Spotlight Session
What Defines a "Statistically Literate Citizen?"

Assuming that the purpose of liberal arts Stats 101 is to produce statistically literate citizens, lifelong users of statistical concepts, what exactly does that mean? What exactly are the basic statistics concepts that we want our students to master? And once the concepts are defined, how are we to teach them?

Jerry Moreno
Dept. of Mathematics and Computer Science
John Carroll University
University Hts. OH 44118
moreno@jcu.edu   216-397-4681

Questions for Discussion:

1. Are our students learning anything in Stats 101 for lifelong use?

- **If "yes," what is the evidence?**
- **If "no," why not?**

2. Is Stats 101 preparing students for Stats 102?

- **If "yes," what is the evidence?**
- **If "no," why not?**

3. Can *STATS 101* satisfy both questions 1 and 2?

- **If "yes," how on earth?**
     What are the topics of such a course?
     Once the topics are defined, how are they to be taught?
- **If "no," what has to be changed if we can offer only one course?**
     What are the topics of such a course?
     Once the topics are defined, how are they to be taught?

To initiate discussion, I am convinced that the answers to both questions 1 and 2, are "No!" Even though our Stats 101 course has been "modernized" (ala D. Moore) over the past 15-plus years by less emphasis on formulas and more on concepts and the use of technology for computation, use of activities, etc., it is my view that students do not leave the course with well-mastered concepts that they will use throughout their lives. One reason is that the course has far too much stuff in it to allow for any sort of true mastery of even *one* concept. For the vast majority of students who take the course, Stats 101 is their sole exposure to statistics. What should be in the course that will enable them to be able to read a

newspaper more intelligently, make personal health inquiries and decisions, understand polls, political, and advertising claims, i.e., to be become better decision-makers throughout their lives?

Draft Suggested Outline of Topics for "Productive Citizens Stats 101:"

I: Graphs/Tables
   Good use, bad use (bar, pie, dot, stem, box, hist, line, scatter, time, picto)

II: Probability
   Contingency Table
   Relative Risk
   Odds Ratio

III: Inference (emphasis on two population comparison)
   Confidence Interval
   p-value

WHAT ARE YOUR TOPICS FOR SUCH A TRULY USEFUL COURSE?

Once the topics have been determined, then "HOW WOULD THE COURSE BE TAUGHT?" can be tackled.

Underlying requirement for the new course:
Stats 101 is a core course at John Carroll University, a liberal arts institution. As such, whatever the new hybrid literacy/methodology course is created, it must satisfy the following criteria:
- Develop quantitative reasoning
- Stress critical thinking and problem-solving
- Stress oral/written expression
- Encourage active learning
- Employ various methodologies to develop knowledge
- Be interdisciplinary
- Be foundational
- Be pedagogically rigorous
- Help students become aware of their own values
- Develop a reflective view of life
- Introduce the ethics of a discipline
- Address state-of-the-art technology
- Encourage the collaborative process of learning
- Create an awareness of current issues