

“Humans since 1914 have undergone a global population explosion, a health explosion, a fertility revolution, and an urbanization revolution. . . .”

# The Human Population Unbound

NICHOLAS EBERSTADT

Over the past hundred years, global demographic changes have been more than just historic—they have been so sweeping and profound as to rank almost on the scale of an evolutionary leap. What we have witnessed is nothing less than a departure from the demographic rhythms that previously characterized human existence. Across the world we have seen humanity unshackled from practically all the patterns and limits that bound us before, save for reproduction and death itself.

Humans since 1914 have undergone a global population explosion, a health explosion, a fertility revolution, and an urbanization revolution—with further, equally monumental changes currently in the works, promising to transform the world’s population profile in likewise previously unimaginable respects over the century to come.

By very approximate orders of magnitude, it is believed that around 100 billion people have ever been born, with around 90 billion of these souls born before 1914. For that first 90 billion, life was almost always rural—and very short. Until the outbreak of World War I, global population growth was perilously contingent—the race between deaths and births, desperately close. From the dawn of our species until the twentieth century, human numbers increased painfully slowly. Although uncertainty is obviously inherent in such calculations, we can nonetheless suggest that human numbers could not have grown on average by more than three one hundredths of one percent *per century* over the 50,000 years preceding 1900. For almost all of history—and pre-history—“population balance” was enforced by recurrent and disastrous setbacks, including the regular dis-

appearance of clans, nations, and even entire civilizations.

Then, over the course of the twentieth century, the human population suddenly quadrupled—from very roughly 1.5–1.6 billion around 1900 to about 6.1 billion in 2000 (a much more solid figure, given the universality of population censuses nowadays). During the century, the tempo of world population growth accelerated by something like two orders of magnitude over the previous epochal pace, and human numbers virtually everywhere surged on an unprecedented scale.

## LIFE CHANCES

How could this have happened? Arithmetically, the answer is clear. This did *not* take place because people suddenly started breeding like rabbits. Rather, it happened because they finally stopped dying like flies. Simply put, the twentieth century saw an unprecedented revolution in life chances. Around 1900, the global expectation of life span at birth was roughly 30 years—not so different from Neolithic or even Paleolithic times. By 2000, according to estimates from the United Nations Population Division (UNPD), worldwide life expectancy surpassed 65 years.

In every region of the world, mortality fell—and fell dramatically. In both relative and absolute terms, the gains in longevity tended to be greater in the world’s poorest regions. In 1900, the female life expectancy in New Zealand—around 60 years at birth—was likely the highest yet achieved. By 2000, a female life expectancy of 60 was characteristic of countries like Haiti: places now among the least healthy on the planet. In 1950, according to the UNPD, the gap in life expectancy between what the UN terms “more developed regions” and “less developed regions” was about 23 years; by 2000, it was down to 10 years, and it is continuing to diminish.

Strictly speaking, the twentieth century’s “population explosion” was in reality a *health* explosion:

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Improvements in survival prospects accounted for every bit of the global population increase.

From the beginning, more or less all the planet's non-human species have been consigned to a grim cycle of population surges followed by die-offs, as they predictably breed beyond the fixed resource bases sustaining them. Past theories of human population dynamics, most famously Thomas Robert Malthus's 1798 *Essay on the Principle of Population*, held that people were subject to these same immutable biological laws. But just as the twentieth century reset the limits for world life expectancy, it also reset the limits on resource availability, and along with this, the limits to living standards that the human masses might enjoy.

The great economic historian Angus Maddison estimated that worldwide per capita output nearly quintupled over the course of the twentieth century—rising unevenly, to be sure, but rising everywhere. Suffice it therefore to say that the greatest population explosion in history did not prevent the greatest jump in per capita income levels ever recorded.

No less remarkable, during the very century when the global demand for goods and services soared nearly twenty-fold, inflation-adjusted prices plunged for the whole market basket of commodities that people consume. Indeed, international prices for the main cereals—rice, wheat, and corn—fell in real terms by about 70 percent over the century. Prices are meant to convey information about economic scarcity—so this tremendous decline in commodity prices implied that these re-

sources were becoming *less* scarce even as people demanded ever more of them.

## HUMAN RESOURCES

The paradox of increasing plenty in an ever more populous world is explained by the momentous new role of human resources in economic production. The global health explosion was accompanied by a worldwide literacy and education explosion (to say nothing of the related explosion in international scientific knowledge and technological innovation). A hundred years ago, the overwhelming majority of adult men and women on earth were illiterate, as in all previous times. Yet by midcentury, in the estimate of the UN Education, Scientific, and Cultural Organization (UNESCO), a slight majority of the planet's adults possessed the rudimentary skills of reading and writing. And by 2011 (UNESCO's latest figures) the global literacy rate was about 84 percent: five out of six adults.

By 2010, according to the World Bank, nine out of ten primary school-age children were in fact in primary school. Educational attainment has been expanding as well. In 1970, according to researchers at Austria's International Institute of Applied Systems Analysis, the global average for women 15 and older was just 1.3 years of schooling. By 2010, it was estimated at 4.6 years, and is on track to reach about 9 years by 2050—roughly the level of Austria today.

“Human capital” has become an ever more important element in the economic process: In our time, it has arguably emerged as the indispensable element. Unlike various natural resources, which in theory could be exhausted, there is no obvious limit to human resources—not to scientific discoveries, not to schooling, perhaps not even to health.

With progressively greater health, education, and productive knowledge, the global population, not surprisingly, also has become increasingly mobile. The past hundred years have witnessed an extraordinary relocation of people from the countryside to cities. By the UNPD's reckoning, the world was still overwhelmingly rural in 1950: Over 70 percent of the globe's population lived in the countryside, including nearly half of those inhabiting the more developed regions. By 2010, the world's population had become majority-urban—with over three fourths of people in the more developed regions living in cities, and the less developed regions on track for their own urban majority before 2020.

From the archives  
of *Current History*...

The forces of individualism, cosmopolitanism, reason, and science have not, of course, pushed steadily in one direction; nor will they ever bring about a utopia or end the frictions and hurts that come with being human. But on top of all the benefits that modernity has brought us in health, experience, and knowledge, we can add its role in the reduction of violence.

Steven Pinker  
“Why the World Is More Peaceful”  
January 2012

HISTORY IN THE MAKING  
**100**  
years  
1914 - 2014

In earlier ages, the growth of cities was severely limited by both demographics and economics. Before modern sanitation and medicines, cities were epidemiological playgrounds of infection and contagion: Death rates were typically higher than in the countryside, indeed so high that urban concentrations were only sustained by continuing influxes from the hinterlands. Furthermore, for much of history the wealth of cities actually amounted to surplus extracted from the countryside—an arrangement that perforce conduced to small urban populations. All this changed over the course of a hundred years. Almost everywhere today, urban populations are both better educated and longer-lived than their rural counterparts—and urban agglomerations now *increase* per capita income, even after taking health and education into account.

### BELOW REPLACEMENT

Another radical departure from past demographic trends is the ongoing, worldwide decline in childbearing. As the twentieth century's population totals shot up, fertility levels around the globe began to plunge—first in rich countries, then in much poorer ones. Before 1900, communities that did not maintain high birth rates had been doomed to demographic decline, or eventual disappearance. (When female life expectancy was around 30 years, nearly five births per woman were necessary just for population replacement.)

Sustained reductions in family size under non-catastrophic conditions (what demographers call “secular fertility decline”) seem to have begun in France in the late eighteenth century. From this initial foothold, the tendency gradually spread through the more developed regions, so that by the middle of the twentieth century, during the 1950s “baby booms,” the total fertility rate (TFR, or births per woman per lifetime) in Europe, North America, Australia, New Zealand, and Japan had fallen collectively to an average of about 2.8.

For the less developed regions, TFRs averaged about 6 births in the 1950s—a level possibly higher than a generation or two earlier, thanks to intervening health improvements. But in the 1960s fertility declines in these regions commenced in earnest, first in East and Southeast Asia, then Latin America, South Asia, the Middle East, and southern Africa. At this writing, western and eastern

Africa are the only reaches of the earth that have not yet been fully inducted into secular fertility decline.

The scale and pace of global fertility decline over the past half-century have been breathtaking. For the world as a whole, TFRs dropped by half between 1960 and 2010—and by well over half in the less developed regions (from 6.1 in 1960/65 to 2.7 in 2005/10, according to the UNPD). Thus fertility levels for the less developed regions are lower now than they were for the more developed regions just 50 years earlier.

While myriad factors are at play in the modern era's momentous birth rate drops—including socioeconomic advances and the spread of new contraceptive methods—these changing fertility patterns necessarily reflect drastic changes in the demand for children, and thus in familial ideals and parental mentalities. We have no way of guessing how much further mindsets will shift—or how low birth rates will ultimately go. So far, however, we have seen no obvious limits to the “lowest-low” fertility under conditions of orderly progress.

In the early 1950s, Luxembourg was the world's least fertile society, with a TFR of just under 2.0. By the late 1990s, Hong Kong was registering a TFR of less than 0.9—which if continued would result in a shrinkage of each successive generation by

more than 50 percent.

Given the seemingly relentless worldwide march toward lower and lower fertility, humanity must now contend with an extraordinary new mass phenomenon: voluntary sub-replacement childbearing, the proliferation of societies with TFRs sufficiently low as to portend indefinite population decline in the absence of compensating immigration. In the early 1950s, only a handful of spots on the map—all in northern or eastern Europe, accounting for maybe 3 percent of the world's population—were registering below-replacement fertility. By the late 1970s, the more developed regions as a whole had gone sub-replacement. By the late 2000s, about 80 countries and territories were sub-replacement, accounting for just about half the total world population.

The great majority of people living in sub-replacement societies are now found in the less developed regions, including not only China with its forcible population control policy, but also countries like Brazil and Thailand, and an

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increasing number of surprises, such as Myanmar and Iran.

### PARADOXICAL PROSPECTS

Looking ahead, it is fairly clear that the current century will not be a demographic repeat of the one just completed. We can reasonably expect some of the twentieth century's big new demographic trends—improvements in health, mass education, mass urbanization—to continue, of course. But human numbers are not about to undergo another quadrupling. At this writing, the world population totals about 7.1 billion, and is growing by roughly 80 million persons a year. Growth rates for world population peaked in the late 1960s, at over 2 percent per annum; they are just over 1 percent per annum today. Even absolute annual world population increments are lower today than in the recent past—those peaked in the late 1980s.

If current trends continue (an immense “if,” since we lack any reliable method for forecasting births), many more countries stand to join the worldwide sub-replacement club. Current UNPD “medium variant” projections hypothesize that more than 120 countries and territories will be at sub-replacement by 2025/30, encompassing nearly three quarters of the global population less than a decade and a half from now. Already some large countries—Germany and Japan—are in the midst of what we might call voluntary depopulation. It is entirely possible that the current century could see a peaking of global population numbers, and a gradual voluntary depopulation thereafter, as healthy, educated, and increasingly prosperous populations opt not to replace their ranks through children. But obviously this is only one of the possible trajectories that lie ahead.

Along with orderly depopulation, several other still largely unfamiliar trends stand to define and transform the global demography of tomorrow. The first of these is the graying of humanity,

since low birth rates are an engine that generates more elderly population structures. All around the world, the fastest growing age group today is senior citizens. Although projections to 2100 are admittedly somewhat fantastical, the UNPD produces them, and for what they are worth, their “medium variant” depicts a global population in 2100 with a higher median age and a greater share of people 65 and older than for the more developed regions in the late 2000s.

A second trend is the “flight from marriage,” already well under way in the more developed regions, but also in East Asia, and now evident in much of the Arab Middle East. In all its regional variants, this trend has been attended by a sharp rise in childlessness and a growing share of lone adults: men and women divorced, separated, or never married in the first place. On current trendlines, according to some Japanese demographers,

fewer than half of the women born in Japan in 1990 will get married and stay married to age 50; count on more of this in the world to come.

Finally, we can expect much more “demographic convergence” in the decades ahead.

In many respects—for example, the gaps in life expectancy, family size, and median population age—the countries of the world have never been so differentiated as they were in the second half of the twentieth century. But these gaps are starting to close. The global distribution of life expectancy is more even today than at any time in recorded memory. Fertility levels and population structures are likewise on track to become more similar in the generations ahead.

Healthier, but also more elderly; more prosperous, but increasingly faced with demographic decline; more alike, but also more alone. Barring an environmental catastrophe or some other man-made global calamity, these could be the paradoxes of the demographic prospect that we and our descendants face in the twenty-first century. ■

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