

## Political Science 787: Multivariate Analysis

Fall 2007

Wednesday 4–6 (7603 HH)

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Office hours: T 2–4 or other times by appointment.

Course web page: <http://www.umich.edu/~wmebane/ps787.html>

### Assignment Due Dates

due date	description	weight
TBA	several data analysis problems	75%
TBA	final take-home exam	25%

### Reading Availability

Much of the course will follow or refer to discussions in the following book.

Cameron, A. Colin, and Pravin K. Trivedi. 2005. *Microeconometrics: Methods and Applications*. Cambridge UP.

I also plan to refer to a few chapters in each of the following.

McCullagh, P., and J. A. Nelder. 1989. *Generalized Linear Models*. 2d ed. Chapman and Hall.

Rosenbaum, Paul R. 2002. *Observational Studies* 2d ed. Springer.

### Class meeting and reading schedule

Items with a bullet (●) are required. Others are supplementary.

#### 1. Association, Estimation and Causal Inference (Sep 12)

- Edward E. Leamer . 1983. “Let’s Take the Con Out of Econometrics.” *American Economic Review* 73 (Mar.): 31–43.
- Holland, Paul W. 1986. “Statistics and Causal Inference.” *Journal of the American Statistical Association* 81 (Dec.): 945–960.
- Cameron and Trivedi. Chapters 2–3.

#### 2. linear regression: computation and influence (Sep 19–26)

- Cameron and Trivedi. Chapter 4 and Appendix A.

Chambers, John M. 1977. *Computational Methods for Data Analysis*. Wiley.

Cook, R. Dennis, and Sanford Weisberg. 1982. *Residuals and Influence in Regression*. Chapman and Hall.

Golub, Gene, and Charles Van Loan. 1996. *Matrix Computations*. 3d ed. Johns Hopkins UP.

3. m-estimation and maximum likelihood (Oct 3)

- Cameron and Trivedi. Appendix A.

Huber, Peter J. 1967. "The Behavior of Maximum Likelihood Estimates under Nonstandard Conditions," in *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability*, vol. 1, U of California Press, pages 221–233.

Huber, Peter J. 1981. *Robust Statistics*. Wiley.

Billingsley, Patrick. 1986. *Probability and Measure*. Wiley.

Loève, Michel. 1977. *Probability Theory I*. Springer.

4. misspecified models and generalized linear models (Oct 10)

- Cameron and Trivedi. Chapter 5.
- McCullagh and Nelder. Chapters 1–2.

White, Halbert. 1982. "Maximum Likelihood Estimation of Misspecified Models," *Econometrica* 50 (1): 1–25.

White, Halbert. 1994. *Estimation, Inference and Specification Analysis*. Cambridge UP.

McCullagh, Peter. 1983. "Quasi-likelihood Functions." *Annals of Statistics* 11 (Mar.): 59–67.

Barndorff-Nielsen, O. E., and D. R. Cox. 1989. *Asymptotic Techniques for Use in Statistics*. Chapman and Hall.

5. binary data and count data (Oct 17)

- Cameron and Trivedi. Chapters 14, 20.
- McCullagh and Nelder. Chapters 4 and 6.

Cameron, A. Colin, and Pravin K. Trivedi. 1998. *Regression Analysis of Count Data*. Cambridge UP.

6. multinomial discrete choice models (Oct 31)

- Cameron and Trivedi. Chapter 15.

Wand, Jonathan. 2007. "Information, learning, and the study of repeated choices by individuals." Working paper.

Mebane, Walter R., Jr. 2000. "Coordination, Moderation, and Institutional Balancing in American Presidential and House Elections." *American Political Science Review* 94 (March): 37–57.

Mebane, Walter R., Jr., and Jasjeet S. Sekhon. 2002. "Coordination and Policy Moderation at Midterm." *American Political Science Review* 96 (March): 141–157.

7. hypothesis tests (Nov 7)

- Cameron and Trivedi. Chapter 7.

Cox, D. R., and Hinkley, D. V. 1974. *Theoretical Statistics*. Chapman and Hall.

Vuong, Quang H. 1989. "Likelihood-ratio Tests for Model Selection and Non-nested Hypotheses." *Econometrica* 57 (2): 307–333.

8. bootstrap (Nov 14–28)

- Cameron and Trivedi. Chapter 11.

Davison, A. C., and D. V. Hinkley. 1997. *Bootstrap Methods and their Applications*. Cambridge.

Efron, Bradley, and Robert J. Tibshirani. 1993. *An Introduction to the Bootstrap*. Chapman and Hall.

Hall, Peter. 1992. *The Bootstrap and Edgeworth Expansion*. Springer.

Barndorff-Nielsen, O. E., and D. R. Cox. 1994. *Inference and Asymptotics*. Chapman and Hall.

Barndorff-Nielsen, O. E., and D. R. Cox. 1984. "Bartlett Adjustments to the Likelihood Ratio Statistic and the Distribution of the Maximum Likelihood Estimator," *Journal of the Royal Statistical Society. Series B (Methodological)* 46 (3): 483–495.

9. censoring and truncation (Dec 5)

- Cameron and Trivedi. Chapter 16.
- Heckman, James J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 47 (1): 153–161.

10. selection bias, observational bias, randomization and matching (Dec 5)

- Rosenbaum, Paul R., and Donald B. Rubin. 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70 (1): 41–55.
- Sekhon, Jasjeet S. 2007. "The Neyman-Rubin Model of Causal Inference Estimation via Matching Methods," forthcoming in *The Oxford Handbook of Political Methodology*, Janet Box-Steffensmeier, Henry Brady, and David Collier, eds.  
<http://sekhon.berkeley.edu/papers/SekhonOxfordHandbook.pdf>
- Sekhon, Jasjeet S., and Rocío Titiunik. 2007. "Exploiting Tom DeLay: A New Method for Estimating Incumbency Advantage and the Effect of Candidate Ethnicity on Turnout." Working paper.  
<http://sekhon.berkeley.edu/papers/SekhonTitiunik.pdf>
- Freedman, David A., and Jasjeet S. Sekhon. 2007. "Endogeneity in Probit Response Models." Working paper.  
<http://sekhon.berkeley.edu/papers/heckprob.pdf>
- Freedman, David A. 2007. "On Regression Adjustments to Experimental Data." To appear in *Advances in Applied Mathematics*.  
<http://www.stat.berkeley.edu/~census/neyregr.pdf>

Rosenbaum. Chapters 2, 3, 10.

11. designing a randomized panel (Dec xx)

- Cameron and Trivedi. Chapter 21.
- Rosenbaum. Chapter 11.