Critical Voter

How to Survive the Next Election by
Making Yourself (and Your Kids) Smarter

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2020 Edition

Degree of Freedom Press

978-0-9972053-2-9

www.criticalvoter.com

CASE STUDY
CAN MATHEMATICAL FALLACIES BE DEADLY?

As you read about in the earlier chapter on mathematical fallacies, there is a huge gap between the perfection of numbers represented in pure mathematics, where 2 plus 2 always equals 4, and the real world in which those numbers are used.

Sometimes, bad numbers accompany bad intentions, including a desire to deceive. But what about numbers that are off due to simple error or the desire to do good? Can our faith in numeric information that turns out to be false be problematic or even lethal?

I thought of this while reading an opinion piece in *Scientific American*[1] that used, as a starting point, a statement by Donald Trump soon after the coronavirus pandemic began in 2020. In it, the President compared COVID deaths to the annual deaths caused by seasonal flu.

In that statement, Trump said he was shocked to learn that between 25,000 and 69,000 people die every year from the flu, a statistic he obtained from the same Centers for Disease

[1] The *Scientific American* opinion piece by Dr. Jeremy Faust calls out one of the fruity mathematical fallacies you read about earlier with its title "Comparing COVID-19 Deaths to Flu Deaths is Like Comparing Apples to Oranges." You can read the original article at https://blogs.scientificamerican.com/observations/comparing-covid-19-deaths-to-flu-deaths-is-like-comparing-apples-to-oranges/.

Control (CDC) that has been so central to tracking coronavirus statistics.

Given that, at the time, it was estimated that COVID might kill close to 70,000 Americans, Trump was trying to reassure the public that this epidemic was no worse than a disease that kills a comparable number of people each year, an illness that does not require shutting down the nation.

Dr. Jeremy Faust, who wrote the *Scientific American* piece, was perplexed by that comparison, not because he was unfamiliar with the flu death statistics the President was using, but because this huge number did not comport with his experience as a physician. During all his years in medicine, he had only seen one flu death.

Because his own time on the medical front lines was limited (less than eight years), Faust reached out to other physicians to confirm that they, too, had rarely seen a flu death compared not just to Coronavirus deaths, which were visible to (and countable by) everyone, but also other unfortunately common types of deaths such as opioid overdoses and gunshot wounds. (The CDC reported that overdoses and gun-related deaths each topped 40,000 in 2018.)

This caused him to look more closely at how the CDC compiles its flu statistics. He discovered that the 25,000 to 69,000 per year death rate was not an actual physical count of victims but rather a statistical estimate based on several assumptions. This approach has resulted in the CDC likely inflating the annual flu numbers by more than 500%.

During normal (non-COVID) times, there were societal

benefits to having the public believe the flu was more deadly than it actually was. Indeed, the fear of such a lethal virus might cause people to protect themselves by improving personal hygiene and getting flu shots. But during the time of COVID, this misinformation tended to minimize the seriousness of the present pandemic. It creates the misconception among some leaders and citizens that they can downplay today's COVID-19 apple because it is like the flu orange, which allegedly kills comparable numbers but does not prompt officials to implement strict preventative measures such as social distancing and lockdowns.

Given this, Dr. Faust recommended that CDC revise its flu reporting methodology to better reflect reality rather than continuing to rely on flawed statistical models that inflate flu death stats, especially now that we know that erring on the high side has a major public downside.

Afficionados of powerful arguments should read Dr. Faust's piece in its entirety since it contains many elements that make it particularly strong, including these notable examples:

- Faust makes a compelling case that current methods for reporting flu statistics are flawed, starting with his own experience and that of other doctors and then diving into how the flu statistics so at odds with that experience came about.
- The author's discovery of flaws in how the CDC calculates flu deaths is an excellent example of the gap between the perfection we project onto numeric

information and the messy reality of numbers.

- The author's assertion that the CDC should modify its approach to generating flu statistics is a perfect example of something we can do to improve things in the future, making it a classical deliberative argument.
- While Faust uses Trump's misconception as a starting point, he does not accuse the President of intentionally misleading the public. Instead, he points out that Trump's misunderstanding was based on figures many people assumed were correct, including himself until he looked at them more closely.

Faust's nonpartisan approach allows his argument to appeal to people across the political spectrum. It does so because he is not using his discovery to condemn Trump (or anyone else, including CDC). Instead, he suggests a way to ensure we are not hamstrung by misperceptions that can cloud important decision-making if and when the next major health threat occurs.