

Nonparametric methods

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Course outline

1. Nonparametric density estimators

- Empirical densities
- The kernel method
- Statistical properties of the kernel method
- Other methods for density estimation
- Multivariate density estimation
- Stata commands.

2. Linear nonparametric regression estimators

- Regression splines
- The kernel method
- The nearest neighbor method
- Cubic smoothing splines
- Local polynomial regression
- Statistical properties of linear smoothers
- Methods for high dimensional data
- Stata commands.

3. Distribution function and quantile function estimators

- The empirical distribution function
- The empirical quantile function
- Estimating the conditional quantile function
- Estimating the conditional distribution function
- Relationships between the two approaches
- Generalizations
- Stata commands.

References

- Fan J. and Gijbels I. (1996) *Local Polynomial Modelling and Its Applications*, Chapman and Hall, London.
- Koenker, R. (2005) *Quantile Regression*, Cambridge University Press, New York.
- Li O. and Racine J.S. (2007) *Nonparametric Econometrics*, Princeton University Press, Princeton.
- Pagan A.R. and Ullah A. (1999) *Nonparametric Econometrics*, Cambridge University Press, New York.
- Ruppert D., Wand M.P. and Carroll R.J. (2003) *Semiparametric Regression*, Cambridge University Press, New York.
- Silverman B.W. (1986) *Density Estimation for Statistics and Data Analysis*, Chapman and Hall, New York.
- Yatchew A. (2003) *Semiparametric Regression for the Applied Econometrician*, Cambridge University Press, New York.

Suggestions for further reading will be provided in class.