Fact or Fiction?

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Fuzzy Math

A bat and a ball cost $1.10 in total. The bat costs $1 more than the ball. How much does the ball cost?

Almost everyone who reads this question will have an immediate impulse to answer "10 cents." I surely did. As Dan Gardner notes, "It just looks and feels right. And yet it's wrong. In fact, it's *clearly* wrong - if you give it some careful thought - and yet it is perfectly normal to stumble on this test. "Almost everyone we ask reports an initial tendency to answer 'ten cents,'" write psychologists Daniel Kahneman and Shane Frederick. "Many people yield to this immediate impulse. People are often content to trust a plausible judgment that quickly comes to mind."[1] This type of response shows that we are quite susceptible to numbers thrown at us by the media, groups seeking funding for a specific cause, lawyers trying to convince a jury, or perhaps some recent event that has shaped our thoughts. Let's start with the latter one first.

After 9/11, many people shifted from planes to cars because of fear of flying. This shift lasted for about one year in the United States. Gerd Gigerenzer analyzed automobile fatalities for five years prior to the September 11 attacks and five years after. He found that fatalities soared on American roads after September 2001 and settled back to normal in September 2002. As a result of the surge in traffic patterns, he concluded that an additional 1,595 people died, more than half the death toll from the terrorist attack.[2]

Dan Gardner reports that air travel is safer than driving, even with terrorists. He says, "The safety gap is so large, in fact, that planes would still be safer than cars even if the threat of terrorism were unimaginably worse than it actually is. An American professor calculated that even if terrorists were hijacking and crashing one passenger jet a week in the United States, a person who took one flight a month for a year would have only a 1-in-135,000 chance of being killed in a hijacking - a trivial risk compared to the annual 1-in-6000 odds of being killed in a car crash."[2]

The media is notorious for spreading the fear factor. Brent Beckley reports that there are four billboards on the 40-mile drive from Norwich to Binghamton (Upstate New York) that announce "Every 20 seconds a child is diagnosed with autism." He says, "I hate these types of ads because I figure there is no way they can be true."[3] Three kids per minute works out to 1,576,000 children per year. Since there are about four million children born every year, this means three out of eight will become autistic. Hard to believe.

Even EPA folks can get carried away by the numbers game. John Brignell observes, "During a speech, Mary Nichols, EPA's Assistant Administrator for air and radiation, claimed that the EPA's proposed air pollution standard for ozone and particulate matter would save (hang on to your hat) 58 million lives. You may wish to be reminded that two million Americans die every year from all causes. I stand to be corrected but I think that this qualifies for the Guinness Book of Records."[4]

Around 1985, there came an explosive awareness about the rapid spread of a deadly new virus. From Dan Gardner, "There was no treatment for AIDS. Get it and you were certain to die a slow, wasting death. And there was a good chance you would get it because a breakthrough into the heterosexual population was inevitable." AIDS has both sexes running scared," Oprah Winfrey told her audience in 1987. "Research studies now project that one in five heterosexuals could be dead from AIDS at the end of the next three years. That's by 1990. One in five." Surgeon General C. Everett Koop called it "The biggest threat to health this nation ever faced."[5] Turns out it didn't work out that way, but we were very, very afraid.

What about AIDS in Africa? Based on reports I've heard over the years I expected to see a drop in population in Africa because of this dreaded disease. Yet, since 1985, the population of sub-Saharan Africa has increased by 299 million, a 70% increase. This increase is equal to the entire present population of the United States.[6] What gives?

Here are some observations from Michael Fumento. "At least 30 percent of the entire adult population of Central Africa is infected with the AIDS virus, a doctor tells a US newspaper. A high Ugandan official says that within two years his nation will 'be a desert.' ABC News Nightline declares that within 12 years, '50 million Africans may have died of AIDS.' Actually, those statements and predictions were all made between 1986 and 1988. Yet since 1985, Central Africa's population has increased over 70 percent while Uganda's has nearly doubled. Japan, conversely, has close to no AIDS cases yet its population has essentially stopped. According to the UN's latest estimate, Nightline's predicted 50 million dead Africans by the year 2000 was actually 20 million dead worldwide by the end of last year."[7]

Epidemics like this and the autism scare mentioned earlier in this article always have and always will refuse to live up to the official predictions for one simple reason: The louder the Klaxon sounds, the more public and private contributions pour in.[7]

Remember the O.J. Simpson trial? How could you not? Leonard Mlodinow notes, "The renowned attorney and Harvard Law School professor Alan Dershowitz employed the prosecutor's fallacy to help defend O.J. Simpson in his trial for the murder of Simpson's ex-wife, Nicole Brown Simpson and a male companion."[8] What is prosecutor's fallacy? My simplistic definition is the clever use of statistics to make a point, while leaving out other important data.

The police had plenty of evidence against Simpson: a bloody glove at his estate that seemed to match one found at the murder scene; bloodstains matching Nicole's blood on the gloves in his white Ford Bronco, on a pair of socks in his bedroom, and in his

driveway and house. DNA samples taken from blood at the crime scene matched O.J.'s.

The prosecution focused much of its case on O.J.'s propensity to violence, claiming that this alone was a good reason to suspect him of her murder. The defense attorneys countered that the evidence that O.J. had battered Nicole on previous occasions meant nothing. Here's why according to Alan Dershowitz: four million women were battered annually by husbands and boyfriends in the United States, yet in 1992, according to the FBI Uniform Crime Reports, a total of 1,432, or 1 in 2,500 were killed by their husbands or boyfriends. Therefore, few men who slap or beat their domestic partners go on to murder them. Mlodinow observes, "True? Yes. Convincing? Yes. Relevant? No. The relevant number is not the probability that a man who batters his wife will go on to kill her (1 in 2,500) but rather the probability that a battered wife who was murdered was murdered by her abuser. According to the Uniform Crime Reports for the United States and Its Possessions in 1993, the probability Dershowitz (or the prosecution) should have reported was this one: of all the battered women murdered in the United States in 1993, some 90% were killed by their abuser. That statistic was not mentioned at the trial."[8]

Mlodinow adds, "Dershowitz may have felt justified in misleading the jury because in his words, 'the courtroom oath - to tell the truth, the whole truth and nothing but the truth- is applicable only to witnesses. Defense attorneys, prosecutors and judges don't take this oath … indeed, it is fair to say the American justice system is built on a foundation of not telling the whole truth.'"[8]

Concludes Dan Gardner, "Unreliable statistics are all too common in public discourse. And the influence of those numbers is not limited to the gullible. In fact, psychologists have demonstrated that even the toughest skeptics will find it difficult, or even impossible, to keep bogus statistics from worming into their brains and influencing their judgments."[9]

Oh, by the way … the answer is 5 cents. **P&SF**

References

1. Dan Gardner, *Risk: The Science and Politics of Fear*, McClelland & Stewart, Toronto, Ontario, Canada, 2008; p. 35.
2. Dan Gardner, *Risk: The Science and Politics of Fear*, McClelland & Stewart, Toronto, Ontario, Canada, 2008; p. 4.
3. Brent Beckley, private communication, January 24, 2008.
4. John Brignell, *Sorry Wrong Number!: The abuse of measurement*, Brignell Associates, Great Britain, 2000; p. 217.
5. Dan Gardner, *Risk: The Science and Politics of Fear*, McClelland & Stewart, Toronto, Ontario, Canada, 2008; p. 347.
6. Tom Bethell, *The Politically Incorrect Guide to Science*, Regnery Publishing, Washington, DC, 2005; p. 118.
7. Michael Fumento, "AIDS and Fuzzy Math," Tech Central Station, July 15, 2004; http://www.tcsdaily.com/article.aspx?id=071504E, last accessed 08/30/09.
8. Leonard Mlodinow, *The Drunkard's Walk*, Pantheon Books, New York, NY, 2008; p. 119.
9. Dan Gardner, *Risk: The Science and Politics of Fear*, McClelland & Stewart, Toronto, Ontario, Canada, 2008; p. 40.