

# QUANTITATIVE FORENSICS (SYLLABUS)

## Reading Assignments:

### I. Introduction (January 7, 2009).

- [Lempert, Richard. Modeling Relevance, 75 Mich. L. Rev. 1021 \(1977\).](#) (CHECK COURSE MATERIALS SECTION OR HEIN ON-LINE)
- FJC - Berger, M., ["The Supreme Court Trilogy on the Admissibility of Expert Evidence"](#)

### II. Introduction to Litigation Statistics I (January 14, 2009).

- FJC - Kaye and Freedman - ["Reference Guide on Statistics"](#)
- FL - Section 1.1 - Introduction to Descriptive Statistics.
- FL - Section 1.2 - Measures of Central Location.
  - FL - Section 1.2.1 - Parking Meter Heist.
  - FL - Section 1.2.6 - Super Drowsy Drug.
- FL - Section 1.3 - Measures of Dispersion.
  - FL - Section 1.3.2 - Damages for Pain and Suffering.
- FL - Section 1.4 - A Measure of Correlation.
  - FL - Section 1.4.1 - Dangerous Eggs.

### III. Proportions and Counting (January 21, 2009).

- FL - Section 1.5 - Measuring the Disparity Between Two Proportions.
  - FL - Section 1.5.1 - Proficiency Test with a Disparate Impact.
- FL - Section 2.1 - Permutations and Combinations.
  - FL - Section 2.1.1 - DNA Profiling
  - FL - Section 2.1.3 - Was the Bidding Rigged?

#### IV. Introduction to Probability Theory (January 28, 2009).

- FL - Section 3.1 - Some Fundamentals of Probability Calculation.
  - FL - Section 3.1.1 - Interracial Couple in Yellow Car
    - Tribe, Lawrence H., Trial by [Mathematics: Precision and Ritual in the Legal Process](#). [84 Harv. L. Rev. 1329 \(April 1971\)](#).
  - FL - Section 3.1.2 - Independence Assumption in DNA Profiles
  - FL - Section 3.1.3 - Telltale Fibers
  - FL - Section 3.1.4 - Telltale Hairs
- FL - 3.2 Selection Effect

#### V. Bayes Theorem (February 4, 2009).

- FL - Section 3.3 - Bayes's Theorem
  - FL - Section 3.3.1 - Rogue Bus
  - Nesson, The Evidence or the [Event: On Judicial Proof and the Acceptability of Verdicts](#), [98 Harv. L. Rev. 1357 \(1985\)](#), Section IIIB.
  - Lombardero, Do Special Verdicts Improve the Structure of Jury Decision Making? [36 Jurimetrics J. 275 \(1996\)](#).

#### VI. Screening Devices (February 11, 2009).

- FL - Section 3.4 Screening Devices and Diagnostic Tests
  - FL - Section 3.4.1 - Airport Screening Devices.
  - FL - Section 3.4.2 - Polygraph Evidence.
    - Imwinkelreid and McCall, Issues Once Moot: the Other Evidentiary Objections to the [Admission of Exculpatory Polygraph Examinations](#), [32 Wake Forest L. Rev. 1045 \(Winter 1997\)](#).
    - [U.S. v. Scheffer](#), [523 U.S. 303 \(1998\)](#).
- DNA
  - *FJC - Kaye and Sensabaugh, [Reference Guide on DNA Evidence](#)*.
  - Berry, D. A. DNA Fingerprinting: What Does it Prove? 3 *Chance: New Directions for Statistics and Computing* 15-32. CHECK COURSE MATERIALS SECTION.

## **VII. Probability Distributions (February 18, 2009).**

- FL - Section 4.1 - Some Probability Distributions
- FL - Section 4.2 - Binomial Distribution
  - FL - Section 4.2.1 - Discrimination in Jury Selection
  - FL - Section 4.2.3 - Small and Nonunanimous Juries in Criminal Cases
- FL - Section 4.3 - Normal Distribution and a Central Limit Theorem.
  - FL - Section 4.3.1 - Alexander: Culling the Jury List.
  - FL - Section 4.3.2 - Castaneda: Measuring Disparities.

## **VIII. Statistical Inference and Hypothesis Testing (February 25, 2009).**

- *FJC - Kaye and Freedman - [Reference Guide on Statistics](#).*
- Rubinfeld, Daniel L. Econometrics in the Courtroom, 85 Col. L. Rev. 1048-1065 (1985)  
CHECK COURSE MATERIALS SECTION OR HEIN ONLINE.
- [Palmer v. Schultz, 815 F.2d 84 \(1987\)](#).
- FL - Section 4.4 Testing Statistical Hypotheses
- FL - Section 4.5 - Hypergeometric Distribution
  - FL - Section 4.53 - Election 2000: Who Won Florida?

## **IX. Statistical Inference and Hypothesis Testing II (March 4, 2009).**

- McCloskey, D. N. and S. T. Zillak, The Standard Error of Regressions, 34 J. Econ. Literature. 97-114 (March 1996). CHECK COURSE MATERIALS SECTION OR J-STOR.
- FL - Section 5.4 - Statistical Power in Hypothesis Testing
  - FL - Section 5.42 Is Bendectin a Teratogen?
- FL - Section 5.5 - Legal and Statistical Significance.
  - FL - Section 5.51 - Port Authority Promotions
- FL - Section 7.1 - Students t-test: Hypothesis Testing and Confidence Intervals
  - FL - Section 7.1.2 - Voir Dire of Prospective Trial Jurors.
  - FL - Section 7.1.4 - Student's t-test and the Castaneda Rule.

## **Spring Break (March 11, 2009).**

### **X. Combining Evidence and Meta Analysis (March 18, 2009).**

- *FJC - Reference Guide to Epidemiology*
- FL - Section 8.1 - Mantel-Haenszel and Fisher Methods for combining the Evidence
- Kellerman, et al. Gun Ownership as a Risk Factor for Homicide in the Home. 329 New England Journal of Medicine 1084-1091 (October 7, 1993). Article is available online at <http://content.nejm.org/>. You can register free and view back issues (older than 6 months).
- Kates and Schaffer, "Guns and Public Health: Epidemic of Violence or Pandemic of Propaganda, 62 Tenn. L. Rev. 513 (1995).
- FL - Section 8.2 - Meta Analysis
  - FL - Section 8.2.1 - Bendectin Revisited.
- FL Section 10.1 - Introduction
  - FL Section 10.2.1 - Atomic Weapons Tests
- FL Section 10.3 - Epidemiologic Principles of Causation
  - FL Section 10.3.1 - Dalkon Shield

### **XI. Regression Analyses (March 25, 2009).**

- *FJC - Rubinfeld - Reference Guide on Multiple Regression.*
- Rubinfeld, Daniel L. Econometrics in the Courtroom, 85 Col. L. Rev. 1065-1094 (1985). CHECK COURSE MATERIALS SECTION OR HEIN ONLINE.
- FL - Section 13.1 - Introduction to Multiple Regression Models.
- FL - Section 13.2 - Estimating and Interpreting Coefficients of the Regression Equation.
- FL - Section 13.3 - Measures of Indeterminacy for the Regression Equation.
- FL - Section 13.4 - Statistical Significance of the Regression Coefficients.
- FL - Section 13.5 - Explanatory Factors for a Regression Equation.

## **XII. Regression Analyses II - Event Studies (April 1, 2009).**

- MacKinlay, Event Studies in Economics and Finance, 35 J. Econ. Literature 13-39 (1997). CHECK COURSE MATERIALS SECTION OR J-STOR.
- [U. S. v. Staples, 970 F.Supp. 1066 \(1997\).](#)

## **XIII. Regression Analyses III - Discrimination (April 8, 2009).**

- FL - Section 14.7 - Logit and Probit Regression
- FL - Section 14.7.1 - Mortgage Lending Discrimination
- Munnell, et al., "Mortgage Lending in Boston: Interpreting HMDA Data," 86 Am. Econ. Rev. 25 (1996). CHECK COURSE MATERIALS.
- Day and Liebowitz, "Mortgage Lending to Minorities: Where's the Bias?" 36 Econ. Inq. 3 (1998). CHECK COURSE MATERIALS.
- Harrison, "Mortgage Lending in Boston: A Reconsideration of the Evidence," 36 Econ. Inq. 29 (1998). CHECK COURSE MATERIALS.

## **XIV. Simultaneous Equations, Time Series and Systems (April 15, 2009).**

- FL - Section 14.1 - Time Series
  - FL - Section 14.1.1 Corrugated Container Price Fixing
- FL - Section 14.6 - Systems of Equations
  - FL - Section 14.6.1 - Death Penalty - Does it Deter Murder?