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https://www.prb.org/howmanypeoplehaveeverlivedonearth/# March 2018 Retrieved April 10, 2018

How Many People Have Ever Lived on Earth?

This article is an updated version of one of the most popular features on PRB's website, estimating the number of people who have ever been born. We first made this estimate in 1995, with updates in 2002 and 2011.

"Modern" *Homo sapiens* (that is, people who were roughly like we are now) first walked the Earth about 50,000 years ago. Since then, **more than 108 billion members of our species have ever been born**, according to estimates by Population Reference Bureau (PRB). Given the current global population of about 7.5 billion (based on our most recent estimate as of mid-2017), that means those of us currently alive represent about 7 percent of the total number of humans who have ever lived.

PRB estimates that by 2050 about 113 billion people will have ever lived on Earth.

To be sure, calculating the number of people who have ever lived is part science and part art. No demographic data exist for 99 percent of the span of human existence. Still, with some assumptions about prehistoric populations, we can get a rough idea of this historic number (see Table 1).

Table 1. How Many People Have Ever Lived?

Year	Population	Births per 1,000	Births Between Benchmarks	Number Ever Born	Percent of Those Ever Born
50,000 B.C.E.	2	–	–	–	–
8000 B.C.E.	5,000,000	80	1,137,789,769	1,137,789,769	0.4
1 C.E.	300,000,000	80	46,025,332,354	47,163,122,125	0.6
1200	450,000,000	60	26,591,343,000	73,754,465,125	0.6
1650	500,000,000	60	12,782,002,453	86,536,467,578	0.6
1750	795,000,000	50	3,171,931,513	89,708,399,091	0.9
1850	1,265,000,000	40	4,046,240,009	93,754,639,100	1.3
1900	1,656,000,000	40	2,900,237,856	96,654,876,956	1.7
1950	2,516,000,000	31-38	3,390,198,215	100,045,075,171	2.5
1995	5,760,000,000	31	5,427,305,000	105,472,380,171	5.5
2011	6,987,000,000	23	2,130,327,622	107,602,707,793	6.5
2017	**7,536,000,000**	**19**	**867,982,322**	**108,470,690,115**	**6.9**
2030	8,563,000,000	16	1,806,595,106	110,277,285,221	7.8
2050	9,846,000,000	15	2,833,529,982	113,110,815,203	8.7

Note: The estimates for those ever born apply only to live births; still births are not counted.

Source: Toshiko Kaneda and Genevieve Dupuis, *2017 World Population Data Sheet* (Washington, DC: Population Reference Bureau, 2017); United Nations Population Division, *World Population Prospects: The 2017 Revision* (New York: United Nations, 2017).

WHAT CAN WE ESTIMATE ABOUT POPULATION IN PREHISTORY AND HISTORY?

Any estimate of the total number of people who have ever lived depends essentially on two factors: the length of time humans are thought to have been on Earth and the average size of the human population at different periods.

Fixing a time when the human race actually came into existence is not straightforward. Hominids walked the Earth as early as several million years ago, and various ancestors of *Homo sapiens* appeared at least as early as 700,000 B.C. According to the United Nations Determinants and Consequences of Population Trends, modern *Homo sapiens* may have appeared about 50,000 B.C.

At the dawn of agriculture, about 8,000 B.C., the world population was somewhere on the order of 5 million. (Very rough figures are given in the table, representing averages of an estimate of ranges given by the United Nations and other sources.) The slow population growth over the 8,000-year period—from an estimated 5 million to 300 million in 1 A.D.—results in a very low growth rate of only 0.0512 percent per year. It is difficult to come up with an average world population size over this period. In all likelihood, human populations in different regions grew or declined in response to famines, the vagaries of animal herds, hostilities, and changing weather and climatic conditions.

In any case, life was short. Life expectancy at birth probably averaged only about 10 years for most of human history. Estimates of average life expectancy in Iron Age France (from 800 B.C. to about 100 A.D.) have been put at only 10 or 12 years. Under these conditions, the birth rate would have to be about 80 live births per 1,000 people just for the species to survive. To put that in perspective, a high birth rate today would be about 45 to 50 live births per 1,000 population, and it is observed in only a few African and several Middle Eastern countries with young populations.

Our birth rate assumption will greatly affect the estimate of the number of people who have ever lived. Infant mortality in the modern human race's earliest days is thought to have been very high—perhaps 500 infant deaths per 1,000 births, or even higher. Children were probably an economic liability among hunter-gatherer societies, a fact likely to have led to the practice of infanticide. Under these circumstances, a disproportionately large number of births would be required to maintain population growth, and that would raise our estimated number of the "ever born."

By 1 A.D., the world may have held about 300 million people. One estimate of the population of the Roman Empire, spanning Spain to Asia Minor, in 14 A.D., is 45 million. Other historians, however, set the figure twice as high, suggesting how imprecise population estimates of early historical periods can be.

By 1650, the world's population rose to about 500 million, not a large increase over the 1 A.D. estimate. The average annual rate of growth was actually lower in this period than the rate suggested for the preceding period from 8,000 B.C. to 1 A.D. One reason for the abnormally slow growth was the Black Death. This dreaded plague was not limited to 14th-century Europe, but may have begun in western Asia about 542 A.D., and spread from there. Experts believe that half the Byzantine Empire was destroyed by plague in the 6th century, a total of 100 million deaths. Such large fluctuations in population size over long periods greatly compound the difficulty of estimating the number of people who have ever lived.

By 1800, however, the world population passed the 1 billion mark, and it has since continued to grow to its current 7.5 billion. This growth is driven in large part by advances in medicine and nutrition that lowered death rates, allowing more people to live into their reproductive years.

HOW DO WE GET FROM 2 BILLION TO 108 BILLION?

Guesstimating the number of people ever born, then, requires selecting population sizes for different points from antiquity to the present and applying assumed birth rates to each period. We start at the very, very beginning—with just two people (a minimalist approach!).

One complicating factor is the pattern of population growth. Did it rise to some level and then fluctuate wildly in response to famines and changes in climate? Or did it grow at a constant rate from one point to another? We cannot know the answers to these questions, although paleontologists have produced a variety of theories. For the purposes of this exercise, it was assumed that a constant growth rate applied to each period up to modern times. Birth rates were set at 80 per 1,000 per year through 1 A.D. and at 60 per 1,000 from 2 A.D. to 1750. Rates then declined to the low 30s by the modern period.

This semi-scientific approach yields an estimate of about 108.4 billion births since the dawn of the modern human race. Clearly, the period 8,000 B.C. to 1 A.D. is key to the magnitude of our number, but, unfortunately, little is known about the population size in that era. If we were to make any guess at all, it might be that our method underestimates the number of births to some degree. The assumption of constant population growth in the earlier period may underestimate the average population size at the time. And, of course, pushing the date of modern humanity's arrival on the planet before 50,000 B.C. would also raise the number, although perhaps not by terribly much.

Table 2. Snapshot of Population History

Number of people ever born	108,470,690,115
World population in mid-2017	7,536,000,000
Percent of those ever born who are living in 2017	6.9

So, our estimate here is that about 7 percent of all people ever born are alive today (see Table 2). That's actually a fairly large percentage when you think about it.

Toshiko Kaneda, a senior research associate at PRB, provided the current estimates of how many people have lived on Earth. We wish to thank **Carl Haub**, former senior demographer at PRB, for producing the original version of this article.

DATE

March 9, 2018

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Population Change