

How Global Warming Increases Life Expectancy

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Introduction

Many studies have addressed the consequences of global warming – which has been tagged “the most important issue humanity has ever faced” (*National Geographic* 2001, Lewis 2011). Published research includes the impact of global warming on – not surprisingly – global heating and changes in global temperature (NOAA 2010, Royal Society, & US National Academy of Sciences 2014), as well as a number of ecosystem impacts, such as extinction of species, permafrost thawing, rising seas, increase in pests (Mastny 2000, Suurkula 2004, Shah 2013, National Research Council 2014), and – not surprisingly either – the brunt of it faced by women (UNFPA 2009). Yet not sufficient attention has been paid to the most consequential of all consequences, which is, the global warming effects on human life expectancy and life span. As life is also one of the most important issues humanity has to face, the close relationship between the 2 variables deserves to be investigated.

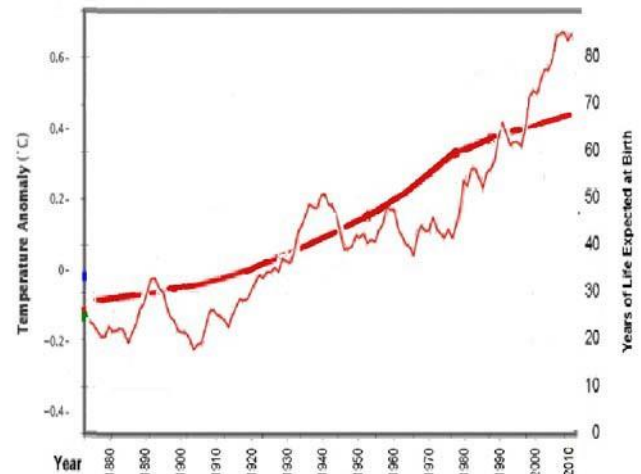
Statistical Analysis

Appropriate observation shows that global warming does increase life expectancy. The empirical evidence is overwhelming. For the period with available data, that is, from 1880 to 2010, the Earth’s temperature has increased 0.9°C or 1.6°F, that is, at the impressive rate of 0.007°C or 0.012°F per year. Temperatures are certain to go up further. (NASA 2014) In turn, the global average life expectancy at birth was less than 30 years in 1880, and 71 years in 2013, that is, it has increased at a rate of nearly 4 months per year. (UN 2008).

The correlation between the 2 variables is visible in the Figure. The correlation is positive, that is, in the expected direction, and statistically significant at $p \leq 0.01$. More detailed reading of this finding demonstrates that for every increase in Earth’s temperature by 1°C, life expectancy increases by 45.5 years, while for every increase by 1°F it increases by 25.6 years. In fact, the pace of warming is accelerating, as the annual rate of temperature

increase has nearly doubled in the last 50 years. If nothing is done to restrict global warming, and according to most respected scientific prospects for rising temperatures in the near future (Hansen & Sun 2003, Lindzen 2006), **life expectancy should grow at a rate of about 164 days per year, attaining a global average life expectancy of 435 years by the end of the century** – not a mean achievement.

Figure: Global Warming and Life Expectancy, 1880-2010.



The saw-teeth curve represents the average global temperature increase, with the scale on the left vertical axis, while the linear curve represents life expectancy, with the scale on the right vertical axis, both for the years on the horizontal axis. Sources: For global warming, NASA 2014; for life expectancy, United Nations 2008.

Hypotheses

The causality relationship between the 2 variables needs to be further explored. Intuitive support to the correlation between higher temperatures and longer life comes, for instance, from the observation that although freezing food, whether by industrial procedures or the domestic fridge, increases its availability over time, actually in most cases the freezing of cattle or fish preserves just dead corpses. In contrast, better food able to improve human health and the subsequent life span is warm on most occasions. The opposite line of causality

could also be considered, as increasing life expectancy implies population growth and an overpopulated Earth may tend to warm up, even if only due to the fact that higher population density increases closeness and warmth in human relationships.

Admittedly, global warming is a global phenomenon. As in any serious scientific endeavor, we are working with average values. It is the Earth's average temperature that sustainably increases over time. But the variance across the globe is sizeable. More specifically, global warming means that the Earth's average temperature rises. But this is not incompatible with the fact that while in certain places the temperature rises, in other places it goes down.

The source of increasing variance and volatility of temperatures is the Polar Vertex, that is, the precise location where the ice melts at the North Pole. As the North Pole warms up, cold air is expelled out from there and makes its way South. So cold air goes South and warm air goes North. Northern areas, such as the Arctic, northern Canada, Alaska, Greenland, and Siberia, are warming up. So is Antarctica in the South. People in those lands are likely to increase their life span. As a side effect, cooling down spreads over other latitudes. As the surfaces of the oceans also warm up, more water is evaporating and from the warmer atmosphere falls rain and snow. This is why since 2010, a number of cities, such as New York, Philadelphia, Toronto, Vancouver, Washington, as well as the states of Michigan, Wisconsin, and the others around the Great Lakes, similarly to most of Europe and much of Russia, have experienced the coldest winters in history, including record-breaking cooling air, snowstorms, and similar events. Since 2001 the typical winter temperature in Chicago has been -22°C . (Weather.com 2014).

Further Research

Relatively elevated variance in temperature changes across places have boosted some scholars and high officials to suggest that the expression "global warming" should be replaced with "climate change", "climate disruption", or just "global weirding" (Singer 1999, Hayhoe & Farley 2009, Holdren 2010). There are, nevertheless, sound reasons to dismiss these suggestions. It has been brought to the attention of the

scientific community that this would be like replacing "great recession" with "financial change". While the annual rates of average growth have decreased or been negative in a number of countries, some people have gotten richer while others have gotten poorer. Likewise for global warming and the accompanying climate change.

A more promising line of research would be to explore the measurement of the per capita change of temperature in different regions of the world, analogously to how the per capita income is measured per country. Nevertheless, current estimates have already overcome the daunting challenge of measuring the average global temperature without measuring local temperatures, bypassing the conventional bottom-up empirical calculations that still prevail in economics and other dismal disciplines. The global warming postulate is based on what is called "ignorance-based logical models" (Taagepera 2008, ch. 4). They are based on nearly complete ignorance. But we know that the conceptual limits are burning and freezing, from which averages can be calibrated. Strenuous resistance to scientific progress comes from the foremost mental roadblocks in model building, which are refusal to simplify and reluctance to play with average values. These roadblocks have little to do with mathematical skills.

Similar dissections can be operated over the available measurements of our dependent variable. Life expectancy is the expected number of years of life remaining at a given age, in the statistical sense. Because life expectancy is an average, a particular person may well die many years before or many years after their expected survival. But this does not detract significance from the global measurement, not the least because expectancies feed hope, which is so much needed.

Conclusion

In the absence of further refinements, these available proofs could be taken with a pinch of salt. But on the basis of both average values and well-educated intuition, we hold the hypothesis – always submitted to further disproof, of course – that, indeed, global warming favors longer life expectancy and longer life span.

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