

Use intensive care to keep from doctoring the digits

By Matt Baron

The headline read, “How To Lie With Statistics.” Of course, my mother-in-law thought of me.

I like to think it’s because she sees me as a detector, and not a perpetrator, of statistical lies. In any event, I checked out the blurb she shared, which ran in Dr. William Campbell Douglass’ “Real Health” newsletter. The doctor took issue with a headline touting a certain drug that cut the risk of breast cancer.

Here’s what the newsletter stated:

“The headlines said, ‘Tamoxifen Cuts Breast Cancer Risk 50% In Healthy Women!’ And so it did. In one study, sort of. But let’s look behind the numbers...

As it turns out, among all the women who took tamoxifen, less than 2% got breast cancer. Yet among those who took the placebo, less than 3% got breast cancer. So the real difference was only 1%.

Much ado about nothing? You bet. But of course, the number 3 is 50% larger than the number 2. Therefore, tamoxifen cuts your cancer risk 50%.

Yeah, right.”

So who is actually lying with statistics? Those who proclaim the 50% reduction in cancer risk? Or Dr. Douglass? Both? Neither?

Notice that “who cares?” is not an option. As tempting as it might be to throw up your arms and dismiss the discussion as so much splitting of hairs, keep in mind that the issue isn’t, in the final analysis, about numbers.

It’s about the people behind the numbers. A woman either gets breast cancer, or she doesn’t. It is a very big deal that personally touches just about everyone, directly or indirectly. The shame is that rather than clear

708.860.1380

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1515 N. Harlem Avenue Oak Park, IL 60302

up anything, Dr. Douglass' newsletter creates a mathematical mess.

Problem I

The reference to “less than” 3 percent and “less than” 2 percent. How much less in each case? With numbers this small, it can make a big difference.

Is it 2.7 percent and 1.9 percent? That would be a difference of 0.8 (of a percentage point) divided by 2.7, which results in a reduction of about 30 percent. If it's 2.9 percent and 1.7, then that would be a 1.2 difference (in percentage point terms) divided by 2.9, which is slightly more than 40 percent.

With tiny numbers, you need to be more precise because any slight fraction can have a significant impact.

Problem II

Even setting aside the flawed decision to use the vague “less than” phrasing, the newsletter's math is plain wrong. When you go from 3 to 2, you are cutting by 33 percent (the difference, 1, divided by the original number, or denominator, 3).

Keep in mind: if you were talking about an increase, then you naturally would start with the lower number (2), find the difference (1), and voila, there's your 50% hike. But the doctor's phrasing revolved around the word “cuts”.

Problem III

The newsletter states, “the real difference was only 1%.”

Not so. It was actually a difference of 1 percentage point. And, as previously noted, depending on how you phrase it, the difference was 33 percent (reduction in risk, from the 3%) or 50 percent (increase in risk, from the 2%).

Some very bright people make this mistake, but for the sake of space, we'll defer a more in-depth explanation to a future column (if you can't bear

another moment without the explanation, let me know and I'll send you a reply).

Problem IV

“Much ado about nothing? You bet.”

Whoa! Before placing any bets, hold on for at least two or three moments.

For the sake of simple math (yes, there is such a thing as simple math in this column), let's accept that the figures are 2% and 3%. Multiply that by 1,000 women, and we're talking 10 fewer women with breast cancer (20 instead of 30). Multiply it by one million women, and we're looking at 10,000 fewer women with breast cancer (20,000, instead of 30,000).

Considering that there are nearly two million American women turning 50 every year, not to mention those turning 48, 49, 51, and 52....well, you can see how tiny numbers become huge when extrapolated over an entire population.

The newsletter very likely had the noblest of intentions. But these basic math mistakes underscore just how important it is to treat figures as we would a newborn: Handle With Care.

BARON BIT: Check out “How to Lie With Statistics,” an eminently fun and insightful classic from the 1950s. Author Darrell Huff uses charming anecdotes to convey the myriad ways that people, innocently or not, lie with numbers.

Grappling with a numbers-related issue? Want to suggest a future “Go Figure” topic? E-mail Matt at Matt@InsideEdgePR.com or call him at 708.860.1380. A longtime journalist-turned-publicist, Matt delivers “Go Figure” seminars throughout the country for corporations and associations.