

World Population: Still Ahead of Schedule

Twenty-seven years ago *Science* published a remarkable article, “Doomsday: Friday, 13 November, A.D. 2026,” in which it was predicted that world population in the year 2026 would go to infinity (1). This startling conclusion was the result of careful analysis of population data going back thousands of years. The article presented an equation that permits computing the population for any given time or the time corresponding to any given population. The equation is

$$\text{Population} = \frac{1.79 * 10^{11}}{(2026.87 - \text{time})^{0.99}}$$

The article attracted wide attention. Not only was it mentioned in *Time* (2) and *The New York Times* (3), it became probably the only article from *Science* ever to be the subject of three Pogo cartoon strips (4).

The article was subjected to severe criticism, but the authors held their ground and with sprightly and entertaining argumentation demonstrated the flaws in the logic of their critics (5).

Although the “doomsday equation” fit surprisingly well estimates of human population in the past, there were doubts about how well the equation would fare in the predicting human population in the future. A small group of scholars has followed the doomsday equation over the years.

In 1975 Serrin noted that most predictions made at the same time as that of von Foerster et al. had ranged from 3 billion to 3.5 billion (6). But the doomsday equation, which had predicted a human population of 3.65 billion people in 1975, was closer to the number being reported by the Population Reference Bureau –3.97 billion. The human reproductive capacity had outperformed all estimates and had jumped to a lead of 320 million.

By 1980 the climate of public opinion regarding population had changed dramatically. From concern about “the population bomb” in the late 1960s and the environmental movement of the early 1970s, arguments by revisionist writers began to appear saying that population was coming under control and was no longer a matter of serious concern.

Nevertheless, the Population Reference Bureau reported that world population in 1980 was 4.414 billion. The equation had predicted 3.969 billion. Hence, 20 years after the equation was proposed and after many years of family planning efforts, the equation had proven to be drastically conservative. We were then 445 million people ahead of schedule!

Just how far ahead of schedule we were can be seen by looking at what would have happened if a nuclear war had occurred between the United States and the Soviet Union in 1980 and had destroyed seven-eighths of the populations of both countries. Such an event would have removed about 425 million people from the world population. Thus a nuclear war would merely have served to put us back on schedule.

In the past 7 years the press has reported the success of family planning efforts in China and elsewhere. But given that in 1980 world population was ahead of the historical trend by almost twice the population of the United States, how much progress have we made? The Population Reference Bureau now estimates that world population in mid-1987 was 5.026 billion. However, the Worldwatch Institute says that world population passed 5 billion in July 1986. The equation predicts a population of 5 billion in 1989. As we head into the equation's fourth of six and one-half decades, we are "comfortably ahead of schedule."

The current discussion of world population growth lacks a firm foundation. Optimists say that the rate of population growth is diminishing. Pessimists say that more action is urgently needed. The layman or policy-maker is left wondering whom to believe. The doomsday equation has so far provided a useful benchmark for judging what progress we have been making in controlling population growth. It seems that we have not been doing as well as we thought.

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