

# Law 301 – Statistics for Lawyers (Spring 2024)

## Professor Kobayashi

Course Schedule: M: 6:05-9:00PM, Room TBA. This syllabus updated on 1/2/2024

### Required Texts:

- (FL) Finkelstein and Levin, Statistics for Lawyers, 3d. ed. (Springer-Verlag 2015).
- (FJC) Federal Judicial Center Reference Manual for Scientific Evidence, 3d Edition, available online at <https://www.fjc.gov/sites/default/files/2015/SciMan3D01.pdf>

### Learning Outcomes:

This course will expose students to the theory, methodology, and use of statistical and empirical evidence in legal settings. The aim of the course is to familiarize the student with the methodology and inferential tools of statistical analyses. Upon completing this course, students will be able critically analyze the methodology and inferential process used to produce statistical evidence, and be prepared to evaluate and challenge the admissibility, relevance, and strength of statistical evidence prepared by expert witnesses in litigation settings.

### Course Requirements:

Writing Assignments:

- Two assignments, each worth 25% of the grade, and one assignment worth 50% of the grade
- Assignments will be posted one week in advance of the due date on the TWEN assignment drop box.
- All assignments must be submitted in PDF format using the drop box.
- E-mail submissions or submissions in other formats will not be accepted.

Class Attendance is Mandatory.

- Anyone missing more than two classes will not receive course credit.

### Reading Assignments:

## **I. Introduction (January 22).**

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

## **II. Introduction to Litigation Statistics I (January 29).**

- 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 (1.2.8 3d) - 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. Introduction to Probability Theory and Bayes Rule (February 5).**

- 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
- FL - Section 3.3 - Bayes's Theorem
- Lombardero, Do Special Verdicts Improve the Structure of Jury Decision Making? 36 Jurimetrics J. 275 (1996).

## **IV. Probability Distributions (February 12).**

- FL - Section 2.1 - Permutations and Combinations.

- FL - Section 2.1.1 - DNA Profiling
- FL - Section 2.1.3 - Was the Bidding Rigged?
- 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.

#### **V. Screening Devices (February 19). (Assignment 1 Due)**

- 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).
- 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.

#### **VI. Optimal Standards of Proof and Error Cost Analysis (February 26).**

- 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.
- Cheng, EK, Reconceptualizing the Burden of Proof, 122 Yale Law Journal 1254 (2013).
- Burtis, et al., *Error Costs, Legal Standards of Proof, and Statistical Significance*, 25 Supreme Court Economic Review (2018), Section I and II.

#### **Spring Break (March 4)**

#### **VII. Statistical Inference and Hypothesis Testing (March 11).**

- Burtis, et al., *Error Costs, Legal Standards of Proof, and Statistical Significance*, 25 Supreme Court Economic Review (forthcoming 2018), Section III and IV.
- FJC -Kaye and Freedman -Reference Guide on Statistics.
- Rubinfeld, Daniel L. *Econometrics in the Courtroom*, 85 Col. L. Rev. 10481065 (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?
- 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.
- Burtis, et al., Sections I, II, IV & V
- FL - Section 5.4 - Statistical Power in Hypothesis Testing
- 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.

### **VIII. Combining Evidence and Meta Analysis (March 18).**

- FL - Section 1.5 - Measuring the Disparity Between Two Proportions.
- FL - Section 1.5.1 - Proficiency Test with a Disparate Impact.
- FL - Section 5.42 - Is Bendectin a Teratogen?
- FJC - Reference Guide on 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

### **IX. Regression Analyses (March 25). (Assignment 2 Due)**

- *FJC - Rubinfeld -Reference Guide on Multiple Regression.*
- Rubinfeld, Daniel L. Econometrics in the Courtroom, 85 Col. L. Rev. 10651094 (1985). CHECK COURSE MATERIALS SECTION OR HEIN ONLINE.
- Gelbach and Klick, Empirical Law and Economics, available at: <http://ssrn.com/abstract=2507324>
- Angrist, J. & Pischke, J., The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con Out of Econometrics, *Journal of Economic Perspectives* 3 (2010).
- 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.

### **X. Time Series Regression Analyses – Event Studies (April 1).**

- MacKinlay, Event Studies in Economics and Finance, 35 J. Econ. Literature 13-39 (1997). CHECK COURSE MATERIALS SECTION OR J-STOR.
- Heron, Randall A. and Lie, Erik, Does Backdating Explain the Stock Price Pattern Around Executive Stock Option Grants?. *Journal of Financial Economics*, Available at SSRN: <http://ssrn.com/abstract=877889>.
- Hazlett & Bittlingmayer, DOS Kapital: Has Antitrust Action Against Microsoft Created Value in the Computer Industry? 55 J. Fin. Econ. 329 (2000), SSRN version available at <http://ssrn.com/abstract=99832>.
- Jon Klick & Robert H. Sitkoff, Agency Costs, Charitable Trusts, and Corporate Control: Evidence from Hershey's Kiss-Off, 108 Col. L. Rev. 750 (2008), available at <http://ssrn.com/abstract=1009353>.
- Gelbach, Helland & Klick, Valid Inference in Single-Firm, Single-Event Studies, *Am. L. & Econ. Rev.* (201\_), SSRN version available at <http://ssrn.com/abstract=1442222>.

### **XI. Cross Section Regression Analyses (April 8).**

- 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 or JSTOR).
- Day and Liebowitz, "Mortgage Lending to Minorities: Where's the Bias?" 36 Econ. Inq. 3 (1998). CHECK COURSE MATERIALS or JSTOR).
- Harrison, "Mortgage Lending in Boston: A Reconsideration of the Evidence," 36 Econ. Inq. 29 (1998). CHECK COURSE MATERIALS or JSTOR).
- Klick & Helland, Legal Origins and Empirical Credibility (CHECK COURSE MATERIALS)
- Leamer, Let's Take the Con Out of Econometrics, 73 Am. Econ. Rev 31 (1983). (CHECK COURSE MATERIALS or JSTOR).

## **XII. Panel Regression Techniques, Natural Experiments, (April 15).**

- Ashenfelter, et al., Econometric Methods in Staples, 13 *Int. J. of the Economics of Business*, 265 (2006), SSRN version available at: <http://ssrn.com/abstract=529144>.
- Carpenter & Stehr, Intended and Unintended Consequences of Youth Bicycle Helmet Laws, 54 J. L. & Econ 305 (2011), SSRN version available at <http://ssrn.com/abstract=1537776>.
- Klick & Wright, Grocery Bag Bans and Foodborne Illness, available at <http://ssrn.com/abstract=2196481>.
- Heald, How Copyright Keeps Works Disappeared, 11 J. Emp. Legal. Stud 829 (2014), SSRN version available at <http://ssrn.com/abstract=2290181>.

## **XIII. Regression Discontinuity and Instrumental Variables (April 22).**

XIV. Megan T. Stevenson, Distortion of Justice: How the Inability to Pay Bail Affects Case Outcomes, [https://papers.ssrn.com/sol3/Papers.cfm?abstract\\_id=2777615](https://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2777615)

XV. Cohen, et al, Using Big Data to Estimate Consumer Surplus: The Case of Uber, available at [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwiXktXQI7XYAhUO\\_mMKHdCCCpgQFgqxMAE&url=http%3A%2F%2Fwww.datascienceassn.org%2Fsites%2Fdefault%2Ffiles%2FUsing%2520Big%2520Data%2520to%2520Estimate%2520Consumer%2520Surplus%2520at%2520Uber.pdf&usq=AOvVaw2ZOq7LMRtGwUgqk56karPH](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0ahUKEwiXktXQI7XYAhUO_mMKHdCCCpgQFgqxMAE&url=http%3A%2F%2Fwww.datascienceassn.org%2Fsites%2Fdefault%2Ffiles%2FUsing%2520Big%2520Data%2520to%2520Estimate%2520Consumer%2520Surplus%2520at%2520Uber.pdf&usq=AOvVaw2ZOq7LMRtGwUgqk56karPH)