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I Love Numbers

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I Love Numbers

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I love numbers. Five and two thirds: the number of years it took for me to finish my bachelor of science degree. 05/05: my wedding anniversary. 15826: the address of the house where I grew up (well, perhaps “got older”—many folks believe that I have never grown up). Twenty-nine and 1290: the minimum ACT and SAT scores, respectively, needed for admittance to an honors program. Forty-two: for you *Hitchhiker’s Guide to the Galaxy* fans, the “...Ultimate Answer to the Great Question of Life, the Universe, and Everything.” As a forester, I work with numbers on a regular and continuing basis: board feet, acres, growth rates. Numbers provide me with a way of measuring things—the size of a tract of land, the grade of a woods road, how many trees to plant. Numbers are very cool and very comforting. Numbers often bring with them a sense of knowing and a sense of security.

But numbers can also confuse. We forget—or never knew—some important aspects of using numbers: units of measure, precision, accuracy, averages, distributions. However, we feel secure because we have the numbers to help us measure things. Alas, this security often reflects only our ignorance. Or much worse, it is a security based on willful neglect or a failure to take the time and effort to find out what the numbers really mean. We lack quantitative literacy. We can recognize the numbers, but if we fail to understand what the numbers really mean, we bask in a false sense of security.

A test of our quantitative literacy: Is 89.4% the same as 89.6%? Of course not. Or maybe not. Or not really. Wait, how can such a simple comparison of numbers generate three such contradictory answers? Simple: accuracy and precision. One example: grading papers. I grade student work in terms of percent. I add up all the scores at the end of the semester and then assign grades. A total of 90–100% earns a student an A, 80–89% a B, etc (we don’t have the option of assigning plus/minus grades, but this really doesn’t matter). So, based on standard rounding rules, a student with a total score of 89.6% would receive a grade of A, and the student with a total score of 89.4% would earn a grade of B. Very precise, but surely not! Should 0.2% of the total points that a student earned over the course of an entire semester make a difference between an A and a B? Doubtful. Did the A student really know 0.2% more than the B student? Doubtful. Did my skills as a grader eliminate the possibility that I might have given the A student a few more points than deserved on one assignment or the B student a couple points less? Doubtful.

I LOVE NUMBERS

So where does that leave me? Do I assign a grade of A to both students? If so, have I abandoned my standards? Or do I assign a B to the 89.4% student and an A to the 89.6% student? A very easy decision to support. Some help, please. Two As or one A and one B?

A second test of our quantitative literacy. Imagine a case where at the end of the semester, all the students in my honors class end up with a score of 89.6% or higher. Do they all deserve As? Yes, they earned them. “How could every student in your class receive an A?” some would ask. Easy, they earned them. “Isn’t this grade distribution a bit skewed?” Statistically, yes. So what? All these answers seem quite reasonable to me (of course I did create these answers). If I perform my job correctly and have the integrity and strength to resist the urge to make myself look better or more popular by giving out good grades, why not assign each of these students an A? A forced distribution of grades, for example the infamous curve, sets up a competitive situation that discourages students from, and indeed penalizes them for, working together—discourages and penalizes as in “If I help my classmates, and they receive higher scores on the exam than I do, my course grade will suffer, so I won’t help them.” Why would we ever want to encourage such behavior in our honors students (or any other students for that matter)?

Lest you think me a Luddite, I do not reject the notion of measuring things. But I like to think that at least to a certain extent I can ferret out what numbers really mean—or don’t mean. Larry Andrews, author of the feature article in this issue of the *JNCHC*, raises extremely important questions about numbers—numbers for admission, numbers for retention, numbers for graduation rates. He also challenges us to look for answers to these questions in the context of our honors programs. Therefore, the answers to these questions depend on the composition of our institution’s student body, the goals of our institution, and the vision we have for our program. In other words, we need to understand what these numbers really mean for us in our own honors programs.

Yes, I love numbers. They can bring me comfort and security. They can give me both precise and accurate answers. But when it comes to honors students and honors programs I sure hope that I can differentiate between precision and accuracy and that I understand distributions. Yes, I love numbers, but I love them conditionally. My love does not extend to the point where I don’t question the numbers. I like to understand things too much for that.

Oh, BTW: Two As or one A and one B?

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