

# Statistical Literacy for Efficient Citizenship

A Blog About Statistical Literacy and Introductory Statistics Instruction

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### It's About Conclusions, Stupid!

Posted in [Statistical Literacy](#) at 1:46 am by schaffer

I got the “What do you do for a living?” question again this week. This is something that all statisticians know about. We share a common bond through our knowledge of the three or four responses we get to “I’m a statistician.”

The one I got this week was the brutally honest, not-so-impressed response: “That’s kind of dry, isn’t it?” Frankly, it doesn’t bother me that people think statistics is dry. Dryness is in the eye of the beholder. If the woman I met wants to imagine that I work all day in a basement office staring at numbers, charts, tables, and graphs on a computer screen with very little human contact... well...well... hmm..., that’s somewhat accurate.

Even so, the point I want to make is about people’s impression of statistics, not whether they find it interesting. Their response to “I’m a statistician” gives us a good idea of the first thing that pops into their mind. I think it’s the numbers, charts, tables, graphs, and mathematics. It’s not, for example, “Oh yes—a branch of human reasoning from evidence.”

I checked some dictionary definitions of statistics. There are variations, but they all seem to have this central theme: statistics is the science for collecting and analyzing numerical data.

I suppose I agree with this definition as long as I interpret “analyzing” in the right way. My complaint, really, is that the word “analyzing” is too vague. If I could change the dictionary definition, I would. First of all, and I apologize if my shouting is rude, **ITS ABOUT MAKING CONCLUSIONS!** The product of a statistical analysis of data is a conclusion.

Here is what I would recommend as a definition of statistics: the science and craft of making conclusions from numerical evidence with inductive reasoning.

In other posts I discuss “craft” and “[inductive reasoning](#).” For now, I want to focus on “conclusions.” This may sound trite, but I don’t think many people, even those that have graduated from a college statistics class, would use the word “conclusion” in a description of the field statistics.

Here is why I’m making a big deal about this. For statistical literacy, the “conclusion” has to be the focal point. By focusing on conclusions, other things fall into place. What are the conclusions about? Why are they uncertain? What is the sort of reasoning from evidence that is involved in making statistical conclusions. What sort of things do we have to do to evaluate the conclusions to see if we agree with them? A student needs the answers to these to evaluate statistical conclusions about the benefits of alternative medicine, the possible effects of radiation, the guilt or innocence of a criminal defendant, and so on.

I think this is important. To avoid spinning our wheels in discussing aspects of statistical literacy and introductory statistics instruction, I advocate the following as a starting premise: “The product of a statistical analysis of data is a conclusion.”

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