Using QR in Writing Assignments

AALAC Workshop on Enhancing QR Across the Curriculum
Carleton College
October 11, 2014

The MegaPenny Project

1 billion pennies

1 trillion pennies

http://www.kokogiak.com/megapenny

Why are people so bad at thinking about large numbers?

How do people think about numbers?
Subitization (of small quantities)

Comparison
- Is this number larger or smaller than 65?

68

Numerical comparisons

Estimation (of large quantities)
- Distance effect
  - 65 vs. 68
  - 65 vs. 41
- Magnitude effect
  - 5 vs. 8
  - 65 vs. 68

Cognitive constraints on how economic rewards on cooperative behavior, we tested our hypothesis by examining changes in cooperation (R), which is greater than the punishment for mutual defection (P), (T) is greater than the reward for mutual cooperation (R), which is numerically larger rewards than for numerically smaller rewards (3 vs. 300 in Study 1; all other procedures were identical to Study 1.}

In Studies 1 and 2, increasing numeric magnitudes increased cooperation at rates that were numerically low (3 vs. 300 in Study 1; all other procedures were identical to Study 1.

Against this classical model, we hypothesized that cooperation behavior would be better predicted by ratios of logarithmically compressed numeric values—ln(R)/ln(T)—than by ratios of uncompressed values (R/T).}

To test whether higher cooperation rates for 300 were due to a preference for dollars or cents, Study 2 was held constant ($3 to 300 was not analyzed and served to introduce Subjects to procedures.}

Finally, given the history of social motives producing effects to an audience.
106,000 cans, the number used every 30 seconds in the US.

Chris Jordan, Running the Numbers

2 million plastic bottles, the number used every 5 minutes in the US.

Chris Jordan, Running the Numbers

Slate

Weasel-Words Rip My Flesh!

By Jack Shafer | Posted Tuesday, Sept. 20, 2000, at 6:38 PM

How many “many’s” are too many for one news story?

Like its fellow weasel-words—some, few, often, seems, likely, more—many serves writers who haven’t found the data to support their argument. A light sprinkling of weasel-words in a news story is acceptable if only because journalism is not an exact science and deadlines must be observed. But when a reporter pours a whole jug of weasel-words into a piece, as Louie Story does on Page One of today’s Sept. 20 New York Times in “Many Women at Elite Colleges Set Career Path to Motherhood,” she needlessly exposes one of the trade’s best-kept secrets for all to see. She deserves a week in the stockade. And her editor deserves a month.

Much attention has been focused on career women who leave the work force to rear children. What seems to be changing is that while many women in college two or three decades ago expected to have full-time careers, their daughters, while still in college, say they have already decided to suspend or end their careers when they have children. ...

Many students say staying home is not a shocking idea among their friends. Shannon Flynn, an 18-year-old from Guilford, Conn., who is a freshman at Harvard, says many of her girlfriends do not want to work full time....

Yet the likelihood that so many young women plan to opt out of high-powered careers presents a conundrum....

What seems new is that while many of their mothers expected to have hard-charging careers, then scaled back their professional plans only after having children, the women of this generation expect their careers to take second place to child rearing....

Sarah Currey, a senior at Harvard, said many of the men in her American Family class last fall approved of women’s plans to stay home with their children....

For many feminists, it may come as a shock to hear how unbothered many young women at the nation’s top schools are by the strictures of traditional roles....
None of these many quantify anything. You could as easily substitute the word some for every many and not gain or lose any information. Or substitute the word few and lose only the wind in Story’s sail. By judgig the available facts with weasel words, Story makes a flawed concept stand up—so long as nobody examines it closely.

To say Story’s piece contains a thesis oversells it. Early on, she squashes out on the whole concept with the weasel word seems. She writes, “What seems to be changing is that while many women in college two or three decades ago expected to have full-time careers, their daughters, while still in college, say they have already decided to suspend or end their careers when they have children.”

To say the piece was edited would also be to oversell it. Story rewrite this seems sentence about two-thirds of the way through the piece without adding any new information. “What seems new is that while many of their mothers expected to have hard-charging careers, then scaled back their professional plans only after having children, the women of this generation expect their careers to take second place to child rearing.” (Emphasis added.)

Seven Basic Principles

Jane Miller

“The Chicago Guide to Writing About Numbers”

“Writing about numbers is an essential skill, an important tool in the repertoire of expository writers in many disciplines.”

— Jane Miller

The Chicago Guide to Writing About Numbers

“There were 25 million deaths.”

“During the fourteenth century, 25 million people died in Europe.”

“When the Black Plague hit Europe in the latter half of the fourteenth century, it took the lives of 25 million people, young and old, city dwellers and those living in the countryside. The disease killed about one-quarter of Europe’s total population at the time (Mack, n.d.)”
Pick simple plausible examples

“In 2001, the average temperature in the New York City area was 56.3 degrees Fahrenheit.”

“In 2001, the average temperature in the New York City area was 56.3 degrees Fahrenheit, 1.5 degrees above normal.”

“In 2001, the average temperature in the New York City area was 56.3 degrees Fahrenheit, 1.5 degrees above normal, making it the seventh warmest year on record for the area.”

Select the right tool: tables, charts, prose

Define your terms

“The relative hazard of failure for material C was 0.78.”

“Under simulated conditions, the best-performing material (material C) lasted 1.28 times as long as the next best choice (material B).”

“In conditions that mimic the weather and volume and weight of traffic in Littletown and Midville, the best-performing material (material C) has an average expected lifetime of 64 years, compared with 50 years for the next best choice (material B).”

Report and interpret
“In 1998, total expenditures on health care in the United States were estimated to be more than $1.1 trillion (Centers for Medicare and Medicaid Services 2004).”

“In 1998, total expenditures on health care in the United States were estimated to be more than $1.1 trillion, equivalent to $1,178 for every man, woman, and child in the nation (Centers for Medicare and Medicaid Services 2004).”

“Between 1990 and 1998, the total costs of health care in the United States rose to $1,150 billion from $699 billion - an increase of 65%. Over that same period, the share of gross domestic product (GDP) spent for health care increased to 13.1% from 12.0% (Centers for Medicare and Medicaid Services 2004).”

“In the United States, per capita health expenditures averaged $4,108 in the 1990s, equivalent to 13.0% of gross domestic product (GDP) - a higher share of GDP than in any other country in the same period. In comparison, Switzerland - the country with the second highest per capita health expenditures - spent approximately $3,835 per person, or 10.4% of GDP. No other country exceeded $3,000 per capita on health expenditures (World Bank 2001b).”

“Mortality and age are correlated.”

“As age increases, mortality increases.”

“Among the elderly, mortality roughly doubles for each successive five-year age group.”

**Specify direction and magnitude**

**Summarize patterns:**
Generalization, Example, Exception