

# Upfront

Numbers don't lie.

It's been repeated so many times by so many people that attribution for the phrase is un-grantable. Mark Twain gets credit for saying lots of things, and a variant of the above is one of them: "Figures don't lie, but liars figure." Frank Shorter, the famous American Olympic miler said it without embellishment – "Numbers don't lie" – and, for him, as he measured the value of his life's work in tenths of seconds, his assertion was coldly accurate. An online forum, Quora, asked the Internet for its opinions regarding the phrase. Seventeen of the Internet's representatives responded. One, Makala Doulos, who self-identifies as holder of a "B.A. in Christian Theology and Philosophy and Christian Education (1990)," says, "Mathematics is the least ambiguous language we currently have." I have no way of measuring a language's embedded ambiguity, but Makala's declaration seems reasonable. Another forum-phat, C.L. Washbrook, whose subheading reads "expertise in language, literature and history – 24 years," is more cynical than Makala. She posits: "The numbers are what they are. But they can be presented in a way which creates a lie. Numbers can be left out, named differently, misrepresented, nullified by purposefully invented reasoning, fiddled, forged, estimated, rounded up/down, never assessed... If accurate, numbers are truths. People using numbers, however, are frequent liars." Based on her posts (and her use of "which" without a preceding comma, I suspect C.L. is a Brit, or at least an Anglophile; and, as to her thesis herein, I'd say she's right.

Humans possess biases. The origins of these biases are fodder for anthropology, sociology, and psychology debate, and beyond (as many things are) my scope (here). Humans analyze numbers. Numbers don't analyze numbers (well, they do, in a way, through Artificial Intelligence, though AI algorithms are borne of biased human minds...so let's just accept numbers as agnostic, left to their own devices). People analyze numbers. It's the people part that's the problem. Numbers don't lie; but they aren't mystically imbued with truth, either.

I was running on a treadmill in a gym. The chyron (the big words at the bottom of cable-news channels' broadcast pictures, designed to scare you into watching) from CNN said something like "COVID-19 VACCINATION RATES PLUMMET TO RECORD LOW." My headphones had a rectangular cord-head and the treadmill offered a round hole...so...I had to wait until I got home to learn more.

Madeline Holcomb and Theresa Waldrop are credited with a CNN online article, titled "Daily pace of new Covid-19 vaccinations is the lowest since the CDC started tracking in mid-January." (What it – the title – lacks in pith, it makes up in hyperbole.) The piece says, "The daily pace of new COVID-19 vaccinations in the U.S. is the lowest it has been since mid-January, CDC data shows. The seven-day average rate of people getting their first shot is 231,695, 31 percent less than last week, almost half – 47 percent – less than a month earlier – and a far cry from the millions a day the country saw in April...according to the CDC data, almost 25 percent of the eligible population – about 70 million people – are not vaccinated...Just over 55 percent of the total U.S. population is fully vaccinated."

That's a lot of numbers. I'm dizzy from reading them (I left some out for clarity/brevity), and I have both an engineering degree and a finance degree. But what do they mean?

The authors refer to 70 million people as the unvaccinated-eligible. If true, the total pool of eligibles (70 million/.25) is 280 million. Current estimates peg U.S. population at 333 million. The authors state that 55 percent of the total U.S. population (333 million x .55) is fully vaccinated, which implies 183 million fully vaccinated people. If 183 million have their shots out of 280 million who are eligible for them, that's a vaccination ratio of 65 percent, or an un-vaccination ratio of 35 percent, while the article (re-see above) cites the CDC's data claims that 25 percent (not 35) of eligibles are not yet fully vaccinated. That's a discrepancy of ((35-25)/25) 40 percent for a single statistic (the ratio of unvaccinated eligible Americans) within one article. Do numbers lie? No, but they don't reveal immutable truth when subjected to human hands.

Further, let's say 280 million is the right starting point (eligible Americans). If we vaccinated a million people on day one (1/280), we did 0.35 percent of the eligible population. As people get vaccinated, the pool of unvaccinated-eligibles shrinks (to 70 million today...or as of September 27, per the CDC). The authors point to an alarmingly low number of new first-shotters (approximately 232 thousand). But 232 thousand/70 million is 0.33 percent, which is not a significantly different rate from the million-vax days of February and March. So, are we in vax-crisis mode? You decide.

Lest you think I'm picking on one side: Fox News displayed a disturbing array of numbers this morning, detailing increases in prices for a disparate array of commodities, services and finished goods. Up 10 percent. Up 50 percent. Up 125 percent! But over what time frame? The same span for each? Or did we pick the absolute lows as baselines, tracking one good for 20 years and another for 10 months? I have no idea, since the chart didn't say.

It's fair to characterize statistics as advanced math. Sadly, according to the National Science Foundation, fewer than 3 percent of Americans are "proficient" with "advanced math." Reports of American literacy proficiency rates vary widely (within a band of 65 to 87 percent), implying a maddeningly sizeable pool of no-to-low-literacy adults. Still, as the statistics in this paragraph suggest, our country is home to a huge pool of people who can't use numbers anywhere near as well as they can use words.

We exalt data. We anoint it with specious gravitas. But we rarely double-check it, or examine its sourcing, or question its efficacy, or... well...bother to do the math.

We should...do the math, and question the conclusions, and seek real truths.

Three classes, taken long ago...one in high school and two in college, both during my sophomore year...serve me daily, and more loyally than others. Typing, Economics (I took a bunch but learned most of what I needed at the introductory level), and Statistics (the second-semester mate to Probability...also enormously useful... both required of engineers). Along with reading and writing, numbers are the currency of human experience...our media of understanding. Misusing them might not be lying, but it also isn't telling the truth.



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