

## **An Introduction to Health Resilience and the Population Explosion**

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Dr. Wijesekara, thank you for your introduction but it was too generous! I look back on our times together during the civil war as colleagues and the development of a fine friendship. I learned so much from you and maybe you gained a little from me during that period.

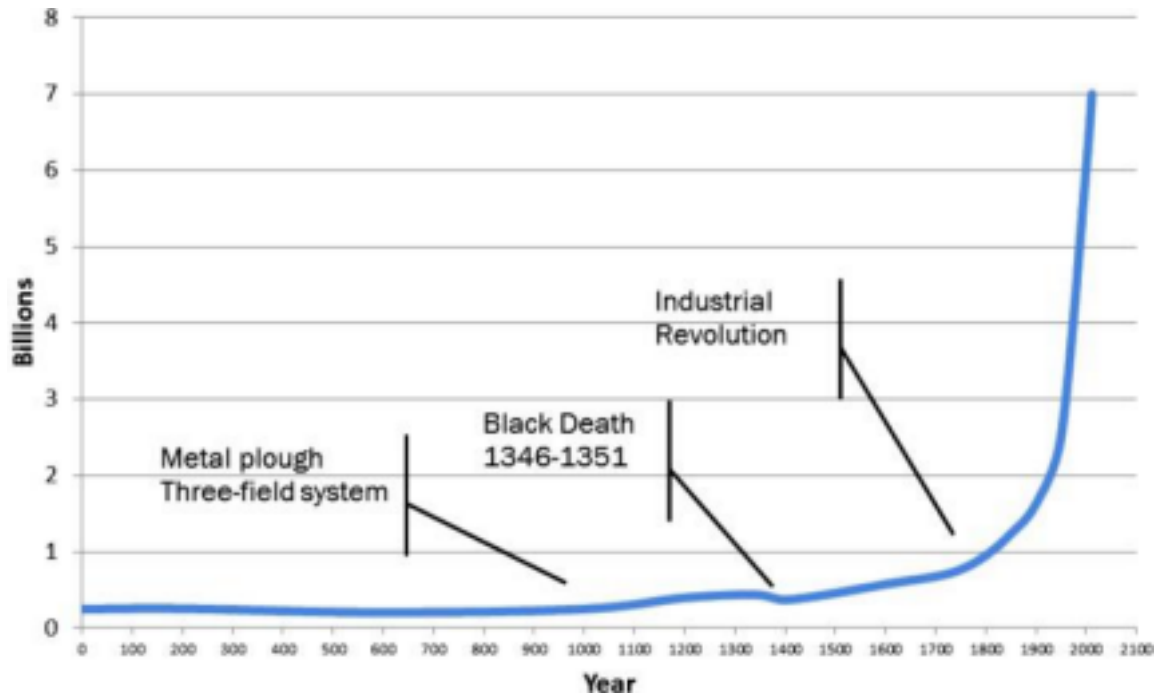
So dear friends, presenters and colleagues, it is an honor for me to be allowed to make a brief introduction to this meeting. This symposium launches a magnificent initiative in starting a new and valuable international journal. To set the scene I plan to put health resilience in the context of the human population explosion.

The graph suggests that little changed with human population numbers over the last 2,000 years. Then increases began to occur about 200 years ago. These changes were prompted by two types of resilience. They have been excellently reviewed by Ninde in 2022. (Ninde, C. San Juan Basin Public Health Report). She showed that “People died painfully, mostly in infancy or childhood, primarily from diseases such as tuberculosis, pleurisy, typhus, tonsillitis, cholera, and dysentery. With a lack of medical understanding of these ailments, a common treatment was bloodletting. The average lifespan at the time was around 35 years. Over the last 200 years, U.S. life expectancy has more than doubled to almost 80 years (78.8 in 2015), with vast improvements in health and quality of life”.

Two types of changes were taking place before the interventions of antibiotics and vaccines. Each illustrates health resilience:

1. Improved education changed the individual or population response to recognize the extent of the damage and set up a process of personal hygiene, family, and community recovery. This utilized first-aid procedures, improvements in lifestyles (nutrition, health, and education), home restructuring and improvements of personal infrastructures
2. Methods employed by a government, community or culture that supported the suffering population and helped its return to or improved on its former situation. Attention was given to the need for food, water, electricity, communication systems and infrastructure. Temporary or permanent relocation was sometimes necessary.

“Historians have concluded that improved sanitation, public water treatment, sewage management, food inspection and municipal garbage collection almost eliminated the causes of death. Also, other social advancements such as greater understanding of nutrition, better housing conditions, air quality improvements, child labor laws and higher literacy rates also greatly improved overall health and life expectation”.



**Figure 1. The Human Population Changes in 2,000 Years.**

Biologists began to be interested in such demographic changes in the 1930s. By 1962, the Club of Rome set up a committee to investigate the impact of these changes on the world. They used computer models to produce a graph that was parallel to the one above. Their non-technical deliberations were published a decade later and their findings have stood the passage of time. (Meadows DH, Meadows DL, Randers J and Behrens WW. 1972. *The Limits to Growth*. Universe Books NY). A doubling in population will continue to have impacts on food, water and ecological systems, and lead to competition for space as well as the need for increased health care.

So the demand for health resilience plans has continued into our current time. We need to understand that effective health resilience can, itself, lead to other problems. For example, consider polio infections. (WHO 2022. *Global Wild Poliovirus 2016 - 2022*). “Globally, as of 9 August, 19 cases of polio due to wild poliovirus type 1 (WPV1) and 223 cases due to circulating vaccine-derived poliovirus (cVDPV) have been

reported this year. In 2022, the cVDPV cases have been reported in 15 countries, with 93% of the cases attributed to cVDPV type 2 (cVDPV2)". We will hear more of this in a later paper. But we must understand how this has arisen as polio was almost totally eradicated earlier worldwide.

An understanding of disease transmission and the use of polio vaccines regulated the incidence of polio in most parts of the world apart from Pakistan and Afghanistan but the almost total reduction in other countries has led to a false sense of safety. If the infection does not exist, then the need for vaccination is obviated, some thought. The lack of vaccination necessity, exacerbated by poverty limiting vaccine procurement increased the risk of a comeback. This is happening now.

Overall, health resilience is essential for a better future for people on our planet that is presently undergoing many natural and manmade catastrophes, but it must be implemented with caution. The new International Journal will allow us to share our ideas.

Thank you very much.  
Bryan Walker