majority. This country is bigger than any man or any party. They couldn’t ruin it even if they tried.

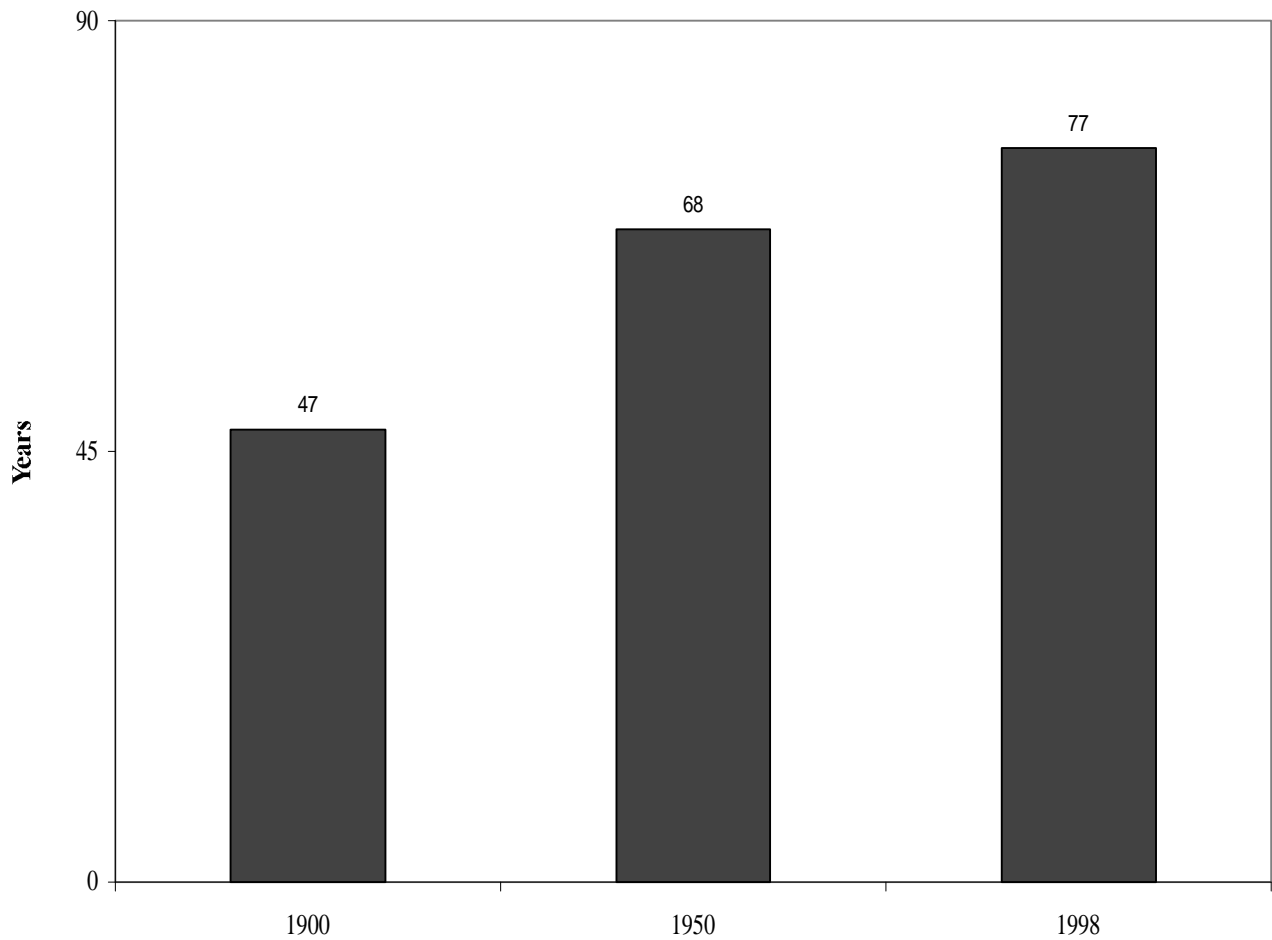
**We are convinced that the progress of the 20th century is not a mere historical blip but rather the start of a long-term trend of improved life on earth.**

## Human Life Span

The most amazing demographic fact of the past century, and the greatest human achievement in history in our view, is that humanity has almost won the battle against early death. We are not alone in this assessment. Several years ago the *New York Times* described the doubling of life expectancy since the start of the Industrial Revolution as “the greatest miracle in the history of our

species.” Throughout most of human history, death came at an early age—often 25–35 years was a typical life span. In the United States over the past 100 years, life expectancy has increased to 77 years (Figure 3)—triple the life span of our ancient ancestors and three decades longer than our great-grandparents could expect to live at the turn of the century. Incredibly, the life expectancy of black Americans has almost doubled in this century.

**Figure 3**  
U.S. Life Expectancy at Birth, 20th Century



Sources: *Historical Statistics of the United States*, Series B 107; and *Monthly Vital Statistics Report* 47, no. 45, Table 16.

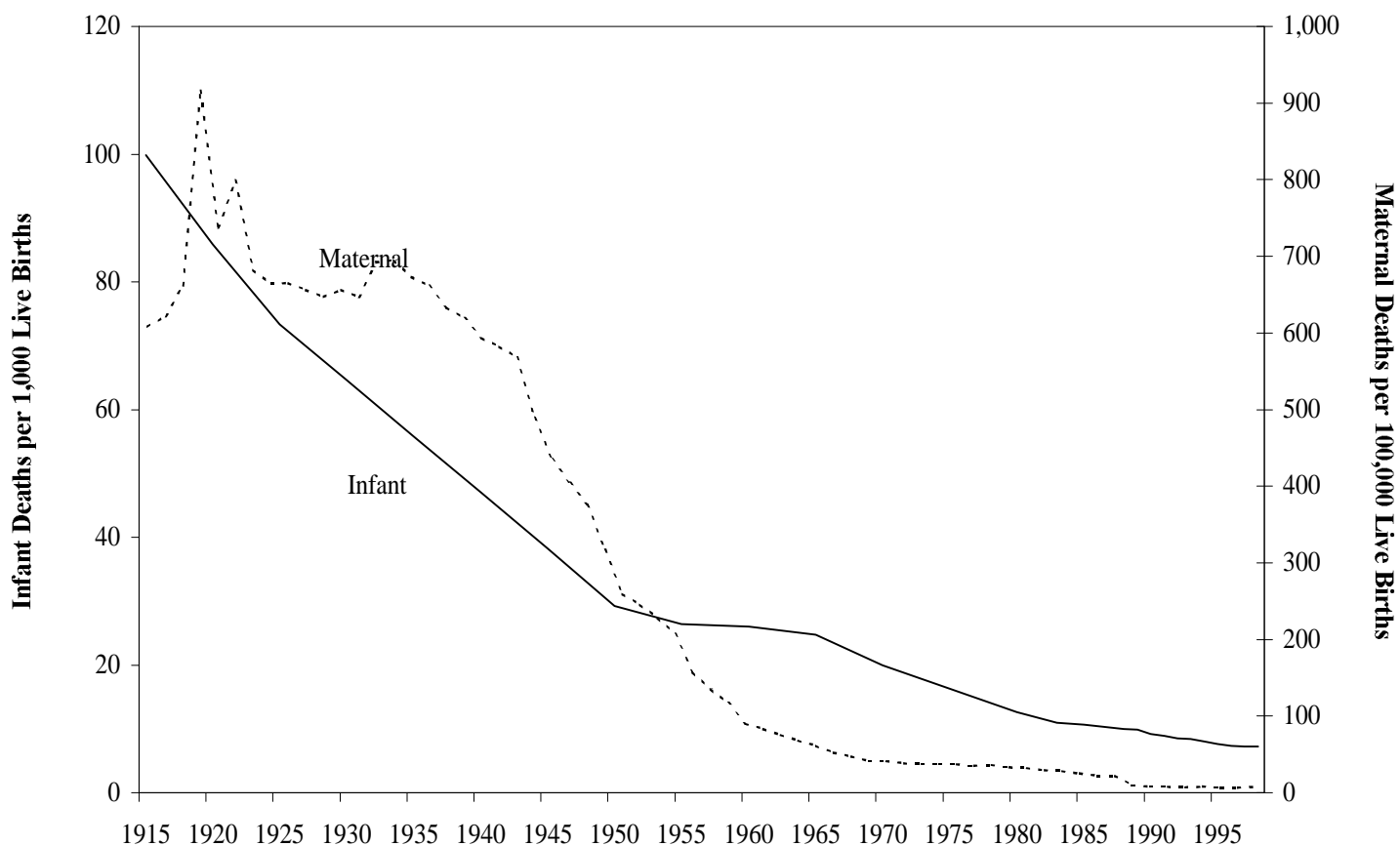


## Death Rate of Children and Mothers

The safety of their children is dear to the hearts of all parents. Any parent who has experienced the joy of bringing a healthy baby into the world can imagine the agony that parents suffer when they lose a child at birth. In the early part of this century, more than 1 child in 10 died before his or her first birthday. In some areas of the country, infant

mortality was as high as 1 in 4. Today, only 1 in about 150 babies dies within the first year. The probability of a child's dying before the age of five is now 50 times lower than it was at the beginning of the century (Figure 4). Most impressive of all has been the decline in the maternal death rate. One hundred years ago a mother was 100 times more likely to die giving birth than she is today—when there are fewer than eight maternal deaths per 100,000 births.

**Figure 4**  
**Infant and Maternal Mortality Rates**



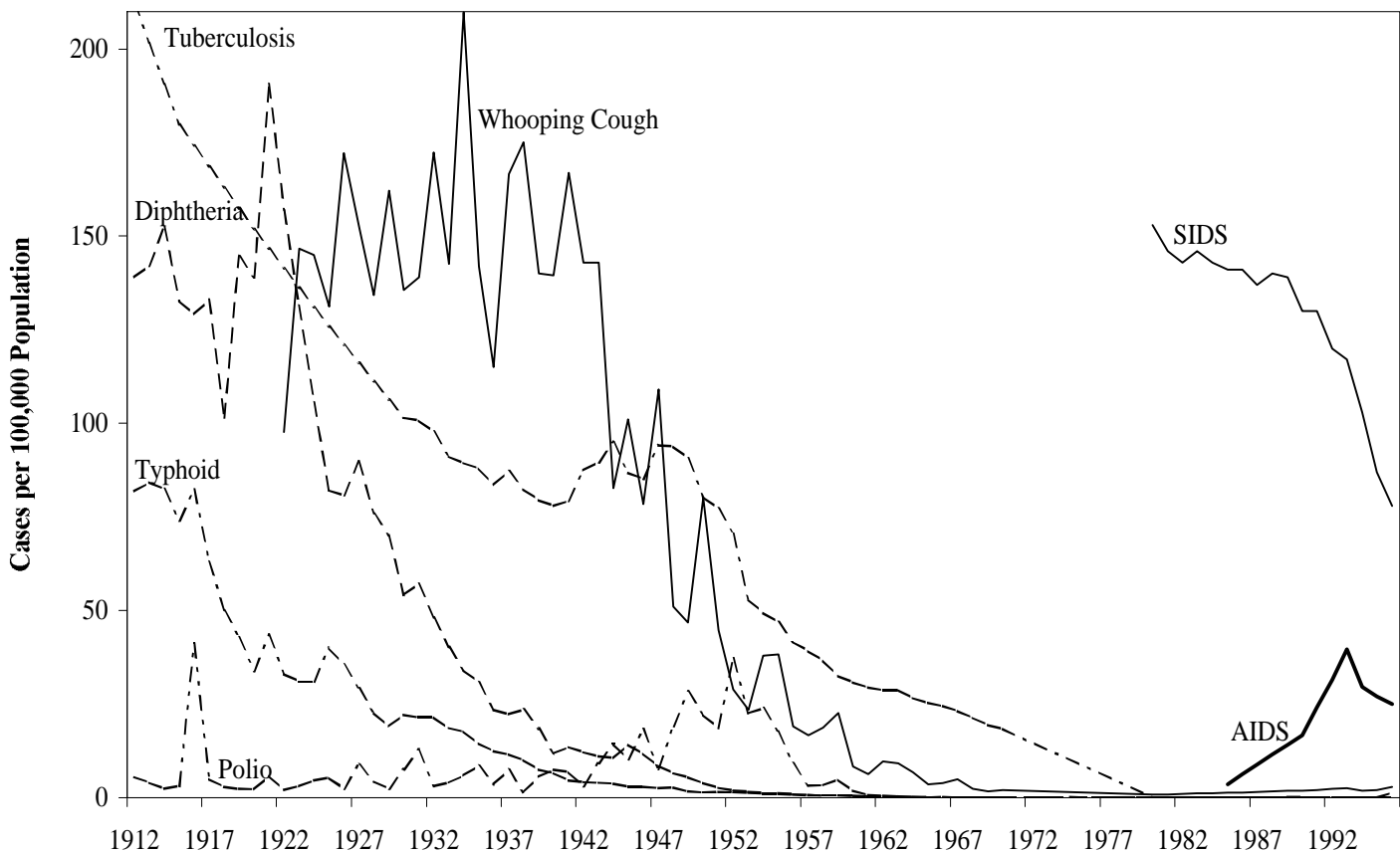
Sources: Centers for Disease Control, National Center for Health Statistics, *Health, United States, 1999* (Hyattsville, Md.: NCHS, 1999), Tables 22, 44; *National Vital Statistics Report 47*, no. 45, Table D; and *Historical Statistics of the United States*, Series B 136, B 145.

## Infectious Diseases

One of the greatest success stories of the 20th century is that we have extinguished almost all of the major diseases that have killed billions of people throughout human history. Thanks to vaccines and better public health measures, we no longer even worry about the scourges of typhoid fever, cholera, typhus, plague, polio, smallpox, and the other terrifying killers of humankind. Throughout most of history plagues and epidemics could wipe out a fourth to a half of a

country's population in the course of a decade. Even as recently as the beginning of the 20th century, the death toll from infectious diseases was about 700 per 100,000 Americans per year. Today infectious diseases kill only about 50 per 100,000—a stunning 14-fold reduction in deaths from disease in this century. The number of cases of those diseases has fallen even more rapidly. Although sudden infant death syndrome and AIDS are not diseases per se, the number of cases of those ailments has also decreased (Figure 5).

**Figure 5**  
Incidence of Selected Diseases in the United States



Sources: *Historical Statistics of the United States*, Series B 149, B 291, B 295, B 299–300, B 303; *Health, United States, 1999*, Table 53; and American SIDS Institute, [www.sids.org/research/webrate/sld001.htm](http://www.sids.org/research/webrate/sld001.htm).

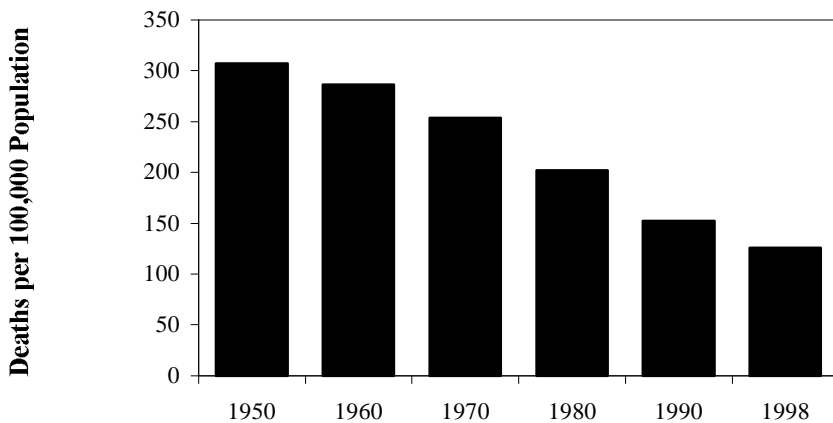
Note: SIDS rate is per 100,000 live births. AIDS definition was substantially expanded in 1985, 1987, and 1993. TB rate prior to 1930 is estimated as 1.3 times the mortality rate.

## Cancer and Heart Disease

The eradication of the most horrible and deadly infectious diseases, which often afflicted children, has meant that more Americans die from chronic and degenerative diseases associated with growing old—most notably, cancer and heart disease. Although we have not yet found complete cures for those two diseases, modern medicine and treatments

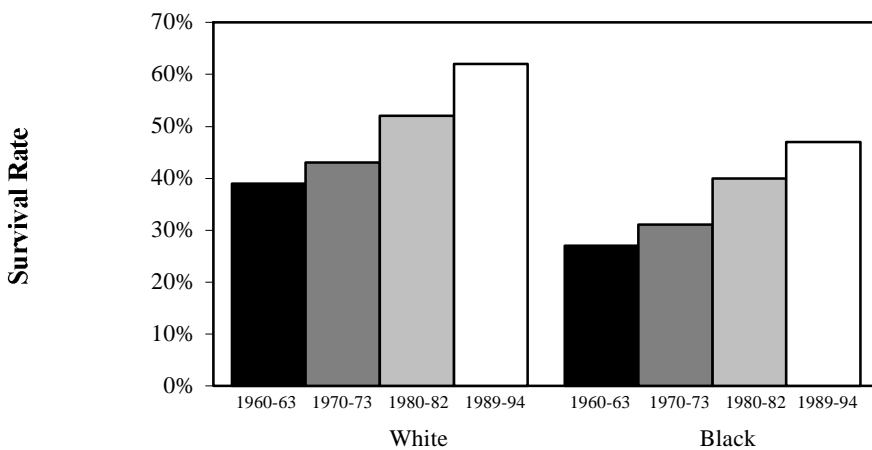
have made spectacular strides in both cases. The age-adjusted death rate from heart attacks has fallen between two- and threefold in just the last 50 years (Figure 6), and the survival rate of cancer victims has nearly doubled in the past 40 years (Figure 7). For whites, the rate of cancer survival went from 38 percent in 1960–63 to 62 percent in 1994. For blacks the probability of survival has risen from roughly 1 in 4 in the early 1960s to 1 in 2 today.

**Figure 6**  
**Heart Disease Mortality**



Source: *Health, United States, 1999*, Table 37.

**Figure 7**  
**Five-Year Relative Cancer Survival Rates**



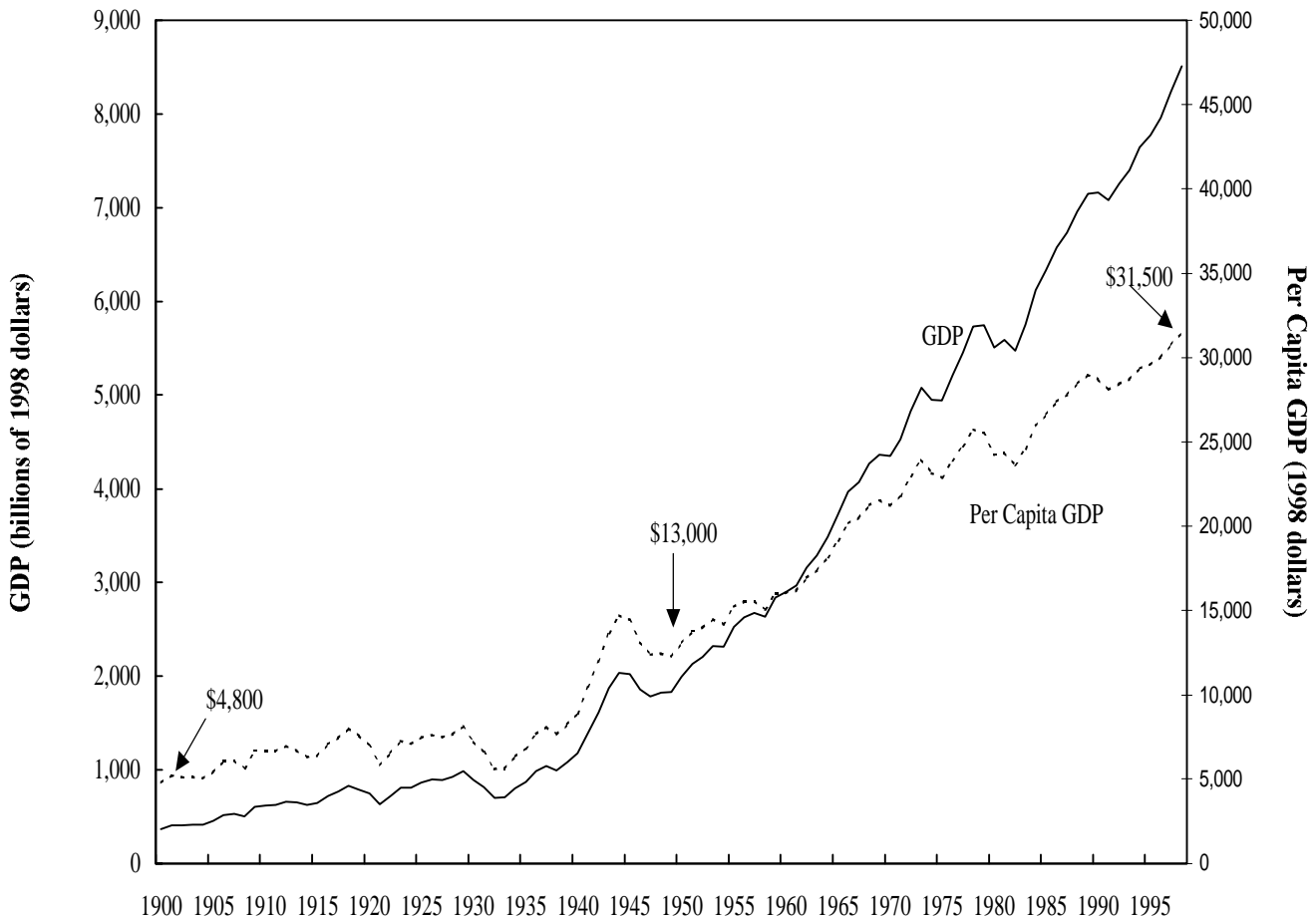
Source: *Health, United States, 1999*, Table 58.

## National Output

The broadest measure of a nation's overall economic performance is the rise in its national output, or what is now commonly called gross domestic product. The real GDP of the United States mushroomed from roughly \$0.5 trillion in 1900 to about \$8.5 trillion in 1998 (in constant dollars). The average annual per person output in the United States has grown from \$5,000 to

\$30,000 (Figure 8). This rapid growth contrasts with the economic performance of the world over the last 1,000 years when, according to the late Harvard economic historian Simon Kuznets, economic growth was "virtually nonexistent." "We Americans are so used to sustained economic growth in per-capita product that we tend to take it for granted—not realizing how exceptional growth of this magnitude is on the scale of human history," Kuznets concluded.

**Figure 8**  
**Gross Domestic Product**



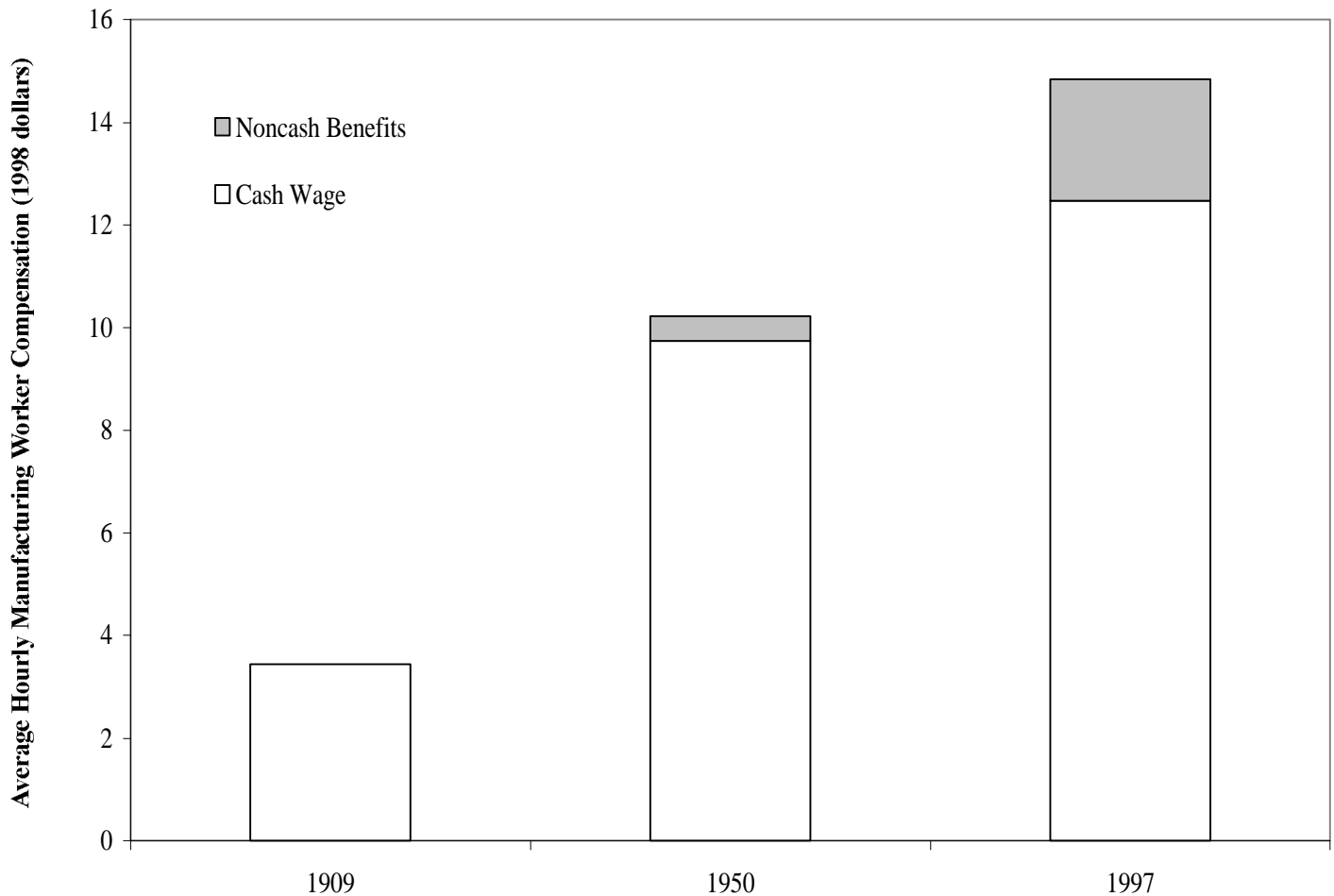
Sources: *Historical Statistics of the United States*, Series F 1; and U.S. Department of Commerce, Bureau of Economic Analysis, [www.bea.doc.gov/bea/dn/gdplev.htm](http://www.bea.doc.gov/bea/dn/gdplev.htm).

## Wages

We often hear nostalgic talk of the good old days of the 1950s when it took only one parent's income to raise a family. Dad went to the office or factory. There was enough income for mom to stay home and take care of the kids. Good jobs were available at good wages. Nowadays, we are told, families struggle on two incomes just to make ends meet. The century-long wage data tell a different story. The hourly manufacturing wage in the United States at the start of the century (in

today's dollars) was \$3.43, or less than the minimum wage today. By 1950 that wage rate had risen to \$9.70. Today, the average manufacturing wage is \$12.47 an hour (Figure 9). It appears from the data that wages have stagnated in recent decades, but that is a statistical illusion. When the value of fringe benefits—such as employer-provided medical insurance, retirement packages, stock options, increased vacation time, and unemployment insurance—is taken into account, average real hourly worker compensation has risen by 50 percent since 1950.

**Figure 9**  
**Worker Compensation**



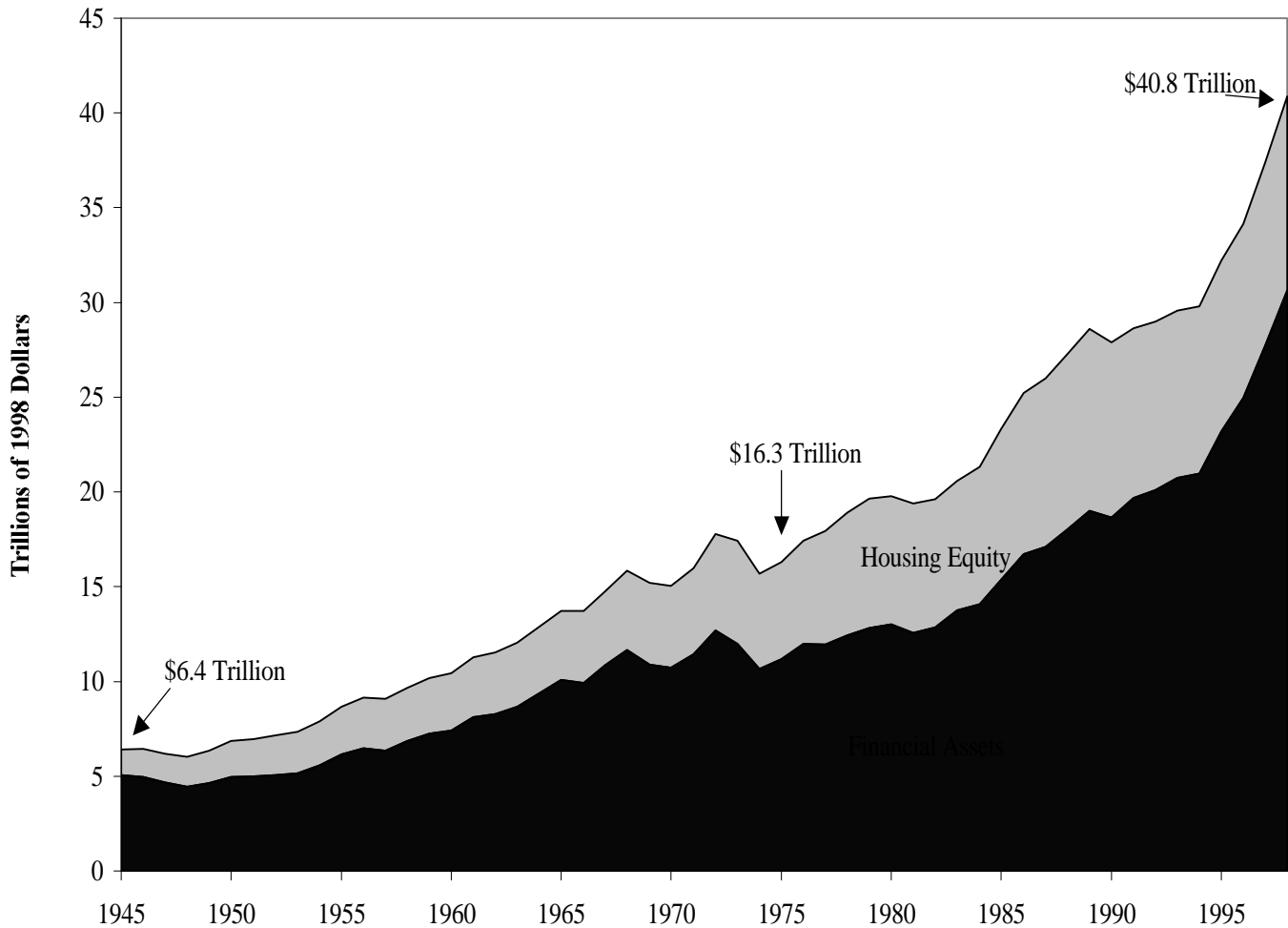
Sources: *Historical Statistics of the United States*, Series D 802; and U.S. Bureau of the Census, *Statistical Abstract of the United States: 1998* (Washington: Government Printing Office, 1998), Table 867.

## Wealth

It is amazing but true that more financial wealth has been generated in the United States over the past 50 years than was created in all the rest of the world in all the centuries before 1950. Fifty years ago, real financial wealth was about \$5 trillion in 1998 dollars. By 1970 that financial wealth had doubled to roughly \$10 trillion. Since then the value of Americans' financial wealth has tripled to \$30 trillion.

When we combine this burst in financial assets with the sevenfold real increase in housing equity owned by Americans, we discover that the nation's assets have risen from about \$6 trillion to more than \$40 trillion in real terms in the past half century (Figure 10). Not all of this wealth is captured by the richest Americans. Median household wealth more than doubled from 1965 to 1995. Although we hear complaints about Americans' indebtedness, asset values have risen at a much faster rate than has debt.

**Figure 10**  
**Wealth of U.S. Households**



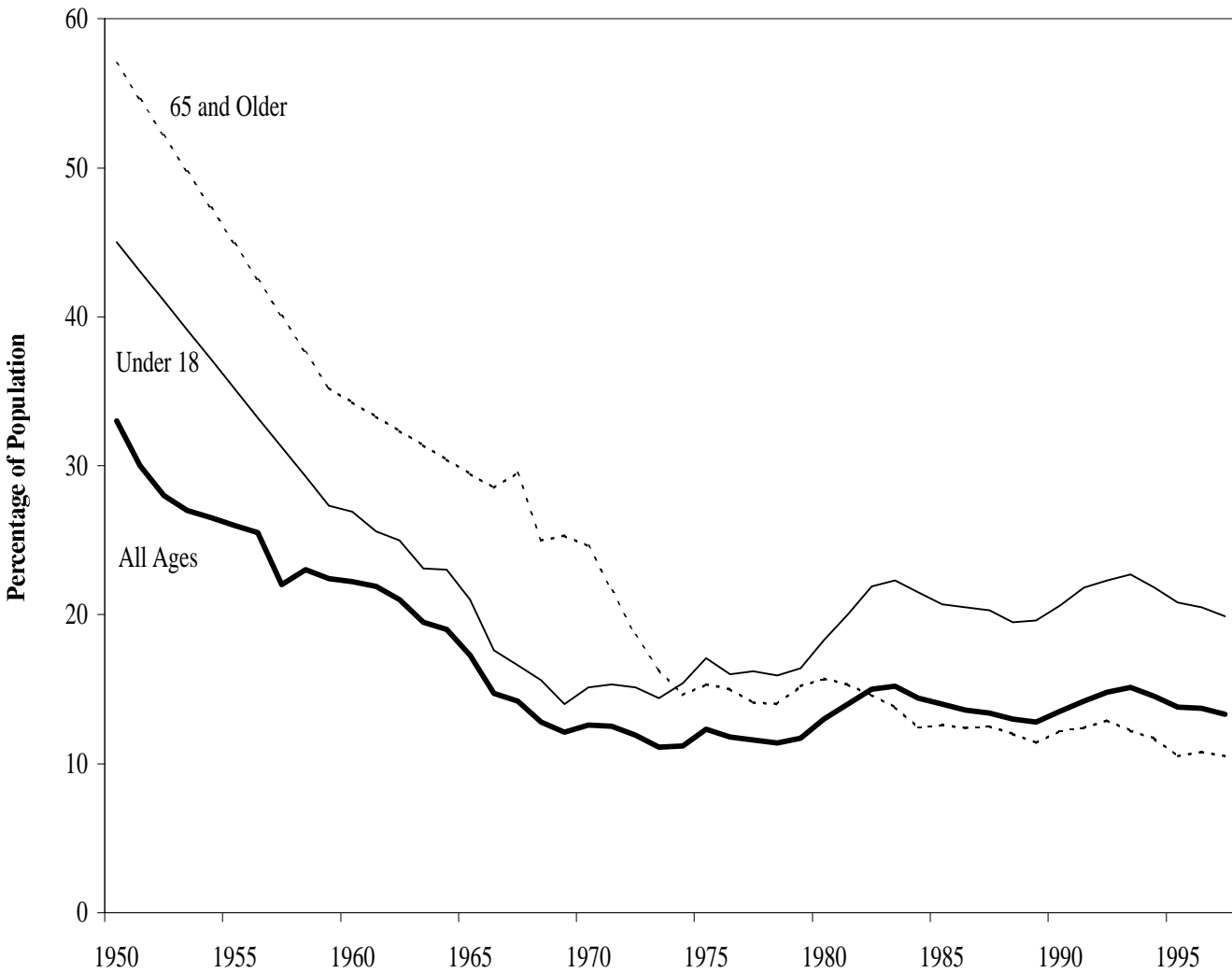
Source: Federal Reserve Board, "Flow of Funds Accounts of the United States," [www.federalreserve.gov/releases/z1/Current/data.htm](http://www.federalreserve.gov/releases/z1/Current/data.htm).

## Poverty

In the United States today, a smaller percentage of the population suffers from material deprivation than at any previous time in history. And people classified as “poor” in the United States have incomes that exceed the average income of most nations. Our success in reducing poverty is not a result of government welfare programs. Rather, it appears

that the continuing rising tide of America’s free-market economy is lifting almost all boats. Some 30 million Americans, or between 10 and 15 percent of the population, are still officially classified as poor. At the turn of the century, between 40 and 50 percent of American households had income levels that would have classified them as poor if judged by today’s standards. The number of “poor” senior citizens, children, and blacks is half of what it was in 1950 (Figure 11).

**Figure 11**  
**U.S. Population below Official Poverty Level**



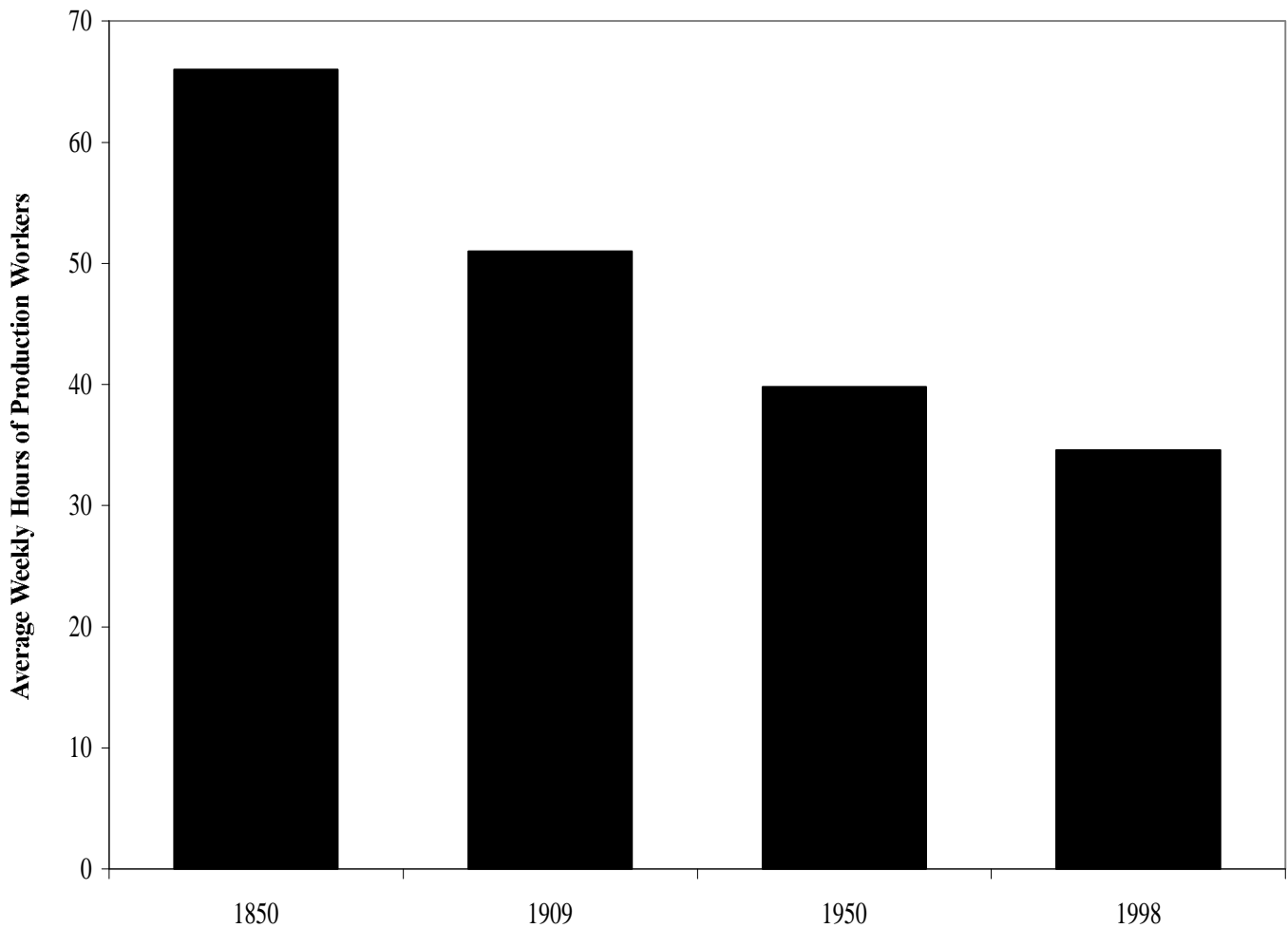
Source: *Statistical Abstract of the United States: 1998*, Tables 764, 765.

## The Workweek

The typical American works substantially less nowadays and has substantially more leisure time than his counterpart did 100 years ago. Because workers are so much more productive on the job today than in earlier times, we can afford to work fewer hours and still receive higher pay and maintain a high-quality lifestyle. The average workweek has shrunk from about 66 hours in 1850, to 50

hours in 1909, to 35 hours today (Figure 12). And, because Americans have more holidays, vacation time, sick leave, and so on, the average number of hours worked in a year is now half of what it was in the latter part of the 19th century. We Americans now complain that we don't have enough time to get everything done—work, family responsibilities, household chores, exercise, and other must-do activities—in just 24 hours a day. The fact is that our ancestors were more overworked than we are.

**Figure 12**  
**Length of the Workweek**



Sources: U.S. Department of Labor, Bureau of Labor Statistics, <http://146.142.4.24/cgi-bin/surveymost?ee>. Hours for 1850 estimated from nonagricultural data in Julian L. Simon, ed., *The State of Humanity* (Cambridge, Mass.: Blackwell, 1995), p. 295.

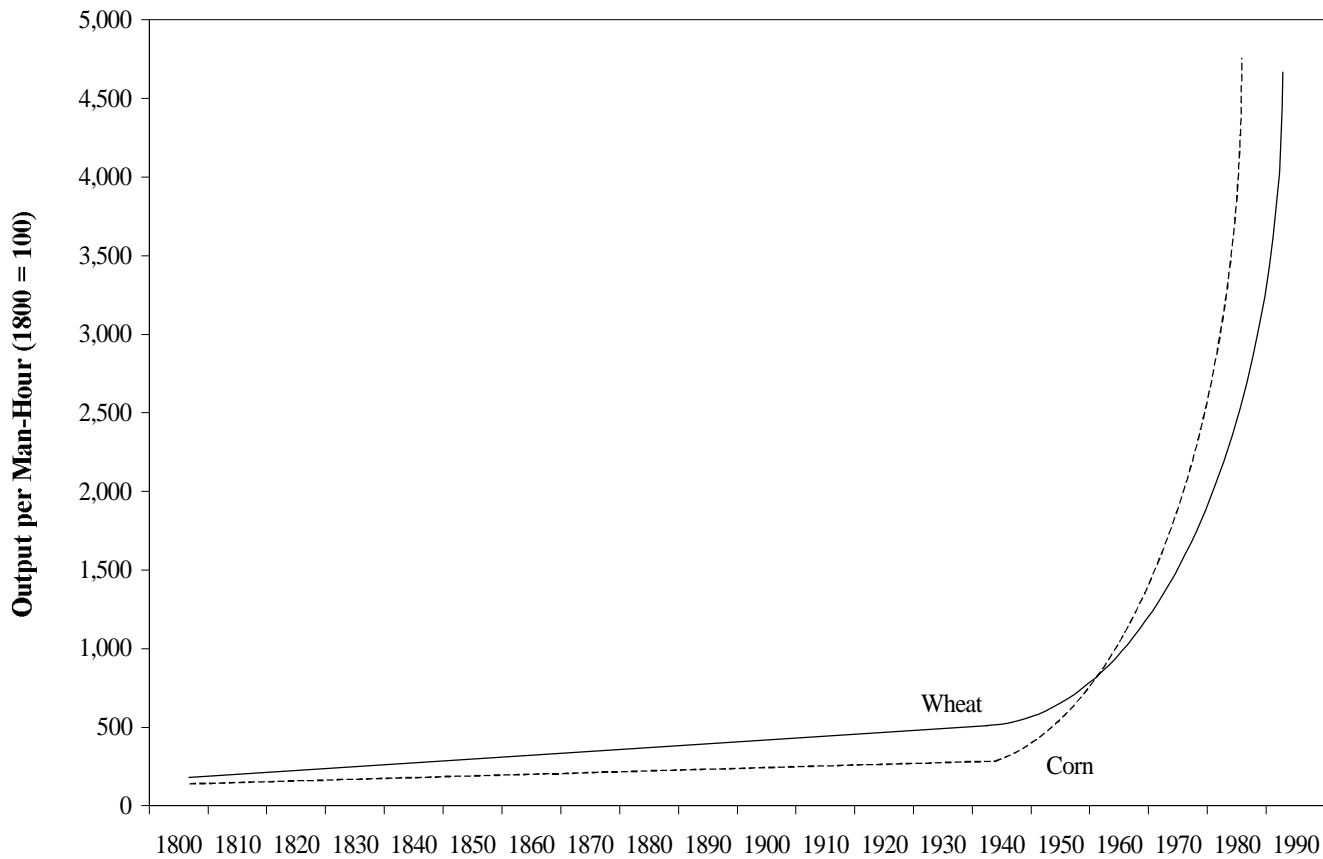


## Farm Productivity

A defining characteristic of a modern, wealth-generating economy is the production of ever more output with ever fewer inputs. This is the essence of what we mean when we talk about productivity: getting more of what we want for less human toil. Nowhere has productivity been more impressive than on the farm (Figure 13). Throughout most of human history, at least half of the workers in most societies were employed in agriculture. Today only 2 to 3 percent of Americans work on farms. But those farmers

produce enough food for the entire nation and then enough more to make America the world's breadbasket. Productivity and innovation on the farm have translated into a 5- to 10-fold increase in farm output per man-hour worked in this century—one of the greatest success stories in human history. Modern technologies—for farm equipment, pesticides, fertilizers, irrigation techniques, and bioengineering—account for this surge in agricultural output. The result: American farmers now feed at least three times as many people with one-half as many total man-hours on one-third less farmland than they did in 1900.

**Figure 13**  
**U.S. Farm Labor Productivity**



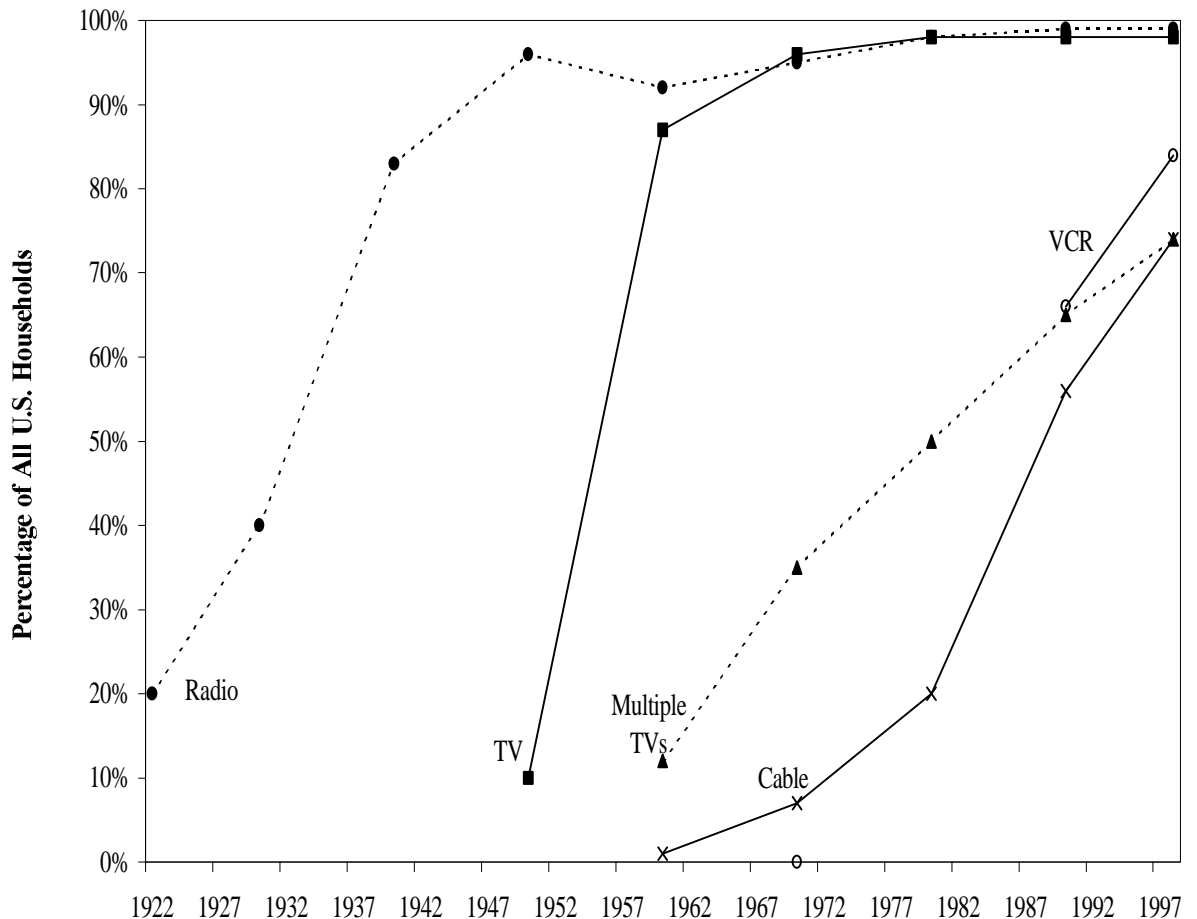
Source: Authors' calculations from data in I. Welfeld, *Where We Live* (New York: Simon and Schuster, 1988).

## Entertainment

Motion pictures were perhaps the first form of modern entertainment. The motion picture industry was launched at the turn of the century and was so instantly popular that by 1930 Hollywood sold three tickets per week per household—an all-time high. In the 1960s, 1970s, and 1980s, movie ticket sales dropped dramatically. Why? Television. Just before the midpoint of this century, 1946, there were about 17,000 TV sets in the

country. By 1960 there were more than 40 million TV sets in use. Those Zenith and Motorola TV sets were black and white and full of static. Today 98 percent of American households own a color TV, 67 percent own two color TVs, 40 percent own three TVs, 74 percent have cable TV, 40 percent get pay cable stations, 84 percent have a VCR, 32 percent have at least two VCRs, and 93 percent have a remote control with their TV (Figure 14). The diffusion of stereos and CD players into American homes has also been remarkably rapid.

**Figure 14**  
**Home Entertainment**



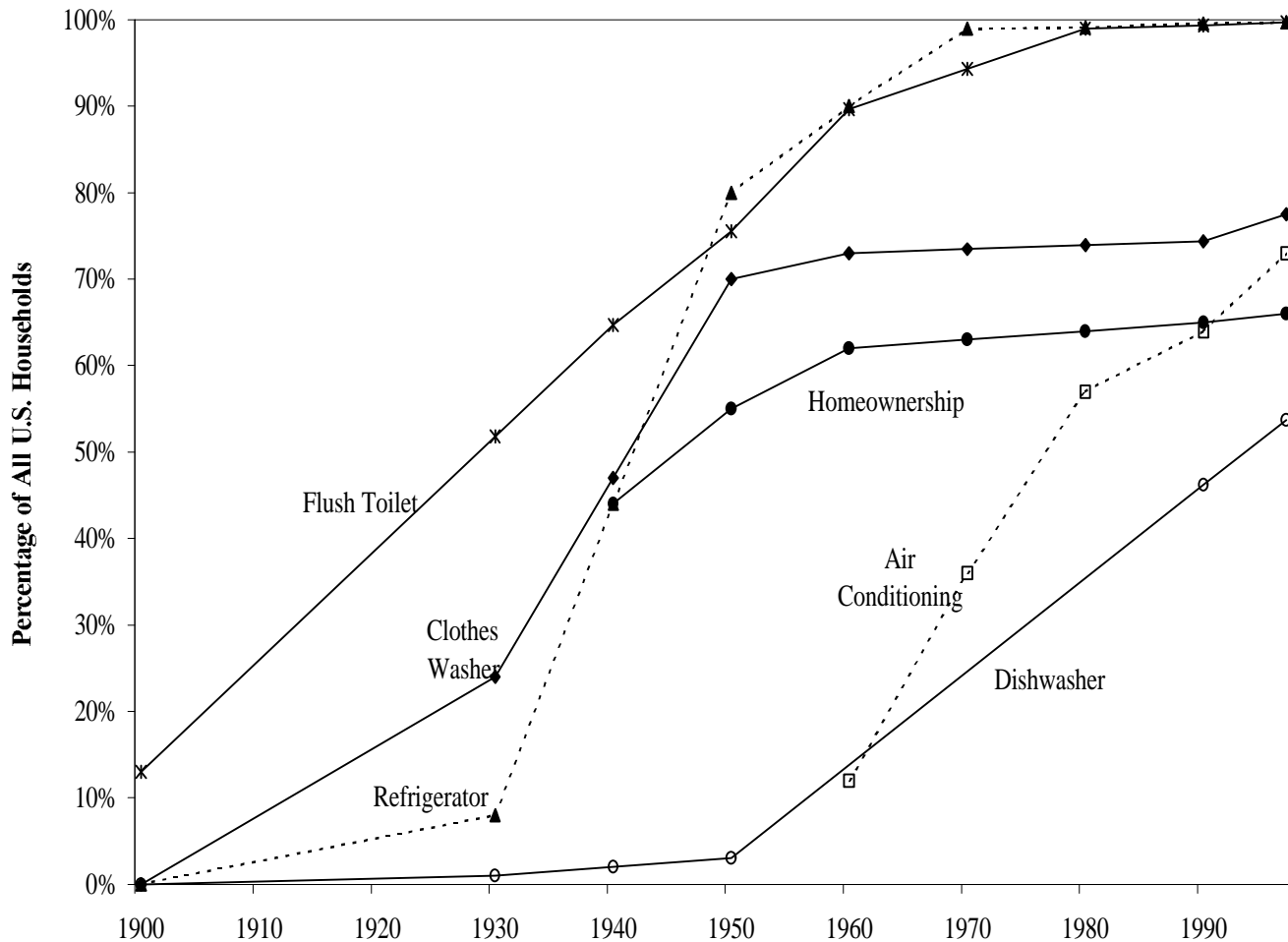
Sources: Stanley Lebergott, *The American Economy: Income, Wealth, and Want* (Princeton, N.J.: Princeton University Press, 1976), pp. 281, 286–88, 290, 355; and U.S. Bureau of the Census, *American Housing Survey for the United States in 1997* (Washington: Government Printing Office, 1998).

## Housing

In 1890 Jacob Riis published his famous book *How the Other Half Lives*, which describes the horrid and unsanitary conditions of tenement slums. Families with three or four children were crowded into single rooms. The dilapidated housing units typically lacked hot water and toilet facilities and were often infested with rats. Today's homes are far superior to those

squalid and cramped living quarters. The average home today has two to three times as many rooms per resident as was the case at the turn of the century. In 1900 only about 1 in 100 homes had a toilet or central heating. Even in 1950 air conditioning was rare. Today, at least 97 percent of homes have electricity, central heating, and modern plumbing (Figure 15). The rate of homeownership in America has risen from less than 50 percent in 1945 to an all-time high of 67 percent today.

**Figure 15**  
**Improvement in U.S. Housing**



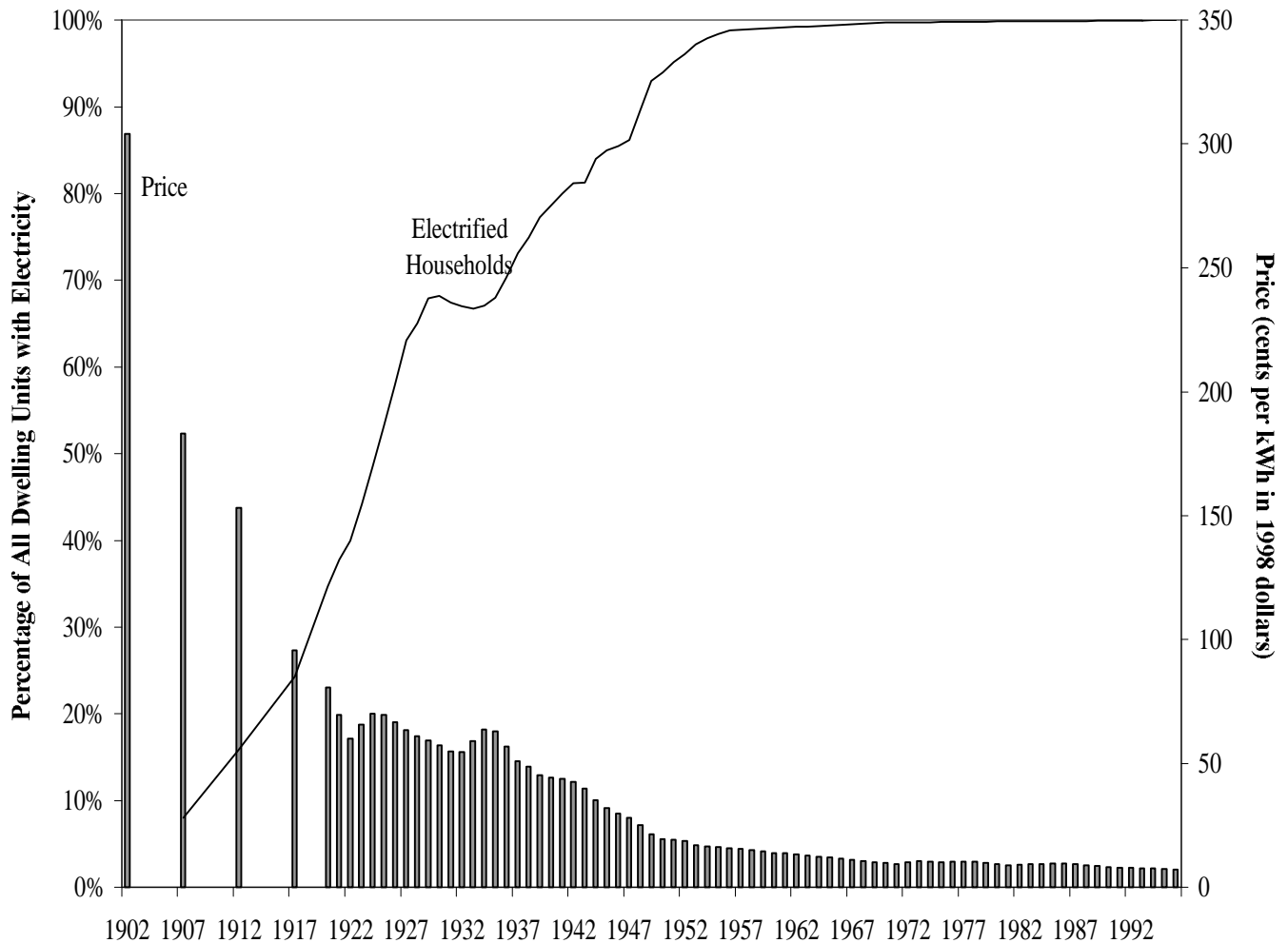
Sources: *American Housing Survey for the United States in 1997*; and U.S. Bureau of the Census, "Housing Then and Now," [www.census.gov/hhes/www/housing/census/histcensushsg.html](http://www.census.gov/hhes/www/housing/census/histcensushsg.html).

## Electrification

Electricity has modernized almost every aspect of American industry and home life in the 20th century. Electricity replaced water and steam as a much more powerful and efficient source of energy for industrial production. And, of course, the electrification of American homes first brought light and then made possible the massive revolution in

household appliances: radios, TVs, refrigerators, vacuum cleaners, and washing machines. In 1900, 2 percent of homes had electricity. In 1950 about 80 percent did. By 1955 about 99 percent of American homes had electricity. Electric bills are much lower today than in the past. In 1900 the wage-indexed price of electricity was six times above its current level. Residential electricity costs were nearly 10 times higher than today (Figure 16).

**Figure 16**  
**Electrification of U.S. Homes**



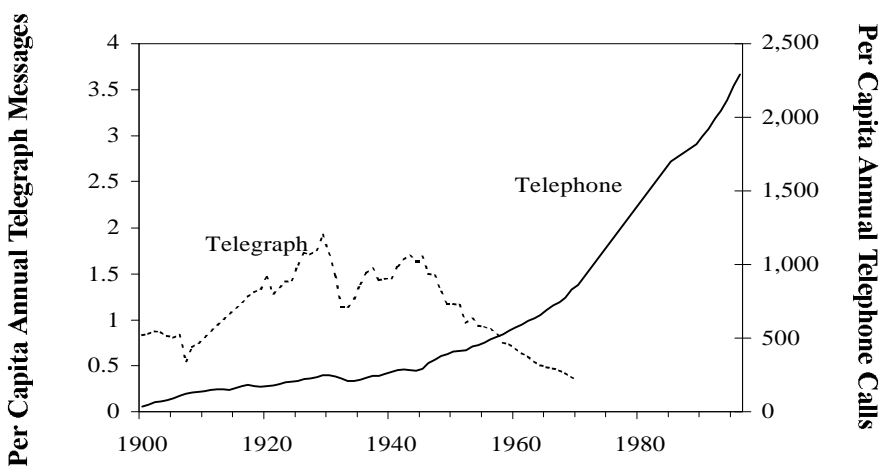
Sources: *Historical Statistics of the United States*, Series S 109, S 116; and *Statistical Abstract of the United States:1998*, Table 959.

## Communications

A little more than 100 years ago, Americans sent more telegrams than they made telephone calls (Figure 17). In this century we have gone from 5 percent to 99 percent telephone ownership. Today, Americans don't have phones just in their homes. We increasingly have phones in our briefcases, purses, and cars. The corded phone is fast

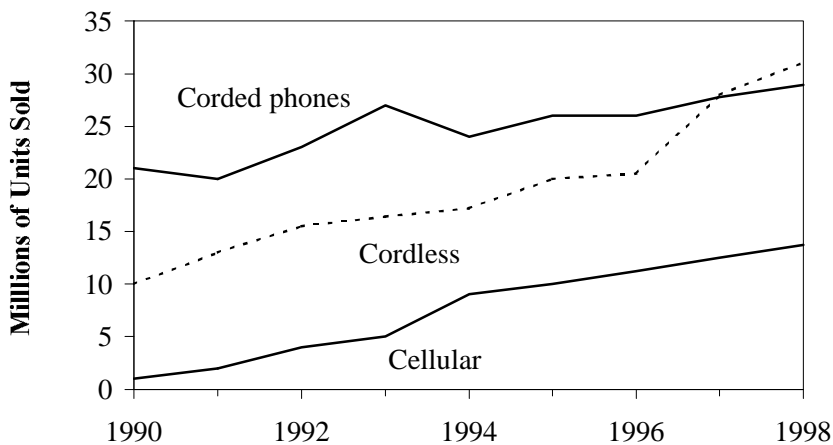
becoming obsolete because it doesn't travel well and is inconvenient. Sales of corded phones have been relatively flat in the 1990s. But sales of cordless and cellular phones have risen sharply (Figure 18). In 1997, for the first time ever, Americans bought more cordless than corded phones. Phone calls are not just more convenient, they are substantially cheaper than they used to be. A 10-minute coast-to-coast phone call in 1915 cost about \$65.00 in today's dollars.

**Figure 17**  
**Modern Communication**



Sources: *Historical Statistics of the United States*, Series R 9-12, R 48, R 56; and *Statistical Abstract of the United States: 1998*, Table 915.

**Figure 18**  
**Cutting the Cord**



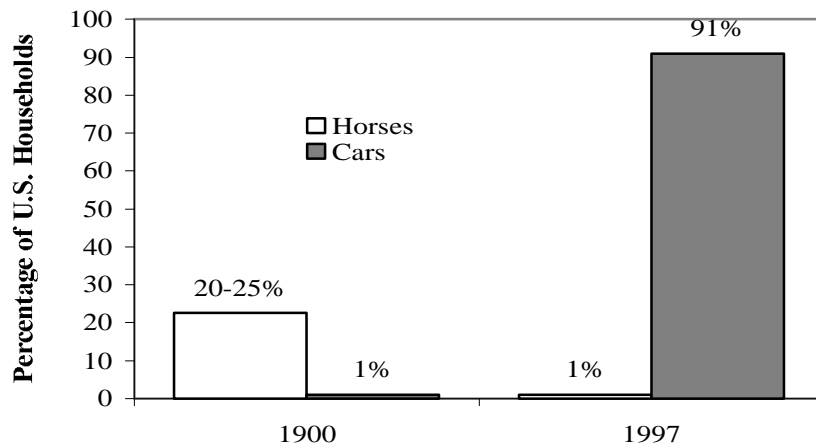
Source: Consumer Electronics Association, cited in *Time*, March 23, 1998, p. 38.  
Note: Cellular includes digital wireless phones.

# Transportation

Henry Ford's assembly line brought the price of an automobile—ideal for the wide-open frontiers of a spacious country—within the financial reach of many Americans. Next to the computer, the automobile is arguably the most liberating invention of the past 100 years—a rapid form of transportation that allows Americans to go wherever they want whenever they want. In 1900 there were 20–25

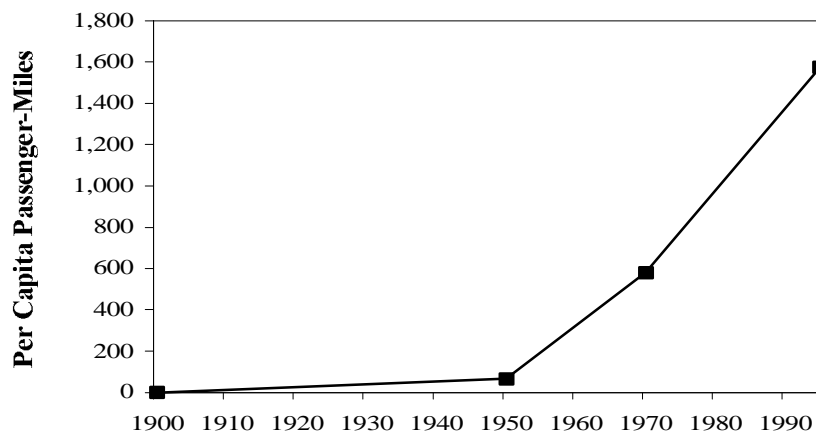
horses for every 100 American households and virtually no cars. At the end of the century about 91 of every 100 American households has a car (Figure 19), and horses are used primarily for pleasure. Ground transportation speeds have increased about threefold in this century. Nonetheless, air travel is now replacing ground transportation for intercity trips. Miles traveled by plane have increased from fewer than 100 per person per year in 1950 to almost 1,000 per person in 1978 to more than 1,500 today (Figure 20).

**Figure 19**  
**Ground Travel: Horses to Horsepower**



Sources: Stanley Lebergott, *The Americans: An Economic Record* (New York: W. W. Norton, 1984); and *American Housing Survey for the United States in 1997*, Table 2-7.

**Figure 20**  
**Air Travel**



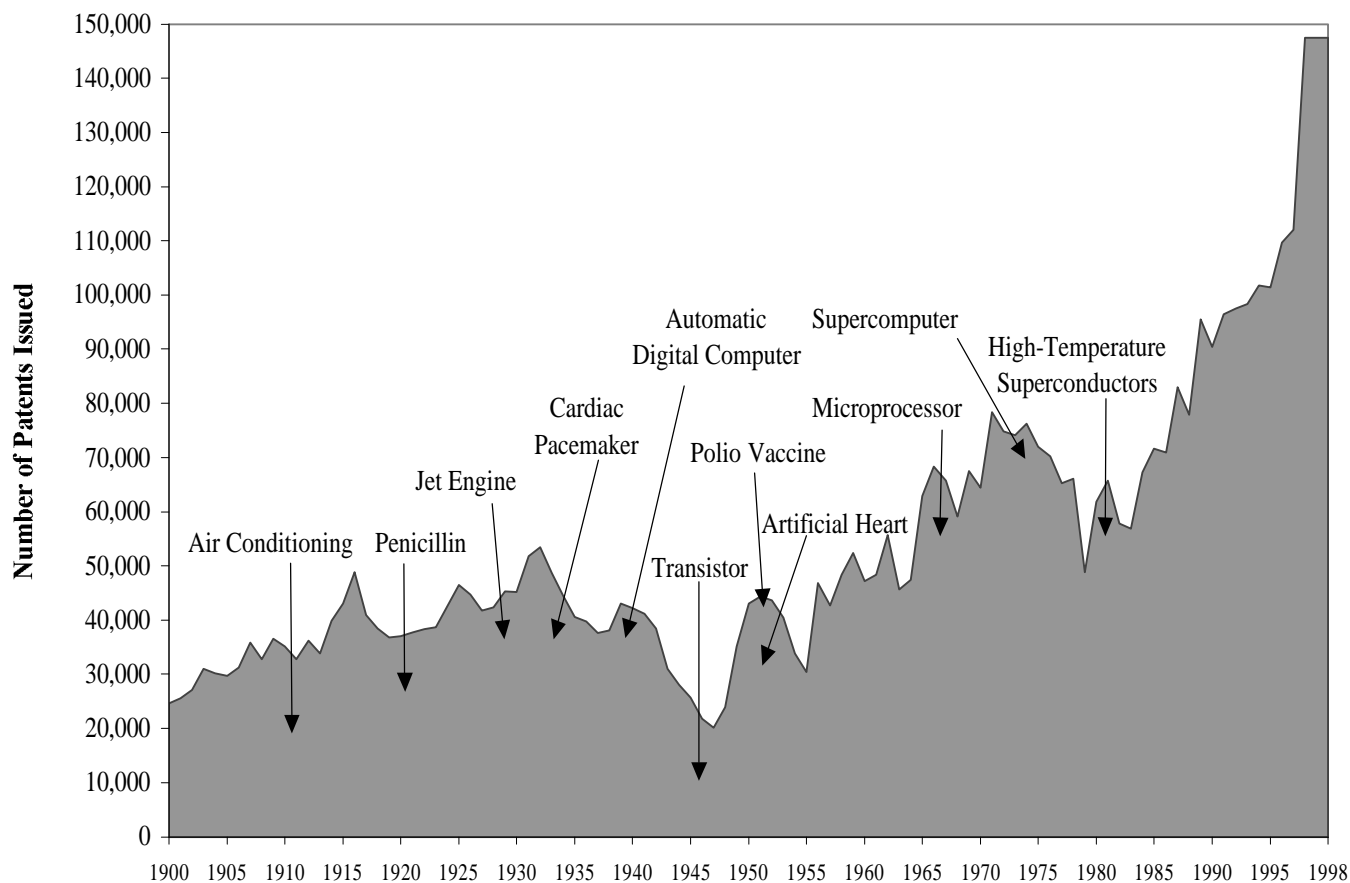
Sources: *Historical Statistics of the United States*, Series Q 4; and *Statistical Abstract of the United States: 1998*, Table 1016.

## Inventions

From the automobile to the refrigerator, to the transistor, to the laser, to fiber optics, to modern medicines, the inventiveness and genius of Americans have been a principal driving force behind the rise in the U.S. standard of living over the past 100 years. Probably the greatest inventor in history was Thomas A. Edison (1850–1931), whose light bulb, motion picture projector, phonograph, tape recorder, and roughly 1,000 other patents propelled America into

the electronic age. But Edison's giant footsteps have been followed by thousands of less well-known American scientists and inventors whose brilliance and creativity are improving the quality of life on earth with every passing year. In 1900 there were roughly 25,000 patents issued. By 1950 that number had risen modestly to 43,000. But after 1950 the number of patents tripled to nearly 150,000 in 1997 (Figure 21). In this century the number of patents issued has grown at twice the pace of the U.S. population.

**Figure 21**  
**Patents Granted by the United States**



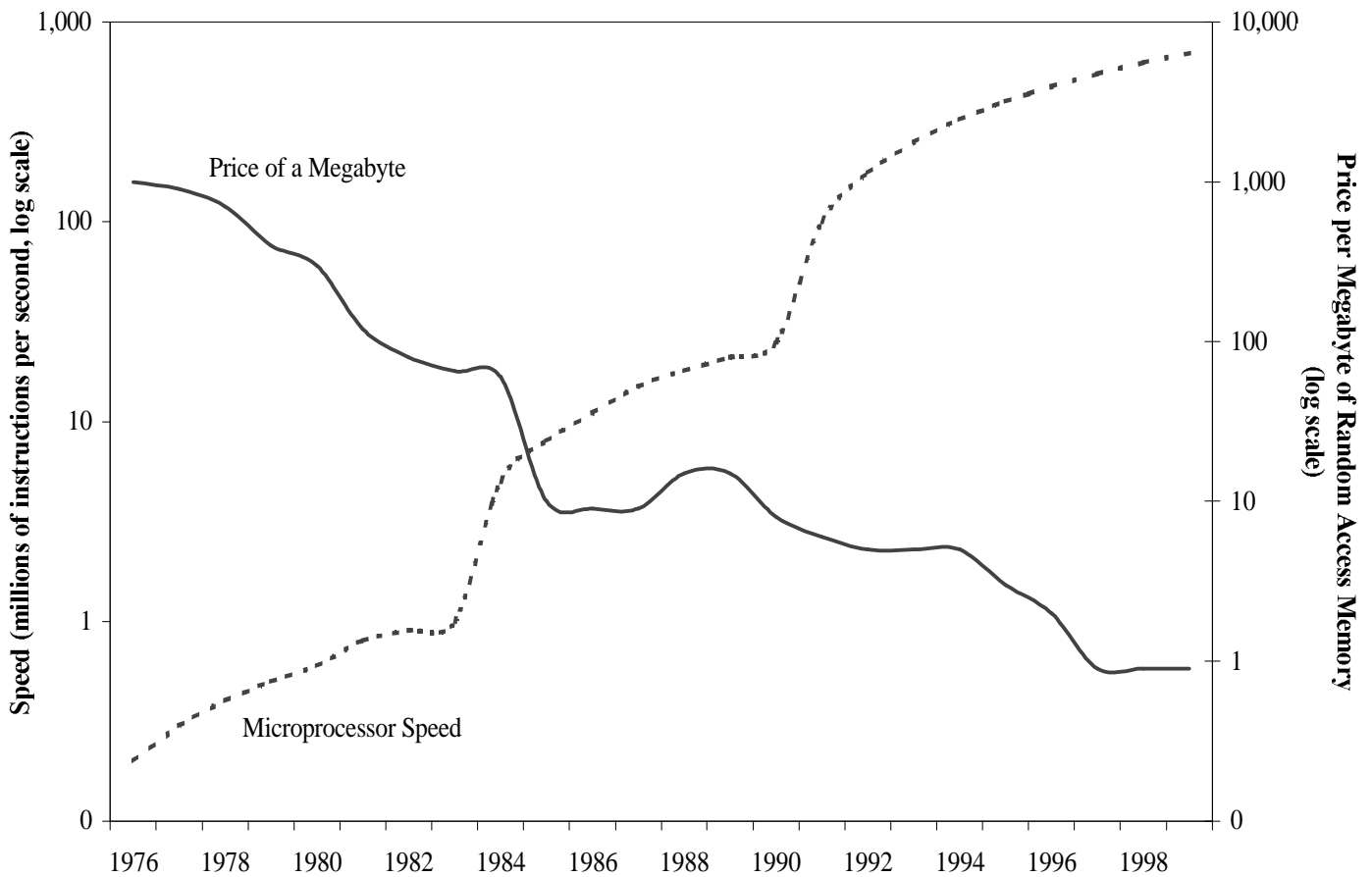
Sources: U.S. Patent and Trademark Office, *U.S. Patent Activity, 1790–1998* (Washington: Government Printing Office, 1999); and Louisiana State University, *Important Historical Inventions and Inventors*, [www.lib.lsu.edu/sci/chem/patent/srs136.html](http://www.lib.lsu.edu/sci/chem/patent/srs136.html).

## The Information Age

Texas Instruments introduced the first computer chip to the world in 1958. Since then the semiconductor has been doubling in capacity and speed (Figure 22) almost every 18 months (Moore's law)—a geometric growth rate that makes all notions of “limits to growth” obsolete. Today the microchip contained in a single laptop computer has more computing power than all the computers used in all the universities across the country in 1950. The cost of processing

information and data that once might have been hundreds of thousands, if not millions, of dollars is rapidly falling to zero. The IBM-370-168 mainframe (circa 1975) sold for \$3.4 million; today a personal computer with an Intel Pentium chip retails for about \$1,500 and is nearly 1,000 times faster. According to an analysis by Microsoft, “If the automobile and aerospace technology had exploded at the same pace as computer and information technology, a new car would cost about \$2 and go 600 miles on a thimble of gas. And you could buy a Boeing 747 for the cost of a pizza.”

**Figure 22**  
**Megabyte Prices and Microprocessor Speeds**



Sources: Intel Corporation, [www.intel.com](http://www.intel.com); and World Semiconductor Trade Statistics, [www.wsts.org](http://www.wsts.org).

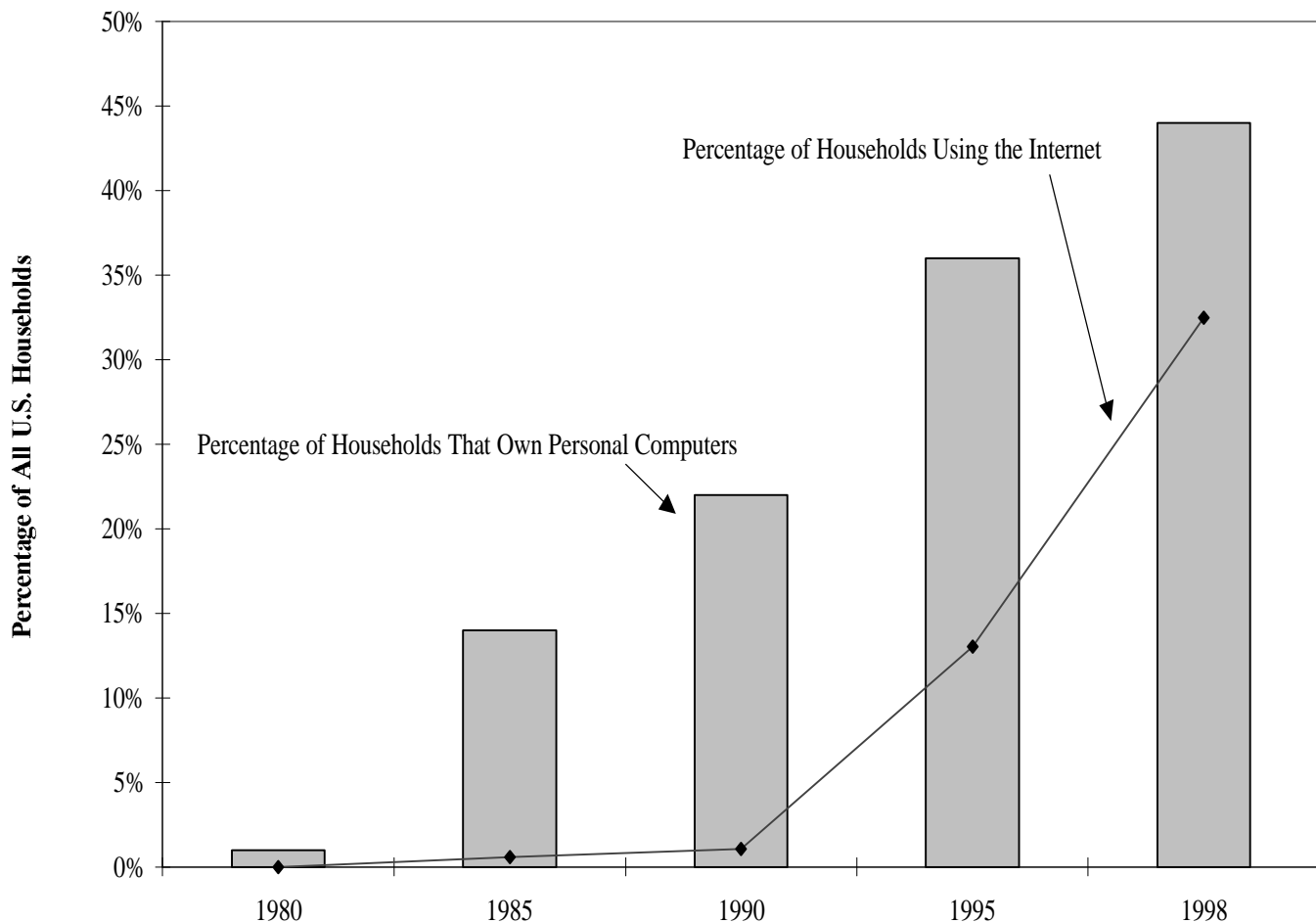


## Computers and the Internet

In 1943 Thomas Watson, chairman of IBM, declared: "I think there is a world market for about five computers." In 1949 *Popular Mechanics* prophesied that "where a calculator on the ENIAC computer is equipped with 18,000 vacuum tubes and weighs 30 tons, computers in the future may have only 1,000 vacuum tubes and perhaps only weigh 1 1/2 tons." Steve Jobs, the founder of Apple Computer, was asked by

Xerox executives in the mid-1970s: "Why would anyone ever need a computer in their home?" Thanks to the rapid decline in price of the personal computer, today almost half of all U.S. homes have personal computers. Home computers are rapidly connecting every American to an information source far greater than the Library of Congress: the Internet (Figure 23). Eric Schmidt, chairman and CEO of Novell, predicts: "At the current rate of growth of the internet, every man, woman, and child in the United States will be connected to the internet by 2007."

**Figure 23**  
**American Households in the Information Age**



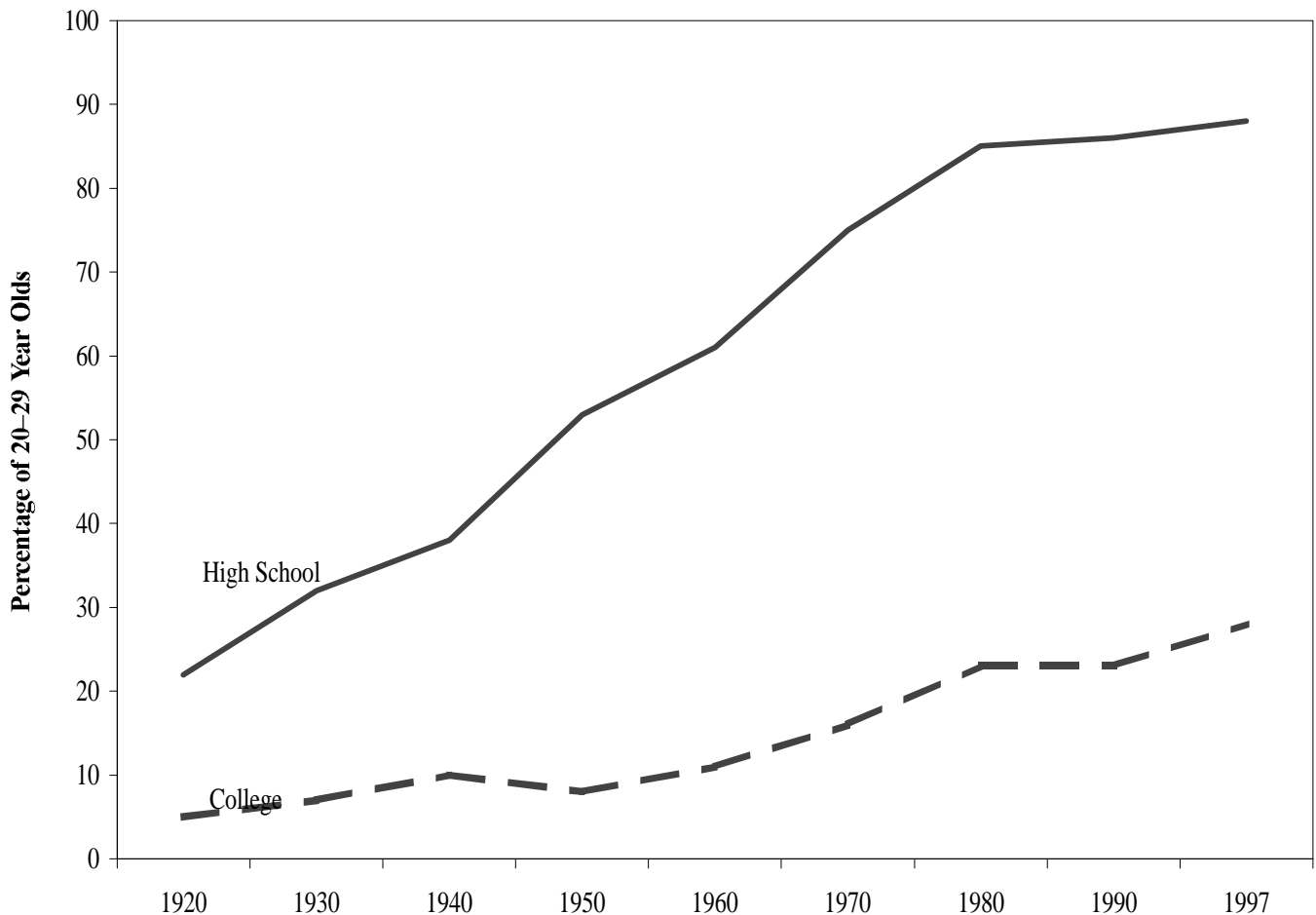
Sources: CEMA Research Center, cited in the *Washington Post*, April 26, 1999; and Forrester Research, cited in *USA Today*, June 22, 1999.

## Education

America today has the most highly schooled workforce in the history of the world. The quantity (though perhaps not the quality) of schooling received by Americans has risen in almost every decade of this century. Today the percentage of Americans graduating from college (28 percent) is higher than the percentage of Americans graduating from high school in 1920 (22 percent).

Average years of schooling have increased from 8 to 12 for whites and from 6 to 12 for blacks. The percentage of American adults with a high school diploma has risen from about 4 in 10 in 1940 to more than 8 in 10 today. Meanwhile, the percentage of Americans receiving advanced degrees is higher today than was the percentage receiving a college degree at the start of the 20th century (Figure 24). The increased years of schooling very closely track the rise in lifetime earnings of our workforce.

**Figure 24**  
**Percentage of Adults 20–29 Who Completed High School or College**



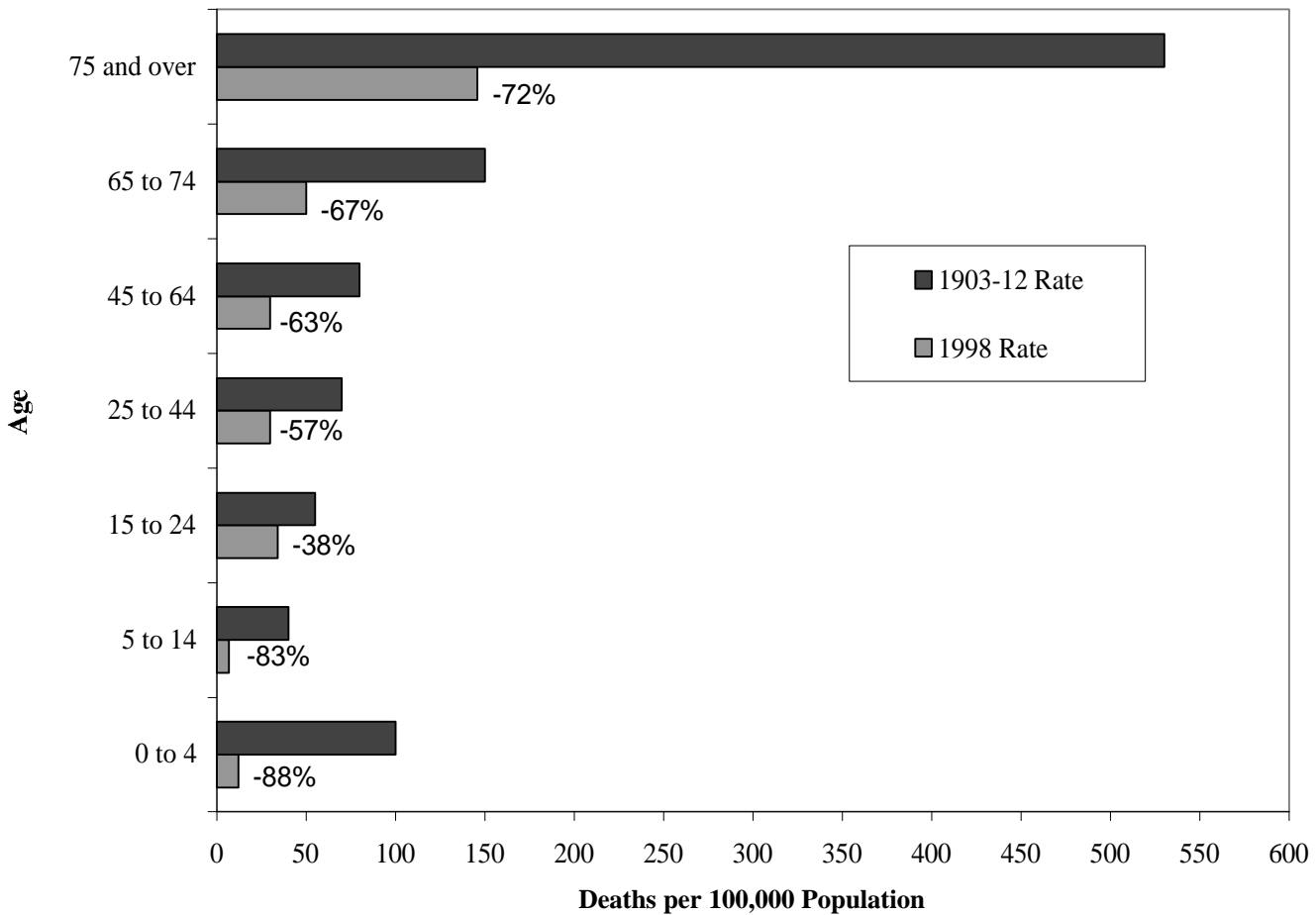
Source: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics 1998* (Washington: Government Printing Office, 1999), Table 8.

## Accidental Deaths

Anyone who reads the newspaper headlines or watches the evening news on TV must believe that we live in mighty dangerous times. It sometimes seems that the numbers of murders, shootings, thefts, airplane crashes, hurricanes, highway fatalities, and acts of terrorism have soared to unprecedented levels. Here's the surprising good news: as Figure 25 shows, the accidental death rate has fallen by half since 1903-12. The biggest improvements have been in the rate of acci-

dental deaths of infants (down 88 percent since 1900) and of seniors (down 67 percent). The accidental death rate on the job has also plummeted. In 1930 about 38 of every 100,000 workers died at the workplace, versus about 4 per 100,000 today. This sevenfold reduction in job-related deaths is due to several factors: first, fewer Americans work in risky places, such as unsafe factories and coal mines; second, safety measures are vastly improved for those who do work in risky occupations; and finally, improved medical care saves the lives of more people who are injured.

**Figure 25**  
**Accidental Death Rates by Age (1903-12 and 1998, with percent change)**



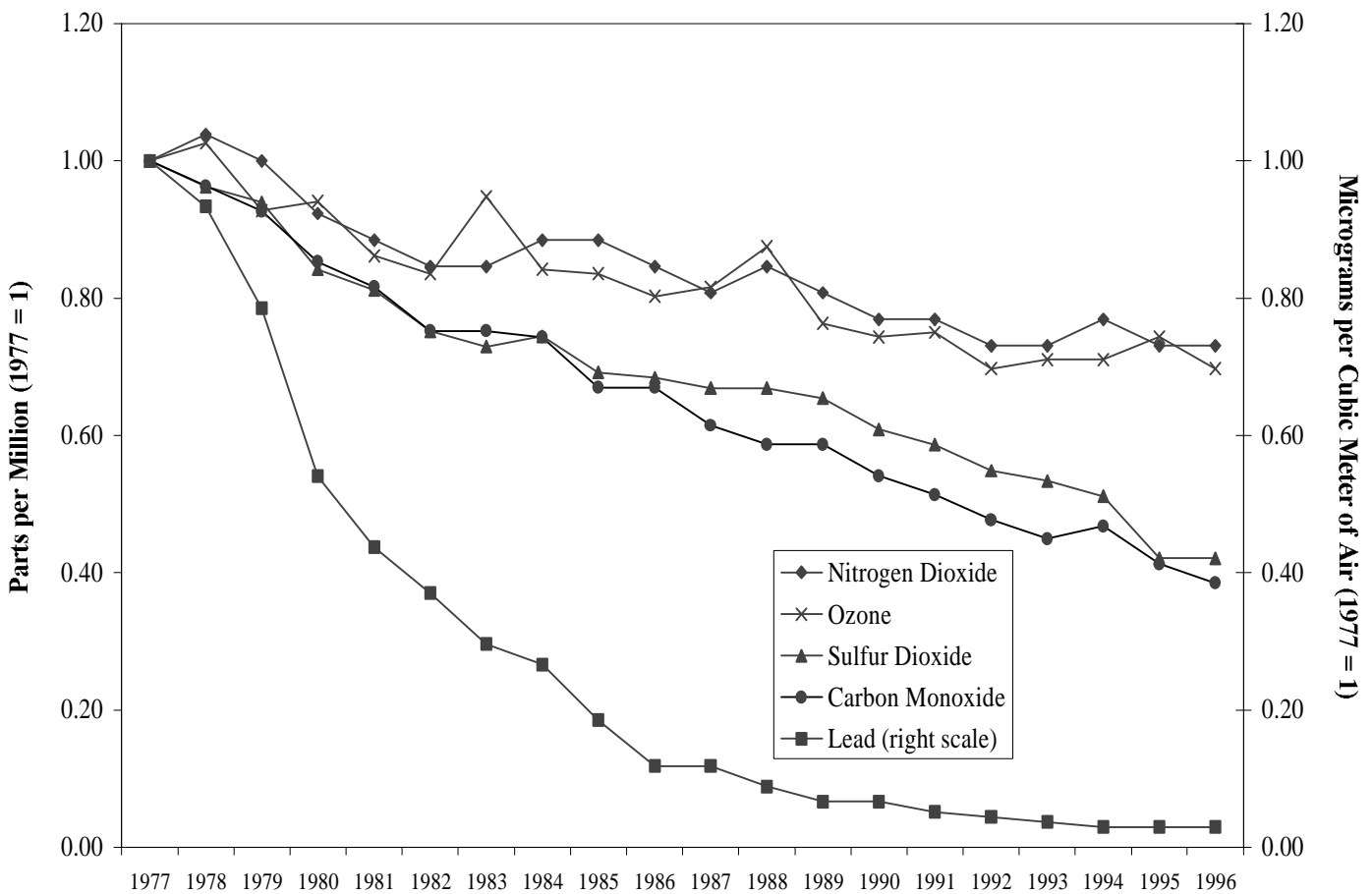
Source: National Safety Council, *Accident Facts* (Washington: NSC, various years).

## Environmental Quality

There is almost certainly no other issue about which Americans' general preconceptions are so contrary to objective reality as they are about the environment. Most Americans believe that, because of industrialization, population growth, and our mass-consumption society, the quality of our air and water is deteriorating and that our natural resources will soon run dry. The scientific evidence tells us precisely the opposite: Between 1977 and 1997, levels of six major air pollutants decreased signifi-

cantly: sulfur dioxide levels decreased 58 percent, nitrogen oxides decreased 27 percent, ozone decreased 30 percent, carbon monoxide decreased 61 percent, and lead decreased an overwhelming 97 percent (Figure 26). The quality of our water has also improved: The percentage of American households served by modern wastewater treatment plants, which improve environmental water quality, has doubled in the past 40 years. Our drinking water is safer; the number of Americans who contract waterborne diseases has fallen between 5- and 10-fold since the end of the 19th century.

**Figure 26**  
**National Ambient Air Quality**



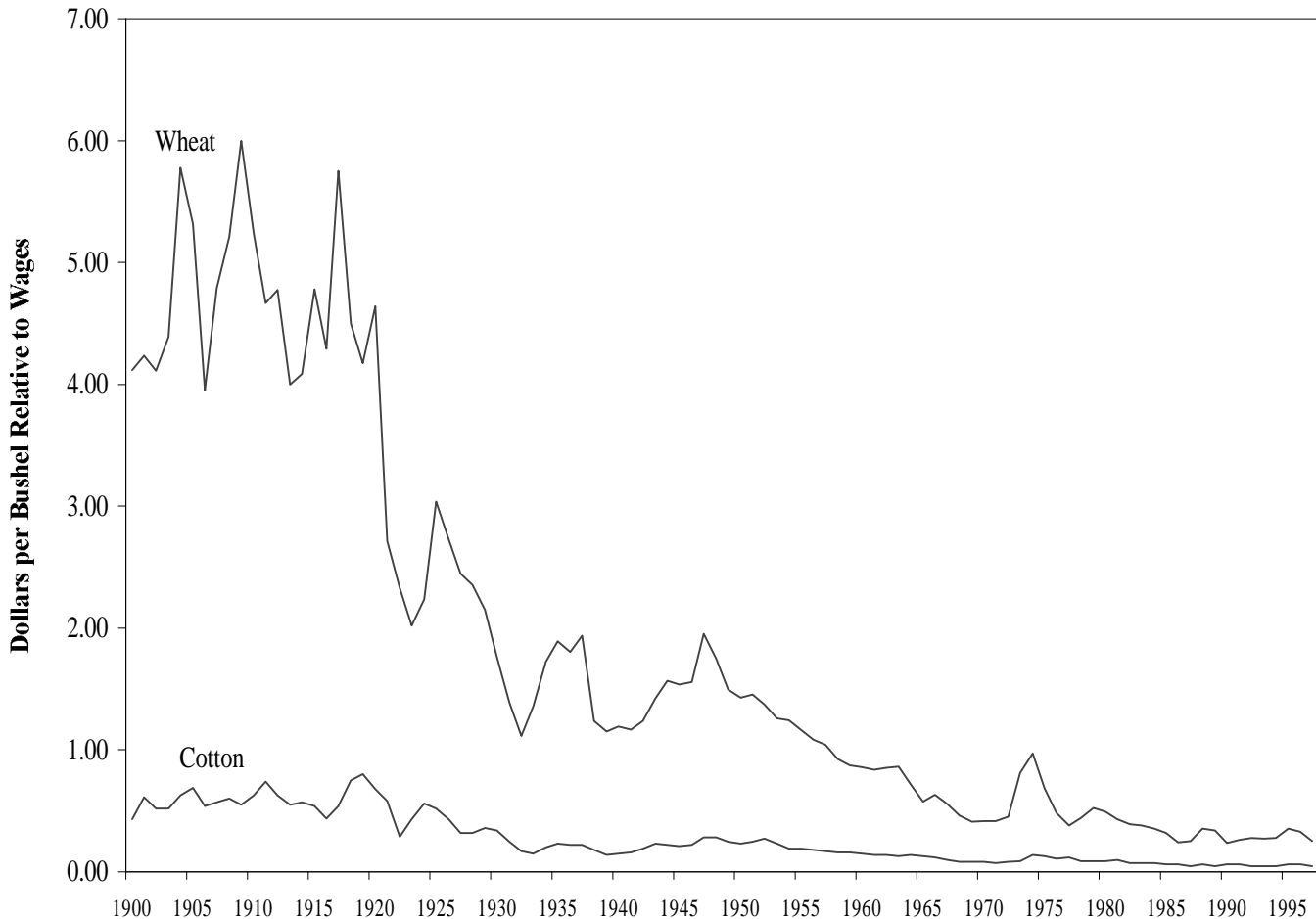
Source: Environmental Protection Agency, Office of Air Quality, Planning and Standards, *National Air Quality and Emissions Trends Report* (Research Triangle Park, N.C.: EPA, 1997).

## Natural Resources

Anxiety about running out of natural resources dates at least to the time of ancient Greece. The truth is that the price of virtually every commodity—agricultural, mineral, and energy—has fallen steadily throughout the 20th century relative to wages. A declining price is an indication of greater abundance, not greater scarcity. Food is so abundant today (Figure 27) that the government pays farmers not to grow so much. Of 13 major metals, the only one

that has risen in price relative to wages in this century is platinum. The prices of most of the rest have fallen an average of fivefold since 1900. The price of fuel has fallen so sharply since the last OPEC oil embargo that “oil is now cheaper than water,” according to a 1999 Associated Press bulletin. Fifty years ago the world had about 20 years’ worth of known reserves of oil. Thanks to technological innovation, which is outstripping the pace of depletion of reserves, the world now has at least 50 years of reserves.

**Figure 27**  
**Wheat and Cotton Prices Relative to Wages**



Source: U.S. Department of Agriculture, National Agricultural Statistics Service, [www.nass.usda.gov/ipedb](http://www.nass.usda.gov/ipedb).

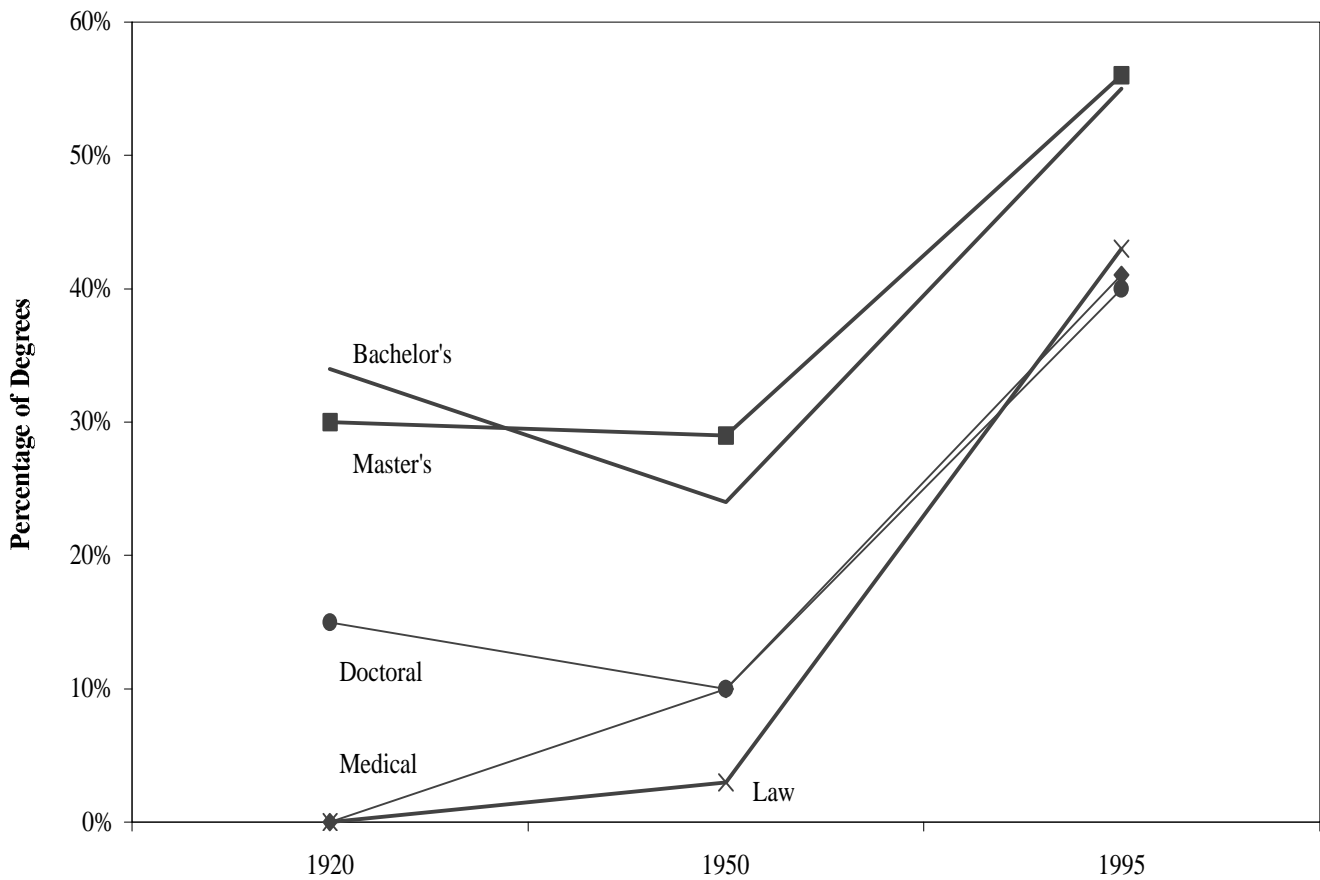
Note: Price of a bushel of each crop was divided by the average wage rate in each respective year.

## Sexual Equality

Nearly every positive trend presented in this study—particularly trends of earnings, education, and health—shows greater improvement for women than for men. According to a study by former Congressional Budget Office director June O’Neill, when men and women are similar in all work-relevant characteristics, women now earn 98 cents for every dollar men do, which is close to wage parity. In 1950 only half of American female workers had a high school

diploma. Now 90 percent do. More than half of bachelor’s and master’s degrees today are awarded to women (Figure 28). Women are more likely than ever to earn advanced degrees in areas once virtually closed to them: law, business management, and medicine, to name a few. One final thought: the proud moment for Americans earlier this year when Mia Hamm and the U.S. women’s soccer team won the World Cup against China would not have been possible 50 years ago, when very few women were able to play organized sports.

**Figure 28**  
**Percentage of Degrees Awarded to Women**



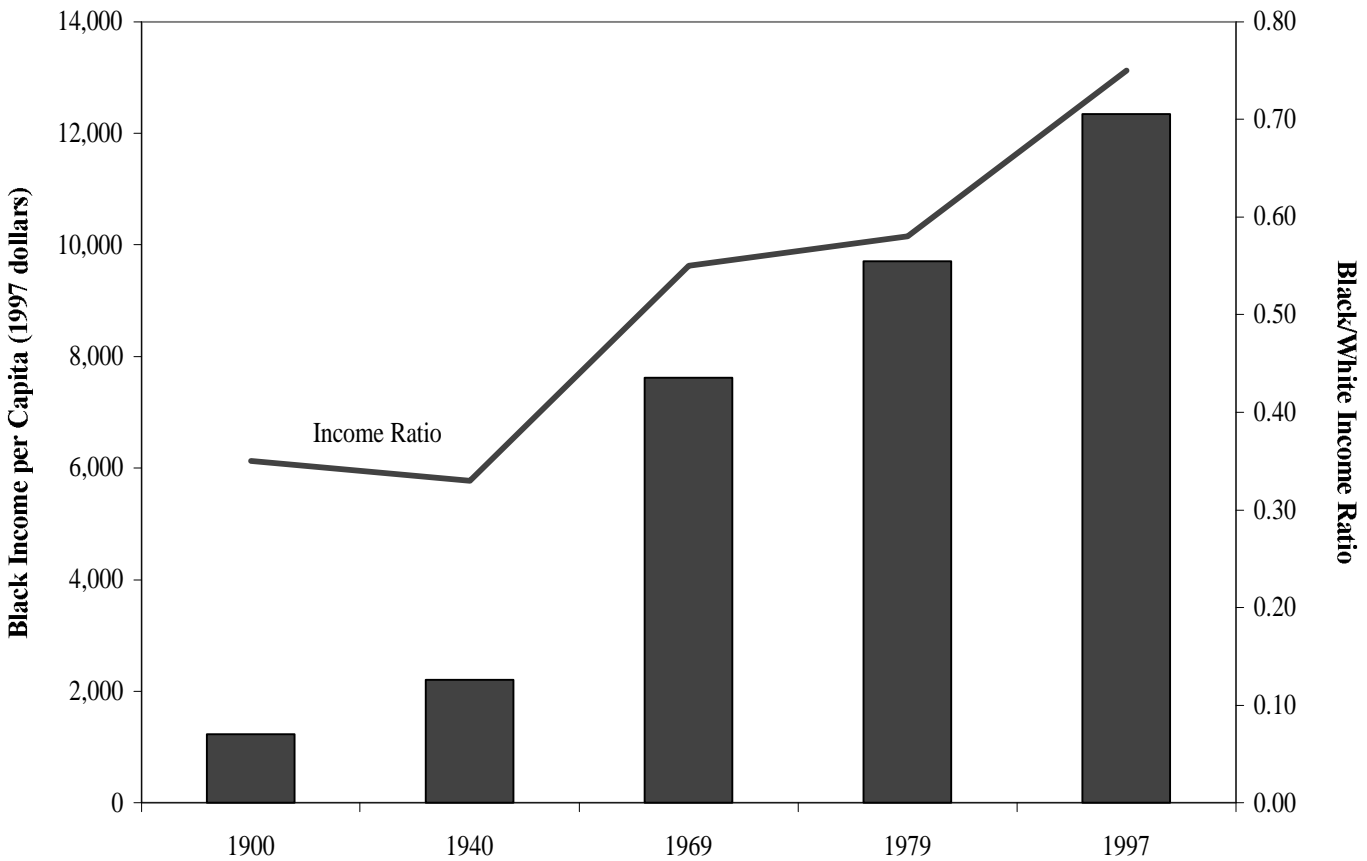
Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, “Completions” survey, cited in Diana Furchgott-Roth, *Women’s Figures* (Washington: American Enterprise Institute, 1998).

## Racial Equality

Slavery and racism have been two of the greatest stains on American society since our independence—mocking the American claim that “all men are created equal.” As recently as 1968 the Kerner Commission on race, appointed after the riots in Los Angeles, Detroit, and other cities, concluded glumly: “Our nation is moving toward two societies, one black, one white—separate and unequal.” The commission was wrong. The racial divide in America has been narrowing, not widening, over the course of this century. African Americans have made strong gains

in income levels (Figure 29), educational attainment, health status, poverty rates, homeownership rates, and life expectancy in both absolute and relative terms compared with whites. According to economic historian Robert Higgs, “Real black per capita income increased between 1900 and 1940 by 61 percent and between 1940 and 1985 by 342 percent.” In 1900 black incomes were less than 40 percent of those of whites; in 1979 they were about 58 percent of those of whites; and today they are more than 75 percent of those of whites. The income gap is still too wide, but it has been cut in half in this century.

**Figure 29**  
**Black Income per Capita and Black/White Income Ratio**



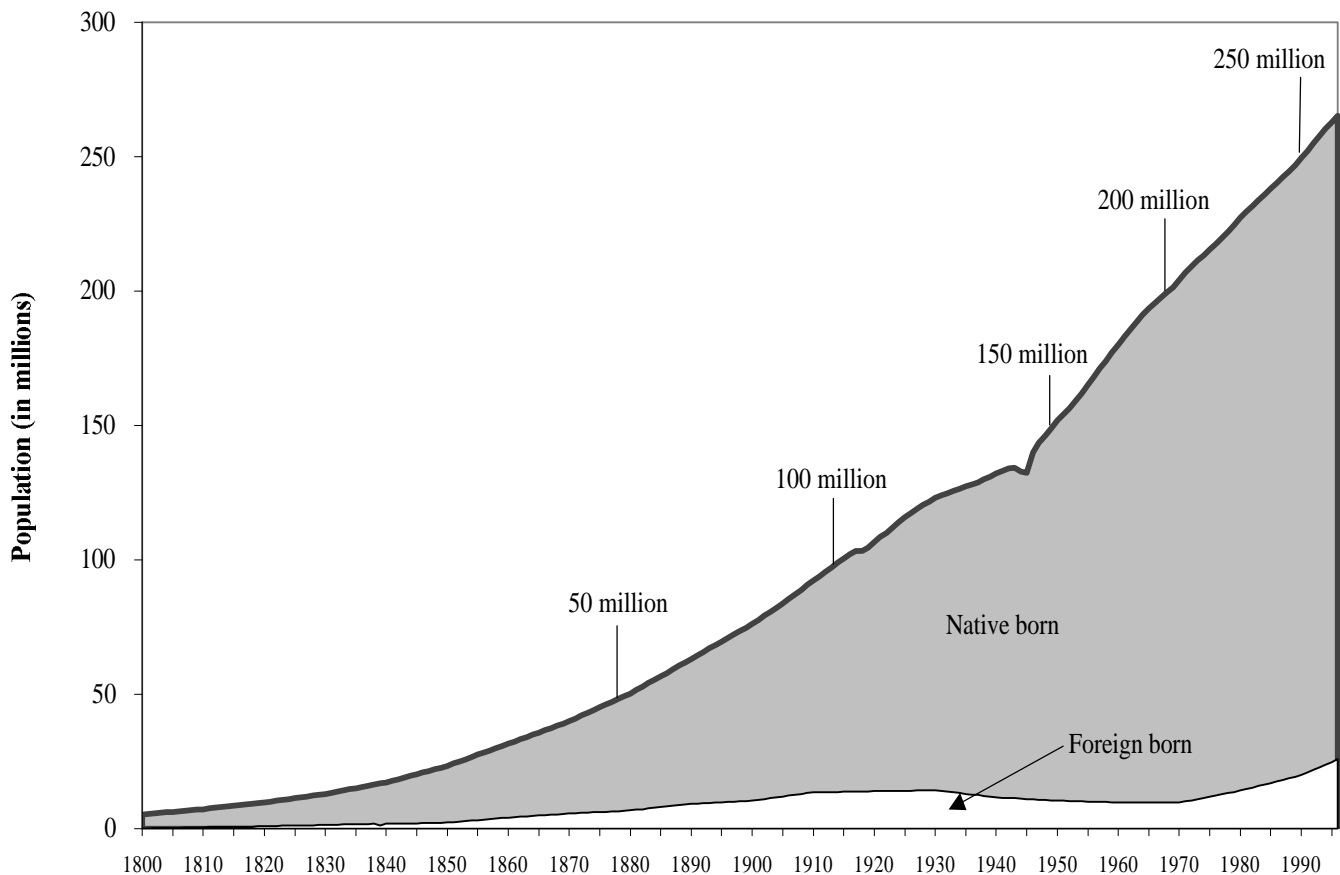
Sources: Robert Higgs, *Competition and Coercion: Blacks in the American Economy, 1865–1914* (New York: Cambridge University Press, 1977); and U.S. Bureau of the Census, *Measuring 50 Years of Economic Change* (Washington: Government Printing Office, 1998).

## Conclusion: The Greatest Resource

A central message of this study is that the fruits of a free society are prosperity, wealth, and better health. All of the evidence in this analysis documents that, in every material way, life in the United States, with a population of 270 million, is much better today than it was in 1900 when the population was 75 million people. Moreover, the American people are net resource creators, not resource

depleters—protectors of the environment, not destroyers. Each generation has left the planet and our continent in better ecological condition for future generations. We have produced more than we have consumed, leaving the savings and wealth to our children and grandchildren. So we consider the happiest social indicator of all in this century to be the rise in the number of Americans (Figure 30) who now live in greater affluence than ever before. We hope and predict that millions more people will live long, healthy, happy lives in America in the 21st century.

**Figure 30**  
**Resident U.S. Population**



Sources: U.S. Bureau of the Census, <http://www.census.gov/population/estimates/nation/popclockest.txt>; *Historical Statistics of the United States*, Series A6-8; and U.S. Bureau of the Census, *Profile of Foreign-Born Population in the United States: 1997* (Washington: Government Printing Office, 1999), p. 9.

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