

WHY SOCIAL SCIENCE ?

Because Leaders Need to Know How to Lead with Evidence

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By Ellen Peters, PhD, Director, [Center for Science Communication Research](#), [University of Oregon](#)

Being bad at math can kill people. Even experts who should understand medical science and help us make good health decisions sometimes fail. In December, a doctor—let’s call him Dr. Smith—advised a [tweeter’s](#) elderly mom not to get the COVID-19 vaccine because “99% of people fight off COVID, but [the vaccine is] only 93% effective.” This doctor is blatantly wrong. He doesn’t understand the math and is giving life-threatening advice. When even some experts struggle with numbers, it’s easy to see the problem.

2020 thrust a new world of statistics upon us—numbers of cases and deaths, false positive rates, and percentages of open ICU beds. Many of us track these numbers to stay informed and feel secure, but we don’t always understand or use them appropriately. [Communicating facts](#) isn’t always enough. But when facts are presented in forms that make sense to us—using the science of science communication—leaders can inform and motivate better choices.

It would be a mistake not to get a vaccine because 99% of people fight off COVID while the vaccine’s effectiveness is lower; that would be true even if the vaccine was 50% effective, let alone 93%. Dr. Smith misunderstood how these numbers are related. It’s nonsense to compare the vaccine’s effectiveness to COVID’s survival rate. Assuming it were true that 99% of people survive COVID, it would still be eminently sensible to reduce how many get infected in the first place. If you could prevent half of cases—or better yet, 93% of them—then far fewer people would have to risk death, not to mention [other effects of the disease](#).

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Unfortunately, many people don’t understand the logic of these numbers. As a decision psychologist, I was so bothered by Dr. Smith’s faulty reasoning that I asked 737 Americans about what he said. Almost a third (29%) agreed at least somewhat that “if 99% of people fight off COVID, and the vaccine is only 93% effective, I’m better taking my chances rather than getting the vaccine.” People who were worse at math agreed more than the math-proficient. The more someone agreed with this faulty comparison, the less they agreed that enough people getting vaccinated would reduce cases and deaths. This is a comprehension failure.

[Providing people with COVID-19 statistics](#) should lead to greater understanding and wiser choices. However, many American adults lack basic math skills. [About a third of us are innumerate](#). And pandemic statistics have been particularly error-prone, even as people try to use them to resolve deep uncertainties and make effective decisions.

As a result, some [question](#) whether leaders should provide statistics at all, because numbers might confuse rather than inform or might cause people to [double down on incorrect beliefs](#).

But we know that providing facts often helps. In one [experiment](#), participants read about a drug prescribed to treat high cholesterol. We showed half our participants its side effects and their non-numeric chances (for example, headaches are

common). Most mistakenly overestimated the risks.

The other half of participants saw the same side effects with numeric likelihoods (seven percent get headaches). They had a more accurate understanding of their chances of experiencing side effects and were more willing to follow doctor recommendations than those who had been given non-numeric information. These findings held whether participants were better or worse at math.

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Facts can matter even for politically polarized issues. In another [study](#), Americans underestimated the scientific consensus concerning human-caused climate change. However, when provided statistics, they became more accurate and confident about the consensus. Similar effects emerged across political ideologies.

Leaders should lead with pandemic evidence to reduce misunderstandings and misinterpretations like Dr. Smith’s. They need to be transparent about what is known and not known, including providing statistics indicating where uncertainty lies. Doing so will help correct false facts and misinterpretations while avoiding surprise, regret, and anger when the unexpected occurs. Because people also [prefer getting statistics](#) and [perceive](#) them as useful, providing statistics will help [earn the public’s trust](#) and build healthier behaviors.

Current methods of presenting statistics, however, likely surpass many people’s capacities. Leaders need to do the math for those who cannot or will not do it themselves. Providing simple, easy-to-understand, and appropriate comparisons then will help leaders have greater impact. [Visualizing data](#) also can promote comprehension. But designing good data presentations is difficult, and even well-intended communications can [lead to worse comprehension](#).

Leaders should provide appropriate data using the [science of how numbers affect us and how to present them](#). As individuals, we also can ask experts to provide numbers in ways that help us choose better.

Why social science? Because leaders need to treat the public respectfully as adults who can handle statistics (presented accessibly), understand the gravity of their choices, and take charge of their lives. This is critical today when personal choices—to vaccinate, mask, or quarantine—determine how well we emerge from this pandemic.



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