

DANGER! NUMBERS IN THE NEWSROOM

"Statistics are human beings with the tears washed off."

— Paul Brodeur.

"We do not expect reporters to be mathematical geniuses. But we do expect them to sidestep their mind-numbing fear of mathematics long enough to ask, 'Does this make sense?' 'What would *I* conclude from these numbers?'"

— A.K. Dewdney, in *200% of Nothing: From Percentage Pumping to Irrational Ratios, an Eye-Opening Tour through the Twists and Turns of Math Abuse and Innumeracy*

"Try to prove something to a reader by throwing three sets of figures at him, and he drops you and turns on the tube. Give him three quotes in a row by Authoritative and Informed Sources, and the same thing happens. He may even grow restive if you give him a long string of examples drawn from the direct experiences of primary actors in the story. ... But give him one of each of these elements mixed together and you've got him. He's convinced...."

and

"We need numbers in almost all our stories, and in some a number may be so important or startling that omitting or generalizing it would weaken the whole piece. I only argue that we be choosy in selecting figures and careful in their treatment.

"In placing numbers in a story, the good writer tries not to stack too many in one paragraph; this builds a wall of abstraction difficult to breach. It becomes impossible to breach when two or more such paragraphs are butted together, a construction that may lead to more unread prose than any other writing fault. Don't do this. Don't ever do this."

— William E. Blundell, in *The Art and Craft of Feature Writing* (The Wall Street Journal Guide).

NEWSROOM NUMBERS TIPS

RATES AND PERCENTS

- Remember to take away two decimal places (or multiply by 100) when figuring percents.

Wrong: $\frac{1}{2} = 0.5$ percent

Right: $\frac{1}{2} = 0.5 = 50$ percent

- Try to find an easy way for your readers to picture a rate. Simple fractions give the image of a pie and are easy to digest.

Correct: Agriculture consumed 35 percent of the budget

Better: About a third of all state dollars went to agriculture *or* One of every three tax dollars in the state went to agriculture

- For very small rates, use a base larger than 100 or percent. This is most common in medical and transportation stories, like the number of accidents per 100,000 miles traveled.
- Keep your bases similar; compare similar numbers (adapted from Philip Meyer's *New Precision Journalism*).

Correct but meaningless: "Eleven percent of blacks voted for McCain, but 10 percent of Obama's vote came from blacks." This mixes bases: the number of black voters then the number of Obama voters.

Better: "Eleven percent of blacks voted for McCain and 85 percent voted for Obama." The sentence keeps the base as the number of black voters. *Or:* "Two percent of McCain's votes and 10 percent of Obama's votes came from blacks." It has two bases (the number of votes for each candidate) but keeps the comparison similar. (NOTE: These are not real numbers)

- With percent changes greater than 100, revert to ratios. This is expressed as "times as many" or "times as much," not "times more". Here are two ways to compare 400 arrests for drunk driving this year compared with 100 last year:

Wrong: "Four times more" is not only confusing but wrong. It's three times more or four times as many. (Do the math: it's a 300 percent change.)

Correct: "Three times more people...." This is correct but confusing. *Better:* "Four times as many people..."

- When you subtract numbers expressed as percentages, the result is a *percentage point difference* not a percent change. It's easy for you — or your sources — to make changing rates seem huge or insignificant, depending on how they're expressed. Some call this "percentage pumping."

Wrong: Joblessness has grown by more than 3 percent since the 1960s, from 4 percent to 7.2 percent.

Both of these are right; choose your phrasing carefully: Joblessness has grown by four fifths since the heyday of the 1960s, when it stood at 4 percent.

Today, the rate is 7.2 percent. AND Joblessness has grown by just 3 percentage points since the 1960s.

- Compound, don't multiply, when you have to project changes. Remember to compound, not divide, when you have to figure an annual rate.

Wrong: If a budget grows 3 percent a year, it will grow 30 percent in 10 years (3×10)

Right: The budget will grow about 35 percent, or $((1.03^{10}) - 1) \times 100$

ROUNDING

- Round by adding 1 when the next digit is 5 or higher.

Wrong: \$2,578,903 \approx \$2.5 million *Right:* \$2,578,903 \approx \$2.6 million

- When deciding how much to round, consider your point. Can you get away with "about," "nearly," or "more than" instead of having to put more numerals in your story? They scare readers.
- Decimal points are for meaning, not emphasis. Use only the level of precision you need and certainly use no more precision than you actually know.
- Watch for false precision, especially in surveys. This is called "significant digits." Interest groups sometimes survey 20 companies and express the results in percent. That means every response accounts for five percentage points. As a rule of thumb, use the actual number (say, one of 20) when the survey had fewer than 100 responses.

AVERAGES

- Use medians, not simple averages (means), when dealing with dollar values like income, house values or salaries. That's because extremely high values of a few will pull up the simple average for all.
- Medians are often called "typical" values; means are often called "average" values.

- You may need to explain what a median is if you use the word in your story. A median is the level at which half the values are below it and half are above it.
- Don't confuse a mode with "most." It's the most frequent category (usually in a survey), not necessarily a majority. Think of it as a vote.

Wrong: Clinton got most of the votes. *Right:* Clinton got the most votes.

- Means are usually used for physical characteristics and other averages that don't vary that much, like weight and grade point averages.

INDEXING, DEFLATING AND ADJUSTING

- Check with your editor about how to handle indexes, such as the Consumer Price Index, consumer confidence, housing affordability or similar comparative statistics. Some want the index levels; others want just the percent changes.
- When reporting on dollar values over a long time, correct them for inflation.

Right: "Teachers' salaries have more than doubled since the 1970s, when educators began complaining the best teachers were leaving the field."
Okay, but read on:

Better: "After inflation, teachers' salaries have risen just 5 percent since they began complaining they could no longer afford to stay in the profession in the 1970s."

- Some numbers require other kinds of adjustments. Consider adjusting budget numbers by population, inflation, income or all three.
- Weekly, monthly and quarterly figures may need seasonal adjustment. You won't be able to do that. So ask for it or make your comparisons to the same period in previous years or to projections.

WRITING WITH NUMBERS

- Readers want people, not numbers. When you can't report on people — politicians, regular people, people in business or effects on people — at least keep your story short.
- A well-selected number, or set of numbers, can add depth and breadth to many spot news stories. Look for opportunities to put an event in perspective by gathering statistics on the growth, decline or scope of a seemingly isolated event.
- The most effective writing comes from selection, not compression, of facts. It's also true with numbers. Choose only the numbers that have meaning to your readers.
- Consider charting numbers instead of writing them. Removing them from the text not only improves your story; it often makes a bigger impression on readers.

- Pepper your story with just the right number in just the right place rather than cramming them all together. Use an anecdote, quote or observation to separate paragraphs with lots of numbers.
- Recast as many numbers as possible in simple terms that remove their abstraction. Ratios, rates, pictorial images and rounding can help simplify numbers.
- In a set of related numbers, decide what you want to say and construct a passage to do it as simply as possible. Remember that numbers in dates are just as difficult for readers as other numbers:

Correct: "Spending on redundancy research by the Office of Unessential Affairs rose from \$847 million in fiscal 2012 to \$1.26 billion in 2013, a 49 percent increase." (Five numbers with 16 digits.)

Better: "Over the past fiscal year, the Office of Unessential Affairs increased spending on redundancy research by almost half, to \$1.3 billion." (One number with 2 digits.)

(From *The Art & Craft of Feature Writing*)

- Images of numbers can help if those numbers are huge and incomprehensible. But although the just-right comparison can work well, the less-than-perfect comparison often falls flat and adds yet more confusion to an already difficult story. If you choose to try it anyway:

Make sure the image fits the story.

Make sure your readers can picture the references.

Avoid cliché images, like dollar bills placed end to end.

Don't insert even *more* numbers with the image.

Don't ask readers to repeat an image.

Not so good: "Enough water to submerge Yankee Stadium 1,000 times."

Better. "Enough water to submerge New York City a foot deep."

(*Note:* I have not idea if this is the same amount of water.)

- The bigger the number, the more difficult it is to visualize. Who really knows the difference between \$900 million and \$1 billion? For big numbers, cut them down to size for your readers by expressing them as a ratio or rate, but choose your base carefully.
- For small numbers, put them in perspective for your readers by emphasizing change — or the lack of it.