SCI199Y: April 9, 1996

We discussed aspects of the following general topics:

- graphics
- polls
- statistics in the courts
- scientific studies
- science and statistics reporting
- environmental risks

In connection with these, and with specific articles given below, we considered a number of more technical topics:

- data maps, time series, relational graphs, bar graphs, pie charts, boxplots
- percentages, percentiles, margin of error, non-response bias, sampling, the bell curve
- probability, conditional probability, Bayes theorem, independent events
- hypothesis testing, significance testing, null hypothesis, test statistic, p-value
- prospective and retrospective studies, confounding variables, Simpson's (not OJ) paradox, causation, relative risk, odds ratio
- estimate, margin of error, confidence interval
- regression, least squares, ecological regression, multiple regression
- relative risk regression, hazard rates
- voting paradoxes

These topics came up in connection with one or more of the following books, articles, or issues:

- *The Visual Display of Quantitative Information*, E. Tufte, Graphics Press
- The Quebec referendum on sovereignty
- DNA testing and the O.J. Simpson trial; AIDS screening
- The Monty Hall (Let's Make a Deal) problem

- "The Cold Facts About the 'Hot Hand' in Basketball", A. Tversky and T. Gilovich, and "Basketball, Baseball and the Null Hypothesis", R. Hooke, *Chance* **2** (1), 16–21 and (4), 35–37.

- Smoking (video) and "Does Exposure to Second-Hand Smoke Increase Lung Cancer Risk?", A.J. Gross and "What Evidence is Needed to Link Lung Cancer and Second-Hand Smoke?", H.E. Rockette, *Chance* **6** (4), 11–18.

- "Statistical evidence of cheating on multiple choice tests." S.P. Klein (1992), *Chance* **5** (3-4), 23–27. and " The use of statistical evidence in allegations of exam cheating." P.J. Boland and M. Proschan (1990), *Chance* **3** (3), 10–14.

- Two articles by John Bailar from *Chance* **8**(1): "How statisticians can help the news media do a better job" and "How the news media can help statisticians do a better job".

- "Factors affecting runners' marathon performace", J.F. Buoncristiani and D.E. Martin *Chance* **6**(4), 24–30.

- chocolate chip cookie experiment

- "Ecological regression in voting rights cases", S.P. Klein and D.A. Freedman, *Chance* **6**(3), 38–47 (1993).

- election fraud (short article from *A Mathematician Reads the Newspaper*, J.A. Paulos, 1995.

- "Should pregnant women move? Linking risks for birth defects with proximity to toxic waster sites", S.A. Geschwind. *Chance* **5**(3-4), 40–46 (1992).

- `Chance News` item on breast cancer screening

- `Chance News` item on risk analysis and the anniversary of the Challenger disaster

- *Tainted Truth*, C. Crossen, 1994.

- several newspaper articles on silicone breast implants

- "A paradox in the ranking of figure skaters", J. Bring and K. Carling (1994) , *Chance* **7**(4), 34–37