Stanford University
Department of Statistics

DEPARTMENTAL SEMINAR

4:15pm, Tuesday, February 22, 2011
Sequoia Hall Room 200
Cookies served at 3:45pm, 1st Floor Lounge.

Speaker: Michael Perlman
Department of Statistics,
University of Washington, Seattle

Title: Two Statistical Vignettes: Simpson’s Paradox and Shaved Dice

Abstract:

1. Simpson’s Paradox occurs for events A, B, and C if A and B are positively correlated given B, positively correlated given not-B, but are negatively correlated in the aggregate. If a $2 \times 2 \times 2$ table is chosen “at random,” what is the probability that it will exhibit Simpson’s Paradox?

2. Persi Diaconis has fascinated audiences at all levels with the following question: If one face of a standard gaming die is shaved uniformly by a specified fraction $s$, express the new face probabilities as a function of $s$. This apparently simple problem appears to be intractable. However, this leads to an interesting statistical question: If the shaved dice are thrown in pairs, as typical in the game of craps, what is the most efficient die design for accurate estimation of the new face probabilities?

This is joint work with Marios Pavlides, and is with the assistance of Fred Bookstein.